

Oracle Fusion Middleware – WebLogic Server 14c (14.1.1.0.0) on SUSE Linux Enterprise Server 15 (SP3) for x86-64

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Introduction

This document provides details on installing Oracle WebLogic Server 14c on SUSE Linux Enterprise Server 15 SP3. Details are provided for Intel(x86-64) versions of both Oracle WebLogic Server 14c and SUSE Linux Enterprise Server 15 SP3. 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 SP3 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 SP3 GM (x86-64) - Kernel version: 5.3.18-57-default

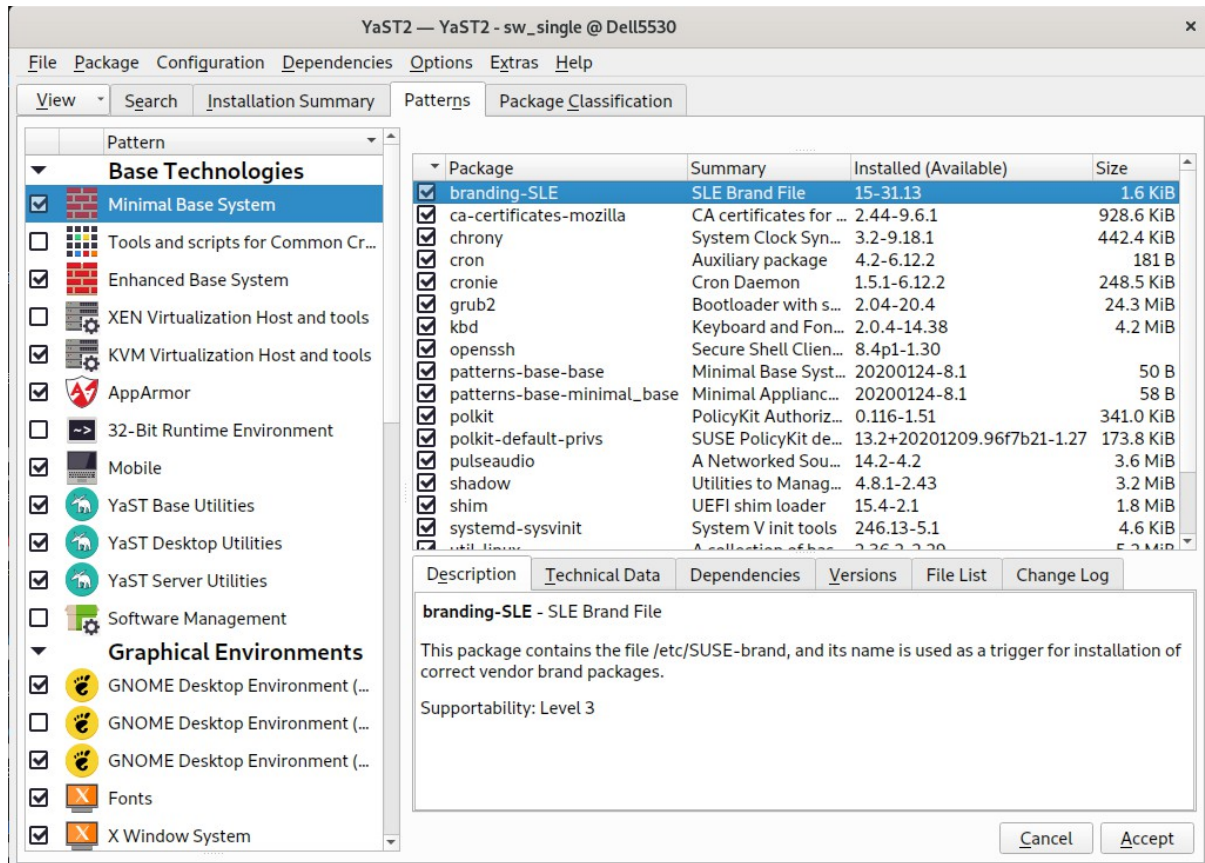


Prerequisites

1. Installing SUSE Linux Enterprise Server 15 SP3

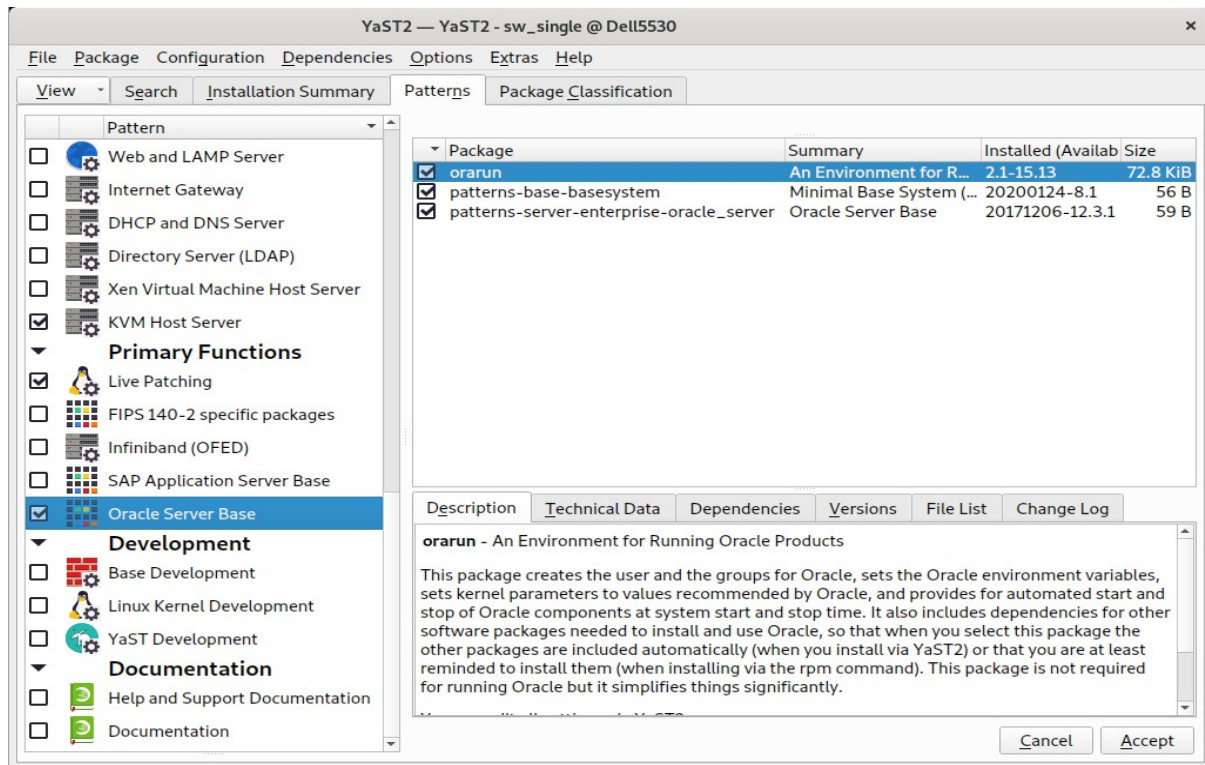
1-1. Install SUSE Linux Enterprise Server 15 SP3 on your testing machine. To do so, follow the instructions in the official SUSE Linux Enterprise Server documentation at <https://www.suse.com/documentation/>.

Figure 1-1 Software Installed as shown below

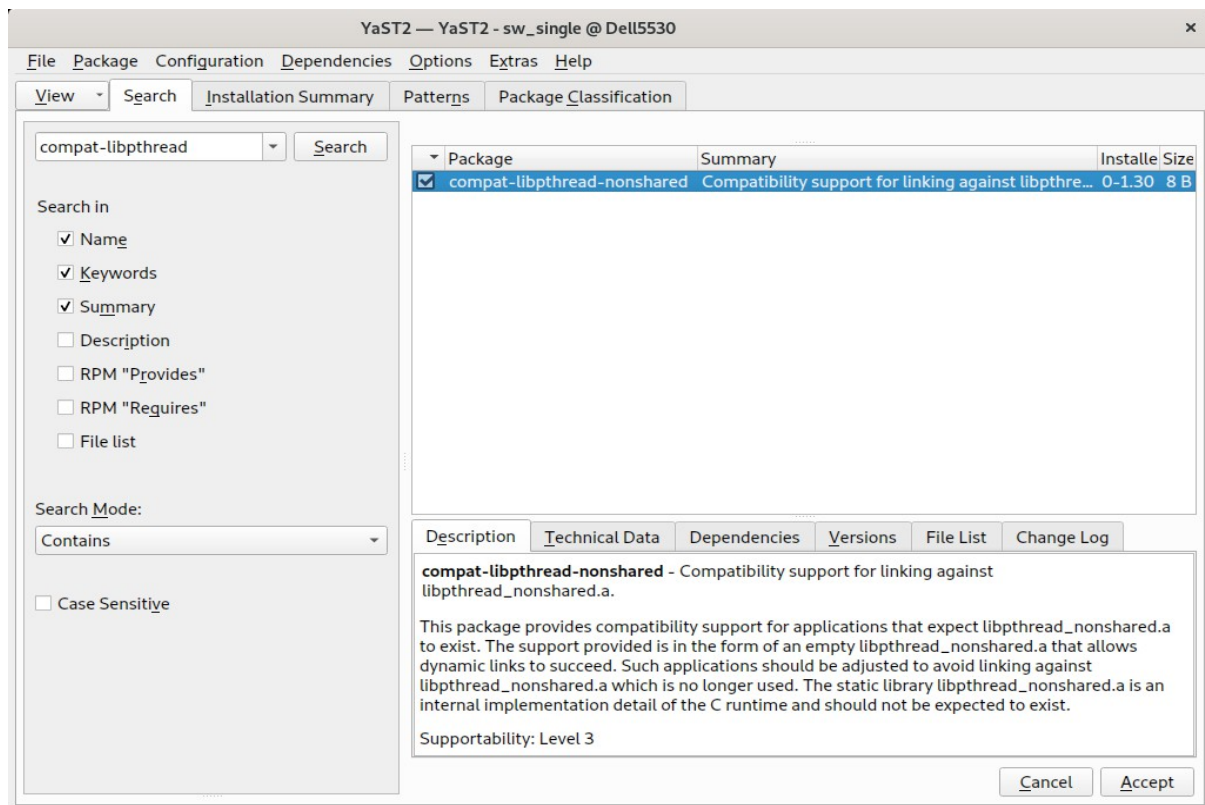


In Yast, select the patterns you need. Make sure you select the patterns and packages required to run Oracle products.

Figure 1-2 Software Installed as shown below



(Note: Please make sure that 'compat-libpthread-nonshared' is installed.)



)

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@Dell5530:~> more /etc/os-release
NAME="SLES"
VERSION="15-SP3"
VERSION_ID="15.3"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP3"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp3"
DOCUMENTATION_URL="https://documentation.suse.com/"
oracle@Dell5530:~> uname -a
Linux Dell5530 5.3.18-57-default #1 SMP Wed Apr 28 10:54:41 UTC 2021 (ba3c2e9/lp-5d9e8aa) x86_64 x86_64 x86_64 GNU/Linux
oracle@Dell5530:~> █
```

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.

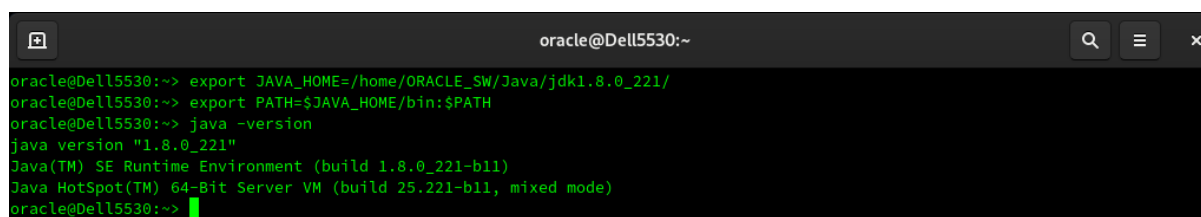
2. Installing Java

2-1. Log in to the target system (SUSE Linux Enterprise Server 15 SP3 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 titled 'oracle@Dell5530:~' showing the following commands and output:

```
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 SP3 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:

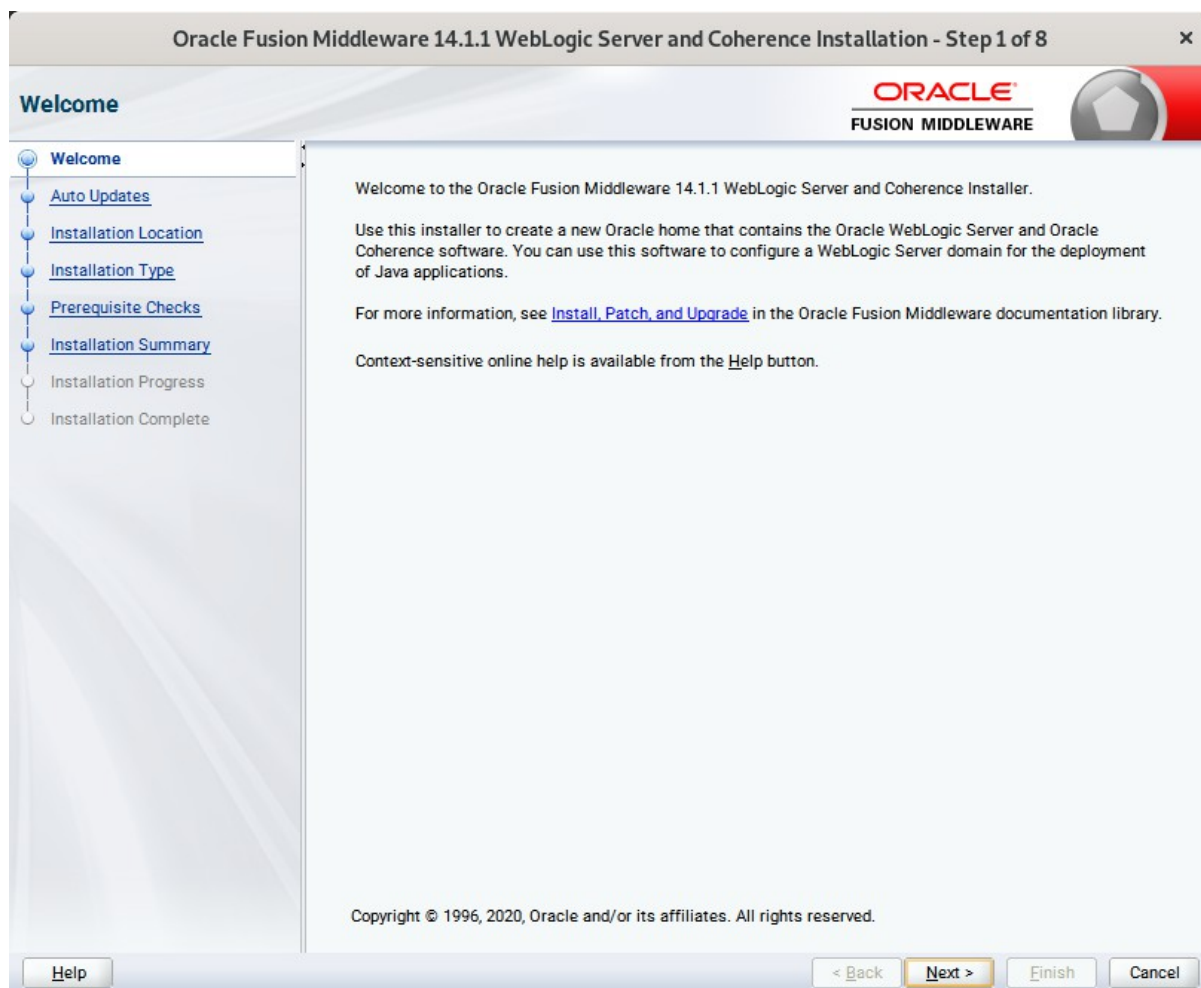
1). Installation Inventory Setup.



The screenshot shows the 'Installation Inventory Setup' window for Oracle Fusion Middleware 14.1.1. The window title is 'Oracle Fusion Middleware 14.1.1 WebLogic Installation'. The main heading is 'Installation Inventory Setup'. Below the heading, there is a section titled 'Central Inventory Directory' with the instruction: 'Enter the Central inventory directory for all your oracle installations. The installer will create a new central inventory directory if it does not exist.' There are two input fields: 'Inventory Directory:' with the text '/home/oracle/orainventory|' and a 'Browse' button; and 'Operating System Group:' with a dropdown menu showing 'oinstall' and the instruction 'Specify a group with write permission to the inventory directory'. Below this is a section titled 'Central Inventory Pointer File' with the instruction: 'Click OK to create a script (createCentralInventory.sh) in the inventory directory. Run this script to create a pointer file, which is used to identify the location of the central inventory for future installations and administrative operations, such as patching and upgrade.' At the bottom of the window are three buttons: 'Help', 'OK', and 'Cancel'.

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.



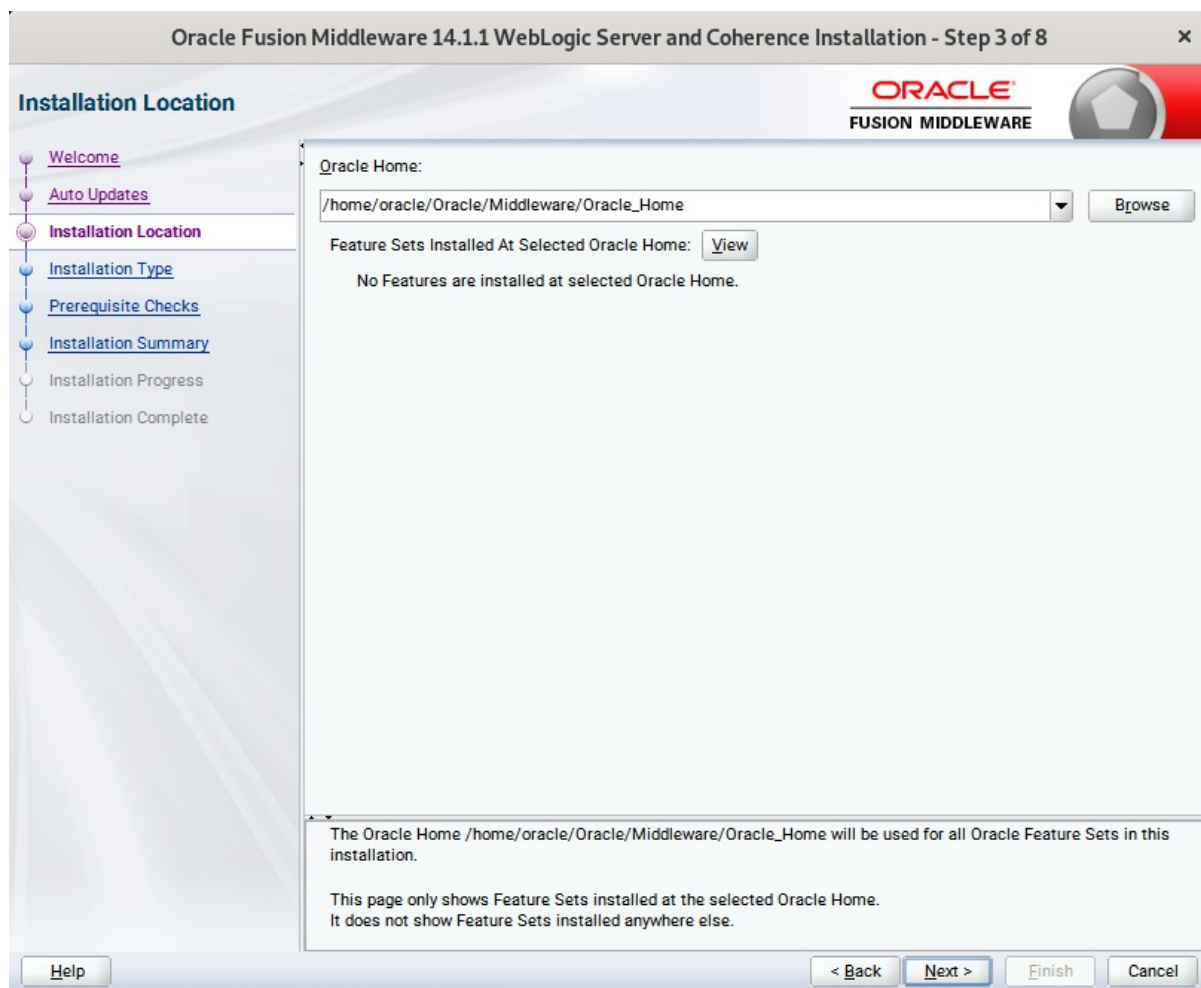
Review the information on this screen carefully to be sure you have performed all the necessary prerequisites, then click **Next** to continue.

3). Auto Updates.

The screenshot shows the 'Auto Updates' configuration screen for Oracle Fusion Middleware 14.1.1. The window title is 'Oracle Fusion Middleware 14.1.1 WebLogic Server and Coherence 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 installation steps: Welcome, Auto Updates (selected), 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. A 'Search' button is located below the radio buttons. A large empty text box is positioned below the 'Search' button. At the bottom of the window, there are buttons for 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

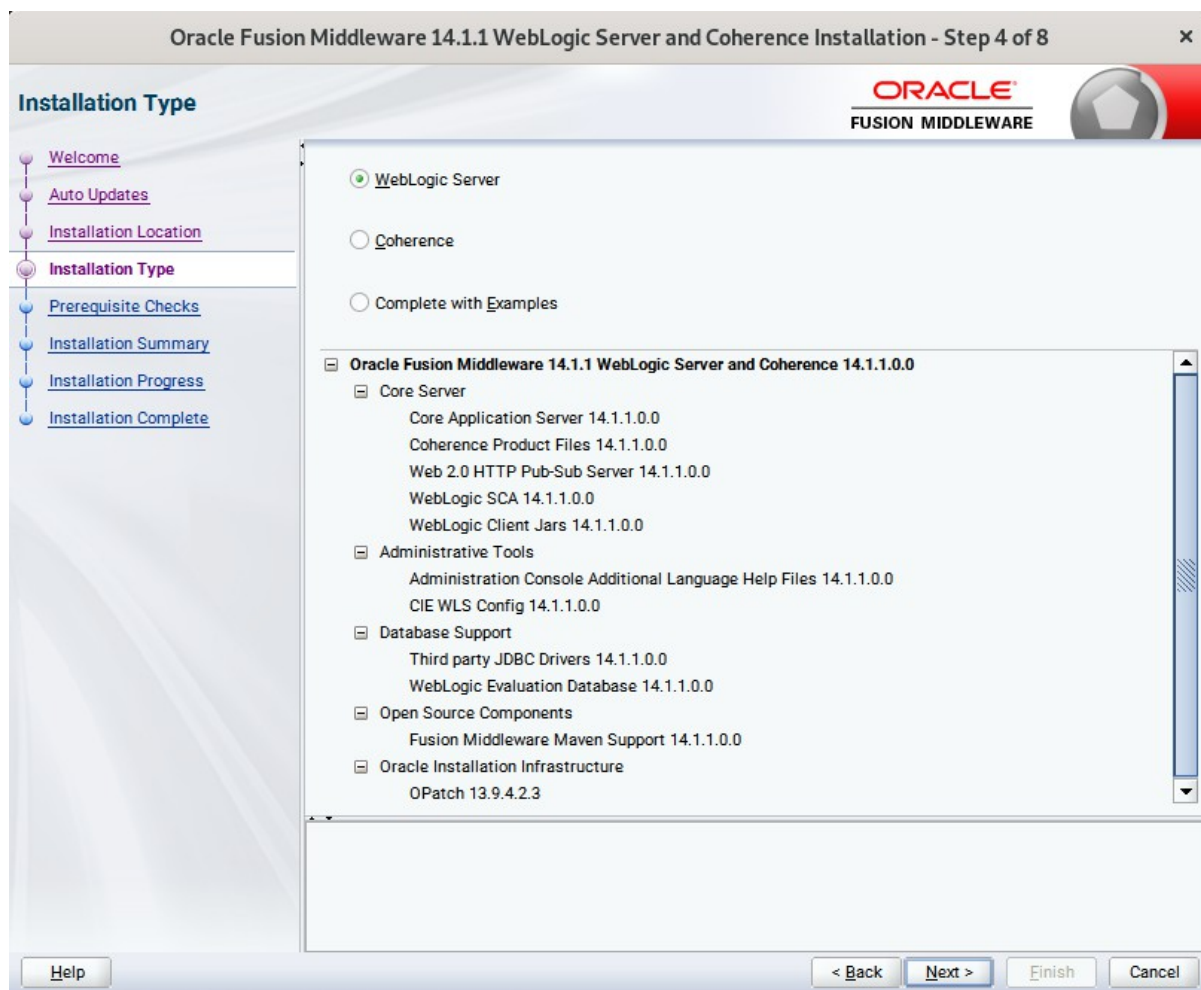
Select option "**Skip Auto Updates**" to skip this screen, then click **Next** to continue.

4). Installation Location.



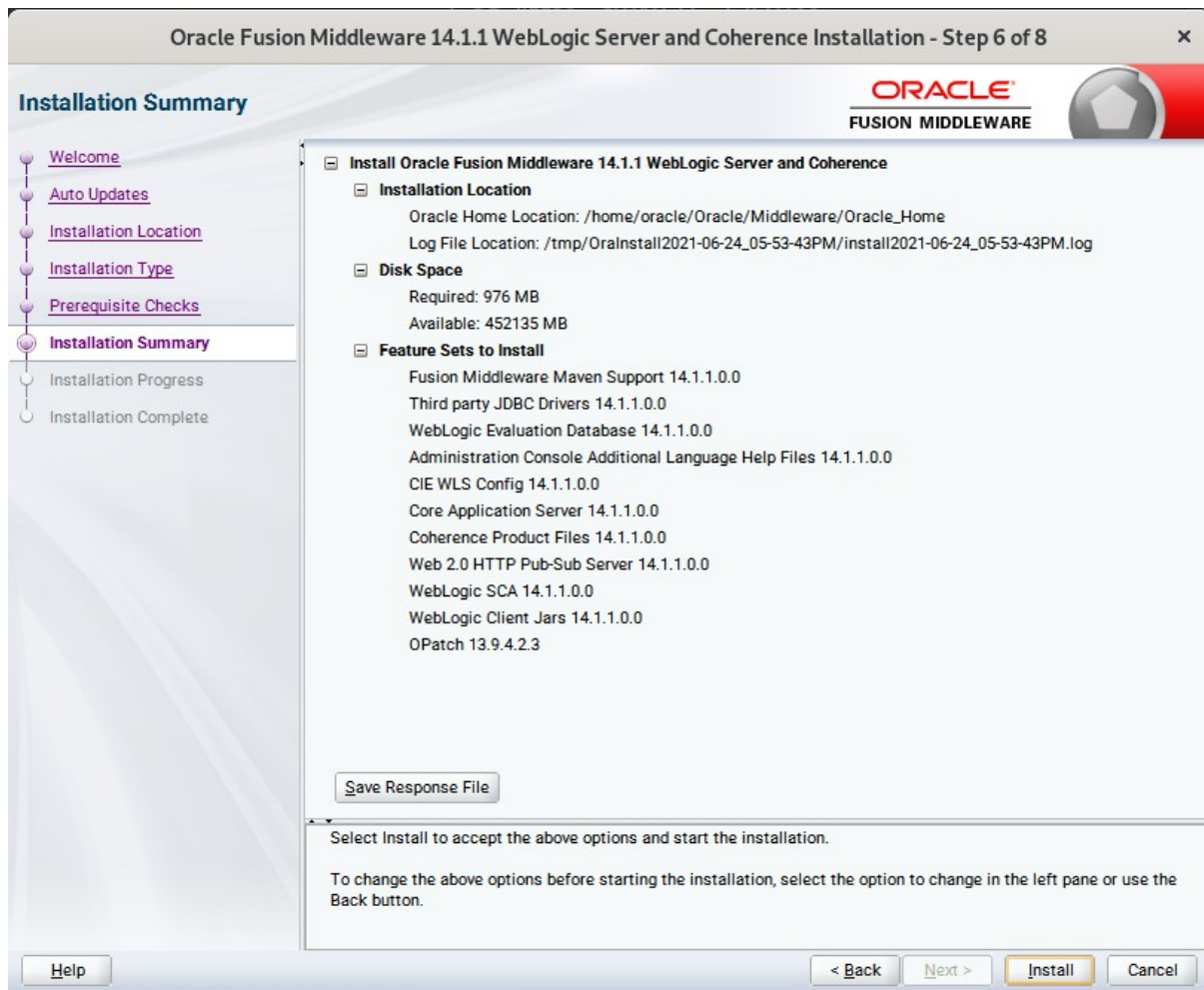
Type the full path of the directory in the Oracle Home field, then click **Next** to continue.

5). Installation Type.



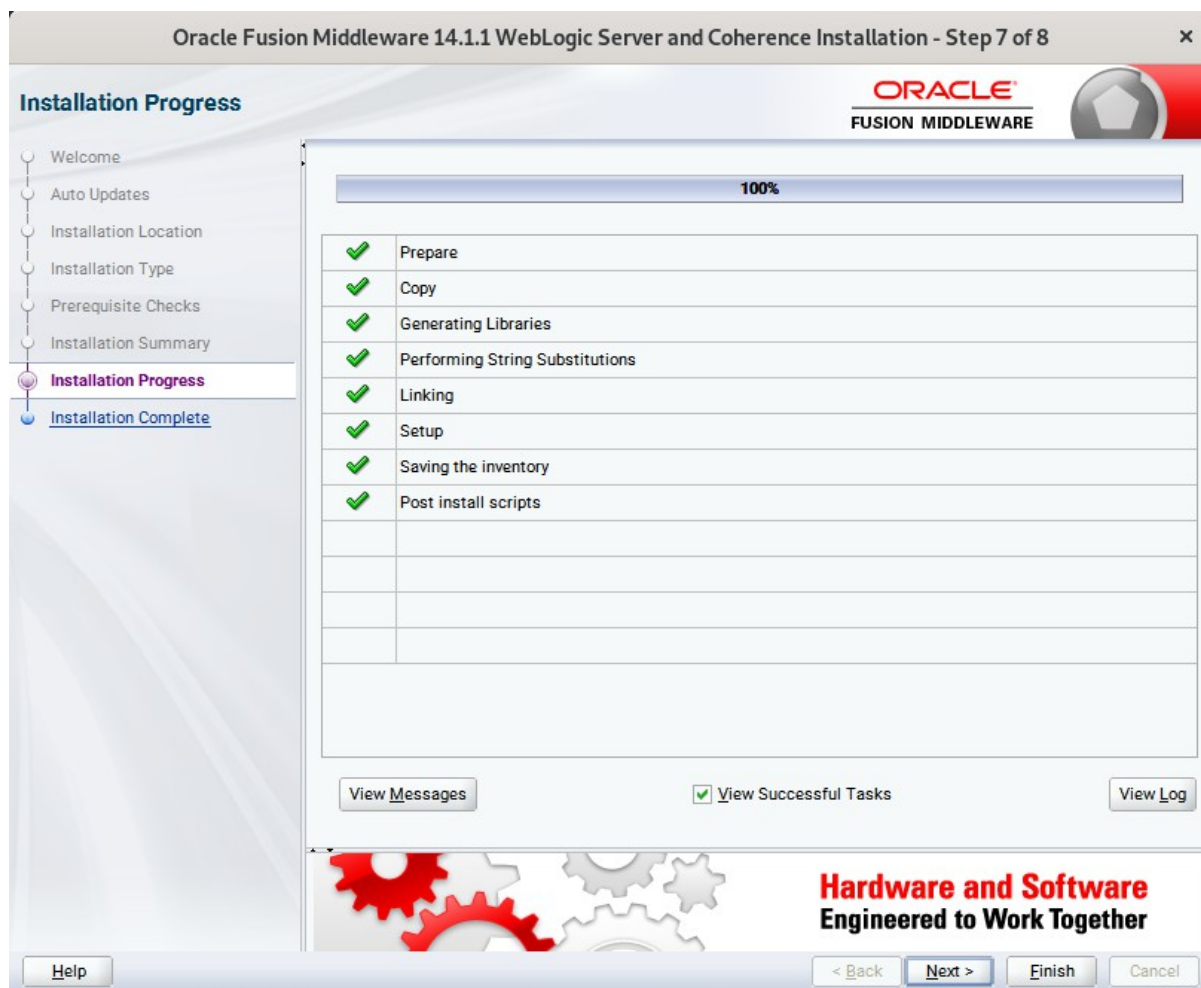
Use this screen to determine the type of installation you want to perform, then click **Next** to continue.

7). Installation Summary.



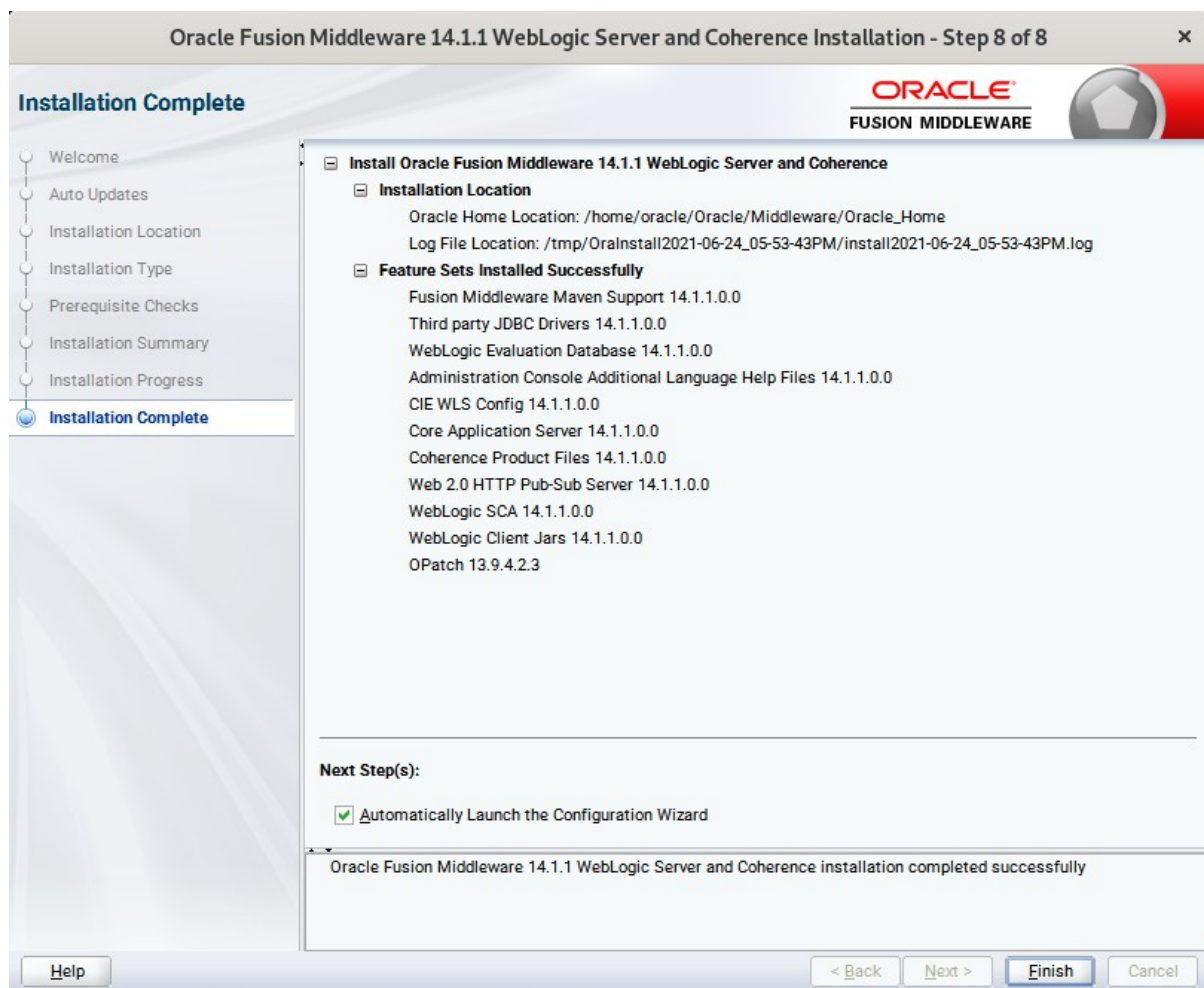
This screen contains a list of the feature sets you selected for installation, along with the approximate amount of disk space to be used by the feature sets once installation is complete. Check the information, then click **Install** to continue.

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.

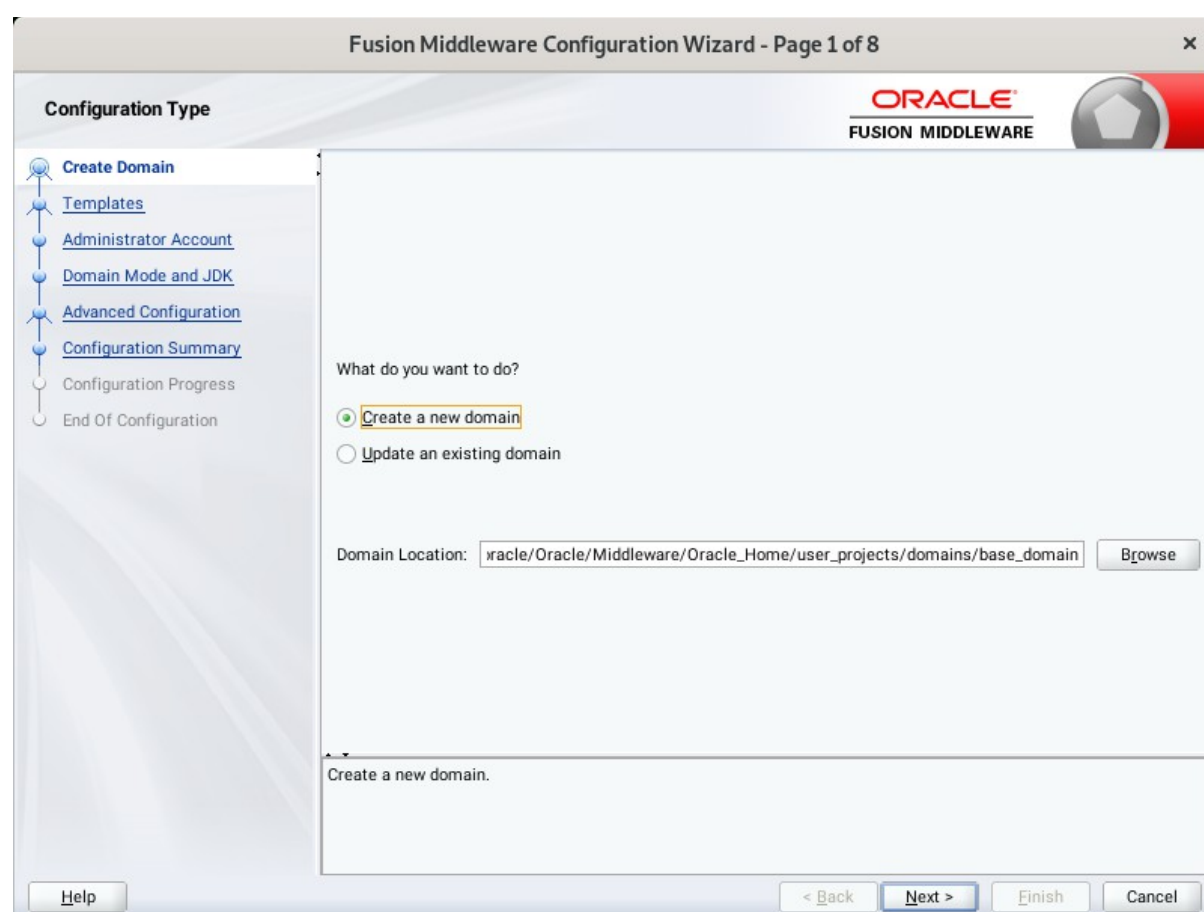
2. Creating and Configuring the WebLogic Domain

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**'.

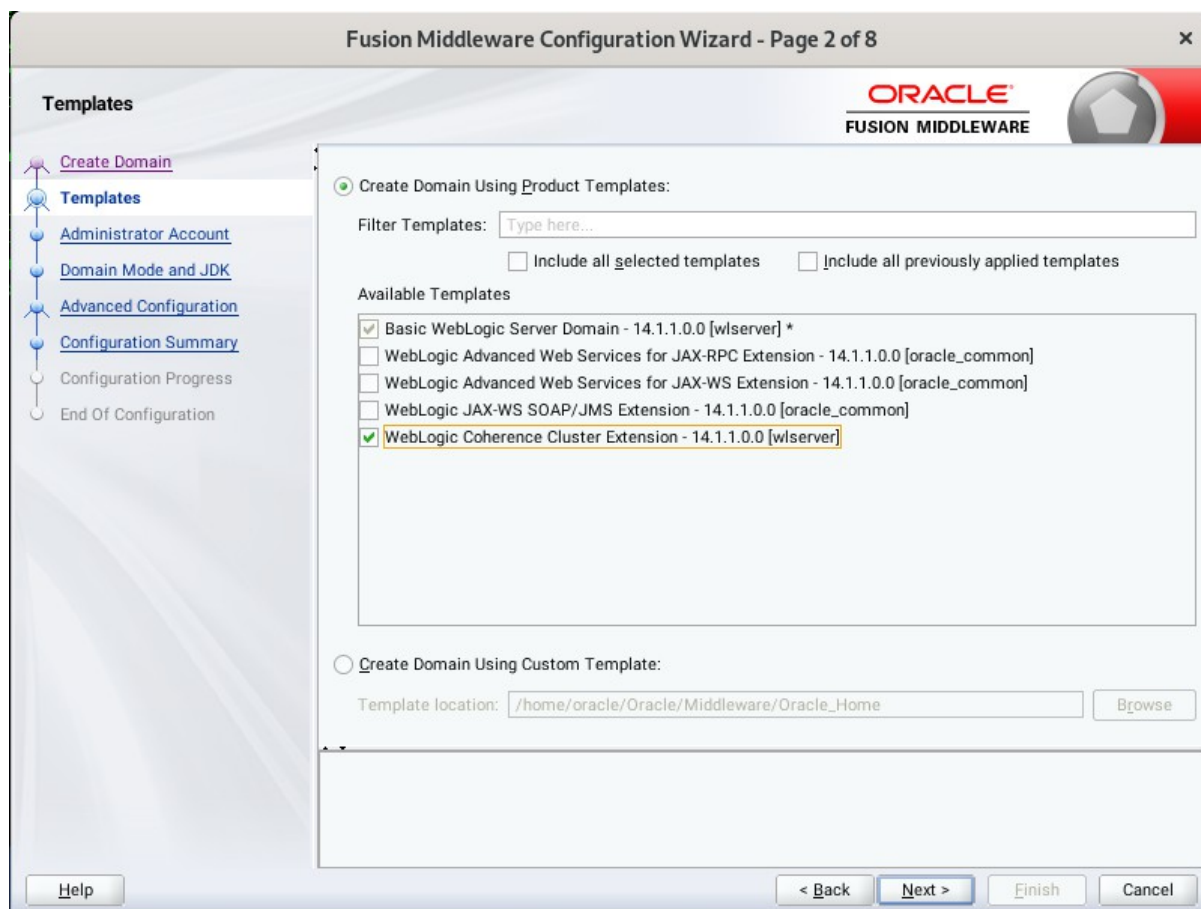
Starting configuration:

1). Configuration Type.



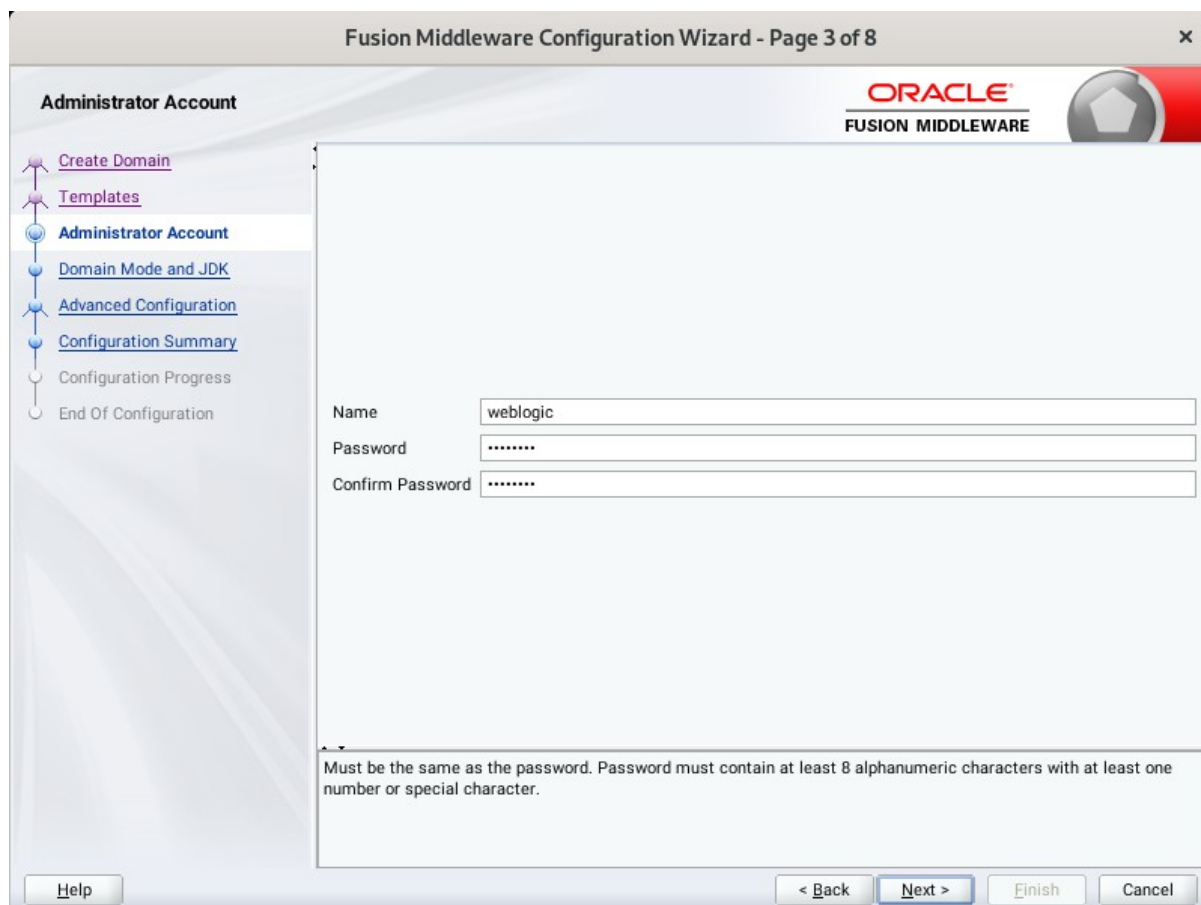
Select option "**Create a New Domain**" and specify the Domain home directory in the "**Domain Location**" field, then click **Next** to continue.

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.

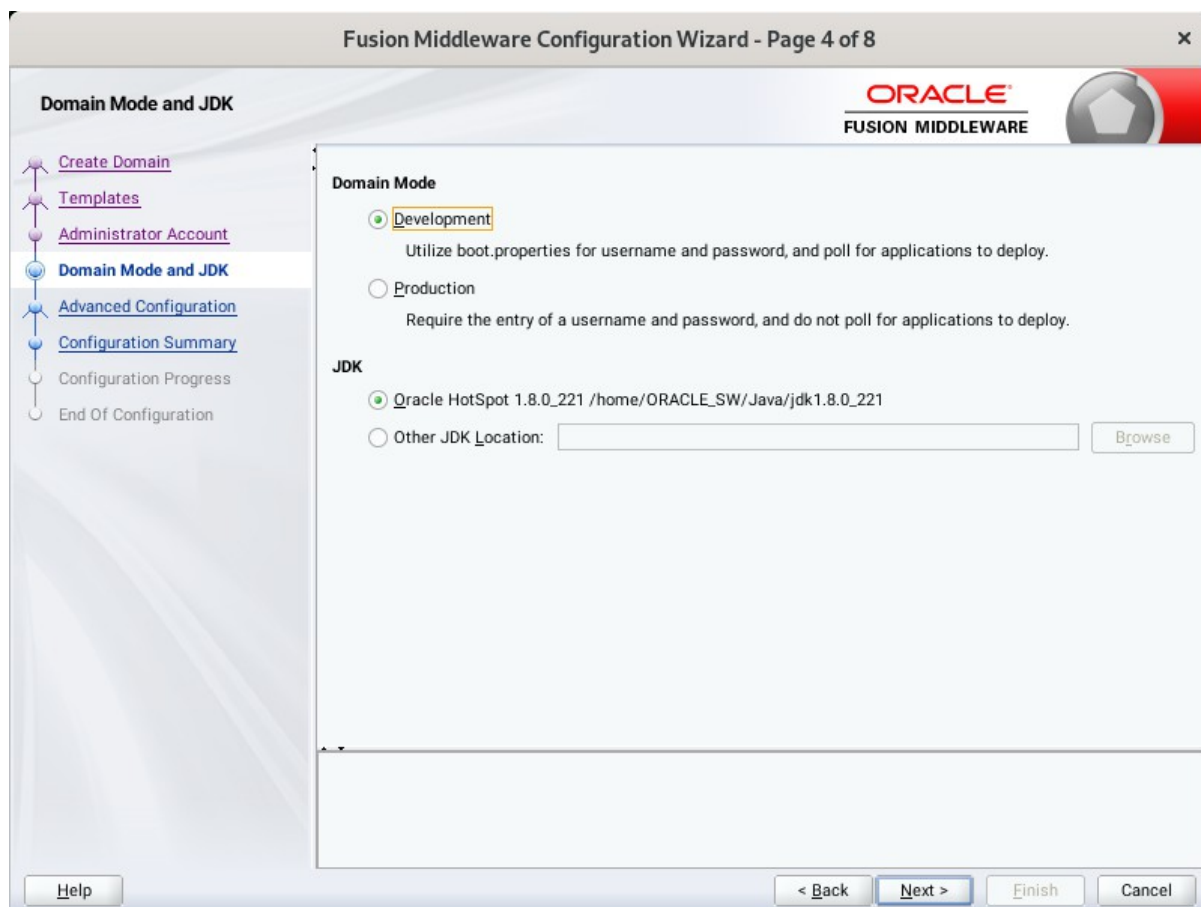
3). Administrator Account.



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 Fusion Middleware logo is visible in the top right corner. 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. A note below the fields states: '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 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.

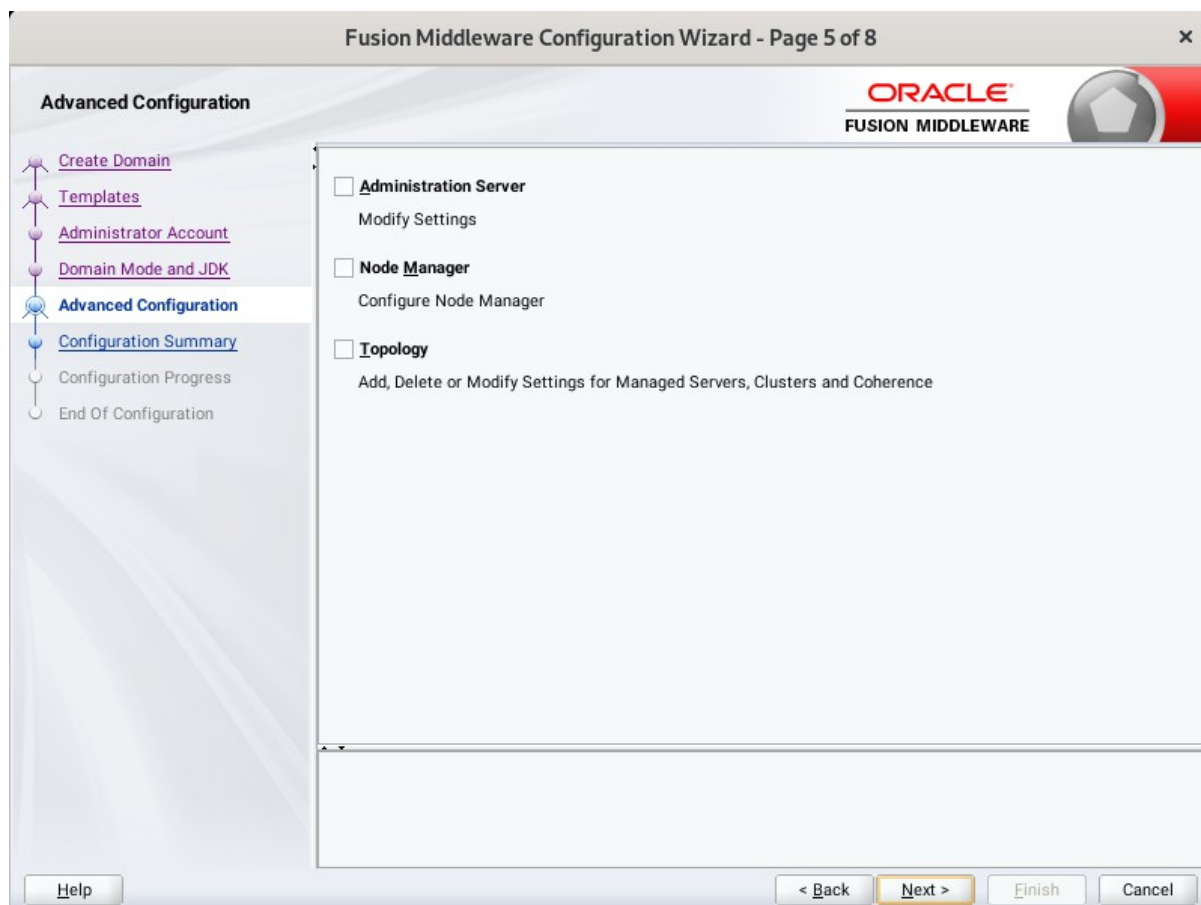
4). Domain Mode and JDK.



The screenshot shows the 'Fusion Middleware Configuration Wizard - Page 4 of 8'. The main title bar includes the Oracle logo and 'FUSION MIDDLEWARE'. The left sidebar contains a navigation tree with the following items: 'Create Domain', 'Templates', 'Administrator Account', 'Domain Mode and JDK' (highlighted), 'Advanced Configuration', 'Configuration Summary', 'Configuration Progress', and 'End Of Configuration'. The main content area is titled 'Domain Mode and JDK' and contains two sections: 'Domain Mode' and 'JDK'. In the 'Domain Mode' section, the 'Development' radio button is selected, with a description: 'Utilize boot.properties for username and password, and poll for applications to deploy.' The 'Production' radio button is unselected, with a description: 'Require the entry of a username and password, and do not poll for applications to deploy.' In the 'JDK' section, the 'Oracle HotSpot 1.8.0_221 /home/ORACLE_SW/Java/jdk1.8.0_221' radio button is selected. The 'Other JDK Location:' radio button is unselected, followed by a text input field and a 'Browse' button. At the bottom of the wizard, there are four buttons: 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

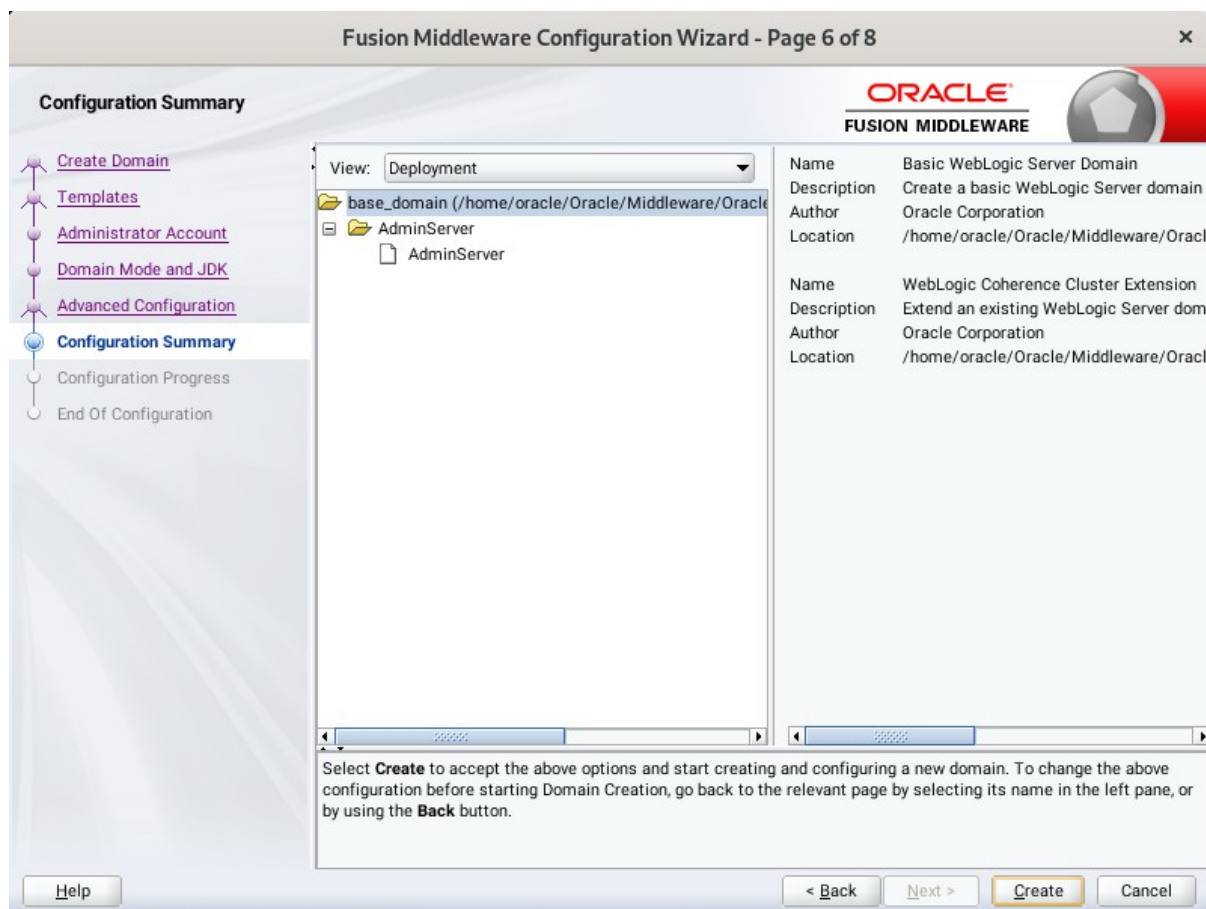
Select "**Development**" in the Domain Mode field, select the "**Oracle HotSpot**" in the JDK field. Then click **Next** to continue.

5). Advanced Configuration.



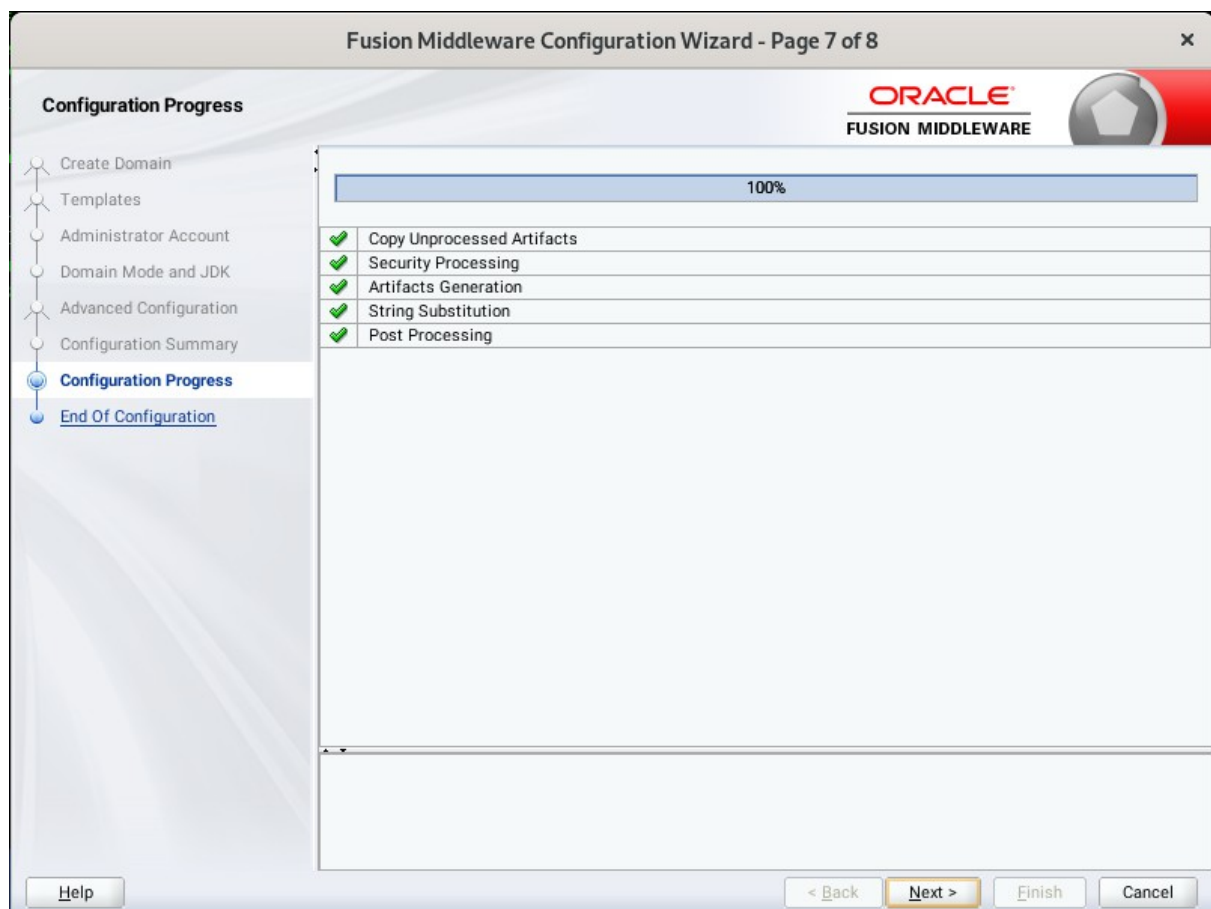
According to your requirements, select the desired options on the Advanced Configuration screen. Then click **Next** to continue.

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:~/base_domain/bin
oracle@Dell5530:~/SW/WebLogic/141100
omatically generated
<Jun 24, 2021 6:08:26,055 PM GMT+08:00> <Notice> <JMX> <BEA-149512> <JMX Connector Server started at service:jmx:iiop://192.168.1.7:7001/jndi/weblogic.management.mbeanservers.domainruntime.>
<Jun 24, 2021 6:08:26,124 PM GMT+08:00> <Notice> <JMX> <BEA-149512> <JMX Connector Server started at service:jmx:iiop://192.168.1.7:7001/jndi/weblogic.management.mbeanservers.edit.>
<Jun 24, 2021 6:08:27,546 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STANDBY.>
<Jun 24, 2021 6:08:27,547 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STARTING.>
<Jun 24, 2021 6:08:27,571 PM GMT+08:00> <Notice> <Log Management> <BEA-170036> <The Logging monitoring service timer has started to check for logged message counts every 30 seconds.>
<Jun 24, 2021 6:08:28,224 PM GMT+08:00> <Notice> <Log Management> <BEA-170027> <The server has successfully established a connection with the Domain level Diagnostic Service.>
<Jun 24, 2021 6:08:28,346 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to ADMIN.>
<Jun 24, 2021 6:08:28,383 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to RESUMING.>
<Jun 24, 2021 6:08:28,403 PM GMT+08:00> <Warning> <Server> <BEA-002611> <The hostname "localhost", maps to multiple IP addresses: 127.0.0.1, 0:0:0:0:0:0:0:1.>
<Jun 24, 2021 6:08:28,404 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.>
<Jun 24, 2021 6:08:28,405 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on 0:0:0:0:0:0:0:1%lo:7001 for protocols iiop, t3, ldap, snmp, http.>
<Jun 24, 2021 6:08:28,405 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000331> <Started the WebLogic Server Administration Server "AdminServer" for domain "base_domain" running in development mode.>
<Jun 24, 2021 6:08:28,405 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.>
<Jun 24, 2021 6:08:28,405 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.>
<Jun 24, 2021 6:08:28,406 PM GMT+08:00> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on 0:0:0:0:0:0:0:1%lo:7001 for protocols iiop, t3, ldap, snmp, http.>
<Jun 24, 2021 6:08:28,406 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.>
<Jun 24, 2021 6:08:28,416 PM GMT+08:00> <Notice> <WebLogicServer> <BEA-000360> <The server started in RUNNING mode.>
<Jun 24, 2021 6:08:28,460 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=10694,fd=729))
tcp LISTEN 0      128          [:::1]:7001                    [:::]*   users:(("java",pid=10694,fd=728))
tcp LISTEN 0      128          [::ffff:127.0.0.1]:7001       *:*      users:(("java",pid=10694,fd=727))
oracle@Dell5530:~> █

```

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

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

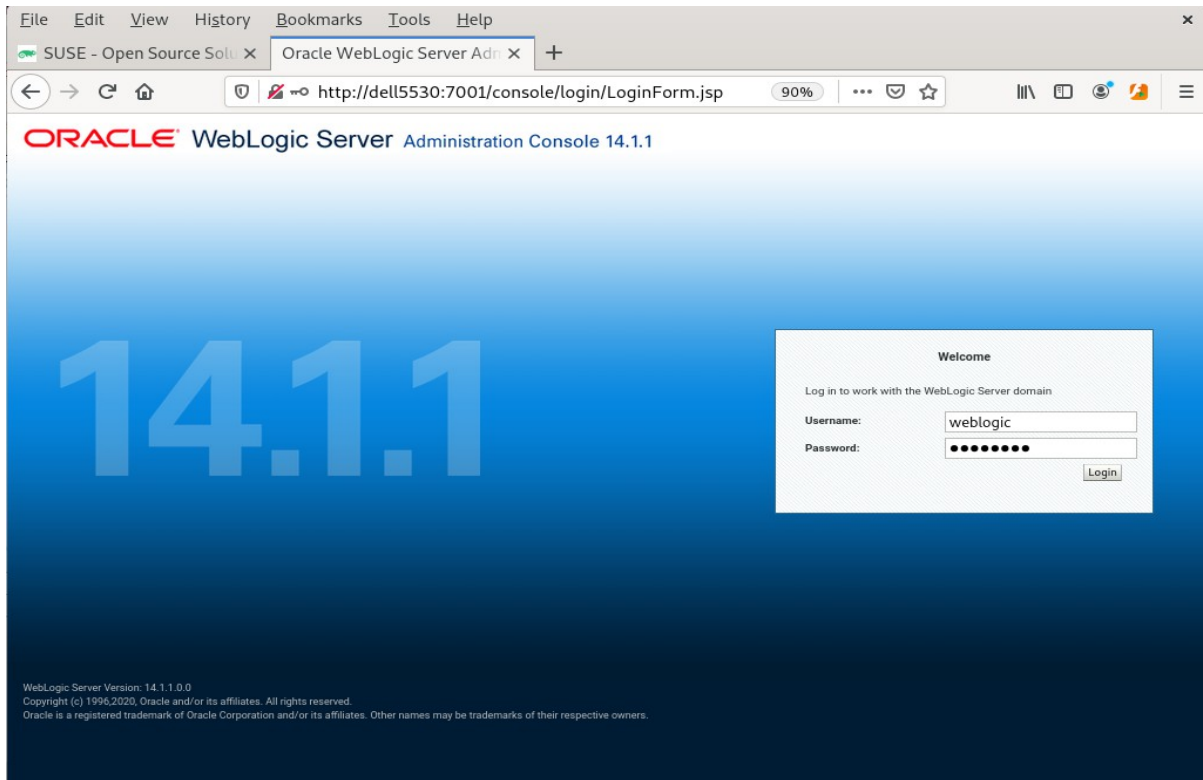


Figure 3-2-2 Viewing WebLogic Server Admin Console - Home page

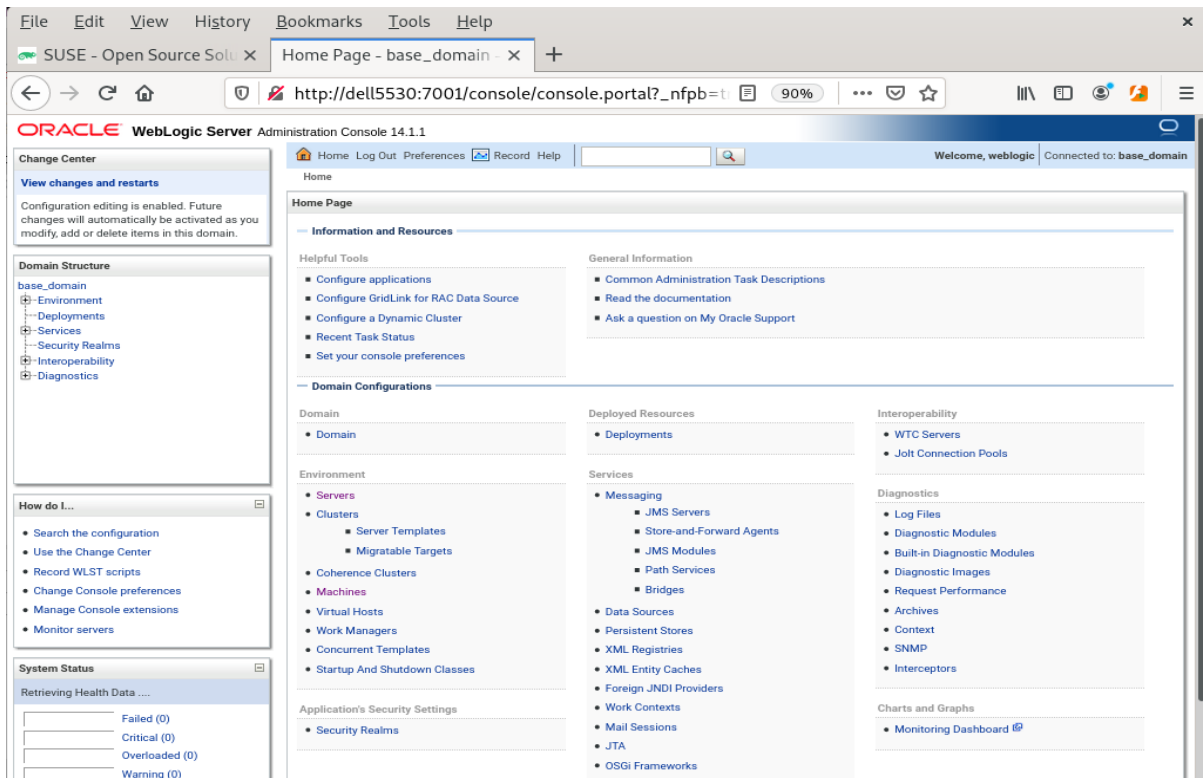
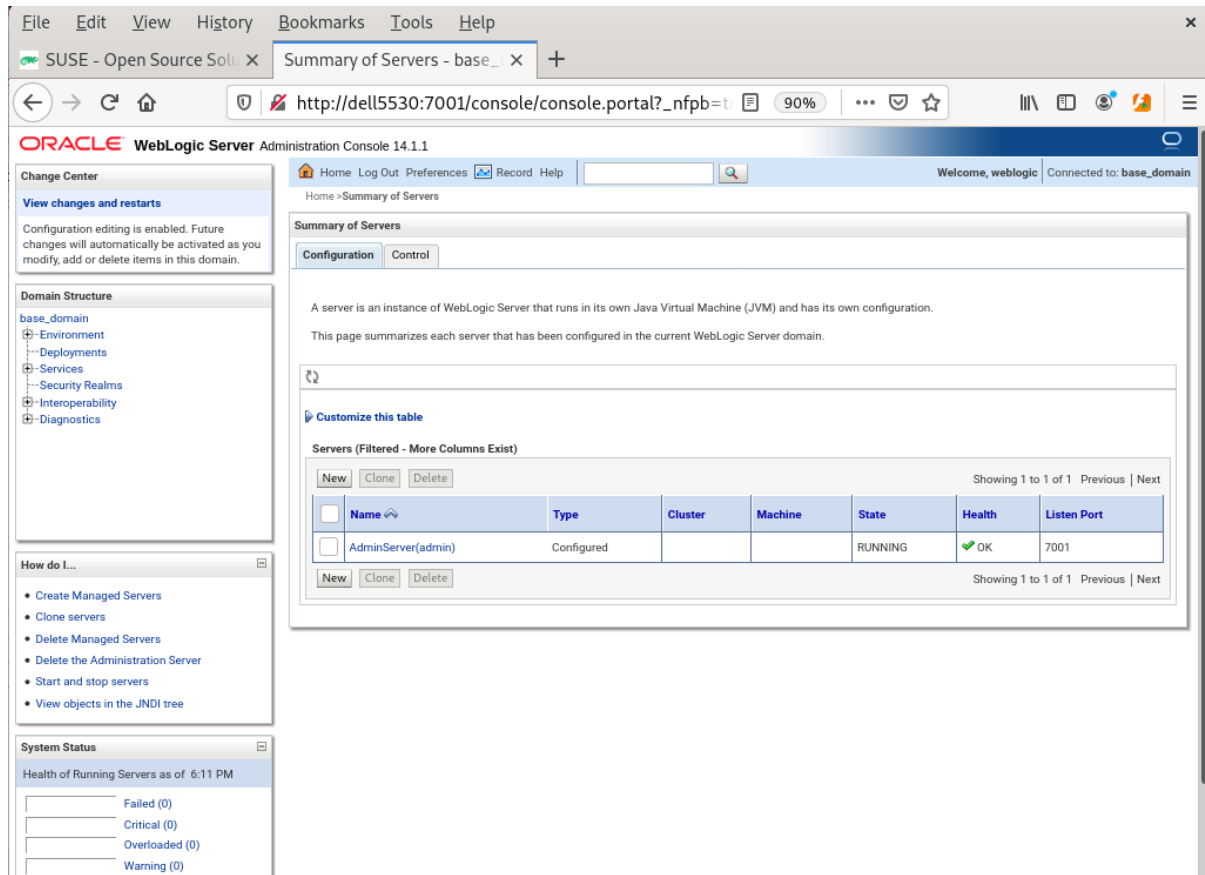


Figure 3-2-3 Viewing WebLogic Server Admin Console - Summary of Servers



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.

*Thanks for selecting **SUSE Linux Enterprise Server** as your Linux platform of choice!*