Oracle® WebCenter Sites

Installing on Apache Tomcat Application Server

11*g* Release 1 (11.1.1) Bundled Patch 1

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Oracle® WebCenter Sites: Installing on Apache Tomcat Application Server, 11*g* Release 1 (11.1.1) Bundled Patch 1

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About This Guide

This guide describes the process of installing Oracle WebCenter Sites on Apache Tomcat Application Server, connecting to a supported database of your choice. This includes instructions for installing WebCenter Sites in single-member and vertically clustered environments.

Applications discussed in this guide are former FatWire products. Naming conventions are the following:

- *Oracle WebCenter Sites* is the current name of the application previously known as *FatWire Content Server*. In this guide, *Oracle WebCenter Sites* is also called *WebCenter Sites*.

- *Oracle WebCenter Sites: Web Experience Management Framework* is the current name of the environment previously known as *FatWire Web Experience Management Framework*. In this guide, *Oracle WebCenter Sites: Web Experience Management Framework* is also called *Web Experience Management Framework*, or *WEM Framework*.

Audience

This guide is for installation engineers and anyone else who has experience installing and configuring databases, web servers, and application servers.

Related Documents

For more information, see the following documents:

- *Oracle WebCenter Sites: Configuring Supporting Software*
- *Oracle WebCenter Sites: Integrating with LDAP*
- *Oracle WebCenter Sites Administrator's Guide for the WEM Framework*
- *Oracle WebCenter Sites Administrator's Guide*
- *Oracle WebCenter Sites Developer's Guide*

Graphics in This Guide

Many steps in this guide include screen captures of dialog boxes and similar windows that you interact with in order to complete the steps. These screen captures are presented to help you follow the installation process. They are not intended to be sources of specific information, such as parameter values, options to select, or product version number.

Conventions

The following text conventions are used in this guide:

- **Boldface** type indicates graphical user interface elements that you select.
- *Italic* type indicates book titles, emphasis, or variables for which you supply particular values.
- `Monospace` type indicates file names, URLs, sample code, or text that appears on the screen.
- **`Monospace bold`** type indicates a command.

Third-Party Libraries

Oracle WebCenter Sites and its applications include third-party libraries. For additional information, see *Oracle WebCenter Sites 11gR1 Bundled Patch 1: Third-Party Licenses*.

Chapter 1
Introduction

This chapter provides information that will help you prepare for the WebCenter Sites installation. It contains the following sections:

- How This Guide Is Organized
- Before You Install Oracle WebCenter Sites
- Installation Quick Reference
- Paths and Directories Used in This Guide

How This Guide Is Organized

This guide provides instructions for installing WebCenter Sites in single-member and clustered environments. This guide also describes the installation and configuration of Apache Tomcat Application Server, as required to support WebCenter Sites. This includes configuration of one or more Tomcat instances, creation of backend databases, and integration of Tomcat with Apache Web Server. The last chapter in this guide shows you how to install WebCenter Sites.

The content of this guide is organized by function rather than the order in which installation steps are completed. For example, a function such as application deployment is associated with the application server. It is presented in Part II (which covers the application server), even though it is performed, later, when WebCenter Sites is installed (Part IV). Each major component of the WebCenter Sites installation is covered in its own part. A summary of the installation steps in the required order is given at the end of this chapter (see "Installation Quick Reference," on page 9).

This guide does not cover the following topics, as they fall outside the scope of this guide:

- Tomcat SSL configuration for simultaneously run instances

- LDAP integration. For information about this topic, see *Oracle WebCenter Sites: Integrating with LDAP.*

- CAS clustering. For information about this topic, see *Oracle WebCenter Sites: Configuring Supporting Software*.

- Oracle Access Manager (OAM) integration. For information about this topic, see *Oracle WebCenter Sites: Configuring Supporting Software*.

Before You Install Oracle WebCenter Sites

- Refer to the *Oracle WebCenter Sites Certification Matrix* for this version of WebCenter Sites to ensure that you are installing currently supported third-party products.

- Only selected information about the configuration of third-party products is given in this guide. For detailed information and to obtain the latest e-fixes, patches, and service packs, refer to third-party product vendors' documentation and release notes.

- You can install and deploy WebCenter Sites by running the supplied installer either in GUI or silent install mode. When you run the GUI installer, a graphical interface guides you through the installation process, prompting you to enter information and select options as required. It also provides access to online help. When you install silently, you enter your installation settings into one of the sample `omii.ini` files provided, using comments in the file for guidance. The installer then uses the file to install WebCenter Sites.

- You will run the WebCenter Sites installer on all systems in your environment. There are two system types: content management or development (whose installation processes are identical) and delivery. Content management systems and development systems run in the same mode but are used for different purposes.

> **Note**
> - The system type cannot be changed once you select the type and click **Next** (GUI installation) or start running the silent installer.
> - **The installation process does not install user interfaces on delivery systems,** except for a limited version of the WebCenter Sites Admin interface to enable the management of select features.
> - The names of the systems in your WebCenter Sites environment might differ from the names used in this document. Typically, the content management system is also called "staging," and the delivery system is also called "production."

- Remove older versions of the Java Runtime Environment from the CLASSPATH and PATH environment variables.
- All installations of WebCenter Sites and Satellite Server must use the same JVM time zone. We recommend setting the JVM time zone to UTC (GMT) to help standardize the time stamps of distributed data. For example, if content is published from Los Angeles to New York and both servers run on local time, the content publication times differ by three hours. Setting both servers to UTC (GMT) alleviates the ambiguity. Note that log files will report data in UTC (GMT) time.

Installation Quick Reference

After you install and configure the components that support WebCenter Sites, you will run the WebCenter Sites installer on each development, content management, and delivery system on which you plan to use WebCenter Sites. During the installation, you will have the option to install sample sites and sample content.

The steps below summarize the installation and configuration of WebCenter Sites and its supporting software. Keep the steps handy as a quick reference to the installation procedure and to the chapters that provide more detailed instructions.

Complete the steps below for each development, content management, and delivery environment.

I. Set Up the Database

Set up your choice of supported databases by installing the database management system, creating a database for WebCenter Sites, and configuring the database. For instructions, see *Oracle WebCenter Sites: Configuring Supporting Software.*

II. Set Up the Application Server

To set up Tomcat Application Server, complete the steps in Chapter 3, "Installing and Configuring Tomcat":

1. "Installing Tomcat," on page 20.

2. "Setting Up a Tomcat Instance," on page 21.

> ### Note
>
> When setting up a Tomcat instance, keep in mind the following:
>
> - If you plan to create a clustered environment, you will repeat this step to create a new instance of Tomcat for each cluster member. Before creating several Tomcat instances, however, it is best to create one instance (as done in this guide), install WebCenter Sites, and verify that it is functional.
>
> - If you plan to cluster CAS, refer to the instructions in *Oracle WebCenter Sites: Configuring Supporting Software*.

3. If you are already running one or more instances of Tomcat on your system (regardless of the application they are serving), or if you are planning to set up a WebCenter Sites vertical cluster, ensure that each Tomcat instance runs on a unique port number. For instructions, see "Setting Up Multiple Instances of Tomcat to Run Simultaneously," on page 24.

4. If you plan on running a single instance over SSL, complete the steps in "Configuring Tomcat for SSL," on page 25.

III. Integrate Tomcat with Apache Web Server

This step is required if:

- You wish to use Apache web server. You can install Apache 2.2.x.

- You are creating a clustered environment that will be load balanced through Apache Web Server.

- You are planning to configure Tomcat to run over SSL through Apache Web Server.

To set up the web server, complete the following steps (in Chapter 4):

1. Install Apache 2.2.x. For instructions, see "Installing Apache Web Server 2.2.x," on page 30.

2. Integrate Tomcat with Apache 2.2.x. For instructions, see "Integrating Tomcat with Apache Web Server 2.2.x (mod_proxy_ajp)," on page 30

IV. Install and Configure WebCenter Sites

In this step, you will first make sure that the listed pre-requisites for installing WebCenter Sites are satisfied. You will install WebCenter Sites, verify the installation, and complete any additional post-installation steps that apply to your system (for example, set up a vertical cluster).

1. Before installing WebCenter Sites, do the following:

   a. Start a Tomcat instance.

   b. Create a valid directory into which you will install WebCenter Sites; the directory name and path cannot contain spaces, and the directory must have write permissions.

   c. For clustered installations, create a shared file system directory that all cluster members can read from and write to; the directory name and path cannot contain spaces.

2. Install and deploy WebCenter Sites by running the GUI installer or installing silently. For instructions, see "Running the GUI Installer," on page 37 or "Installing Silently," on page 39.

3. Complete the WebCenter Sites installation by performing the following steps:

   a. If you installed WebCenter Sites on Unix, set the permissions for WebCenter Sites binaries by following the steps in "Setting File Permissions (Unix Only)," on page 41.

   b. WebCenter Sites contains a modified version of the Microsoft XML Parser (`MSXML.jar` in the `WEB-INF/lib` directory). If a different version of the Parser is referenced in the `CLASSPATH` environment variable, you must change the path to refer to the version used by WebCenter Sites; otherwise, WebCenter Sites will fail when parsing XML. For information, see "Loading the XML Parser," on page 41.

   c. Add the WebCenter Sites binaries directory to your library path variable as explained in "Adding the WebCenter Sites Binaries Directory to the Library Path Variable," on page 41.

   d. Verify the WebCenter Sites installation by logging in to Oracle WebCenter Sites as the general administrator and accessing the WebCenter Sites Admin interface and Contributor interface. For instructions, see "Verifying the WebCenter Sites Installation," on page 42.

   e. If you wish to replace CAS with Oracle Access Manager (OAM), follow the instructions in *Oracle WebCenter Sites: Configuring Supporting Software*.

   f. If you want to perform LDAP integration, follow the steps in "Integrating with LDAP (Optional)," on page 46. For detailed instructions about installing and configuring LDAP servers, see *Oracle WebCenter Sites: Configuring Supporting Software*.

   g. If you are creating a clustered system, follow the instructions in "Setting Up a WebCenter Sites Cluster (Optional)," on page 46.

   h. If you are clustering CAS, follow the instructions in *Oracle WebCenter Sites: Configuring Supporting Software*.

   i. If you need to redeploy CAS, refer to the instructions in *Oracle WebCenter Sites: Configuring Supporting Software*.

   j. Once the entire installation is completed and verified, set up WebCenter Sites for its business purpose. For instructions, see the *Oracle WebCenter Sites Administrator's Guide* and the *Oracle WebCenter Sites Developer's Guide*.

Paths and Directories Used in This Guide

Name	Description
`<tomcat_home>`	Path to the Tomcat installation directory (`$CATALINA_HOME`).
`<cs_install_dir>`	Path to the WebCenter Sites installation directory.

Part 1

Database

This part contains a short chapter summarizing the databases that WebCenter Sites uses. Instructions on creating and configuring the databases are given in *Oracle WebCenter Sites: Configuring Supporting Software*.

This part contains the following chapter:

- Chapter 2, "Setting Up a Database"

Chapter 2

Setting Up a Database

WebCenter Sites requires access to a database specifically configured for WebCenter Sites. Refer to the *Oracle WebCenter Sites Certification Matrix* for the list of supported databases (as well as other components).

Before installing any other of WebCenter Sites' supporting software, complete the following steps:

1. Install the database management system.
   For instructions, refer to the product vendor's documentation.

2. Create and configure a database for WebCenter Sites.
   For instructions, consult *Oracle WebCenter Sites: Configuring Supporting Software*. Note that database configuration is identical across different application servers. Refer to the correct chapter to create and configure the database of your choice.

Part 2

Application Server

This part contains information about installing and configuring the Tomcat Application Server as well as integrating Tomcat with Apache Web Server.

This part contains the following chapter:

- Chapter 3, "Installing and Configuring Tomcat"

Chapter 3

Installing and Configuring Tomcat

The chapter shows you how to install and configure Tomcat Application Server for WebCenter Sites, for running over SSL, and for simultaneously running multiple instances of Tomcat.

This is not an exhaustive chapter, as its covers the installation of Tomcat Application Server only so far as needed to install and run WebCenter Sites. For more extensive documentation on the installation process and best practices, see the documentation on the Apache Tomcat website.

This chapter contains the following sections:

- Start/Stop Commands
- Installing Tomcat
- Configuring Tomcat

Start/Stop Commands

This section lists commands for starting and stopping Tomcat instances.

> **Note**
>
> All commands require that CATALINA_HOME and JAVA_HOME are set to the proper directories.

Action	Command
Start the Tomcat instance:	`$CATALINA_HOME/bin/startup.sh`
Shut down the Tomcat instance:	`$CATALINA_HOME/bin/shutdown.sh -force`

Step I. Installing Tomcat

> **Note**
>
> In this guide, we assume that you are using a UNIX based system. Therefore, the commands that are provided in this section for your reference are only for UNIX based systems. Commands for Windows based systems may be different.

To install the Tomcat Application Server

1. Create an installation directory for Tomcat.

2. Download and install a supported JDK.

3. Decompress the Tomcat archive file into the Tomcat installation directory:

   `tar xvfz apache-tomcat-x.tar.gz`

4. Edit $CATALINA_HOME/bin/catalina.sh by adding the following lines after the first comment block:

   CATALINA_HOME=<path_to_tomcat_home>
   CATALINA_PID="$CATALINA_HOME"/tomcat.pid

   Adding tomcat.pid ensures that the Tomcat process is killed when the shutdown.sh command is executed with the -force argument.

5. Set the JAVA_HOME variable to the JDK folder of the version of Java that will be used. For example:

   `export JAVA_HOME=/opt/jdk1.6.0_24`

6. Start the application server by running the startup command.

   `$CATALINA_HOME/bin/startup.sh`

7. Access the following URL in a web browser: **http://<hostname>:8080/**

   This brings you to Tomcat's default homepage.

8. Shut down the application server by running the **shutdown** command.

```
$CATALINA_HOME/bin/shutdown.sh -force
```

9. After you have successfully installed Tomcat, continue with the next section, "Configuring Tomcat."

Step II. Configuring Tomcat

Complete the steps in this section as required for your installation:

- Setting Up a Tomcat Instance
- Setting Up Multiple Instances of Tomcat to Run Simultaneously
- Configuring Tomcat for SSL

Setting Up a Tomcat Instance

1. Create a directory named `test` in `$CATALINA_HOME/webapps`.

2. Copy `tomcat.gif` from `$CATALINA_HOME/webapps/ROOT` to `$CATALINA_HOME/webapps/test`.

3. Choose the data source information that corresponds to the database you will be using and place the required `jar` files in `$CATALINA_HOME/lib`. The driver class and url data will be inserted into the `server.xml` file in the next step.

Table 1: Data Source Information

Database Driver	Parameters	Values
JTDS (third-party driver)	DriverClass	`net.sourceforge.jtds.jdbcx.` `    JtdsDataSource`
	Required `.jar` files	`jtds-1.2.5 jar`

	URL	`jdbc:jtds:sqlserver://`
		`    <server>:<dbport>/<dbname>`
		
		Ex:
		`jdbc:jtds:sqlserver://`
		`    127.0.0.1:1433/contentDB`

DB2	DriverClass	`com.ibm.db2.jcc.DB2Driver`
	Required `.jar` files	`db2jcc.jar, db2cc_license_cu.jar` **Note:** The `db2jcc4.jar` file is not supported. Installation will fail if the `db2jcc4.jar` file is used.

	URL	`jdbc:db2://<hostname>:<dbport>/`
		`    <dbname>`
		
		Ex.
		`jdbc:db2://127.0.0.1:50001/`
		`    contentDB`

Table 1: Data Source Information *(continued)*

Database Driver	Parameters	Values
Oracle Thin driver	DriverClass	`oracle.jdbc.driver.OracleDriver`
	Required `.jar` files	`ojdbc6.jar`

	URL	`jdbc:oracle:thin:@//`
		`  <hostname>:1521/<dbname>`
		
		Ex.
		`jdbc:oracle:thin:@//`
		`  127.0.0.1:1521/`
		`  contentDB`

Note

If you are using an Oracle database and require text attributes greater than 2000 characters, you will have to set `cc.bigtext` to `CLOB`. You will set `cc.bigtext` to `CLOB` when you run the WebCenter Sites installer (as explained in "Installation Procedures," on page 36.)

---

4. Edit the `server.xml` file as follows:

   a. Add the following code before the `</Host>` tag:

```
<Context path="/cs" docBase="cs" reloadable="true"
crossContext="true">
   <Resource name="csDataSource"
     auth="Container"
     type="javax.sql.DataSource"
     maxActive="100"
     maxIdle="30"
     username="<db_user_name>"
     password="<db_user_password>"
     driverClassName="<DriverClass_Value>"
     url="<db_driver_url_value>"/>
</Context>
```

   b. Set the `driverClassName` and `url` to the values you selected from Table 1 in step 3.

   c. Set the `username` and `password`.

> **Note**
>
> Sample configuration for an Oracle Database:
>
> ```
> <Context path="/cs" docBase="cs" reloadable="true"
> crossContext="true">
>
>    <Resource name="csDataSource" auth="Container"
>      type="javax.sql.DataSource"
>      maxActive="100"
>      maxIdle="30"
>      username="csuser"
>      password="password"
>      driverClassName="oracle.jdbc.driver.OracleDriv
>      er"
>      url="jdbc:oracle:thin:@//127.0.0.1:1521/
>      contentDB"/>
>
> </Context>
> ```

5. Edit the `catalina.sh` file in `$CATALINA_HOME/bin`. Do the following:

   a. Set the classpath by adding the following line:

```
CLASSPATH="$JAVA_HOME"/lib/tools.jar:<cs_install_dir>
    /bin:$CLASSPATH
```

> **Note**
>
> If the classpath and library path are not set properly, the CAS web
> application will not start and the **System Tools** node in the **Admin** tab of
> the WebCenter Sites Admin interface will have reduced functionality.

   b. Add the following lines to `CATALINA_OPTS`:

     - Set the value of the `Max PermGen` space to a minimum value of 192 MB. For
example, add the following line:

```
-XX:MaxPermSize=<desired_size>
```

     - Set UTF file encoding by adding the following line:

```
-Dfile.encoding=UTF-8
```

     - Enable the Ehcache shutdown hook by adding the following line:

```
-Dnet.sf.ehcache.enableShutdownHook=true
```

     - Add the following line to use IPv4 stack:

```
-Djava.net.preferIPv4Stack=true
```

After completing this step, your `CATALINA_OPTS` should look similar to the
following:

```
CATALINA_OPTS="-XX:MaxPermSiz==<desired_permgen_size>
    -Dfile.encoding=UTF-8
    -Dnet.sf.ehcache.enableShutdownHook=true
    -Djava.net.preferIPv4Stack=true $CATALINA_OPTS"
```

6. Test the new instance as follows:

   a. Make sure the Tomcat instance is shut down before attempting to start it.

    b. Start the Tomcat instance by running the startup command:

        `$CATALINA_HOME/bin/startup.sh`

    c. In your browser, open `http://<hostname>:8080/test/tomcat.gif`

        If the `tomcat.gif` image is displayed, the setup was done properly.

7. For the next step, see the ".

Setting Up Multiple Instances of Tomcat to Run Simultaneously

This section explains the extra steps that need to be taken if multiple Tomcat instances have been set up on the same machine/server and must run simultaneously—**regardless of the applications they are serving**. To set up multiple Tomcat instances, follow the steps used for setting up the first instance (see "). The steps in this section ensure that no two instances use the same ports:

1. Shut down all running instances of Tomcat.

2. Check that the `server.xml` file for each Tomcat instance uses unique port values. The port values to check are:

- The `port` value in the first connector tag (set to `8080` in the main instance and previous example). This is the main port where the application will be deployed.

- The `shutdown port` value, located in the `Server` tag (with a value of 8005 in the example above as well as the main instance). If this value is identical for two instances attempting to run simultaneously, the second instance will be unable to start.

- The `redirectPort` value in both `Connector` tags.

- The `connector port` value, located in the second `Connector` tag.

3. Test whether two instances can run simultaneously:

    a. Open a shell and `cd` to the `$CATALINA_HOME` of the first Tomcat instance, and run the **startup** command:

        `./bin/startup.sh`

    b. Open a shell and `cd` to the `$CATALINA_HOME` of the second Tomcat instance, and run the **startup** command:

        `./bin/startup.sh`

    c. To verify that the two instances can run simultaneously, display the image `tomcat.gif`:

```
http://<hostname_for_1st_instance>:<port_for_1st_instance>/
    test/tomcat.gif
http://<hostname_for_2nd_instance>:<port_for_2nd_instance>/
    test/tomcat.gif
```

        If there is an error, check both `server.xml` files to make sure the instances are not sharing any ports.

4. For the next step, see the ".

Configuring Tomcat for SSL

> **Note**
>
> This section applies only to single-server WebCenter Sites installations.

1. Generate a certificate:

    `keytool -genkey -alias tomcat -keyalg RSA –keystore`
    `<path_to_$CATALINA_HOME>/keys/.keystore`

    a. Set the `-keystore` parameter to the location where you want the generated keys to be stored.

    b. When prompted for the keystore password, you may use your own password, or the default "`changeit`." If a custom password is entered, a value in the `server.xml` file will need to be changed (as explained in step 2).

    c. Enter your first and last name, name of organization, city, state, and country code when prompted, then click **Yes** to confirm.

    d. At the next prompt, "`Enter key password for <tomcat> (RETURN if same as keystore password)`," press Enter, as the key password **must** be the same as the keystore password.

2. Edit `$CATALINA_HOME/conf/server.xml`, uncomment the `SSL` section, and add the following attributes to the SSL connector:

    -   `keystoreType="JKS"`

        This attribute is set to JKS for "`Java Keystore`" (the format produced by Java's keytool).

    -   `keystoreFile="<path_to_$CATALINA_HOME>/keys/.keystore"`

        This attribute is set to the path where the `.keystore` file was created and the same path used in step 1.

    -   `keystorePass="<new_password>"`

        This attribute is needed only if the keystore password used in step 1 is not "`changeit`", and should be set to the custom password used.

    a. If the `redirectPort` values in the `<Connector>` tags are not already set to `8443`, change them now.

3. Point your browser to `https://<hostname>:8443/test/tomcat.gif`.

    If your system works correctly, you will be prompted to accept the certificate. When you accept the certificate, the Tomcat image is displayed.

4. For the next step, see the "Installation Quick Reference," on page 9.

Part 3
Web Server

This part shows you how to install and configure Apache Web Server.

This part contains the following chapter:

- Chapter 4, "Integrating with Apache Web Server"

Chapter 4

Integrating with Apache Web Server

The chapter shows you how to install Apache Web Server 2.2.x and then integrate it with the Tomcat Application Server. The steps in this chapter are required if you wish to integrate Tomcat with Apache Web Server or to create a vertical cluster that will be load balanced through Apache Web Server.

This chapter contains the following section:

- Installing and Integrating Apache Web Server 2.2.x

Installing and Integrating Apache Web Server 2.2.x

This section contains instructions for installing Apache Web Server 2.2.x and then integrating this version of Apache with the Tomcat application server. This section contains the following topics:

Installing Apache Web Server 2.2.*x*

1. Extract, compile, and install Apache 2.2.*x* as follows:

   a. `tar xvfjp httpd-2.2.11.tar.bz2`

   b. `./configure --enable-so --enable-mods-shared="proxy cache ssl all" --prefix=<PATH_TO_APACHE_HOME> --with-included-apr`

   c. `make`

   d. `make install`

2. Set the variable `$APACHE2_HOME` to the directory in which Apache 2.2.*x* was installed.

Integrating Tomcat with Apache Web Server 2.2.*x* (mod_proxy_ajp)

In this step you will use `mod_proxy_ajp` to integrate Tomcat Application Server with Apache Web Server 2.2.*x*.

1. Make sure you have modified `<tc_home>/conf/server.xml` to include `jvmroute` in the `Engine` tag. For example:

   ```
   <Engine name="Catalina"
    defaultHost="localhost"
    jvmRoute="jvm1">
   ```

2. Open `$APACHE2_HOME/conf/httpd.conf` and add the following to the "Main" server configuration section:

   ```
   <Location /balancer-manager>
      SetHandler balancer-manager
      Order Deny,Allow
      Deny from all
   </Location>


   <Proxy balancer://cluster>
      BalancerMember ajp://<host>:<ajp_port> loadfactor=1
         route=jvm1
   </Proxy>


   ProxyPass /cs balancer://cluster/cs
   ProxyPassReverse /cs balancer://cluster/cs
   ```

3. Test `httpd.conf` by typing the following:

   cd $APACHE2_HOME/bin

   apachectl configtest

   If successful, you will receive the message "`Syntax OK`". Ignore any warning messages.

4. Start Tomcat:

   `$CATALINA_HOME/bin/startup.sh`

5. Start Apache:

   `$APACHE2_HOME/bin/apachectl start`

6. Point your browser to `http://<hostname>/test/tomcat.gif` and verify that the Tomcat image is displayed.

Part 4

Oracle WebCenter Sites

This part shows you how to install WebCenter Sites. It contains the following chapter:

- Chapter 5, "Installing and Configuring Oracle WebCenter Sites"

Chapter 5

Installing and Configuring Oracle WebCenter Sites

This chapter guides you through the installation of WebCenter Sites on the Tomcat Application Server.

This chapter contains the following sections:

- Installing WebCenter Sites
- Post-Installation Steps

Installing WebCenter Sites

After completing Steps I – IV.1 in the "Installation Quick Reference," on page 9, you install WebCenter Sites using the provided installer. The installation process consists of two stages:

- In the first stage, the installer gathers necessary configuration information, installs the file structure, and automatically deploys the WebCenter Sites application. At the end of the first stage, the GUI installer displays the "Installation Actions" window which lists the steps you must perform before proceeding to the second stage of the installation. In a silent installation, these steps are displayed on the command-line.

  If the first stage fails, the installer allows you to go back and modify your configuration options (except the database type), and retry the installation.

  > **Note**
  >
  > If you need to change the type of database you have specified during the installation, you must delete the installed WebCenter Sites file structure and restart the installation.

- In the second stage, the installer populates the database with the tables and data required for WebCenter Sites to function. If the second stage fails, you must drop the database tables, undeploy the WebCenter Sites application, delete the WebCenter Sites file structure, and re-install WebCenter Sites.

Installation Procedures

> **Note**
>
> The WebCenter Sites installer includes the installation of CAS. By default, CAS will be installed on the primary cluster member.

This section explains the two ways to install WebCenter Sites:

- Running the GUI Installer

  When you run the GUI installer, a graphical interface guides you through the installation process, prompting you to enter information and select options as required. It also provides access to online help.

- Installing Silently

  When you install silently, you enter your installation settings into one of the sample omii.ini files provided, using comments in the file for guidance. The installer uses the settings in the file to install and deploy WebCenter Sites.

Running the GUI Installer

To install WebCenter Sites using the GUI installer

1. Make sure you have completed Steps I – IV.1 in the "Installation Quick Reference," on page 9.

2. Extract the WebCenter Sites installer archive into a temporary directory.

3. Change to the temporary directory containing the installer files.

4. Execute the installer script:

   - On Windows: **csInstall.bat**

   - On Unix: **csInstall.sh**

   The installer provides online help at each screen. Read the online help for detailed explanations of the options in each screen. If you encounter problems during the installation process, consult the online help for possible causes and solutions.

5. In the "Enter CAS Deployment information" screen, do one of the following:

   - For networks with firewalls, fill in the fields as follows:

     - **Enter Server HostName** – Enter the hostname/IP address of the CAS server, as referred to by the external network. If you are clustering CAS, enter the hostname/IP address of the externally facing load balancer.

     - **Enter Server PortNumber** – Enter the port number of the CAS server, as referred to by the external network. If you are clustering CAS, enter the port number of the externally facing load balancer.

     - **Enter Server HostName of internally accessible CAS** – Enter the hostname/IP address of the CAS server, as referred to by the internal network. If you are clustering CAS, enter the hostname/IP address of the load balancer, as referred to by the internal network.

     - **Enter Server PortNumber of internally accessible CAS** – Enter the port number of the CAS server, as referred to by the internal network. If you are clustering CAS, enter the hostname/IP address of the load balancer, as referred to by the internal network.

     - **Enter Server HostName where CAS is actually deployed** – Enter the hostname of the machine where CAS will be deployed.

   - For networks without firewalls, fill in the fields as follows:

     - **Enter Server HostName** – Enter the hostname/IP address of the CAS server. If you are clustering CAS, enter the hostname/IP address of the load balancer.

     - **Enter Server PortNumber** – Enter the port number of the CAS server. If you are clustering CAS, enter the post number of the load balancer.

     - **Enter Server HostName of internally accessible CAS** – Enter the hostname/IP address of the CAS server. If you are clustering CAS, enter the hostname/IP address of the load balancer.

     - **Enter Server PortNumber of internally accessible CAS** – Enter the port number of the CAS server. If you are clustering CAS, enter the port number of the load balancer.

- **Enter Server HostName where CAS is actually installed** – Enter the hostname of the machine where CAS will be deployed.

6. Halfway through the installation, after the WebCenter Sites and CAS applications are deployed, the GUI installer displays the "Installation Actions" window, which lists the steps you must perform to complete the installation.

If necessary, deploy the WebCenter Sites and CAS web applications. Do the following before continuing with the installation process:

a. Edit the `cas-cache.xml`, `cs-cache.xml`, `ss-cache.xml`, and `linked-cache.xml` files (located in the WebCenter Sites deployed directory under the `WEB-INF/classes` folder). Ensure that the following fields are unique for each cache type:

- `multicastGroupAddress`
- `multicastGroupPort`
- `timeToLive`

Note

When setting up a cluster, ensure that each corresponding file has identical values across the cluster members. Edit the `timeToLive` field to control the propagation of multicast packets. The following is a list of possible options:

- `1-` (multicast packets restricted to the same subnet)
- `32-` (multicast packets restricted to the same site)
- `64-` (multicast packets restricted to the same region)
- `128-` (multicast packets restricted to the same continent)
- `255-` (multicast packets are unrestricted)

---

b. Edit the `jbossTicketCacheReplicationConfig.xml` file, located under the `<cs_install>/bin` directory. Ensure that the following fields have unique values:

- `mcast addr`
- `mcast port`

> **Note**
>
> When setting up a CAS cluster, ensure that each cluster member has identical values for the following fields:
>
> - `ClusterName`
> - `mcast addr`
> - `mcast port`
> - `ip_ttl` (set this value to `1` or `32` depending on your network)
>
> For more details on setting up a CAS cluster, see *Oracle WebCenter Sites: Configuring Supporting Software*.

c. If you are using an Oracle database and require text attributes greater than 2000 characters set the `cc.bigtext` property to `CLOB`:

   1) Open the Property Editor by clicking the **Property Editor** button.

   2) In the Property Editor, open the `futuretense.ini` file.

   3) Click the **Database** tab.

   4) Locate the `cc.bigtext` property and set its value to `CLOB`.

   5) Save your changes and close the Property Editor.

7. When the installation completes successfully, continue with "Post-Installation Steps," on page 41.

Installing Silently

To install WebCenter Sites silently:

1. Ensure you have completed Steps I – IV.1 in the "Installation Quick Reference," on page 9.

2. Extract the WebCenter Sites installer archive into a temporary directory.

3. The `Misc/silentinstaller` folder of the temporary directory contains sample `omii.ini` files that you can use for your silent installation.

- If you are installing a content management or development system, use the `generic_omii.ini` file.
- If you are installing a delivery system, use the `delivery_omii.ini` file.

a. Edit the file for your type of installation by verifying the default values and entering additional values as required. Refer to the comments in the file for guidance.

b. Save the file and copy it to a folder outside `<cs_install_dir>`.

4. If you are installing a delivery system, you must set unique passwords for the `fwadmin` and `ContentServer/SatelliteServer` users:

   a. Open the `cscore.xml` file in the `ContentServer` folder of the temporary directory.

   b. Set passwords in the following section:

```
<IF COND="Variables.bShowInstallTypeDialog=false">
   <THEN>
      <DIALOGACTION>
         <SETVARIABLE NAME="passwordVar" VALUE=" "/>
         <SETVARIABLE NAME="passwordAdminVar" VALUE=" "/>
      </DIALOGACTION>
   </THEN>
</IF>
```

   1) Set the password for the `fwadmin` user in the `VALUE` field following `NAME="passwordVar"`.

   2) Set the password for the `ContentServer/SatteliteServer` user in the `VALUE` field following `NAME="passwordAdminVar"`.

   c. Save and close the file.

5. Edit the `install.ini` file in the root folder of the temporary directory:

   a. Set the `nodisplay` property to `true`.

   b. Uncomment the `loadfile` property and set it to the path and name of the `omii.ini` file from step 3b.

> ### Note
>
> Verify that you have correctly specified the file system path. For example, for Windows:
>
>   CSInstallDirectory=C\:/csinstall
>
> - or -
>
>   c\:\\install

---

   c. Save and close the file.

6. Change to the temporary directory containing the installer files.

7. Execute the installer script:

   - On Windows: **`csInstall.bat -silent`**

   - On Unix: **`csInstall.sh -silent`**

8. To complete the installation, refer to steps 6 – 7 starting on page 38.

9. When the installation completes successfully, continue with "Post-Installation Steps," on page 41.

Post-Installation Steps

When the installation process completes successfully, perform the steps in this section, as required for your configuration:

A. Setting File Permissions (Unix Only)

If you installed WebCenter Sites on Unix, you must grant the "executable" permission to all files in the `<cs_install_dir>/bin` directory. To do so, perform the following steps:

1. Change to the `<cs_install_dir>/bin` directory.

2. Run the following command: **chmod +x ***

3. Restart Tomcat.

B. Loading the XML Parser

WebCenter Sites contains a modified version of the Microsoft XML Parser (`MSXML.jar` in the `WEB-INF/lib` directory). If a different version of the Parser is referenced in the `CLASSPATH` environment variable, you must change the path to refer to the version used by WebCenter Sites; otherwise, WebCenter Sites will fail when parsing XML.

C. Adding the WebCenter Sites Binaries Directory to the Library Path Variable

> **Note**
>
> If the classpath and library path are not set properly, the **System Tools** node in the **Admin** tab of the WebCenter Sites Admin interface will have reduced functionality and CAS will not start.

In order for the ContentServer component to function in WebCenter Sites, you must add the WebCenter Sites binaries directory, `<cs_install_dir>/bin`, to your library path variable as follows:

- For HP-UX:

  Add `<cs_install_dir>/bin` to `SHLIB_PATH`.

- For Linux and Solaris:

    Add `<cs_install_dir>/bin` to `LD_LIBRARY_PATH`.

- For AIX:

    Add `<cs_install_dir>/bin` to `LIBPATH`.

- For Windows:

    Add `<cs_install_dir>\bin` to your system's `PATH` variable.

For AIX and Solaris based systems, you will have to manually copy the correct library file from the `sigar/bin/<os_type>` folder, located under the Installer folder (into which you extracted the WebCenter Sites installer), to the `<cs_install_dir>/bin` directory. Then, remove the incorrect version from the `<cs_install_dir>/bin` directory.

For example, for AIX 64 bit, copy the `libsigar-ppc64-aix-5.so` from `<Installer>/sigar/bin/AIX64/` to the `<cs_install>/bin` directory and delete the `libsigar-ppc-aix-5.so` from the `<cs_install>/bin` directory.

> **Note**
>
> In the WebCenter Sites log file, the following message indicates that the correct libraries are not found in the library path:
>
> "UnsatisfiedLinkError caught: Content Server is unable to gather/display system information. Ensure that `java.library.path` (or **LD_LIBRARY_PATH**) is pointed to `CSInstallDirectory/bin`"
>
> In such cases, set `-Djava.library.path=<cs_install_dir>/bin` for the application server.
>
> The default WebCenter Sites log file (`sites.log`) is created during the installation process in the `<cs_install_dir>/logs` directory.

D. Verifying the WebCenter Sites Installation

Verify the installation by logging in to Oracle WebCenter Sites as a general administrator and accessing the WebCenter Sites Admin, Contributor, and WEM Admin interfaces. In the process, you will verify that single sign-on functions (by accessing a different application without logging out and back in to WebCenter Sites).

To access the WebCenter Sites interfaces

1. Point your browser to the following URL:

    `http://<server>:<port>/<context>/login`

    where `<server>` is the host name or IP address of the server running WebCenter Sites, `<port>` is the port number of the WebCenter Sites application, and `<context>` is the name of the WebCenter Sites application that was deployed on the server.
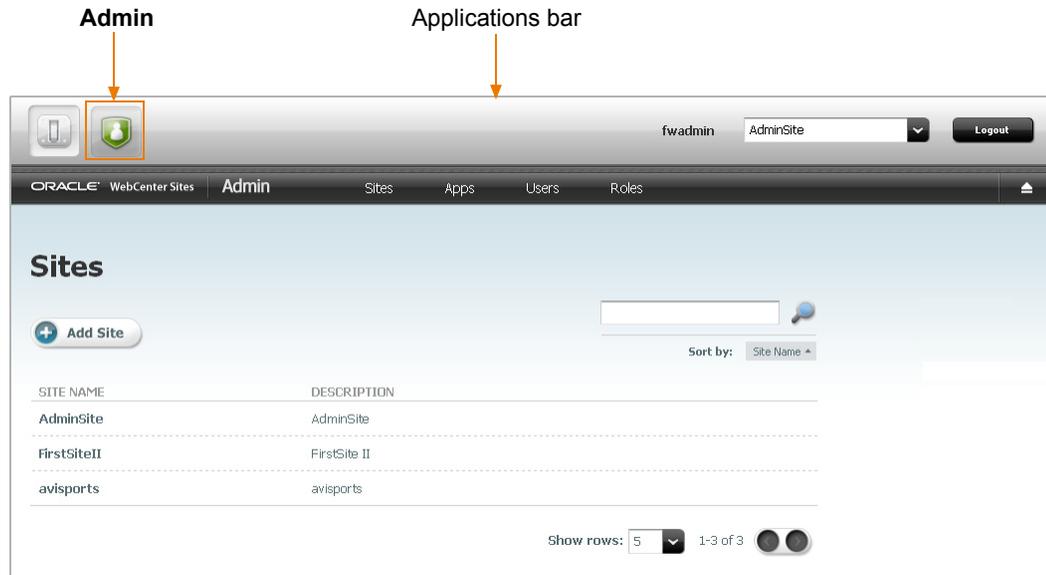
The WebCenter Sites login form is displayed.

2. Enter the following credentials:

  - User name: **fwadmin**

  - Password: **xceladmin**

3. Click **Login**.

4. Access the WEM Admin interface. In the "Site" drop-down, select **AdminSite** and the
icon for the **WEM Admin** interface.

The WEM Admin interface (on AdminSite) is displayed:

5. Switch to the WebCenter Sites Admin interface by navigating to the applications bar and selecting the icon for the WebCenter Sites **Admin** interface:

Admin   Applications bar

The WebCenter Sites Admin interface (on AdminSite) is displayed. Only system administration functionality is available.
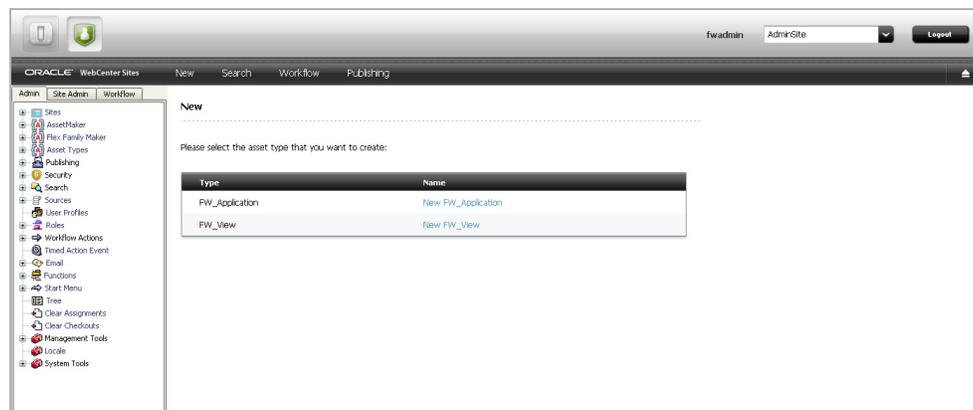
6. Switch to the WebCenter Sites Contributor interface:

Note

The WebCenter Sites Contributor interface is not associated with AdminSite. If the avisports and FirstSite II sample sites are installed, you can switch to either one of these sample sites to access the Contributor interface. If no sample sites are installed, you will have to access the WEM Admin interface (see), create a site, create users, and then assign the users to the site. The Contributor interface is automatically assigned to the site. (For instructions, see the *Oracle WebCenter Sites Administrator's Guide for the Web Experience Management Framework.*) Then continue with this step.

    a. Navigate to the applications bar. In the site selection drop-down menu, select a site other than AdminSite.

Site selection drop-down menu

    b. Since this is the first time you are accessing the selected site, the following screen is displayed. Select the icon for the **Contributor** interface.

(Upon subsequent access, WebCenter Sites opens the application you last accessed for the site you selected.)

The Contributor interface on the site to which you are logged in is displayed:
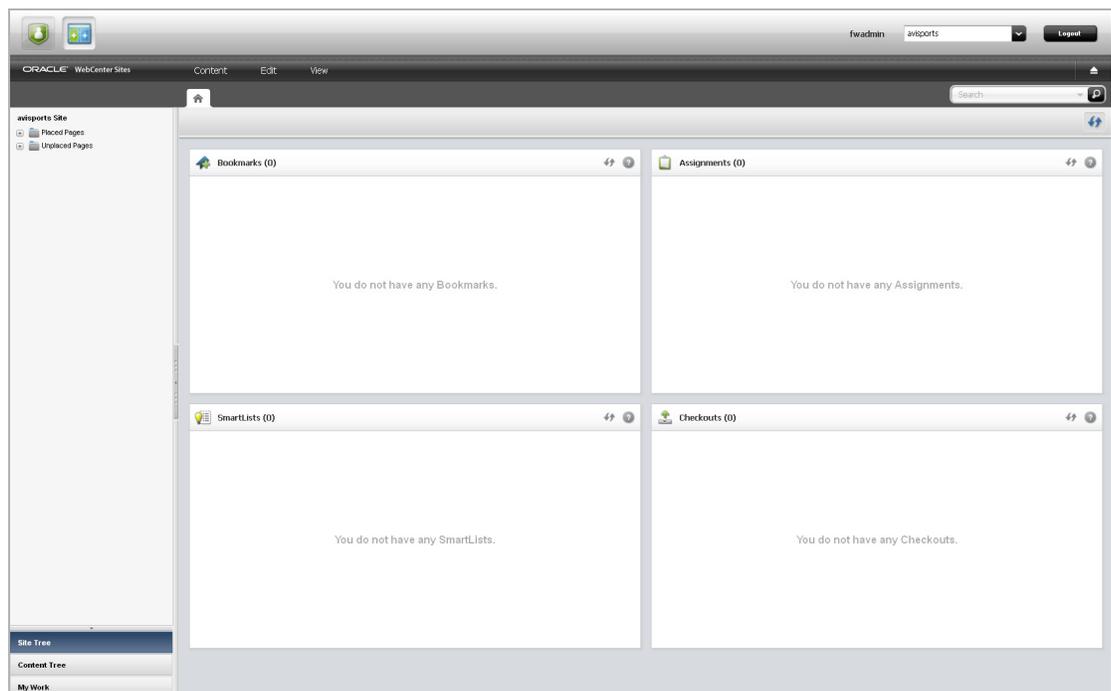
WebCenter Sites is now ready to be configured. Follow the steps in the rest of this chapter.

E. Integrating Oracle Access Manager (OAM) with WebCenter Sites (Optional)

If you wish to replace CAS with Oracle Access Manager (OAM), refer to the instructions in *Oracle WebCenter Sites: Configuring Supporting Software*.

F. Integrating with LDAP (Optional)

If you wish to perform LDAP integration, do the following:

1. Set up a supported LDAP server of your choice. For instructions, see *Oracle WebCenter Sites: Configuring Supporting Software*.

2. Run the LDAP integration program included on the WebCenter Sites CD.

For more information, see *Oracle WebCenter Sites: Integrating with LDAP*.

Note

If you have configured LDAP for the primary cluster member, make sure to run the `configureLDAP.sh` for all secondary cluster members.

G. Setting Up a WebCenter Sites Cluster (Optional)

This section is written on the assumption that you have already installed and configured Tomcat Application Server as specified in the previous sections of this guide, and:

- You are installing a vertical cluster (Tomcat Application Server instances are installed on the same machine).

- You have installed and configured a single instance of WebCenter Sites to run through Tomcat. You have also logged in to the instance and confirmed that it is operational.

Note

If you are clustering CAS, you will have to manually redeploy all secondary CAS cluster members. For instructions, see *Oracle WebCenter Sites: Configuring Supporting Software*.

Step I. Creating Vertical Cluster Members

1. Create an installation directory for each cluster member.

2. Create a new Tomcat instance by following the steps in Chapter 3, "Installing and Configuring Tomcat."

3. Change the port settings of the new instance by following the steps in "Setting Up Multiple Instances of Tomcat to Run Simultaneously," on page 24.

4. Install the WebCenter Sites cluster member on the newly created Tomcat instance. Follow the steps in "Running the GUI Installer," on page 37 or "Installing Silently," on page 39, but observe the following exceptions:

  - When running the GUI installer:

    - In the "Installation Directory" screen, select the installation directory that you created in step 1 of this section.

- In the "Clustering" screen, select **Cluster Member**.

- In the "WebCenter Sites Shared File System" screen, enter the path to the shared file system of the primary cluster member.

- In the "WebCenter Sites URL Parameters" screen, enter the IP address and port number of the load balancer for WebCenter Sites and CAS.

- In the "WebCenter Sites Application Deployment" screen, enter the path to CATALINA_HOME of the Tomcat instance you created in step 1 of this section.

- When configuring the `omii.ini` file for silent installation:

  - Set `CSInstallDirectory` to the installation directory that you created in step 1 of this section.

  - Set `CSInstallType` to `cluster`.

  - Set `CSInstallSharedDirectory` to the shared file system of the primary cluster member.

  - Set `CSInstallWebServerAddress` to the IP address of the load balancer for WebCenter Sites and CAS.

  - Set `CSInstallWebServerPort` to the port number of the load balancer for WebCenter Sites and CAS.

  - Set `CSInstallAppServerPath` to `CATALINA_HOME` of the Tomcat instance you created in step 1 of this section.

  - Set `CASHostName` to the resolvable hostname/IP address of the external load balancer for CAS.

  - Set `CASPortNumber` to the port number of external load balancer for CAS.

  - Set `CASHostNameLocal` to the resolvable hostname/IP address of the internal load balancer for CAS.

  - Set `CASPortNumberLocal` to the port number of internal load balancer for CAS.

  - Set `CASHostNameActual` to the resolvable hostname/IP address of the Server where CAS is actually deployed.

5. For every member of the WebCenter Sites cluster and CAS cluster, edit the `web.xml` file (located in `<path to cs_tomcat directory>/webapps/cs/WEB-INF/`) by adding the line **`<distributable/>`** between the `<web-app>` and `<servlet>` lines:

    ```
    <web-app>
    <distributable/>
    <servlet>
    ```

6. To enable Tomcat to cluster, do the following:

    a. For every member of the cluster, open the `server.xml` file and add the code shown below (replacing the sample values with the values for your system). The code shown below is a sample configuration. If you need more information, refer to the Tomcat documentation.

```
<Cluster className="org.apache.catalina.ha.tcp.SimpleTcpCluster"
      channelSendOptions="8">

   <Manager
         className="org.apache.catalina.ha.session.DeltaManager"
```

```
            expireSessionsOnShutdown="false"
            notifyListenersOnReplication="true"/>
     <Channel
            className="org.apache.catalina.tribes.group.GroupChannel"
            >
        <Membership
            className="org.apache.catalina.tribes.membership.Mcast
            Service"
            address="228.0.0.4"
            port="45564"
            frequency="500"
            dropTime="3000"/>
        <Receiver
            className="org.apache.catalina.tribes.transport.nio.Ni
            oReceiver"
            address="auto"
            port="4180"
            autoBind="100"
            selectorTimeout="5000"
            maxThreads="6"/>
        <Sender
            className="org.apache.catalina.tribes.transport.Replic
            ationTransmitter">
           <Transport
                className="org.apache.catalina.tribes.transport.nio
                .PooledParallelSender"/>
        </Sender>
        <Interceptor
            className="org.apache.catalina.tribes.group.intercepto
            rs.TcpFailureDetector"/>
        <Interceptor
            className="org.apache.catalina.tribes.group.intercepto
            rs.MessageDispatch15Interceptor"/>
     </Channel>
     <Valve className="org.apache.catalina.ha.tcp.ReplicationValve"
            filter=""/>
     <Valve
            className="org.apache.catalina.ha.session.JvmRouteBinderV
            alve"/>
     <Deployer
            className="org.apache.catalina.ha.deploy.FarmWarDeployer"
            tempDir="/tmp/war-temp/"
            deployDir="/tmp/war-deploy/"
            watchDir="/tmp/war-listen/"
            watchEnabled="false"/>
     <ClusterListener
            className="org.apache.catalina.ha.session.JvmRouteSession
            IDBinderListener"/>
     <ClusterListener
            className="org.apache.catalina.ha.session.ClusterSessionL
            istener"/>
  </Cluster>
```

    b. Check the following:

        - All Tomcat instances belonging to the same cluster have the same values for the `mcastAddr` and `mcastPort` in the `Membership` tag.

- All Tomcat instances have a different value for the `tcpListeningPort` in the `Receiver` tag.

7. Make sure there is a `usedisksync` directory in the `Shared` directory of your primary WebCenter Sites installation, or the first one that was created. If the `usedisksync` directory is not already there, then create it with the following command:

`mkdir <path_to_primary_cs_install_dir>/Shared/usedisksync`

8. To finish configuring WebCenter Sites for clustering, edit the following properties by using WebCenter Sites's Property Editor. **Complete the steps below for all cluster members**:

a. Launch the WebCenter Sites Property Editor (make sure your `DISPLAY` variable is set):

`<cs_install_dir>/propeditor.sh`

b. From the **File** menu, select **Open**, navigate to your WebCenter Sites installation directory and open the `futuretense.ini` file.

c. Click **Cluster**.

d. Make sure the following variables are set as shown below:

- `cc.cacheNoSync` is set to `false`
- `ft.sync` is set to a value (assigned by you) that is identical for all members of this cluster, e.g., `cluster1`.
- `ft.usedisksync` is set to the path of the `usedisksync` directory created in .

e. If you have configured LDAP for the primary cluster member, make sure to run `configureLDAP.sh` for all secondary cluster members.

9. Verify the newly created cluster member. For instructions, see .

10. To create additional cluster members, repeat the steps in this section. Once the cluster is created, continue with the next step,

Step II. Balancing Load With mod_proxy_ajp

For every cluster member, complete the following steps:

1. Open the `server.xml` file and add the following attribute to the `Engine` tag:

```
<Engine name="Catalina" defaultHost="localhost"
   jvmRoute="jvm1">
```

Note

Each member can be given any node name as long as the names are unique across members.

2. Open the `httpd.conf` file and add the following to the "Main" server configuration section:

```
<Location /balancer-manager>
   SetHandler balancer-manager
```

```
      Order Deny,Allow
      Deny from all
</Location>


<Proxy balancer://cluster>
   BalancerMember ajp://<tomcat_1>:<ajp_port_tomcat1>
      loadfactor=1 route=<jvmroute_of_tomcat_1>
   BalancerMember ajp://<tomcat_2>:<ajp_port_tomcat2>
      loadfactor=1 route=<jvmroute_of_tomcat_2>
   ProxySet stickysession=JSESSIONID
</Proxy>


ProxyPass /cas balancer://cluster/cas
ProxyPassReverse /cas balancer://cluster/cas
ProxyPass /cs balancer://cluster/cs
ProxyPassReverse /cs balancer://cluster/cs
```

3. For each cluster member, edit the `$CATALINA_HOME/conf/web.xml` file by adding the line **`<distributable/>`** between the `<web-app>` and `<filter>` lines:

```
<web-app>
<distributable/>
<filter>
```

4. Load balancer configuration is now complete. Restart Apache for the changes to take effect.

H. Setting Up a CAS Cluster (Optional)

The installer is configured to deploy CAS only on the primary WebCenter Sites cluster member. In cases where CAS is deployed on a separate server, you will have to manually deploy CAS. Additionally, you must configure and deploy secondary CAS cluster members manually. For instructions, see *Oracle WebCenter Sites: Configuring Supporting Software*.

I. Redeploying CAS (Optional)

There may be cases where you will have to manually redeploy CAS on another server. For instructions on redeploying CAS, see *Oracle WebCenter Sites: Configuring Supporting Software*.

J. Setting Up WebCenter Sites for Its Business Purpose

You are now ready to configure WebCenter Sites for business use. For instructions, see the *Oracle WebCenter Sites Administrator's Guide* and the *Oracle WebCenter Sites Developer's Guide*. The guides explain how to create and enable a content management environment including the data model, content management sites, site users, publishing functions, workflow operations, and client interfaces.