

Installing the Advanced Edition using Apache HTTP Server and IBM DB2 UDB in a Custom installation on Windows

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

- Windows NT 4.0 or Windows 2000
- IBM Developer Kit, Java™ 2 Technology Edition, 1.3.0
- Apache HTTP Server 1.3.20
- DB2 Universal Database (UDB) 7.2
- A single node

See "[Software Prerequisites](#)" to learn what products and fixpacks are supported for your level of WebSphere Application Server.

Steps for installation

[Deciding which steps to follow](#)

[Installing Apache HTTP Server 1.3.20](#)

[Installing DB2 UDB 7.2](#)

[Installing WebSphere Application Server](#)

[Testing the installation](#)

[Testing with an Enterprise Bean](#) (optional)

[Setting up TCP/IP for standalone operations](#) (optional)

Deciding which steps to follow

If you have not already done so, install Apache HTTP Server and DB2 UDB, then obtain the product CD for WebSphere Application Server or [download](#) the product from the Web. The IBM Developer Kit comes with WebSphere Application Server. Instructions for installation follow:

1. [Install Apache HTTP Server](#).
2. [Install DB2 UDB 7.2](#).
3. [Install WebSphere Application Server 4.0](#) using the **Custom Installation** option. Installs the IBM Developer Kit and WebSphere Application Server products.

If your system is not connected to the network, also complete the steps in "[Setting up TCP/IP for standalone operations](#)".

Installing Apache HTTP Server 1.3.20 on Windows

The steps in this section cover instructions for the following tasks:

- [Obtaining](#) compiled Apache HTTP Server binaries
- [Installing](#) compiled Apache HTTP Server binaries
- [Testing](#) that the installed product runs properly
- [Configuring](#) your server for your site

Obtaining Apache HTTP Server 1.3.20

You can obtain Apache HTTP Server by downloading files from the Apache Software Foundation Web

site, <http://www.apache.org>. Apache HTTP Server is available in source code or binary distribution. The Apache Software Foundation Web site provides information on the latest versions of the product and instructions for downloading the product to your machine.

Installing Apache HTTP Server from downloaded files

Install Apache HTTP Server before installing WebSphere Application Server. The WebSphere Application Server installation 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 can function incorrectly.

Perform the steps below to install Apache HTTP Server from a downloaded .zip file. Note that these instructions assume you have the WinZip Wizard utility on your system; if you do not, follow instructions on the [Apache Web site](#) to install the Apache product using a different process:

1. Ensure that you are logged into the host machine with administrative privileges.
2. Double-click the file you downloaded to activate the **WinZip Wizard** utility to unzip the file.
3. The **WinZip Wizard** utility displays the default directory (C:\Program Files\Apache Group\) to be used as the installation directory for the product. Click **Unzip Now** to accept that location, or click **Select a different folder** to change the location of the installation directory.
4. The **WinZip Wizard** utility automatically activates the **Install Wizard** utility, which directs you to click **Install**.
5. The License Agreement is displayed. Read the agreement. When you click the radio button labeled **I accept the terms in the license agreement**, the **Next** button is enabled. Click **Next** to accept the licensing agreement.
6. The README file is displayed. Click **Next** after you read the file.
7. The Server Information window is displayed. It shows the **Netware Domain**, the **Server Name**, and the **Administrator email Address** that is to be used for this installation. The window displays two options: **Run as a service for all users (Recommended)** or **Run when started manually, only for me (user_name)** where *user_name* is the name associated with the machine's user ID. Click the option you desire. Click **Next** to continue with the installation.
8. The Setup Type window is displayed, asking you to choose either **Complete** or **Custom** as the installation type. Click the option you desire. Click **Next** to continue with the installation.
9. The Destination Folder window is displayed, showing the default installation directory (C:\Program Files\Apache Group\). Click **Install** to accept that location, or click **Change** to choose a different location.
10. A message is displayed, indicating that the installation was successful. Click **Finish** to continue the installation process.
11. You are prompted to choose between restarting your machine now or restarting it at another time. You must restart your machine to complete the installation.
12. Proceed to "Testing installation of Apache HTTP Server."

Testing installation of Apache HTTP Server

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

1. Click **Start -> Programs -> Apache httpd Server -> Control Apache Server -> Start** to start the server. A window is displayed, indicating that the server is started.
2. To connect to the server and access the default page, start a browser and enter this URL:

```
http://localhost/
```

where *localhost* is the name of the machine on which the server is installed. A Welcome page is displayed.

If your machine is not connected to a network, use the following URL:

`http://127.0.0.1`

A window is displayed, reporting that your Apache installation was successful, and you are instructed to contact your site administrator for information.

3. Proceed to "Configuring Apache HTTP Server" to configure your server installation.

Configuring Apache HTTP Server

Apache is configured in the following file:

`drive_letter:\Programs Files\Apache Group\Apache\Conf\httpd.conf`

where *drive_letter* is the letter of the drive on which you installed the product. See Apache documentation for information on available options. The `httpd.conf` file contains default configuration settings. Read the comments in the `httpd.conf` file to understand the default settings. After making a change in the file, start the Apache console to ensure that the changed configuration is functioning. By incrementally testing the changes, you can more easily solve problems.

Installing DB2 Universal Database (UDB) 7.2 on a Windows system

The instructions in this section cover the following tasks:

- [Ensuring that your user ID has the appropriate user rights](#)
- [Installing DB2 UDB 7.2](#)
- [Installing any needed fixpack](#)
- [Verifying](#) that the product is correctly installed

For the most recent information on installing DB2 UDB or a fixpack, consult DB2 documentation.

Checking the user rights for your ID

To install DB2, you must be logged in using a user ID that has the following set of basic and advanced user rights:

- Is defined locally
- Belongs to the local Administrator's group
- Act as part of the operating system
- Create a token object
- Increase quotas
- Replace a process level token

To later install WebSphere Application Server, the user ID must also have the advanced user right "Log on as a service."

Use the Windows **User Manager** utility to ensure that the user ID has the appropriate rights. To activate

this utility on Windows NT, click **Start -> Programs -> Administrative Tools (Common) -> User Manager**. On Windows 2000, click **Control Panel -> Users and Password**. See Windows documentation for information on how to use this tool. Note that you might need to restart your system in order for any changes made to the user account to take effect.

Installing DB2 UDB 7.2

To install DB2 UDB 7.2, follow these steps:

1. Log in using a user ID that has the appropriate user rights as shown in the [preceding section](#).
2. On the product CD for DB2 UDB, run **setup.exe**. The Welcome to DB2 window is displayed.
3. On the Welcome to DB2 window, read the information as needed under the **Installation Prerequisites, Release Notes, and Quick Tour** options. Click **Install** to begin the installation process.
4. The Select Products window is displayed. Choose the **Enterprise Edition** or the **Workgroup Edition**, and click **Next**. These instructions assume that you choose the Enterprise Edition.
5. The Select Installation Type window is displayed. Select **Typical**, and click **Next**.
6. If a window pertaining to the DB2 OLAP Starter Kit is displayed, click **OK** and continue with the installation.
7. If a window pertaining to the OLE DB Support component is displayed, click **OK** and continue with the installation.
8. The Choose Destination Location window is displayed. Specify an installation directory for DB2, and click **Next**.
9. The Enter Username and Password for Control Center Source window is displayed, and default values show in the **Username** and **Password** fields.

To simplify administration, consider configuring DB2 administration to use the same user ID and password as those that are used by the Web server installation. In the **Username** and **Password** fields, overwrite the default values in the **Username** and **Password** fields with your own choices for user ID and password. Note that DB2 requires a password of eight or fewer characters. Click **Next**, and continue with the installation.

10. On the Start Copying Files window, click **Next**.
11. The **setup.exe** program performs the default configuration for users, groups, and an instance to be used by DB2. The installation program reboots your system and starts the DB2 services.

Stop the DB2 services and run the usejdbc2.bat file in the \SQLLIB\java12 directory to upgrade the JDBC drivers.

Installing any needed DB2 UDB fixpack

See "[Software Prerequisites](#)" to learn whether you need to install a DB2 UDB fixpack for your level of WebSphere Application Server. If you need a DB2 UDB fixpack, [download the fixpack](#) or obtain a CD that holds the fixpack. Follow the instructions in the README file that accompanies the fixpack.

Verifying the installation

To verify that your installation has completed successfully, create the database SAMPLE used by the WebSphere Application Server samples. To create the database SAMPLE, follow these steps:

1. Click **Start > Programs > IBM DB2 > First Steps**. The First Steps window is displayed.

2. Click **Create Sample Databases**. The First Steps - Create Sample Databases window is displayed.
3. Click **DB2 UDB Sample** and click **OK**. The SAMPLE database is added to the default instance that was created by the **setup.exe** program.

If you receive an error message stating that the database was not created, go to the Services dialog box accessible from the Control Panel and ensure that the DB2 parameters are set as follows:

- The DB2-DB2 service is **Started**.
- The startup type for the DB2-DB2 service is **Automatic**.
- The hardware profile is **Enabled**.

After you set the parameters, try creating the database SAMPLE again.

4. To ensure that the database SAMPLE was created, go to the DB2 Control Center (**Start > Programs > IBM DB2 > Control Center**) and ensure that the name of the DB2 database SAMPLE is shown in the tree.
5. After you finish, close the DB2 dialog box.

Installing WebSphere Application Server -- Custom Installation option

To install WebSphere Application Server along with the IBM Developer Kit, do the following:

1. Ensure that you will be installing WebSphere Application Server under a local Windows user ID that is in the Administrative group and has the advanced user rights "Act as part of the operating system" and "Log on as a service."
2. If Apache HTTP Server or another Web server on your system is running, stop the Web server.
3. If you obtained Version 4.0 from the product Web site, run or unpack the downloaded executable.
4. 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 do one of the following:
 - Download the most current prereq.properties file from the Web site <http://www.ibm.com/software/webservers/appserv/tools.html> to a directory such as c:\tmp on the machine onto which you will install WebSphere Application Server.
 - Disable the WebSphere Prerequisite Checker before installing WebSphere Application Server.
 - a. Copy the prereq.properties file from the \nt directory to the c:\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`.
5. If you have *not* downloaded a new prereq.properties file or disabled the Prerequisite Checker (Step 3), run `setup.exe` or, if you have the product CD, run `\nt\setup.exe`.

If you *have* downloaded a new prereq.properties file or disabled the Prerequisite Checker, enter the following command:

```
setup.exe -prereqfile c:\tmp\prereq.properties
```

You will need 135 MB free in your temp directory (usually on the C drive), even if you are installing on another drive, because the installation shield package unpacks to the temp directory. This will kick off an installation shield package.

6. If the Choose Setup Language dialog is displayed, select a language and click **OK**.
7. Click **Next** to pass the introductory page.
8. If WebSphere Application Server is already installed on your system, a dialog giving you the option to backup and uninstall WebSphere Application Server displays. You now have three options:
 - To backup your files and uninstall WebSphere Application Server, click **Backup and Uninstall** and then **Next** to continue with the installation.
 - To install to a different directory, simply click **Next** and continue with the installation.
 - To migrate your files from a previous release, click **Perform Migration**. Complete the migration, then run the WebSphere installation program again.

If WebSphere Application Server is not already installed on your system, proceed to step 9.

9. In the Installation Options dialog, select **Custom Installation**; then click **Next**.
10. In the Choose Application Server Components dialog, select those components you want and deselect those components you do not want.

If you want to install **Application and Administrative Server**, **Administrator's Console** or **Application and Development Tools**, you must also install the IBM JDK or specify a valid JDK in the Select Java Development Kit dialog.

Clicking **Other JDK** displays the Select Java Development Kit dialog. If you have a non-IBM Java development kit installed, we recommend that you specify that you want the Java Development Kit (IBM Developer Kit 1.3.0.). Also specify the destination directory for the IBM Developer Kit. Further, to use the IBM Developer Kit, you must remove your other JDKs from the `jre\lib\ext` directory. If you use a JDK other than IBM Developer Kit to run WebSphere Application Server, it must be at the XML4j/Xerces 3.1.1 level. Click **Next** to confirm your selections. Otherwise, click **Back** to exit the dialog.

If you want to install **Samples**, you must also install **Application and Administrative Server** or have the Application Server product already installed on your system.

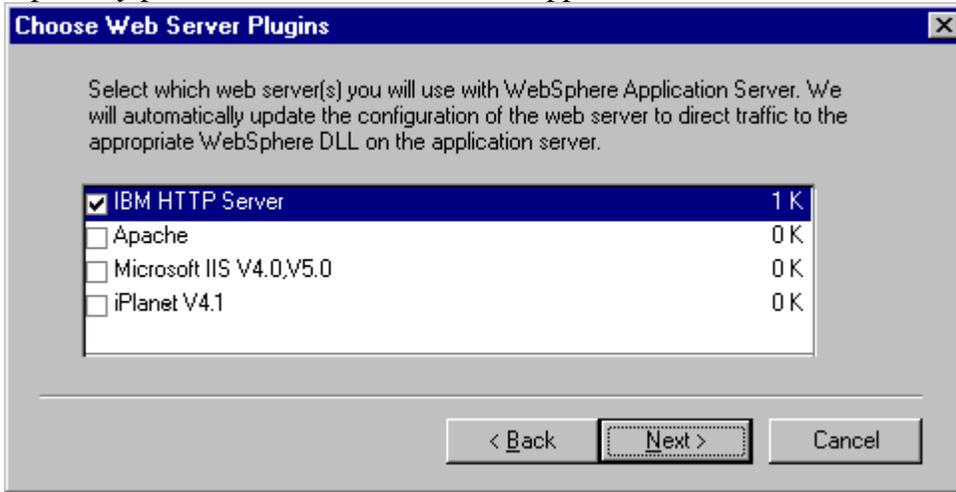
As to **Web Server Plugins**, no plugins are required to bring up the Application Server or the administrative console. However, for production applications, you generally will not be able to serve servlets without a Web server plugin and a valid Web server. For non-production applications, you can use the internal HTTP transport system to serve servlets without an HTTP plugin by simply using the internal HTTP transport port (9080). For example, to serve the sample snoop servlet without an HTTP Web server, you use the URL `http://your_server_name:9080/servlet/snoop`, with 9080 being the internal transport port number and `your_server_name` being `localhost` if the Application Server is on the local machine. The internal transport mechanism lacks the performance for production applications available with a plugin.

As to **IBM HTTP Server**, you install this Web server if you intend to select the IBM HTTP Server plugin and do not have IBM HTTP Server installed.

These installation instructions assume that you will install all of the components except IBM HTTP Server, which you should deselect.

11. Click **Next**. If necessary, shut down all Web servers you plan to run with WebSphere Application Server and proceed.
12. On the Choose Web Server Plugins page, deselect **IBM HTTP Server**, select **Apache**, and click **Next**. Only IBM HTTP Server 1.3.19 is provided with WebSphere Application Server. You must

separately purchase and install the other supported Web servers.



13. On the Security Options dialog, fill in the user ID and password to use for the application server. Do not use the characters < or > for the user ID or password. After you fill in the fields, click **Next**.
14. Specify the destination directory and click **Next**.
15. On the Database Options dialog, do the following:
 1. For **Database Type**, select **DB2**. If the Application Server will be using a database that is installed on a machine other than the one onto which you are installing WebSphere Application Server, select the **Remote Database** check box.
 2. For **Database Name**, give the name of the database to use. The default is **was40**.
 3. For **Database User ID**, specify the Username that installed DB2 UDB; or specify a new name and the WebSphere installation program will create a new database user ID for you.
 4. For **Password** and **Confirm Password**, enter your password. If you specified the Username that installed DB2 UDB, ensure that you specify the password specified when installing DB2 UDB. Note that DB2 requires a password of 8 or fewer characters.
 5. For **Path**, specify the path for the database program. This is the SQLLIB directory.
 6. Click **Next**.
16. Click **Next** on the next two dialogs and begin the installation.
17. In the Configure Apache Webserver panel, verify that the path points to the location of the directory containing the httpd.conf file, then click **OK**.
18. After the installation completes, check the box to view the README 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/>.

19. Click **Finish** and, to complete the installation, restart your computer.

Finishing prerequisite configuration

If you want to ensure that the Web server installed correctly, see "[Testing installation of Apache HTTP Server](#)" and "[Configuring Apache HTTP Server](#)."

As to DB2 UDB, when installing WebSphere Application Server, the installation program should have created a database to store the administrative configuration used when your system starts up after rebooting. Further, the installation program should have created the WAS40 database with its DB2 application heap size set to 256.

To ensure that the WAS40 database exists, do the following:

1. Go to the Control Center dialog. If it did not open automatically after rebooting, open it by selecting **Start -> Programs -> IBM DB2 -> Control Center**.
2. In the DB2 Control Center, expand the tree under **Systems**. Your DB2 databases are listed under **Databases**. Examine the list to see if WAS40 is in it.

If you see WAS40 in the list, proceed to "[Testing the installation](#)".

If you do not see WAS40 listed, run the file createdb2.bat in the \AppServer\bin directory. Or, do the following:

1. Go to the Services dialog accessible from a Control Panel and set the startup for the DB2-DB2 service to **Automatic**. Also, ensure that the hardware profile for the DB2-DB2 service is enabled. Then, complete Step 2. Optionally, for information about why the installation program did not create the WAS40 database, look at the wasdb2.log file.
2. If the DB2 database WAS40 has not yet been created, do the following:
 1. From the **Start** menu, select **Programs -> IBM DB2 -> Command Line Processor**.
 2. Enter `CREATE DATABASE WAS40`
 3. Wait a minute to allow time for DB2 to create the database.
 4. Enter `UPDATE DB CFG FOR WAS40 USING APPLHEAPSZ 256`
 5. Type `quit` to leave the CLP, and then `exit` to finish the command prompt.
 6. Restart the machine.

If an application heap size of 256 doesn't work for your system, return to the DB2 Command Line Processor and change the application heap size to, for example, 512 using the command:

```
UPDATE DB CFG FOR WAS40 USING APPLHEAPSZ 512
```

Testing the installation

You can use the First Steps dialog to test the WebSphere installation. Your Web server must be running to use the First Steps dialog. Access the dialog by selecting **Start -> Programs -> IBM Websphere -> Application Server V4.0 -> First Steps**.

Alternatively, you can do the following to test the installation:

1. Check that WebSphere administrative server has been registered in the Services dialog. Open the Control Panel and select **Services**. If you scroll down you should see **IBM WS AdminServer**.
2. Start the service by selecting **IBM WS AdminServer** and then selecting **Start**.

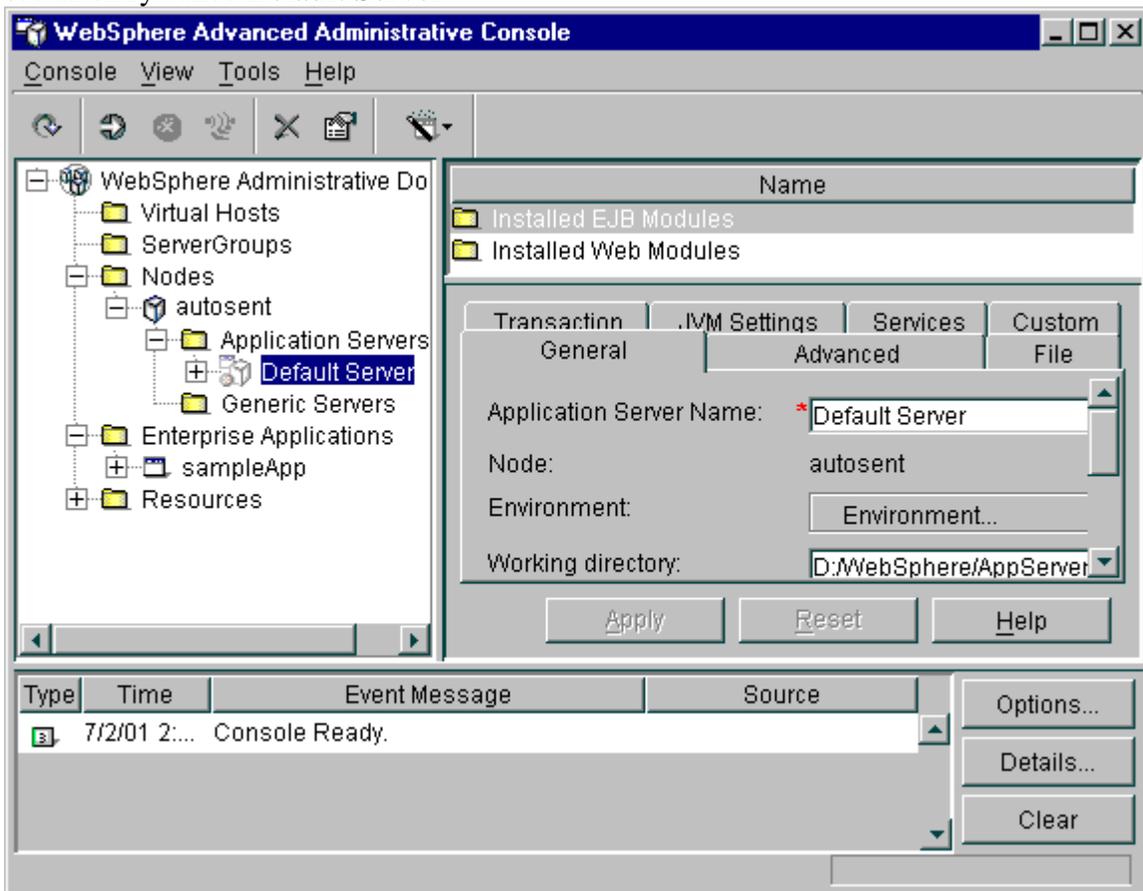
Wait patiently. If the server is slow to start or does not start successfully, look at the last line in the \WebSphere\AppServer\logs\tracefile log. If the trace file says *server is open for e-business*, the server has started.

Hint: You can control the server from a command line or batch file using the following commands:

```
net start "IBM WS AdminServer"  
net stop "IBM WS AdminServer"
```

3. To start the server, run the administrative console, which is how you manage WebSphere Application Server 4.0. From the **Start** menu, select **Programs-> IBM WebSphere -> Application Server 4.0 -> Administrator's Console**. This starts the WebSphere Administrative Console.

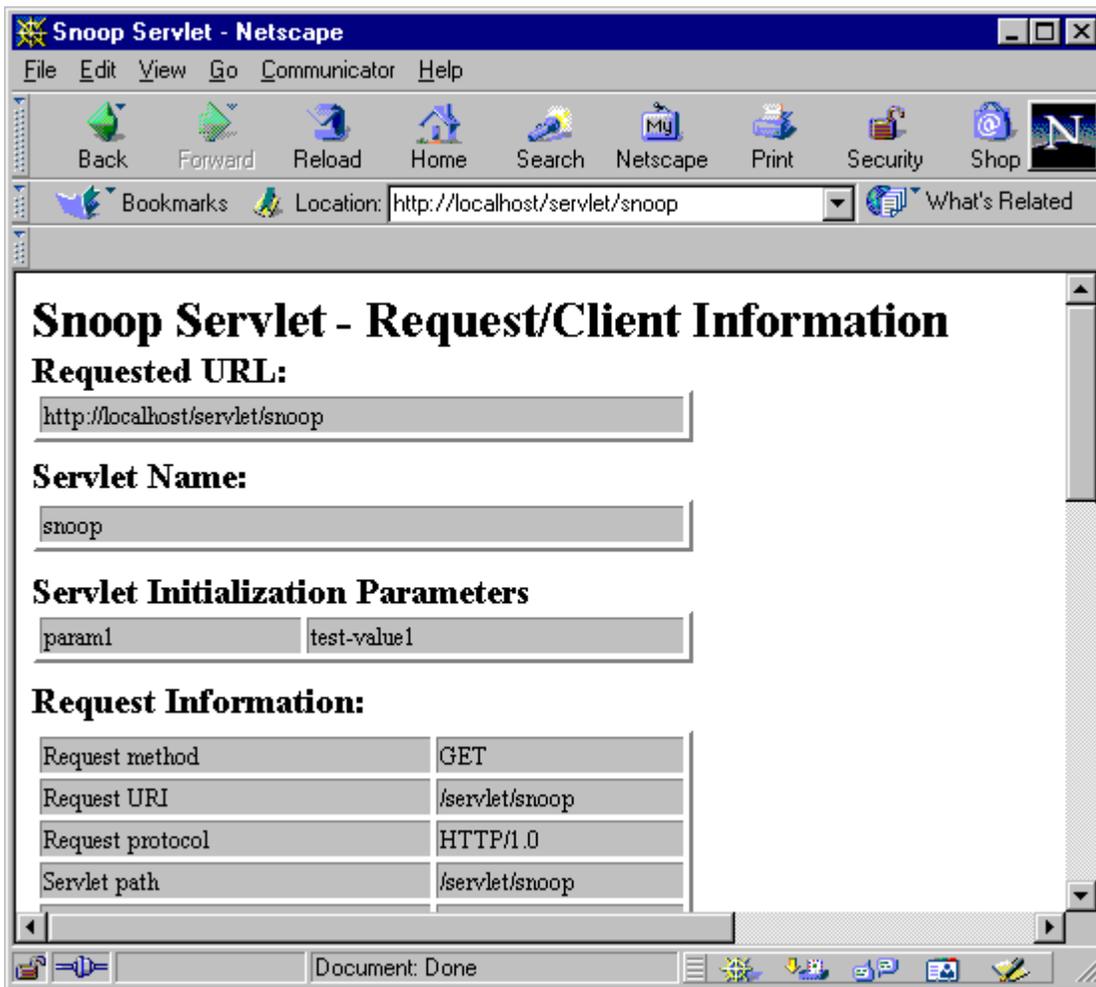
4. When the Administrative Console opens, the tree view is shown. Click on the + sign next to **WebSphere Administrative Domain** to expand the view. Your host name should be listed in the **Nodes** folder. Expand the view of your host name node and of **Application Servers**, and you should see an entry called **Default Server**.



Right-click on **Default Server** and select **Start**. To ensure that the server is running, right-click on **Default Server** and select **Ping**. After an information dialog displays, stating that the server is running, click **OK**.

Once the server starts, it is marked in the configuration database that it should be running. If it 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 Apache HTTP Server is running. (The status for **Apache httpd Server** in a Services dialog, which is accessible from a Control Panel, shows *Started*.) If the Apache HTTP Server is not running, use the **Start** option in a Services dialog to start the server, or select **Start -> Programs -> Apache httpd Server -> Control Apache Server -> Start**. Then, open a browser and go to <http://localhost/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_server_name/webapp/examples/HitCount
```

where *your_server_name* is `localhost` if the Application Server is on the local machine. If the server is on a remote machine, enter the short or fully qualified host name for the machine containing the administrative server.

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.

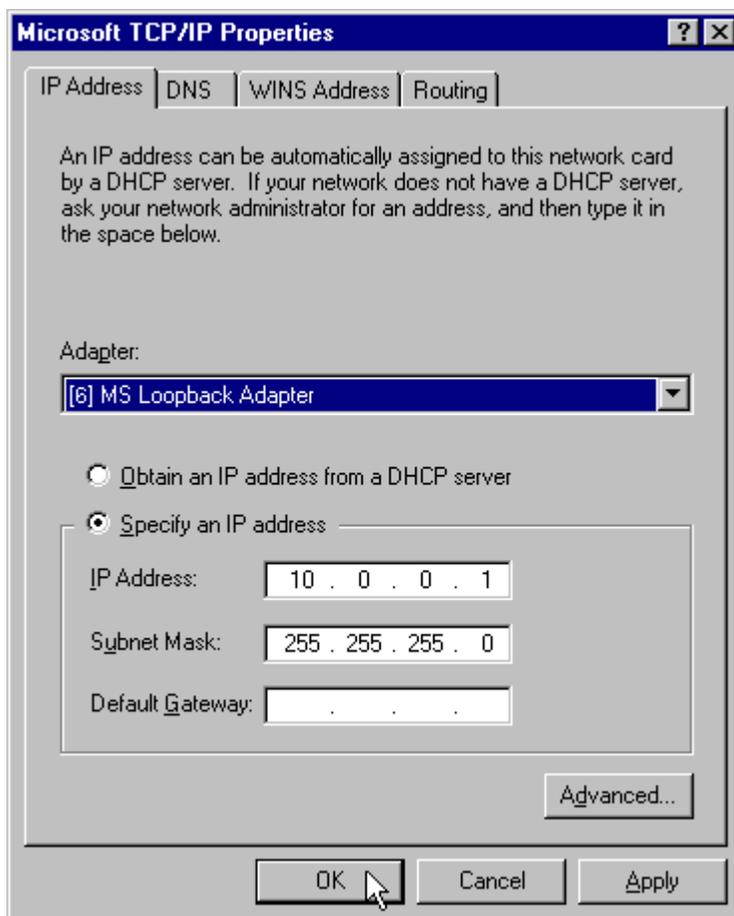
Setting up TCP/IP for standalone operations

If your system is not connected to a network, you must set up WebSphere Application Server for standalone operations.

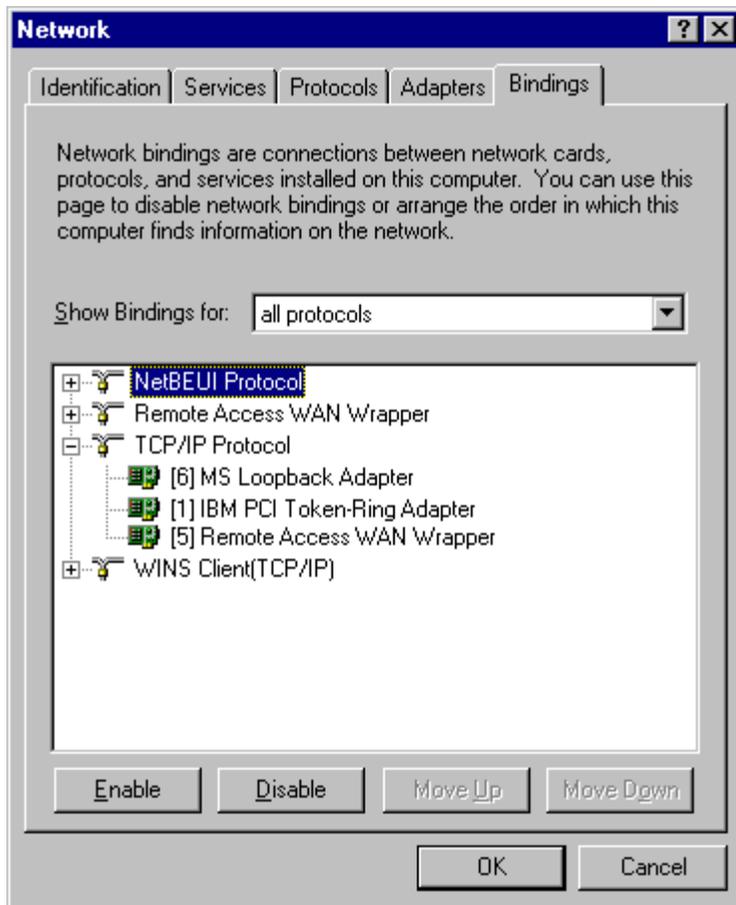
To set up your system for standalone operations, you must have TCP/IP networking installed. If you will run WebSphere Application Server as a standalone (not connected to a network), your host name must remain fixed. WebSphere Application Server is a "networked" system that can be clustered into a single domain, with the administration and other aspects rely upon the IP networking. When the product starts for the first time, it records the host name. When it restarts, it needs to be able to contact that IP address again. If you wish to use WebSphere Application Server "disconnected", you must still always be able to "ping" your host name successfully.

If you need to set up a fixed IP address, for Windows NT, go to the **Network** section of the Control Panel, in the **Adapters** tab, and install the **MS Loopback Adapter**.

Then, go to the **Protocols** tab, open TCP/IP properties, and specify a fixed TCP/IP address of 10.0.0.1 (which is an address reserved for private use and thus appropriate for standalone operations), and a subnet mask of 255.255.255.0.



No default gateway for this adapter is specified. Go to the **Bindings** tab, select **all protocols**, expand **TCP/IP Protocol**, and then move the MS Loopback Adapter to the top of the **TCP/IP Protocol** list.



Save the changes and reboot. After rebooting, you should be able to ping your host name whether or not you are connected to a network. To test your new TCP/IP setup, ping your host name while running standalone and, optionally, while connected to a network.

Uninstalling WebSphere Application Server

To uninstall WebSphere Application Server:

1. Run the `uninstwas40.exe` file in the main WebSphere Application Server directory. For example, enter the command `uninstwas40` at a prompt in the main product directory.
2. Select **Yes** when asked if you want to uninstall the product.
3. Select whether you want to back up your product files.
4. After the uninstallation program runs, reboot your system.

Note that, instead of running the `uninstwas40.exe` file, you can uninstall WebSphere Application Server using the Add/Remove Programs option of the Windows Control Panel.

If WebSphere Application Server files do not completely uninstall from your system--for example, there is a power failure or a system crash--then you can do the following to remove the WebSphere Application Server files:

1. Backup any WebSphere development and configuration data that you want saved.
2. Stop any WebSphere services that are running.

3. Delete WebSphere program files. That is, delete the WAS_HOME directory.
4. Delete WebSphere registry entries under

```
HKEY_LOCAL_MACHINE\Software\IBM\WebSphere Application Server\4.0
```

5. Delete the Service entry in the registry:

```
SYSTEM\CurrentControlSet\Services\IBM WS AdminServer\Parameters
```

6. Delete the uninstall entry in the registry:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\IBMWebASDei
```

7. Ensure that the environment variable WAS_HOME does not exist. If it does exist, remove it.
8. Ensure that WAS_HOME\bin was not added to the PATH environment variable. If it was added, remove it.
9. Reboot your system.

IBM HTTP Server is not uninstalled by the WebSphere Application Server uninstall program. If you installed IBM HTTP Server as part of the WebSphere Application Server installation, you must run the IBM HTTP Server uninstall program.