

***Oracle Fusion Middleware - WebLogic
Server 12cR2 (12.2.1.4.0) on SUSE Linux
Enterprise Server 15 (SP1) for x86-64***



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Introduction

This document provides details on installing Oracle WebLogic Server 12cR2 on SUSE Linux Enterprise Server 15 SP1. Details are provided for Intel(x86-64) versions of both Oracle WebLogic Server 12cR2 and SUSE Linux Enterprise Server 15 SP1. Similar steps apply to other platforms (x86, ia64, System z, etc.). If you encounter issues or have general questions, please post your query to suse-oracle@listx.novell.com.

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 12cR2 (12.2.1.4.0) (fmw_12.2.1.3.0_wls_Disk1_1of1.zip)
(<https://www.oracle.com/technetwork/middleware/downloads/fusion-downloads-1714164.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

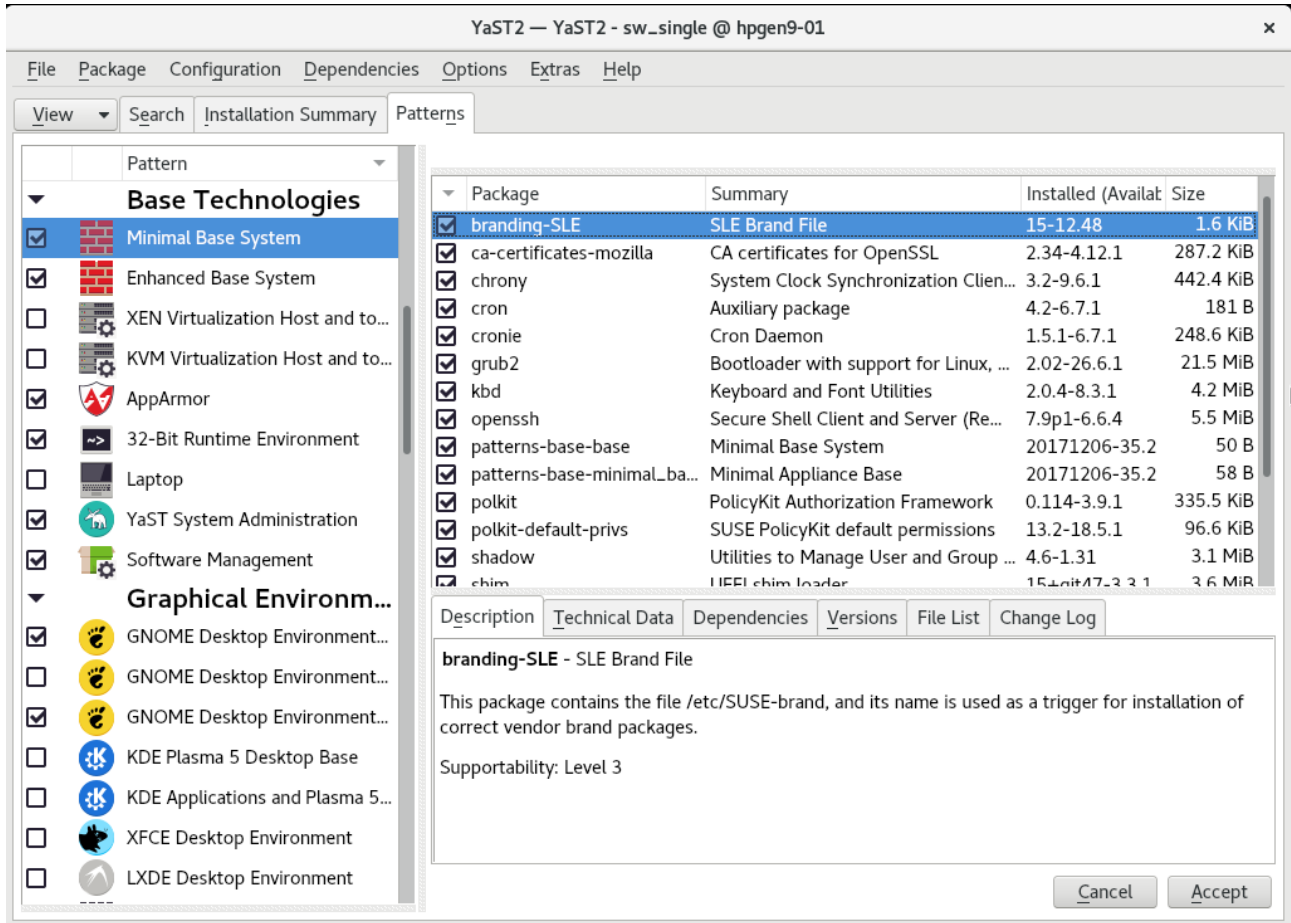
HP DL388 Gen9 Server
 CPU: 2 * Intel(R) Xeon(R) CPU E5-2630 v3 @ 2.40GHz
 RAM: 64 GB
 NIC: 8
 Local HDD: 2TB
 OS: SUSE Linux Enterprise Server 15 SP1 (x86-64) - Kernel version: 4.12.14-197.15-default

Prerequisites

1. Installing SUSE Linux Enterprise Server 15 SP1

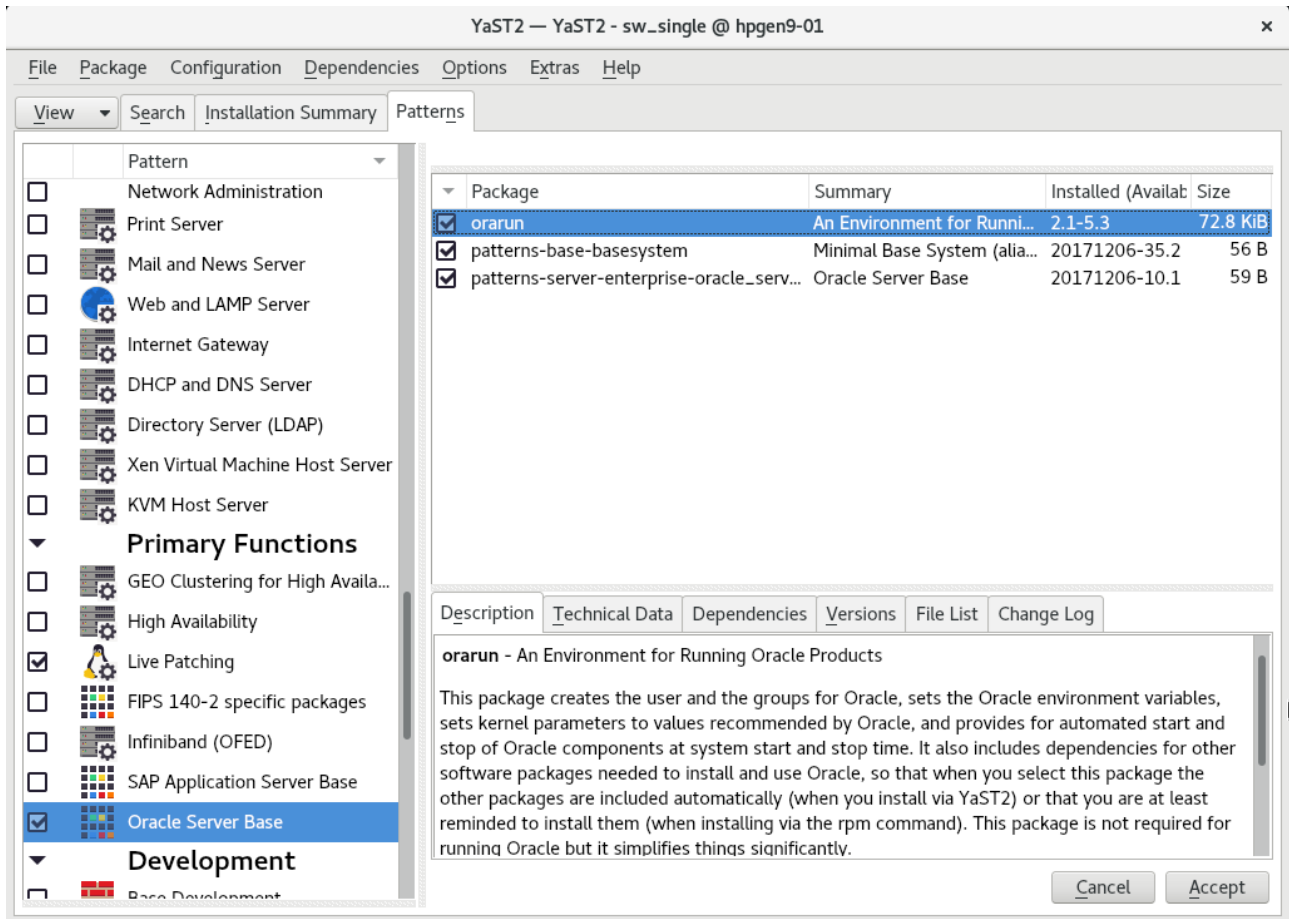
1-1. Install SUSE Linux Enterprise Server 15 SP1 on your testing machine. To do so, follow the instructions in the official SUSE Linux Enterprise Server documentation at <https://www.suse.com/documentation/>.

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 nofile 4096
* hard nofile 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.

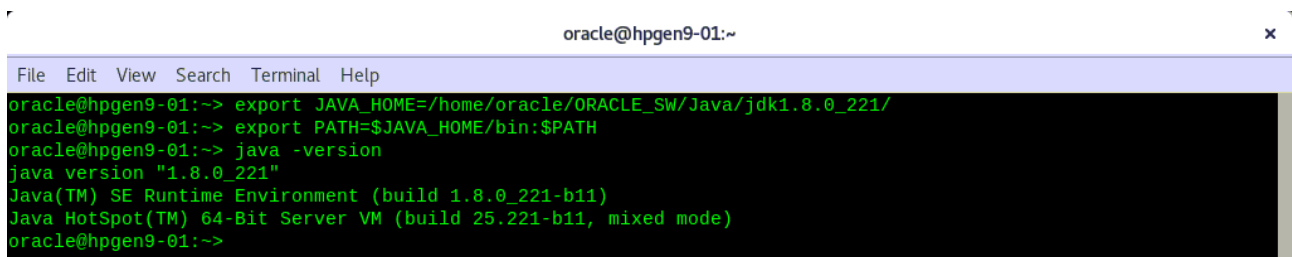
2. Installing Java

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 12c(12.2.1.4.0), 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 12cR2 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 12cR2 (12.2.1.4.0) from <https://www.oracle.com/technetwork/middleware/downloads/fusion-downloads-1714164.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_12.2.1.4.0_wls_Disk1_1of1.zip) file and launch the installation program by running **'java -jar fmw_12.2.1.4.0_wls.jar'**

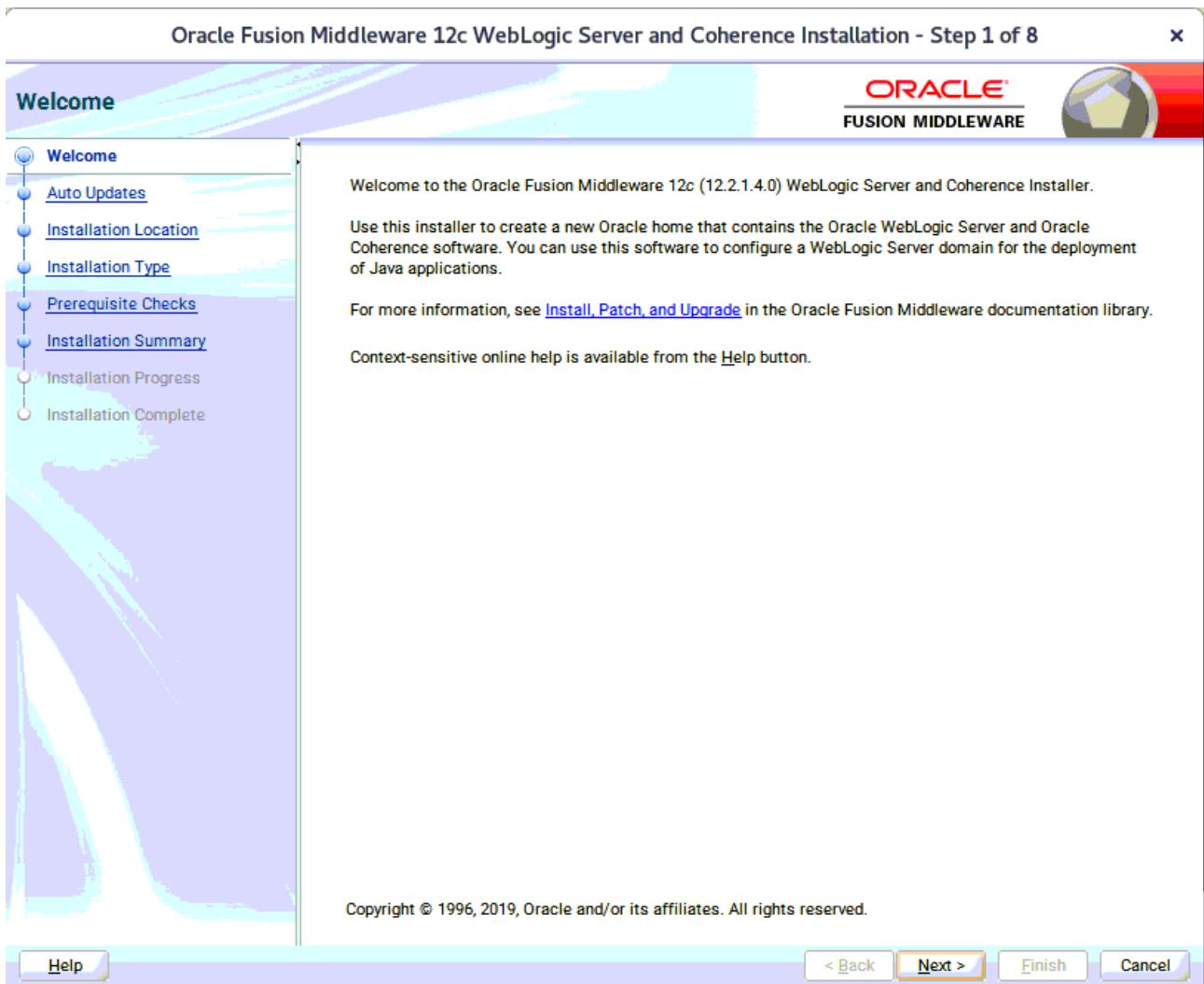
Install Flow:

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.

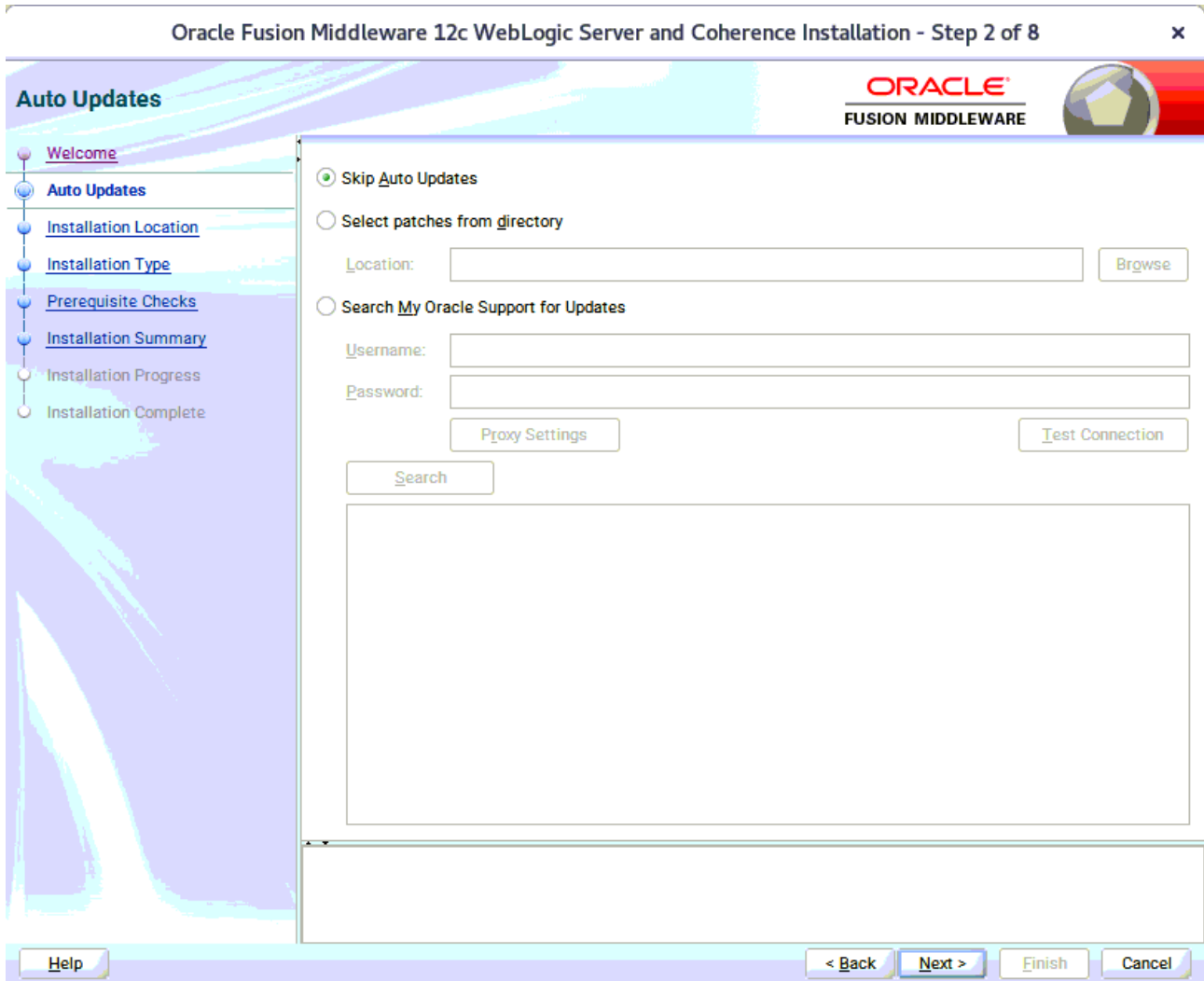


2). Welcome.



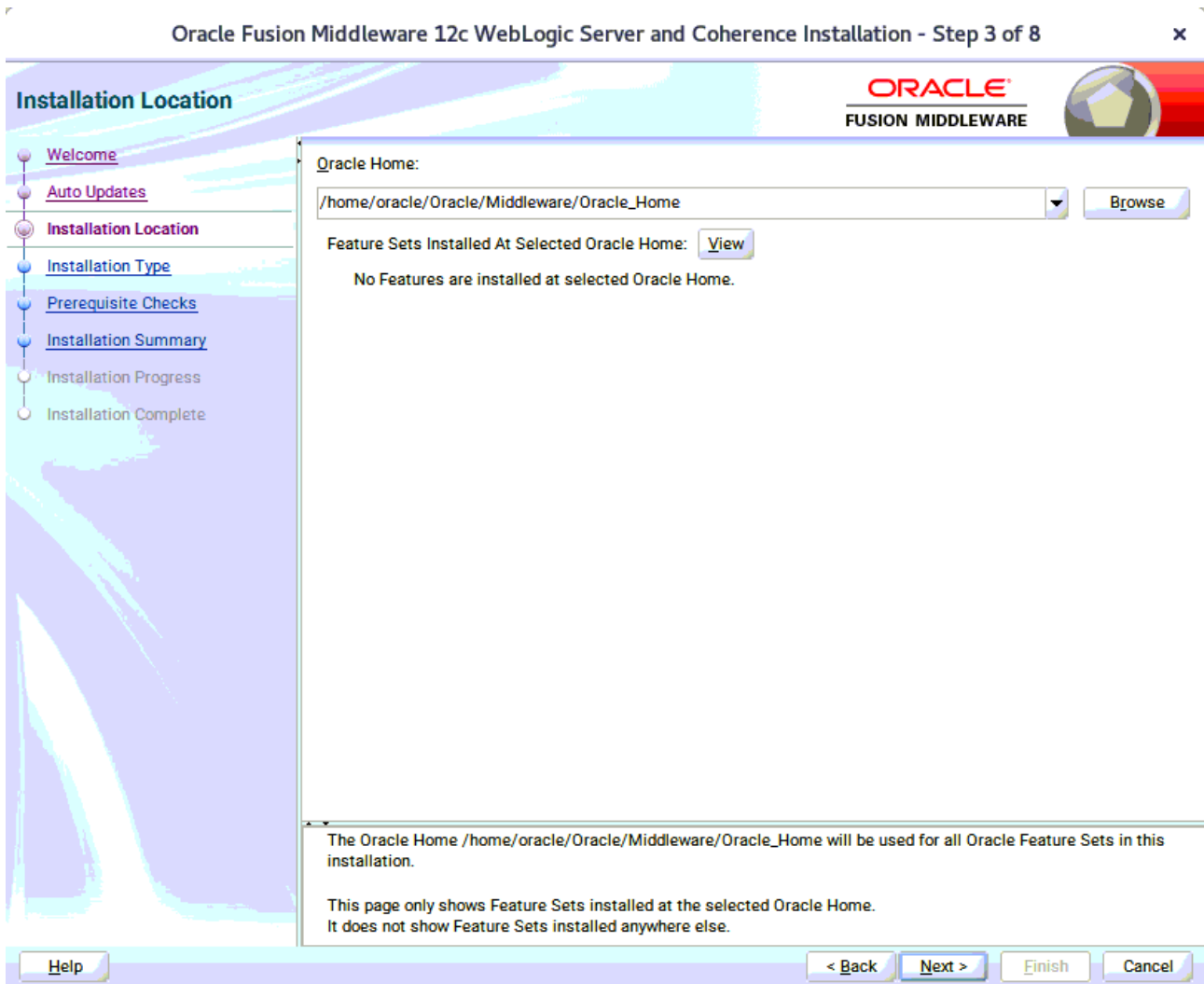
Review the information on this screen carefully to be sure you have performed all the necessary prerequisites, then click **Next** to continue.

3). Auto Updates.



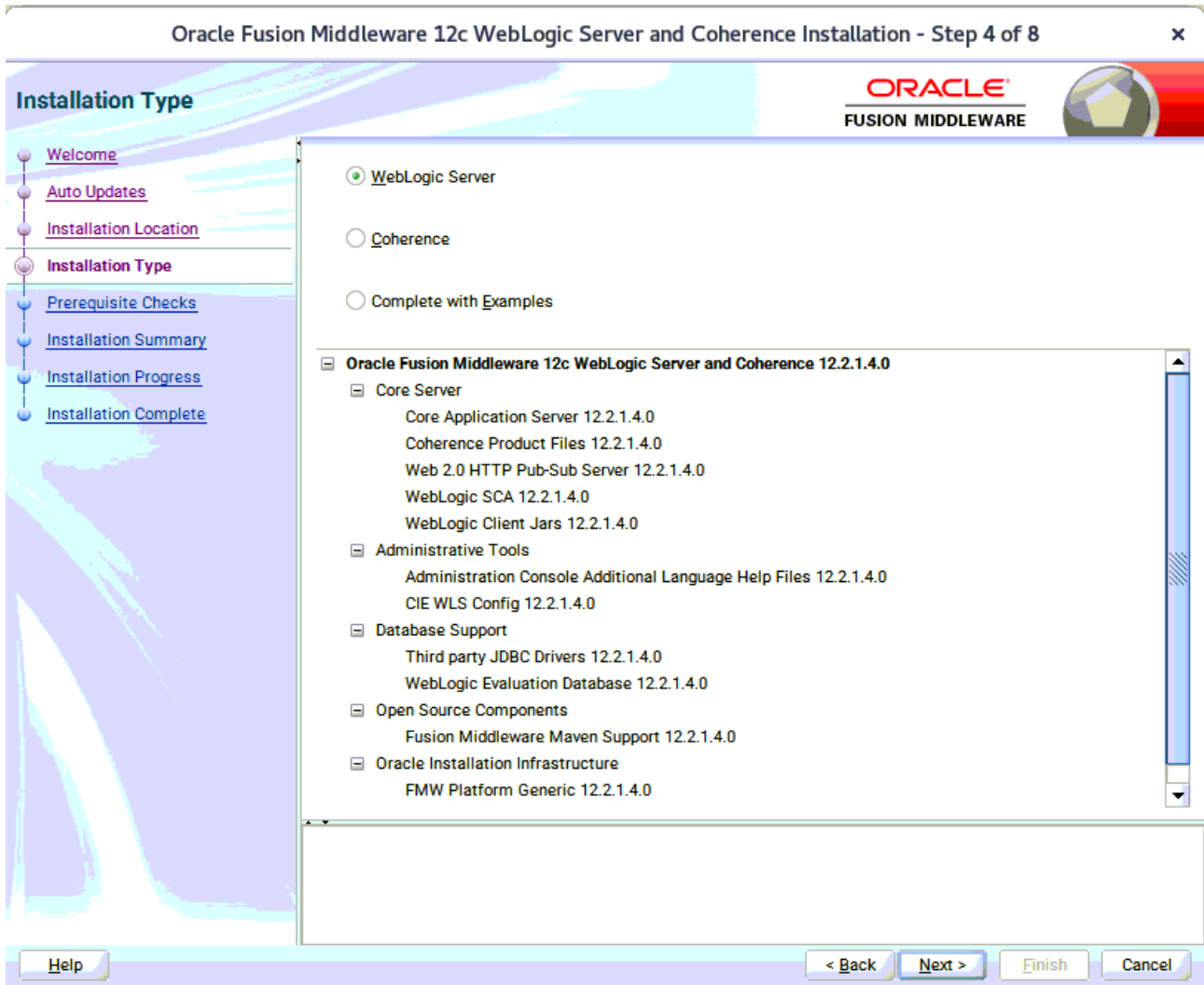
Select option "Skip Auto Updates" to skip this screen, then click **Next** to continue.

4). Installation Location.



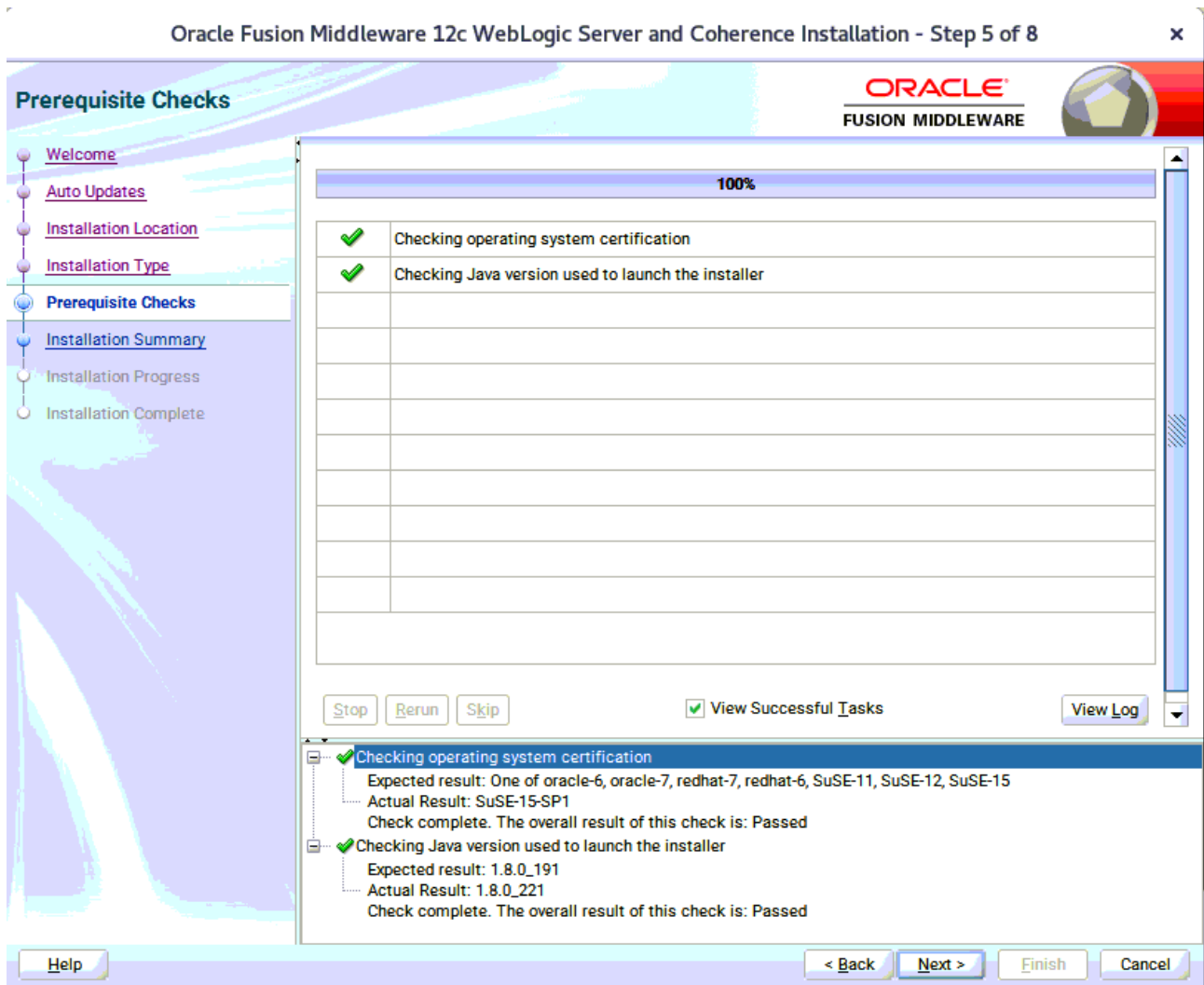
Type the full path of the directory in the Oracle Home field, then click **Next** to continue.

5). Installation Type.



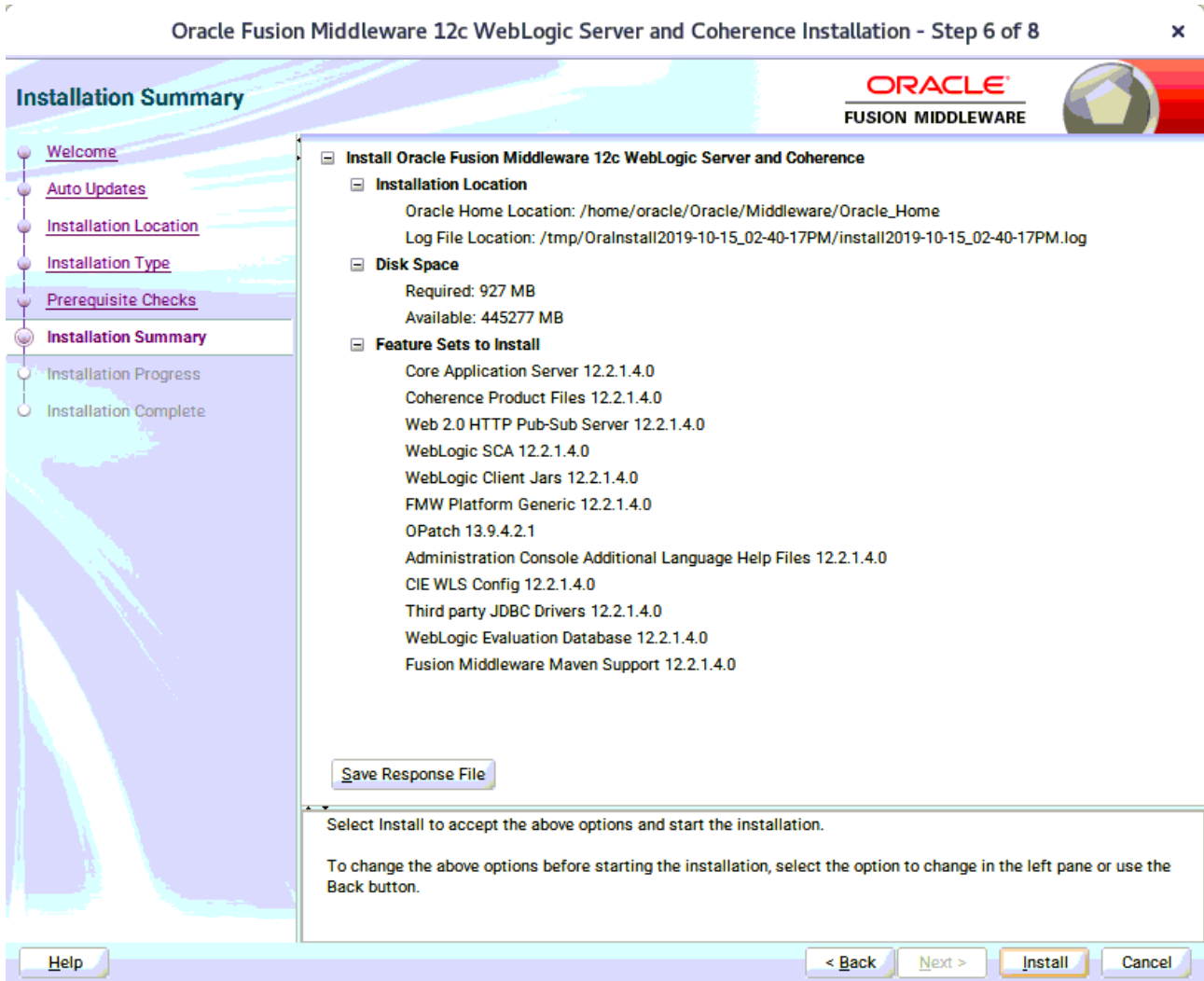
Use this screen to determine the type of installation you want to perform, then click **Next** to continue.

6). Prerequisite Checks.



Prerequisite Checks results will be shown as above, Oracle Fusion Middleware 12c is certified on SLES 15(+), click **Next** to continue.

7). Installation Summary.



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 12c 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

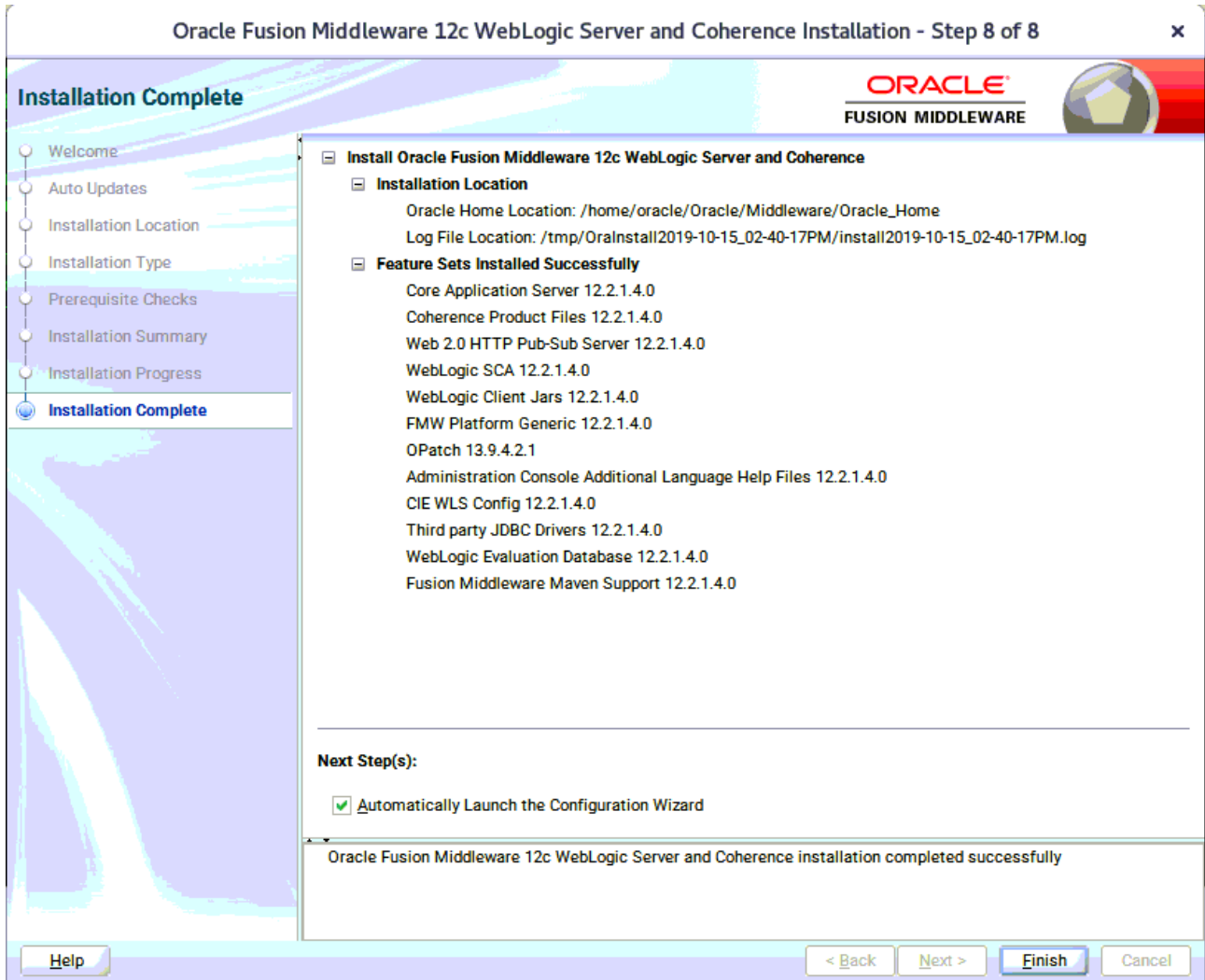
View Messages View Successful Tasks View Log

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.



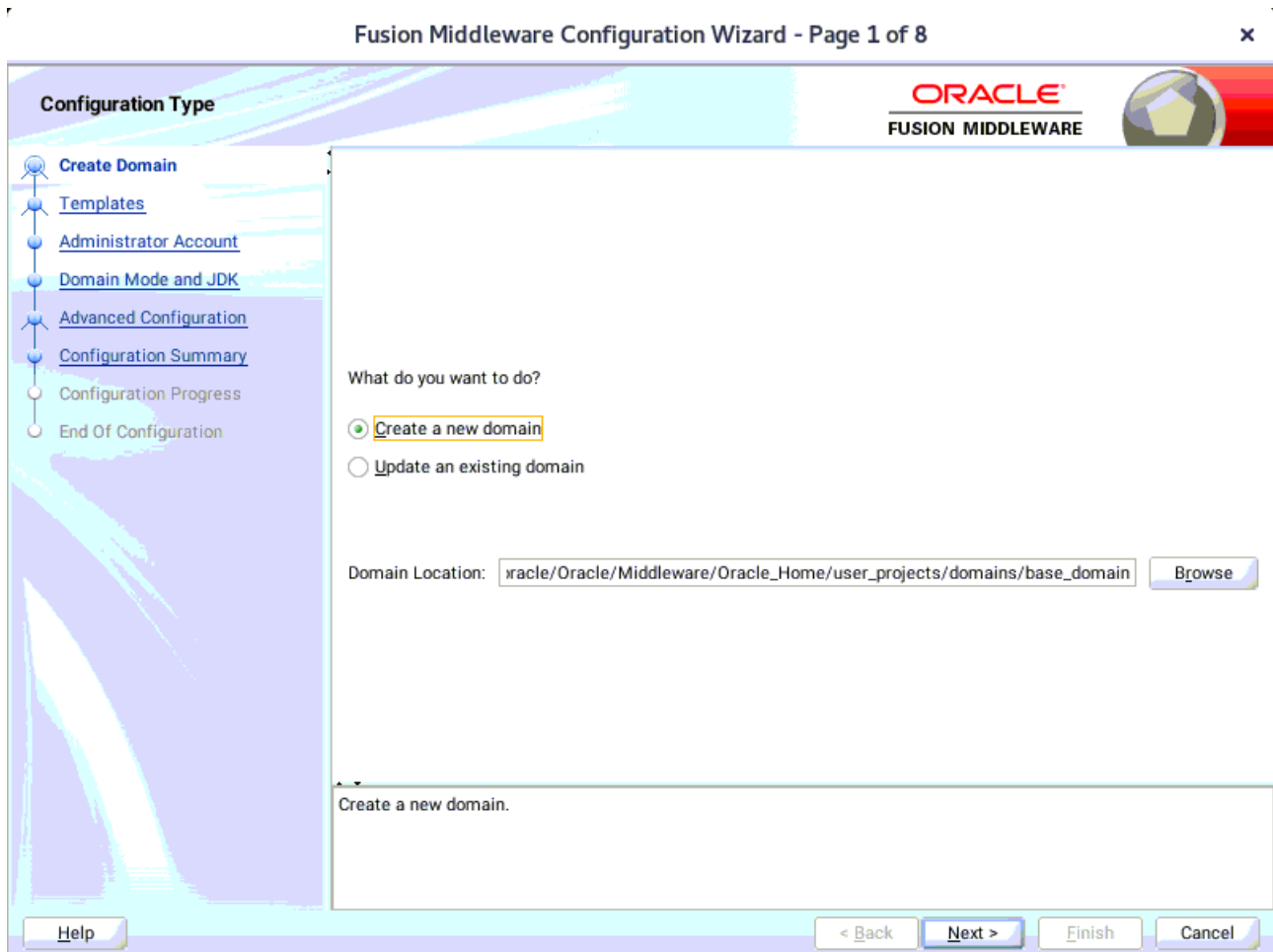
This screen appears at the conclusion of the installation. Select option "**Automatically Launch the Configuration Wizard**", then click **Finish** to dismiss the installer.

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**'.

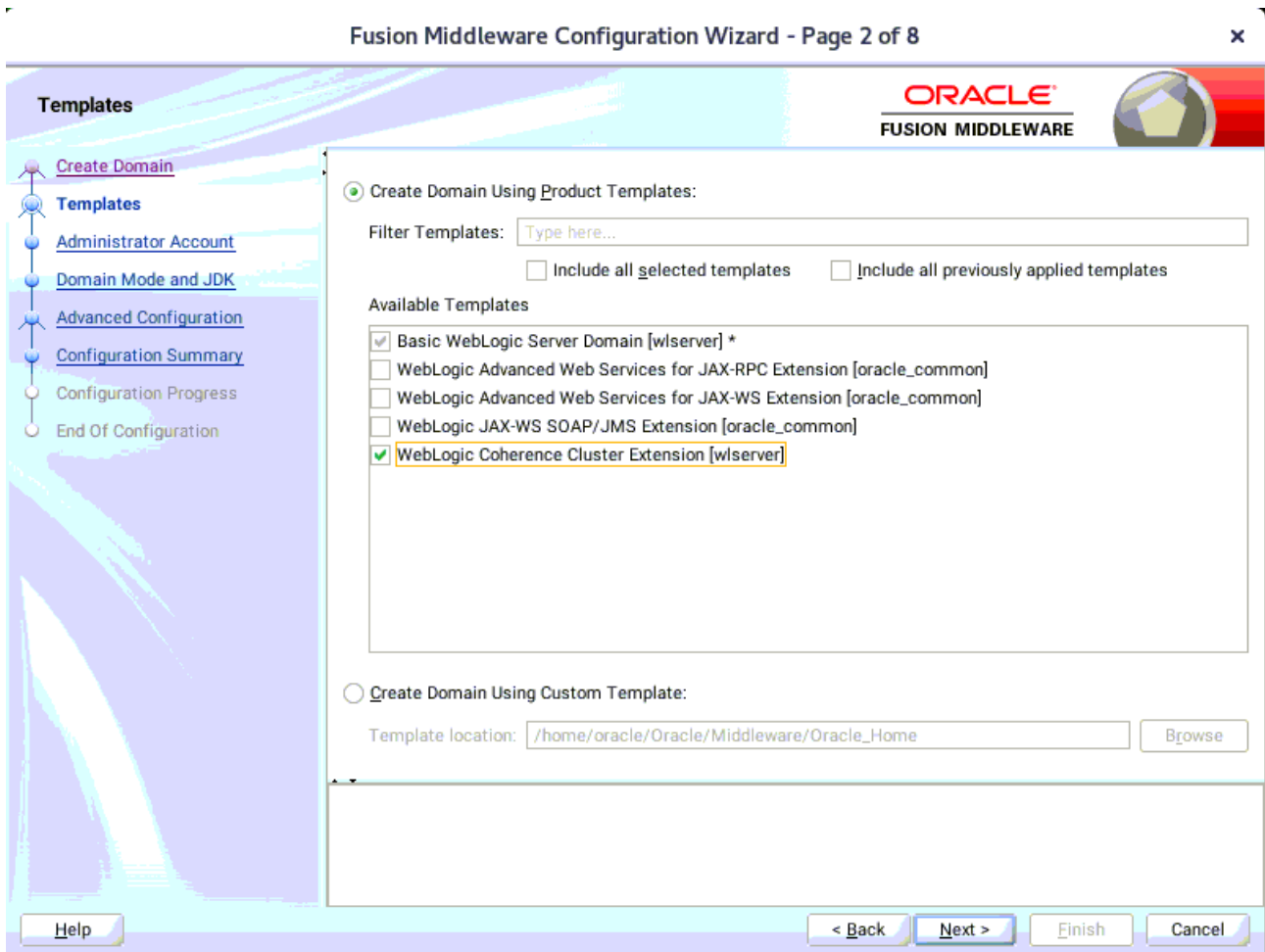
Starting configuration:

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.



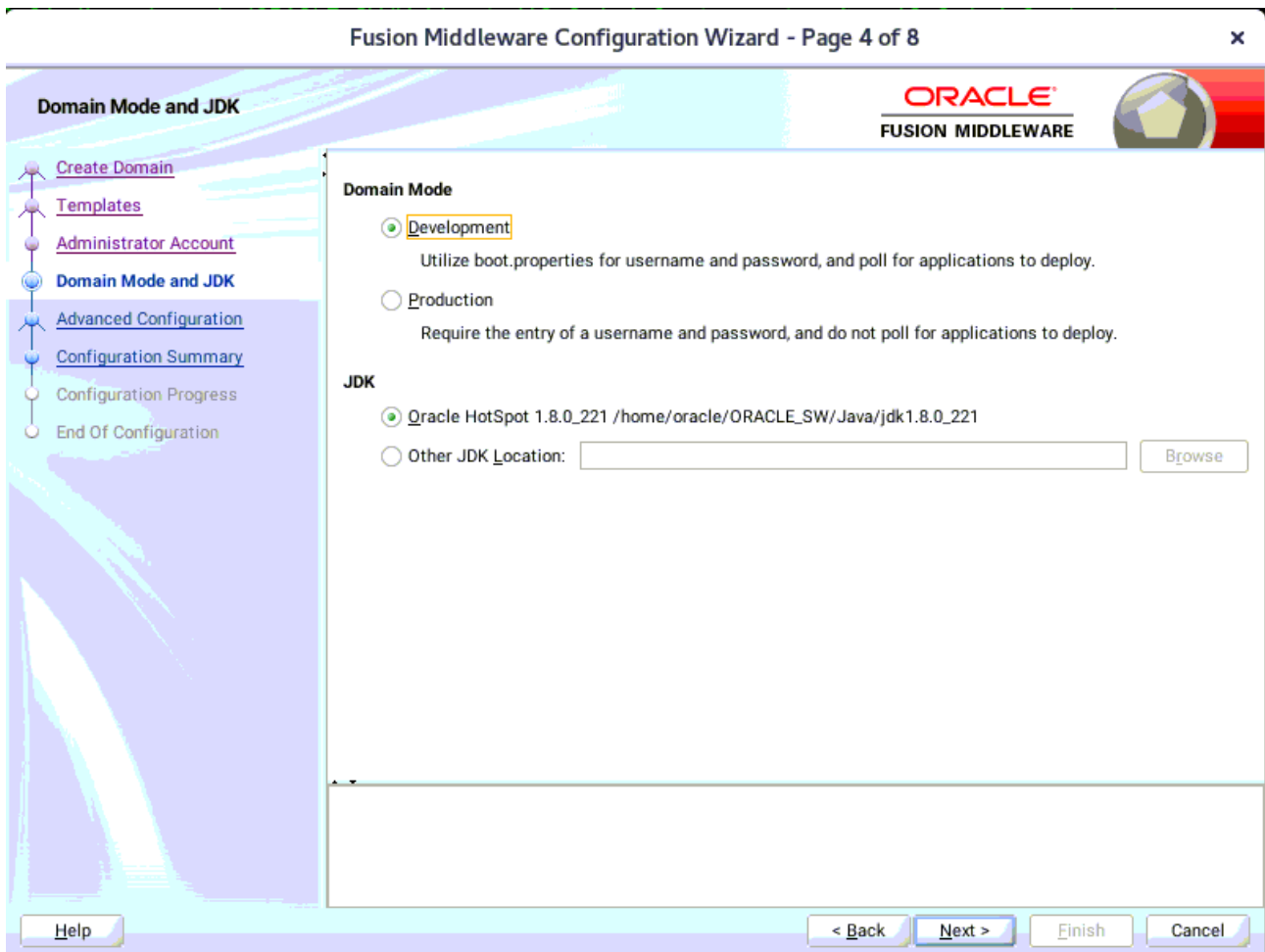
On the Templates screen select "**Basic WebLogic Server Domain (selected by default)**" and "**WebLogic Coherence Cluster Extension**" for configuration, then click **Next** to continue.

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. A navigation pane on the left lists the following steps: Create Domain, Templates, Administrator Account (selected), 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 of the wizard are buttons for 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

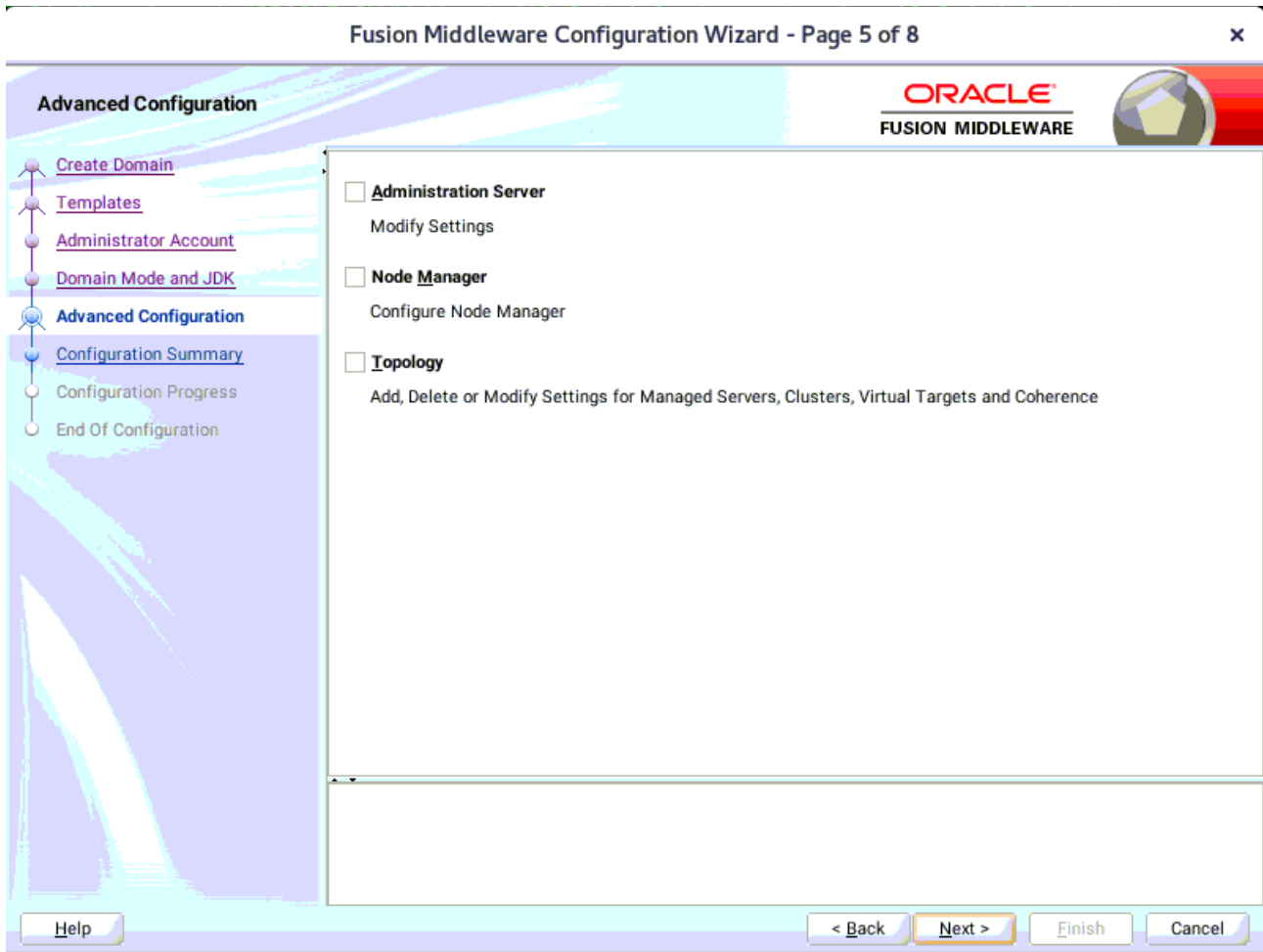
Specify the user name and password for the default WebLogic Administrator account for the domain, then click **Next** to continue.

4). Domain Mode and JDK.



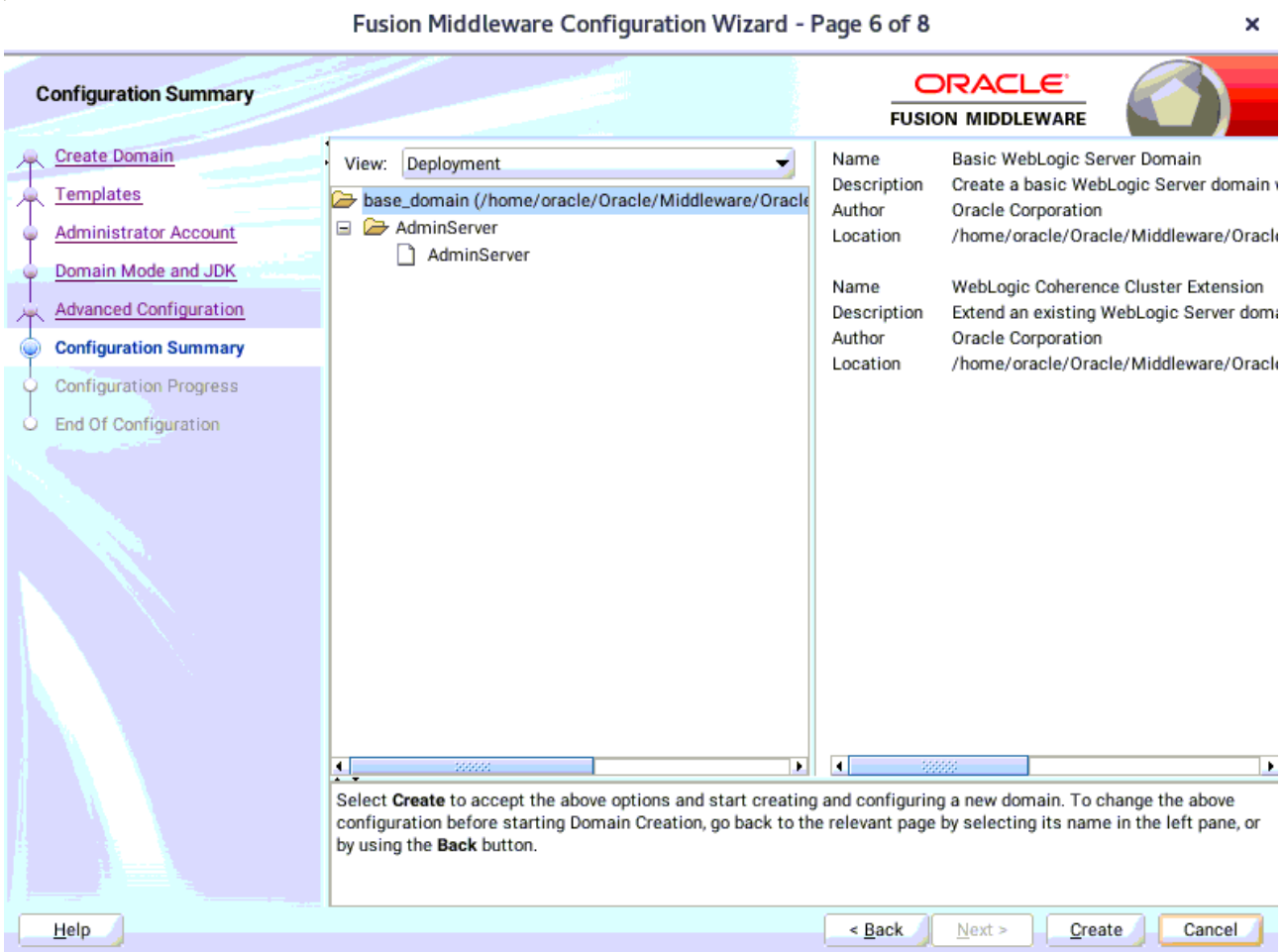
Select "**Development**" in the Domain Mode field, select the "**Oracle HotSpot**" in the JDK field. Then click **Next** to continue.

5). Advanced Configuration.



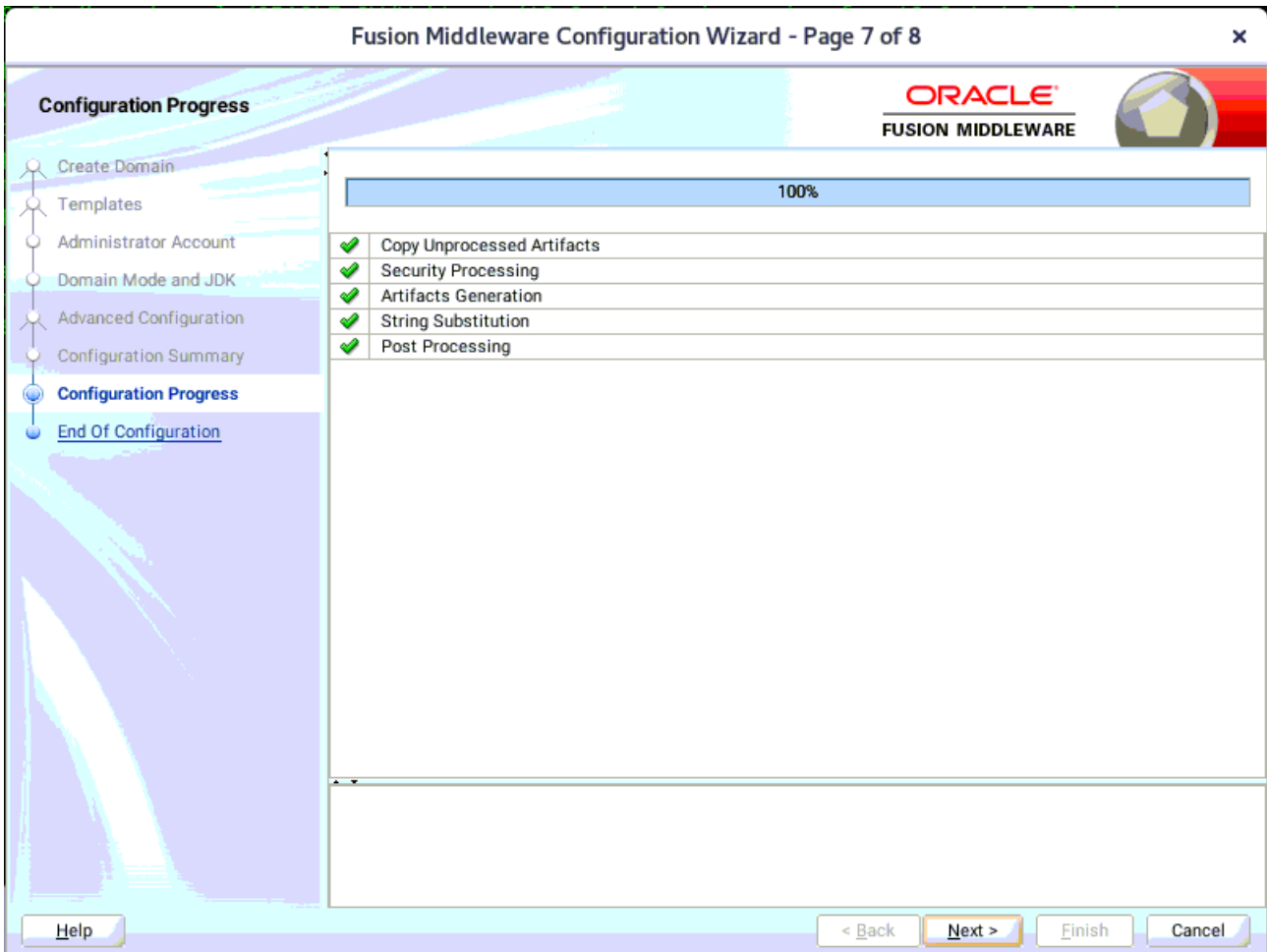
According to your requirements, select the desired options on the Advanced Configuration screen. Then click **Next** to continue.

6). Configuration Summary.



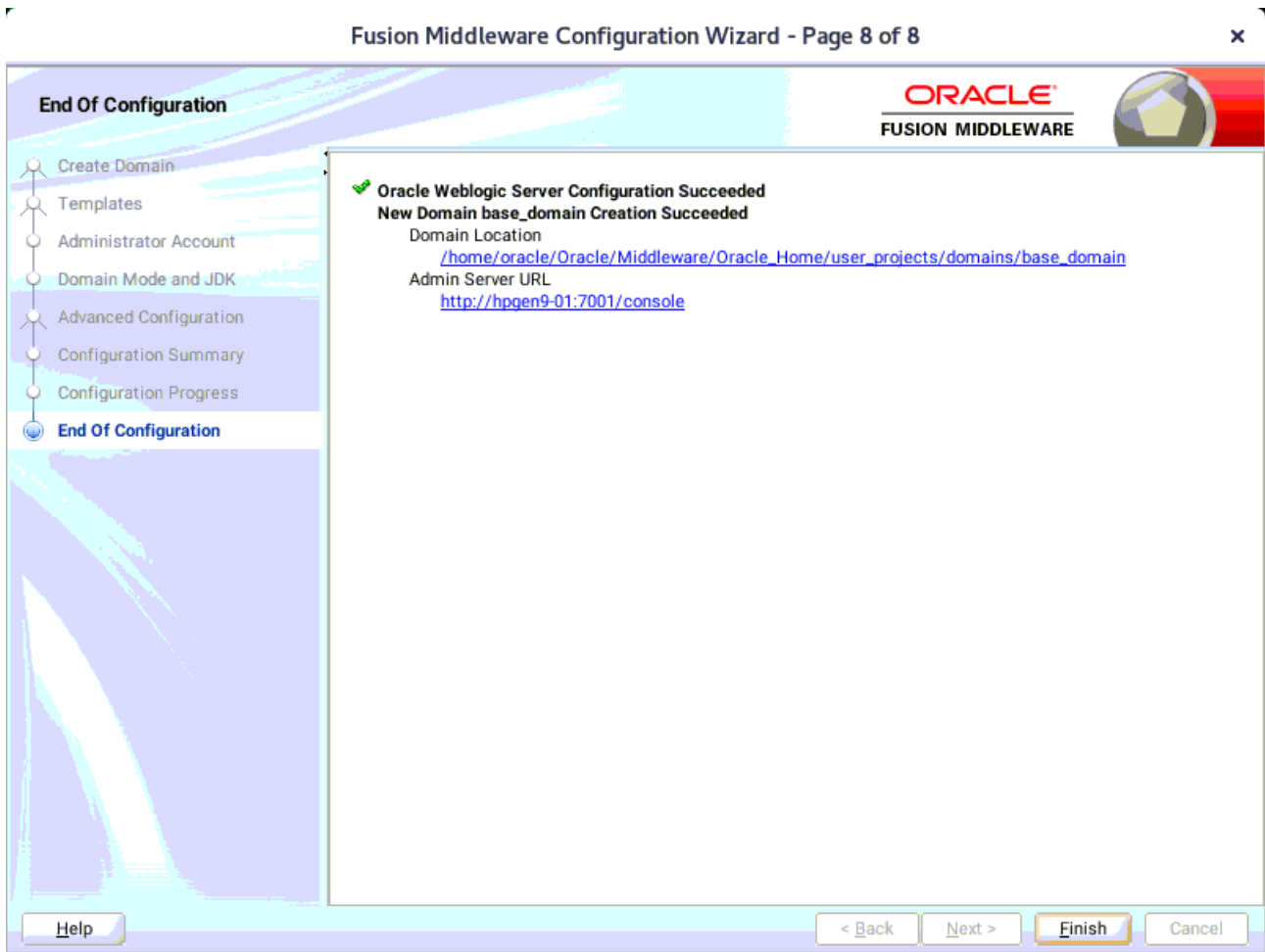
Review this screen to verify the information is correct, then click **Create** to continue.

7). Configuration Progress.



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

8). End Of Configuration.

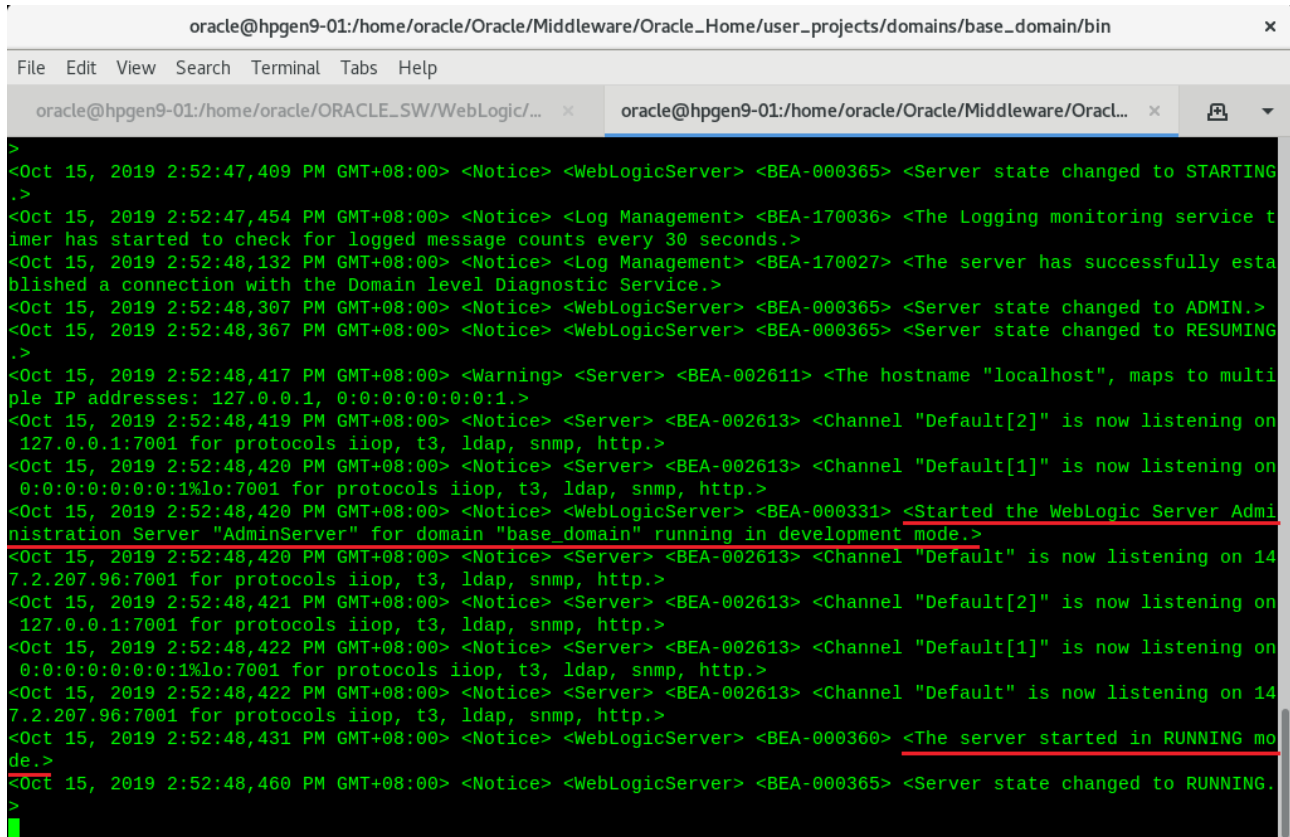


Once you see: "Oracle Weblogic Server Configuration Succeeded", record the "**Domain Location**" and "**Admin Server URL**", then click **Finish** to dismiss the Configuration Wizard.

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

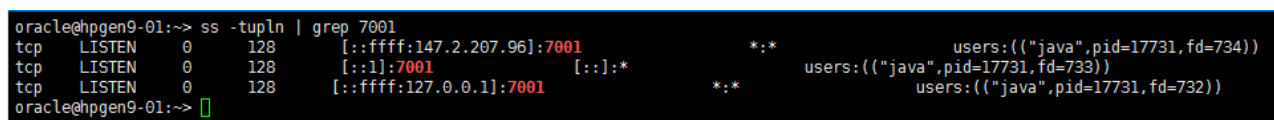


```

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_SW/WebLogic/... x oracle@hpgen9-01:/home/oracle/Oracle/Middleware/Oracl... x
>
<Oct 15, 2019 2:52:47,409 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STARTING
.>
<Oct 15, 2019 2:52:47,454 PM GMT+08:00> <Notice> <Log Management> <BEA-170036> <The Logging monitoring service t
imer has started to check for logged message counts every 30 seconds.>
<Oct 15, 2019 2:52:48,132 PM GMT+08:00> <Notice> <Log Management> <BEA-170027> <The server has successfully esta
blished a connection with the Domain level Diagnostic Service.>
<Oct 15, 2019 2:52:48,307 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to ADMIN.>
<Oct 15, 2019 2:52:48,367 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to RESUMING
.>
<Oct 15, 2019 2:52:48,417 PM GMT+08:00> <Warning> <Server> <BEA-002611> <The hostname "localhost", maps to multi
ple IP addresses: 127.0.0.1, 0:0:0:0:0:0:1.>
<Oct 15, 2019 2:52:48,419 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.>
<Oct 15, 2019 2:52:48,420 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.>
<Oct 15, 2019 2:52:48,420 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000331> <Started the WebLogic Server Admi
nistration Server "AdminServer" for domain "base_domain" running in development mode.>
<Oct 15, 2019 2:52:48,420 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 14
7.2.207.96:7001 for protocols iiop, t3, ldap, snmp, http.>
<Oct 15, 2019 2:52:48,421 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.>
<Oct 15, 2019 2:52:48,422 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.>
<Oct 15, 2019 2:52:48,422 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 14
7.2.207.96:7001 for protocols iiop, t3, ldap, snmp, http.>
<Oct 15, 2019 2:52:48,431 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000360> <The server started in RUNNING mo
de.>
<Oct 15, 2019 2:52:48,460 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=17731,fd=734))
tcp LISTEN 0 128 [::1]:7001 [::]:* users:(("java",pid=17731,fd=733))
tcp LISTEN 0 128 [::ffff:127.0.0.1]:7001 *:* users:(("java",pid=17731,fd=732))
oracle@hpgen9-01:~>

```

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

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

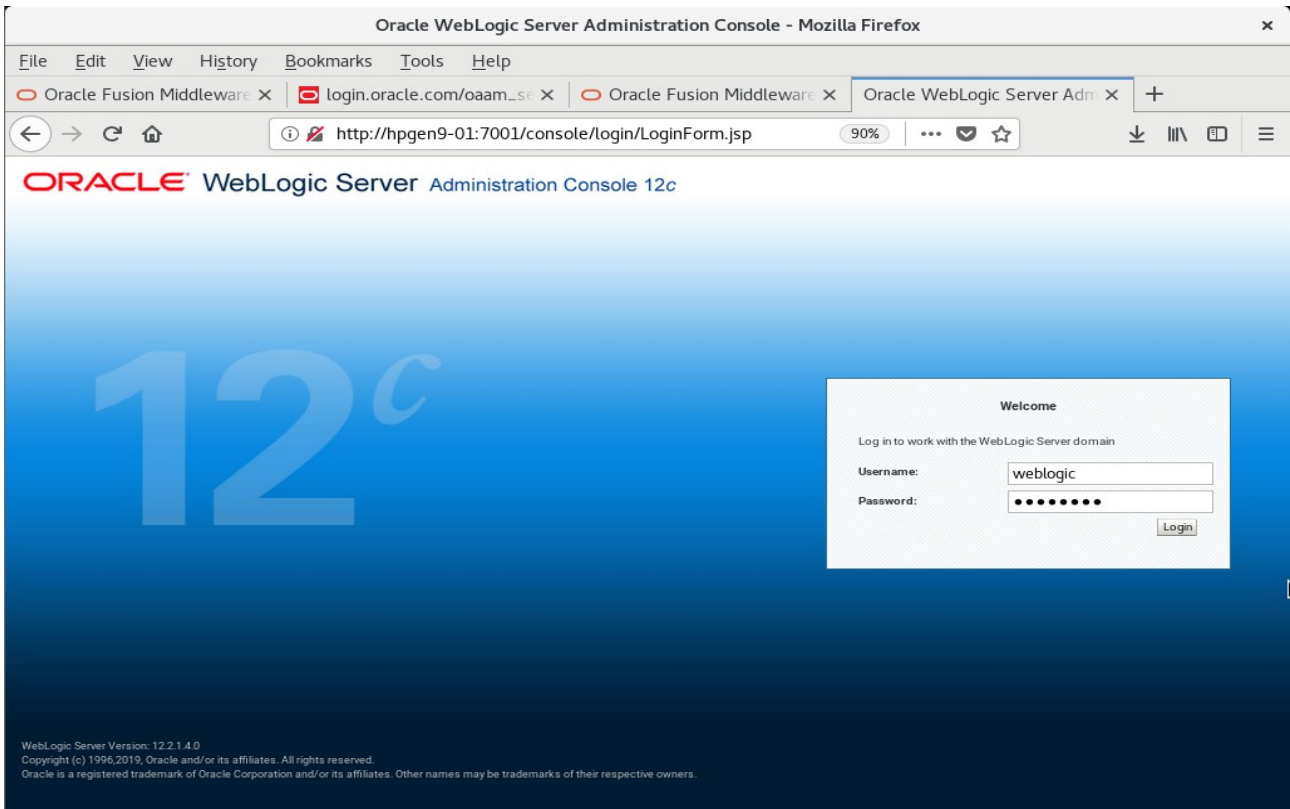


Figure 3-2-2 Viewing WebLogic Server Admin Console - Home page

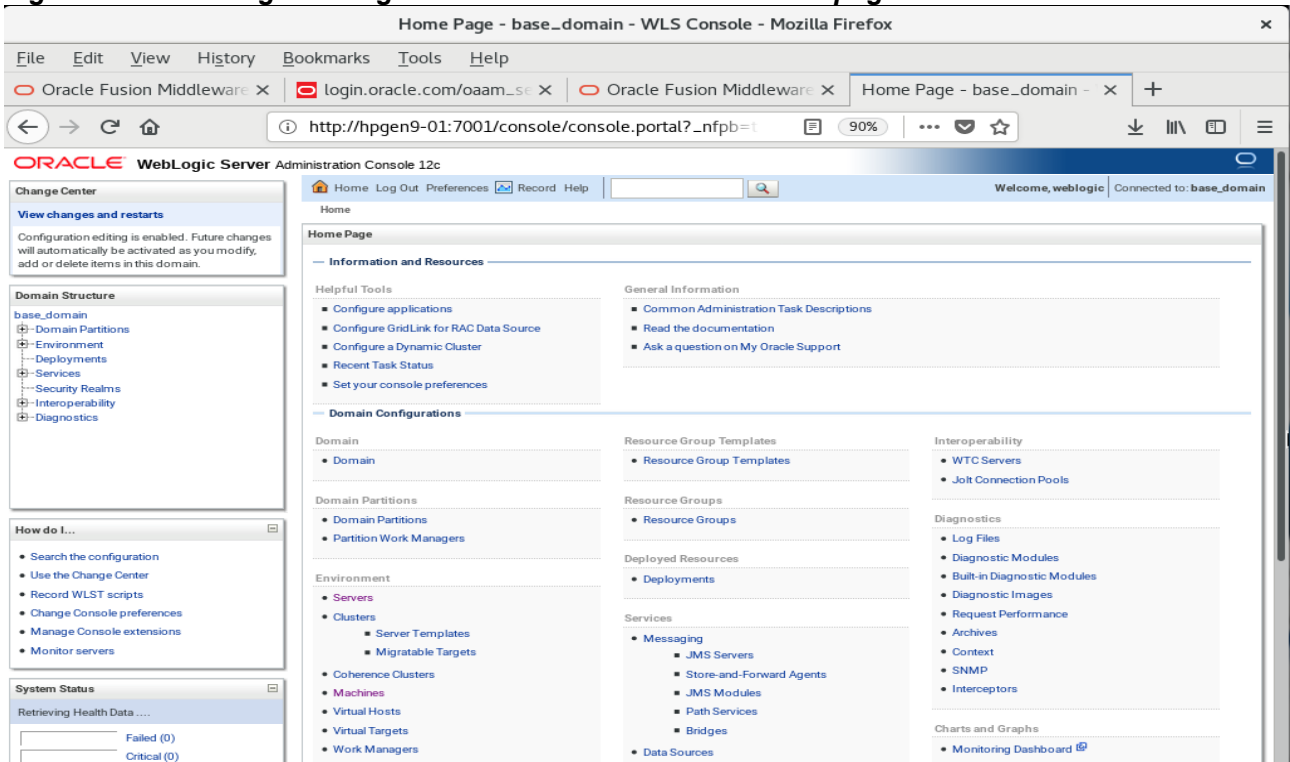


Figure 3-2-3 Viewing WebLogic Server Admin Console - Summary of Servers

The screenshot shows the Oracle WebLogic Server Administration Console interface. The main content area is titled "Summary of Servers" and includes a "Configuration" tab. Below the tab, there is a table listing the servers in the domain. The table has columns for Name, Type, Cluster, Machine, State, Health, and Listen Port. One server is listed: AdminServer(admin) with a Type of Configured, State of RUNNING, Health of OK, and Listen Port of 7001.

Name	Type	Cluster	Machine	State	Health	Listen Port
AdminServer(admin)	Configured			RUNNING	OK	7001

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
Oct 18th, 2019***

<https://www.suse.com>