



# Setting Up JBoss EAP Application Server

Cisco Prime Service Catalog is not bundled with the JBoss-EAP-7.0 software distribution. You must separately obtain the licensed version of JBoss EAP Application Server software zip and place it in the same system where you wish to install Prime Service Catalog. The Cisco Prime Service Catalog installer will install and deploy only the Service Catalog applications.

The JBoss EAP application server can be configured only in a cluster setup. For setting up JBoss EAP application server in cluster for the failover scenarios, see [Setting Up JBoss EAP Clustered Application Servers](#). The subsequent sections in this chapter describes various deployment topologies for JBoss EAP Application Servers.

The JMS service is configured in the JBoss EAP server where the Service Link component application resides.

Follow the instructions in the Preinstallation Configuration for JBoss EAP section of this chapter to prepare your machine. Then after you execute the Cisco Prime Service Catalog installer, follow the Postinstallation Configuration for JBoss EAP section of this chapter to verify your installation.

- [Preinstallation Tasks for JBoss EAP, page 4-1](#)
- [Installing Prime Service Catalog on JBoss EAP Application Server, page 4-5](#)
- [Postinstallation Tasks for JBoss EAP, page 4-24](#)

## Preinstallation Tasks for JBoss EAP

This section contains instructions for preparing your computer, prior to installing Prime Service Catalog with JBoss EAP application server.

This release of Prime Service Catalog supports JBoss EAP Application Server on the following Operating Systems, web servers, and Java Development Kit:

**Table 4-1** JBoss EAP Supported Operating System, Web Server, and Java

JBoss EAP Application Server	Operating System	Web Server	Java
JBoss-EAP-7.0	Red Hat Enterprise Linux Server 7.3 (64-bit)	Red Hat Http Server 2.4.6	Red Hat OpenJDK 8 (version 1.8.0_131 or higher 1.8.0_x)
JBoss-EAP-7.0	Windows Server 2012 R2 (64-bit)	Microsoft Internet Information Services (IIS) 8.5	Oracle JDK 8 Update 131 (or higher update)

## Preinstallation Checklist

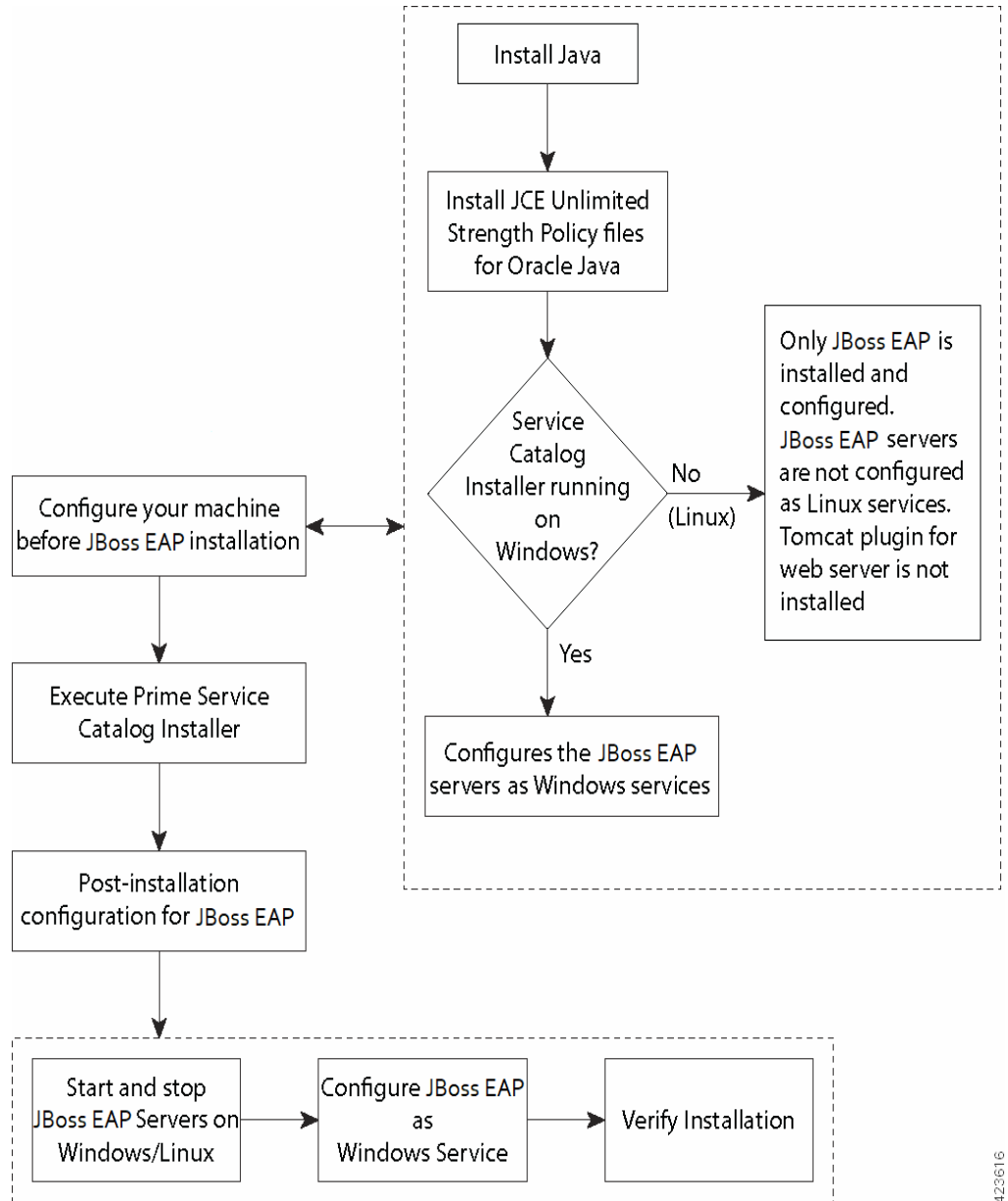
- Review the [Installation Requirements](#) to ensure that you have adequately addressed the minimum hardware and software requirements for running the system.
- Ensure that you have performed the database tasks described in the [Configuring the Service Catalog Database](#), and completed the [Database Information Worksheet](#).
- Ensure that you have performed the preinstallation tasks for your type of application server and completed the Application Server Information Worksheet in [Appendix A, “Worksheets”](#).
- The Cisco Prime Service Catalog installer requires Java 1.8. For the prerequisite details, see [“Installing Java” section on page 4-3](#).
- If you are on a Windows Operating System, stop the IIS web server.
- Extract the electronic software distribution file that you downloaded from the Cisco web site to your computer, if you have not already done so. For more information, see [Downloading Prime Service Catalog Software Image, page 4-5](#).
- Add the `%JAVA_HOME%\bin` (or `$JAVA_HOME/bin` if you are on Linux) to the beginning of the PATH environment variable on your machine, where `%JAVA_HOME%` points to the correct JDK directory.
- The Cisco Prime Service Catalog installer is a GUI program. On Linux Operating System, you will need a graphical display, such as X-window. The installer does not support console mode or CLI mode.
- During the installation, you will be asked to specify the destination directory for the software.
  - On Windows, the default destination directory is "C:\CiscoPrimeServiceCatalog".
  - On Linux, the default destination directory is "/opt/CiscoPrimeServiceCatalog". Ensure that there is at least 2 GB free disk space in the destination directory; otherwise, the installer will display the following error message:
 

```
Not enough disk space.
The installation requires 2048 MB of free disk space, but there are only 182 MB
available at C:\CiscoPrimeServiceCatalog.
Please free the required space to proceed with the installation.
```
- During installation, the installer requires an additional 2 GB of free disk space in the TMP directory, where it extracts some temporary files. The TMP directory is different for different Operating Systems and/or user profiles.
  - On Windows, the TMP directory is the `%TMP%` or `%TEMP%` environment variable for the user profile.
  - On Linux, the TMP directory is usually either `/tmp` or `/var/tmp` directory.
- Ensure that you size your application server machine based on defined parameters listed in section [Minimum Hardware Requirements for Application Server Host, page 2-5](#).
- Ensure that `JBOSS_HOME` is not set as an environment variable in the system.

## JBoss EAP Installation Flow

The following figure illustrates steps to install Prime Service Catalog on JBoss EAP Application Server.

Figure 4-1 Installation Flow for JBoss EAP Application Server



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## Installing Java

In this section, you will install JDK as a prerequisite, and prepare the environment variables on your computer.

**Note**

If you are on Windows Server, you must install Oracle JDK as a prerequisite, plus the JCE Unlimited Strength Policy jar files. If you are on Red Hat Enterprise Linux Server, you must install Red Hat OpenJDK as a prerequisite. You don't need JCE Unlimited Strength Policy jars for Red Hat OpenJDK.

## Oracle JDK

- Step 1** Download Oracle JDK 8 Update 77 (or higher Update) from the Oracle website. Ensure that you download the correct version of JDK 8. Only Update 77 or later is supported.

**Note**

The installer does not use the JAVA\_HOME path that you enter in this screen to launch its own Java process, but uses the Java executable that it finds in the PATH environment variable of the Operating System. Ensure that Java path selected is JDK during installation and not the JRE.

- Step 2** Copy the unlimited strength JCE policy files to the %JAVA\_HOME%\jre\lib\security directory, overwriting the existing files. The unlimited strength policy files are "local\_policy.jar" and "US\_export\_policy.jar", which can be downloaded from the following link:

<http://www.oracle.com/technetwork/java/javase/downloads/jce8-download-2133166.html>

- Step 3** Add the <path\_to\_oracle\_jdk\_1.8\_java\_executable> to the PATH environment variable. You may have multiple Java installation on your machine. Make sure that the path to the Java executable for Oracle JDK 1.8.0\_x is first in the PATH environment variable. This is what the Prime Service Catalog installer will use when it is first launched.

**Note**

By default, after successful installation of JDK 1.8, the value *C:\ProgramData\Oracle\Java\javapath* is updated in the path variable (environment variables). You must remove this manually and add the appropriate installed java folder.

For example:

```
set JAVA_HOME=C:\jdk1.8.0_77
set PATH=%JAVA_HOME%\bin;%PATH%
```

## Red Hat OpenJDK

- Step 1** Install OpenJDK on your Red Hat Enterprise Linux Server by executing the "yum install java-1.8.0-openjdk-devel" command.

**Note**

You must have Red Hat license and subscription in order to do "yum install".

- Step 2** Add the <path\_to\_openjdk\_1.8\_java\_executable> to the PATH environment variable. You may have multiple Java installation on your machine. Just make sure that the path to the Java executable for OpenJDK 1.8.0\_x is first in the PATH environment variable. This is what the Prime Service Catalog installer will use when it is first launched.

For example:

- export JAVA\_HOME=/usr/lib/jvm/java-1.8.0-openjdk-1.8.0.85-2.6.1.2.el7\_1.x86\_64
  - export PATH=\$JAVA\_HOME/bin:\$PATH
- 

## Preparing IIS Web Server

Before you run the Service Catalog installer, ensure that you prepare the IIS web server. However, IIS web server must be configured manually after installing Prime Service Catalog. For more information, see section [Configuring Plugin for IIS Web Server, page B-8](#).

## Downloading Prime Service Catalog Software Image

In this section, you will download the electronic software distribution for Prime Service Catalog.

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- Step 1** Access the Cisco product download web site and authenticate with the user name and password provided to you.
- Step 2** Search by product name, or navigate within the product selector to locate the product you want to download. (Navigation: **Downloads Home > Products > Cloud and Systems Management > Service Catalog > Prime Service Catalog**).
- Step 3** A list of different releases is displayed. Locate Prime Service Catalog 12.1.1 and click it.
- Step 4** Click the Prime Service Catalog Software link. Then click the link for the appropriate operating system.
- Step 5** Download file CPSC\_12.1.1\_win.zip for the Windows Operating System, or file CPSC\_12.1.1\_linux.tar.gz for the Linux Operating System.
- Step 6** Extract the software image to a directory on your application server machine.

**Note**

The CPSC\_12.1.1\_linux.tar.gz file must be untarred using a GNU-compatible tar utility. Older tar utilities may have problems unzipping tar files that contain filenames longer than 100 characters.

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## Installing Prime Service Catalog on JBoss EAP Application Server

After your JBoss EAP environment is prepared, proceed to configure JBoss EAP application server in clustered mode.

## Setting Up JBoss EAP Clustered Application Servers

The Prime Service Catalog JBoss EAP cluster configuration comprises of Domain Controller, Service Link with JMS service, and Service Catalog. You can add up to six Service Catalog nodes that host the RequestCenter.war file.

The installer wizard provides the following options during installation:

- Domain Controller
- Service Link
- Service Catalog
- All Components

Prime Service Catalog supports two types of cluster topologies for JBoss EAP application server.

- **All Components Topology:**

Choose **All Components** option in the installer to set up this topology. This requires minimum of two virtual machines: In this configuration, first virtual machine includes a Domain Controller, Host Controller 1 with Service Catalog, and Host Controller 1 Service Link. Second virtual machine includes only a Host Controller 2 with Service Catalog. You can add up to five nodes (Host 2, Host 3, Host 4, Host 5, and Host 6). For more information on setting this type of cluster, see [Performing JBoss EAP Cluster Installation for All Components Topology](#).

- **Separate Component Topology:**

Choose individual components from the installer one by one to set up this topology. This requires a minimum of four virtual machines: In this configuration, first virtual machine is for the Domain Controller, second virtual machines for the Service Link Component with JMS service, third virtual machine is for the host controller for the Host 1, and fourth virtual machine is for the host controller for the Host 2. For more information on setting this type of cluster, see [Performing JBoss EAP Cluster Installation for Separate Component Topology](#).


**Note**


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After you initiate the installation of a particular topology type, you cannot modify the configurations at a later stage. You can only add new nodes for the host controllers.

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You can start with two nodes, and add more nodes (i.e. more hosts) to the cluster, if desired. The Prime Service Catalog Installer will support only up to 6th node for the cluster. To add a 7th node or more, please contact Cisco TAC for manual instructions.

## Performing JBoss EAP Cluster Installation for All Components Topology


**Note**

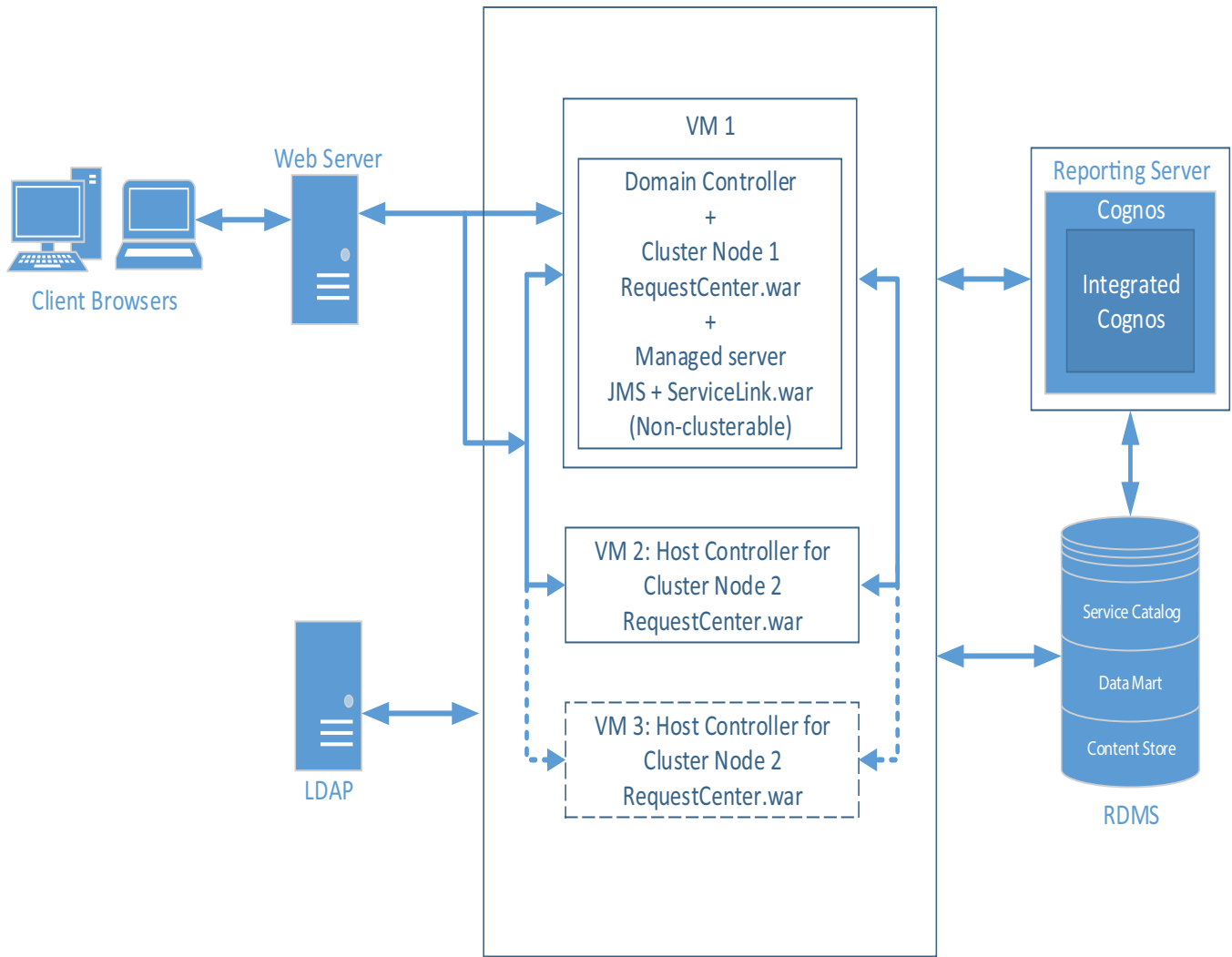

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This is an overview procedure for setting up All Components topology and the detailed setup instructions are described in the subsequent sections. To complete the setup, you must perform all the steps described in this overview procedure.

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In the All Components topology, Domain Controller, Host Controller for Host 1, Service Link application with JMS service are installed on the first virtual machine and Host Controller for Host 2 is installed on the second virtual machine. The All Components topology diagram is shown below.

Figure 4-2 All Components Topology



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## Before You Begin

Verify all the other preinstallation tasks are completed before proceeding with the installation. The preinstallation tasks are summarized in [Preinstallation Checklist, page 4-2](#).

## Procedure

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- Step 1** Prepare the database server.
- Make sure database server meets all the requirements. For more information, see [Configuring the Service Catalog Database](#), and completed the [Database Information Worksheet](#).
- Step 2** Prepare the virtual machines.
- Make sure both the virtual machines meet all the hardware and software requirements. For more information, see the [Installation Requirements](#). Plan the requirements such that Host 1 and Host 2 can include the following components:

- Host 1: Domain Controller, Service Catalog, Service Link and JMS
- Host 2: Service Catalog

**Step 3** Set up Host 1. For more information on how to set up the Host 1, see the instructions in [Setting Up the Host 1 in All Components Topology](#) procedure.

**Step 4** Set up Host 2. For more information on how to set up the Host 2, see the instructions in [Setting Up the Host 2 in All Components Topology](#) procedure.

**Step 5** Install the Web Server.

Install the Apache web server, and configure it to point to the Cluster JBoss EAP server group where RequestCenter.war was deployed. You must have a web server that acts as a load balancer on top of the cluster. All client connection to Service Catalog must go through the web server. Thus, the URL for Service Catalog will be

*[http://<web\\_server\\_host>:<web\\_server\\_port>/RequestCenter](http://<web_server_host>:<web_server_port>/RequestCenter)*

You can install the web server on its own VM, or if you'd like, you can install it on any of the existing VM because it won't interfere with the configuration of the other components that you have already installed in the previous steps.




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**Note** Prime Service Catalog Installer does not install or configure the web server. You have to install the web server on your own. For configuring the Apache web server as a common web server for Service Catalog and Service Link, see [Setting Up Apache Web Server on JBoss EAP](#).

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If you selected the "Configure Windows Service" option during the installation, stop all the JBoss EAP servers on VM1, VM2 and start them up again as windows services.

To stop the JBoss EAP servers on VM1 or VM2, open the Command Prompt window, where startServiceCatalogCluster.cmd is running, and press **Control-C** to stop the process and start the windows service called - **Cisco Prime Service Catalog Cluster**.

**Step 6** (Optional) Add another node to the cluster.

If you want to add a third node to the cluster, repeat [Step 4](#) for setting up Host 3. After setting up Host 3, modify the Plugin settings for the web server that you set up in [Step 5](#), so that it is aware of the third cluster node.




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**Note** You can execute the Prime Service Catalog Installer to add up to a 4th node to the cluster. If you want to add a 7th node or more, you need to contact Cisco TAC for manual instructions.

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## Setting Up the Host 1 in All Components Topology

**Step 1** On the machine designated for Host 1, launch the web interface installation wizard:

- On Windows Operating System, log in as a user with administrator rights and double-click setup.cmd.
- On Linux Operating System, log in as the root user and execute ./setup.sh from a graphical interface, such as X-window.

**Step 2** When the Introduction panel appears, click **Next** to begin.



- Step 3** In the **Choose Install Folder** panel, enter a directory path (or click the Choose button to select a directory) as the destination folder for Service Catalog, and click **Next**.
- On Windows, the default value for destination folder is **C:\CiscoPrimeServiceCatalog**.
  - On Linux, the default value is **/opt/CiscoPrimeServiceCatalog**. The value for destination directory must not contain any space character.
- Throughout this document, this destination folder is referred to as *<ServiceCatalog\_Install\_Dir>*. This directory is also where the Service Catalog installer installs and the JBoss EAP Application Server software is configured.
- Step 4** Browse and choose the JBoss EAP zip file for this installation.
- Step 5** On the Gathering Setup Details panel, select **All components** radio button and click **Next**. This option will install the Domain Controller, Service Catalog, Service Link and JMS on the Host 1.
- Step 6** On the Database Selection panel, select a database platform (Microsoft SQL Server or Oracle) and click **Next**. The subsequent panels may look different depending on which database platform you select at this point. Refer to the [Database Information Worksheet](#) that you filled out in Appendix A to determine your database platform.
- Step 7** On the Service Catalog Database Creation panel:
- If you have not created the database in advance, select **Yes**.  
By selecting **Yes**, you are telling the installer to create the database automatically for you. In the next panel, you will be prompted for the information that the installer will use to create the database user and database schema for Service Catalog. Refer to the [Database Information Worksheet](#) for the description of each field on this panel.
  - If you have already created your database or if you want to upgrade to an existing database, then select **No**.  
In the next panel, you will be prompted for the information of the existing database user and database schema. Refer to the [Database Information Worksheet](#) for the description of each field on this panel.
- Step 8** On the Service Catalog Database panel, enter the information for the Service Catalog database.
- If you selected **Yes** in [Step 7](#), you will see a **Create Database** button on this panel, and the **Next** button is grayed out.  
Notice that you need to enter the password for either the “sys” user (for Oracle) or the “sa” user (for SQL Server) which the installer will use to connect to your database server. Once you enter the information on this panel, click the **Create Database**. If you get the message “*Service Catalog database created successfully*,” click **OK** to close the message. The **Next** button is now enabled.
  - If you selected **No** in [Step 7](#), you just need to fill out the information for the existing Service Catalog database, and select the **Execute database scripts** check box.

**Note**

The “Create Database” feature creates a very basic Service Catalog database that meets the minimum requirements for the Service Catalog application to operate. This feature is recommended for a Demo or Test system. For a Production system, contact your DBA in advance, to create the Service Catalog database which meets all of the product requirements as described in the Configuring Databases section, as well as any performance, reliability, and security requirements that adhere to your corporate policy.

**Step 9** Click **Next** to continue. The installer connects to the database to validate the required settings for the database. If the installer created the database for you, then it would meet all of the required settings, and the validation test would pass. If you provided the information for an existing database, then the installer may report a validation error if any database setting is missing. See the [Software Requirements](#) for the database requirements. If a database validation error occurs, you can do the following:

- Close the error dialog and click **Cancel** to exit the installation wizard.
- Fix the missing database setting on a separate database connection session. Then come back to this screen, close the error dialog, and click **Next** again. At this point, the installer will repeat the validation test, and if the test passes, it will let you move to the next panel.

**Step 10** In the Master Key Password panel, enter the master key password, if you selected **Yes** in step 8. Otherwise, enter the path to an existing KEK file that contains the Master Key Password for the existing database that you want to upgrade.

As part of the security requirement, a master key password must be provided that would be used to encrypt all the passwords that are available in the application. The password provided must match the password rules, as described on the panel.

The master key password is saved in two files, `kek_new.txt` and `kek_old.txt`, under the `<ServiceCatalog_Install_Dir>/dist` directory. The `kek_new.txt` and `kek_old.txt` files must be backed up and stored in a safe location. The application server cannot login to the ServiceCatalog database without the master key password files. If you lose these master key password files, please contact Cisco TAC for help.

**Step 11** On Choose Java Virtual Machine panel, select the correct Java version for your platform. Click the **Search Another Location** button to navigate to the correct location of Java on your computer and click **Next**.




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**Note** You must specify the location of Java for JBoss EAP because the installer will install the JBoss EAP Application Server software on your computer, and it will set the `JAVA_HOME` variable in the JBoss EAP configuration to use this particular Java.

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**Step 12** On the Service Catalog Configuration panel, enter the information for the JBoss EAP server (IP address of this machine, i.e, Host 1) where the Service Catalog application (i.e. RequestCenter.war) will be deployed and Service Link URL, that is, IP address of Host 1.

Refer to the [Service Catalog Configuration Table for JBoss EAP](#) for the description of each field on this panel. Click **Next**.

**Step 13** On the Service Link Configuration panel, enter the information for the JBoss EAP server (IP address of this machine, i.e, Host 1) where Service Link application (i.e. ISEE.war) will be deployed. Refer to the [Service Link Configuration Table for JBoss EAP](#) for the description of each field on this panel. Click **Next**.

**Step 14** On the Messaging Configuration panel, enter the information for the JMS Queue server and click **Next**. Refer to the [Messaging Configuration Table](#) for the description of each field on this panel.

Remember the Queue password value that you would fill in the Messaging Configuration panel, as you need to enter same password when you install the 2nd node on VM 2 later.

**Step 15** On the Service Catalog Administration Configuration panel, enter the information for the SMTP server, and the password for the Site Administrator. Refer to the [Service Catalog Administration Configuration Table](#) for the description of each field on this panel. Click **Next**.

**Step 16** Click **Install** in the Preinstallation Summary panel to begin installation.

The installer will display the progress bar. It may take up to 30 minutes for the installer to complete. Do not interrupt or abort the installer during this process.

**Step 17** If the installation process completes successfully, the **Install Complete** panel appears. Click **Done** to exit the installation wizard.

**Step 18** Start the Domain Controller and all managed servers on the Host 1.

**Note**

- For the first time after the installation, each JBoss EAP server must be started as an application by executing the start script provided by Cisco, as also described in this step. DO NOT use the windows service called Cisco Prime Service Catalog Cluster to start the server.
- This start script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service.

To start the cluster services for the first time on any of the nodes, do the following:

a. Access the `<ServiceCatalog_Install_Dir>\bin` directory.

```
cd <ServiceCatalog_Install_Dir>\bin
```

b. Execute the following command to start the Domain Controller, Service Catalog, and Service Link:

[For Windows]:

```
startServiceCatalogCluster.cmd
```

[For Linux]

```
startServiceCatalogCluster.sh
```

This command will automatically start a total of 4 JVM processes on the Host 1:

- The Domain Controller
- The Process Controller
- A managed server for Service Catalog. This managed server belongs to a cluster server group called “main-server-group”. (Note that for this configuration, there is no need to have a separate Host Controller server since the Domain Controller will also act as a Host Controller for the managed server.)
- A managed server for Service Link. This managed server belongs to another server group called “other-server-group”. JMS is configured on this server.

**Step 19** Deploy RequestCenter.war and ISEE.war on Host 1. To start the cluster services for the first time on VM1, do the following:

a. Access the `<ServiceCatalog_Install_Dir>\bin` directory.

b. Execute the following command to the RequestCenter.war:

[For Windows]:

```
deployServiceCatalogCluster.cmd ALL
```

[For Linux]

```
deployServiceCatalogCluster.sh ALL
```

This command will push the RequestCenter.war to the cluster server group.

At this point, RequestCenter.war is deployed into a cluster server group called “main-server-group”. This cluster server group already contains one managed server. Thus, RequestCenter.war will be deployed immediately to the managed server for Service Catalog.

ISEE.war is deployed into a server group called “other-server-group”. This server group already contains one managed server. Thus, ISEE.war will be deployed immediately to the managed server for Service Link.

---

You can start and stop individual servers in a cluster. For information on the other start and stop scripts available with the installer for the JBoss EAP cluster environment, see [JBoss EAP Scripts](#). To stop the domain controller and all the managed servers on Host 1, execute the `shutdownAllOnHC1` script to stop both the domain controller, process controller, and the managed server for Service Catalog and Service Link.

### Next Step

Proceed to setting up the second node in the cluster. See [Setting Up the Host 2 in All Components Topology](#).

## Setting Up the Host 2 in All Components Topology

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- Step 1** On the machine designated for Host 2, launch the web interface installation wizard:
- On Windows Operating System, log in as a user with administrator rights and double-click `setup.cmd`.
  - On Linux Operating System, log in as the root user and execute `./setup.sh` from a graphical interface, such as X-window.

**Step 2** When the Introduction panel appears, click **Next** to begin.

- Step 3** In the **Choose Install Folder** panel, enter a directory path (or click the Choose button to select a directory) as the destination folder for Service Catalog, and click **Next**.
- On Windows, the default value for destination folder is `C:\CiscoPrimeServiceCatalog`.
  - On Linux, the default value is `/opt/CiscoPrimeServiceCatalog`. The value for destination directory must not contain any space character.

Throughout this document, this destination folder is referred to as `<ServiceCatalog_Install_Dir>`.

For JBoss EAP, this directory is also where the Service Catalog installer installs and configures the JBoss EAP Application Server software.

- Step 4** Browse and choose the JBoss EAP licensed software zip file and click **Next**.
- Step 5** On the Gathering Setup Data panel, select **Service Catalog** radio button and click **Next**.
- Step 6** On the Host Controller Selection panel, select **Host2** radio button and click **Next**.




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**Note** Host 1 is the first node where Domain Controller, Service Link were installed. Second machine is the Host 2 in this cluster topology, so it is important that you select Host 2 here.

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- Step 7** Enter the Domain Controller IP Address to establish connection to the first machine where domain controller is installed.

**Step 8** On Choose Java Virtual Machine panel, select the correct Java JDK version for your platform. Click the **Search Another Location** button to navigate to the correct location of Java on your computer and click **Next**.



**Note** You must specify the location of Java for JBoss EAP because the installer will install the JBoss EAP Application Server software on your computer, and it will set the JAVA\_HOME variable in the JBoss EAP configuration to use this particular Java.

**Step 9** On the Service Catalog Configuration panel, enter the information for the JBoss EAP server (IP address of this machine, i.e, Host 2) where the Service Catalog application (i.e. RequestCenter.war) will be deployed and enter the Service Link URL, that is, IP Address of Host 1. Refer to the [Service Catalog Configuration Table for JBoss EAP](#) for the description of each field on this panel. Click **Next**.

**Step 10** On the Messaging Configuration panel, enter the information for the JMS Queue server (IP address of VM1) and click **Next**. Refer to the [Messaging Configuration Table](#) for the description of each field on this panel.

In the Queue password field, enter the same password that you entered for "Queue password" during the installation of the Domain Controller on Host 1.

**Step 11** Click **Install** in the Preinstallation Summary panel to begin installation.

The installer will display the progress bar. It may take up to 30 minutes for the installer to complete. Do not interrupt or abort the installer during this process.

**Step 12** If the installation process completes successfully, the **Install Complete** panel appears. Click **Done** to exit the installation wizard.

**Step 13** Start the Host Controller for Host 2.



**Note**

- For the first time after the installation, each JBoss EAP server must be started as an application by executing the start script provided by Cisco, as also described in this step. DO NOT use the windows service called Cisco Prime Service Catalog to start the server.
- This start script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service.

To start the cluster services for the first time on any of the nodes, do the following:

a. Access the `<ServiceCatalog_Install_Dir>\bin` directory.

```
cd <ServiceCatalog_Install_Dir>\bin
```

b. Execute the following command to start the Domain Controller, Service Catalog, and Service Link:

[For Windows]:

```
startServiceCatalogCluster.cmd
```

[For Linux]

```
startServiceCatalogCluster.sh
```

The Host Controller will in turn, automatically start the managed server that belongs to the server group “main-server-group”. Since RequestCenter.war was already deployed in the “main-server-group” on the Domain Controller, it will also be automatically deployed onto this managed server.

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You can start and stop individual servers in a cluster. For information on the other start and stop scripts available with the installer for the JBoss EAP cluster environment, see [JBoss EAP Scripts](#). To stop the host controller for VM2, execute the `forceStopAllOnHC` script to stop both the process controller and the managed server for Service Catalog.

**Next Step**

Set up web server. See [Step 5 of Performing JBoss EAP Cluster Installation for All Components Topology](#).

## Performing JBoss EAP Cluster Installation for Separate Component Topology

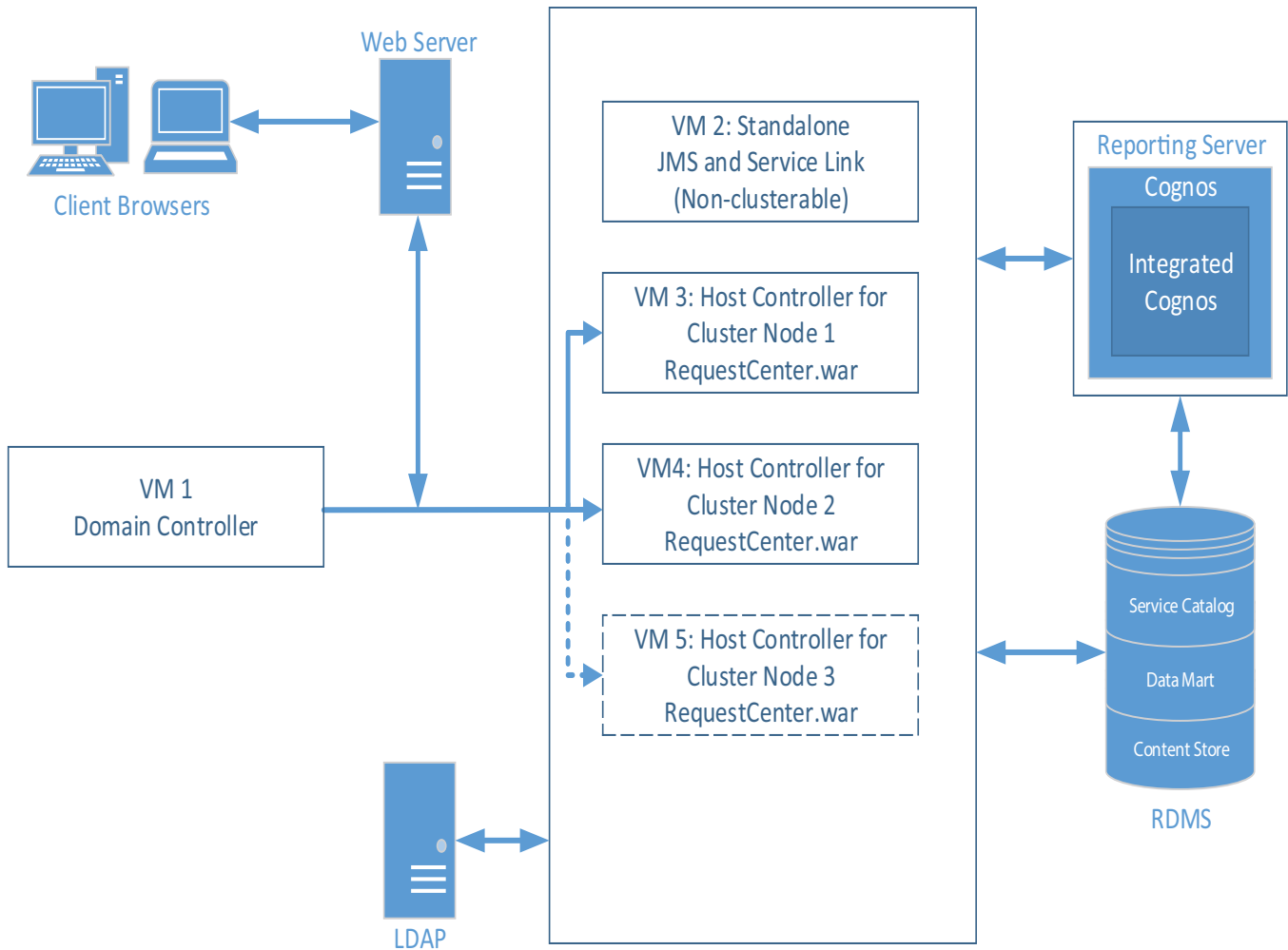
**Note**

This is an overview procedure for setting up Separate Component topology and the detailed setup instructions are described in the subsequent sections. To complete the setup, you must perform all the steps described in this overview procedure.

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In the Separate Component topology, Domain Controller, Host Controller for Host 1 and Host 2, Service Link application with JMS service are installed on separate virtual machines. The Separate Component topology diagram is shown below.

Figure 4-3 Separate Component Topology



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## Before You Begin

Verify all the other preinstallation tasks are completed before proceeding with the installation. The preinstallation tasks are summarized in [Preinstallation Checklist](#), page 4-2.

## Procedure

- 
- Step 1** Prepare the database server.
- Make sure database server meets all the requirements. For more information, see [Configuring the Service Catalog Database](#), and completed the [Database Information Worksheet](#).
- Step 2** Prepare the virtual machines.
- Make sure all the virtual machines meet all the hardware and software requirements. For more information, see the [Installation Requirements](#). Plan the requirements such that following can be installed on each of the VMs:
- VM1:Domain Controller

- VM2: Service Link and JMS
- VM3: Host Controller 1 for Service Catalog
- VM4: Host Controller 2 for Service Catalog

- Step 3** Set up VM 1 as Domain Controller. For more information on how to set up domain controller, see the instructions in [Setting Up the Domain Controller Node \(VM 1\) in a Separate Component Topology](#).
- Step 4** Set up VM 2 for Service link and JMS. For more information on how to set up Service Link and JMS node, see the instructions in [Setting Up the Service Link and JMS Node \(VM 2\) in a Separate Component Topology](#).
- Step 5** Set up VM3 as Host Controller 1 for Service Catalog. For more information on how to set up Host Controller 1 for cluster nodes, see the instructions in [Setting Up Host Controller and Service Catalog For Cluster Nodes in a Separate Component Topology](#).
- Step 6** Set up VM4 as Host Controller 2 for Service Catalog. For more information on how to set up Host Controller 2 for cluster nodes, see the instructions in [Setting Up Host Controller and Service Catalog For Cluster Nodes in a Separate Component Topology](#).
- Step 7** (Optional) Set up VM5 as Host Controller 2 for Service Catalog. For more information on how to set up Host Controller 2 for cluster nodes, see the instructions in [Adding Subsequent Host Nodes Manually in JBoss Cluster](#).
- Step 8** Install the Web Server.

Install the Apache web server, and configure it to point to the Cluster JBoss EAP server group where RequestCenter.war was deployed. You must have a web server that acts as a load balancer on top of the cluster. All client connection to Service Catalog must go through the web server. Thus, the URL for Service Catalog will be

[http://<web\\_server\\_host>:<web\\_server\\_port>/RequestCenter](http://<web_server_host>:<web_server_port>/RequestCenter)

You can install the web server on its own VM, or if you'd like, you can install it on any of the existing VM because it won't interfere with the configuration of the other components that you have already installed in the previous steps.




---

**Note** Prime Service Catalog Installer does not install or configure the web server. You have to install the web server on your own. For configuring the Apache web server as a common web server for Service Catalog and Service Link, see [Setting Up Apache Web Server on JBoss EAP](#).

---

If you selected the "Configure Windows Service" option during the installation, stop all the JBoss EAP servers on VM1, VM3, VM4 and start them up again as windows services.

To stop the JBoss EAP servers on these JBoss EAP servers, open the Command Prompt window, where startServiceCatalogCluster.cmd is running, and press **Control-C** to stop the process and start the windows service called - **Cisco Prime Service Catalog**

- Step 9** (Optional) Add another node to the cluster.

If you want to add a third node to the cluster, repeat [Step 5](#) for setting up Node 3. After setting up Node 3, modify the Plugin settings for the web server that you set up in [Step 8](#), so that it is aware of the third cluster node.




---

**Note** You can execute the Prime Service Catalog Installer to add up to a 6th node to the cluster. If you want to add a 7th node or more, see section [Adding Subsequent Host Nodes Manually in JBoss Cluster](#).

---



**Next Step**

Proceed to setting up the domain controller node on VM1. See [Setting Up the Domain Controller Node \(VM 1\) in a Separate Component Topology](#).

**Setting Up the Domain Controller Node (VM 1) in a Separate Component Topology**

- 
- Step 1** On the machine designated for installing Domain Controller (in this case VM 1), launch the web interface installation wizard:
- On Windows Operating System, log in as a user with administrator rights and double-click `setup.cmd`.
  - On Linux Operating System, log in as the root user and execute `./setup.sh` from a graphical interface, such as X-window.
- Step 2** When the Introduction panel appears, click **Next** to begin.
- Step 3** In the **Choose Install Folder** panel, enter a directory path (or click the Choose button to select a directory) as the destination folder for Service Catalog, and click **Next**.
- On Windows, the default value for destination folder is `C:\CiscoPrimeServiceCatalog`.
  - On Linux, the default value is `/opt/CiscoPrimeServiceCatalog`. The value for destination directory must not contain any space character.

Throughout this document, this destination folder is referred to as `<ServiceCatalog_Install_Dir>`.

For JBoss EAP, this directory is also where the Service Catalog installer installs and configures the JBoss EAP Application Server software.

- Step 4** Browse and select the JBoss EAP zip. and click **Next**.
- Step 5** On the Node Type Selection panel, select the **Domain Controller Node** radio button and click **Next**. This option will install the Domain Controller on the VM 1.
- Step 6** On the Database Selection panel, select a database platform (Microsoft SQL Server or Oracle) and click **Next**. The subsequent panels may look different depending on which database platform you select at this point. Refer to the [Database Information Worksheet](#) that you filled out in Appendix A to determine your database platform.
- Step 7** On the Service Catalog Database Creation panel:
- If you have not created the database in advance, select **Yes**.  
By selecting **Yes**, you are telling the installer to create the database automatically for you. In the next panel, you will be prompted for the information that the installer will use to create the database user and database schema for Service Catalog. Refer to the [Database Information Worksheet](#) for the description of each field on this panel.
  - If you have already created your database or if you want to upgrade to an existing database, then select **No**.  
In the next panel, you will be prompted for the information of the existing database user and database schema. Refer to the [Database Information Worksheet](#) for the description of each field on this panel.
- Step 8** On the Service Catalog Database panel, enter the information for the Service Catalog database.
- If you selected **Yes** in [Step 7](#), you will see a **Create Database** button on this panel, and the **Next** button is grayed out.

Notice that you need to enter the password for either the “sys” user (for Oracle) or the “sa” user (for SQL Server) which the installer will use to connect to your database server. Once you enter the information on this panel, click the **Create Database**. If you get the message “*Service Catalog database created successfully*,” click **OK** to close the message. The **Next** button is now enabled.

- If you selected **No** in [Step 7](#), you just need to fill out the information for the existing Service Catalog database, and select the **Execute database scripts** check box.




---

**Note** The “Create Database” feature creates a very basic Service Catalog database that meets the minimum requirements for the Service Catalog application to operate. This feature is recommended for a Demo or Test system. For a Production system, contact your DBA in advance, to create the Service Catalog database which meets all of the product requirements as described in the [Configuring Databases](#) section, as well as any performance, reliability, and security requirements that adhere to your corporate policy.

---

**Step 9** Click **Next** to continue. The installer connects to the database to validate the required settings for the database. If the installer created the database for you, then it would meet all of the required settings, and the validation test would pass. If you provided the information for an existing database, then the installer may report a validation error if any database setting is missing. See the [Software Requirements](#) for the database requirements. If a database validation error occurs, you can do the following:

- Close the error dialog and click **Cancel** to exit the installation wizard.
- Fix the missing database setting on a separate database connection session. Then come back to this screen, close the error dialog, and click **Next** again. At this point, the installer will repeat the validation test, and if the test passes, it will let you move to the next panel.

**Step 10** In the Master Key Password panel, enter the master key password, if you selected **Yes** in step 8. Otherwise, enter the path to an existing KEK file that contains the Master Key Password for the existing database that you want to upgrade.

As part of the security requirement, a master key password must be provided that would be used to encrypt all the passwords that are available in the application. The password provided must match the password rules, as described on the panel.

The master key password is saved in two files, `kek_new.txt` and `kek_old.txt`, under the `<ServiceCatalog_Install_Dir>/dist` directory. The `kek_new.txt` and `kek_old.txt` files must be backed up and stored in a safe location. The application server cannot login to the ServiceCatalog database without the master key password files. If you lose these master key password files, please contact Cisco TAC for help.

**Step 11** On Choose Java Virtual Machine panel, select the correct Java version for your platform. Click the **Search Another Location** button to navigate to the correct location of Java on your computer and click **Next**.




---

**Note** You must specify the location of Java for JBoss EAP because the installer will install the JBoss EAP Application Server software on your computer, and it will set the `JAVA_HOME` variable in the JBoss EAP configuration to use this particular Java.

---

**Step 12** On the Domain Controller Configuration panel, enter the information for the JBoss EAP server (IP address of this machine, i.e, VM 1) and Service Link URL (IP Address of VM2 where SL is planned to install). Refer to the [Service Catalog Configuration Table for JBoss EAP](#) for the description of each field on this panel. Click **Next**.

**Step 13** On the Messaging Configuration panel, enter the information for the JMS Queue server (IP address of VM 2, where you will be installing Service Link next), and click **Next**. Refer to the [Messaging Configuration Table](#) for the description of each field on this panel.

Remember the Queue password value that you would fill in the Messaging Configuration panel, as you need to enter same password when you install the Service Link later on VM 2.

**Step 14** On the Service Catalog Administration Configuration panel, enter the information for the SMTP server, and the password for the Site Administrator. Refer to the [Service Catalog Administration Configuration Table](#) for the description of each field on this panel. Click **Next**.

**Step 15** Click **Install** in the Preinstallation Summary panel to begin installation.

The installer will display the progress bar. It may take up to 30 minutes for the installer to complete. Do not interrupt or abort the installer during this process.

**Step 16** If the installation process completes successfully, the **Install Complete** panel appears. Click **Done** to exit the installation wizard.

**Step 17** Start the Domain Controller and all managed servers on the Host 1.



#### Note

- For the first time after the installation, each JBoss EAP server must be started as an application by executing the start script provided by Cisco, as also described in this step. DO NOT use the windows service called Cisco Prime Service Catalog to start the server.
- This start script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service.

To start the start the domain controller on Host 1, do the following:

- a. Access the `<ServiceCatalog_Install_Dir>\bin` directory.

```
cd <ServiceCatalog_Install_Dir>\bin
```

- b. Execute the following command to start the Domain Controller, Service Catalog, and Service Link:

[For Windows]:

```
startServiceCatalogCluster.cmd
```

[For Linux]

```
startServiceCatalogCluster.sh
```

To stop the domain controller, execute the `stopDomainController` script. For information on the other scripts available with the installer for the cluster environment, see [JBoss EAP Scripts](#).

#### Next Steps

- Keep the following handy:
  - IP Address of VM 1 where the Domain Controller was installed.
  - Queue password that was set in the Messaging Configuration panel.
  - Location of the licensed JBoss EAP software zip file downloaded on the VM.
- Proceed to setting up the Service Link and JMS node on VM2. See [Setting Up the Service Link and JMS Node \(VM 2\) in a Separate Component Topology](#).

## Setting Up the Service Link and JMS Node (VM 2) in a Separate Component Topology

- 
- Step 1** Install Service Link and JMS node on VM2. Launch the web interface installation wizard.
- On Windows Operating System, log in as a user with administrator rights and double-click `setup.cmd`.
  - On Linux Operating System, log in as the root user and execute `./setup.sh` from a graphical interface, such as X-window.
- Step 2** When the Introduction panel appears, click **Next**.
- Step 3** In the **Choose Install Folder** panel, enter a directory path (or click the Choose button to select a directory) as the destination folder for Service Catalog, and click **Next**.
- On Windows, the default value for destination folder is `C:\CiscoPrimeServiceCatalog`.
  - On Linux, the default value is `/opt/CiscoPrimeServiceCatalog`. The value for destination directory must not contain any space character.
- Throughout this document, this destination folder is referred to as `<ServiceCatalog_Install_Dir>`.
- Step 4** Browse and select the JBoss EAP zip file and click **Next**.
- Step 5** On the Gathering Setup Details panel, select the **Service Link** radio button and click **Next**.
- Step 6** Enter the Domain Controller IP address to establish connection to the VM1 where domain controller is installed.
- Step 7** On Choose Java Virtual Machine panel, select the correct Java version for your platform. Click the **Search Another Location** button to navigate to the correct location of Java on your computer and click **Next**.




---

**Note** You must specify the location of Java for JBoss EAP because the installer will install the JBoss EAP Application Server software on your computer, and it will set the `JAVA_HOME` variable in the JBoss EAP configuration to use this particular Java.

---

- Step 8** On the Service Link Configuration panel, enter the following information:
- Enter the IP address of this VM in the **Service Link Host IP Address** field.
  - Enter a password in the **JBoss admin password** field.
  - Re-enter the same password in the **Confirm password** field.
  - If the **Configure as windows service** option is displayed on the screen, select it.
- Step 9** On the Messaging Configuration panel, enter the information for the JMS Queue server (IP address of this VM) where the Service Link will be deployed, and click **Next**. Refer to the [Messaging Configuration Table](#) for the description of each field on this panel. See the note below for the queue password field.




---

**Note** For the Queue password value, use the same password that you entered for “Queue password” during the installation of the Domain Controller on VM 1.

---

- Step 10** On the Service Catalog Administration Configuration panel, enter the information for the SMTP server, and the password for the Site Administrator. Refer to the [Service Catalog Administration Configuration Table](#) for the description of each field on this panel. Click **Next**.
- Step 11** Click **Install** in the Preinstallation Summary panel to begin installation.

The installer will display the progress bar. It may take up to 30 minutes for the installer to complete. Do not interrupt or abort the installer during this process.

**Step 12** If the installation process completes successfully, the **Install Complete** panel appears. Click **Done** to exit the installation wizard.

**Step 13** Start the Service Link server on the VM 2. To start the Service Link and JMS services, do the following:

a. Access the `<ServiceCatalog_Install_Dir>\bin` directory.

```
cd <ServiceCatalog_Install_Dir>\bin
```

b. Execute the following command to start Service Link:

[For Windows]:

```
startServiceCatalogCluster.cmd
```

[For Linux]

```
startServiceCatalogCluster.sh
```

On the Windows operating system, you can also start or stop the Service Link server, by starting or stopping the following Windows service:

#### Cisco Prime Service Catalog Cluster

To stop the service link, execute the `ForcestoPonALLHC` script. For information on the other scripts available with the installer for the cluster environment, see [JBoss EAP Scripts](#).

#### Next Steps

- Keep the following handy:
  - IP Address of VM 1 where the Domain Controller was installed.
  - IP address of VM 2, where the Service Link server and JMS were installed.
  - Queue password that was entered during the installation of the Domain Controller on VM 1.
  - Location of the licensed JBoss EAP software zip file downloaded on the VM.
- Proceed to setting up the VM3 and VM4 as Host Controller 1 and Host Controller 2 respectively. See [Setting Up Host Controller and Service Catalog For Cluster Nodes in a Separate Component Topology](#).

### Setting Up Host Controller and Service Catalog For Cluster Nodes in a Separate Component Topology

**Step 1** On the machine designated for Cluster Host 1, launch the web interface installation wizard:

- On Windows Operating System, log in as a user with administrator rights and double-click `setup.cmd`.
- On Linux Operating System, log in as the root user and execute `./setup.sh` from a graphical interface, such as X-window.

**Step 2** When the Introduction panel appears, click **Next** to begin.

**Step 3** In the **Choose Install Folder** panel, enter a directory path (or click the Choose button to select a directory) as the destination folder for Service Catalog, and click **Next**.

- On Windows, the default value for destination folder is `C:\CiscoPrimeServiceCatalog`.

- On Linux, the default value is `/opt/CiscoPrimeServiceCatalog`. The value for destination directory must not contain any space character.

Throughout this document, this destination folder is referred to as `<ServiceCatalog_Install_Dir>`.

**Step 4** Browse and choose the JBoss EAP zip file and click **Next**.

**Step 5** On the Node Type Selection panel, select **Host Controller Node** radio button and click **Next**.

**Step 6** On the Host Controller Selection panel, do the following:

- Choose **Host1** radio button if this machine should be set up as the first node of the cluster.
- Choose **Host2** radio button if this machine should be set up as the second node of the cluster.



**Note**

The Prime Service Catalog Installer will support only up to six nodes for the cluster. To add 7th node or more, please contact Cisco TAC.

**Step 7** Enter the Domain Controller IP Address to establish connection to the first machine (VM 1) where domain controller is installed.

**Step 8** On Choose Java Virtual Machine panel, select the correct Java version for your platform. Click the **Search Another Location** button to navigate to the correct location of Java on your computer and click **Next**.



**Note**

You must specify the location of Java for JBoss EAP because the installer will install the JBoss EAP Application Server software on your computer, and it will set the `JAVA_HOME` variable in the JBoss EAP configuration to use this particular Java.

**Step 9** On the Service Catalog Configuration panel, enter the following information, and click **Next**:

- Service Catalog Host IP address: IP address of this machine, i.e, of the Cluster Host 1.
- In the Service Link URL field, enter `http://<SL_Address>:6080`, where `<SL_Address>` is the IP address of VM 2, where the Service Link server resides.
- If the “Configure as windows service” option is displayed on the screen, select it.

**Step 10** On the Messaging Configuration panel, enter the following information for the JMS Queue server, and click **Next**:

- Enter the IP address of VM 2 in the **Queue Host IP Address** field.
- In the **Queue password** field, enter the same password that you entered for **Queue password** during the installation of the Domain Controller on VM 1.

Refer to the [Messaging Configuration Table](#) for the description of each field on this panel.

**Step 11** On the Service Catalog Administration Configuration panel, enter the information for the SMTP server, and the password for the Site Administrator. Refer to the [Service Catalog Administration Configuration Table](#) for the description of each field on this panel. Click **Next**.

**Step 12** Click **Install** in the Preinstallation Summary panel to begin installation.

The installer will display the progress bar. It may take up to 30 minutes for the installer to complete. Do not interrupt or abort the installer during this process.

**Step 13** If the installation process completes successfully, the **Install Complete** panel appears. Click **Done** to exit the installation wizard.

**Step 14** Start the Host Controller for Cluster Host 1.

**Note**

- For the first time after the installation, each JBoss EAP server must be started as an application by executing the start script provided by Cisco, as also described in this step. DO NOT use the windows service called Cisco Prime Service Catalog to start the server.
- This start script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service.

To start the Host Controller, do the following:

- a. Access the `<ServiceCatalog_Install_Dir>\bin` directory.

```
cd <ServiceCatalog_Install_Dir>\bin
```

- b. Execute the following command to start the Domain Controller, Service Catalog, and Service Link:

[For Windows]:

```
startServiceCatalogCluster.cmd
```

[For Linux]

```
startServiceCatalogCluster.sh
```

The Host Controller will in turn, automatically start the managed server that belongs to the server group “main-server-group”. Since RequestCenter.war was already deployed in the “main-server-group” on the Domain Controller, it will also be automatically deployed onto this managed server.

- Step 15** Deploy RequestCenter.war. To deploy, do the following:



**Note** Ensure all nodes are up and running before you deploy RequestCenter.war.

- a. Access the `ServiceCatalog_Install_Dir\bin` directory.
- b. Execute the following command to the RequestCenter.war:

[For Windows]:

```
deployServiceCatalogCluster.cmd ALL
```

[For Linux]

```
deployServiceCatalogCluster.sh ALL
```

- Step 16** Verify that you can connect to the following URL:

```
http://<VM3_or_VM4_IP_address>:8080/RequestCenter.
```

To stop the Host Controller and the Service Catalog server on both Host 1 and Host 2, execute the **forceStopAllOnHC** script. You can start and stop individual servers in a cluster. For information on the other start and stop scripts available with the installer for the JBoss EAP cluster environment, see [JBoss EAP Scripts](#).

**Next Steps**

Set up web server. See [Step 8 of Performing JBoss EAP Cluster Installation for Separate Component Topology](#).

# Postinstallation Tasks for JBoss EAP

The Service Catalog installer installs and configures JBoss EAP for the Service Catalog and Service Link services on your computer, but it will not automatically start up the JBoss EAP service. This section contains instructions for starting and stopping the JBoss EAP services for Service Catalog and Service Link and other postinstallation tasks for cluster JBoss EAP setup.

## Postinstallation Tasks for JBoss EAP Clustered Application Servers

The following section includes the postinstallation tasks for clustered application servers for JBoss EAP. To start and stop individual servers in a cluster, see [JBoss EAP Scripts](#) for information on the scripts available with the installer for the JBoss EAP cluster environment.

**Note**

For JBoss EAP cluster setup on Windows, keep the following in mind:

- For the first time after the installation, each JBoss EAP server must be started as an application by executing the start script provided by Cisco. This script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service. Before starting the servers as windows service, you need to stop the servers, if they are already running with the help of the scripts provided by Cisco.
- When a JBoss EAP server is started using the script provided by Cisco, the server runs in the foreground instead of background. As a result, if a user accidentally logs off from the machine where the JBoss EAP server is running, the JBoss EAP server process will be terminated.
- Because you start the JBoss EAP servers using command scripts, if you log out of the Windows Operating System, the JBoss EAP servers will be automatically killed when your login session is ended. So make sure that you don't log off the session where the JBoss EAP servers are running. Follow the instructions in the section [Configure JBoss EAP as Windows Service](#) if you want to configure the JBoss EAP servers as windows services after the installation. When the JBoss EAP servers are running as windows services, they will not be killed when you log out of Windows Operating System.

## Configure JBoss EAP as Windows Service

Perform the following steps to configure JBoss EAP as Windows service:

- Step 1** It is assumed that your installation directory is "C:\CiscoPrimeServiceCatalog". Open a Command Prompt window, and navigate to the "C:\CiscoPrimeServiceCatalog\bin" directory. Execute the script "installProcessControllerClusterService.cmd" to configure the JBoss EAP server for Cluster Service as a Windows service. The service will be named "Cisco Prime Service Catalog Cluster".
- Step 2** To remove the Windows services: First you need to manually stop the "Cisco Prime Service Catalog Cluster" and execute the script "uninstallServiceCatalogService.cmd".



## Setting Up Apache Web Server on JBoss EAP

This section describes how to configure the `httpd.conf` file as a proxy server for the Service Catalog and Service Link servers. This procedure uses the "mod\_proxy" that comes with the installation of Apache (or Httpd) web server.

### Procedure

**Step 1** Stop the Apache web server:

```
service httpd stop
```

**Step 2** Replace the IP addresses in the `httpd.conf` file to the corresponding servers in your environment.

In the example below, replace the IP addresses in the `httpd.conf`, with the actual IP addresses of the following servers:

Web server's IP address = 10.78.0.100

Service Link's IP address = 10.78.0.200

Host 1 of Service Catalog's IP address = 10.78.0.300

Host 1 of Service Catalog's IP address = 10.78.0.400

```
ServerName 10.78.0.100
```

```
ServerRoot "/etc/httpd" Listen 80
```

```
Include conf.modules.d/*.conf
```

```
LoadModule proxy_module modules/mod_proxy.so
```

```
LoadModule proxy_connect_module modules/mod_proxy_connect.so LoadModule
```

```
proxy_ftp_module modules/mod_proxy_ftp.so LoadModule proxy_http_module
```

```
modules/mod_proxy_http.so LoadModule proxy_fcgi_module modules/mod_proxy_fcgi.so
```

```
LoadModule proxy_scgi_module modules/mod_proxy_scgi.so
```

```
LoadModule proxy_wstunnel_module modules/mod_proxy_wstunnel.so LoadModule
```

```
proxy_ajp_module modules/mod_proxy_ajp.so
```

```
LoadModule proxy_balancer_module modules/mod_proxy_balancer.so LoadModule
```

```
proxy_express_module modules/mod_proxy_express.so
```

```
User apache Group apache
```

```
ServerAdmin root@localhost
```

```
<Directory /> AllowOverride none Require all denied
```

```
</Directory>
```

```
DocumentRoot "/var/www/html"
```

```
#
```

```
# Relax access to content within /var/www.
```

```
#
```

```
<Directory "/var/www"> AllowOverride None
```

```
# Allow open access: Require all granted
```

```
</Directory>
```

```
# Further relax access to the default document root:
```

```
<Directory "/var/www/html"> Options Indexes FollowSymLinks AllowOverride None
```

```
Require all granted
```

```
</Directory>
```

```
<IfModule dir_module> DirectoryIndex index.html
```

```
</IfModule>
```

```

<Files ".ht*"> Require all denied
</Files>

ErrorLog "logs/error_log" LogLevel warn

<IfModule log_config_module>
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"" combined
LogFormat "%h %l %u %t \"%r\" %>s %b" common

<IfModule logio_module>
# You need to enable mod_logio.c to use %I and %O
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\" %I %O"
combinedio
</IfModule>
CustomLog "logs/access_log" combined
</IfModule>

<IfModule alias_module>
ScriptAlias /cgi-bin/ "/var/www/cgi-bin/"
</IfModule>

<Directory "/var/www/cgi-bin"> AllowOverride None Options None
Require all granted
</Directory>

<IfModule mime_module> TypesConfig /etc/mime.types AddType application/x-compress .Z
AddType application/x-gzip .gz .tgz
AddType text/html .shtml AddOutputFilter INCLUDES .shtml
</IfModule> AddDefaultCharset UTF-8
<IfModule mime_magic_module> MIMEMagicFile conf/magic
</IfModule> EnableSendfile on
IncludeOptional conf.d/*.conf

<VirtualHost *:80>

ServerName 10.78.0.100
ProxyRequests Off
ProxyPreserveHost On
ProxyTimeout 1200
LimitRequestFieldSize 65536
ProxyIOBufferSize 65536

<Location /balancer-manager>
SetHandler balancer-manager
Order allow,deny
Allow from all
</Location>

Header add Set-Cookie "ROUTEID=.%{BALANCER_WORKER_ROUTE}e; path=/"
env=BALANCER_ROUTE_CHANGED

<Proxy balancer://mycluster>
BalancerMember http://10.78.0.300:8080 route=1
BalancerMember http://10.78.0.400:8080 route=2
ProxySet stickysession=ROUTEID
</Proxy>

ProxyPass / balancer://mycluster/
ProxyPassReverse / balancer://mycluster/

</VirtualHost>

```

**Step 3** To connect the server to a specific port (for ex:8080), run the below command:

```
semanage port -?a -?t http_port_t -?p tcp 8080
```

**Step 4** To allow the server to access the different IP's and ports defined in the load balancer settings, execute the below command:

```
setsebool -?P httpd_can_network_connect 1
```

**Step 5** Start the Apache web server, using the below command:

```
service httpd start
```

## Enabling SSL on Apache Web Server and IIS Server

If you need Prime Service Catalog to be accessed securely, configure the existing virtual host for SSL on Apache web server as described below.

In the *domain.xml* file, modify scheme value to "https" for both RC and service link nodes.



### Note

The scheme value must be modified at both places in the domain.xml file to enable SSL.

Example:

```
"<ajp-listener name="ajp" socket-binding="ajp" scheme="https" max-ajp-packet-size=65536/>"
```

## Applying Patch or Customizations on Windows Platform

- [For All Components Setup Cluster Topology](#)
- [For Separate Component Cluster Topology](#)

### For All Components Setup Cluster Topology

Perform the following steps on a All Components Setup to apply a patch or customizations.

- Step 1** Perform the following steps on the Domain Controller.
- Login to Prime Service Catalog component (Ensure that the systems are up and running).
  - Execute the `./pre-customizationOnDC.sh` script from the location `/opt/cisco/psc/bin` with arguments - [ALL/RC/SL] based on your requirements. To customize both RC and SL or either of the two use the below scripts:
    - `./pre-customization.cmd ALL` OR
    - `./pre-customization.cmd RC` OR
    - `./pre-customization.cmd SL`

Unzipped version of RequestCenter.war and/or ISEE.war is now placed at `SC_Install_Dir/tmp` folder.
  - Manually customize the files in the `SC_Install_Dir/tmp` folder as needed.
  - Execute the script `./post-customizationOnDC.cmd` from `SC_Install_Dir/tmp`.



### Note

Wait for server to start up fully on DC.

- e. Run the following scripts one after the other:
  - Undeploy script and wait till the process is complete.
  - Deploy script and wait till the process is complete.
  - script `./killalljava.cmd`

**Step 2** Run the apply-customization script on the Host Controller.




---

**Note** Ensure that the server is up and running before you run the script.

---

- for RC `./apply-customizationOnRC.bat`

**Step 3** Start the servers on Domain Controller and Host controllers one after the other. You should see the "Deployed RequestCenter.war" message in the server log of both DC and HC.

---

### For Separate Component Cluster Topology

Perform the following steps on a Separate Component to apply a patch or customizations.

---

**Step 1** Perform the following steps on the Domain Controller.

- a. Login to Prime Service Catalog component.
- b. Execute the `./pre-customizationOnDC.sh` script from the location `/opt/cisco/psc/bin` with arguments - [`'ALL'`/`'RC'`/`'SL'`] based on your requirements. To customize both RC and SL or either of the two use the below scripts:

- `./pre-customization.cmd ALL` or
- `./pre-customization.cmd RC` or
- `./pre-customization.cmd SL`

Unzipped version of RequestCenter.war and/or ISEE.war is now placed at `/opt/cisco/psc/tmp` folder.

- c. Manually customize the files in the `/opt/cisco/psc/tmp` folder as needed.
- d. Execute the script `./post-customizationOnDC.cmd` from `/opt/cisco/psc/bin`.




---

**Note** Wait for server to start up fully on DC.

---

- e. Run the following scripts one after the other:
  - Undeploy script and wait till the process is complete.
  - Deploy script and wait till the process is complete.
  - script `./killalljava.cmd`

**Step 2** Run the following script on RC Host Controller and SL Host Controller.




---

**Note** Ensure that the server is up and running before you run the apply-customization script.

---

- `./apply-customizationRC.bat`
- `./apply-customizationSL.bat`

- Step 3** Start the servers on Domain Controller and Host controllers one after the other, in the sequence: Domain Controller > Service Link > Request Center.
- 

## Applying Patch or Customizations on Linux Platform

- [For All Components Setup Cluster Topology](#)
- [For Separate Component Cluster Topology](#)

### For All Components Setup Cluster Topology

Perform the following steps on a All Components Setup for applying a patch or any customizations.



**Note**

This procedure is based on the assumption that all servers are still running on both VM1 and VM2 for All Components topology.

---

- Step 1** Login to VM1 and access the <ServiceCatalog\_Install\_Dir>\bin directory.

- Step 2** Undeploy the .war file:

- a. Remove the RequestCenter.war and ISEE.war from all the host controllers, by executing the following command:

```
undeployServiceCatalogCluster.cmd ALL
```

- b. If you want to undeploy just RequestCenter.war, then execute the following command:

```
undeployServiceCatalogCluster.cmd RC
```

- c. if you want to undeploy just ISEE.war, then execute the following command:

```
undeployServiceCatalogCluster.cmd SL
```

- Step 3** Shutdown all the servers by executing the following commands on VM1:

```
shutdownAllOnHC2.cmd  
shutdownAllOnHC1.cmd
```

- Step 4** Backup the original dist/RequestCenter.war and dist/ISEE.war, if you plan to change it. To do so, execute the following command:

```
md temp_dir\RequestCenter.war  
md temp_dir\ISEE.war
```

- Step 5** Extract the appropriate WAR file(s) that you want to customize:

- a. Extract the original dist/RequestCenter.war to a temporary directory, such as /temp/RequestCenter.war by executing the following command:

```
cd temp_dir\RequestCenter.war  
jar xvf <ServiceCatalog_Install_Dir>\dist\RequestCenter.war > nul
```

- b. Extract the original dist/ISEE.war to a temporary directory, such as /temp/ISEE.war

```
cd temp_dir\RequestCenter.war  
jar xvf <ServiceCatalog_Install_Dir>\dist\ISEE.war > nul
```

- Step 6** Apply the customizations:
- Apply the customizations by modifying or overwriting the files in the /temp\_dir/RequestCenter.war directory.
  - Apply the customization by modifying or overwriting the files in the /temp\_dir/ISEE.war directory.
- Step 7** Zip up the RequestCenter.war file and ISEE.war file:
- To zip up the /temp\_dir/RequestCenter.war directory into a RequestCenter.war file, execute the following commands:
 

```
cd temp_dir\RequestCenter.war
jar -cvf RequestCenter.war.\META-INF\MANIFEST.MF *
```

A compressed version of RequestCenter.war is created in temp\_dir\RequestCenter.war.
  - To zip up the /temp\_dir/ISEE.war directory into a ISEE.war file, execute the following commands:
 

```
cd temp_dir\ISEE.war
jar -cvf ISEE.war.\META-INF\MANIFEST.MF *
```

A compressed version of ISEE.war is created in temp\_dir\ ISEE.war.
- Step 8** Overwrite the new versions of the war files in the "dist" directory:
- Copy the new version of RequestCenter.war into the <ServiceCatalog\_Install\_Dir>\dist directory, overwriting the existing file.
  - Copy the new version of ISEE.war into the <ServiceCatalog\_Install\_Dir>\dist directory, overwriting the existing file.
- Step 9** Delete the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/content directory on VM1.
- Step 10** Remove the domain/servers/<servername>/tmp/\* on VM1:
- Delete everything under <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/domain/servers/server-host1-RC/tmp directory.
  - Delete everything under <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/domain/servers/server-host1-SL/tmp directory.
- Step 11** Start the servers on VM1. To do this execute the following commands on VM1.
- ```
startServiceCatalogCluster.cmd
```
- Step 12** Deploy the latest war files on VM1:
- To deploy the latest version of RequestCenter.war followed by ISEE.war, execute the following command:
 

```
deployServiceCatalogCluster.cmd ALL
```
  - To deploy just RequestCenter.war, execute the following command:
 

```
deployServiceCatalogCluster RC
```
  - To deploy just ISEE.war, execute the following command:
 

```
deployServiceCatalogCluster SL
```
- Step 13** On VM2, do the following:
- Copy the new version of RequestCenter.war on VM1 into the <ServiceCatalog\_Install\_Dir>\dist directory on VM2, overwriting the existing file on VM2.
  - Login to VM2.
  - Delete the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/content directory on VM2.

- d. Delete everything under the `<ServiceCatalog_Install_Dir>/jboss-eap-7.0/domain/servers/server-host2-RC/tmp` directory.
- e. Start all the servers on VM2 by executing the following command:

```
startServiceCatalogCluster.cmd
```

This script will automatically recreate the missing

`<ServiceCatalog_Install_Dir>/content/RequestCenter.war` directory on this VM.



**Note** After applying the patch, each JBoss EAP server must be started as an application by executing the start script provided by Cisco. This script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service. Before starting the servers as windows service, you need to stop the servers, if they are already running with the help of the scripts provided by Cisco.

### For Separate Component Cluster Topology

Perform the following steps on a Separate Component topology for applying a patch or any customizations.



**Note** This procedure is based on the assumption that all servers are still running on both VM1, VM3, and VM4 for a Separate Component topology.

- Step 1** Login to VM1 and access the `<ServiceCatalog_Install_Dir>\bin` directory.
- Step 2** Remove the `RequestCenter.war` from all the Host Controllers by executing the following command on VM1:
 

```
undeployServiceCatalogCluster.cmd RC
```
- Step 3** Stop all the servers on VM3 by executing the following command on VM1:
 

```
shutdownAllOnHC1.cmd
```
- Step 4** Stop all the servers on VM4 by executing the following command on VM1:
 

```
shutdownAllOnHC2.cmd
```
- Step 5** Backup the original `dist/RequestCenter.war` file. To do so, execute the following command:
 

```
md temp_dir\RequestCenter.war
```
- Step 6** Extract the original `dist/RequestCenter.war` to a temporary directory, such as `/temp/RequestCenter.war`. To do so, execute the following command:
 

```
cd temp_dir\RequestCenter.war
jar xvf <ServiceCatalog_Install_Dir>\dist\RequestCenter.war > nul
```
- Step 7** On VM1, apply the customizations by modifying or overwriting the files in the `/temp_dir/RequestCenter.war` directory.
- Step 8** Zip up the `/temp_dir/RequestCenter.war` directory into a `RequestCenter.war` file as follows:
 

```
cd temp_dir\RequestCenter.war
jar -cvf RequestCenter.war.\META-INF\MANIFEST.MF *
```

A compressed version of RequestCenter.war is created in temp\_dir\RequestCenter.war.

- Step 9** Copy the new version of RequestCenter.war into the <ServiceCatalog\_Install\_Dir>\dist directory, overwriting the existing file.
- Step 10** On VM1, deploy the latest version of RequestCenter.war in all host controllers. To do this execute the following commands on VM1.
- ```
deployServiceCatalogCluster.cmd RC
```
- Step 11** On VM2 (Service Link Server), apply the customization in the ISEE.war directory by doing the following:
- Login to VM2.
  - Stop the Service Link Server by executing the following command:
 

```
stopServiceLink.cmd
```
  - Backup <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/ServiceLinkServer/deployments/ISEE.war directory to a temporary directory. To do so, execute the following command:
 

```
md temp_dir\ISEE.war
cd temp_dir\ISEE.war
jar xvf <ServiceCatalog_Install_Dir>\ServiceLinkServer\deployments\ISEE.war > nul
```
  - Apply the customization directly in the <ServiceCatalog\_Install\_Dir>\ServiceLinkServer\deployments\ISEE.war directory.
  - Delete everything under the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/ServiceLinkServer/tmp directory.
  - Start the Service Link server by executing the following command:
 

```
startServiceLink.cmd
```
- Step 12** Copy new version of RequestCenter.war from <ServiceCatalog\_Install\_Dir>\dist directory on VM 1 to the <ServiceCatalog\_Install\_Dir>\dist directory, overwriting the existing file on VM3 and VM4.
- Step 13** Log in to VM3.
- Step 14** Delete the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/content directory.
- Step 15** Delete everything under the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/domain/servers/server-host1-RC/tmp directory.
- Step 16** Start all the servers on VM3 by executing the following script:
- ```
startServiceCatalogCluster.cmd
```
- Step 17** Log in to VM4.
- Step 18** Delete the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/content directory.
- Step 19** Delete everything under the <ServiceCatalog\_Install\_Dir>/jboss-eap-7.0/domain/servers/server-host2-RC/tmp directory.
- Step 20** Start all the servers on VM3 by executing the following script:
- ```
startServiceCatalogCluster.cmd
```



This script will automatically recreate the missing <ServiceCatalog\_Install\_Dir/content/\*.war directory on both VM3 and VM4.



**Note** After applying the patch, each JBoss EAP server must be started as an application by executing the start script provided by Cisco. This script will create the content folder and generate necessary files in the installation directory. After this is done, then from the next time you can directly start the servers as windows service. Before starting the servers as windows service, you need to stop the servers, if they are already running with the help of the scripts provided by Cisco.

When both Request Center and Service Link applications are deployed, they are in preparation state, they must be moved to Active state by starting them in following order:

First start Service Link. Only after Service Link is in the Active state, start RequestCenter. Make sure it is in active state before you try verifying the installation.

## Verifying Your Installation

Verify your installation by performing the following tasks:

- Step 1** Open a browser, and connect to the following URL: <http://<hostname>:<port>/RequestCenter> where <hostname> = The fully qualified domain hostname or the IP address of the computer where you installed the JBoss EAP server for Service Catalog.  
<port> =The HTTP Port number assigned to the JBoss EAP server for Service Catalog. The default value for HTTP Port number is 8080.
- Step 2** Log in as the Site Administrator. For a new installation of Service Catalog, the username for the Site Administrator is "admin" and the password is the value you entered on the Service Catalog Administration Configuration panel of the installation wizard.
- Step 3** Navigate to the Service Link module.
- Step 4** On the left hand side of the panel, under Service Link Status, verify that the connection has a green status.

You have completed the installation for Cisco Prime Service Catalog on JBoss EAP.

