

## Installing the Advanced Single Server Edition using IBM HTTP Server on HP-UX--Custom Installation

The steps that follow describe how to install a configuration of WebSphere Application Server that uses the following--

- HP-UX 11.0
- Java 2 Software Development Kit (SDK) 1.3 (version supplied with WebSphere Application Server)
- IBM HTTP Server 1.3.19
- A single node or multiple nodes

See the WebSphere Application Server Supported Hardware, Software, and APIs Web site at [www.ibm.com/software/webservers/appserv/doc/latest/prereq.html](http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html) to learn which products and fix levels are supported for your level of WebSphere Application Server.

### Steps for installation

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### 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](http://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, set the kernel parameters and then obtain the product CD-ROM for WebSphere Application Server or download the product from the Web site [www.ibm.com/software/webservers/appserv/download.html](http://www.ibm.com/software/webservers/appserv/download.html). WebSphere Application Server comes with the Java 2 SDK and IBM HTTP Server. Instructions for installation follow:

1. [Setting kernel parameters](#), as needed
2. [Installing WebSphere Application Server--Custom Installation option](#)
3. [Testing the installation](#)
4. [Testing with an enterprise bean](#)

### Setting kernel parameters

This article describes how to change particular operating system kernel parameters on an HP machine to make WebSphere Application Server run effectively. To set kernel parameters, perform the following steps:

1. Ensure that you are logged into the host machine with superuser (root) privileges.
2. Determine the machine's physical memory by doing the following. You will need this value when configuring kernel parameters:
  - a. Start the HP-UX System Administration Manager (SAM) utility.
  - b. Select **Performance Monitors**, then **System Properties**.
  - c. Click the **Memory** tab and note the value for **Physical Memory**.
  - d. Click **OK** and exit from the SAM utility.
3. In order to set the maxfiles and maxfiles\_lim parameters to at least 4096, you must first edit the file /usr/conf/master.d/core-hpux to allow values greater than 2048 to be set by using the SAM utility. Do the following:
  - a. Open the file /usr/conf/master.d/core-hpux in a text editor.
  - b. Change the line

```
*range maxfiles<=2048
```

to

```
*range maxfiles<=60000
```

- c. Change the line

```
*range maxfiles_lim<=2048
```

to

```
*range maxfiles_lim<=60000
```

- d. Save these changes and close the file. The old values for these parameters might still be stored in the file `/var/sam/boot.config`. To force the SAM utility to create a new `boot.config` file, do the following:
1. Move the existing version of the `boot.config` file located in the directory `/var/sam` to another location (the `/tmp` directory, for instance).
  2. Start the SAM utility.
  3. Select **Kernel Configuration**, then **Configurable Parameters**. When the Kernel Configuration window opens, a new `boot.config` file exists.

Alternatively, you can enter the following command to rebuild the `boot.config` file:

```
# /usr/sam/lbin/getkinfo -b
```

4. Set the parameters listed in Table 1 to the values listed by doing the following:
- a. Start the SAM utility.
  - b. Select **Kernel Configuration**, then **Configurable Parameters**.
  - c. Highlight a parameter that you want to change and select **Actions**, then **Modify Configurable Parameter**.
  - d. Type the new value for the parameter in the **Formula/Value** field and click **OK**.
  - e. Repeat these steps for each of the parameters listed in Table 1.
  - f. After you have set all of the parameters, select **Actions**, then **Process New Kernel**.
  - g. An information window opens, confirming your decision to restart the machine. Click **Yes**.

If other information windows open, requesting information particular to your installation, follow the on-screen instructions to restart your machine and to enable the new settings to take effect.

Alternatively, use the **HPjconfig** configuration utility available from the Java products for HP-UX Web site at [www.hp.com/go/java](http://www.hp.com/go/java). This pure Java application provides kernel parameter recommendations tailored to your specific Java enterprise services and HP-UX hardware platform. It supports only selected machine types, however. Refer to the information on this Web site to verify that your machine is supported and for instructions on downloading and installing the utility.

**Table 1**

Parameter	Value
<i>maxfiles</i>	4096
<i>maxfiles_lim</i>	4096
<i>max_thread_proc</i>	1024
<i>maxuprc</i>	512
<i>nproc</i>	1024
<i>nflocks</i>	8192
<i>ninode</i>	2048

<i>nfile</i>	4 * <i>ninode</i> value
<i>msgseg</i>	32767 (or less)
<i>msgmnb</i>	65 535
<i>msgmax</i>	65 535
<i>msgtql</i>	1024
<i>msgmap</i>	258
<i>msgmni</i>	256
<i>msgssz</i>	16
<i>semnmi</i>	512
<i>semmap</i>	514
<i>semnms</i>	1024
<i>semnmu</i>	1020 ( <i>nproc</i> value minus 4)
<i>shmmax</i>	483 183 821 (Ensure that this parameter is set to 483 183 821 or 90% of the physical memory (in bytes), whichever is higher. For example, if you have 512 MB of physical memory in your system, set <i>shmmax</i> to 483 183 821 (512 * 0.9 * 1024 * 1024).
<i>shmseg</i>	16
<i>shmmni</i>	300

5. If you plan to redirect displays to non-HP machines, do the following before running applications that have a graphical user interface, such as the WebSphere Application Server applications that are started with the scripts **install.sh** or **adminclient.sh**:

- a. Enter the following command to obtain information on all public locales accessible to your application:

```
# locale -a
```

- b. Choose a value for your system from the output that is displayed and set the LANG environment variable to this value. Here is an example command that sets the value of LANG to en\_US.iso88591:

```
# export LANG=en_US.iso88591
```

## Installing WebSphere Application Server 4.0--Custom Installation option

This article describes how to install WebSphere Application Server on a local HP machine. These instructions assume the following:

- Your 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](http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html) for the requirements.
- You do not have a previous version of WebSphere Application Server already installed. If you do have a previous version of WebSphere Application Server installed, do not follow these instructions. Instead, refer to the article "[Migration overview](#)."
- If you are using IBM HTTP Server as your Web server, you will install it at the same time and onto the same node as you install WebSphere Application Server. If you are using another supported Web server with WebSphere Application Server, you have already installed it onto the same node as WebSphere Application Server.

**Note:** You must purchase and install any Web server except IBM HTTP Server *before* you install WebSphere Application Server. IBM HTTP Server is supplied with WebSphere Application Server and can be installed automatically during installation of WebSphere Application Server.

To install WebSphere Application Server, do the following:

1. Ensure that you are logged onto the host machine with superuser (root) privileges.

2. Ensure that the **swagentd** daemon is running by entering the following command:

```
# ps -ef | grep swagentd
```

- o If the **swagentd** daemon is running, output similar to the following is displayed:

```
root    10431    10128    0    10:43:33 pts/0    0:00    grep swagentd
root    1391      1      0    May  9   ?        0:00    /usr/sbin/swagentd -r
```

- o If the **swagentd** daemon is not running, start it by entering the following command:

```
# swagentd -r
```

3. If a preexisting Web server on your system is running, stop the Web server. If you plan to install IBM HTTP Server 1.3.19 as part of the WebSphere Application Server installation and a version of IBM HTTP Server prior to 1.3.19 is already installed on your system, you must uninstall it in order for the WebSphere Application Server installation program to successfully install IBM HTTP Server 1.3.19.
4. Insert the WebSphere Application Server CD-ROM into the CD-ROM drive.
5. Mount the CD-ROM by following the instructions in the file "[Mounting a CD-ROM on HP-UX](#)." The following steps assume that the CD-ROM drive is mounted at /cdrom.
6. Navigate to the correct directory on the WebSphere Application Server CD-ROM by entering the following command:

```
# cd /cdrom/hp
```

7. If the supported Web server you plan to use with WebSphere Application Server 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](http://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 the prerequisite checking functionality, perform the following steps:

- a. Copy the prereq.properties file from the /cdrom/hp 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.
8. If you have *not* downloaded a new prereq.properties file or disabled the prerequisite checking functionality as detailed in Step 7, run the installation script file by entering the following command:

```
# /cdrom/hp/install.sh
```

If you *have* downloaded a new prereq.properties file or disabled the prerequisite checking functionality as detailed in Step 7, run the installation script file by entering the following command:

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

9. Click **Next** to pass the introductory page.
10. The Install Options window opens. Select **Custom Installation** and then click **Next**.
11. The Choose Application Server Components window 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 Development Kit (SDK) is installed by default.
  - o The **Server, Samples, Application Assembly and Deployment Tools, IBM HTTP Server 1.3.19, and WebServer Plugins** components are selected for installation by default.

- 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.
- 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. 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://machine_name:9080/servlet/snoop
```

In this command, *machine\_name* represents the name of the machine on which WebSphere Application Server is running. The internal HTTP transport mechanism is not designed for use in a production environment.

- 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.
- These instructions assume that you are installing all of the components.

Click **Next** to continue.

12. A window opens that lets you select the plug-in. In this window, do the following:
  - a. Select the plug-in option for your Web server.
  - b. Click **Next**.

Only IBM HTTP Server 1.3.19 is provided with WebSphere Application Server. You must separately purchase and install the other supported Web servers.

13. The Select Destination Directory window opens. Specify the directory into 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 its destination directory. Click **Next** to continue.
14. A window opens that lists the options you have selected to install. Click **Install** to begin the installation.
15. If you are installing IBM HTTP Server automatically at the same time as you install WebSphere Application Server, a window opens, prompting you for the full pathname and file name of the configuration file for the IBM HTTP Server, httpd.conf. Type the location of this file and click **OK**.
16. The Setup Complete window 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.
17. The WebSphere Application Server - First Steps window opens. You can use the GUI to access product information in the InfoCenter, start or stop the application server, run samples within your application server environment, launch the administrative console, or launch the application assembly tool. Because you must first start and possibly configure your Web server, close this window for now. If you later want to access the First Steps window, do the following:
  - a. Navigate to the directory containing the **firststeps.sh** script (by default, /opt/WebSphere/AppServer/bin) by using the **cd** command, as follows:

```
# cd /opt/WebSphere/AppServer/bin
```

- b. Execute the **firststeps.sh** script, as follows:

```
# ./firststeps.sh
```

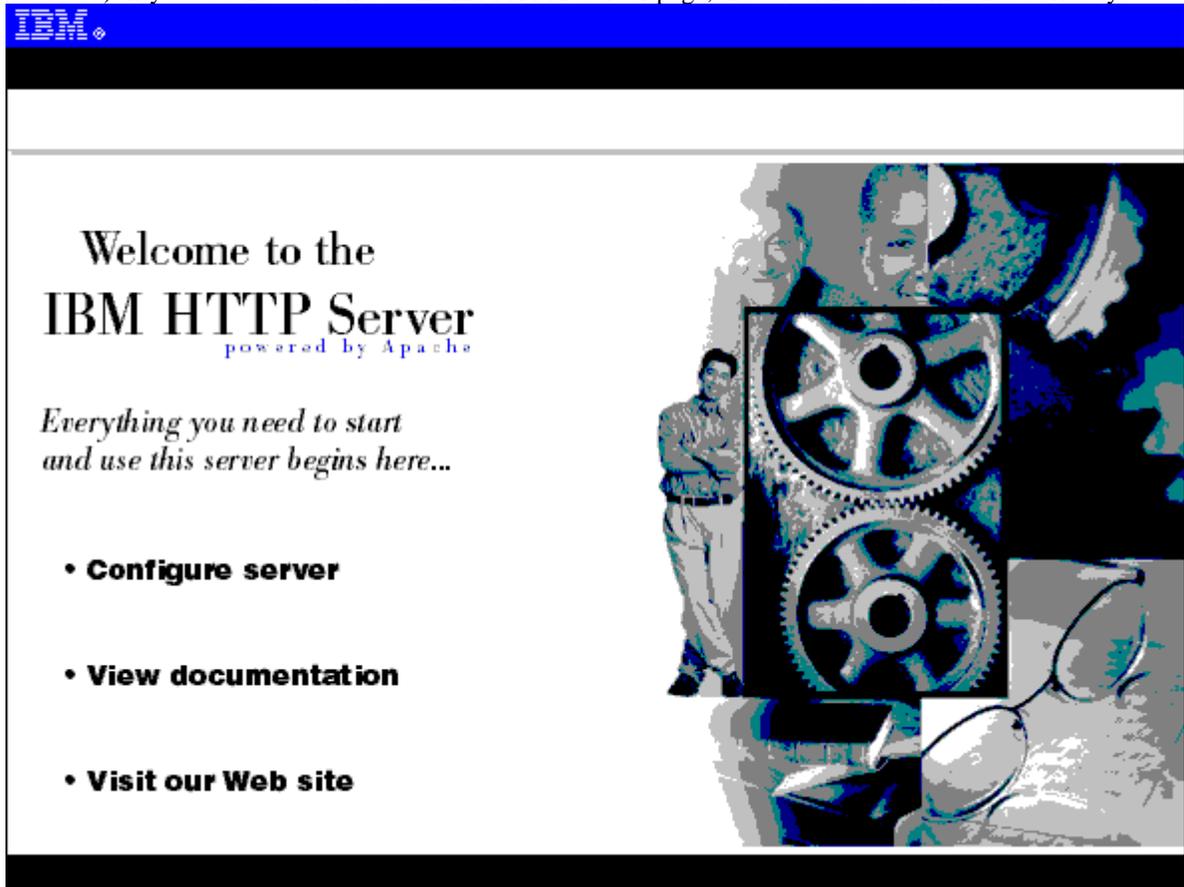
18. Unmount the CD-ROM before removing it from the CD-ROM drive by following the instructions in the file "[Mounting a CD-ROM on HP-UX.](#)"
19. If you are using a Web server other than IBM HTTP Server, start the server. If you installed IBM HTTP Server as

part of the WebSphere Application Server installation, you might need to configure it. Perform the following steps to verify that the IBM HTTP Server is installed correctly:

- a. Ensure that the Web server is running or start it by entering the following command:

```
# /opt/HTTPServer/bin/apachectl start
```

- b. Open a Web browser window and type the name of the host machine as the URL ([http://host\\_machine](http://host_machine) or [localhost](http://localhost)). If you see the Welcome to the IBM HTTP Server page, the server has been installed correctly.



Note that you might need to make configuration adjustments to the server in order to run it successfully on your system. See the IBM HTTP Server documentation at [www.ibm.com/software/webservers/htpservers/library.html](http://www.ibm.com/software/webservers/htpservers/library.html) for more information.

To enable the Secure Sockets Layer (SSL) on IBM HTTP Server, see the IBM HTTP Server documentation at [www.ibm.com/software/webservers/htpservers/doc/v1319/9atstart.htm](http://www.ibm.com/software/webservers/htpservers/doc/v1319/9atstart.htm) for more information.

## Testing the installation

This article describes how to test your installation and configuration of WebSphere Application Server. These instructions assume that you have installed a supported Web server and WebSphere Application Server. Perform the following steps to test your WebSphere Application Server installation:

1. Ensure that you are logged into the host machine with superuser (root) privileges.
2. Navigate to the directory containing the **startServer.sh** script (located by default in the `/opt/WebSphere/AppServer/bin` directory) by using the **cd** command, as follows:

```
# cd /opt/WebSphere/AppServer/bin
```

3. Start the server by entering the following command:

```
# ./startServer.sh
```

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

4. Open a Web browser window and enter the following URL:

```
http://localhost:9090/admin
```

5. The Login window opens and prompts you to enter a user ID to which your configuration changes will be saved. Enter a user ID and click **Submit**. If you do not care to save changes using your user ID, click **Submit** without entering an ID and your changes will be saved using the default user ID `User`.

If the user ID you choose is already in use and in session, you are prompted to do one of the following:

- o Force the existing user ID out of session. The configuration file that was being used by the existing user ID will be saved in a temporary storage area. You will be prompted to load the saved file; choosing not to do so will delete it from the temporary storage area.
  - o Wait for the existing user ID to log out or time out of the session.
  - o Select a different user ID.
6. Administer the application server by doing the following:
    - a. When the console opens, a tree view is displayed. Click the plus sign (+) next to the **Nodes** entry to expand the view.
    - b. Find your host name and expand the view of that node.
    - c. Click the plus sign (+) next to the **Application Servers** entry to expand the view.
    - d. Select the **Default Server** entry and view the information displayed in the right panel. If the value for the **Execution State** field is `STOP`, click the drop-down menu and select `START`.

After the default server is started initially, it will start automatically if it stops or if you restart the machine.

- e. Click **OK**.
7. Test the server by doing the following:
    - a. Ensure that the Web Server is running. If the Web server is not running, start it.
    - b. Open a Web browser window and enter the URL for the snoop servlet, which is a standard sample servlet installed by default, as follows:

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

In this command, `machine_name` represents the name of the machine on which WebSphere Application Server is running. Information on `/servlet/snoop` is displayed.

8. To stop the console, close the browser. Ensure that you save any changes that you want to keep. Unless you save the changes, they will be lost when you close the browser.

## Testing with an enterprise bean

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

1. Ensure that you are logged into the host machine with superuser (root) privileges.
2. Navigate to the directory containing the `startServer.sh` script (located by default in the `/opt/WebSphere/AppServer/bin` directory) by using the `cd` command, as follows:

```
# cd /opt/WebSphere/AppServer/bin
```

3. Start the server by entering the following command:

```
# ./startServer.sh
```

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

4. Open a Web browser window and enter the following URL:

```
http://localhost:9090/admin
```

5. The Login window opens and prompts you to enter a user ID to which your configuration changes will be saved. Enter a user ID and click **Submit**. If you do not care to save changes using your user ID, click **Submit** without entering an ID and your changes will be saved using the default user ID `User`.

If the user ID you choose is already in use and in session, you are prompted to do one of the following:

- o Force the existing user ID out of session. The configuration file that was being used by the existing user ID will be saved in a temporary storage area. You will be prompted to load the saved file; choosing not to do so will delete it from the temporary storage area.
  - o Wait for the existing user ID to log out or time out of the session.
  - o Select a different user ID.
6. Ensure that the **Default Server** is started by doing the following:
    - a. When the console opens, a tree view is displayed. Click the plus sign (+) next to the **Nodes** entry to expand the view.
    - b. Find your host name and expand the view of that node.
    - c. Click the plus sign (+) next to the **Application Servers** entry to expand the view.
    - d. Select the **Default Server** entry and view the information displayed in the right panel. If the value for the **Execution State** field is `STOP`, click the drop-down menu and select `START`.

After the default server is started initially, it will start automatically if it stops or if you restart the machine.

- e. Click **OK**.
7. 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 Application Server is running. When the Web page opens, several selection options are displayed.

8. Under the heading **Generate hit count using**, click the radio button beside the option **Enterprise Java Bean**.
9. Under the heading **Transaction Type**, click the radio button beside the option **None**.
10. Click **Increment**.

If the number of hits is displayed, WebSphere Application Server is operating properly.

## Mounting a CD-ROM on HP-UX

This article describes how to mount and unmount a CD-ROM on HP-UX. To mount a CD-ROM, as the user root, perform the following steps one time:

1. Determine the device address for the CD-ROM by entering the following command:

```
# ioscan -C disk -f -n
```

Output similar to the following is displayed. This output example indicates that the CD-ROM device file

```
is /dev/dsk/clt2d0:
```

```
Class I H/W Path      Driver  S/W State  H/W Type  Description
=====
disk  0  8/0/19/0.6.0    sdisk   CLAIMED   DEVICE    IBM       DDRS-39130WS
      /dev/dsk/c0t6d0  /dev/rdisk/c0t6d0
disk  1  8/16/5.2.0      sdisk   CLAIMED   DEVICE    TOSHIBA   CD-ROM    XM-6201TA
      /dev/dsk/clt2d0  /dev/rdisk/clt2d0
```

2. Create a new directory called /cdrom at the root of the file system. This directory becomes the CD-ROM mount point; all CD-ROM files appear under this directory.
3. Determine whether the **pfs** daemon is running by entering the following command:

```
# ps -ef | grep pfs
```

If the **pfs** daemon is running, output similar to the following is displayed:

```
root  1681  1651  0 11:39:20 pts/ta    0:00 /usr/sbin/pfs_mountd
root  1682  1681  0 11:39:20 pts/ta    0:00 pfs_mountd.rpc
```

If the **pfs** daemon is running, go to Step 6. If the **pfs** daemon is not running, complete Step 4 and Step 5 before trying to complete Step 6.

4. Edit the file /etc/pfs\_fstab by adding a line similar to the following to indicate the hardware path for the CD-ROM:

```
/dev/dsk/c0t6d0 /cdrom pfs-rrip xlat=unix 0 0
```

5. Enter the following commands. You must reenter these commands any time that you restart your system.

```
# nohup /usr/sbin/pfs_mountd &
# nohup /usr/sbin/pfsd &
```

6. To physically mount the CD-ROM, place the CD-ROM in the machine and enter the following command:

```
# /usr/sbin/pfs_mount /cdrom
```

## Unmounting a CD-ROM

After you finish using the CD-ROM, enter the following command to unmount it:

```
# /usr/sbin/pfs_umount /cdrom
```

You can now eject the CD-ROM.

## 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](http://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.