

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--

- Solaris 2.6, 7, or 8
- Sun SDK 1.2.2
- iPlanet Web Server, Enterprise Edition 4.0 or 4.1
- Oracle 8i Release 2 (8.1.6) or 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 4.0](#) or [iPlanet Web Server, Enterprise Edition 4.1](#)

Installing [Oracle 8i Release 2 \(8.1.6\)](#) or [Oracle 8i Release 3 \(8.1.7\)](#)

[Installing WebSphere Application Server](#)

[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 <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 appropriate Solaris patches and Sun SDK. If you have not already done so, install the Web server and database, then obtain the product CD for WebSphere Application Server or [download](#) the product from the Web. Instructions for installation follow:

1. Install [iPlanet Web Server, Enterprise Edition 4.0](#) or [iPlanet Web Server, Enterprise Edition 4.1](#).
2. Install [Oracle 8i Release 2 \(8.1.6\)](#) or [Oracle 8i Release 3 \(8.1.7\)](#).
3. Install [WebSphere Application Server](#) using the **Custom Install** option.

Installing iPlanet Web Server Enterprise Edition 4.0

This document contains the following:

- How to install iPlanet Web Server Enterprise Edition 4.0
- How to verify the installation
- How to start and stop the server

Installing iPlanet Web Server Enterprise Edition 4.0

To install iPlanet Web Server, which you can obtain from the [iPlanet Web site](#), perform the following steps:

1. If you have not already done so, see the [Software Prerequisites Web site](#) to learn what level of iPlanet you need to download.
2. Download the appropriate version of iPlanet Web Server and any required patches from the iPlanet Web site at www.iplanet.com/downloads/download/. Follow the steps given to download the file.
3. Ensure that you are logged into the host machine with superuser (root) privileges.
4. Move to the directory containing the downloaded file.
5. Unzip and extract the files.

6. Launch the installation program by typing the following command:

```
# ./setup
```

A welcome screen appears.

7. Press Enter to exit from the welcome screen and continue installation.
8. Type **Yes** to accept the software licensing agreement and press Enter.
9. A warning screen can appear that alerts you to any potential installation problems. 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 screen.
10. Choose the type of installation you require by typing the appropriate number and pressing Enter. For this example, type **2** for **Typical installation**.
11. 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.
12. 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.
13. 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.
14. If the default *host_name* shown in brackets ([]) is correct, press Enter. If your *host_name* (the name of your host machine) differs from the one shown in brackets, type the correct *host_name* and press Enter.
15. 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.
16. 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.
17. Type the UNIX user name to use when running the Administration Server. In most cases, this is *root*. Press Enter.
18. 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 Netscape environment.)
19. 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 Netscape environment.)
20. Retype the Administration Server password and press Enter.
21. 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.
22. 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/`.
23. Specify whether or not you are using a Lightweight Directory Access Protocol (LDAP)-based directory server. For this example, accept the default **No** and press Enter.
24. 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 to the location of the server files that you specified in Step 11. Press Enter.
25. Type **Yes** to indicate that you want to use your own Java 2 Software Development Kit (SDK) and press Enter.
26. Type the absolute path to the directory on your system where the SDK is installed and press Enter.
27. A screen can appear that lets you 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.
28. A screen can appear that lets you 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.
29. After the installation program extracts and installs the iPlanet Web Server components, a message is displayed, indicating that installation is complete. Press Enter.

Verifying installation of iPlanet Web Server Enterprise Edition 4.0 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 11 in the section Installing iPlanet Web Server Enterprise Edition 4.0). In this example, the directory is `/usr/netcape/server4`.
2. Start iPlanet Web Server Enterprise Edition 4.0 by typing the following command:


```
# ./startconsole
```
3. In the Netscape:Password screen, type the Administration Server user name and password that you specified in Step 18 and Step 19 in the section Installing iPlanet Web Server Enterprise Edition 4.0 (in this example, `admin`). Click **OK**.
4. On the iPlanet Web Server Administration Server screen, select the server by clicking the server name button beside the field **Select a Server**.
5. Click **Manage** beside the server name button.
6. On the iPlanet Web Server 4.0 Server Manager screen, click **Server On**.
7. The Netscape:Question screen confirms that the server has started successfully. Click **OK**.
8. Open a browser window and type the Web address `http://host_name/`, where `host_name` is the host name you specified in Step 14 in the section Installing iPlanet Web Server Enterprise Edition 4.0. A default page provided by the Netscape installation is displayed.
9. Type the Web address `http://host_name:administration_port_number/`, where `administration_port_number` is the port number that you defined in Step 21 in the section Installing iPlanet Web Server Enterprise Edition 4.0. You can 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 your iPlanet Web Server.

Stopping the iPlanet Web Server Enterprise Edition 4.0

Before installing WebSphere Application Server, stop the Web Server by performing the following steps:

1. On the iPlanet Web Server 4.0 Server Manager screen, click **Server Off**.
2. The Netscape:Question screen confirms that the server has stopped successfully. Click **OK**.

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.iplanet.com/downloads/download/:

- Install iPlanet Web Server Enterprise Edition 4.1.
- 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/.
- 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/ 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 to learn what level of iPlanet 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/ by following the steps given on that Web site.

Installing iPlanet Web Server Enterprise Edition 4.1

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. Launch 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 4.1 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 4.1 by entering the following command:

```
# ./startconsole
```

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 4.1 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 4.1 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 4.1 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 4.1 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 2 (8.1.6)

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

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:
 - o SHMMAX
 - o SHMMIN
 - o SHMMNI
 - o SHMSEG
 - o SEMMNI
 - o SEMMSL
 - o SEMMNS
 - o SEMOPM
 - o SEMVMX

For more information on the proper values for these parameters, refer to the *Oracle8i Installation Guide*.

3. Ensure that you have the DISPLAY and TERM environment variables set correctly for your environment.
4. Create a file system, logical volume, or directory to hold the Oracle software. Ensure that the location you choose has 1200 MB of free disk space.
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 Solaris system documentation for more information on creating and mounting a file system.
6. Use operating system utilities to create the group dba by entering the following command:

```
# groupadd dba
```

7. Use operating system utilities to create the user *oracle*. Use the location you created in [Step 4](#) as the user's home directory.

```
# useradd -d <home_directory> -g dba -s /bin/ksh oracle
```

8. Edit the */etc/group* file to add the user *oracle* to the group *dba*.
9. Create a *.profile* file in the home directory for the user *oracle*. Ensure that the file contains the information below. Your Oracle SID may differ.

```
#-----
# Oracle environment setup
#-----
#
ORACLE_BASE=<oracle_home_directory>
export ORACLE_BASE
ORACLE_SID=ORA816
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 8.1.6 environment is set'
```

In the example file above, the variable *<oracle_home_directory>* specifies the home directory for the *oracle* user.

10. Ensure that the */tmp* directory has at least 200 MB of free disk space. If necessary, set the TMP and TMPDIR environment variables to specify another location with sufficient disk space.
11. Ensure that the Oracle directory structure you created has the correct permissions. If necessary, change to the directory you plan to use for Oracle installation and enter the following **chmod** command: # **chmod 775 .**
12. Log in as user *oracle*, as follows: # **su - oracle**

13. Ensure that your `DISPLAY` and `TERM` environment variables are still set properly.
14. Insert the Oracle 8i Release 2 (8.1.6) CD and, if necessary, mount the CD-ROM drive. On 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 this machine, see your Solaris documentation for instructions on how to mount the CD-ROM drive.

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

15. Enter the following commands to begin the Oracle installation process:

```
% cd /cdrom/oracle8i
% ./runInstaller
```

The Oracle Universal Installer opens, displaying the Welcome screen.

16. Click **Next**. The File Locations screen is displayed.
17. Verify the values in the **Source** and **Destination** fields. The value of the **Source** field must be `/cdrom/oracle8i/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.
18. Click **Next**. The UNIX Group Name screen is displayed.
19. Enter `dba` 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 `/tmp/OrainstRoot.sh` script at this point in the installation process. Switch to another terminal, log in as *root*, and execute the script. After the script has been executed, return to the Oracle Universal Installer to continue the installation process.

20. On the Available Products screen, verify that the **Oracle8i Enterprise Edition 8.1.6.0.0** option is selected, and then click **Next**.
21. On the Installation Types screen, choose the **Typical** option, and then click **Next**.
22. On the Database Identification screen, enter a global database name in the **Global Database Name** field (for example, **ORA816.<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. Then, click **Next**.
23. On the Database File Location screen, specify the installation location for the Oracle database files in the **Directory for Database Files** field, and then click **Next**. The Summary screen displays, summarizing all of the installation choices you have made so far.
24. Verify the information on the Summary screen. When you have determined that it is correct, click **Install**. The Install screen displays; 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 necessary file permissions for Oracle products. Switch to another terminal, log in as *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 screen displays. The Net8 Configuration Assistant and Oracle Database Configuration Assistant are automatically configured, along with an Oracle database.

25. After the configuration process is complete, click **Next**. The End of Install screen displays.
26. Exit from the Oracle Universal Installer.

To test your installation, see ["Configuring Oracle 8i Release 2 \(8.1.6\) for use with WebSphere Application Server."](#)

Configuring Oracle 8i Release 2 (8.1.6) for use with WebSphere Application Server

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/init<your_SID>.ora so it includes the following line:

```
open_cursors = 200
```

You might also need to set processes to more than the default (50), for example:

```
processes = 100
```

3. Restart your Oracle database. You can start the database by entering the commands:

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

If you need to stop the database, use the commands:

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

4. Start the Oracle listener. At a command line, enter the following commands:

```
$ lsnrct
LSNRCTL> start
```

5. You must create the *EJSADMIN* Oracle user required by WebSphere Application Server. You might or might not want to grant this user *dba* authority. You must also create an *EJB* Oracle user and grant this user authority.

If you **do** want to grant *dba* authority to the user *EJSADMIN*, enter the following set of commands using these values: the *system* variable is the user ID; the *manager* variable is the default password; and the *EJSADMIN_password* is the password you assign to user *EJSADMIN*.

```
$ 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*, perform the following two steps:

- a. Enter the following set of commands using these values: the *system* variable is the user ID; the *manager* variable is the default password; and the *EJSADMIN_password* is the password you assign to user *EJSADMIN*.

```
$ 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
```

- b. When you later start the WebSphere Administrative Console, you must edit the data source for the HitCount bean. Do this by selecting **Default Server**, **Default Container**, **HitCount Bean**, and **DataSource** so the **User ID** and **Password** are set to **EJB**. Then click **Apply**.

6. Test access to the new database with the *EJSADMIN* user ID by doing the following:

- a. Enter the command `$ sqlplus ejadmin/EJSADMIN_password`. A message is displayed indicating a successful connection.
- b. Enter the command `$ exit` to log out as the *EJSADMIN* user.

Installing Oracle 8i Release 3 (8.1.7)

This document 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.
- 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 system environments. For information on more complicated scenarios, refer to the IBM Redbook *WebSphere V3.5 Handbook* at www.redbooks.ibm.com/redbooks/SG246161.html.
- You have checked the Oracle product documentation on the Oracle Web site at 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:
 - o SHMMAX
 - o SHMMIN
 - o SHMMNI
 - o SHMSEG
 - o SEMMNI
 - o SEMMSL
 - o SEMMNS
 - o SEMOPM
 - o SEMVMX

For more information on the proper values for these parameters, refer to the *Oracle 8i Installation Guide*.

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. Also, Oracle software is supplied on two CD-ROMs. Review the Oracle documentation for suggestions on how best to set up the software for installation.

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. In the Admintool:Groups window, click **Edit > Add**. The Admintool:Add Group window opens.
- f. In the Admintool:Add Group window, in the **Group Name** field, enter osdba and click **OK**.
- g. In the Admintool:Groups window, click **Edit > Add**. The Admintool:Add Group window opens.
- h. In the Admintool:Add Group window, in the **Group Name** field, enter osoper and click **OK**.

- i. In the `Admintool:Groups` window, click **Edit > Add**. The `Admintool:Add Group` window opens.
- j. In the `Admintool:Add Group` window, in the **Group Name** field, enter `oinstall` and click **OK**.
- k. In the `Admintool:Groups` window, click **Browse > Users**. The `Admintool:Users` window opens.
- l. In the `Admintool:Users` window, click **Edit > Add**. The `Admintool:Add User` window opens.
- m. 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`. For this example, specify the directory into which you will install Oracle (for instance, `/home/oracle`).
 7. Accept the default values for the other fields and click **OK**.
- n. 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'
```

In the example file above, the variable `oracle_home_directory` specifies the home directory for the user oracle.

11. Log out and log back in for your changes to take effect.
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. Enter the following commands to begin the Oracle installation process:

```
$ cd /cdrom/oracle8i
$ ./runInstaller
```

The Oracle Universal Installer opens, displaying the Welcome window.

14. Click **Next**. The File Locations window opens.
15. Verify the values in the **Source** and **Destination** fields. The value of the **Source** field must be `/cdrom/oracle8i/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.
16. Click **Next**. The UNIX Group Name window opens.
17. 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.

18. In the Available Products window, verify that the **Oracle8i Enterprise Edition 8.1.7.0.0** option is selected, and then click **Next**.
19. In the Installation Types window, choose the **Typical** option, and then click **Next**.

Note: As part of a **Typical** installation, an Apache-based Web server is installed and started by default. If you plan to use another Web server as part of your WebSphere Application Server environment, you might need to perform a **Custom** installation or perform a **Typical** installation and uninstall the Web server after installation. See the Oracle product documentation on the Oracle Web site at docs.oracle.com/database/mp/8i.html for instructions on performing **Custom** installations or uninstalling parts of the Oracle product.

20. 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**.
21. 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**.
22. 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.

23. After the configuration process is complete, click **Next**. The End of Installation window opens.
24. Click **Exit** to close the Oracle Universal Installer. Click **Yes** to confirm the action.
25. Apply to the product any Oracle-supplied patches located in the `cdrom_mount_point/patch` or

cdrom_mount_point/opspatch directories. Review the README included with each patch for installation instructions.

26. At this point, check the Oracle product documentation on the Oracle Web site at docs.oracle.com/database/mp_8i.html to verify that your environment variables are set to optimize your particular installation.
27. Unmount the CD-ROM before removing it from the CD-ROM drive by entering the following command:

```
# umount cdrom/cdrom0
```

28. 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 default value of 50 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 user EJSADMIN required by WebSphere Application Server. You might or might not want to grant this user *dba* authority. You must also create an Oracle user EJB and grant this user authority.

If you **do** want to grant *dba* authority to the user EJSADMIN, enter the following commands using these values: the *system* variable is the user ID; the *manager* variable is the default password; and the *EJSADMIN_password* is the password you assign to the user EJSADMIN.

```
$ 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, perform the following two steps:

- a. Enter the following commands using these values: the *system* variable is the user ID; the *manager* variable is the default password; and the *EJSADMIN_password* is the password you assign to the user EJSADMIN.

```
$ 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
```

- b. When you later start the WebSphere Administrative Console, you must edit the data source for the HitCount bean. Do this by selecting **Default Server, Default Container, HitCount Bean, and DataSource** so the **User ID** and **Password** are set to EJB. Then click **Apply**.
6. Test access to the new database with the user ID EJSADMIN by doing the following:
 - a. Enter the command `$ sqlplus ejadmin/EJSADMIN_password`. A message is displayed indicating a successful connection.
 - b. Enter the command `$ exit` to log out as the user EJSADMIN.

Installing WebSphere Application Server

To install WebSphere Application Server using the GUI installer, do the following:

1. Log onto your machine with superuser (root) privileges.

If your system does not grant you root authority even though you are logged on as *root*, ensure `/usr/ucb` is in the path for the root login. Edit the `install.sh` file by adding the following line before the call to the `whoami` command:

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

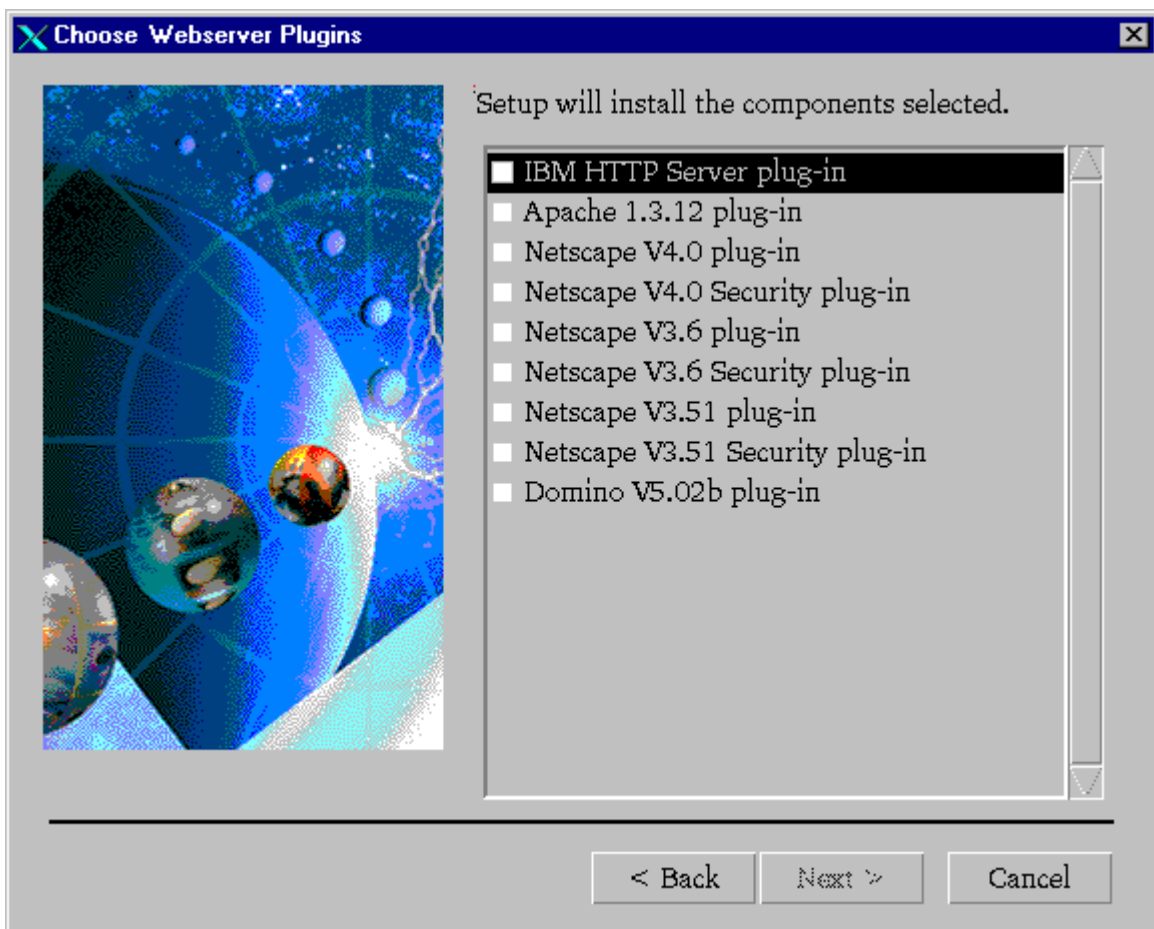
2. If iPlanet Web Server or another Web server on your system is running, stop the Web server.
3. If you plan to use a Web server or database at a level that exceeds the current version required by WebSphere Application Server, you must disable the WebSphere Prerequisite Checker before installing WebSphere Application Server. To do this, 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 will install WebSphere Application Server.
 - b. Edit this file by finding the line `prereq_checker=1` and changing it to `prereq_checker=0`.
4. If you have not disabled the Prerequisite Checker as detailed in Step 3, run the installation script file by entering the following command:

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

If you have disabled the Prerequisite Checker as detailed in Step 3, run the installation script file by entering the following command:

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

5. Click **Next** to pass the introductory page.
6. In the Install Options dialog, select **Custom Installation**; then click **Next**.
7. In the Choose Application Server Components dialog, select those components you want and deselect those components you do not want. You will likely want to include the default options. Ensure that **Configure Default Server and Application** is selected. If you plan on running WebSphere Application Server with a supported Web server, then also select **Web Server Plugins**.
8. Click **Next**. If necessary, shut down all Web servers you plan to run with WebSphere Application Server and proceed.
9. If you opted to install a plug-in, the Choose Web Server Plugins page displays.



Select **Netscape V4.0 plug-in**. Only IBM HTTP Server 1.3.12 is provided with WebSphere Application Server. You must separately purchase and install the other supported Web servers.

10. When prompted, specify the directory and file name for the Netscape Enterprise Server configuration file.
11. On the Database Options dialog, do the following:
 - a. For **Database Type**, select **Oracle**.
 - b. For **Database Name**, give the name of the database to use. The default is **orcl**.
 - c. For **DB Home**, specify the path for the database home (the value of ORACLE_HOME).
 - d. For **DB URL**, specify the URL for accessing the database. You will likely want to take the default.
 - e. For **Database User ID**, specify your user name. If you have already installed Oracle 8i, ensure that you specify the Username specified when configuring Oracle 8i for use with WebSphere Application Server (for example, EJSADMIN).
 - f. For **Database Password** and **Confirm Password**, enter your password. If you have already installed Oracle 8i, ensure that you specify the Password specified when installing Oracle 8i.
 - g. Click **Next**.
12. On the Security Options dialog, fill in the user ID, security password, and confirming password to use for the application server. If you do not need special key ring files, click **Next** to take the default key ring files and to move to the Product Directory dialog.

If you need special key ring files, move to the key ring section, designate client and server files and passwords, and then click **Next** until you are at the Product Directory dialog.

13. Specify the destination directory and click **Next**.
14. Click **Next** again and then **OK** to begin the installation.
15. The next page points you to the README. If you select to view the README and a Netscape browser does not open on the README, look in the `<main_Application_Server_directory>/web/InfoCenter/was` directory for the `readme.html` file. For the most recent version of the README or release notes, go to **Library** section of the product

Web site at <http://www.ibm.com/software/webservers/appserv/>.

Click **Finish**.

Testing the installation

1. Start the WebSphere Administrative Server by running the startupServer script in the /opt/WebSphere/AppServer/bin directory:

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

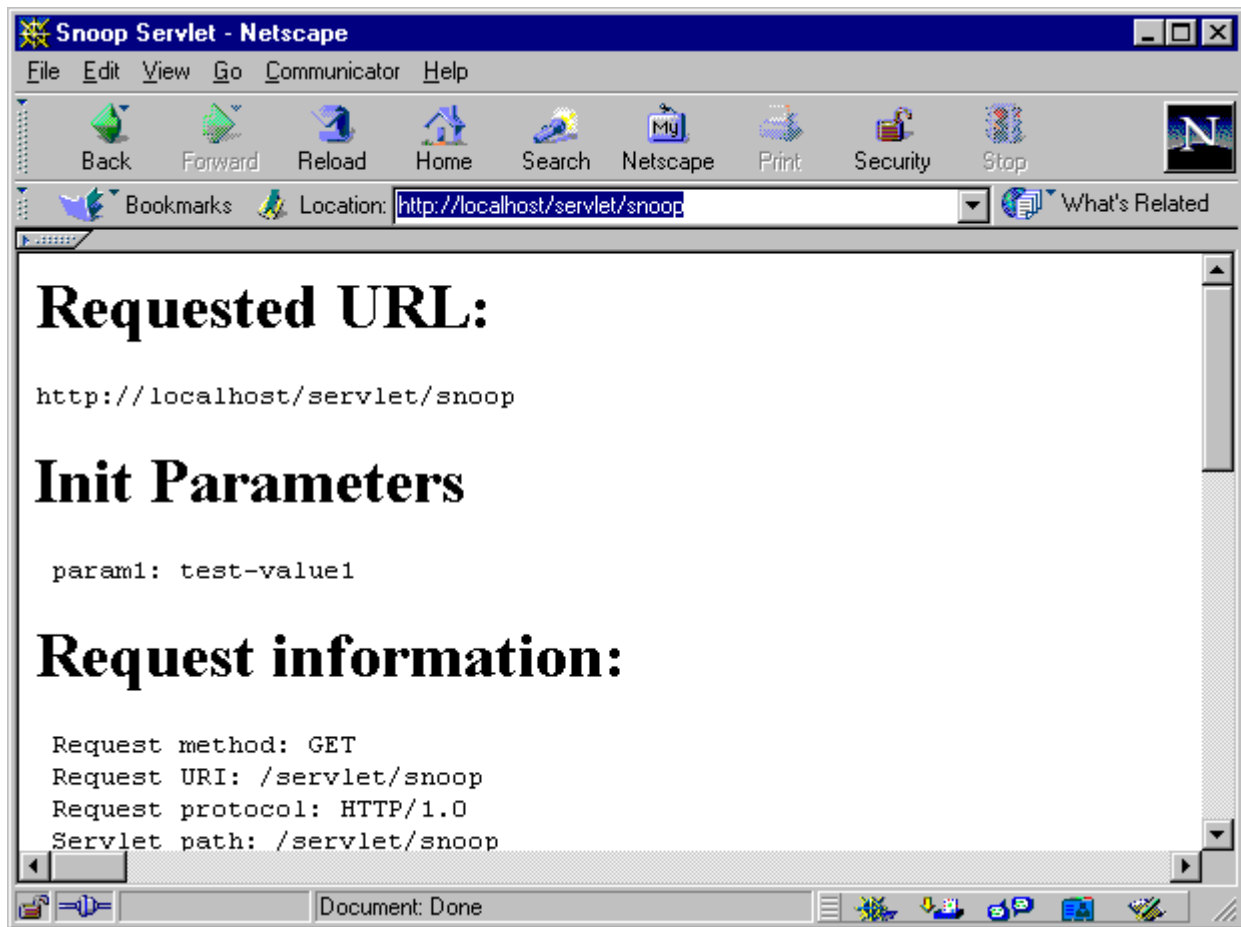
2. Wait patiently. If the server is slow to start or does not start successfully, look at the tracefile log in the /opt/WebSphere/AppServer/logs directory. If the trace file says *server is open for e-business*, the server has started.
3. Start the administrative console by running the adminclient script in the /opt/WebSphere/AppServer/bin directory:

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

4. Wait until you see the console message *Console Ready*. Then administer the server:
 - a. When the Administrative Console opens, the **Topology** tree view is shown. Click on the + sign next to **WebSphere Administrative Domain** to expand the view.
 - b. Your host name should be listed. Expand the view of that node, and you should see an entry called **Default Server**. Expand that and you will see the default container and servletEngine.
 - c. Select **Default Server**. If the **Current State** of DefaultServer is *Stopped*, click the **Start** icon on the tool bar. After an information dialog displays, stating that the server is running, click **OK**. Note that the current state changes from *Stopped* to *Running*.

After the server starts, the configuration database is automatically updated to ensure that the server is always running. If the server stops, or if you reboot the machine, the administrative server will automatically restart it. Even if the administrative server fails, it will continue to run.

5. Test the server. Ensure that the iPlanet Web Server is running. If the Web server is not running, start the server. Then, open a browser and go to the URL address: `http://your_server_name/servlet/snoop`, which is a standard sample servlet installed by default. You should see information on /servlet/snoop.



Testing with an Enterprise Bean

After you install WebSphere Application Server, you can test an enterprise bean using the Inc sample:

1. Go to the administrative console.
2. Ensure that default server and the Inc bean are already started.
3. Start your Web browser and specify for the URL address: `http://your_host/webapp/examples/HitCount`. You should see a Web page with selection options.
4. From the list **Generate hit count using**, select **Enterprise JavaBean**. From the list **Transaction Type**, select **None**.
5. Click on **Increment**.

The number of hits should display.