

Oracle Fusion Middleware – WebLogic Server 14c (14.1.2.0.0) on SUSE Linux Enterprise Server 15 (SP7) for x86-64

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Introduction

This document provides details on installing Oracle WebLogic Server 14c on SUSE Linux Enterprise Server 15 SP7. Details are provided for Intel(x86-64) versions of both Oracle WebLogic Server 14c and SUSE Linux Enterprise Server 15 SP7. 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 SP7 Beta2-202411.1 (x86-64)
(<https://www.suse.com/download/sles/>)

Oracle

- WebLogic Server 14c (14.1.2.0.0) (V1045131-01.zip)
(<https://www.oracle.com/downloads/#category-middleware>)
- Java SE Development Kit 17 (jdk-17.0.13_linux-x64_bin.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 SP7 Beta2-202411.1 (x86-64) - Kernel version: 6.4.0-150700.35-default

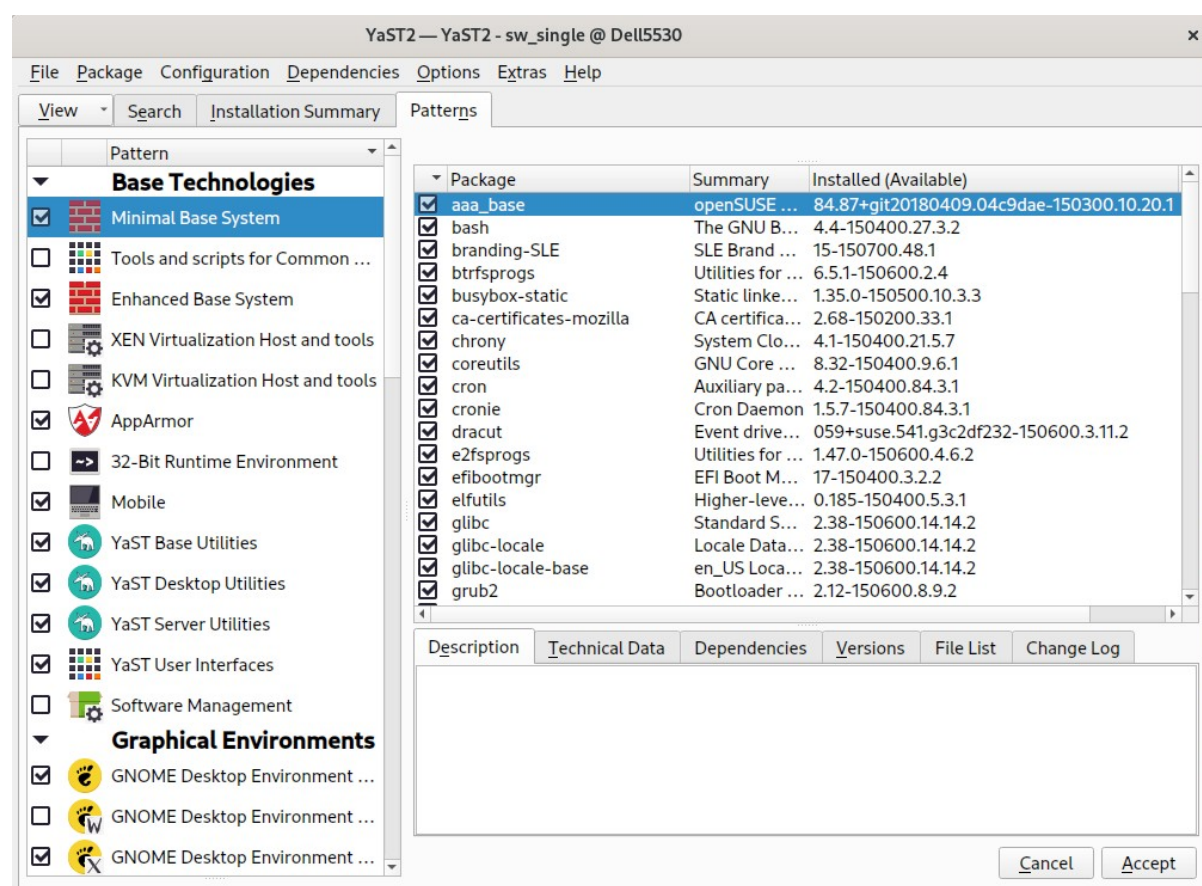


Prerequisites

1. Installing SUSE Linux Enterprise Server 15 SP7

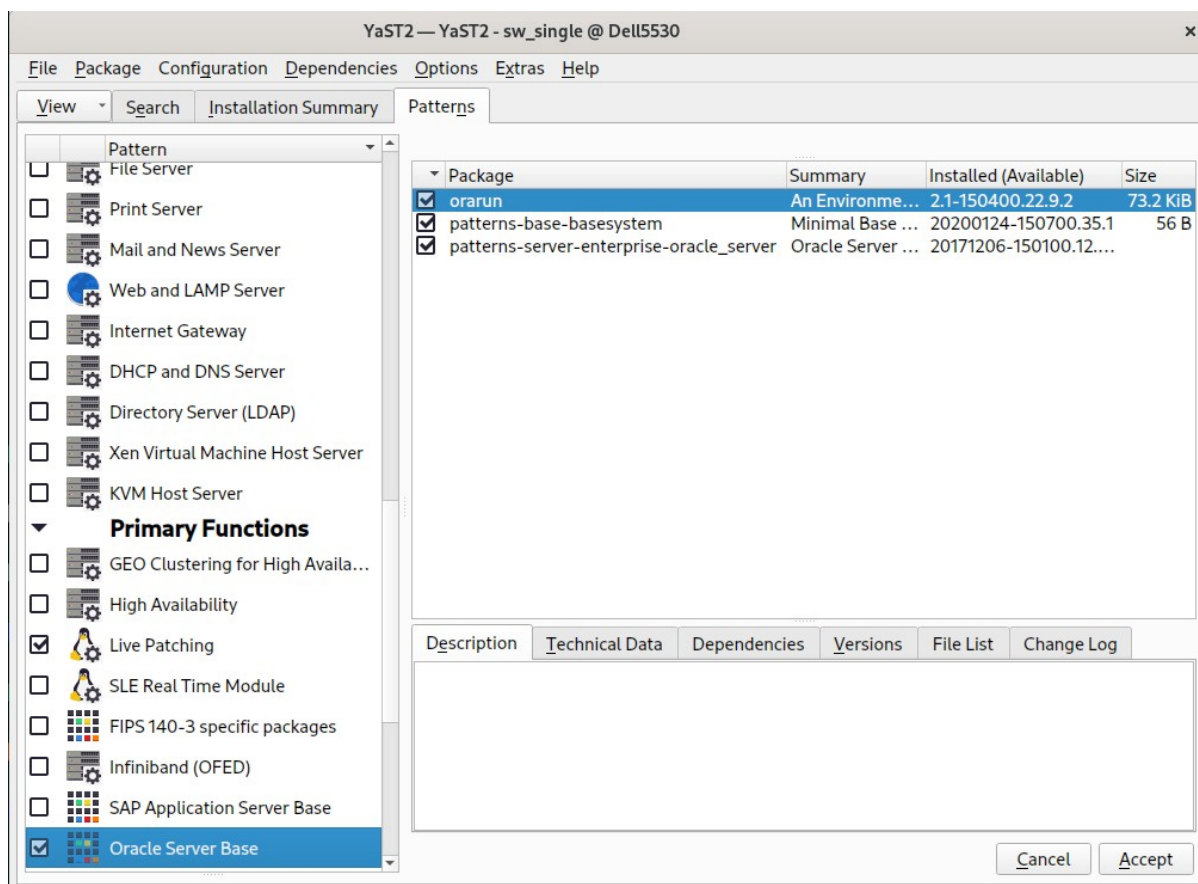
1-1. Install SUSE Linux Enterprise Server 15 SP7 on your testing machine. To do so, follow the instructions in the official SUSE Linux Enterprise Server documentation at <https://www.suse.com/documentation/>.

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@Dell5530:~> more /etc/os-release
NAME="SLES"
VERSION="15-SP7"
VERSION_ID="15.7"
PRETTY_NAME="SUSE Linux Enterprise Server 15 SP7"
ID="sles"
ID_LIKE="suse"
ANSI_COLOR="0;32"
CPE_NAME="cpe:/o:suse:sles:15:sp7"
DOCUMENTATION_URL="https://documentation.suse.com/"
oracle@Dell5530:~> uname -a
Linux Dell5530 6.4.0-150700.35-default #1 SMP PREEMPT_DYNAMIC Thu Nov 7 07:25:31 UTC 2024 (4c04064/lp) 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 16531791872 by including the following line in `/etc/sysctl.conf`:

```
kernel.shmmax = 16531791872
```

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.

3). Remove `/etc/profile.d/oracle.sh` and `/etc/profile.d/alljava.sh` as root.

```
#mv /etc/profile.d/oracle.sh /etc/profile.d/oracle.sh.bak
#mv /etc/profile.d/alljava.sh /etc/profile.d/alljava.sh.bak
```

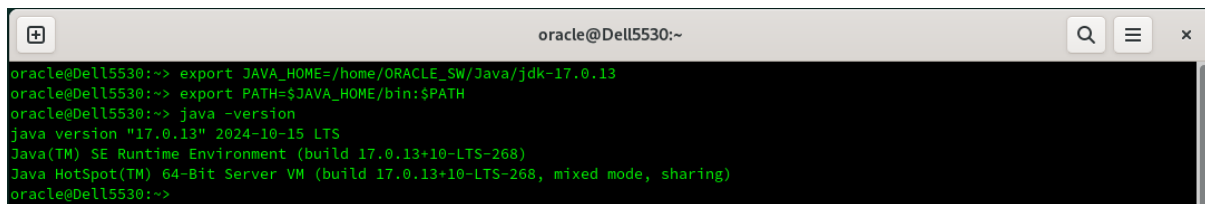
2. Installing Java

2-1. Log in to the target system (SUSE Linux Enterprise Server 15 SP7 64-bit OS) as a non-admin user. Download Java SE Development Kit 17 (jdk-17.0.13_linux-x64_bin.tar.gz) from <https://www.oracle.com/downloads/#category-java>.

(Note: For 14c (14.1.2.0.0), the certified JDK is 17.0.12 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:~' with search, menu, and close icons in the title bar. The terminal shows the following commands and output:

```
oracle@Dell5530:~> export JAVA_HOME=/home/ORACLE_SW/Java/jdk-17.0.13
oracle@Dell5530:~> export PATH=$JAVA_HOME/bin:$PATH
oracle@Dell5530:~> java -version
java version "17.0.13" 2024-10-15 LTS
Java(TM) SE Runtime Environment (build 17.0.13+10-LTS-268)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.13+10-LTS-268, mixed mode, sharing)
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 SP7 64-bit OS) as a non-admin user. Download the Oracle WebLogic Server 14c (14.1.2.0.0) 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 (V1045131-01.zip) file and launch the installation program by running **'java -jar fmw_14.1.2.0.0_wls.jar'**

Install Flow:

1). Installation Inventory Setup.

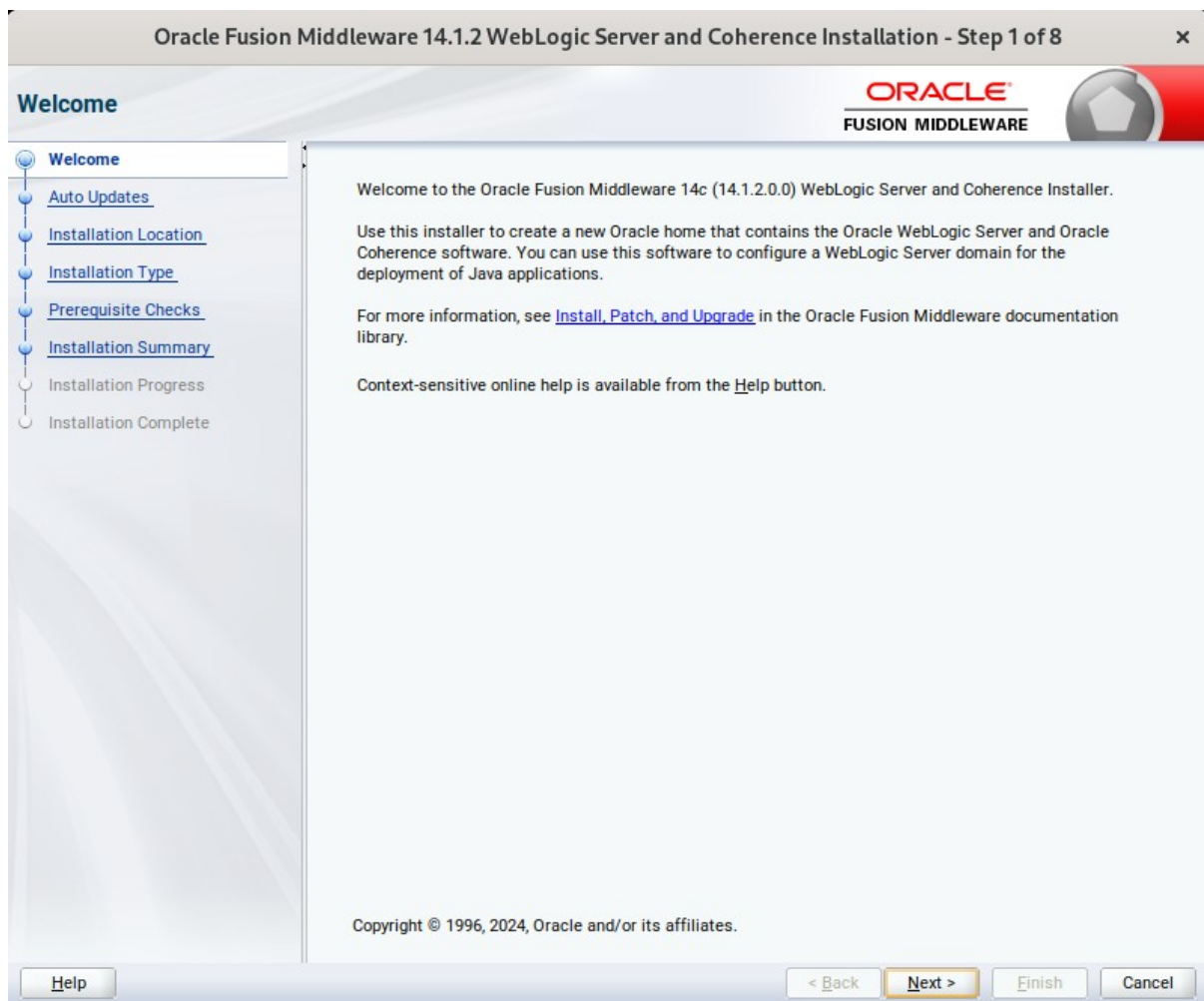
The screenshot shows the 'Installation Inventory Setup' window for Oracle Fusion Middleware 14c WebLogic. The window has a title bar 'Oracle Fusion Middleware 14c WebLogic Installation' and a close button. Below the title bar is a header with the 'ORACLE' logo and 'FUSION MIDDLEWARE' text. The main content area is titled 'Installation Inventory Setup' and contains the following sections:

- Central Inventory Directory**: A text box for 'Inventory Directory' containing '/home/oracle/orainventory' and a 'Browse' button. Below the text box is the instruction 'Enter the full path for the directory.'
- Operating System Group**: A dropdown menu showing 'oinstall' and a downward arrow. Below the dropdown is the instruction 'Specify a group with write permission to the inventory directory'.
- Central Inventory Pointer File**: A paragraph of text explaining that clicking OK will create a script (createCentralInventory.sh) in the inventory directory, 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.

Oracle Fusion Middleware 14.1.2 WebLogic Server and Coherence Installation - Step 2 of 8

Auto Updates

[Welcome](#)

Auto Updates

[Installation Location](#)

[Installation Type](#)

[Prerequisite Checks](#)

[Installation Summary](#)

Installation Progress

Installation Complete

☒ Skip Auto Updates

☐ Select patches from directory

Location:

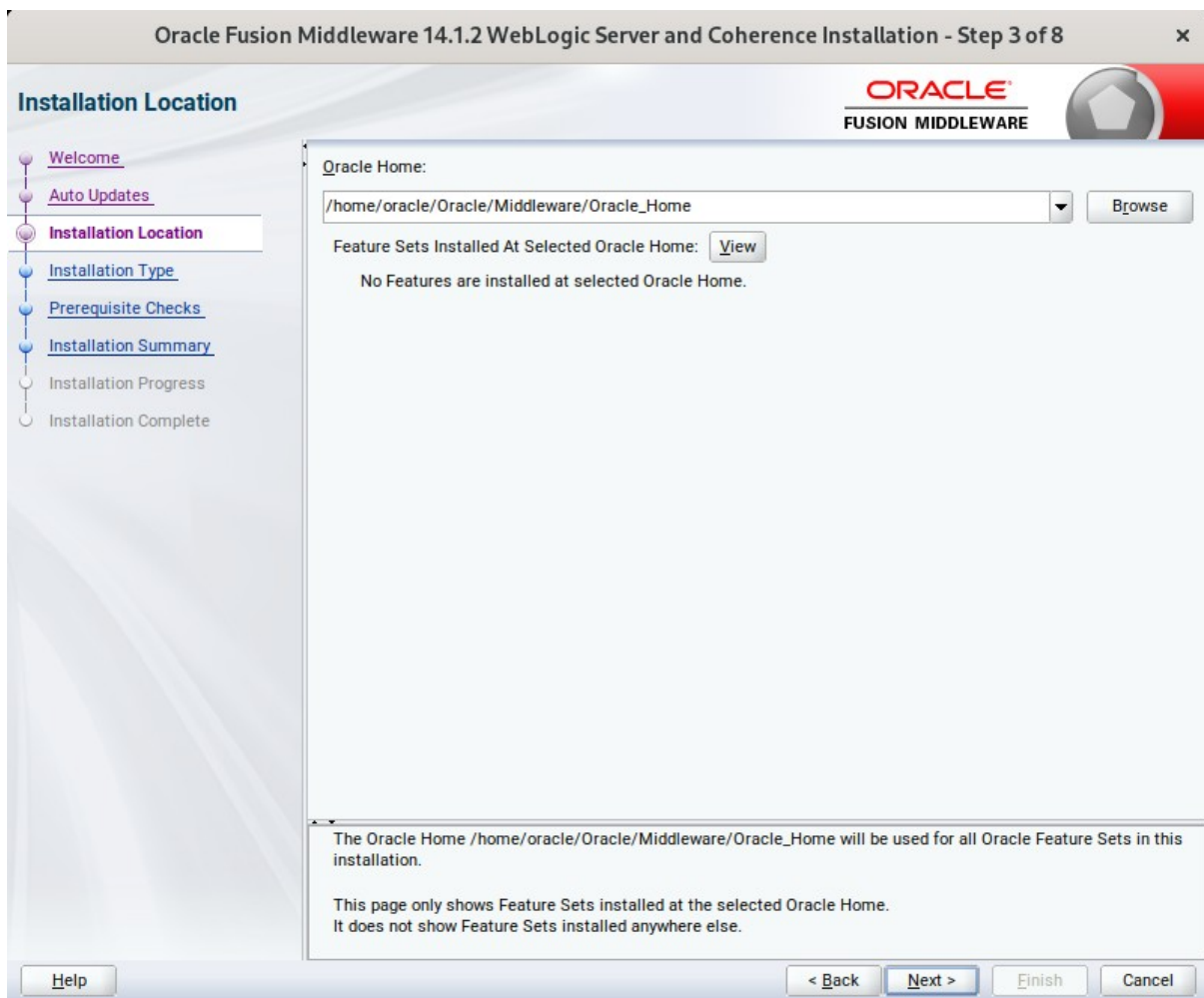
☐ Search My Oracle Support for Updates

Username:

Password:

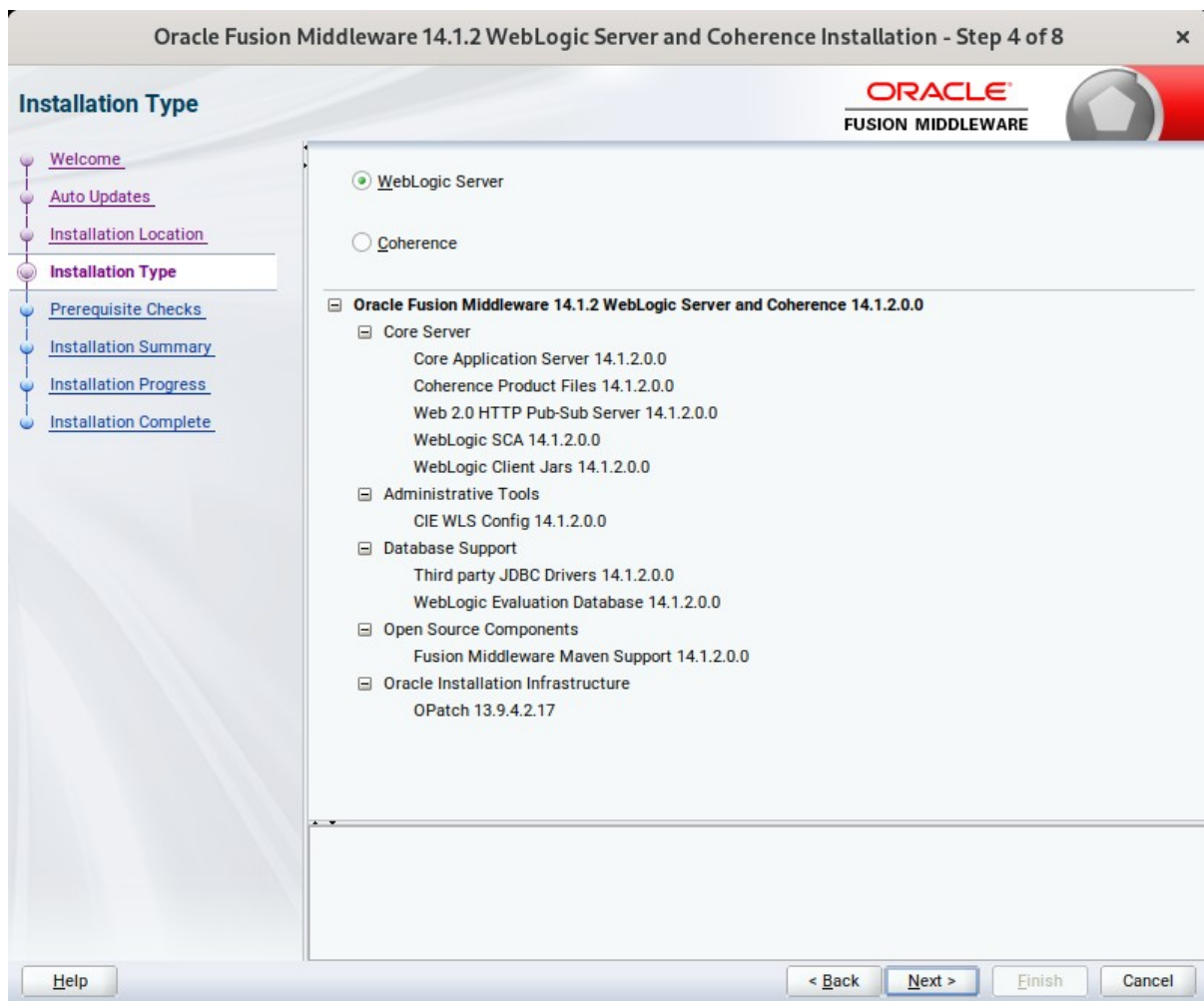
Select option "**Skip Auto Updates**" to skip this screen, then click **Next** to continue.

4). Installation Location.



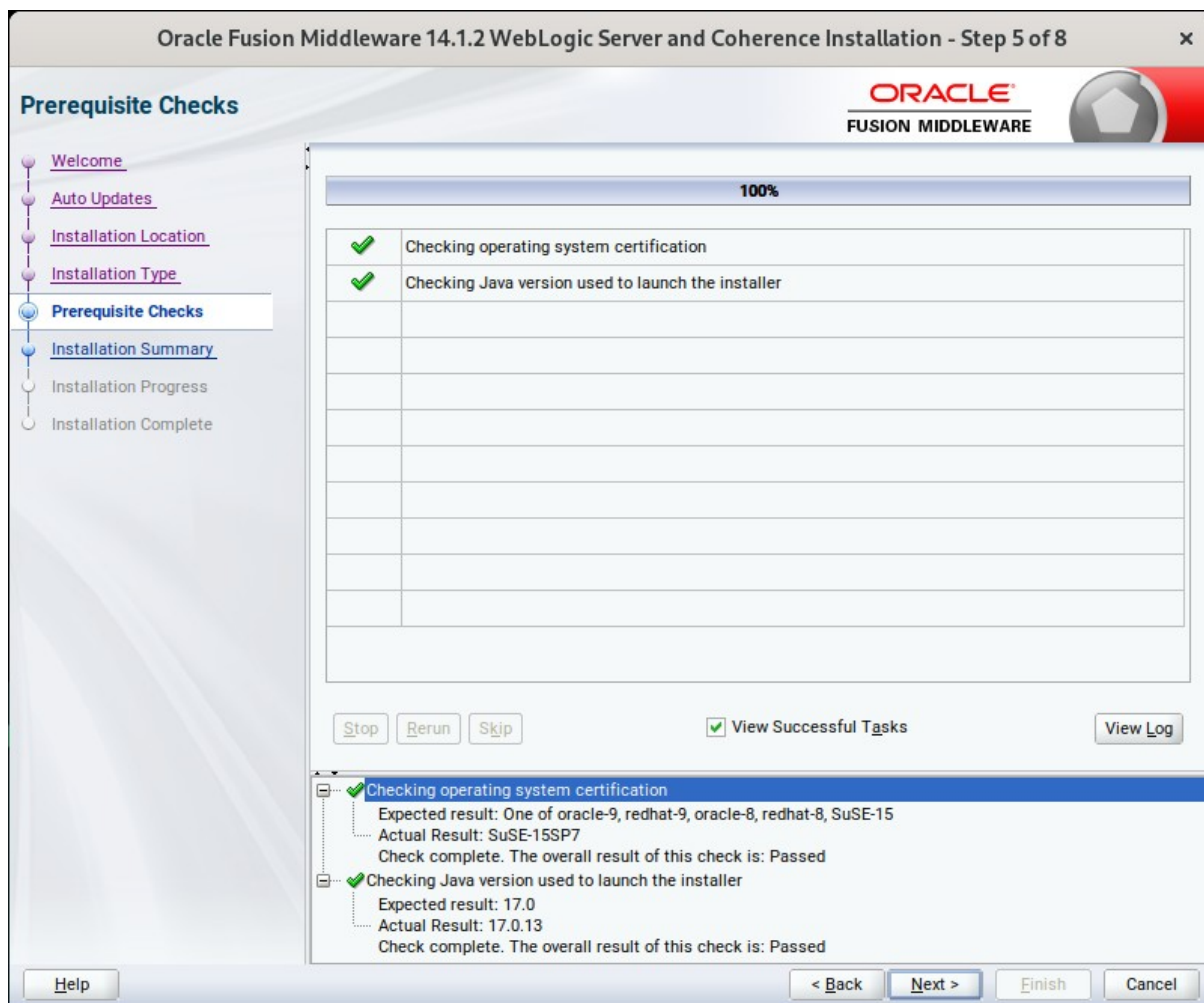
Type the full path of the directory in the Oracle Home field, then click **Next** to continue.

5). Installation Type.



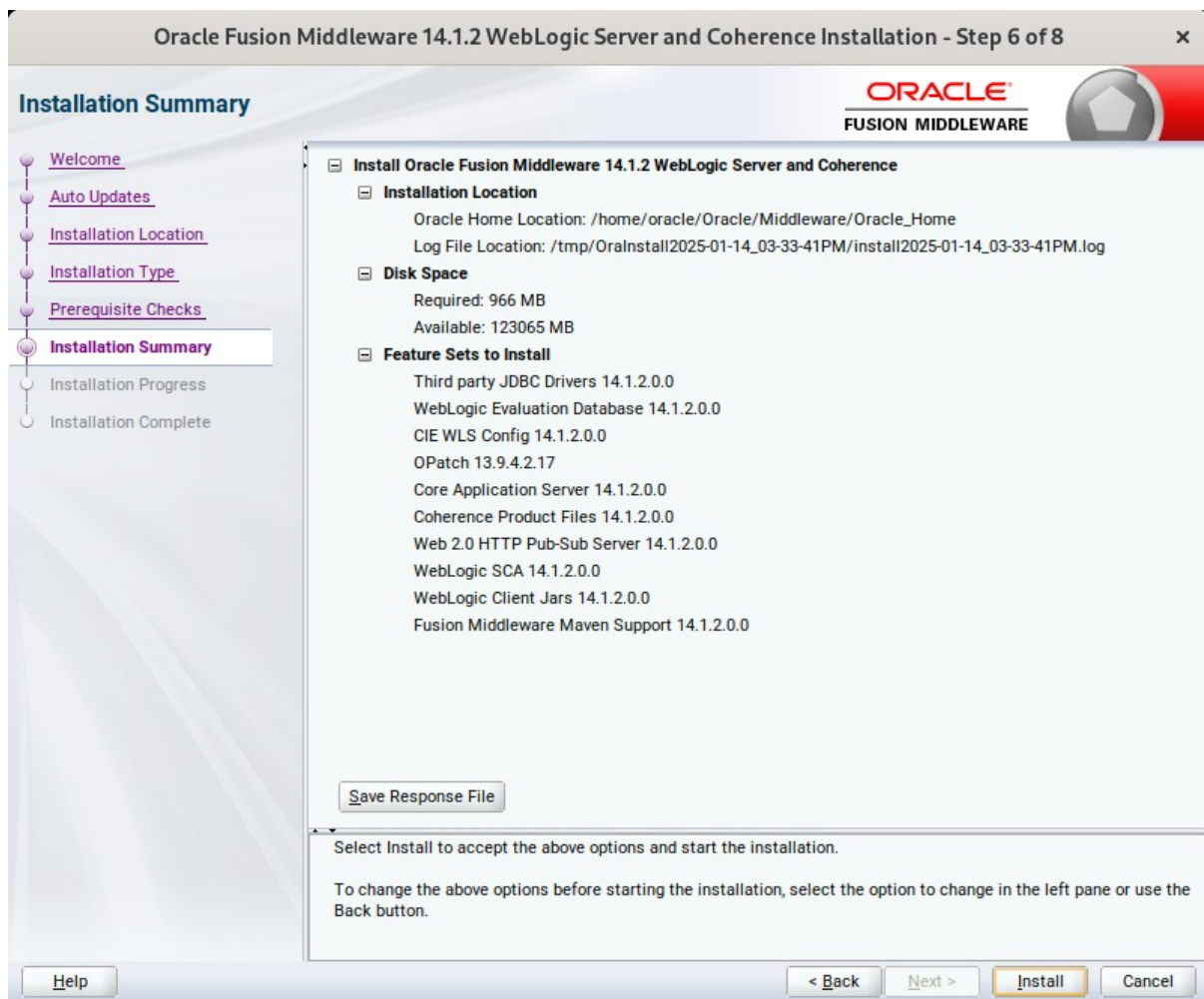
Use this screen to determine the type of installation you want to perform, then click **Next** to continue.

6). Prerequisite Checks.



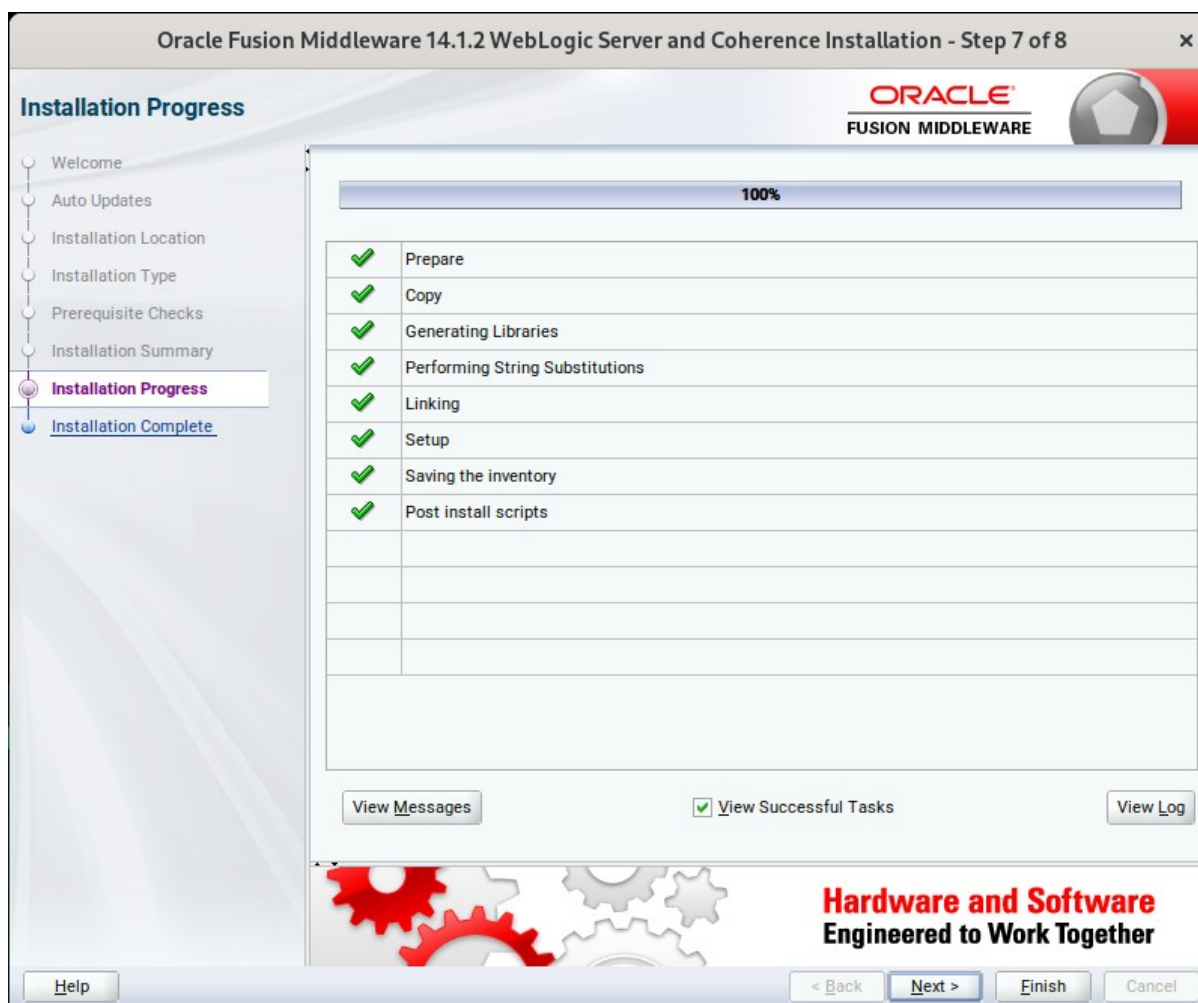
Prerequisite Checks results will be shown as above, click **Next** to continue.

7). Installation Summary.



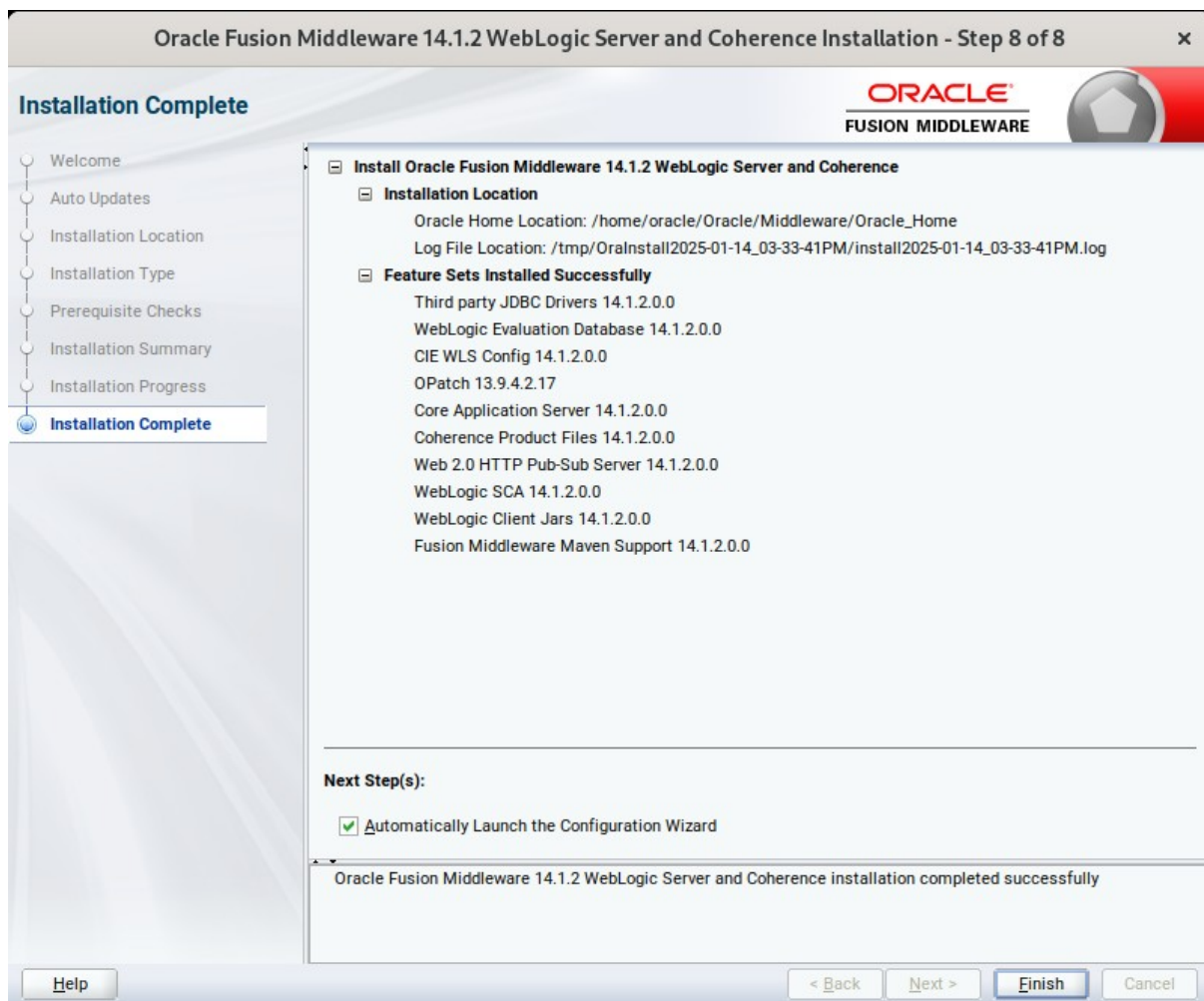
This screen contains a list of the feature sets you selected for installation, along with the approximate amount of disk space to be used by the feature sets once installation is complete. Check the information, then click **Install** to continue.

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**'.

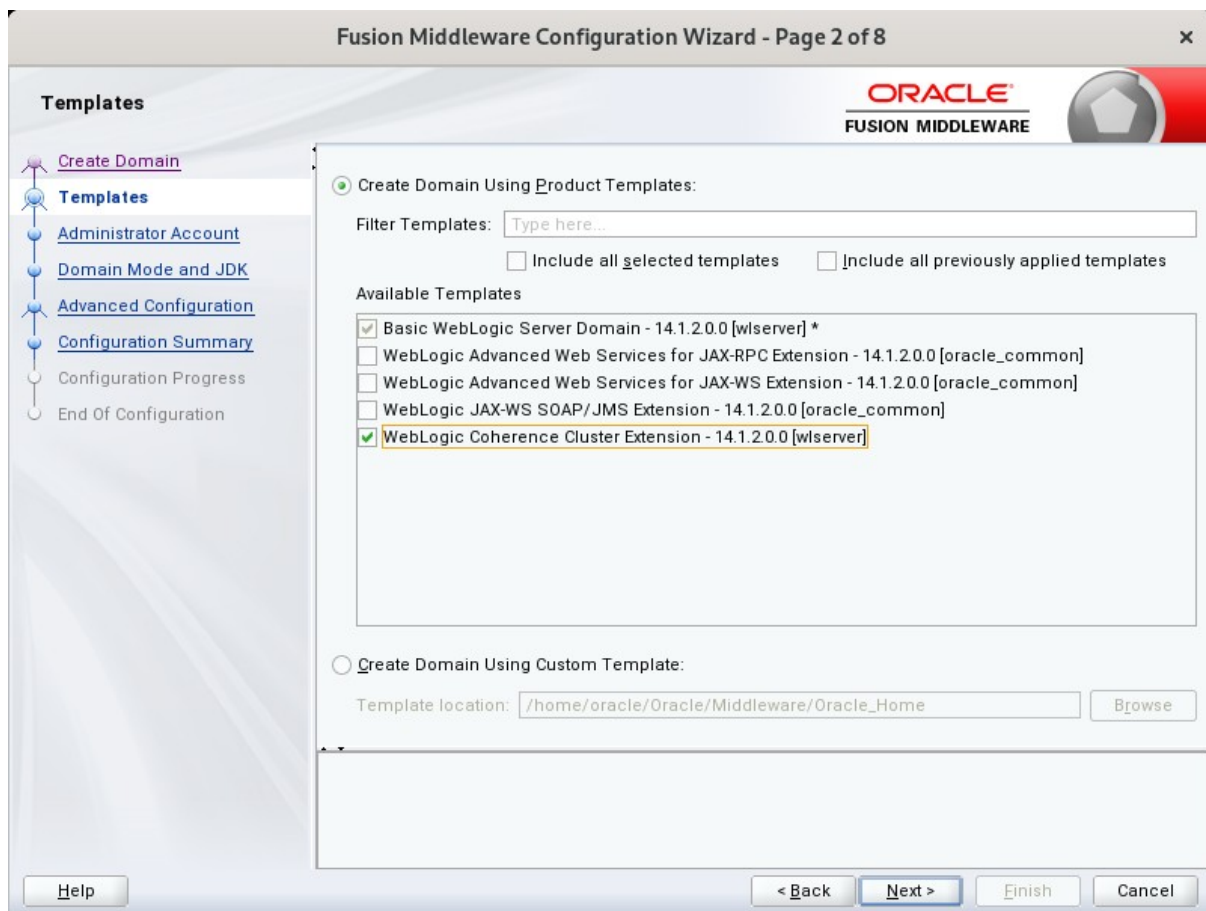
Starting configuration:

1). Configuration Type.



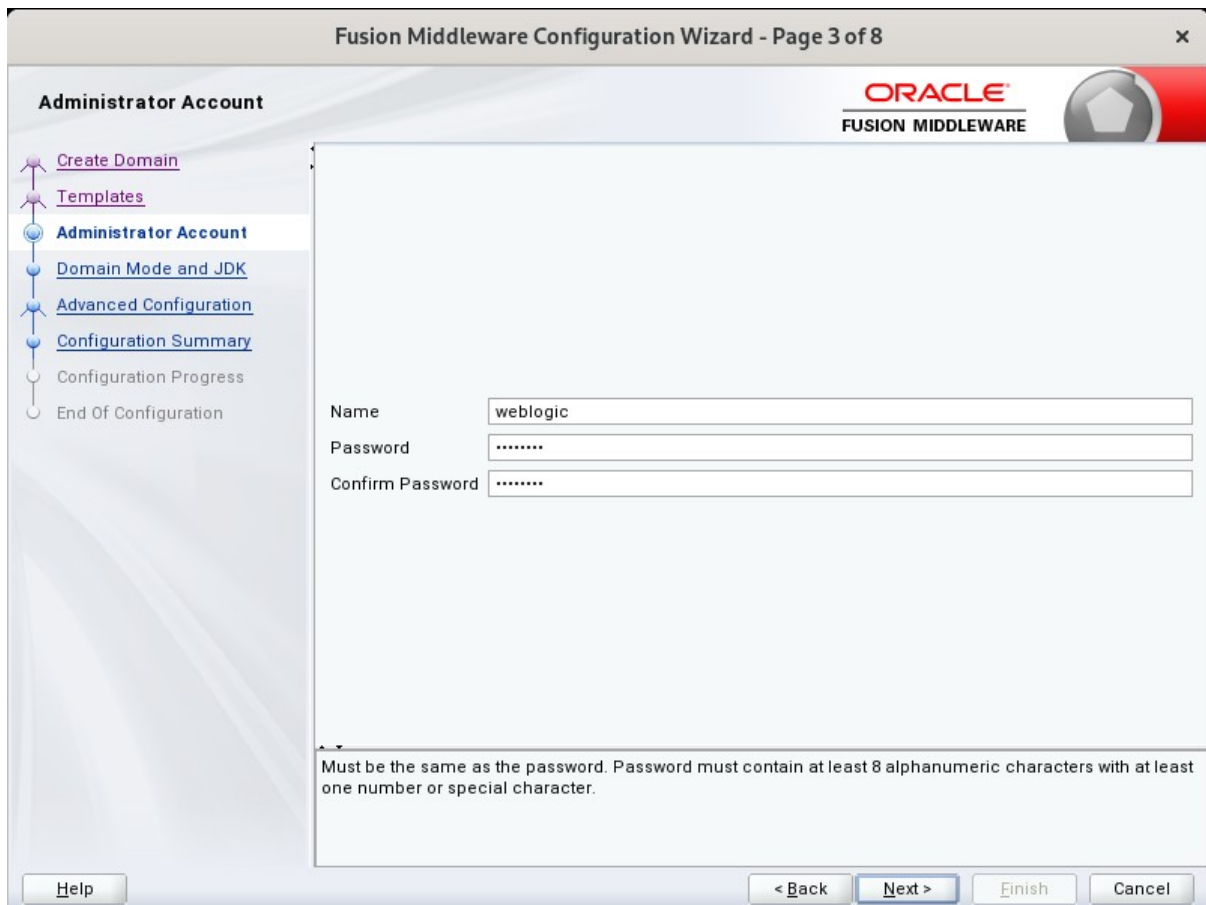
Select option "**Create a New Domain**" and specify the Domain home directory in the "**Domain Location**" field, then click **Next** to continue.

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 'Fusion Middleware Configuration Wizard - Page 3 of 8'. The title bar includes the Oracle Fusion Middleware logo. The left sidebar contains a navigation tree with the following items: 'Create Domain', 'Templates', 'Administrator Account' (highlighted), 'Domain Mode and JDK', 'Advanced Configuration', 'Configuration Summary', 'Configuration Progress', and 'End Of Configuration'. The main content area is titled 'Administrator Account' and contains three input fields: 'Name' (with the value 'weblogic'), 'Password' (masked with dots), and 'Confirm Password' (masked with dots). Below these fields is a text box containing the password requirements: '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 window are four buttons: 'Help', '< Back', 'Next >', 'Finish', and 'Cancel'.

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: weblogic
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 "**Production**" in the Domain Mode field, select the "**Oracle HotSpot**" in the JDK field. Then click **Next** to continue.

(**Note:** Select **Production** Mode to give your environment a higher degree of security. You need to enter a user name and password to deploy applications and to start the Administration Server.

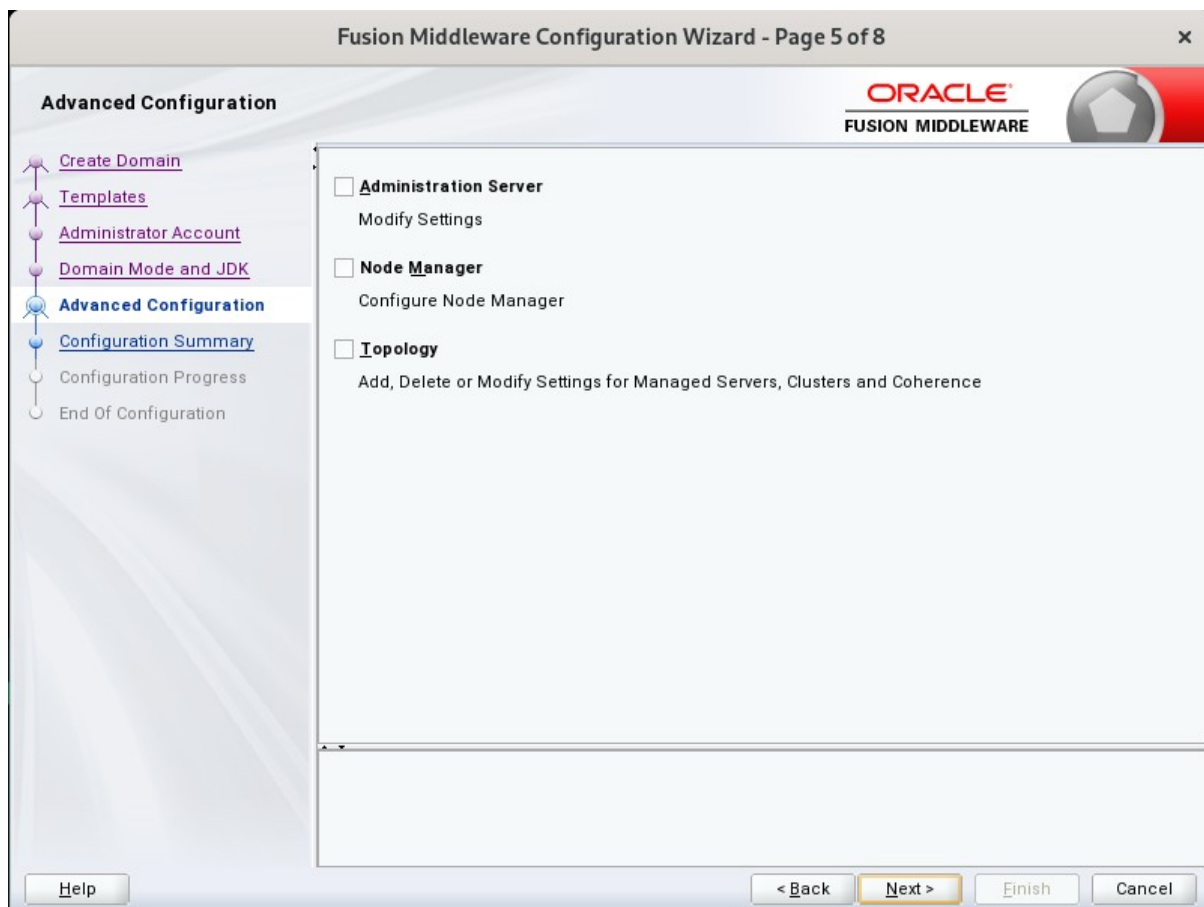
As of WebLogic Server 14.1.2.0.0, when you select **Production** mode, WebLogic Server automatically sets some of the security configurations of **Secured Production** to more secure values. However, there are certain security configurations (such as SSL/TLS) that require manual configuration. If you want to disable the more secure default settings, then you may select **Disable Secure Mode**. This will enable the non-SSL listen ports.

If you want to retain the more secure default settings of **Secured Production** mode in general, but want to change which ports (listen ports, SSL listen ports, or administration ports) will be enabled by default in your domain, then you may:

- Leave **Disable Secure Mode** unselected, and
- Change the default port selections under **Enable or Disable Default Ports for Your Domain**.

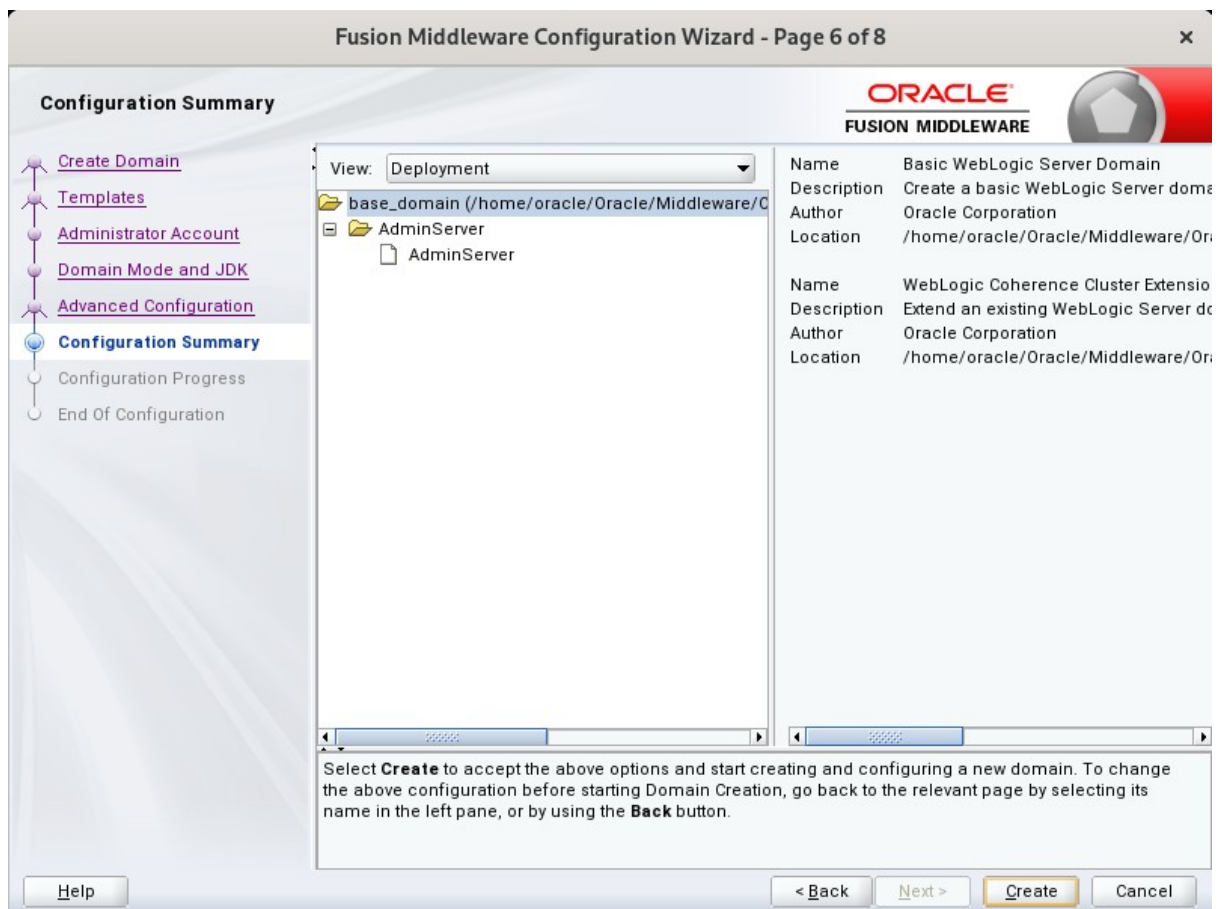
)

5). Advanced Configuration.



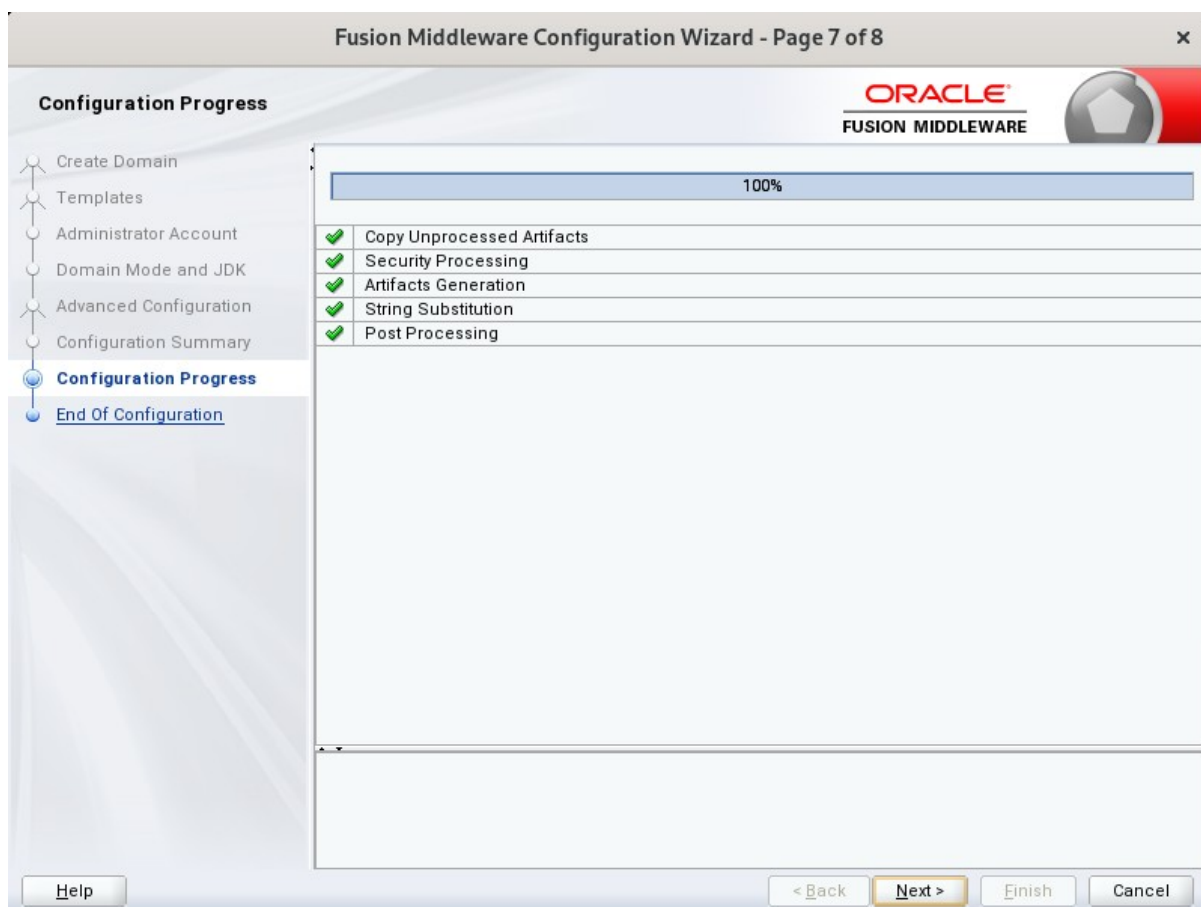
According to your requirements, select the desired options on the Advanced Configuration screen. Then click **Next** to continue.

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

lib/derbyclient.jar:/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/common/derby/lib/derby.jar:/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/common/derby/lib/derbyshared.jar:/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/common/derby/lib/derbyoptionaltools.jar

PATH=/home/oracle/Oracle/Middleware/Oracle_Home/user_projects/domains/base_domain/bin:/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/server/bin:/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/./oracle_common/modules/thirdparty/org.apache.ant/apache-ant/bin:/home/ORACLE_SW/Java/jdk-17.0.13/bin:/home/ORACLE_SW/Java/jdk-17.0.13/bin:/usr/local/bin:/usr/bin:/bin

*****
* To start WebLogic Server, use a username and *
* password assigned to an admin-level user. For *
* server administration, use the WebLogic Server *
* console at http://hostname:port/console *
*****
Starting WLS with line:
/home/ORACLE_SW/Java/jdk-17.0.13/bin/java -server -Xms256m -Xmx512m -cp /home/oracle/Oracle/Middleware/Oracle_Home/wlserver/server/lib/weblogic-launcher.jar -Dlaunch.use.env.classpath=true -Dweblogic.Name=AdminServer -Djava.security.policy=/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/server/lib/weblogic.policy -Dweblogic.ProductionModeEnabled=true -Djava.system.class.loader=com.oracle.classloader.weblogic.LaunchClassLoader -javaagent:/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/server/lib/debugpatch-agent.jar -da -Dwls.home=/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/server -Dweblogic.home=/home/oracle/Oracle/Middleware/Oracle_Home/wlserver/server weblogic.Server
Java HotSpot(TM) 64-Bit Server VM warning: Archived non-system classes are disabled because the java.system.class.loader property is specified (value = "com.oracle.classloader.weblogic.LaunchClassLoader"). To use archived non-system classes, this property must not be set
<Jan 14, 2025, 3:51:13 PM China Standard Time> <Info> <Default> <BEA-000000> <JceConfig is unknown>
<Jan 14, 2025, 3:51:13 PM China Standard Time> <Info> <Default> <BEA-000000> <FIPS compliant operation not available for configuration type OTHER>
<Jan 14, 2025, 3:51:13 PM China Standard Time> <Info> <Default> <BEA-000000> <JceConfig is in non-FIPS mode>
<Jan 14, 2025, 3:51:13 PM China Standard Time> <Info> <WebLogicServer> <BEA-000377> <Starting WebLogic Server with Java HotSpot(TM) 64-Bit Server VM Version 17.0.13+10-LTS-268 from Oracle Corporation.>
<Jan 14, 2025, 3:51:13 PM China Standard Time> <Info> <Management> <BEA-141107> <Version: WebLogic Server 14.1.2.0.0 Tue Nov 26 02:40:45 GMT 2024 2171472>
<Jan 14, 2025, 3:51:14 PM China Standard Time> <Info> <Security> <BEA-090065> <Getting boot identity from user.>
Enter username to boot WebLogic server:weblogic
Enter password to boot WebLogic server:

<Jan 14, 2025, 3:52:00,136 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STANDBY.>
<Jan 14, 2025, 3:52:00,136 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to STARTING.>
<Jan 14, 2025, 3:52:00,167 PM China Standard Time> <Notice> <Log Management> <BEA-170036> <The Logging monitoring service timer has started to check for logged message counts every 30 seconds.>
<Jan 14, 2025, 3:52:00,217 PM China Standard Time> <Notice> <Security> <BEA-090171> <Loading the identity certificate and private key stored under the alias DemoIdentity from the pkcs12 keystore file /home/oracle/Oracle/Middleware/Oracle_Home/user_projects/domains/base_domain/security/DemoIdentity.p12.>
<Jan 14, 2025, 3:52:00,455 PM China Standard Time> <Notice> <Log Management> <BEA-170027> <The server has successfully established a connection with the Domain level Diagnostic Service.>
<Jan 14, 2025, 3:52:03,212 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to ADMIN.>
<Jan 14, 2025, 3:52:03,250 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000365> <Server state changed to RESUMING.>
<Jan 14, 2025, 3:52:03,287 PM China Standard Time> <Warning> <Server> <BEA-002611> <The hostname "localhost", maps to multiple IP addresses: 127.0.0.1, 0:0:0:0:0:0:0:1.>
<Jan 14, 2025, 3:52:03,288 PM China Standard Time> <Notice> <Server> <BEA-002613> <Channel "Default[2]" is now listening on 127.0.0.1:7001 for protocols iiop, t3, ldap, snmp, http.>
<Jan 14, 2025, 3:52:03,288 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000398> <Secure mode enabled for WebLogic Server "AdminServer".>
<Jan 14, 2025, 3:52:03,288 PM China Standard Time> <Notice> <Server> <BEA-002613> <Channel "Default" is now listening on 192.168.0.10:7001 for protocols iiop, t3, ldap, snmp, http.>
<Jan 14, 2025, 3:52:03,288 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000329> <Started the WebLogic Server Administration Server "AdminServer" for domain "base_domain" running in production mode.>
<Jan 14, 2025, 3:52:03,289 PM China Standard Time> <Notice> <Server> <BEA-002613> <Channel "Default[1]" is now listening on 0:0:0:0:0:0:0:1:7001 for protocols iiop, t3, ldap, snmp, http.>
<Jan 14, 2025, 3:52:03,294 PM China Standard Time> <Warning> <Security> <BEA-090983> <Secure Mode is enabled but the administration port is not enabled. SOLUTION: Enable the administration port.>
<Jan 14, 2025, 3:52:03,294 PM China Standard Time> <Warning> <Security> <BEA-091033> <No dedicated network channel configured for HTTPS traffic. SOLUTION: Oracle recommends creating a network channel for only HTTPS traffic for externally available applications. Configure your firewall so that the network channel is available externally, and that the default network channel and other customer internal channels are only accessible internally.>
<Jan 14, 2025, 3:52:03,299 PM China Standard Time> <Warning> <Security> <BEA-091003> <Secure Mode requires that users in the Administrators group do not have obvious user names. SOLUTION: Change the user name "weblogic" so it is not a commonly used administrator name.>
<Jan 14, 2025, 3:52:03,369 PM China Standard Time> <Notice> <WebLogicServer> <BEA-000360> <The server started in RUNNING mode.>
<Jan 14, 2025, 3:52:03,374 PM China Standard Time> <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      300      [::ffff:127.0.0.1]:7001      *:*    users:(("java",pid=4424,fd=730))
tcp    LISTEN 0      300      [::ffff:192.168.0.100]:7001  *:*    users:(("java",pid=4424,fd=731))
tcp    LISTEN 0      300      [:::]:7001      [:::]*  users:(("java",pid=4424,fd=732))
oracle@Dell5530:~> lsof -i:7001
COMMAND PID  USER FD  TYPE DEVICE SIZE/OFF NODE NAME
java    4424 oracle 730u IPv6 166806 0t0  TCP localhost:afs3-callback (LISTEN)
java    4424 oracle 731u IPv6 166810 0t0  TCP Dell5530:afs3-callback (LISTEN)
java    4424 oracle 732u IPv6 166811 0t0  TCP localhost:afs3-callback (LISTEN)
oracle@Dell5530:~> █
```



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

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

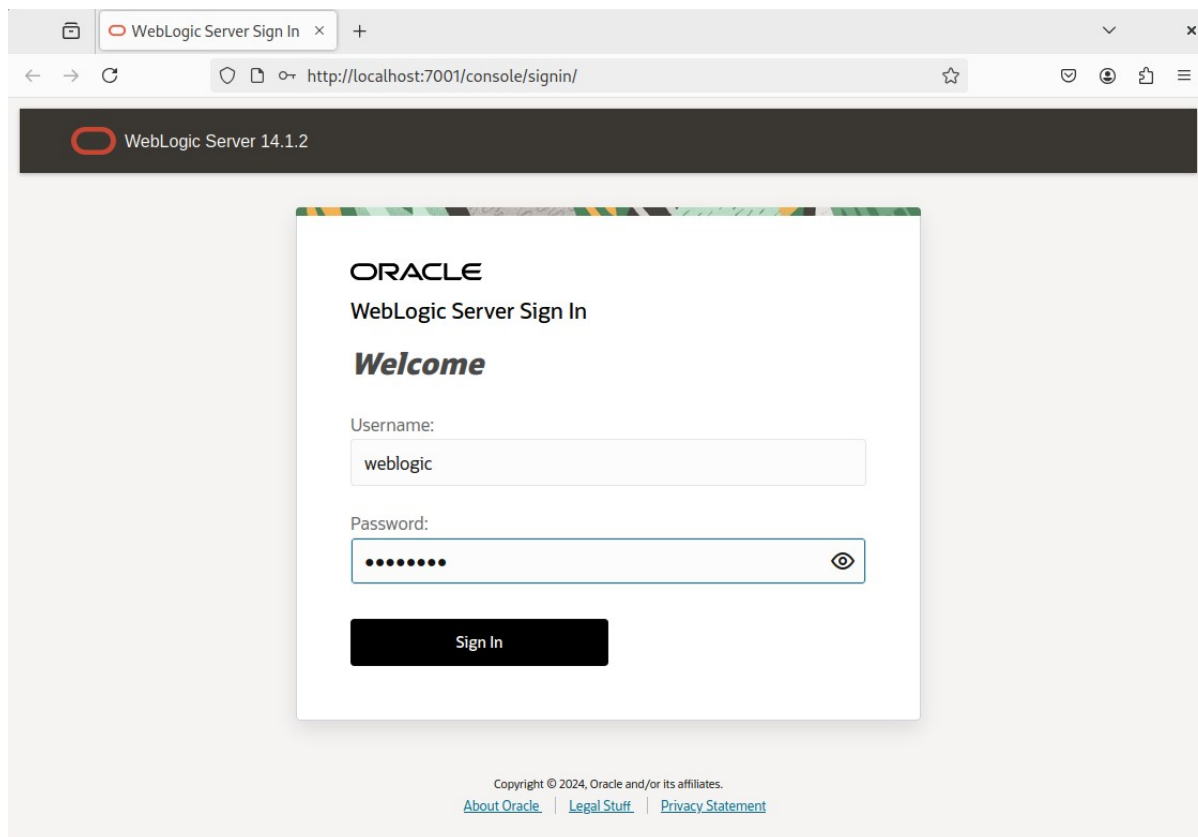


Figure 3-2-2 Viewing WebLogic Server Admin Console - Home page

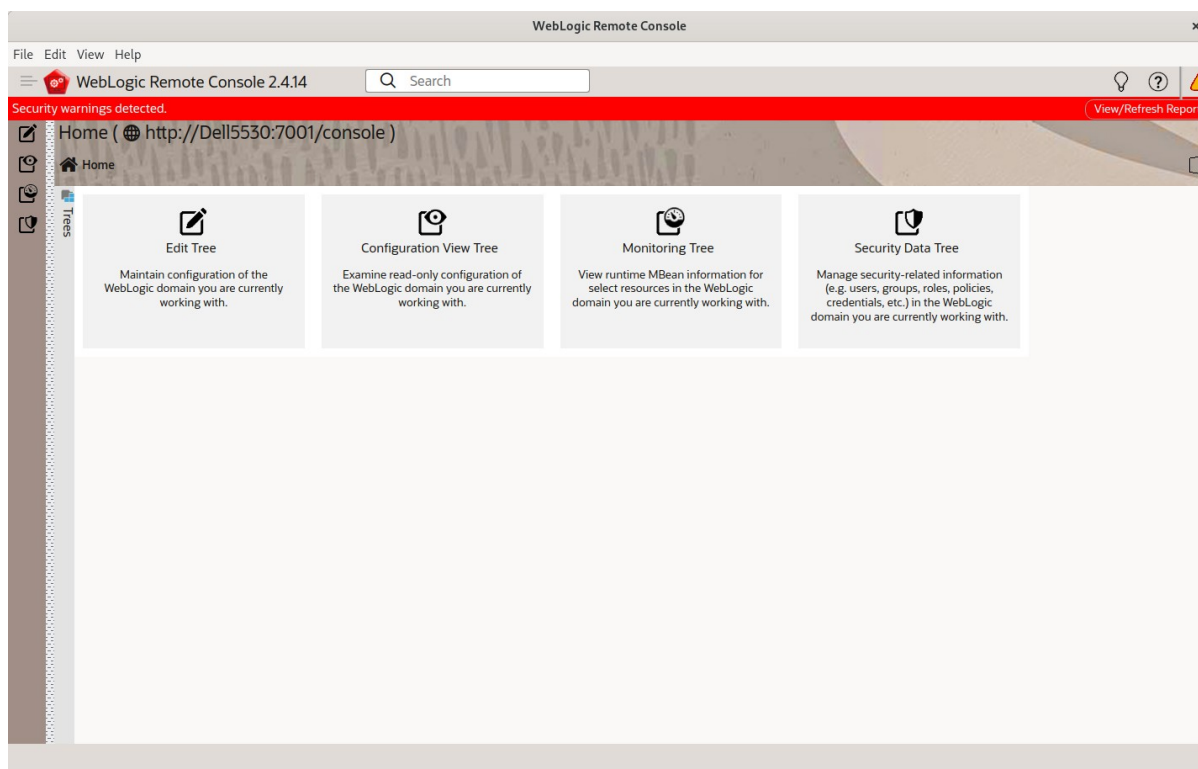
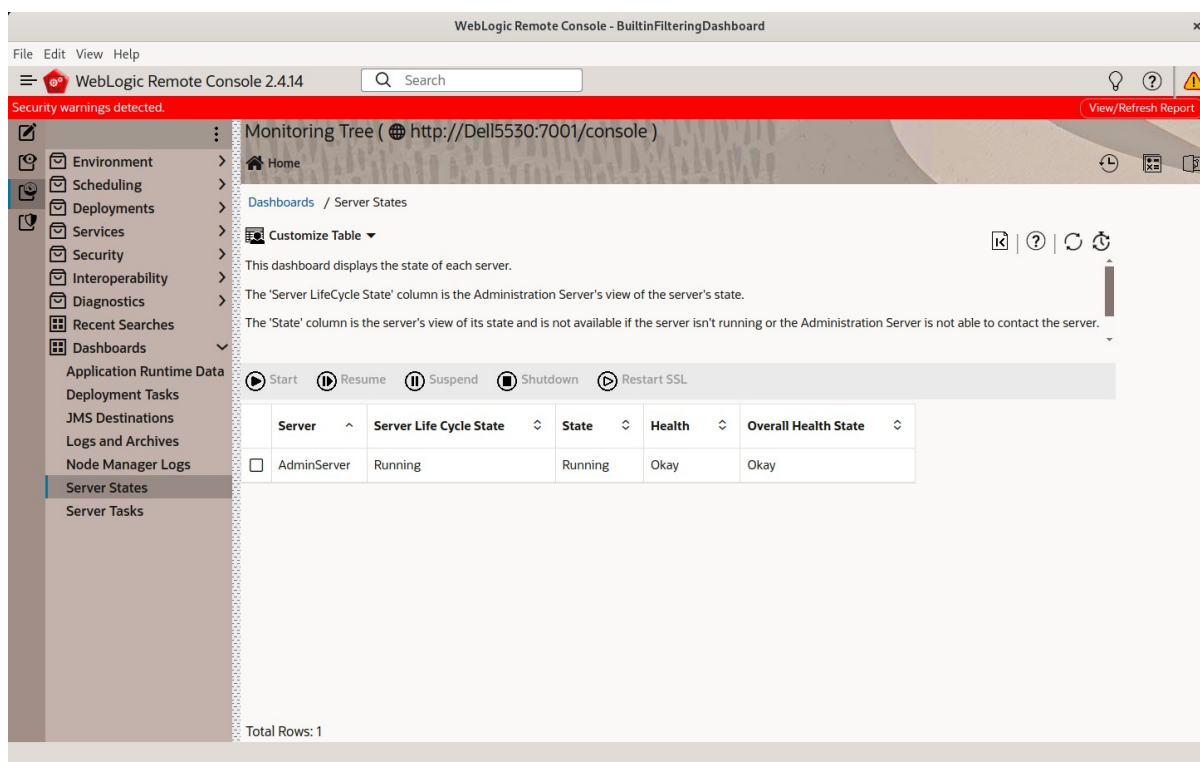
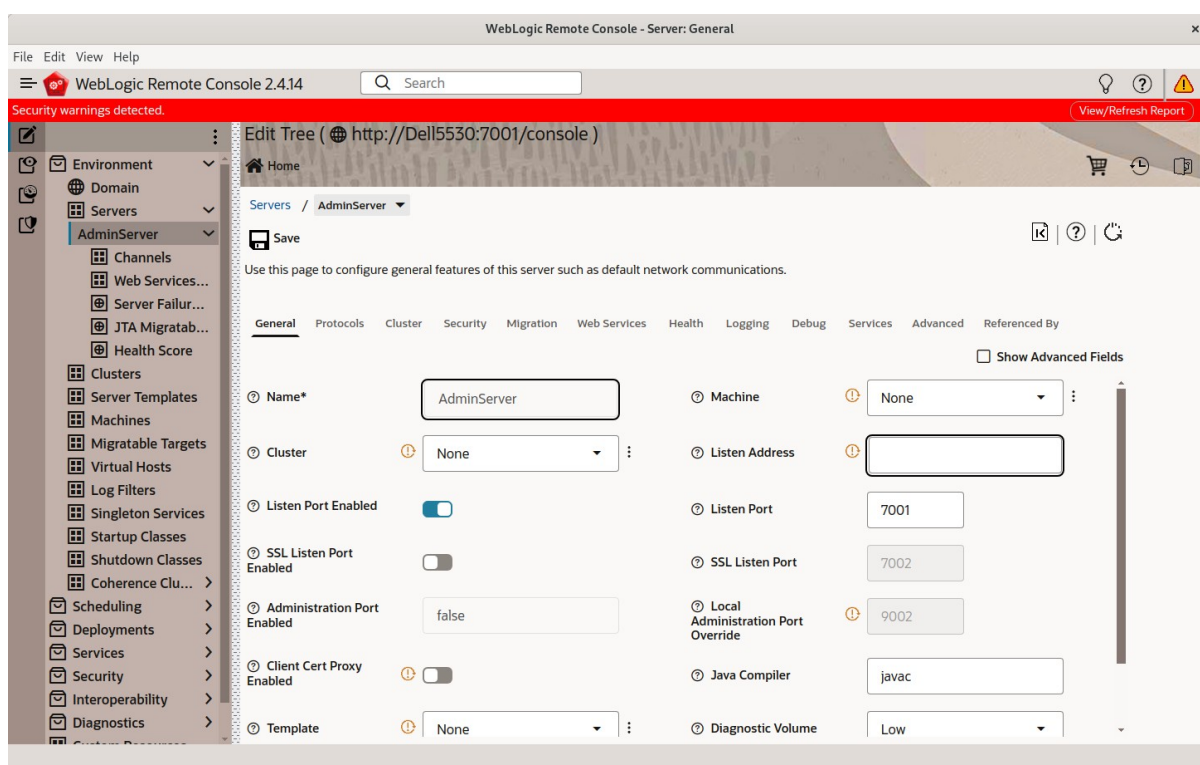


Figure 3-2-3 Viewing WebLogic Server Admin Console - Server States**Figure 3-2-4 Viewing WebLogic Server Admin Console - AdminServer Configuration**

Appendix

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!*

