

Lab 2.1: Installing Internet Information Server

Lab Overview

Objectives

After completing this lab, you will be able to:

- ♦ Configure Windows NT Server to support Internet services.
- ♦ Install Internet Information Server on Windows NT Server.
- ♦ Verify that the Internet Information Server services are running, and shut down unused services.

Scenario

Commercial Internet and Intranet sites require scaleable, high-performance information servers. Microsoft Internet Information Server (IIS) is tightly integrated with Windows NT Server and Microsoft BackOffice to meet these requirements. In this lab, you will install IIS and configure both IIS and Windows NT to enable World Wide Web (HTTP), gopher, and FTP services.

Lab Setup

This lab requires that you have full administrative privileges on a Windows NT Server machine, and that this machine has 9 MB free disk space required to install Internet Information Server. Version 4.0 or later of Windows NT Server is recommended.

For More Information

For more information on installing the Microsoft Internet Information Server, consult the product documentation and online Help. The Microsoft Windows NT Resource Kit is an excellent source of information on system configuration.

For updated information, visit the IIS home page.

<http://www.microsoft.com/Infoserv/>

Estimated time to complete this lab: **60 minutes**

Exercises

The following exercises provide practice working with the concepts and techniques covered in this chapter.

Exercise 1: Configuring NT Server

In this exercise, you will configure Microsoft Windows NT Server so that it can run Microsoft Internet Information Server. You will check the version number of the operating system, verify that the TCP/IP protocol is loaded, and assign an IP address to your server.

Exercise 2: Installation Procedure

In this exercise, you will install Internet Information Server (IIS) onto your computer running Windows NT Server. You will install the components of IIS, including the Internet Server Manager, and the World Wide Web (HTTP), gopher, and FTP services.

Exercise 3: Testing the Installation

In this exercise, you will test this installation of IIS. First you will use the Services applet of the Control Panel to verify the existence and state of the Internet services you installed in Exercise 1. Then, you will run Internet Explorer to view the default home page, default.htm.

Exercise 4: Configuring Security

In this exercise, you will configure the security for Windows NT Server and IIS to support an Intranet architecture. You will use the Windows NT User Manager to configure user privileges, Windows NT Explorer to verify directory and file access rights, and Internet Server Manager to configure IIS security.

Exercise 1: Configuring NT Server

In this exercise, you will configure Microsoft Windows NT Server so that it can properly run Microsoft Internet Information Server (IIS). You will verify that the version of NT server is current, the NTFS file system is used on your primary drive, and the TCP/IP protocol is installed and functioning properly.

➤ Confirm the version number of Windows NT

1. Start a command-line session ("MS-DOS box").
2. Type **winver** and press ENTER. The Windows Version dialog box will appear.
3. To run IIS, you must either have Windows NT Server 3.51 with Service Pack 4 installed, in which case the second line of this dialog will read:

Version 3.51 (Build 1057: Service Pack 4)

or, you must have Windows NT Server version 4.0, in which case this line will read:

Version 4.0 (Build xxxx)

where xxxx is the build number for the product you have (for example, beta 2 is build 1314).

It is recommended that you use version 4.0. If you have an earlier version of NT, then you must upgrade before you can proceed. To upgrade from Windows NT Server version 3.5 or earlier, you must go through the standard software upgrade procedure. If you have version 3.51 and require the service pack, see the Windows NT Server free software Web page at the Microsoft Web site to download this product.

<http://www.microsoft.com/NTServer/freesoft.htm>

➤ Verify that NTFS file system is being used

1. Start the Windows NT Explorer.
2. Right-click on the hard drive icon where IIS is installed. From the shortcut menu, choose Properties. The Properties property sheet appears.
3. Select the General tab. In the File System entry, verify that the file system is NTFS.

To use some of the advanced features of Windows NT file and directory security, and to enjoy more efficient and robust file operations, you will want to use the NTFS file system.

➤ Convert a FAT or HPFS partition to NTFS

1. Start a command-line session.
2. Enter the **convert** command. Assuming you're converting drive C to NTFS, the command would be:
convert c: /fs:ntfs /v
3. If prompted, you will need to restart the system to initiate the conversion.

➤ Verify that the TCP/IP protocol is installed

1. Open the Control Panel and start the Network applet.
2. In the Network property sheet, select the Protocol property page.

3. If the TCP/IP protocol is listed in the Network Display text box, then it is already installed. You can go to the next step of this exercise.

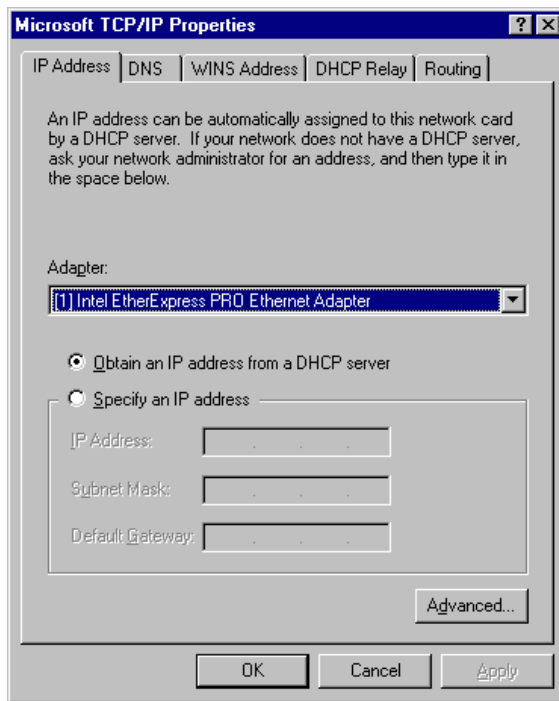
If this protocol is *not* listed, then to install it, perform the following steps:

- Choose the Add button. The Select Network Protocols dialog box appears.
- Select the TCP/IP protocol from the Network Protocol list, and then choose OK.
- At the Network applet, choose Close. You will be prompted to restart the computer.
- Choose Yes to restart the computer with the TCP/IP protocol installed.

➤ **Configure your computer's IP address**

In this section, you will set the IP address mechanism for your Windows NT server machine. If this has already been set up, you can skip this step.

1. If it is not already running, open the Control Panel and start the Network applet.
2. Select the Protocols property page.
3. In the Protocols list box, select the TCP/IP Protocol entry. Then, choose the Properties button. The Microsoft TCP/IP Properties property sheet should appear. Select the IP Address property page.



4. If you have multiple Network Interface Cards (NICs) and other communication adapters on your computer, in the Adapter list box, select the card that you will be offering Internet information services through.

5. Select the IP address mechanism. The mechanism will depend on whether you are setting up an Intranet or an Internet server (for the labs and demos in this course, you will be setting up an Intranet).

- **Intranet:** If your computer is a stand-alone server, or it is connected to a LAN running Windows NT Server, and your LAN uses Dynamic Host Control Protocol (DHCP) services, then select the Obtain An IP Address From A DHCP Server option.
- **Internet:** Your Internet Service Provider (ISP) will provide you with directions on how to configure the TCP/IP protocol.

6. Optionally set the DNS and WINS property pages. The Domain Name System (DNS) is a distributed database that provides a hierarchical naming service for mapping friendly host names to IP addresses. The Windows Internet Naming Service (WINS) is a dynamic database for mapping computer names to IP addresses.

Check with your site's LAN administrator or ISP to determine how you should set these options.

7. Choose OK to accept these changes. Close the Network applet. If you have made changes, you will be prompted to reboot. Choose Yes.

➤ Testing the TCP/IP connection

In this section, you will use the command-line utilities Hostname.exe, IPConfig.exe, WinIPCfg.exe, and Ping.exe to test the TCP/IP connection to your server.

1. Start a command-line session. Run the command **hostname**. This command will display the name of the TCP/IP host computer (your computer's friendly name). Commonly, this is also your computer's machine name. Write down this information. If the TCP/IP protocol is not running, this command fails.
2. Next, determine the IP address of the computer. Run the command **winipcfg** at the command line. If this program is not present, run the earlier version, **ipconfig**, instead. Write down the IP address of your host.
3. Next, you will more formally test the TCP/IP connection by "pinging" your server. On this same computer (your Windows NT Server), enter the command:

```
ping <hostname>
```

<hostname> is the friendly name you gathered in Step 1 above. Alternatively, you can use the following form of the command:

```
ping <IP address>
```

<IP address> is the information you gathered in Step 2 above. If the TCP/IP protocol is installed, the host computer should reply with several lines of the following form:

```
Reply from <IP address>: bytes=32 time<10ms TTL=128
```

4. If you have another computer connected to your server over a LAN or the Internet, you can repeat Step 3 by issuing the ping commands from this other computer. Try the IP address version of the command first. Note that using the friendly host name version may fail under the following conditions.
 - The computers are connected though an Intranet (LAN or WAN): If the sending computer is on a different domain than your Windows NT Server, and a naming service like DNS is not running.
 - The computers are connected through the Internet: If you have not registered your server's friendly name with InterNIC, and the computers are on separate subnets.

Under both of these scenarios, the friendly name cannot be resolved to the true IP address.

Exercise 2: Installation Procedure

In this exercise, you will install the Internet Information Server (IIS). Included in this installation are the Internet Server Manager, and the World Wide Web (HTTP), gopher, and FTP services.

➤ To install Internet Information Server

1. Start the Setup program for IIS. This installation set for IIS can be found in one of the following places:
 - If you have purchased Microsoft Windows NT Server 4.0, the Setup for IIS version 2.0 is integrated with the Setup for the operating system. If you did not choose to install IIS when you originally installed Windows NT, use one of the following techniques to start the installation program for IIS.

At the time of this writing, the Windows NT Server 4.0 beta places the following shortcut on the Windows desktop: Install Internet Information Server. Double-click the shortcut icon.

In the Control Panel, start the Network applet. Select the Services property page. Choose the Add button, and in the resulting Add Network Services dialog box, choose Microsoft Internet Information Server 2.0.

- Version 1.0 of IIS can be found on the *Mastering Internet Development* CD-ROM. Use this version of IIS if you are running Window NT Server version 3.51 with Service Pack 4 installed. For information on installing it from this course disk, see Internet Information Server in the Library.
 - The most recent version of IIS can be downloaded and installed from the IIS information Web page at the Microsoft Web site.
<http://www.microsoft.com/infoserv/>
 - MSDN level II and III members receive this component as part of their subscription.
2. Read the information in the Microsoft Internet Information Server 2.0 Setup dialog box and click OK. Setup next displays the following list of installation options:
 - Internet Server Manager
 - World Wide Web Service
 - Gopher Service
 - FTP Service
 - ODBC Drivers and Administration
 - Help and Sample files
 - Microsoft Internet Explorer
 3. Make sure that all options are selected, and then click OK.
 4. Setup will prompt you for the installation directory for the components of IIS and publishing directories for the Web, gopher, and FTP. By default, these are:

Directory	Path
Installation directory	c:\<windows root>\System32\InetSrv
World Wide Web Publishing Directory	InetSrv\wwwRoot
FTP Publishing Directory	InetSrv\FTPRoot
Gopher Publishing Directory	InetSrv\Gophroot

Accept the default directories by clicking OK. (You can choose different installation directories, but the instructions in this course reflect the default directories.)

5. Setup will install the components you selected. Depending on the configuration you chose in Exercise 1, a Setup message box may display to indicate that an Internet Domain Name was not configured. Click OK to proceed.
6. A dialog appears, informing you that Microsoft Internet Information Server Setup was completed successfully. Choose OK to complete IIS installation.

You have now successfully installed the Microsoft Internet Information Server and are ready to test the installation.

Exercise 3: Testing the Installation

In this exercise, you will test this installation of IIS. First, you will use the Services applet of the Control Panel to verify the existence and state of the Internet services you installed in Exercise 1. Then, you will run Internet Explorer to view the default home page, default.htm.

Optionally, you can shut down the gopher and FTP services, because you will not use them in this course.

➤ **Verify that the Internet information services are running**

1. From the Control Panel, start the Services applet. The Services dialog box should appear.

2. In the Services list box, locate the following NT services:

- FTP Publishing Service
- Gopher Publishing Service
- World Wide Web Publishing Service

All three services should have a status of Started, which means they are running. (All three should also have a Startup value of Automatic, which means they begin running when Windows NT starts.)

3. In this course, you will only be using the Web publishing service. Optionally, to deactivate the FTP and gopher services, perform the following steps for both of these services:

First, disable the automatic startup of the service.

- a. In the Services applet, select the publishing service you want to disable and then choose the Startup button. The Service dialog for this service appears.
- b. In the Startup group box, change the type to Manual. Manual services only start when another dependent application requires them, or when they are started explicitly by the user.
- c. Choose OK to return to the Services applet main dialog.

Second, stop the currently running service.

- a. In the Services applet, select the publishing service you want to disable, and then choose the Stop button. A confirmation dialog box appears.
- b. In the confirmation dialog box, choose Yes. After a brief time, the service should be closed. The status shown in the Services dialog should be automatically updated to a blank value (indicating it is not running).

➤ **Test the Web server with Internet Explorer**

1. On the same computer, start Internet Explorer.
2. In the address box, type in **http://** immediately followed by the host name of the computer; for example:

http://DDTThumper

Then press ENTER. The default home page installed by Setup, \WWWRoot\Default.htm, should be displayed.

3. If your server is connected to a LAN or the Internet, repeat these steps on a client machine. It should also be able to display your home page. If the client machine fails to connect because of security problems, then try this test again after you have completed Lab 2.1, Exercise 4.

Exercise 4: Configuring Security

In this exercise, you will configure the security for Windows NT Server and Internet Information Server (IIS) to support an Intranet architecture. You will use Windows NT's User Manager to configure user privileges, Windows NT Explorer to verify directory and file access rights, and IIS's Service Manager to configure IIS security. The security options selected in this lab will configure your server as a freely available Intranet server.

This exercise assumes that you have installed and configured IIS as described in the previous exercises of this lab. The following instructions are for Windows NT Server 4.0 and IIS 2.0. If you are using different versions of these products, consult online Help for the products to determine differences in the procedure.

➤ **Configure User Privileges**

In this section, you will verify that the group memberships and access rights have been set up correctly on the IIS computer.

1. Start the User Manager application, found in the Administrative Tools folder.

2. In the top pane, double-click on the Internet Guest Account to display its User Properties dialog box. This is the account set up by IIS to let anonymous users access Internet services on this Windows NT Server.
3. Note the following items in this dialog:
 - IIS has generated a password for this account, so that it is difficult for a person to impersonate the Internet Guest Account.
 - The User Cannot Change Password and Password Never Expires options are selected. Because IIS effectively uses this account, there is little reason to change it.
4. Choose the Groups button to view the Group Memberships dialog box. Verify that the only group that the Internet Guest Account belongs to is the Guests group. Choose the Cancel button to return to the User Properties dialog box.
5. Observe the Account Disabled check box. (Selecting this is the quickest method to disable anonymous logon for all three Internet services.) Unless you are setting up a secure site for authorized users only, leave the Internet Guest account enabled.
6. Choose OK to return to the User Manager primary window. In the lower pane, double-click on the Guests group. The Local Group Properties dialog box should appear. Verify that only those people you want to access this server's Web services are listed in the Members box. (Remember that IUSR_<machinename> is the Internet Guest Account.) Use the Add and Remove buttons to modify this list appropriately. Choose OK to accept these changes and return to the User Manager primary window.
7. From the Policies menu, choose User Rights to display the User Rights Policy dialog box. In the Rights list box, select each category, and for each one, note the users that have been assigned privileges. Verify that the Internet Guest Account, Guests, and Everyone are included only in the following categories:
 - **Access The Computer From The Network**
 - **Logon Locally**If one of these appears under another category, consider removing them.
8. Close the User Manager program.

➤ Configure Directory Access Rights

In this section, you will verify that all directory shares have properly limited access rights.

1. Start Windows NT Explorer.
2. Expand the directory tree for the computer's hard disk(s). Locate all of the shared directories. With the exception of the root drive C, which can be shared for administrative purposes, perform the following steps for each of the other shares.
3. Right -click on the share, and from the shortcut menu, choose Properties. The Properties property sheet for that drive should appear.
4. View the Sharing property page. Choose the Permissions button to view the Access Through Share Permissions dialog box.
5. If the group's Everybody, Guests, or Internet Guest Account appear in this list, then do one of the following:
 - If the share contains information that you do not want to be freely accessible to everyone, then remove the group from the share list by selecting the group from the list and choosing the Remove button. (You may then want to add a restricted set of users by choosing the Add button. This is the recommended scheme.)
 - If the share contains information that you do want freely accessible to everyone, then consider restricting the access rights. Select the group, then in the Access Type list box, select the most restrictive category for that group. For example, Read is the access type most commonly granted for use of public, read-only shares.

Choose OK to return to main property sheet.

6. View the Security property page. Choose permissions to display the Directory Permissions dialog box. Repeat the previous step to limit the security privileges to the share directories.
Keep in mind that an Internet Guest Account user can access all shares made available to the groups Everybody, Guests, and Internet Guest Account.
7. Choose OK until you return to the Windows NT Explorer.
8. Expand the INETSVR directory. Note that neither this directory nor any of its subdirectories are shared by default. Because a user of the Internet services logs on locally via IIS, it is not necessary to share these directories.
9. Again, use the Security property page on the Properties property sheet to verify and set the security permissions as follows:
 - **Inetsvr parent directory** - If present, remove the group Everybody.
 - **WWWRoot, GophRoot, FTPRoot** - Everybody should have read-only access rights.
 - **Scripts** - Everybody should have read-only and execute-only rights.

➤ **Configure IIS Security**

In this section, you will use the Internet Service Manager to configure IIS security options.

1. From the Microsoft Internet Server folder, start the Internet Service Manager program.
2. From the View menu, choose Report View. Then, in the client area, double-click on the WWW service to display the WWW Service Properties property sheet. Select the first page, Service.
3. Change the connection timeout to 500 seconds. This is the length of time until IIS disconnects an inactive client.
4. In the Password Authentication group box, verify that the option Allow Anonymous is selected. (If you are setting up your server as a secure Intranet, then clear this option and select Basic and/or Windows NT Challenge/Response instead.)
5. In the Comment text box, enter a description of your Web server site.
6. Select the Directories tab. Verify that the Directory Browsing Allowed check box is *not* selected.
7. Select the Advanced tab. If there are computers you want to include or exclude from your Web site by specific IP address, perform the following:
 - To allow access for a specific computer, select the Granted Access button, and then choose the Add button to supply a specific IP address.
 - To exclude a specific computer, select the Denied Access button, and then choose the Add button to supply a specific IP address.

Choose OK to return to the Internet Service Manager. The security for the FTP and gopher services can also be modified by IP address. However, remember that a knowledgeable user can breach IP security.