Installing the Advanced Edition using Apache HTTP Server and Oracle8*i* on Linux (Intel)

The following articles describe how to install a WebSphere Application Server Advanced Edition configuration that uses the following--

- SuSE Linux 7.1, 2.4 kernel
- IBM Java 2™ Software Developer's Kit (SDK) 1.3.0
- Apache HTTP Server 1.3.20
- Oracle8*i* Release 3 (8.1.7)
- A single node

See the WebSphere Application Server Supported Software and APIs Web site at www.ibm.com/software/webservers/appserv/doc/latest/prereq.html to determine the products and fix levels that are supported for use with your version of WebSphere Application Server.

 Note: All installation and configuration procedures for WebSphere Application Server Advanced Edition 4.0 on Linux were created and tested using Red Hat Linux. If you are using a different distribution of Linux, some operating system procedures can be different than what is documented in the InfoCenter. Consult your Linux distribution's documentation as necessary.

Steps for installation

Deciding which steps to follow
Installing Apache HTTP Server 1.3.20
Installing Oracle8*i* Release 3 (8.1.7)
Configuring Oracle8*i* Release 3 (8.1.7)
Installing WebSphere Application Server 4.0
Testing the installation
Testing with an enterprise bean (optional)

Deciding which steps to follow

First, check the WebSphere Application Server Supported Hardware, Software, and APIs Web site at www.ibm.com/software/webservers/appserv/doc/latest/prereq.html to ensure that you have the correct prerequisites, including operating system patches. If you have not already done so, install Apache HTTP Server and DB2 UDB, and then obtain the product CD for WebSphere Application Server or download the product from the WebSphere Application Server Download Web site at www.ibm.com/software/webservers/appserv/download.html. WebSphere Application Server comes with the IBM Java 2™ Software Developer's Kit (SDK). Instructions for installation follow:

1. Installing Apache HTTP Server 1.3.20 describes how to download and install Apache HTTP Server.
2. Installing Oracle8*i* Release 3 (8.1.7) describes how to install Oracle8*i*.
3. Configuring Oracle8*i* Release 3 (8.1.7) describes how to configure Oracle8*i* for use with WebSphere Application Server.
4. Installing WebSphere Application Server 4.0 describes how to install WebSphere Application Server by using the **Custom Installation** option.
5. Testing the installation describes how to test the installation and configuration of your WebSphere system.
6. Testing with an enterprise bean describes how to test your WebSphere configuration by using an enterprise bean and the Increment sample.

Installing Apache HTTP Server 1.3.20

This article describes how to do the following:

- Install Apache HTTP Server on a Linux (Intel) machine from files downloaded from the Apache HTTP Server Download Web site at httpd.apache.org/dist.
- Test the installation of Apache HTTP Server.

These instructions assume the following:

- Your machine has enough memory and disk space for the installation. See the Apache HTTP Server documentation Web site at www.apache.org/docs for more information.
- You do not have a previous version of Apache HTTP Server already installed on your machine. If you do have a previous version of Apache HTTP Server installed, you must remove it before installing Apache HTTP Server 1.3.20. See the Apache HTTP Server documentation Web site at www.apache.org/docs for more information.

Note: It is recommended that you install Apache HTTP Server before installing WebSphere Application Server. The WebSphere Application Server installation process changes a Web server's configuration so that the Web server directs certain requests (such as servlet requests) to WebSphere Application Server. If the Web server is not installed before WebSphere Application Server, WebSphere Application Server could function incorrectly.

Installing Apache HTTP Server from downloaded files

You can install Apache HTTP Server from a binary distribution downloaded from the Apache Software Foundation Web site at httpd.apache.org/dist.

Note: Binary distributions of Apache HTTP Server are provided for your convenience; current distributions for specific platforms are not always available. Verify that the binaries you are downloading and installing are for the correct distribution and version of Linux and correct version the kernel.

Perform the following steps to install Apache HTTP Server from a downloaded .tar.gz file:

1. Ensure that you are logged into the machine with superuser (root) privileges.
2. Download the appropriate binary distribution of Apache HTTP Server from the Apache Software Foundation Web site at httpd.apache.org/dist.
3. Uncompress and untar the .tar.gz file you downloaded to extract the Apache HTTP Server packages by using the **tar** command, as follows:

```
# tar -zxvf file_name.tar.gz
```

   In this command, *file_name* is the name of the .tar.gz file you downloaded.

4. Ensure that you are in the directory containing the uncompressed and untarred Apache HTTP Server packages.
5. Install the Apache HTTP Server binaries by using the **install-bindist.sh** script, as follows:

```
# ./install-bindist.sh
```

   The Apache HTTP Server is installed in the /usr/local/apache directory, by default.

6. To change the default configuration of the Apache HTTP Server, edit the httpd.conf, srm.conf, and access.conf files as necessary. See the Apache Directives Web site at www.apache.org/docs/mod/directives.html for more information about editing these files and using Apache HTTP Server runtime directives.

Testing installation of Apache HTTP Server

Perform the following steps to verify that Apache HTTP Server is installed correctly:

1. Start the server by entering the **httpd** command, as follows:

```
# /usr/local/apache/bin/httpd
```

The httpd command attempts to locate the httpd.conf file in the default directory, /usr/local/apache. If the httpd.conf file is located in a different directory, you can specify the full pathname of the httpd.conf file by using the -f option.

2. Start a Web browser and enter the name of the host machine as the URL (http://*host_machine_name*). If you see a Web site that contains links to the Apache Software Foundation Web site and the Powered by Apache logo, the Apache HTTP Server is running properly. Note that you possibly need to adjust the server's configuration for it to run optimally on your machine. For more information, see the Apache HTTP Server documentation Web site at www.apache.org/docs.

Installing Oracle8*i* Release 3 (8.1.7)

This article describes how to install Oracle8*i* on a local Linux (Intel) machine.

Note: Oracle8*i* Release 3 (8.1.7) is not supported for use on Red Hat Linux 7.1. See the WebSphere Application Server Supported Hardware, Software, and APIs Web site at www.ibm.com/software/webservers/appserv/doc/latest/prereq.html for more information.

These instructions assume the following:

- You have enough memory and disk space for your installation. See the Oracle product documentation on the Oracle Web site at docs.oracle.com/database_mp_8i.html for the requirements.
- You do not already have a previous version of Oracle installed on the machine. If a previous version of Oracle is installed, you can need to migrate databases, depending on the version installed. In this case, do not follow these instructions. Instead, refer to the Oracle product documentation.
- Your Oracle database server will be located on the same machine as WebSphere Application Server. This configuration and the use of the default settings documented in these instructions are appropriate only for development and small production system environments. For larger environments where it is preferable to configure the Oracle server on a remote machine, you must install and configure a Oracle client on the same machine on which you install WebSphere Application Server and verify the remote database connectivity. See the IBM Redbook, *WebSphere V3.5 Handbook*, on the IBM Redbooks Web site at www.redbooks.ibm.com/redbooks/SG246161.html for more information about implementing this configuration.

Note: Install Oracle8*i* before installing WebSphere Application Server.

Perform the following steps to install Oracle:

1. Ensure that you are logged into the machine with superuser (root) privileges.
2. Ensure that you have set the following kernel, shared memory, and semaphore parameters correctly:
   - SHMMAX
   - SHMMIN
   - SHMMNI
   - SHMSEG
   - SEMMNI
   - SEMMSL
   - SEMMNS
   - SEMOPM
   - SEMVMX

   For more information about setting these parameters, refer to the *Oracle8i Installation Guide*.

3. Ensure that the DISPLAY and TERM environment variables are set correctly for your environment.
4. Create a file system or directory to contain the Oracle software. Ensure that the location you choose has enough free disk space. This directory or file system represents the value for the ORACLE_BASE environment variable and the home directory of the user named oracle.
5. If you plan to use Oracle in a production environment, it is recommended that you create a file system on a separate partition to store the database files. Refer to the *Oracle8i Installation Guide* and your Linux documentation for information about creating and mounting a file system.
6. Create the operating system group required by Oracle named dba by using the **groupadd** command, as follows:

```
# groupadd dba
```

7. Create the operating system user required by Oracle named oracle by using the **useradd** command, as follows:

```
# useradd -d oracle_base_directory -g dba -s /bin/bash oracle
```

In this command, *oracle_base_directory* represents the full pathname of the file system or directory you created to contain the Oracle software. It is also the home directory of the user named oracle.

8. Add the user named oracle to the group named dba by editing the /etc/group file.
9. Edit the .bash_profile file located in the home directory of the user named oracle to include the following information:

```
#---------------------------------
# Oracle environment setup
#---------------------------------
ORACLE_BASE=oracle_base_directory
export ORACLE_BASE
ORACLE_SID=ORA817
export ORACLE_SID
ORACLE_HOME=$ORACLE_BASE/$ORACLE_SID
export ORACLE_HOME
PATH=$PATH:$ORACLE_HOME/bin
export PATH
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ORACLE_HOME/lib
export LD_LIBRARY_PATH
ORA_CLIENT_LIB=shared
export ORA_CLIENT_LIB
echo 'The Oracle 8.1.7 environment is set'
```

In the example file above, *oracle_base_directory* represents the full pathname of the file system or directory you created to contain the Oracle software and the home directory of the user named oracle.

10. Ensure that the /tmp directory has at least 200 MB of free disk space.
11. Ensure that the Oracle base directory or file system you created has the correct permissions. Navigate to that directory and modify the permissions by using the **chmod** command, as follows:

```
# chmod 777 .
```

12. Insert the Oracle8*i* software CD-ROM into the CD-ROM drive.
13. If necessary, use the **mkdir** command to create a mount point for the CD-ROM. The following command creates a mount point at the directory /cdrom; you can mount the CD-ROM at any location on the machine's local file system.

```
# mkdir /cdrom
```

The commands in these steps assume the CD-ROM is mounted at /cdrom. If you mount the CD-ROM at a different location, use that location when issuing commands.

14. Mount the CD-ROM drive by entering the following command:

```
# mount -t isso9660 /dev/cdrom /cdrom
```

 Note: Some window managers automatically mount a CD-ROM for you. Consult your operating system documentation for more information.
15. Authenticate as the user named oracle by using the **su** command, as follows:

```
# su - oracle
```

16. Ensure that the DISPLAY and TERM environment variables are still set correctly.

17. Navigate to the /cdrom directory.
18. Start the Oracle Universal Installer by executing the **runInstaller** script, as follows:

    ```
    $ ./runInstaller
    ```

    The Welcome dialog box opens. Click **Next**. The File Locations dialog box opens.

19. On the File Locations dialog, verify the values in the **Source** and **Destination** path fields. The value of the **Source** path field must be **/cdrom/stage/products.jar**, and the value of the **Destination** path field must be */oracle_base_directory*/ORA817 (the same as the value of the ORACLE_HOME environment variable). Click **Next**. If this is the first Oracle installation on the machine, the Inventory Location dialog box opens.
20. The Inventory Location dialog prompts you to specify the base directory for installation files. Accept the default value, */oracle_base_directory*/ORA817/oraInventory, or specify a different base directory. Click **Next**. The UNIX Group Name dialog box opens.
21. Type the group name dba in the **UNIX Group Name** field, and then click **Next**.

    Note: You can be prompted to execute the */oracle_base_directory*/ORA817/**orainstRoot.sh** script at this time. Open another terminal, log in as root, and execute the script. After the script has completed, return to the Oracle Universal Installer and click **Retry** to continue the installation process.

    The Available Products dialog box opens.

22. On the Available Products dialog, select the **Oracle8i Enterprise Edition 8.1.7.0.0** option, and then click **Next**. The Installation Types dialog box opens.
23. On the Installation Types dialog, ensure that the **Typical** option is selected, and then click **Next**. The Database Identification dialog box opens.
24. On the Database Identification dialog, type a global database name in the **Global Database Name** field (for example, ORA817.*machine_name*) and verify that the value in the **SID** field is the same as the value you entered for the ORACLE_SID environment variable in the .bash_profile file. Click**Next**. The Database File Location dialog box opens.
25. On the Database File Location dialog, specify the installation location for the Oracle database files in the **Directory for Database Files** field, and then click **Next**. The Choose JDK Home Directory dialog box opens.
26. On the Choose JDK Home Directory dialog, accept the default value for the installation location of the JDK, and then click **Next**. The Summary dialog box opens.
27. Verify the information on the Summary dialog. After you determine that it is correct, click **Install**. The Install dialog box opens and shows the status of the Oracle installation as it progresses.
28. During the installation and linking process, the Setup Privileges dialog can be displayed. It prompts you to execute the */oracle_base_directory*/ORA817/**root.sh** configuration script to set file permissions for Oracle products. To do so, open another terminal, log in as root, and execute the script. When the script has completed, return to the Oracle Universal Installer to finish the installation process.
29. When the installation and linking processes are completed, the Configuration Tools dialog box opens. The Net8 Configuration Assistant Welcome dialog box opens.
30. Select the **Perform Typical Configuration** option and click **Next**. When the Net8 configuration process is complete, the status of the Net8 Configuration Assistant entry on the Configuration Tools dialog changes from in progress... to succeeded.
31. The Oracle Database Configuration Assistant is started and the Database Creation Progress dialog box opens. It shows the progress of the instance and database creation and initialization process. When the database configuration process is complete, the status of the Oracle Database Configuration Assistant entry on the Configuration Tools dialog changes from in progress... to succeeded.
32. The Oracle HTTP Server is started. When the server has been started successfully, the status of the Starting Web server in non-SSL mode on port 7777 entry on the Configuration Tools dialog changes from in progress... to succeeded. The End of Installation dialog box opens.
33. Click **Exit** to close the Oracle Universal Installer. Click **Yes** to confirm the action.
34. Unmount the CD-ROM before removing it from the CD-ROM drive by using the **umount** command, as follows:

    ```
    # umount /cdrom
    ```

35. Proceed to the article Configuring Oracle8*i* Release 3 (8.1.7).

Configuring Oracle8*i* Release 3 (8.1.7)

This article describes how to create the Oracle users required by WebSphere Application Server. These instructions assume that you have installed Oracle8*i*.

Perform the following steps to configure Oracle for use with WebSphere Application Server:

1. Ensure that you are logged in as the user named oracle.
2. Edit the initialization file $ORACLE_HOME/dbs/init*your_SID*.ora, as follows:
   - Add the line `open_cursors = 200`
   - Ensure that the default value of `50` for the `processes` setting is sufficient for your database by reading the information included in the init*your_SID*.ora file. To increase the value of this setting, comment or uncomment the appropriate lines in the file.
3. Restart your Oracle database by using the **startup** command, as follows:

```
$ svrmgrl
SVRMGR> connect internal
SVRMGR> startup
SVRMGR> quit
```

   Note: You might need to stop the database before you are able to restart it. Stop the Oracle database by using the **shutdown** command, as follows:

```
$ svrmgrl
SVRMGR> connect internal
SVRMGR> shutdown
SVRMGR> quit
```

4. Ensure that the Oracle listener process is started. If necessary, start the it by using the **start** command, as follows:

```
$ lsnrctl
LSNRCTL> start
LSNRCTL> quit
```

5. Create the Oracle users named EJSADMIN and EJB required by WebSphere Application Server. You might or might not want to grant user EJSADMIN dba authority. Create these users with the proper authorities, by entering the following set of commands using these values: SYSTEM is user account created by the Oracle Database Configuration Assistant; `manager` is the default password for the SYSTEM account; and the *EJSADMIN_password* is the password you specify for the user named EJSADMIN.
   - If you do want to grant dba authority to the user EJSADMIN, enter the following commands:

```
$ sqlplus SYSTEM/manager
SQL> create user EJSADMIN identified by EJSADMIN_password;
SQL> grant connect, resource, dba to EJSADMIN;
SQL> create user EJB identified by EJB;
SQL> grant connect, resource to EJB;
SQL> quit
```

   - If you do **not** want to grant dba authority to the user EJSADMIN, enter the following commands:

```
$ sqlplus SYSTEM/manager
SQL> create user EJSADMIN identified by EJSADMIN_password quota 100M \
on SYSTEM;
SQL> create user EJB identified by EJB quota 100M on USERS;
SQL> grant connect, resource to EJSADMIN;
SQL> grant connect, resource to EJB;
SQL> quit
```

6. If any of your applications use JTA datasources, enter the following commands using these values: SYS is user

account created by the Oracle Database Configuration Assistant; change_on_install is the default password for the SYS account.

```
$ sqlplus SYS/change_on_install
SQL> grant select on dba_pending_transactions to EJB;
SQL> quit
```

7. Test access to the new database with the EJSADMIN user ID by doing the following:
   a. Enter the command $ sqlplus ejsadmin/*EJSADMIN_password*. A message opens indicating a successful connection.
   b. Enter the command SQL> exit to log out as the EJSADMIN user.

Installing WebSphere Application Server 4.0

This article describes how to install WebSphere Application Server on a Linux (Intel) machine by using the Custom Installation option.

These instructions assume the following:

- The machine has enough memory and disk space for your installation. See the WebSphere Application Server Supported Hardware, Software, and APIs Web site at www.ibm.com/software/webservers/appserv/doc/latest/prereq.html for the requirements.
- If you plan to use IBM HTTP Server, you will select it for installation during the WebSphere Application Server installation process. If you plan to use a different supported Web server with WebSphere, you have already installed it on the same machine that will contain WebSphere Application Server.
- You have installed and configured a supported database for use with WebSphere Application Server.
- You do not have a previous version of WebSphere Application Server already installed on this machine. If you do have a previous version of WebSphere Application Server already installed, do not follow these instructions. Instead, see the article Migration overview.

Note: IBM HTTP Server is provided with WebSphere Application Server. If you want to install and use a different supported Web server, you must purchase and install it separately.

Perform the following steps to install WebSphere Application Server:

1. Ensure that you are logged into the machine with superuser (root) privileges.
2. If IBM HTTP Server or another Web server is running on your system, stop the Web server.
3. If you have a version of IBM HTTP Server older than version 1.3.19 installed on your machine, you must uninstall it before using the WebSphere Application Server installation program to install IBM HTTP Server 1.3.19.
4. Insert the WebSphere Application Server CD-ROM into the CD-ROM drive.
5. If necessary, use the **mkdir** command to create a mount point for the CD-ROM. The following command creates a mount point at the directory /cdrom; you can mount the CD-ROM at any location on the machine's local file system.

   ```
   # mkdir /cdrom
   ```

   The commands in these steps assume the CD-ROM is mounted at /cdrom. If you mount the CD-ROM at a different location, use that location when issuing commands.

6. Mount the CD-ROM drive by entering the following command:

   ```
   # mount -t isso9660 -r /dev/cdrom /cdrom
   ```

   Note: Some window managers automatically mount a CD-ROM for you. Consult your operating system documentation for more information.
7. Ensure that your DISPLAY and TERM environment variables are set properly.
8. If the supported Web server or database you plan to use with WebSphere is newer than the version currently required

by WebSphere Application Server, you must update the prereq.properties file or disable the prerequisite checking functionality before installing WebSphere Application Server.

To obtain an updated prereq.properties file, download the latest version from the WebSphere Application Server Tools Web site at www.ibm.com/software/webservers/appserv/tools.html. Ensure that the updated prereq.properties file is downloaded or copied into the local /tmp directory.

To disable prerequisite checking functionality, perform the following steps:
   a. Copy the prereq.properties file from the /cdrom directory to the /tmp directory on the machine on which you plan to install WebSphere Application Server.
   b. Open the prereq.properties file in a text editor and disable prerequisite checking for an individual component by changing the value of the specific key from 1 to 0.
   c. Save the edited prereq.properties file.

 9. Navigate to the /cdrom directory.
10. If you have not downloaded an updated prereq.properties file or disabled the prerequisite checking functionality, start the WebSphere Application Server installation program by using the **install.sh** command, as follows:

```
# ./install.sh
```

If you have downloaded an updated prereq.properties file or disabled the prerequisite checking functionality as detailed in Step 8, start the WebSphere Application Server installation program by using the **install.sh** command, as follows:

```
# ./install.sh -prereqfile /tmp/prereq.properties
```

11. The Welcome to the IBM WebSphere Application Server Setup program dialog box opens. Click **Next** to continue.
12. The Install Options dialog box opens. Select **Custom Installation**, and click **Next**.
13. The Choose Application Server Components dialog box opens. Select the components you want to install and deselect the components you do not want to install. Note the following information:
    o The Java 2 Software Developer's Kit (SDK) is installed by default.
    o The **Server**, **Admin**, **Samples**, **Application Assembly and Deployment Tools**, **IBM HTTP Server 1.3.19**, and **WebServer Plugins** components are selected for installation by default.
    o If you plan to use WebSphere Application Server with IBM HTTP Server, ensure that the **IBM HTTP Server 1.3.19** and **Web Server Plugins** options are selected.
    o If you plan to use WebSphere Application Server with a different supported Web server, ensure that the **Web Server Plugins** option is selected.

      Note: No plug-ins are required to launch the Application Server or the administrative console. However, for production applications, you will not be able to serve servlets without having installed a supported Web server and corresponding Web server plug-in.

      For non-production applications, you can use the internal HTTP transport system to serve servlets without installing a Web server plug-in by using the internal HTTP transport port 9080. For example, to serve the sample snoop servlet by using the internal HTTP transport, enter the URL http://*local_host*:9080/servlet/snoop. The internal HTTP transport mechanism is not designed for use in a production environment.

    o If you plan to install the Web server plug-in for IBM HTTP Server, you must select the **IBM HTTP Server 1.3.19** option, or have it already installed on the machine.
    o These instructions assume that you are installing all of the components.

    Click **Next** to continue.

14. If you selected the **Web Server Plugins** option, the Choose Application Server Components dialog box opens. Select the appropriate plug-in for your Web server, and click **Next**.
15. The Database Options dialog box opens. Depending on the database you have installed, complete one of the following set of instructions:

      o If you are using DB2, perform the following steps in the Database Options dialog:

          a. In the **Database Type** field, select **DB2** from the pull-down menu.
          b. Ensure that **Remote DB** is not selected. For this example, the database and WebSphere Application Server are installed on the same node.
          c. In the **Database Name (Database SID)** field, type the name of the database, `was40`.
          d. In the **DB Home** field, type the full pathname of the home directory of the DB2 instance owner, `/home/db2inst1`, or specify the full pathname of the home directory by using the **Browse** button.
          e. The **DB URL** field cannot be edited.
          f. The **Server Name** field cannot be edited.
          g. The **Port Number** field cannot be edited.
          h. In the **Database User ID** field, type the name of the database instance owner, `db2inst1`.
          i. In the **Database Password** field, type the current password for the database instance owner.
          j. Click **Next** to continue.

      o If you are using Oracle, perform the following steps in the Database Options dialog:

          a. In the **Database Type** field, select **Oracle** from the pull-down menu.
          b. Ensure that **Remote DB** is not selected. For this example, the database and WebSphere Application Server are installed on the same node.
          c. In the **Database Name (Database SID)** field, type the name of the Oracle database you created. For example, `ORA817.`*`machine_name`*.
          d. In the **DB Home** field, type the full pathname of the directory you created to contain the Oracle software and to be the home directory of the user named oracle, or specify the full path name of the directory by using the **Browse** button. This path should also be the value of the ORACLE_HOME environment variable.
          e. In the **DB URL** field, accept the default value `jdbc:oracle:thin:@`*`fully_qualified_domain_name`*`:`*`port_number`*`:`*`database_name`*, or specify a different URL for accessing the database.
          f. In the **Server Name** field, type the name of the machine on which the database is installed.
          g. In the **Port Number** field, type the port number used to access the database.
          h. In the **Database User ID** field, type the name of the database owner, `EJSADMIN`.
          i. In the **Database Password** field, type the current password for the database owner.
          j. Click **Next** to continue.

16. The Select Destination Directory dialog opens. Specify the directory in which you want to install WebSphere Application Server. You can either accept the default destination directory or specify a different one by typing the full pathname or by clicking **Browse**. Note that if you've selected IBM HTTP Server for installation, you cannot modify the destination directory. Click **Next** to continue.
17. The Install Options Selected dialog box opens. Verify that the information is correct and click **Install** to complete the installation.
18. Depending on the machine's configuration, the Location of Configuration files dialog box can open. It prompts you to enter the full pathname of the directory in which you want to store the specified Web server configuration file. Specify the full pathname of the file by typing it in the field or by clicking **Browse**.
19. The Setup Complete dialog box opens. To view the ReadMe file, ensure that **Yes, I want to view the ReadMe File** is selected and click **Finish**; the ReadMe file is displayed in a default browser window. To view the ReadMe file at a later time, deselect **Yes, I want to view the ReadMe File** and click **Finish** to exit from the WebSphere Application Server installation program.
20. The WebSphere Application Server - First Steps dialog box opens. You can use this GUI to access product information in the InfoCenter, start the administrative server, launch the administrative console, or launch the application assembly tool. Because you must first start and possibly configure the Web server before using WebSphere, close this dialog for now. You can launch the First Steps GUI at a later time by running the **firststeps.sh** script located in the /opt/WebSphere/AppServer/bin directory.
21. Unmount the CD-ROM before removing it from the CD-ROM drive by using the **umount** command, as follows:

```
# umount /cdrom
```

22. If you are using a Web server other than IBM HTTP Server, start the server. If you are using IBM HTTP Server and have installed it during the WebSphere Application Server installation, you may need to configure the Web Server to run it successfully.

Perform the following steps to verify that IBM HTTP Server is installed and configured correctly:
   a. Ensure that the Web server is running. If not, start it by entering the following command:

```
# /opt/IBMHTTPServer/bin/apachectl start
```

   b. Start a browser and enter the name of the local machine as the URL. If you see the IBM HTTP Server Web page, the server is installed and configured correctly.

See the IBM HTTP Server documentation Web site at www.ibm.com/software/webservers/httpservers/library.html for more information about configuring IBM HTTP Server.

To enable the Secure Sockets Layer (SSL) for IBM HTTP Server, see the IBM HTTP Server documentation Web site at www.ibm.com/software/webservers/httpservers/doc/v1319/index.html for more information.

23. Proceed to the article Testing the installation.

Testing the installation

This article describes how to test the installation and configuration of your WebSphere Application Server system. These instructions assume that you have installed a supported Web server, database, and the WebSphere Application Server component.

Perform the following steps to test your WebSphere installation:

1. Ensure that you are logged into the machine with superuser (root) privileges.
2. Start the WebSphere administrative server by executing the **startupServer** script, as follows:

```
# cd /opt/WebSphere/AppServer/bin
# ./startupServer.sh
```

Ensure that the administrative server has started successfully by checking the file named tracefile located in the /opt/WebSphere/AppServer/logs directory. The message Server open for e-business appears in this file when the server has started successfully.

3. Start the administrative console by running the **adminclient** script, as follows:

```
# cd /opt/WebSphere/AppServer/bin
# ./adminclient.sh
```

4. When the console displays the message Console Ready, administer the application server by performing the following steps:
   a. When the console opens, a tree view is displayed. Click the plus sign (+) next to **WebSphere Administrative Domain** entry to expand the view.
   b. Expand the view of the **Nodes** entry.
   c. Identify the name of your host machine and expand the view of that entry.
   d. Expand the view of the **Application Servers** entry.
   e. Select the **Default Server** entry and click the **Start** icon located on the toolbar. An information window opens, and indicates that the server has started. Click **OK** to close the information window.

   After the default server is started initially, it will start automatically if it stops or if you restart the machine. If the administrative server fails, the default server continues to run.

   f. Click **OK**.
5. Ensure that the Web server is running. If the Web server is not running, start it.
6. Start a Web browser and enter the URL for the snoop servlet, which is a standard sample servlet that is installed by default, as follows:

```
http://machine_name/servlet/snoop
```

In this command, *machine_name* represents the name of the machine on which WebSphere is running. Information about /servlet/snoop is displayed.
7. Proceed to the article Testing with an enterprise bean.

Testing with an enterprise bean

This article describes how to test your WebSphere configuration by using an enterprise bean and the Increment sample. These instructions assume that you have installed your WebSphere Application Server system and have tested the installation by using the instructions in the article Testing the installation.

Perform the following steps to test your WebSphere configuration using an enterprise bean:

1. Ensure that you are logged into the machine with superuser (root) privileges.
2. Ensure that the administrative console is running.
3. Ensure that the default server (located under **WebSphere Administrative Domain > Nodes >** *node_name* **> Application Servers**) is running.
4. Start a Web browser and specify the following URL:

   ```
   http://machine_name/webapp/examples/HitCount
   ```

   In this command, *machine_name* represents the name of the machine on which WebSphere is running. When the Web page opens, several selection options are displayed.
5. Under the heading **Generate hit count using**, click the radio button for the **Enterprise Java Bean** option.
6. Under the heading **Transaction Type**, click the radio button for the **None** option.
7. Click **Increment**.

   If the number of hits is displayed, WebSphere is functioning properly.

Uninstalling WebSphere Application Server

Perform the following steps to uninstall WebSphere Application Server from a UNIX machine:

1. Ensure that you are logged into the machine with superuser (root) privileges.
2. If IBM HTTP Server or another Web server is running on your system, stop the Web server.

   Note: Although IBM HTTP Server can be installed using the WebSphere Application Server installation program, it is not uninstalled when you uninstall WebSphere Application Server. It must be uninstalled separately. See the IBM HTTP Server Library Web site at www.ibm.com/software/webservers/httpservers/library.html for more information.

3. Ensure that your DISPLAY and TERM environment variables are set properly.
4. Navigate to the root installation directory (/opt/WebSphere/AppServer on HP-UX, Linux, and Solaris; /usr/WebSphere/AppServer on AIX) and execute the **uninstall.sh** script as follows:

   ```
   # ./uninstall.sh
   ```

5. The uninstallation program starts and the Uninstall dialog box opens. Click **Uninstall** to remove WebSphere Application Server from the machine.
6. To ensure that subsequent installations of WebSphere Application Server do not conflict with files left on the machine from a previous installation, use the **rm -r** command to remove the WebSphere directory structure. Use caution when executing this command to prevent the unintentional removal of portions of the file system.