

***Oracle Fusion Middleware - WebLogic  
Server 14c (14.1.1.0.0) on SUSE Linux  
Enterprise Server 15 (SP2) for x86-64***



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## Introduction

This document provides details on installing Oracle WebLogic Server 14c on SUSE Linux Enterprise Server 15 SP2. Details are provided for Intel(x86-64) versions of both Oracle WebLogic Server 14c and SUSE Linux Enterprise Server 15 SP2. 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 SP2 GM (x86-64)  
(<https://www.suse.com/download/sles/>)

#### Oracle

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

### Testing Machine Information

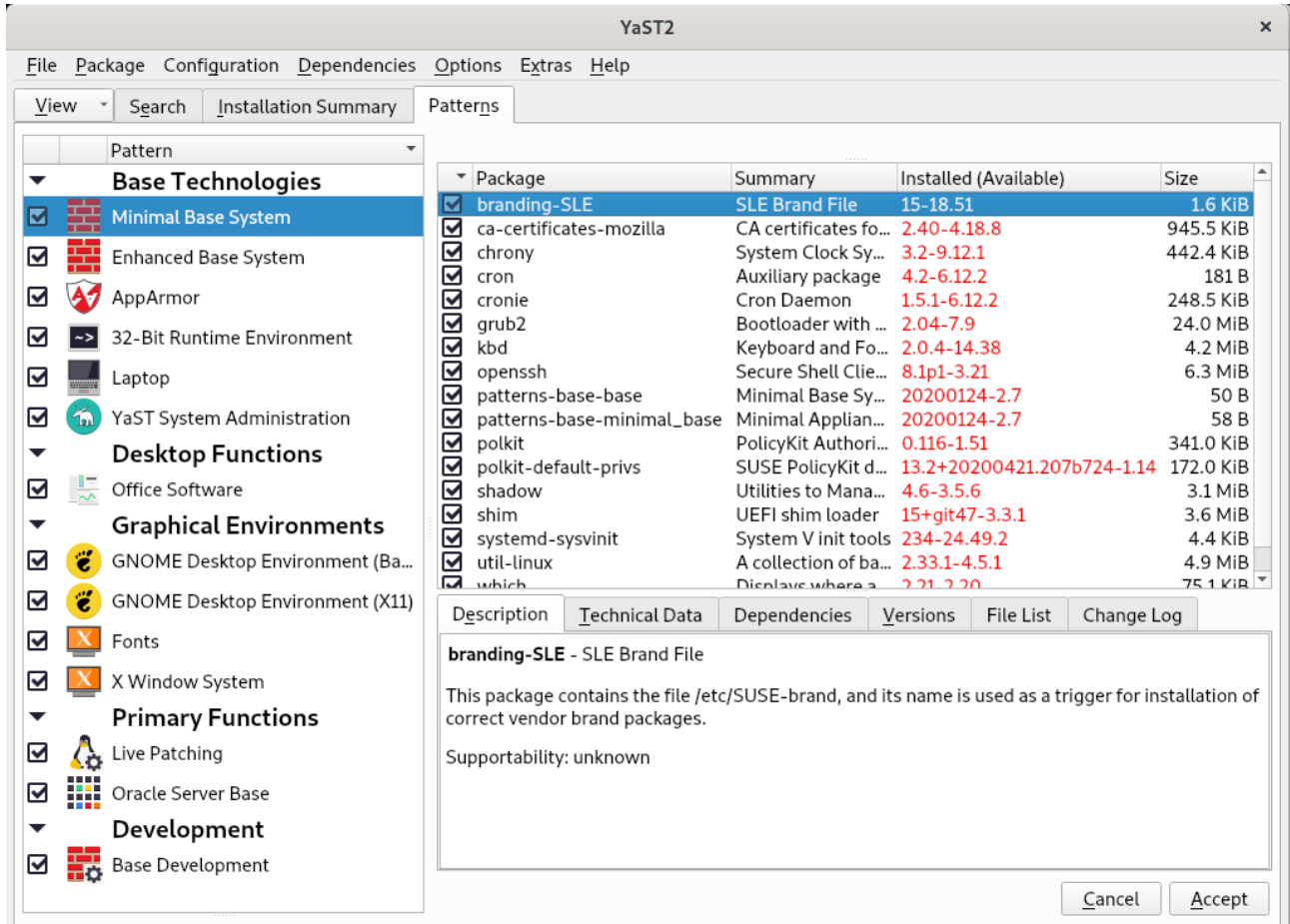
Dell Laptop Precision 5530  
 CPU: 6 \* Intel(R) Core(TM) i7-8850H CPU @ 2.60GHz  
 RAM: 32 GB  
 NIC: 2  
 Local HDD: 1TB + 512GB  
 OS: SUSE Linux Enterprise Server 15 SP2 GM (x86-64) - Kernel version: 5.3.18-22-default

# Prerequisites

## 1. Installing SUSE Linux Enterprise Server 15 SP2

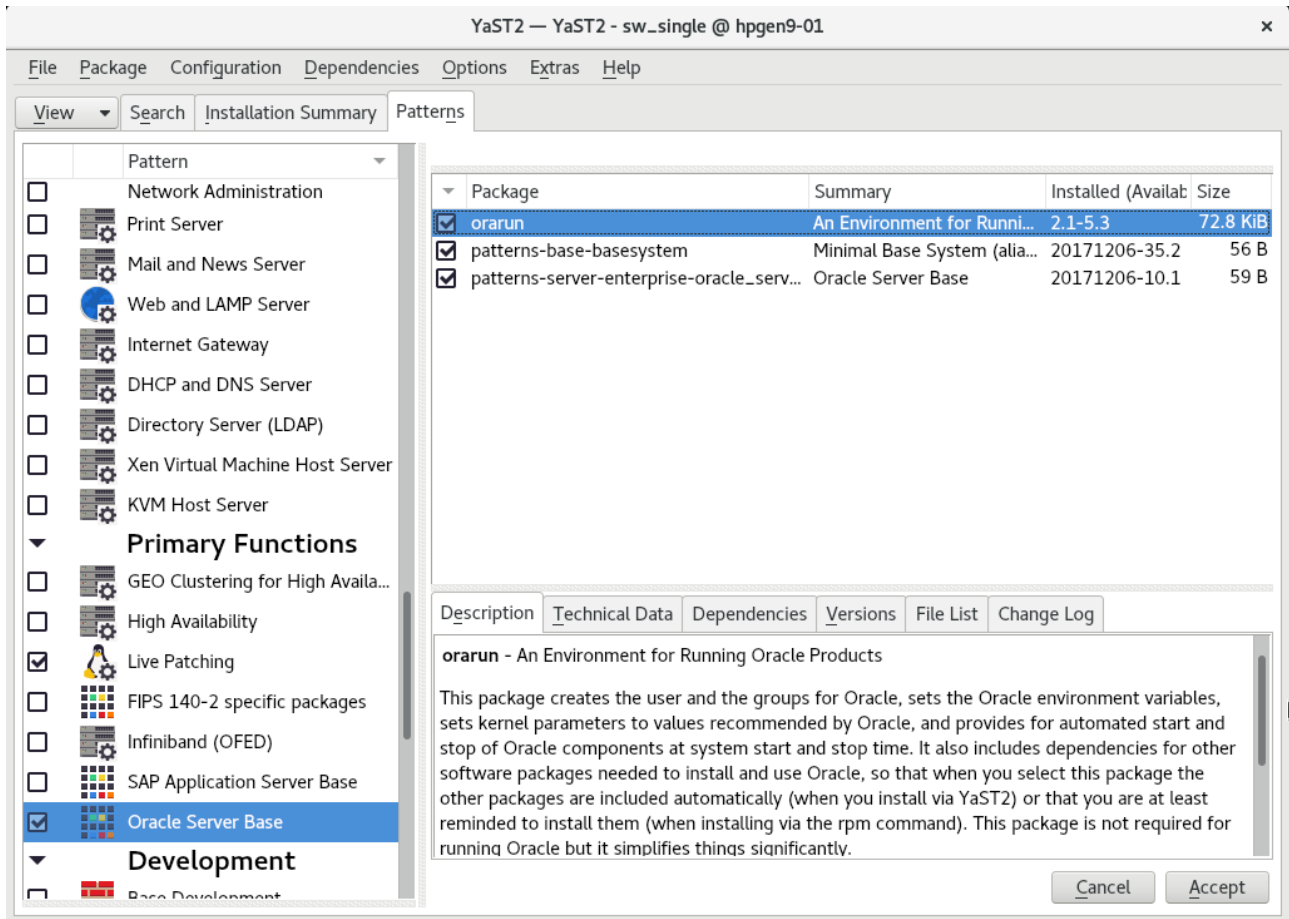
1-1. Install SUSE Linux Enterprise Server 15 SP2 on your testing machine. To do so, follow the instructions in the official SUSE Linux Enterprise Server documentation at <https://www.suse.com/documentation/>.

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@Dell15530:~> more /etc/os-release
NAME="SLES"
VERSION="15-SP2"
VERSION_ID="15.2"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP2"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp2"
oracle@Dell15530:~> uname -a
Linux Dell15530 5.3.18-22-default #1 SMP Wed Jun 3 12:16:43 UTC 2020 (720aeba/lp-1a956f1) x86_64 x86_64 x86_64 GNU/Linux
oracle@Dell15530:~>
```

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
```

Change the value of shmall to 9272480 by including the following line in `/etc/sysctl.conf`

```
kernel.shmall = 9272480
```

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.

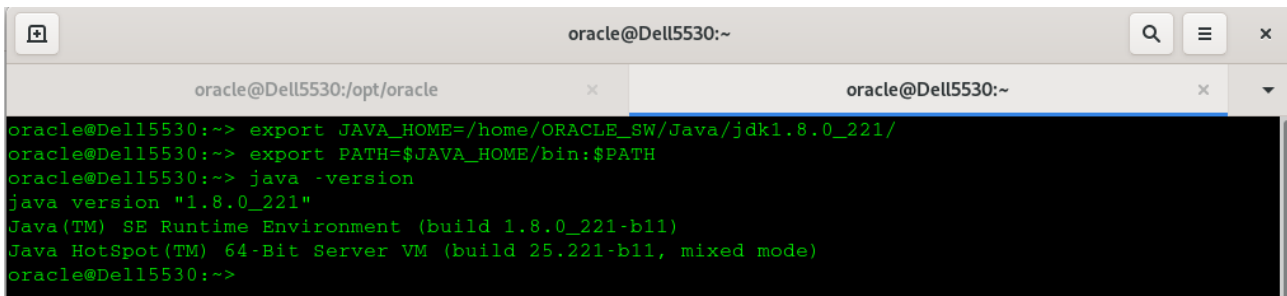
## 2. Installing Java

2-1. Log in to the target system (SUSE Linux Enterprise Server 15 SP2 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/downloads/#category-java>.

(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**

A terminal window screenshot showing the installation of Java. The terminal title is 'oracle@Dell5530:~'. The user is in the directory 'oracle@Dell5530:/opt/oracle'. The commands and their outputs are as follows:

```
oracle@Dell5530:~> export JAVA_HOME=/home/ORACLE_SW/Java/jdk1.8.0_221/
oracle@Dell5530:~> export PATH=$JAVA_HOME/bin:$PATH
oracle@Dell5530:~> 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@Dell5530:~>
```

# Oracle WebLogic Server 14c Installation

## 1. Installing Oracle WebLogic Server software

1-1. Log in to the target system (SUSE Linux Enterprise Server 15 SP2 64-bit OS) as a non-admin user. Download the Oracle WebLogic Server 14c (14.1.1.0.0) from <https://www.oracle.com/downloads/#category-middleware>.

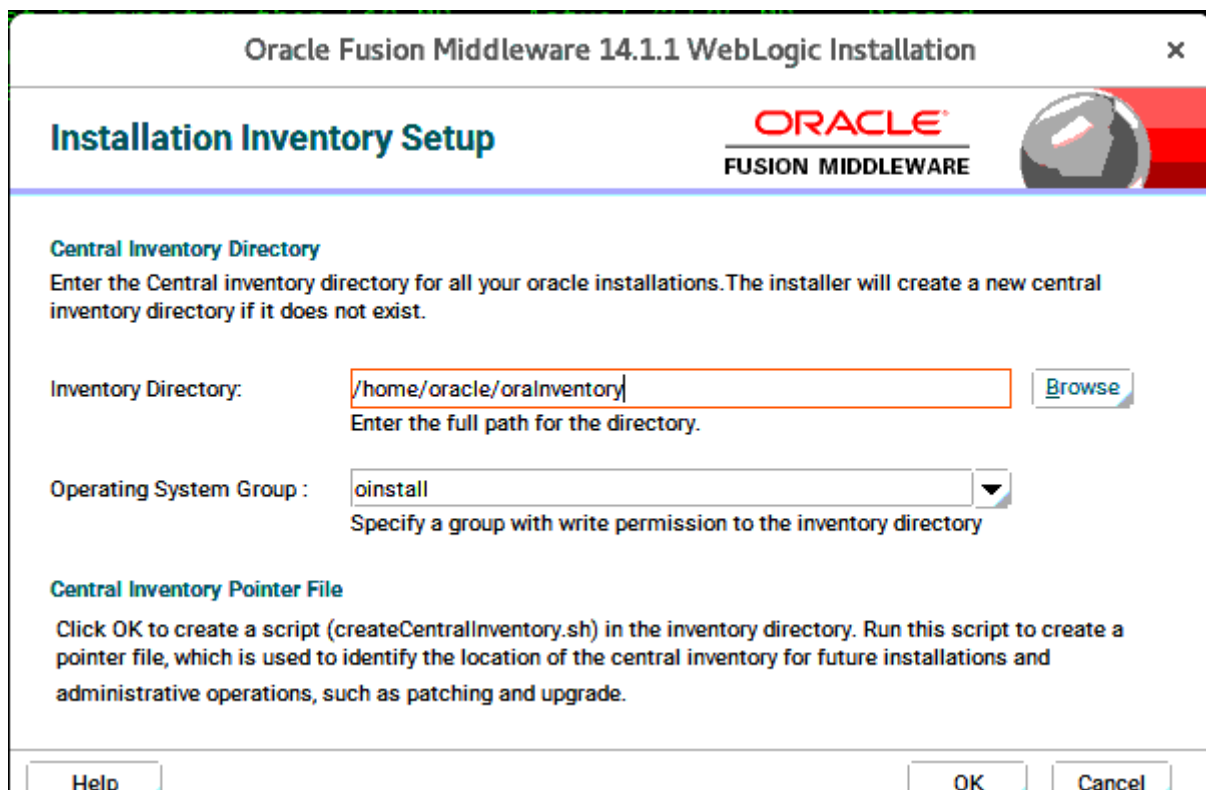
(**Note:** Please ensure the installation user has the proper permissions to install and configure the software.)

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:

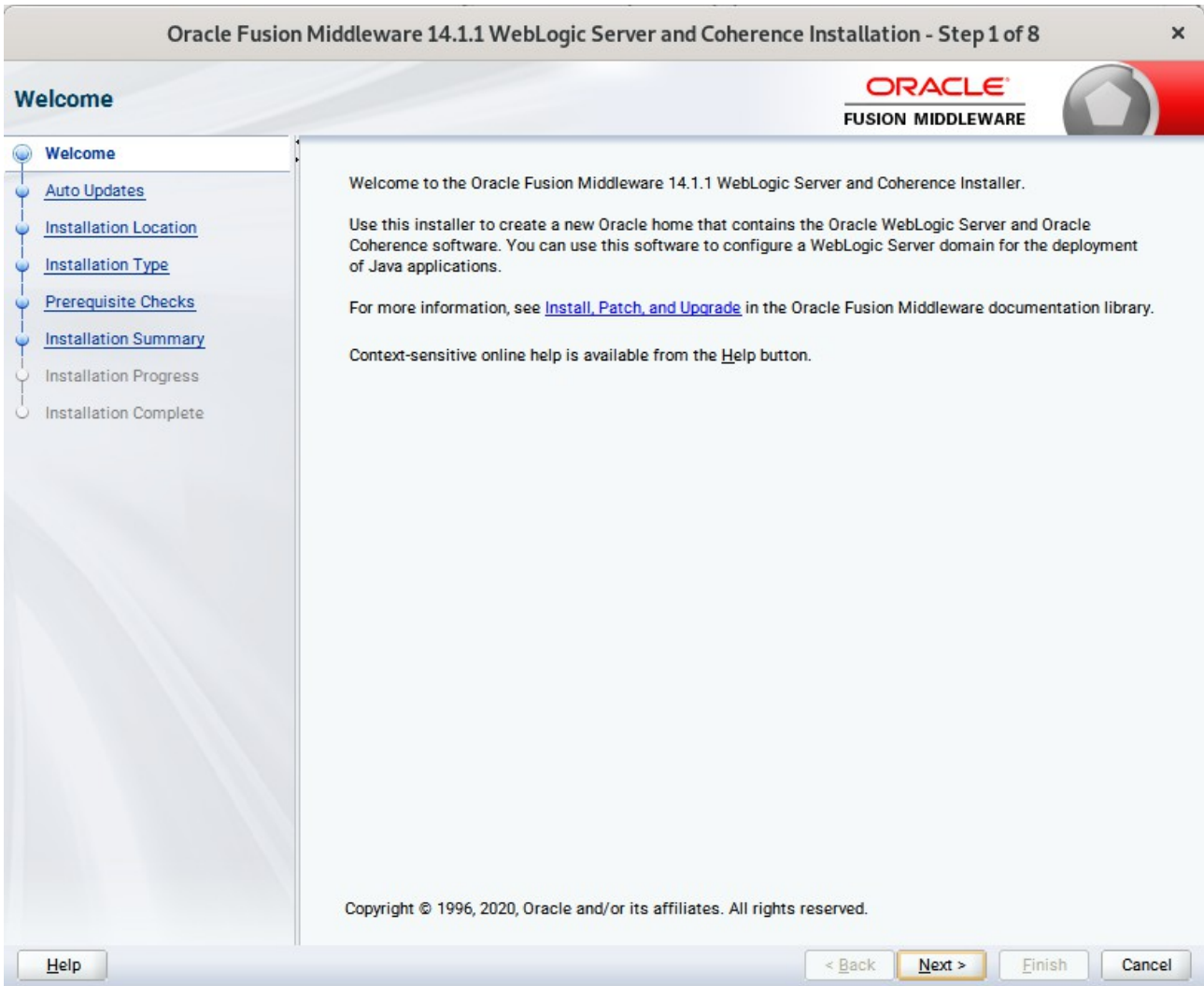
1). Installation Inventory Setup.

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.



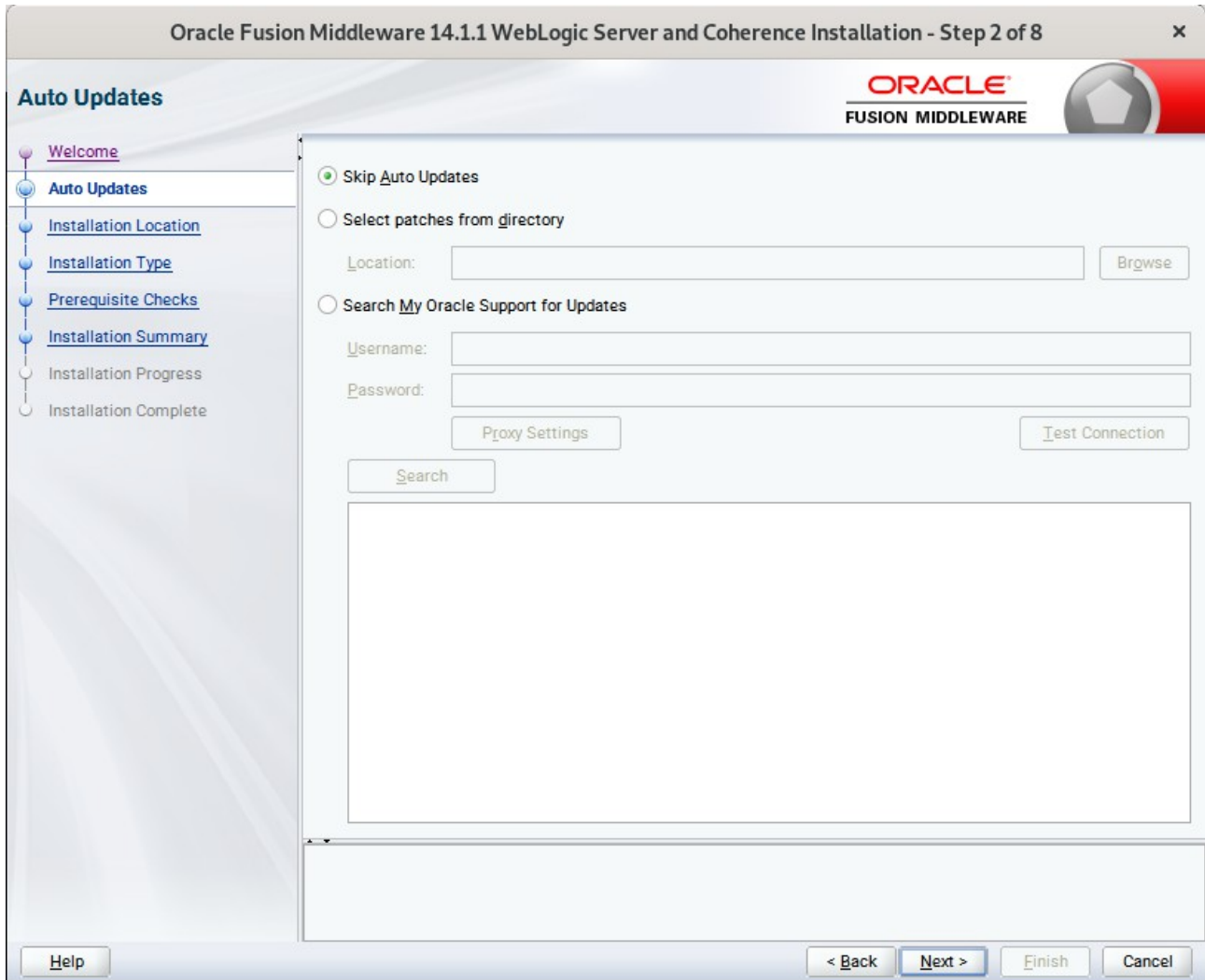


2). Welcome.



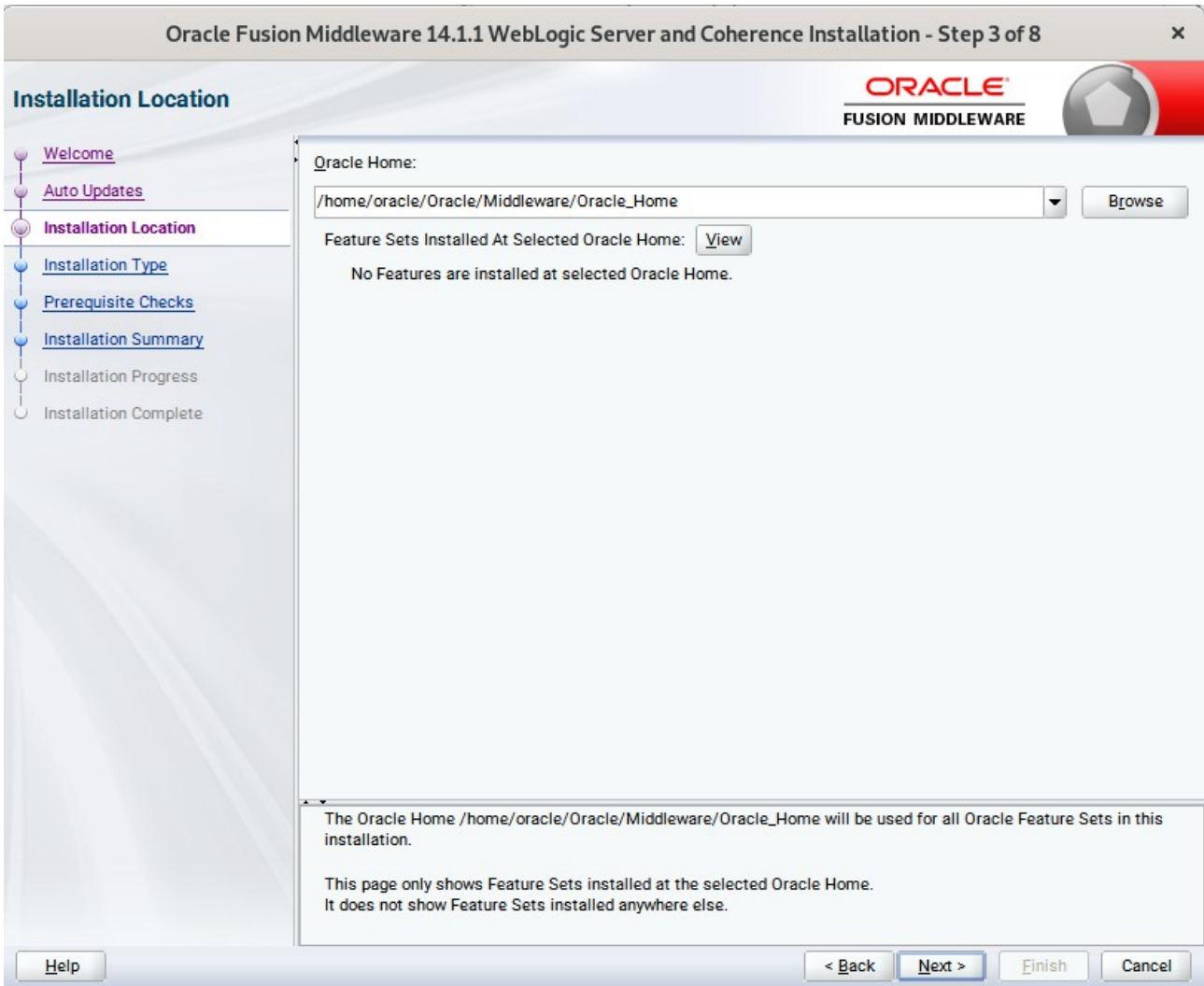
Review the information on this screen carefully to be sure you have performed all the necessary prerequisites, then click **Next** to continue.

3). Auto Updates.



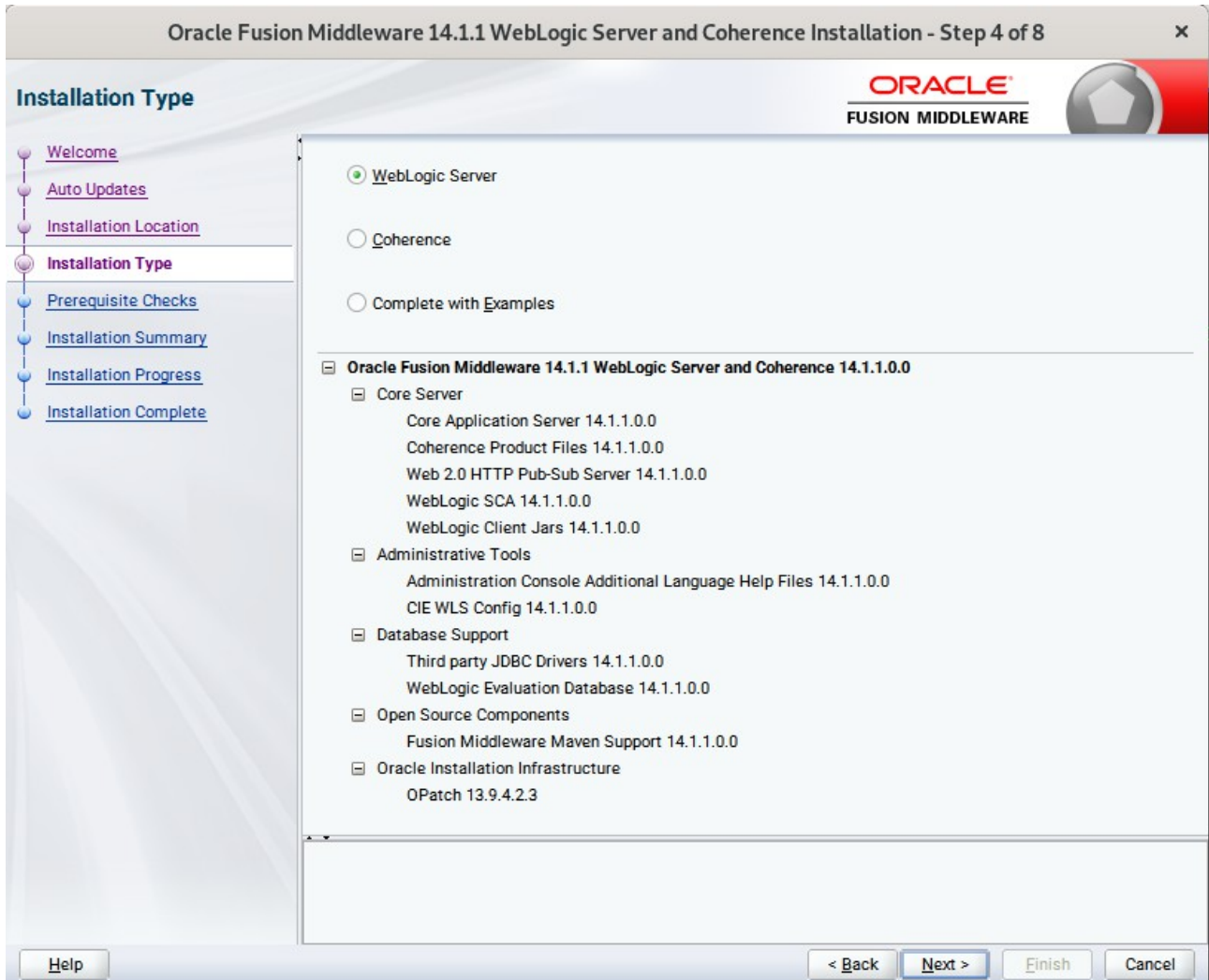
Select option "Skip Auto Updates" to skip this screen, then click **Next** to continue.

4). Installation Location.



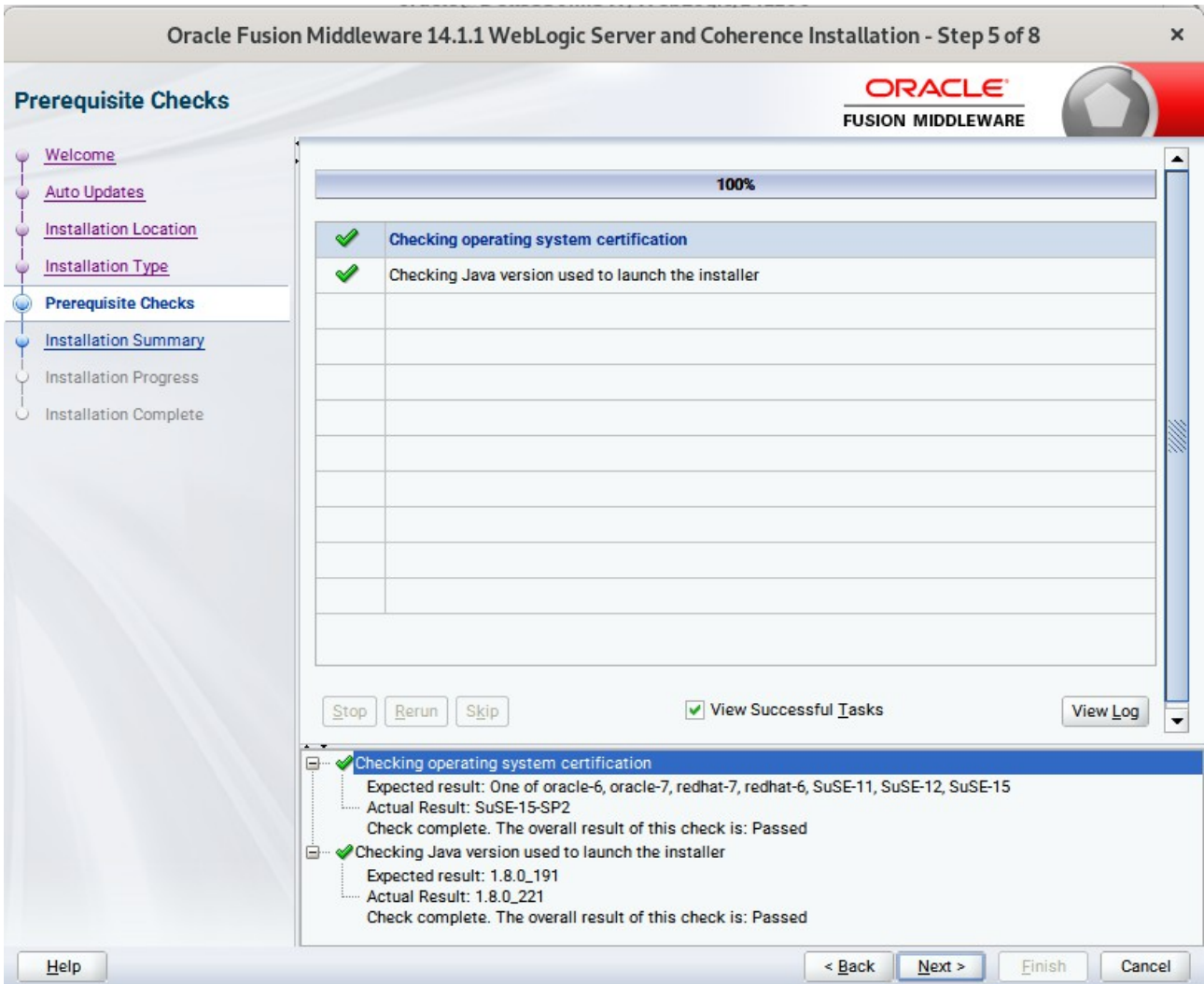
Type the full path of the directory in the Oracle Home field, then click **Next** to continue.

5). Installation Type.



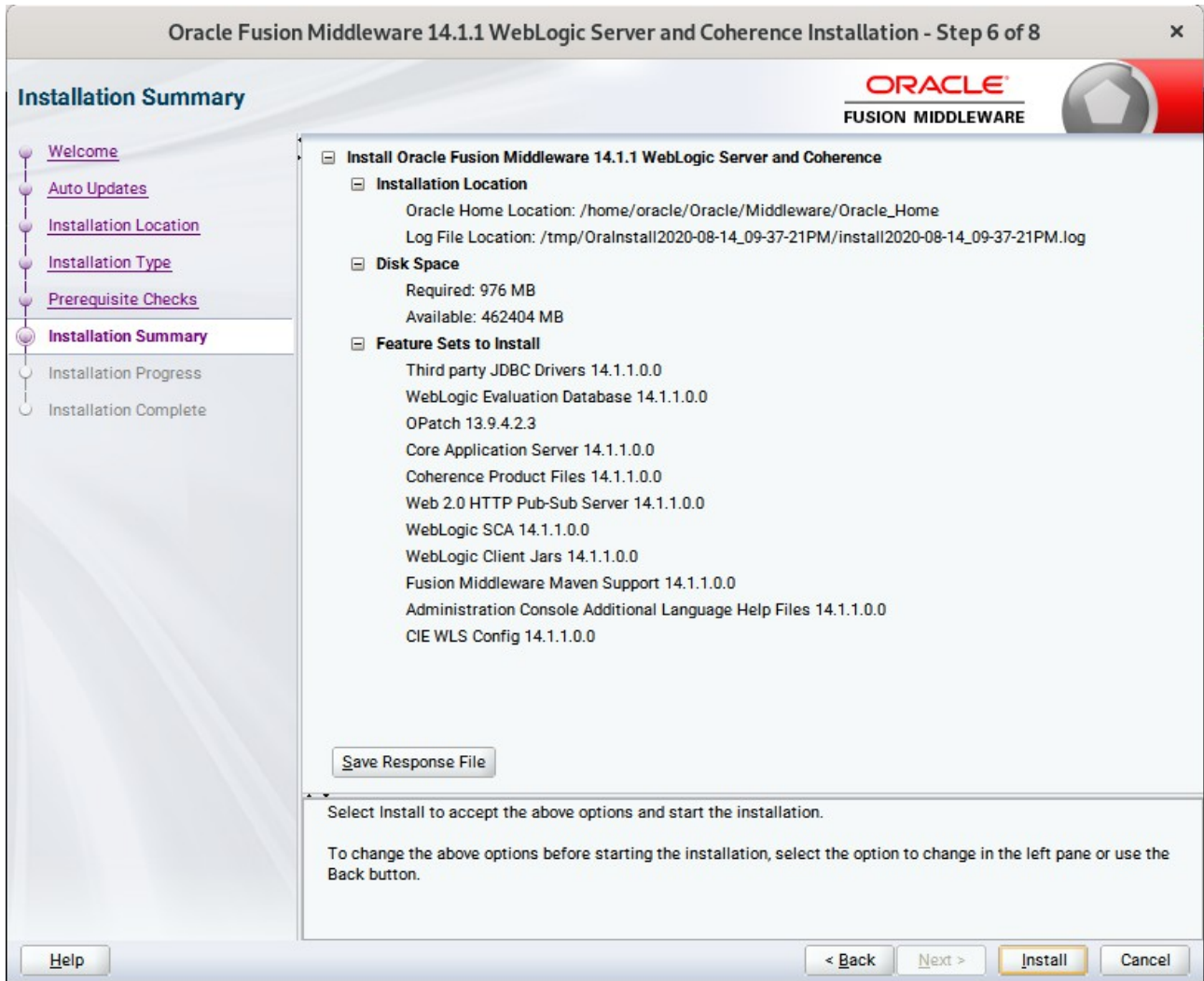
Use this screen to determine the type of installation you want to perform, then click **Next** to continue.

6). Prerequisite Checks.



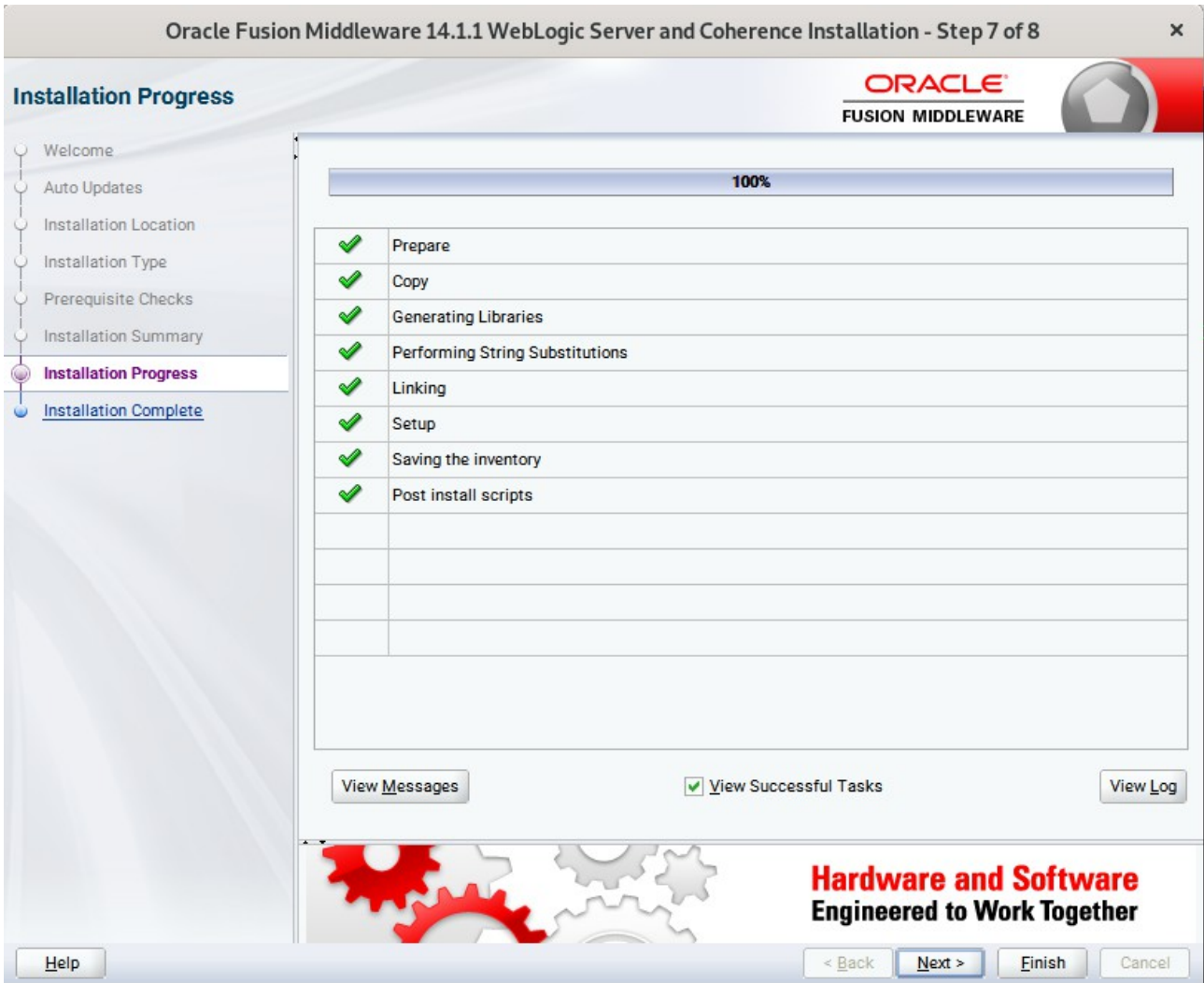
Prerequisite Checks results will be shown as above, Oracle Fusion Middleware 14c is certified on SLES 15(+), click **Next** to continue.

7). Installation Summary.



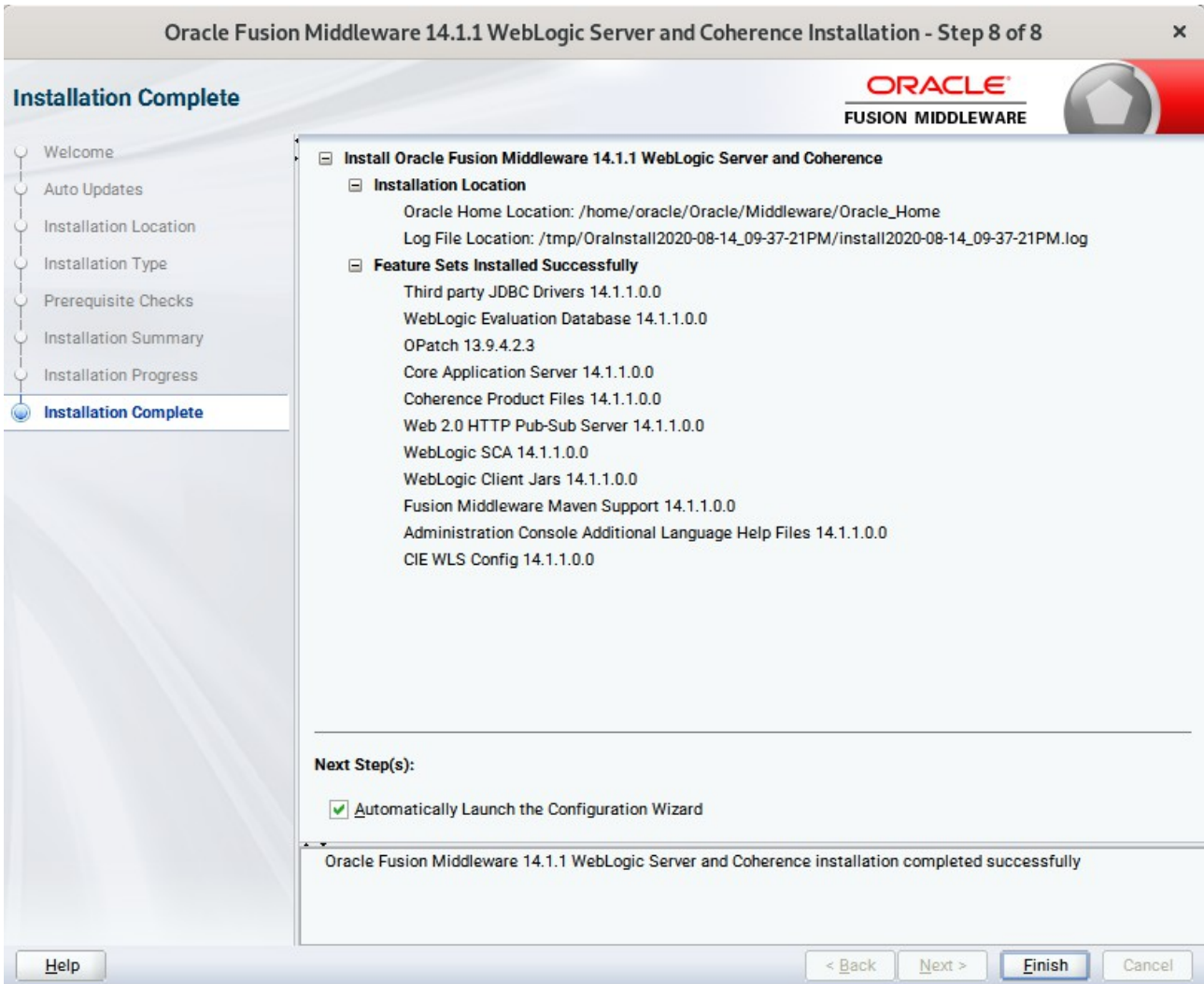
This screen contains a list of the feature sets you selected for installation, along with the approximate amount of disk space to be used by the feature sets once installation is complete. Check the information, then click **Install** to continue.

8). Installation Progress.



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.

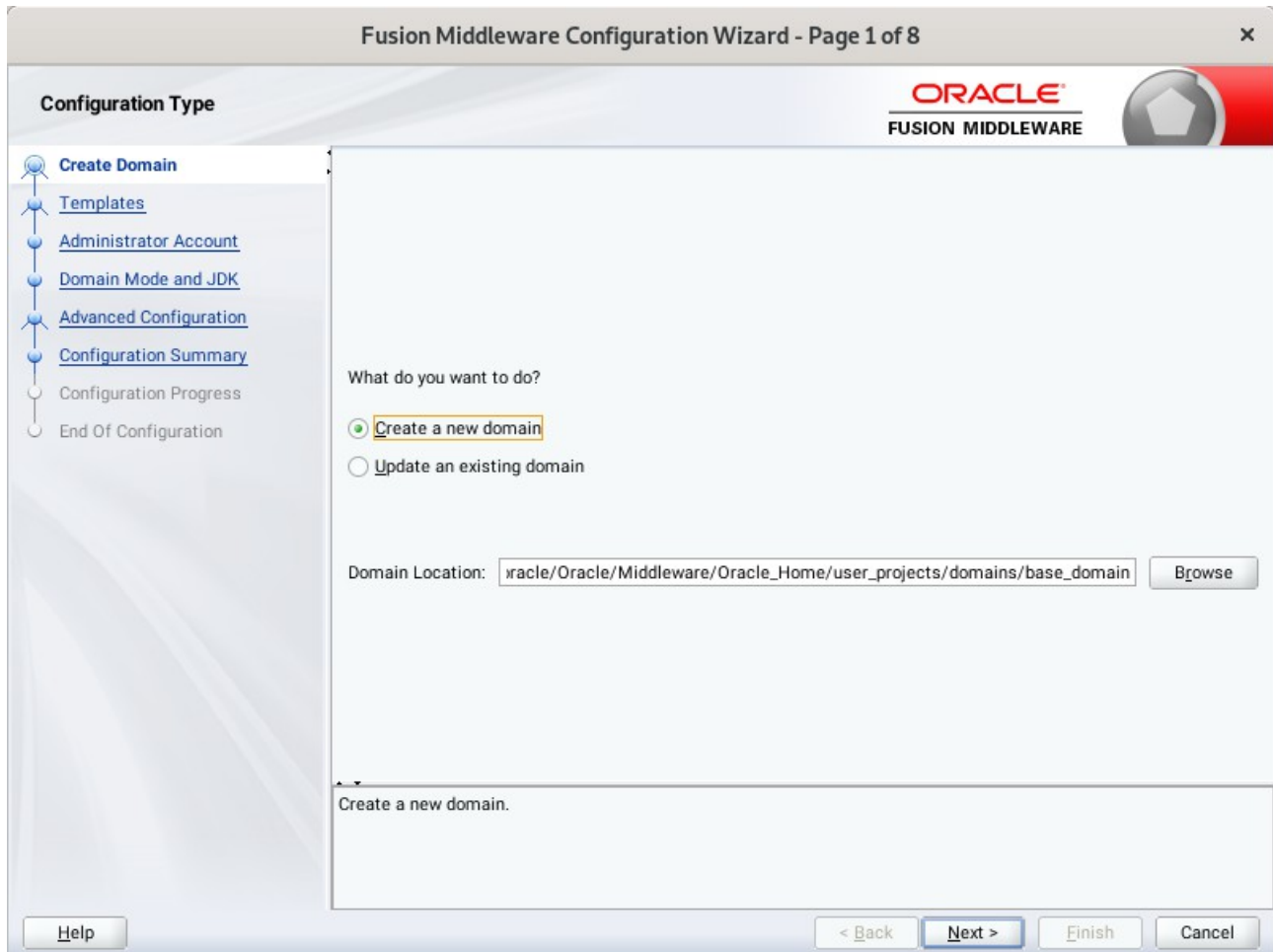


## 2. Creating and Configuring the WebLogic Domain

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**'.

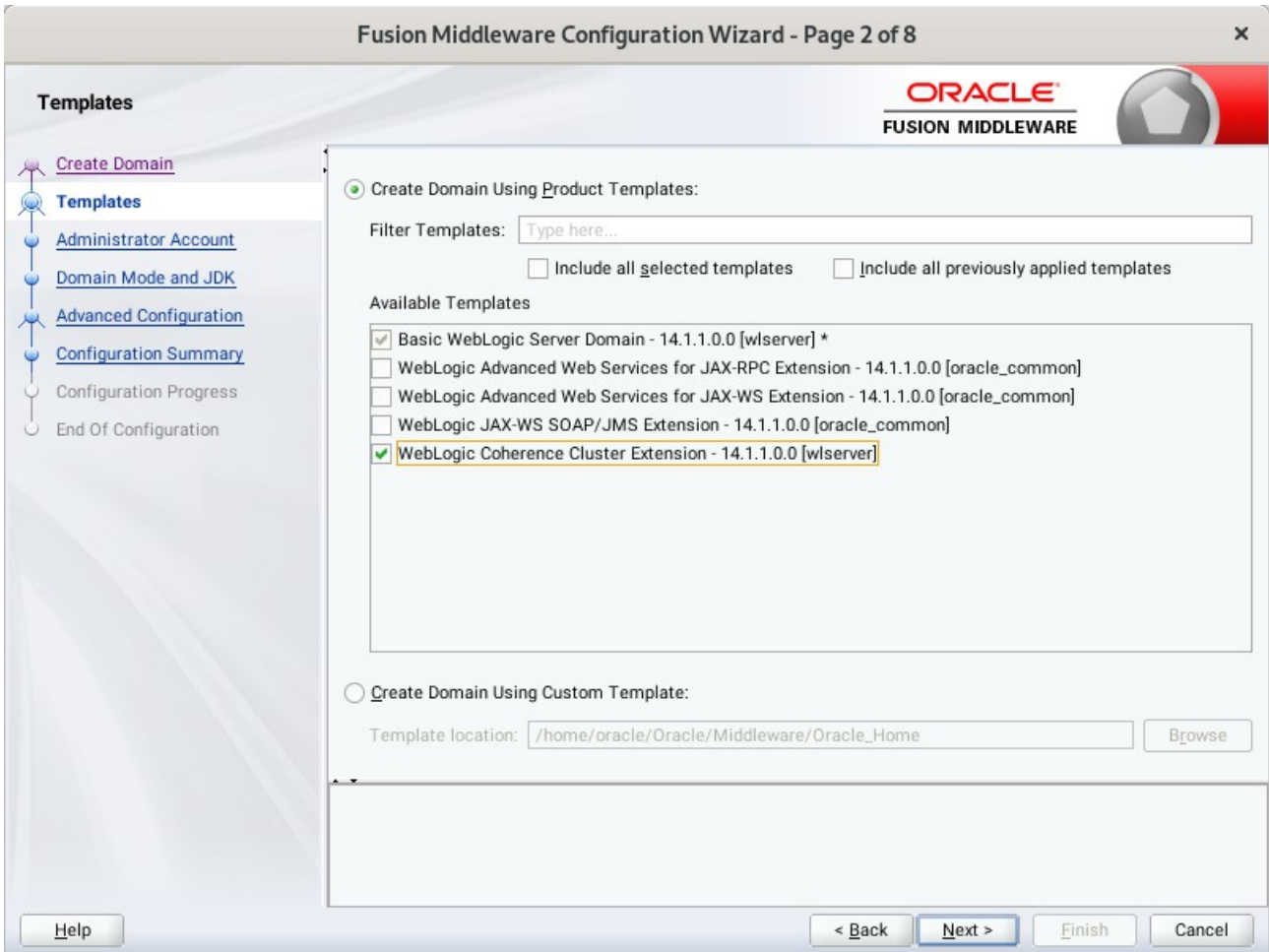
### Starting configuration:

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.

Fusion Middleware Configuration Wizard - Page 3 of 8

**Administrator Account**

ORACLE  
FUSION MIDDLEWARE

- Create Domain
- Templates
- Administrator Account**
- Domain Mode and JDK
- Advanced Configuration
- Configuration Summary
- Configuration Progress
- End Of Configuration

Name:

Password:

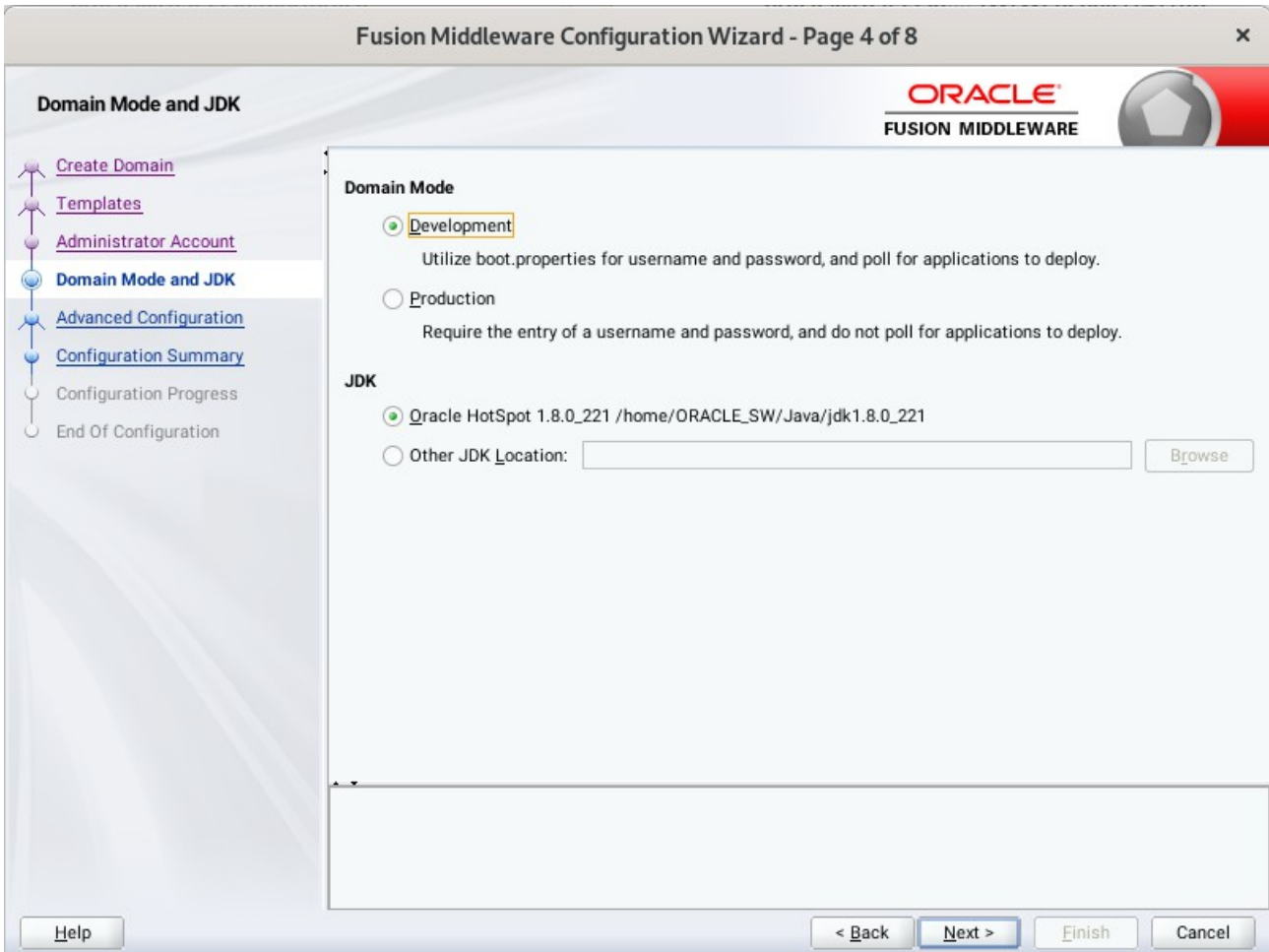
Confirm Password:

Must be the same as the password. Password must contain at least 8 alphanumeric characters with at least one number or special character.

Help < Back Next > Finish Cancel

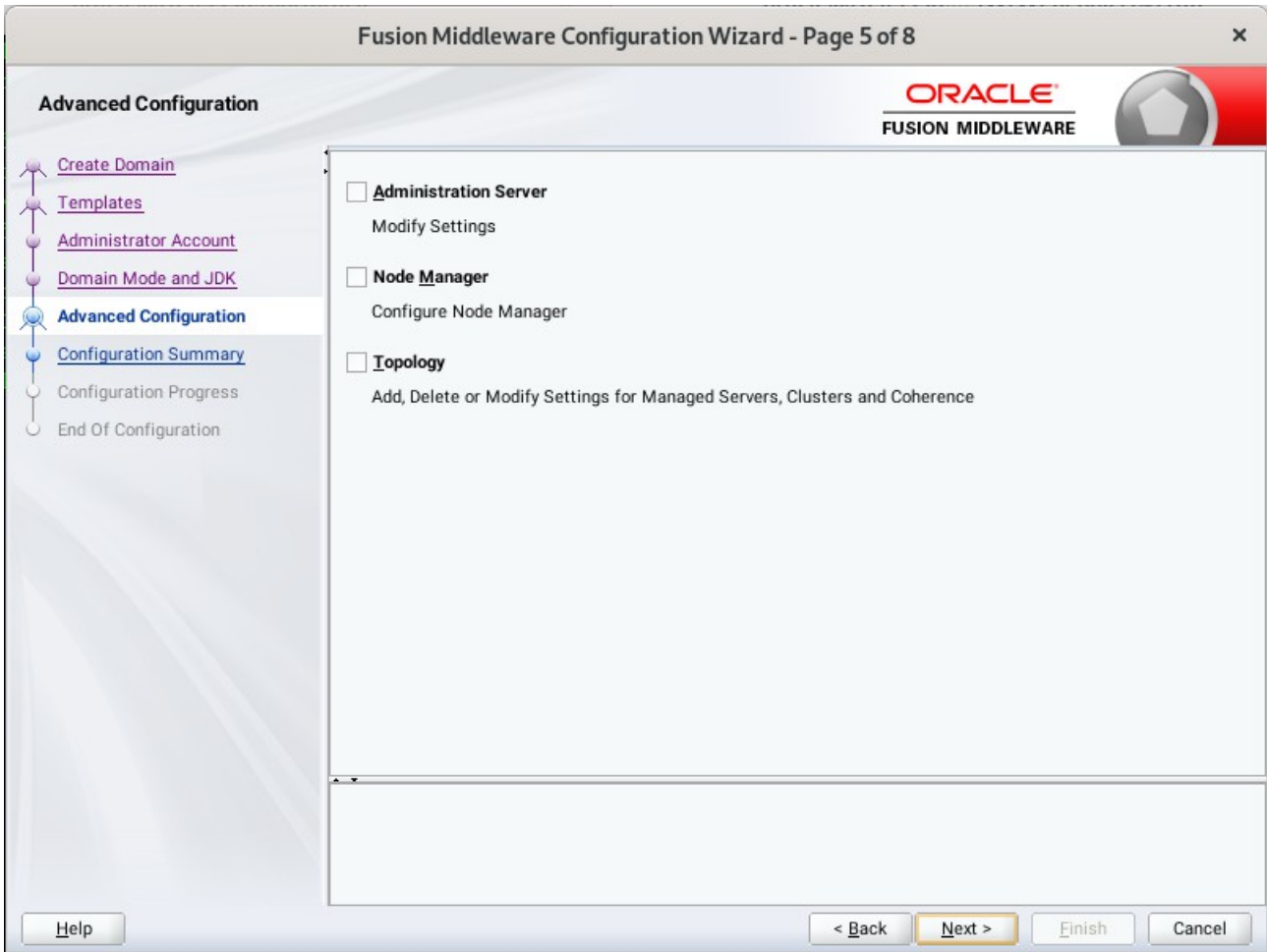
Specify the user name and password for the default WebLogic Administrator account for the domain, then click **Next** to continue.

4). Domain Mode and JDK.



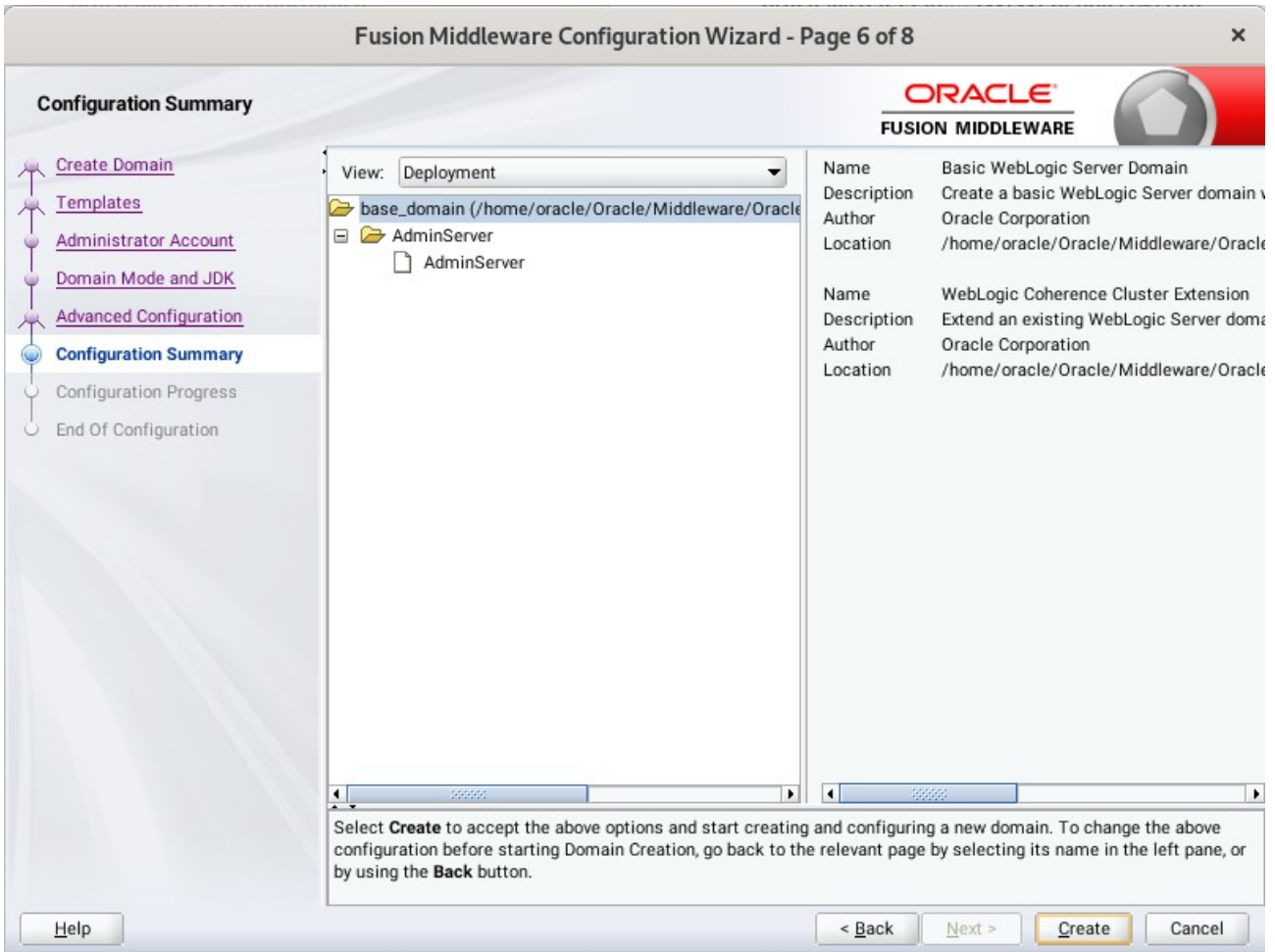
Select "**Development**" in the Domain Mode field, select the "**Oracle HotSpot**" in the JDK field. Then click **Next** to continue.

5). Advanced Configuration.



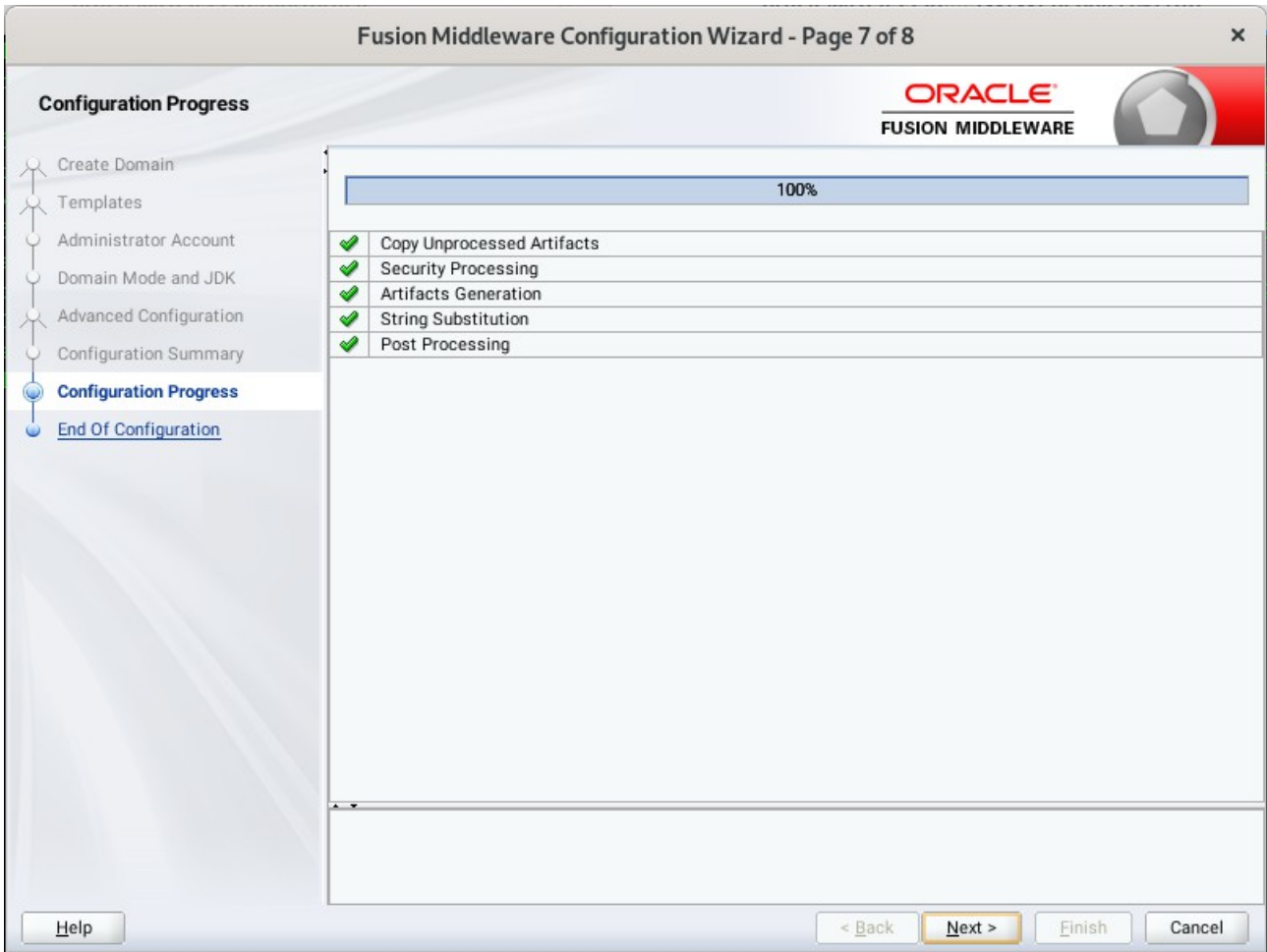
According to your requirements, select the desired options on the Advanced Configuration screen. Then click **Next** to continue.

6). Configuration Summary.



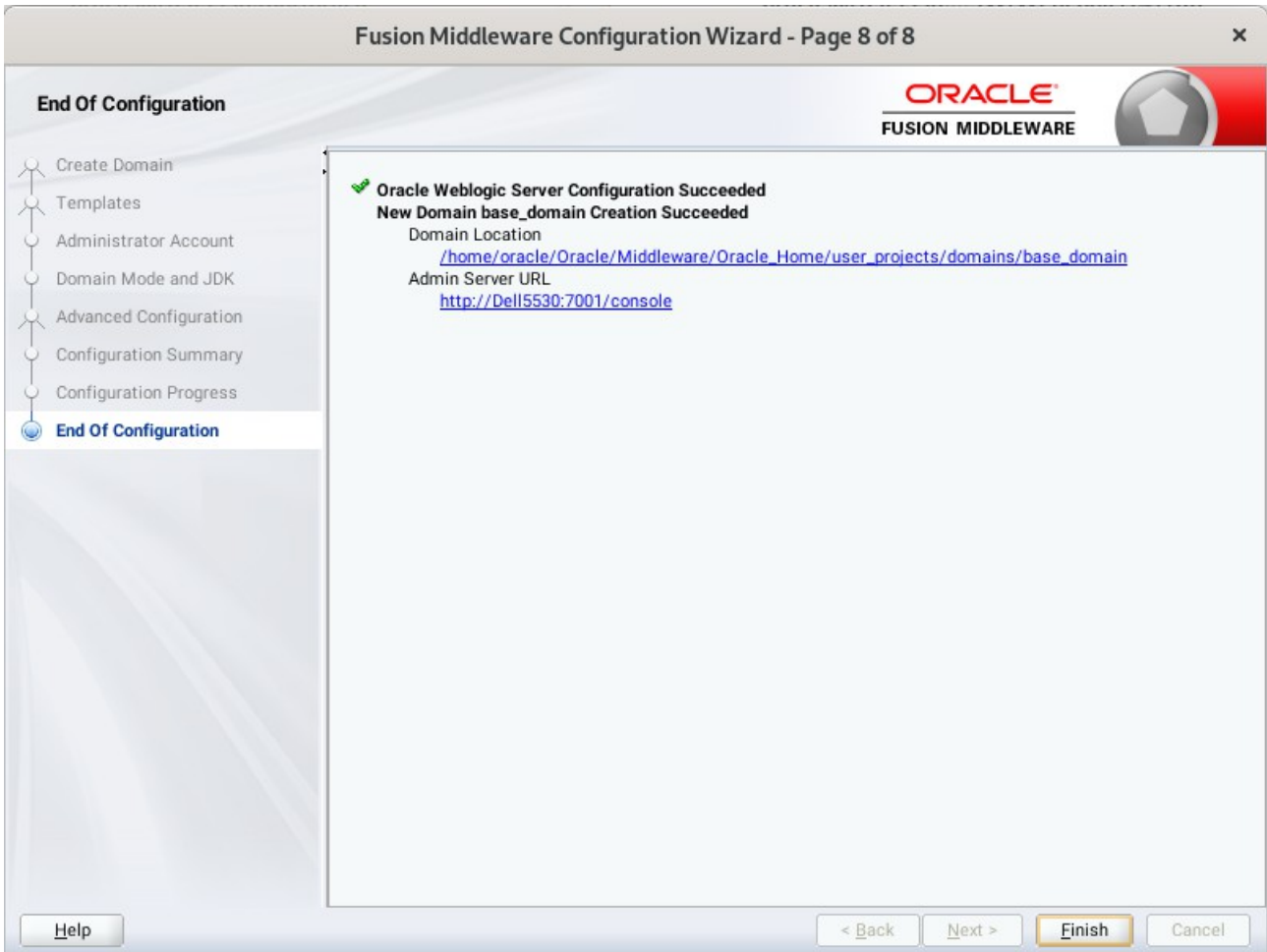
Review this screen to verify the information is correct, then click **Create** to continue.

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@Dell5530:...ns/base_domain/bin
oracle@Dell5530:/opt/oracle x oracle@Dell5530:...SW/WebLogic/14... x oracle@Dell5530:...ns/base_domain/... x
<Aug 14, 2020 9:48:33,259 PM GMT+08:00> <Warning> <Server> <BEA-002611> <The hostname "localhost", maps to multiple IP addresses: 127.0.0.1, 0:0:0:0:0:0:1.>
<Aug 14, 2020 9:48:33,260 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[4]" is now listening on 127.0.0.1:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:38,276 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on 2408:8207:c5e:1f30:a46b:6db1:f2a0:6208%eth0:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:38,277 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[3]" is now listening on 0:0:0:0:0:0:1%lo:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,288 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[2]" is now listening on 2408:8207:c5e:1f30:c068:6d17:7ed5:702c%eth0:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,289 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 192.168.1.7:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,290 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000331> <Started the WebLogic Server Administration Server "AdminServer" for domain "base_domain" running in development mode.>
<Aug 14, 2020 9:48:48,291 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[4]" is now listening on 127.0.0.1:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,291 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on 2408:8207:c5e:1f30:a46b:6db1:f2a0:6208%eth0:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,292 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[3]" is now listening on 0:0:0:0:0:0:1%lo:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,293 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[2]" is now listening on 2408:8207:c5e:1f30:c068:6d17:7ed5:702c%eth0:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,293 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 192.168.1.7:7001 for protocols iiop, t3, ldap, snmp, http.>
<Aug 14, 2020 9:48:48,294 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000360> <The server started in RUNNING mode.>
<Aug 14, 2020 9:48:48,428 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to RUNNING.>

```

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

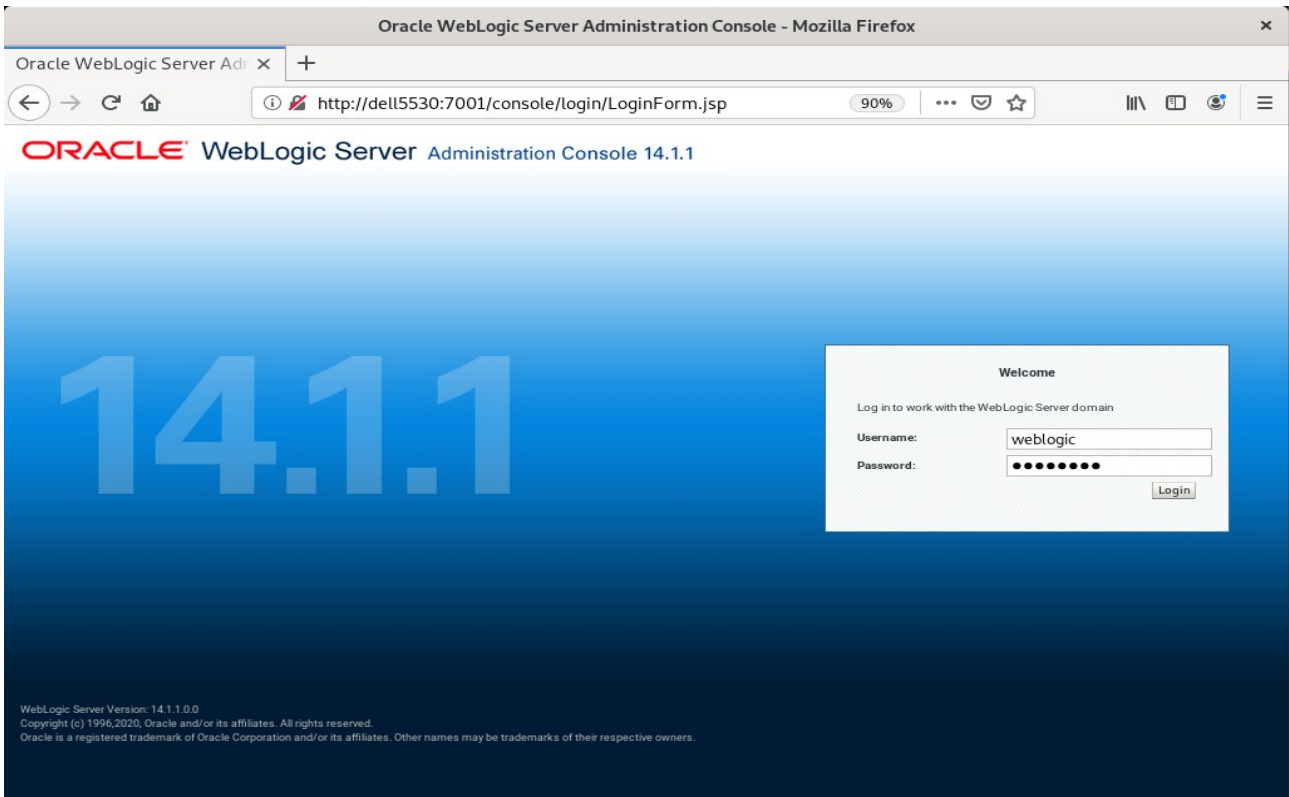
```

oracle@Dell5530:~$ ss -tupln | grep 7001
tcp        LISTEN    0         128          [::ffff:192.168.1.7]:7001          *:*          users:(("java",pid=6897,fd=735))
tcp        LISTEN    0         128          [2408:8207:c5e:1f30:c068:6d17:7ed5:702c]:7001  [::]:*      users:(("java",pid=6897,fd=734))
tcp        LISTEN    0         128          [::]:7001                          [::]:*      users:(("java",pid=6897,fd=733))
tcp        LISTEN    0         128          [2408:8207:c5e:1f30:a46b:6db1:f2a0:6208]:7001  [::]:*      users:(("java",pid=6897,fd=732))
tcp        LISTEN    0         128          [::ffff:127.0.0.1]:7001            *:*          users:(("java",pid=6897,fd=731))
oracle@Dell5530:~$

```

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**

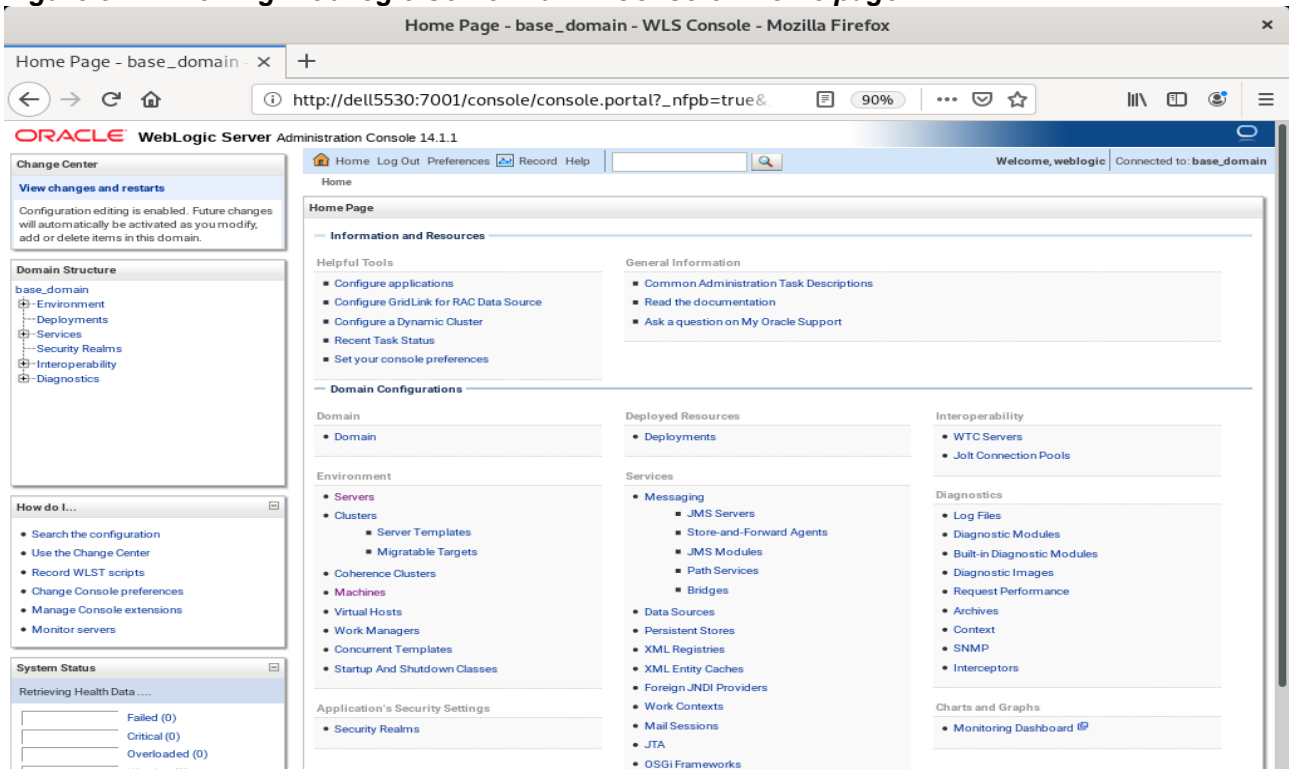


Figure 3-2-3 Viewing WebLogic Server Admin Console - Summary of Servers

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 of servers. 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. The left sidebar contains navigation menus for "Change Center", "Domain Structure", "How do I...", and "System Status".

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**  
**Aug 14th, 2020**  
<https://www.suse.com>