

## Installing the Advanced Edition using iPlanet Web Server Enterprise Edition and Oracle 8i on Solaris

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

- Solaris 7 or 8
- Java 2 Software Development Kit (SDK) 1.3 (version supplied with WebSphere Application Server)
- iPlanet Web Server Enterprise Edition 4.1
- Oracle 8i Release 3 (8.1.7)
- A single node

See the WebSphere Application Server Supported Hardware, Software, and APIs Web site at <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

[Deciding which steps to follow](#)

[Installing iPlanet Web Server Enterprise Edition 4.1](#)

[Installing Oracle 8i Release 3 \(8.1.7\)](#)

[Configuring Oracle 8i Release 3 \(8.1.7\) for use with WebSphere Application Server](#)

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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. WebSphere Application Server comes with the Java 2 SDK. If you have not already done so, install the Web server and database, 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). Instructions for installation follow:

1. [Installing iPlanet Web Server Enterprise Edition 4.1](#)
2. [Installing Oracle 8i Release 3 \(8.1.7\)](#)
3. [Configuring Oracle 8i Release 3 \(8.1.7\) for use with WebSphere Application Server](#)
4. [Installing WebSphere Application Server--\*\*Custom Installation\*\* option](#)
5. [Testing the installation](#)
6. [Testing with an enterprise bean](#)

### Installing iPlanet Web Server Enterprise Edition 4.1

This article describes how to perform the following procedures on a Solaris SPARC machine from files downloaded from the iPlanet Web site at [www.ipplanet.com/downloads/download/](http://www.ipplanet.com/downloads/download/):

- Install iPlanet Web Server Enterprise Edition
- Test the installation
- Start and stop the Web server and Servlet Engine

It is recommended that you install iPlanet Web 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 might function incorrectly.

These instructions assume the following:

- You do not have a previous version of iPlanet Web Server already installed on your machine. If you do have a previous version of iPlanet Web Server installed, you might need to perform migration tasks based on the version installed. In this case, do not follow these instructions. Instead, refer to iPlanet product documentation on the iPlanet Web Server Documentation Web site at [docs.iplanet.com/docs/manuals/](http://docs.iplanet.com/docs/manuals/).
- Your machine has enough memory and disk space for your installation. See the iPlanet product documentation on the iPlanet Documentation Web site at [docs.iplanet.com/docs/manuals/](http://docs.iplanet.com/docs/manuals/) for the necessary requirements.
- You have checked 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 what level of iPlanet Web Server you need to download.
- You have downloaded the appropriate version of iPlanet Web Server and any required patches from the iPlanet Web site at [www.iplanet.com/downloads/download/](http://www.iplanet.com/downloads/download/) by following the steps given on that Web site.

### Installing iPlanet Web Server Enterprise Edition

To install iPlanet Web Server, perform the following steps:

1. Ensure that you are logged into the host machine with superuser (root) privileges.
2. Move to the directory containing the downloaded file.
3. Unzip and extract the files.
4. Start the installation program by typing the following command:

```
# ./setup
```

A welcome window opens.

5. Press Enter to close the welcome window and continue installation.
6. Type **Yes** to accept the software licensing agreement and press Enter.
7. A warning window might appear that alerts you to any potential installation problems and asks if you want to continue with the installation. If you want to resolve any problems, type **No** and press Enter to exit from the installation program. If you want to proceed with the installation, type **Yes** and press Enter to close the warning window.
8. Choose the type of installation you require by typing the appropriate number and pressing Enter. For this example, type **2** for **Typical installation**.
9. Type the directory path for the location where the server files and directory structure are to be installed or accept the default location `/usr/netscape/server4`, and press Enter.
10. Choose the **iPlanet Web Server, Enterprise Edition** option and indicate that you want to select from all of its components by typing **All** and pressing Enter.
11. Choose the components you want to install by typing the number of each, separating each entry from the next with a comma. Press Enter. (To accept the default installation of all components except **WAI Support**, press Enter.)  
**Note:** See the iPlanet Web Server documentation for descriptions of each component. If you do not install a component and later decide that you need it, you can run the installer again and install just the missing component; however, you cannot uninstall individual components after they are installed.
12. If the default *host\_name* (the name of your host machine) shown in brackets ([ ]) is correct, press Enter. If your *host\_name* differs from the one shown in brackets, type the correct *host\_name* and press Enter.
13. Type the UNIX user name to use when running the default instance of iPlanet Web Server. For this example, accept the default user name of `nobody` and press Enter.
14. Type the UNIX group name to use when running the default instance of iPlanet Web Server. For this example, accept the default group name of `nobody` and press Enter.
15. Type the UNIX user name to use when running the Administration Server. In most cases, this is `root`. Press Enter.
16. Type the Administration Server user name to use for authentication. For this example, type the default name `admin` and press Enter. (This user is not a UNIX user, but a user name set up in the iPlanet environment.)
17. Type the Administration Server password to use for authentication. For this example, type the default name `admin` and press Enter. (This password is not a UNIX password, but a password set up in the iPlanet environment.)
18. Retype the Administration Server password and press Enter.

19. Type a number between 1024 and 65535 for the port on which to run the Administration Server, or accept the default of 8888 and press Enter. Note this number for later reference.  
**Note:** If you want to use a port number lower than 1024, you must be logged in as `root` to start the server.
20. Type a number for the port on which to run the iPlanet Web Server and press Enter. For this example, accept the default of 80. Note this number for later reference.  
**Note:** If you want to use a port number lower than 1024, you must be logged in as `root` to start the server. If you choose a port number other than 80, the Uniform Resource Locator (URL) used to gain access to your home page changes. For instance, if your host is called `www.host_name.com` and you choose port 9753, your server's URL becomes `http://www.host_name.com:9753/`.
21. Specify whether you are using a Lightweight Directory Access Protocol (LDAP)-based directory server. For this example, accept the default `No` and press Enter.
22. Type the path for the root directory where your server's content files are to reside or accept the default of `server_root/docs`, where `server_root` refers to the directory path for the location of the server files that you specified in Step 9. Press Enter.
23. Type `Yes` to indicate that you want to use your own Java 2 Software Development Kit (SDK) and press Enter.
24. Type the absolute path to the directory on your system where the SDK is installed and press Enter.
25. A window might appear that prompts you to specify a path name to your SDK libraries if they are not found in the `/jre/lib` subdirectory of the SDK directory. For this example, press Enter.
26. A window might appear that prompts you to specify a path name to your SDK library classes if they are not found in the `/lib` subdirectory of the SDK directory. For this example, press Enter.
27. After the installation program extracts and installs the iPlanet Web Server components, a message is displayed, indicating that installation is complete. Press Enter.

### Testing installation of iPlanet Web Server Enterprise Edition and starting the server

To demonstrate that iPlanet Web Server is operating correctly, perform the following steps:

1. Go to the directory that stores the server files (the directory that you specified in Step 9 in the previous section. In this example, the directory is `/usr/netscape/server4`).
2. Start iPlanet Web Server Enterprise Edition by entering the following command:

```
# ./startconsole
```

The **startconsole** command starts the iPlanet Web Server processes and starts a Netscape Navigator session to the Enterprise Administration Server administration page. **Note:** The **startconsole** command requires that Netscape Navigator is installed on the host machine and that the **netscape** executable file is accessible via the `PATH` environment variable. For Netscape Navigator to run, the `TERM` and `DISPLAY` environment variables must be set to the correct values for your terminal type and display name, respectively.

3. In the Netscape:Password window, type the Administration Server user name and password that you specified in Step 16 and Step 17 in the previous section (in this example, `admin`). Click **OK**.
4. In the iPlanet Web Server Administration Server window, select the server by clicking the server name button beside the field **Select a Server**.
5. Click **Manage** beside the server name button.
6. In the iPlanet Web Server Server Manager window, click **Server On**.
7. The Netscape:Security Warning window informs you that the information you are about to submit is insecure and could be observed by a third party while in transit. For this example, click **Continue Submission**.
8. The Netscape:Question window confirms that the server has started successfully. Click **OK**.
9. Open a browser window and type the Web address `http://host_name/`, where `host_name` is the host name that you specified in Step 12 in the previous section. A default page provided by the iPlanet installation is displayed.
10. Type the Web address `http://host_name:administration_port_number/`, where `administration_port_number` is the port number that you defined in Step 19 in the previous section. You might be prompted for the Administration Server user name and password.

When these steps are complete, iPlanet Web Server is installed and operating correctly. If you are going to install Websphere Application Server, you must stop iPlanet Web Server and the iPlanet Servlet Engine.

### Stopping iPlanet Web Server Enterprise Edition and the iPlanet Servlet Engine

Before installing WebSphere Application Server, stop the Web Server and Servlet Engine by performing the following steps. (At several points in this process, the Netscape:Security window might open to inform you that the information you are about to submit is insecure and might be observed by a third party while in transit. For this example, click **Continue Submission** in each case.)

1. In the iPlanet Web Server Server Manager window, click **Server Off**.
2. The Netscape:Question window confirms that the server has stopped successfully. Click **OK**.
3. In the iPlanet Web Server Server Manager window, click the **Servlets** tab. The Enable Servlets window opens.
4. Under the **Activate the Servlet Engine?** field, click the radio button beside the **No** option and then click **OK**.
5. The Save and Apply Changes window appears. Click **Save and Apply**.
6. The Netscape:Question window confirms that your changes are saved and applied. Click **OK**.

## Installing Oracle 8i Release 3 (8.1.7)

This article describes how to install and configure Oracle on a local Solaris SPARC machine. The instructions assume the following:

- You do not have a previous version of Oracle already installed on your machine. If you have a previous version of Oracle installed, you might need to migrate databases, depending on the version installed. In this case, do not follow these instructions. Instead, refer to Oracle product documentation on the Oracle Web site at [docs.oracle.com/database\\_mp\\_8i.html](http://docs.oracle.com/database_mp_8i.html).
- Your Oracle database server will be located on the same machine as WebSphere Application Server. This configuration and the use of default settings documented in these instructions are appropriate only for development and very small production environments. For information on more complicated scenarios, refer to the IBM Redbook *WebSphere V3.5 Handbook* at [www.redbooks.ibm.com/redbooks/SG246161.html](http://www.redbooks.ibm.com/redbooks/SG246161.html). Although this Redbook was written for the WebSphere Application Server Version 3.5 product, much of the conceptual information also pertains to the WebSphere Application Server 4.0 product.
- You have checked the Oracle product documentation on the Oracle Web site at [docs.oracle.com/database\\_mp\\_8i.html](http://docs.oracle.com/database_mp_8i.html) to verify that you have enough memory and disk space for your installation.

**Note:** Install Oracle before installing WebSphere Application Server.

Perform the following steps to install Oracle 8i from the product CD-ROM:

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

For more information on the proper values for these parameters, refer to the *Oracle 8i Installation Guide*. It is recommended that you review these settings with your system administrator to ensure that they do not conflict with existing settings needed for other software programs on your system.

3. Ensure that the DISPLAY and TERM environment variables are set correctly for your environment.
4. Create a mount point for Oracle 8i. The mount point can be a directory in an existing volume, or you can set up a new logical volume.

**Note:** 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. (If you are performing an Optimal Flexible Architecture (OFA)-compliant installation, you must create four mount points, one for Oracle 8i and three for the database files.) Refer to the *Oracle 8i Installation Guide* and your Solaris system documentation for more information on creating and

mounting file systems.

5. Use operating system utilities to create groups for database administrators (groups dba, osdba, osoper, and oinstall) and user oracle (who owns the Oracle software after installation) by doing the following:
  - a. Start the **admintool** utility, as follows:

```
# admintool
```

- b. In the Admintool window, click **Browse > Groups**. The Admintool:Groups window opens.
- c. In the Admintool:Groups window, click **Edit > Add**. The Admintool:Add Group window opens.
- d. In the Admintool:Add Group window, in the **Group Name** field, enter dba and click **OK**.
- e. Repeat Step **c** and Step **d** to create the groups osdba, osoper, and oinstall.
- f. In the Admintool:Groups window, click **Browse > Users**. The Admintool:Users window opens.
- g. In the Admintool:Users window, click **Edit > Add**. The Admintool:Add User window opens.
- h. In the Admintool:Add User window, do the following:
  1. In the **User Name** field, enter oracle.
  2. In the **Primary Group** field, enter oinstall.
  3. In the **Secondary Groups** field, enter dba.
  4. Select the desired user login shell by clicking the button beside the **Login Shell** field, and then clicking the desired shell. These instructions assume that the Bourne shell is the login shell for the user oracle. If you indicate a different shell for the user oracle, change the shell-specific instructions within this article accordingly.
  5. Ensure that the radio button beside the **Create Home Directory** field is selected.
  6. In the **Path** field, enter the desired home directory for the user oracle.
  7. Accept the default values for the other fields and click **OK**.
- i. Exit from the **admintool** utility.

**Note:** Use the oracle account only for installing and maintaining Oracle software; do not log into a database as the user oracle.

6. Ensure that the home directory for the user oracle is owned by the user oracle and the group oinstall.
7. Log in as the user oracle, as follows:

```
# su - oracle
```

8. Ensure that the DISPLAY and TERM environment variables are still set properly.
9. Ensure that the user mask value is set to 022 by entering the following command:

```
$ umask
```

If the command does not return a value of 022, set the value as follows:

- a. Edit the .profile file in the home directory of the user oracle by adding the line `umask 022` to this file and then saving and closing it.
- b. Enter the following command:

```
$ umask 022
```

10. Add the following information to the .profile file in the home directory for the user oracle. Your Oracle System Identifier (SID) can differ from the example shown, but it must be fewer than eight characters in length.

```
#-----
# Oracle environment setup
#-----
#
ORACLE_BASE=oracle_home_directory
export ORACLE_BASE
ORACLE_SID=orcl
```

```

export ORACLE_SID
ORACLE_HOME=$ORACLE_BASE/product/8.1.7
export ORACLE_HOME
PATH=$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'

```

11. Log in as user root, as follows:

```
# su - root
```

12. Insert the Oracle 8i CD-ROM and, if necessary, mount the CD-ROM drive. In most Solaris systems, the Volume Management daemon (**vold**) mounts the CD automatically and immediately, as well as each time the machine is restarted. If the **vold** process is not running on your machine, see your Solaris documentation for instructions on how to mount the CD-ROM drive.

The following steps assume that the CD-ROM is mounted at /cdrom.

13. Oracle8i is provided on two CD-ROMs called Disk 1 and Disk 2. To avoid having to switch between these CD-ROMs to complete a full installation, Oracle recommends copying the contents of each CD-ROM to the hard drive of the machine on which you will install Oracle and running the Oracle Universal Installer from the new location. To perform these tasks, do the following:

- a. As user root, create a directory to hold the Oracle software, as follows:

```
# mkdir software_source_directory
```

- b. Within the *software\_source\_directory*, create two subdirectories called Disk1 and Disk2, as follows:

```
# cd software_source_directory
# mkdir Disk1
# mkdir Disk2
```

- c. Navigate to the directory /cdrom/cdrom0/, as follows:

```
# cd /cdrom/cdrom0
```

- d. Copy the contents of the CD-ROM Disk 1 to the subdirectory Disk1, as follows:

```
# cp -R * software_source_directory/Disk1
```

- e. Copy the contents of the CD-ROM Disk 2 to the subdirectory Disk2, as follows:

```
# cp -R * software_source_directory/Disk2
```

- f. Navigate to the *software\_source\_directory*, as follows:

```
# cd software_source_directory
```

- g. Change the ownership of the Disk1 and Disk2 subdirectories to user oracle, group oinstall, as follows:

```
# chown -R oracle:oinstall Disk1
# chown -R oracle:oinstall Disk2
```

When copied in this fashion, the Oracle Universal Installer automatically finds the contents of each CD-ROM and does not prompt for the location of either CD-ROM during the course of installation.

14. Log in as user oracle, as follows:

```
# su - oracle
```

15. Ensure that the DISPLAY and TERM environment variables are still set properly.
16. Enter the following commands to begin the Oracle installation process:

```
$ cd software_source_directory/Disk1
$ ./runInstaller
```

where *software\_source\_directory* is the directory into which you've copied the Oracle CD-ROMs.

The Oracle Universal Installer opens, displaying the Welcome window.

17. Click **Next**. The File Locations window opens.
18. Verify the values in the **Source** and **Destination** fields. The value of the **Source** field must be *software\_source\_directory/Disk1/stage/products.jar*, and the value of the **Destination** field must be the same as the value you set for the ORACLE\_HOME environment variable.
19. Click **Next**. The UNIX Group Name window opens.
20. Enter oinstall in the **UNIX Group Name** field, and then click **Next**.

**Note:** If the /var/opt/oracle directory does not exist or cannot be written to by the user oracle, you are prompted to run the */oracle\_home\_directory/product/8.1.7/oraInstRoot.sh* script at this point in the installation process. Switch to another terminal, log in as the user root, and execute the script. After the script has been executed, return to the Oracle Universal Installer to continue the installation process.

21. In the Available Products window, verify that the **Oracle8i Enterprise Edition 8.1.7.0.0** option is selected, and then click **Next**.
22. In the Installation Types window, choose the **Typical** option, and then click **Next**.
23. In the Database Identification window, enter a global database name in the **Global Database Name** field (for example, *orcl.machine\_name*), and verify that the value in the **SID** field is the same as the value you set for the ORACLE\_SID environment variable. Click **Next**.
24. In the Database File Location window, specify the installation location for the Oracle database files in the **Directory for Database Files** field and then click **Next**.
25. Verify the information in the Summary window, which summarizes all of the installation choices that you have made so far. When you determine that the information is correct, click **Install**. The Install window opens; it tracks the status of the Oracle installation.

**Note:** At this point in the installation, you are prompted to run the **root.sh** configuration script to set the necessary file permissions for Oracle products. Switch to another terminal, log in as the user root, and execute the script. After the script runs, return to the Oracle Universal Installer to finish the installation process.

After the installation and linking processes finish, the Configuration Tools window opens. The Net8 Configuration Assistant and Oracle Database Configuration Assistant are automatically configured, along with an Oracle database.

The Configuration Tools window identifies two user accounts and passwords automatically configured for the database by the Oracle Database Configuration Assistant. One is the SYS account with a password of change\_on\_install and the other is the SYSTEM account with a password of manager. Note these accounts and passwords for future use.

26. After the configuration process is complete, click **Next**. The End of Installation window opens.
27. Click **Exit** to close the Oracle Universal Installer. Click **Yes** to confirm the action.
28. Apply to the product any Oracle-supplied patches located in the *software\_source\_directory/Disk1/patch*, *software\_source\_directory/Disk2/patch*, *software\_source\_directory/Disk1/opspatch*, and

*software\_source\_directory*/Disk2/opspatch directories. Review the README included with each patch for installation instructions.

29. At this point, check the Oracle product documentation on the Oracle Web site at [docs.oracle.com/database/mp\\_8i.html](http://docs.oracle.com/database/mp_8i.html) to verify that your environment variables are set to optimize your particular installation.
30. Unmount any CD-ROM before removing it from the CD-ROM drive by entering the following command:

```
# umount cdrom/cdrom0
```

31. Proceed to the article "[Configuring Oracle 8i Release 3 \(8.1.7\) for use with WebSphere Application Server](#)" to configure Oracle for use with WebSphere Application Server.

## Configuring Oracle 8i Release 3 (8.1.7) for use with WebSphere Application Server

This article describes how to create the Oracle users required by WebSphere Application Server. The procedures in this article assume that you have installed Oracle 8i.

Perform the following steps to configure Oracle 8i for use with WebSphere Application Server:

1. Ensure that you are logged in as the user oracle.
2. Edit the initialization file \$ORACLE\_HOME/dbs/inityour\_SID.ora as follows:
  - o Ensure that the line `open_cursors = 220` appears in the file. (The value for this parameter must be 220.)
  - o Ensure that the value for the `processes` parameter is sufficient for your database by reading the information within the `inityour_SID.ora` file. To increase the value of this parameter, add comment markers to or remove comment markers from the specific lines within the file related to processes.
3. Restart your Oracle database by entering the following commands:

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

**Note:** You might need to stop the database before you are able to restart it. To stop the database, enter the following commands:

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

4. Ensure that the Oracle listener is started or start it by entering the following commands:

```
$ lsnrctl
LSNRCTL> start
```

5. You must create the Oracle users EJSADMIN and EJB required by WebSphere Application Server. You might or might not want to grant user EJSADMIN *dba* authority. Create the users EJSADMIN and EJB with the proper authorities by entering the following commands using these values: `SYSTEM` is a user account created by the Oracle Database Configuration Assistant; `manager` is the password for the `SYSTEM` account created by the Oracle Database Configuration Assistant; `EJSADMIN_password` is the password you assign to the user 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 a user account created by the Oracle Database Configuration Assistant; *change\_on\_install* is the password for the *SYS* account created by the Oracle Database Configuration Assistant.

```
$ 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 user ID EJSADMIN by doing the following:
  - a. Enter the following command:

```
$ sqlplus ejsadmin/EJSADMIN_password
```

A message is displayed indicating a successful connection.

- b. Enter the following command to log out as the user EJSADMIN:

```
$ exit
```

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

This article describes how to install WebSphere Application Server on a local Solaris SPARC 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](#)."
- You have installed and configured your database.
- 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. 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.
3. Insert the WebSphere Application Server CD-ROM and, if necessary, mount the CD-ROM drive. (On most Solaris systems, the Volume Management daemon (**vold**) mounts the CD-ROM automatically and immediately, as well as

each time the machine is restarted. If the **vold** process is not running on the local machine, see your Solaris documentation for instructions on how to mount the CD-ROM drive.) The following steps assume that the CD-ROM drive is mounted at /cdrom.

4. Navigate to the correct directory on the WebSphere Application Server CD-ROM by entering the following command:

```
# cd /cdrom/cdrom0/sun
```

5. Ensure that the directory /usr/ucb exists in the PATH environment variable for the *root* login. If it does not, you must edit the **install.sh** script. To edit this script, do the following:
  - a. Copy the **install.sh** script from the /cdrom/cdrom0/sun directory to the /tmp directory on the machine on which you will install WebSphere Application Server.
  - b. Open this script in a text editor and find the line `USERNAME=`/usr/ucb/whoami``.
  - c. Add the following line *before* the line `USERNAME=`/usr/ucb/whoami``:

```
export PATH = $PATH:/usr/ucb
```

- d. Save the edited **install.sh** script.
6. If the supported Web server or database 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/cdrom0/sun 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.
7. Run the installation script in one of following ways depending on the actions you have taken in Step 5 and Step 6:
  - o If you *have* edited the **install.sh** script as detailed in Step 5 but have *not* downloaded a new prereq.properties file or disabled prerequisite checking functionality as detailed in Step 6, run the installation script file by entering the following commands:

```
# cd /cdrom/cdrom0/sun
# /tmp/install.sh
```

- o If you *have* edited the **install.sh** script as detailed in Step 5 and *have* downloaded a new prereq.properties file or disabled the prerequisite checking functionality as detailed in Step 6, run the installation script file by entering the following commands:

```
# cd /cdrom/cdrom0/sun
# /tmp/install.sh -prereqfile /tmp/prereq.properties
```

- o If you have *not* edited the **install.sh** script as detailed in Step 5 and have *not* downloaded a new prereq.properties file or disabled the prerequisite checking functionality as detailed in Step 6, run the installation script file by entering the following command:

```
# /cdrom/cdrom0/sun/install.sh
```

- o If you have *not* edited the **install.sh** script as detailed in Step 5 and *have* downloaded a new prereq.properties file or disabled the prerequisite checking functionality as detailed in Step 6, run the installation script file by entering the following command:

```
# /cdrom/cdrom0/sun/install.sh -prereqfile /tmp/prereq.properties
```

8. Click **Next** to pass the introductory page.
9. The Install Options window opens. Select **Custom Installation** and then click **Next**.
10. 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, 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://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.

- 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.

11. 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.

12. The Database Options window opens. From the information that is displayed, do the following:
  - a. For **Database Type**, select your database from the drop-down list.
  - b. Ensure that **Remote DB** is not selected. For this example, you will install WebSphere Application Server on the same node as the database.
  - c. For **Database Name (Database SID)**, enter the name of the database to use. This value is the name of the database that you created when you configured your database (for instance, **orcl** for Oracle or **was40** for DB2 UDB).
  - d. For **DB Home**, specify the path of the directory containing the database software.
  - e. For **DB URL**, specify the URL for accessing the database. In most cases, accept the default. (If you are using DB2, Sybase, Merant, or Informix, this field cannot be edited.)
  - f. For **Server Name**, specify the name of the host machine on which the database is located. In most cases, accept the default. (Do not edit this parameter if you are using DB2. To edit this parameter when using another database type, the database must be installed remotely and you must have clicked the **Remote DB** button.)
  - g. For **Port Number**, specify the port number of the host machine on which the database is located. In most cases, accept the default. (Do not edit this parameter if you are using DB2. To edit this parameter when using another database type, the database must be installed remotely and you must have clicked the **Remote DB** button.)
  - h. For **Database User ID**, specify the database user name. Ensure that you specify the same user name that you specified when configuring your database for use with WebSphere Application Server.
  - i. For **Database Password**, enter the database password. Ensure that you specify the same password that you

specified when installing your database. If you are using DB2 UDB, your password must be eight or fewer characters in length. If you are using Sybase, your password must be six or more characters in length.

j. Click **Next**.

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 the administrative server, 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 by entering the following command:

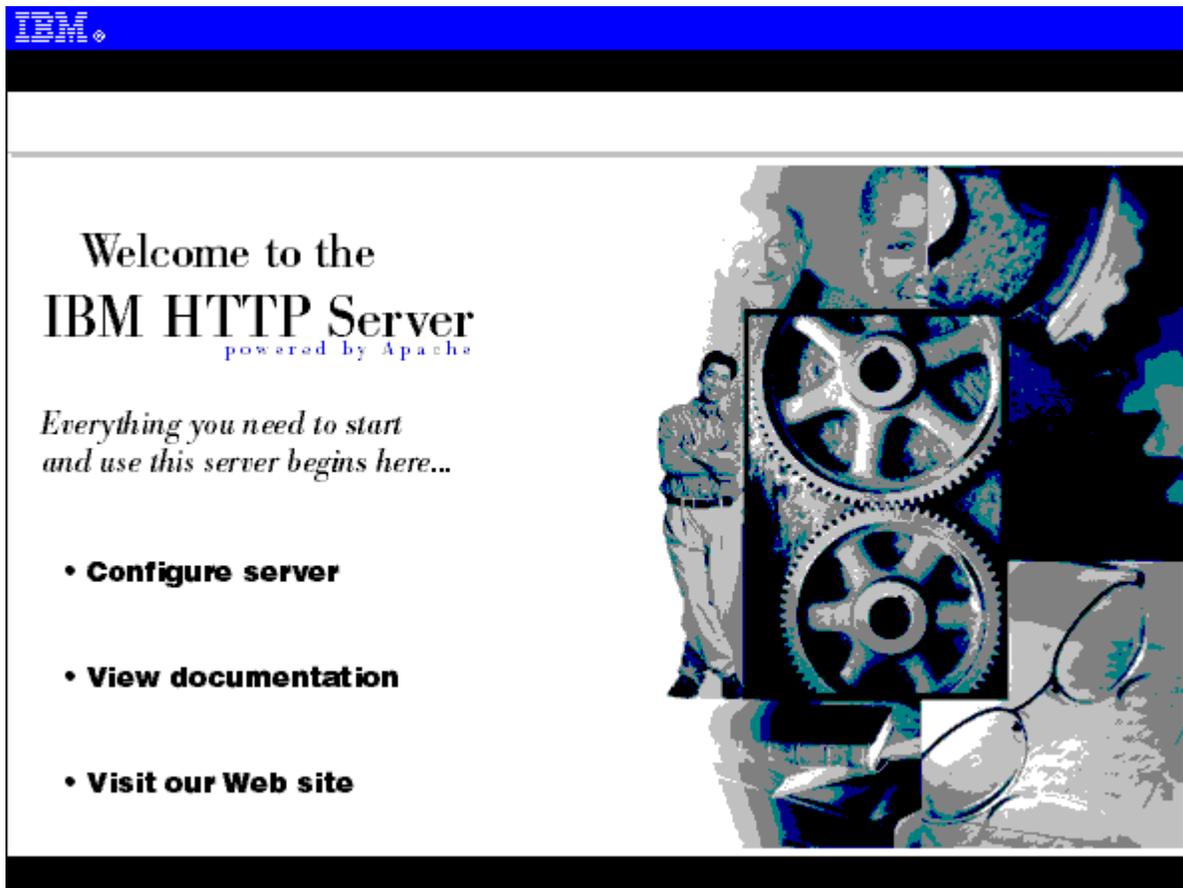
```
# umount cdrom/cdrom0
```

You can now eject the CD-ROM.

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/IBMHTTPD/bin/apachectl start
```

- b. Open a Web browser window and type the name of the host machine as the Universal Resource Locator (URL) ([http://host\\_machine](http://host_machine) or *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 Web 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, database, 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 **startupServer.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 WebSphere Administrative Server by running the script **startupServer.sh**, as follows:

```
# ./startupServer.sh
```

Ensure that the server has started successfully by checking the file named `tracefile` located in the `/opt/WebSphere/AppServer/logs` directory. Use the **tail** command to check the file, as follows:

```
# tail -f tracefile
```

The message `...open for e-business` appears in this file when the server has started successfully.

4. Navigate to the directory containing the **adminclient.sh** script (located by default in the `/opt/WebSphere/AppServer/bin` directory) by using the **cd** command, as follows:

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

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

```
# ./adminclient.sh
```

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

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

7. Test the server by doing the following:
  - a. Ensure that the Web Server is running. If it 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 Default Server, do the following:
  - a. Highlight the entry **Default Server** and click the **Stop** icon on the tool bar. An information window opens stating that the server has stopped.
  - b. Click **OK** to close this window.

## 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 **startupServer.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 WebSphere Administrative Server by running the script **startupServer.sh**, as follows:

```
# ./startupServer.sh
```

Ensure that the server has started successfully by checking the file named `tracefile` located in the `/opt/WebSphere/AppServer/logs` directory. Use the **tail** command to check the file, as follows:

```
# tail -f tracefile
```

The message `...open for e-business` appears in this file when the server has started successfully.

4. Navigate to the directory containing the **adminclient.sh** script (located by default in the `/opt/WebSphere/AppServer/bin` directory) by using the **cd** command, as follows:

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

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

```
# ./adminclient.sh
```

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

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

7. Ensure that the Web Server is running. If the Web server is not running, start it.
8. 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.

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

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