



# IS Admin

*Internet/Print Server Administration Utility*

## User's Guide

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Rev. 02 (July 1999)

6DP802S...02

Printed In Taiwan



RECYCLABLE

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# Table of Contents

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<b>ABOUT THIS GUIDE .....</b>	<b>1</b>
<b>INTRODUCTION.....</b>	<b>2</b>
<i>IS Admin Features .....</i>	<i>2</i>
<i>System Requirements .....</i>	<i>2</i>
<b>INSTALLATION .....</b>	<b>4</b>
<i>Installing IS Admin .....</i>	<i>4</i>
<i>Starting IS Admin .....</i>	<i>5</i>
<b>BASIC OPERATION .....</b>	<b>7</b>
<i>Discovering Servers.....</i>	<i>8</i>
Discover Server .....	8
Server Name .....	9
<i>Viewing Information About a Server .....</i>	<i>9</i>
MAC Address .....	9
IP Address.....	10
Model .....	10
Status .....	10
Firmware.....	10
UpTime.....	10
<i>Using Basic Configuration Commands .....</i>	<i>11</i>
Change IP Address .....	11
Quick Configuration .....	14
Configuration .....	27
<i>Using Basic Device Control Tools .....</i>	<i>28</i>
Dial Up .....	28
Hang Up.....	29

Test.....	30
Reset.....	30

## **INTERMEDIATE AND ADVANCED OPERATION.....32**

<i>Configuration</i> .....	32
System .....	33
WAN Port .....	36
Print Server.....	37
DHCP Server .....	41
Server Address.....	42
Advanced Control.....	44
Ending Configuration .....	56
<i>Factory Reset</i> .....	56
<i>Download Firmware</i> .....	57
<i>Adjust Time</i> .....	59
<i>Diagnostics</i> .....	59
<i>Traffic Analysis</i> .....	61

## **SETTING UP MICROSOFT NETWORK PRINTING .....63**

<i>Printing from Client Workstations</i> .....	63
Windows 95 Client Workstations.....	64
Windows NT 4.0 (and later) Client Workstations.....	66
Windows NT 3.51 Client Workstations.....	68
Windows for Workgroups Client Workstations .....	70
MS-DOS/PC-DOS Workstations.....	73
<i>Keeping the Print Queue on a Windows NT Server</i> .....	74

## **SETTING UP APPLE TALK PRINTING .....77**

<i>Printing from MacOS Client Workstations</i> .....	77
--	----

## **SETTING UP UNIX TCP/IP PRINTING .....80**

<i>Printing Text Files from Unix</i> .....	80
--	----

<i>Printing from BSD Unix Versions .....</i>	<i>81</i>
<i>Printing from SCO Unix System V/386.....</i>	<i>83</i>
<i>Printing from Solaris .....</i>	<i>85</i>
<i>Printing from Windows NT.....</i>	<i>86</i>
<i>Printing using TFTP .....</i>	<i>88</i>
<i>Printing using FTP .....</i>	<i>89</i>



# IS Admin

## User's Guide

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### About This Guide

This guide explains how to install and use the Internet/print server administration program known as IS Admin. You will be provided with vital information including a description of the program, a step-by-step installation procedure, and a detailed description of the program's functions. Workstation setup for printing through the Internet/print server is also covered in detail.

IS Admin is designed to be installed and used in the Windows 95 or Windows NT environment, but it is also compatible with Windows 3.1 and Windows 98 systems.

Before installing and running IS Admin, be sure to connect your Internet/print server and become familiar with its capabilities. See your Internet/print server hardware manual for installation instructions and function descriptions.

**Important:** *Depending on the model you purchased, your Internet/print server may have one or two COM (communications) ports, and it may or may not have a built-in modem or modems. All examples in this guide use a model with one COM port and no built-in modem. Appropriate notes are included where model differences result in differences in the IS Admin screen display or method of operation.*

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# Introduction

## ***IS Admin Features***

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IS Admin lets you link to your Internet/print server through your LAN, get the server's current settings, send new settings to the server, test various server functions, monitor server operation, and update the server's firmware.

Many IS Admin functions can also be carried out using a Telnet or Web browsing program, as described in the server hardware manual. However, only through IS Admin can you change an Internet/print server's IP address for the first time or download new firmware code to the device. IS Admin is an indispensable tool for setting up and maintaining your Internet/print server.

## ***System Requirements***

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We recommend that your system meet the following requirements to be able to use the IS Admin program:

- ◆ An IBM PC-compatible computer with a 386 or faster processor
- ◆ One of the following Microsoft operating environments:
  - ◇ Windows version 3.1x
  - ◇ Windows for Workgroups version 3.11



- ◇ Windows 95 or later
- ◇ Windows NT 3.51, 4.0 or later.
- ◆ 4 megabytes of main memory (RAM)
- ◆ At least 4 megabytes of free hard disk space
- ◆ A Windows-compatible mouse or other pointing device
- ◆ An Ethernet network card with appropriate drivers (either NDIS or ODI)

You should also check your computer's settings:

- ◆ If you are using a screen resolution higher than 640 x 480 (standard VGA), you should use a "Small Fonts" setting.
- ◆ You need to have the IP network protocol enabled. IS Admin uses the IP protocol for communicating with the Internet/print server.

You only need to have one workstation that meets the above requirements. It is not necessary to run the IS Admin program on every workstation.

## Installation

This chapter explains how to install and start up IS Admin.

### *Installing IS Admin*

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Follow the procedure outlined below to install IS Admin:

1. Insert the IS Admin installation disk in your system's 3.5" floppy drive (**A:** or **B:**).
2. If you are using Windows 3.1x or Windows NT 3.51, choose **Run...** from the Program Manager's **File** menu. Under Windows 95/Windows NT 4.x or later Windows-based operating systems, choose **Run...** from the **Start** menu on the taskbar. When the dialog box appears, type the pathname of the Setup program on the floppy drive (A:\SETUP or B:\SETUP) and click OK.
3. The Setup program will begin by copying some files and ask for your confirmation. Click the **Next >** button to continue.
4. The Setup program will then ask you to select a directory on your hard disk where you want it to install the IS Admin program. If you want a destination directory path other than the one shown, click the **Browse...** button to select it.  
  
Click the **Next >** button to continue the installation.
5. The setup program will copy IS Admin program files to the directory you selected, as well as create an IS Admin program group. Press the **Finish** button to complete the installation.

Once the installation is complete, you can begin using IS Admin.

## ***Starting IS Admin***

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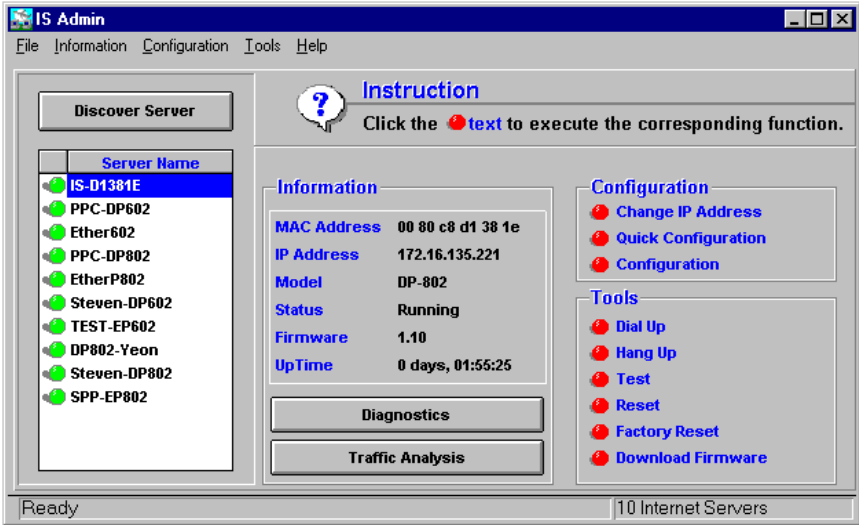
If you are using Windows 95 or Windows NT 4.0 (or a later version of Windows), to start the IS Admin program:

1. Move the pointer to the task bar's Start button and briefly press the mouse's main button. The Start menu will appear.
2. Move the pointer to Programs, or press P. The Programs menu will appear. Move the pointer to IS Admin. The IS Admin submenu will appear.
3. Choose IS Admin from the IS Admin submenu.

For Windows 3.1, Windows for Workgroups 3.1x, or Windows NT 3.51:

1. In the Program Manager, double-click the IS Admin program group icon to open it.
2. Double-click the IS Admin program icon.

The IS Admin program will then be ready for use. A sample IS Admin display is shown below:



## Basic Operation

IS Admin lets you link to any Internet/print servers on your LAN, configure them for proper operation, check their status, and perform many other control, monitoring, and maintenance operations on them.

This chapter covers the most basic and important IS Admin operations:

- “Discovering” Internet/print servers on your LAN
- Selecting the Internet/print server that you want information about or that you want to configure
- Viewing information about the selected Internet/print server
- Configuring the selected Internet/print server using the Change IP Address and Quick Configuration commands
- Using IS Admin’s basic device control tools: the Dial Up, Hang Up, Test, and Reset commands

Some of these operations can be carried out *only* through IS Admin, for example, discovering Internet/print servers and changing an Internet/print server’s IP address for the first time. Some *must* be carried out before you can start using an Internet/print server, for example, the Change IP Address command and many of the operations included in the Quick Configuration command. Read this chapter carefully and carry out all required operations before using your Internet/print server.

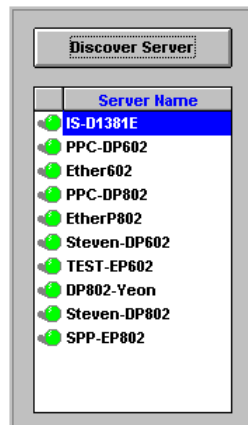
## Discovering Servers

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When IS Admin starts running, it automatically searches your LAN for Internet/print servers and other devices from the same product family. This process, referred to as “discovering” active servers, can take about twelve seconds. When discovery is complete, the names of all such devices that are powered up and physically connected to your LAN will appear in the Server Name list box on the left side of the IS Admin main window.

### **Discover Server**

The purpose of the Discover Server button is to let you manually initiate the same discovery process that IS Admin automatically carries out when started up. If your Internet/print server was not turned on when IS Admin started running, you can turn it on, wait about ten seconds for it to complete its power-on self-test, and click Discover Server. The server's name will quickly appear in the Server Name list box.



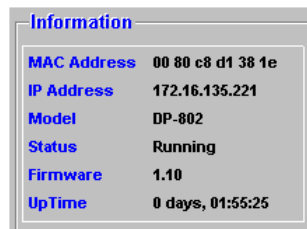
## **Server Name**

This is a list of all Internet/print servers and similar servers that are attached to your network and able to respond. Servers are listed by their names, in order of discovery. Click the name of the server you wish to view or modify.

## ***Viewing Information About a Server***

---

The Information section of the IS Admin main window helps identify which server is currently selected for viewing and adjustment with IS Admin. The information shown here does not change except in response to actions you take in other parts of the IS Admin window; you cannot change any of these items directly.



Information	
MAC Address	00 80 c8 d1 38 1e
IP Address	172.16.135.221
Model	DP-802
Status	Running
Firmware	1.10
UpTime	0 days, 01:55:25

Also in the Information section of the IS Admin main window are a Diagnostics button and a Traffic Analysis button. These are explained in the chapter on intermediate and advanced operation.

## **MAC Address**

The MAC (media access control) address is a factory-assigned address encoded in the device's firmware. It cannot be modified.

## **IP Address**

The IP address is the currently assigned Internet Protocol (IP) address for the device. The default assignment is 192.168.100.1. See the description of the Change IP Address command, further on, for information about how to modify the device's IP address.

## **Model**

The Model field shows the model name of the selected server. This data cannot be changed.

## **Status**

The Status field shows the selected server's current operating state. This field will read either "Running" or "Download Request." The contents of this field cannot be modified.

## **Firmware**

The Firmware field displays the version number of the selected Internet/print server's current firmware. This data cannot be changed except by upgrading the firmware (see "Download Firmware," further on in this guide).

## **UpTime**

The UpTime field shows how long the device has been operating since it was last powered on. This variable cannot be manually modified. If the device is powered off, this variable will be reset to 0 days, 0:00:00.



The time is displayed as: days, hours:minutes:seconds.

## ***Using Basic Configuration Commands***

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The IS Admin main window's Configuration section contains three commands: Change IP Address, Quick Configuration, and Configuration. To use one of these commands, click the command name or choose the command of the same name from the Configuration menu.



If more than one name appears in the Server Name list box, be sure to select the desired server by clicking its name before choosing any configuration command.

Note that functions available through the Quick Configuration and Configuration commands will work only if the server's IP address is in the same range as the station you are running IS Admin on. The Change IP Address command will always work for any Internet/print server physically connected to your LAN.

The Change IP Address and Quick Configuration commands are explained below. The Configuration command is described in the following chapter.

### **Change IP Address**

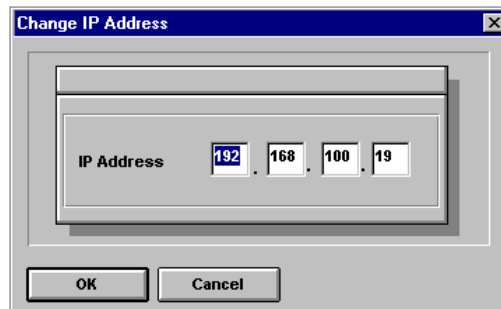
The Change IP Address command is used to give an Internet/print server a local IP address suitable for your LAN, in other words, an

address that is (1) within one of the three permissible address ranges (these are described further on), (2) in the same range as the station running IS Admin, and (3) not used by any other device on the LAN.

If more than one name appears in the Server Name list box, make sure the desired server is selected before you choose the Change IP Address command. To select the desired server, simply click its name in the Server Name list box.

The Change IP Address command will work for any Internet/print server that IS Admin can discover on your LAN. IS Admin's other configuration commands, however, will work only if the selected server has been given an IP address suitable for your LAN.

Choosing Change IP Address displays the following dialog box:



IP addresses are in the form *xxx.xxx.xxx.xxx*, where each group of three *x*'s represents a number from 0 to 255. The address you choose must be unused by any other device on your LAN, and it must be in one of the three address ranges set aside by Internet authorities for private use:

10.0.0.0 – 10.255.255.255

172.16.0.0 – 172.31.255.255

192.168.0.0 – 192.168.255.255

In addition, the Internet/print server and the station running IS Admin must have IP addresses in the same range, or configuration commands other than Change IP Address will not work.

The Internet/print server will act as a “gateway” for devices on your LAN. By convention, a gateway such as this is often assigned an IP address ending in .1 or .254. Addresses ending in .0 and .255 are reserved for network functions and should be avoided. For more information about IP address settings, see your Internet/print server hardware manual.

To change the Internet/print server's local IP address, type the desired address into the Change IP Address dialog box and click OK. The new address will be sent to the server and stored there. It can then be changed only by a configuration command or factory reset.

**Important:** *If you want to install more than one server from the same product series as your Internet/print server on your LAN, you must modify the IP address of at least one of these servers. If you connect two or more such servers to the same LAN without modifying at least one's IP address, none of these servers will work, because they will all have the same factory-set IP address.*

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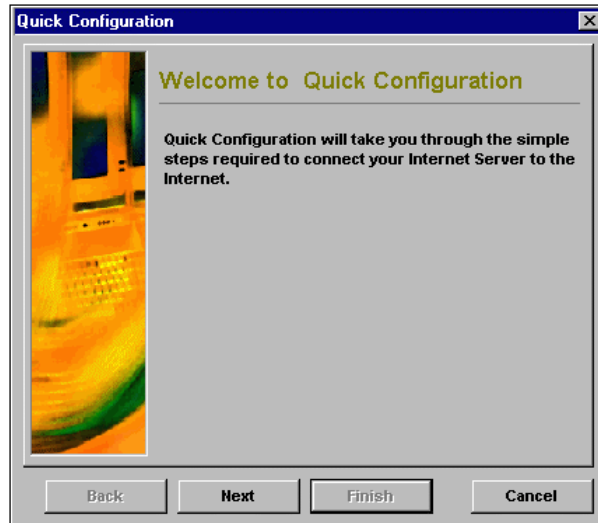
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## **Quick Configuration**

Before you can use your Internet/print server for Internet access, you must configure it to work correctly with your modem or terminal adapter (TA) and your Internet service provider's (ISP's) equipment. The Quick Configuration command lets you do this in as short a time as possible. This command lets you enter the settings that are absolutely necessary for a working connection. Once the connection is working, you can use the Configuration command to change settings and activate additional features.

To carry out the Quick Configuration process, you must have certain basic information about your Internet access account and your equipment on hand. We strongly recommend that you read through this entire section and make sure you have the required information on hand before you start.

To begin the Quick Configuration process, click Quick Configuration in the IS Admin main window or choose Quick Configuration from the Configuration menu. The Quick Configuration dialog box will appear.



The Quick Configuration process is carried out through a series of panels that appear in the middle of this dialog box. The number of panels that can appear depends on the model type of your server and the settings that you enter. Use the Next and Back buttons to move between panels. The Cancel button lets you exit the Quick Configuration process at any time without sending any settings to the server. The Finish button sends your settings to the server; it is enabled only at the last panel.

The Quick Configuration dialog box's panels and the information that each one prompts you for are described below.

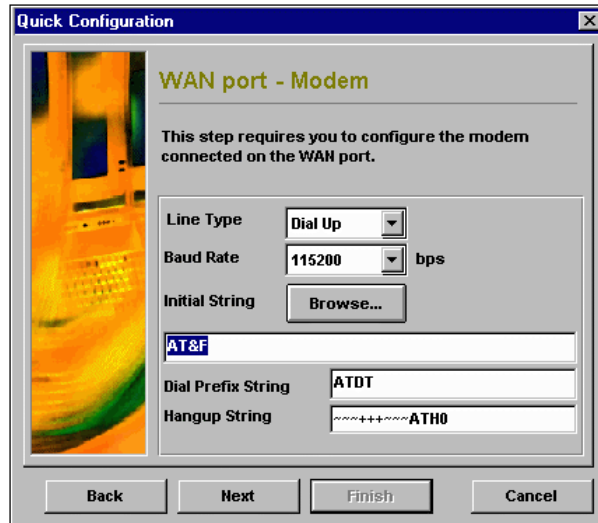
**Welcome to Quick Configuration:** Assuming that your Internet/print server has only one WAN (wide-area network) port (also known as a communications or COM port), this panel contains only a title and a brief explanation. Simply click Next to go on.

If your server has two WAN ports, this panel lets you indicate whether you will configure the server for one Internet access account or two. Each WAN port is capable of providing a connection to one Internet access account. If you have only one modem or TA connected to the server, *uncheck* the box for the *unused* WAN port. Click the Next button to go on.

The WAN Port – Modem panel will appear.

**WAN Port – Modem:** You must supply two kinds of information about your Internet connection: (1) information about your modem or TA, so the server and the modem or TA can work together correctly, and (2) information about your Internet access account, so the server can work correctly with your ISP's equipment. The WAN Port – Modem panel lets you input the required information about your modem or TA. This panel is shown below.

*If your Internet/print server has a built-in modem or modems, the Browse button shown in the following illustration will not appear, and none of the controls in this panel will need to be adjusted. Click Next and proceed to the section entitled "WAN Port – ISP Account."*



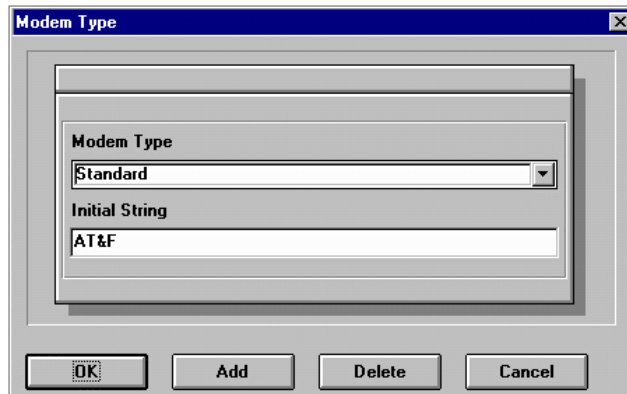
In this panel you must supply the following information:

**Line Type:** This is the kind of telephone line you will use to connect to your ISP. The default setting is Dial-up, in other words, an ordinary dial-up phone line. If you will use a leased line or you wish to disable the WAN port, click the Line Type list box and select the appropriate setting, Leased Line or Disable.

**Baud Rate:** The Baud Rate control determines the speed at which the Internet/print server will communicate with the modem or TA. Most modems and TAs can handle the default setting, 115200 bps (bits per second). For some older modems, however, you might have to reduce the speed to 57600 bps or lower. See your modem or TA manual for details. To adjust the rate at which the server will communicate with the modem or TA, click the Baud Rate list box and select the desired speed.

**Init. String:** Before starting to make connections through a modem or TA, the Internet/print server must set the modem or TA to work a certain way. The server does this by sending the modem or TA a set of commands called an initialization string.

The contents of the initialization string depend on the make and model of the modem or TA. Initialization strings for more than 100 kinds of modems and TAs are stored in IS Admin. To view the list of supported modems and TAs, click the Browse button to display the Modem Type dialog box:



Next, click the Modem Type list box's arrowhead and scroll through the list of modems and TAs. If your modem or TA's name appears, select it and click OK.

If you do not see your modem or TA's name, you can add the name and initialization string to the list yourself. This requires technical knowledge! Consult the manuals for your Internet/print server and your modem or TA to determine what the contents of the initialization string should be, then call up the Modem Type dialog box. The Modem Type list box can double as a text input box; type the device's name into this box, type the initialization



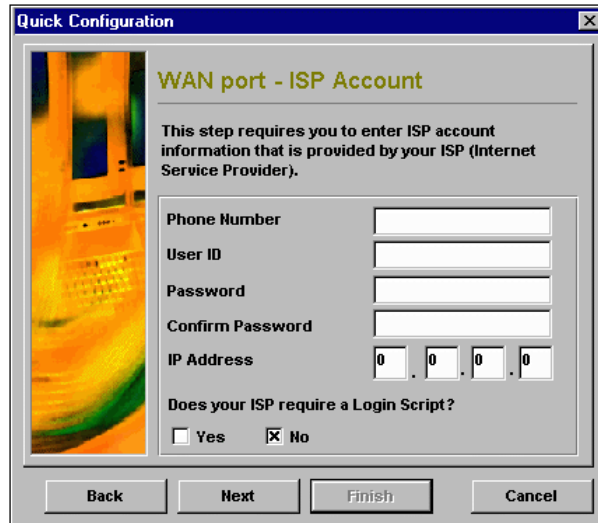
string into the Init. String box, click Add, then click OK to finish.

After you click OK, the selected initialization string will appear in the WAN Port – Modem panel's Init. String box.

**Dial Prefix String and Hangup String:** To make a modem or terminal adapter dial a number, the Internet/print server must send the modem or TA a special sequence of characters before sending the number itself. This sequence of characters is called the Dial Prefix String. Another sequence, called the Hangup String, is the preferred way to command a modem or TA to hang up. The factory-set dial prefix string (ATDT) and hangup string (~~~++++~::~ATH0) will work for almost all modems and TAs (note that the 0 in ATH0 is a zero, not the letter O). Do not change these settings unless you are very knowledgeable about your modem or TA's command set.

After supplying the necessary information about your modem or TA in the WAN Port – Modem panel, click Next to go on. The WAN Port – ISP Account panel will appear.

**WAN Port – ISP Account:** The information in the WAN Port – Modem panel enables your Internet/print server to work with your modem or TA; the information in the WAN Port – ISP Account panel lets the server actually connect to and work with your ISP's equipment.



The screenshot shows a 'Quick Configuration' window with a title bar containing a close button. The main area is titled 'WAN port - ISP Account' in green. Below the title, a message states: 'This step requires you to enter ISP account information that is provided by your ISP (Internet Service Provider).' The form contains several input fields: 'Phone Number' (a single text box), 'User ID' (a single text box), 'Password' (a single text box), 'Confirm Password' (a single text box), and 'IP Address' (four individual boxes for each octet, each containing a '0'). Below these fields is a checkbox labeled 'Does your ISP require a Login Script?' with 'Yes' and 'No' options. The 'No' option is selected. At the bottom of the window are four buttons: 'Back', 'Next', 'Finish', and 'Cancel'.

Following are the kinds of information you need to supply in this panel:

**Phone Number:** This is required only for a dial-up line; if you have a leased line to your ISP, leave this item blank. When typing a phone number, be sure to include all the digits needed to call your ISP on your phone system. Wherever a wait might be required (after dialing an outside-line prefix, for example) type one or more commas to insert a pause into the dialing sequence. Other special characters understood by your modem or TA can also be included; see your modem or TA manual for details.

**User ID:** In most cases, your user ID is assigned by your ISP from choices that you submit when you apply for an Internet access account. It might be referred to as your “login,” “login name,” or “host name” in the material you receive from your ISP when your account is established. Your user ID can be up to 64

characters long. Click in the User ID box (or tab to it) and type the user ID for your account. Make sure it is in the correct form, including capitalization and any non-alphabetic characters.

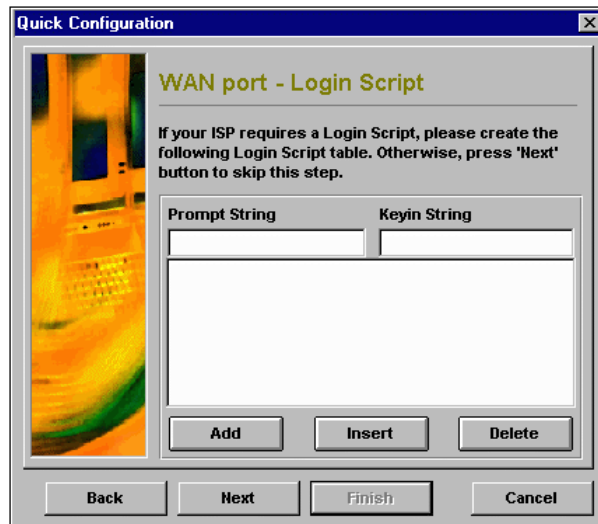
**Password:** Your password is ordinarily assigned by your ISP when your Internet access account is established. This password can be up to 32 characters long. Click in the Password box (or tab to it) and type the password for your Internet access account; then go to the **Confirm Password** box and type it in again. Make sure it is in the correct form, including capitalization and any non-alphabetic characters. Only asterisks will appear as you type; IS Admin never displays this password on the screen.

**IP Address:** Your Internet/print server uses one IP address on your LAN (this is the address you entered using the Change IP Address command) and another on the Internet. The IP address that the server uses on the Internet is assigned by your ISP, and can be fixed (that is, pre-assigned) or dynamic (that is, assigned at connection time). If your ISP has given you a fixed IP address, click in the IP Address boxes (or tab to them) and type that address in; if your ISP assigns you an IP address dynamically, use the server's default (factory) setting (0.0.0.0).

**Does your ISP require a login script?** To log onto some Internet access accounts, you must respond to one or more prompts that appear on your screen after the call goes through. If you have such an account, you must use a "login script" to automate the process of logging onto your account. To create a login script, click the Yes check box before going on; otherwise leave the No check box checked.

When finished with the settings in the WAN Port – ISP Account panel, click Next to go on. If you responded No to the login script query (see preceding paragraph), the DNS Server IP Address panel will appear, and you can skip ahead to the section on that panel in this manual. If you responded Yes to the login script query, the WAN Port – Login Script panel will appear.

**WAN Port – Login Script:** The WAN Port – Login Script panel appears only if you responded Yes to the login script query in the WAN Port – ISP Account panel.



A login script is necessary only if logging onto your Internet access account involves typing responses to on-screen prompt strings displayed by your ISP's system. If you do not need a login script, be sure to respond No to the login script query in the WAN Port – ISP Account panel.

To create a login script, you must know beforehand what prompt strings appear and how you must respond to them when logging on. You can obtain this information from your ISP or by logging onto your account manually and carefully writing down all the prompts and responses. You do not need to write down screen text that requires no response, but you must accurately record each prompt and the correct response to it.

Here is an example of how to create a login script. Imagine that the following text initially appears on your screen when you log onto your account manually:

```
Welcome to ConnectKing Internet Access!

Your user ID: _
```

“Welcome to ConnectKing Internet Access!” is not a prompt string—it requires no response—so it can be ignored. “Your user ID:” is the first prompt string to appear. After you enter your user ID and respond to additional prompt strings, your screen might look like this:

```
Welcome to ConnectKing Internet Access!

Your user ID: JLee34

Your password: *****

Services:  1. Telnet
          2. PPP
          3. SLIP

Your choice (1-3): 2_
```

Let's assume, just for this example, that “abcde” is your password (you should *never* use such an easy-to-guess password). To create

a login script for this account, you would carry out the following steps in the WAN Port – Login Script panel. Text that you would type is shown below in single quotation marks; do *not* type quotation marks when you actually create a login script.

1. Click in the Prompt String box and type 'Your user ID' (without the quotes, on this or any other string); click in the Keyin String box and type 'JLee34'; then click the Add button. The strings will appear on the first blank line in the script box.

(It is not necessary to type the entire prompt string; any part of it that does not appear on any previous line of the log-on process is sufficient. For instance, in this example, 'Your' or 'user' or 'ID' alone would be enough to make the Internet/print server recognize the full prompt string sent by the ISP.)

2. Click in the Prompt String box and type 'Your password'; click in the Keyin String box and type 'abcde'; then click the Add button. The strings will appear just under the previously entered strings in the script box.
3. Click in the Prompt String box and type 'Your choice'; click in the Keyin String box and type '2'; then click the Add button.

The screenshot shows a window titled 'WAN Port – Login Script'. It contains two columns: 'Prompt String' and 'Keyin String'. The 'Prompt String' column has three entries: 'Your user ID', 'Your password', and 'Your choice'. The 'Keyin String' column has three entries: 'JLee34', 'abcde', and '2'. Below the columns are three buttons: 'Add', 'Insert', and 'Delete'.

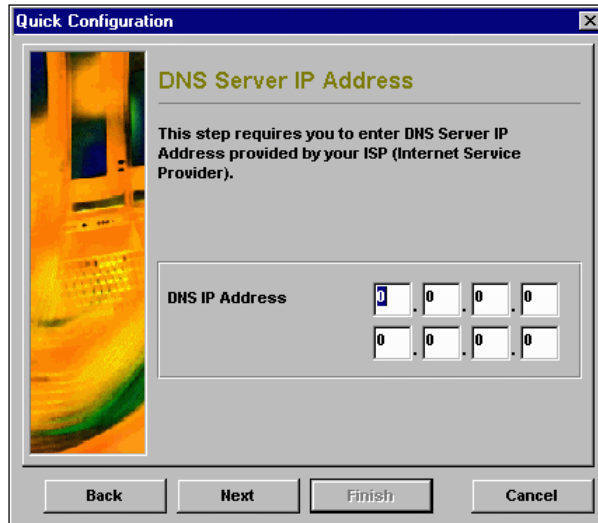
Prompt String	Keyin String
Your user ID	JLee34
Your password	abcde
Your choice	2

Add Insert Delete

Before exiting the dialog box, check the script. You cannot edit existing lines directly, but you can remove incorrect lines and insert new lines between existing lines. Remove a line by clicking it and clicking the Delete button. To insert a line, type its contents into the Prompt String and Keyin String boxes, click the line in the script box that you want the new line to follow, and click the Insert button.

To exit the WAN Port – Login Script panel, click the Next button. The DNS Server IP Address panel will appear.

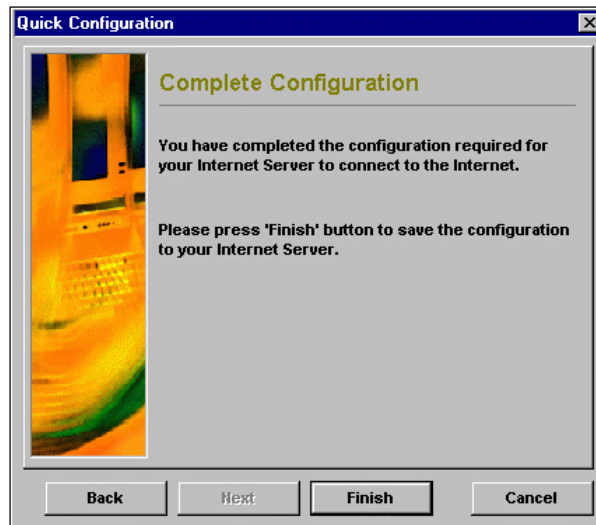
**DNS Server IP Address:** DNS stands for Domain Name System, an arrangement whereby special servers around the world make Internet use easier by converting between the textual addresses used by humans and the numeric addresses used by machines. Like every other machine connected to the Internet, your Internet/print server must “know” the IP address of at least one nearby DNS server. When you establish an Internet access account, your ISP informs you of at least one DNS server’s IP address.



Type a DNS server address supplied by your ISP into the upper boxes in the DNS Server IP Address panel. If more than one DNS server is available to you, you can type a second such server's IP address into the lower boxes. Click Next to proceed to the next and final step in the Quick Configuration process.

**Complete Configuration:** Settings that you have entered up to this point in the Quick Configuration process are held by IS Admin in temporary storage. The purpose of the Complete Configuration panel is to send these settings to the Internet/print server itself. The Internet/print server will store the settings in its “non-volatile” memory, where they will be preserved even if you turn the server off or reset it with IS Admin’s Reset function (note that they will *not* be preserved if you choose IS Admin’s Factory Reset function).





To complete the Quick Configuration process, click the Finish button in the Complete Configuration panel. Your settings will be sent to the Internet/print server, the Quick Configuration dialog box will be closed, and you will be returned to the IS Admin main window.

After the Change IP Address command and the Quick Configuration process have been successfully carried out, you can begin using the machines on your LAN to access the Internet through your Internet/print server.

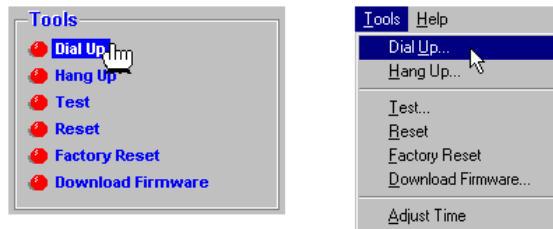
## **Configuration**

The Configuration command provides all the same functions as the Quick Configuration command, plus functions for using highly sophisticated features of your Internet/print server. See the chapter entitled "Intermediate and Advanced Operation" for details.

## ***Using Basic Device Control Tools***

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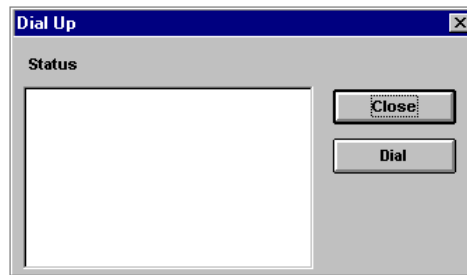
The IS Admin main window's Tools section contains six commands for directly controlling your Internet/print server and modem or terminal adapter (TA). To use one of these commands, click the command name or choose the command of the same name from the Tools menu.



Remember that these commands will work only if you have assigned the server an IP address suitable for your LAN as described above under “Change IP Address.”

### **Dial Up**

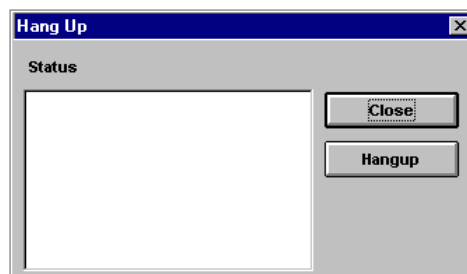
The Dial Up command lets you manually test your modem and phone line settings and connections to make sure you can reach your ISP. Click Dial Up in the IS Admin main window, or choose Dial Up from the Tools menu. The Dial Up dialog box will appear.



To dial your ISP, click the Dial button. (If your Internet/print server has two WAN ports, be sure to click the button for the correct WAN port, WAN 1 or WAN 2.) Results will appear in the Status box to the left of the buttons. Click the Close button to finish. Use the Hang Up command (see next) to end the call.

## **Hang Up**

The Hang Up command lets you manually break the connection to your ISP at any time. To use this function, click Hang Up in the IS Admin main window, or choose Hang Up from the tools menu. The Hang Up dialog box will appear.

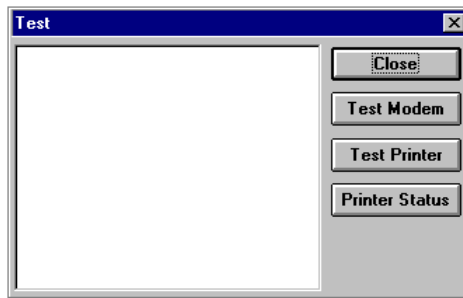


To break the connection, click the Hangup button. (If your Internet/print server has two WAN ports, be sure to click the button for the correct WAN port, WAN 1 or WAN 2.) Results will

appear in the Status box to the left of the buttons. Click Close to return to the IS Admin main window.

## **Test**

The Test command lets you check your modem connection, printer connection, and printer operating status. To begin this process, click Test in the IS Admin main window, or choose Test from the Tools menu. The Test dialog box will appear.

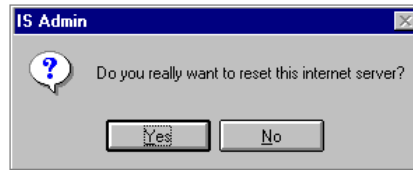


For any test to work, the device to be tested must be connected and powered up. Click Test Modem to check the status of modem interface signals; click Test Printer to check printer status (on line, off line, out of paper, etc.) *and* print a test sheet; click Printer Status to check printer status without printing a test sheet. Results will appear in the Status box to the left of the buttons. Click Close to return to the IS Admin main window.

## **Reset**

The Reset function acts like a power-off and restart of the Internet/print server. Make sure the desired server is selected in the

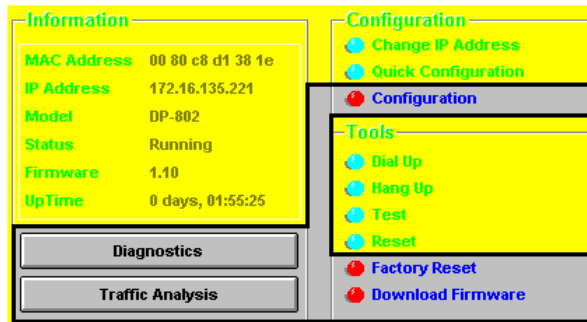
Server Name list box, then click Reset to restart it. IS Admin will prompt you for confirmation of the command.



Resetting an Internet/print server will disconnect all of the server's operating sessions (LAN and WAN) and return the uptime counter to zero. Reset has no effect on the device's variable settings.

## Intermediate and Advanced Operation

This chapter covers IS Admin functions that require specialized knowledge or special preparation. These are the Configuration, Factory Reset, Download Firmware, Adjust Time, Diagnostics, and Traffic Analysis commands.



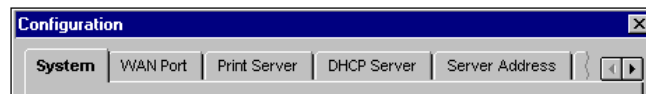
### Configuration

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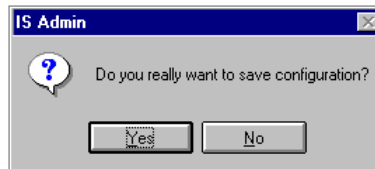
The Configuration command lets you change any or all of an Internet/print server's settings, including settings that can be changed with the Change IP Address and Quick Configuration commands (see preceding chapter). You can choose the Configuration command from the Configuration section of the main window or from the Configuration menu.



Choosing the Configuration command displays a dialog box with the following tabbed panels: a System panel for important general settings, a panel for the WAN port (or one for each WAN port, if the device has two), a panel for print server settings, a panel for controlling the server's DHCP capability (this is explained further on), and a panel for allowing outside access to World Wide Web, FTP, Gopher and similar servers on your LAN.



Note that settings you input in the Configuration dialog box are not transmitted to the Internet/print server until you press the Return or Enter key or click the Save button at the bottom of the dialog box. IS Admin will ask for confirmation before actually sending the settings to the server:



Following are descriptions of the Configuration dialog box's panels and the functions available through them.

## **System**

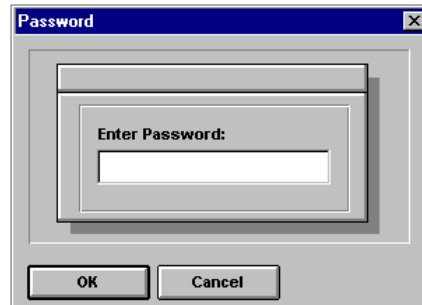
The Configuration dialog box's System panel is illustrated and explained below.

The screenshot shows the 'System' configuration window. At the top are tabs: 'System', 'WAN Port', 'Print Server', 'DHCP Server', and 'Server Address'. The 'System' tab is selected. Below the tabs, there are several sections: 'Server Name' with a text box containing 'IS-D1381E'; 'Local LAN' with 'IP Address' (172.16.135.221) and 'Subnet Mask' (255.255.255.0) fields; 'DNS IP Address' with a field showing '0.0.0.0'; 'Maximum Idle Time' with a field showing '30' and the unit 'minutes'; 'Operation Mode' with two radio buttons: 'LAN-to-WAN Internet Server' (selected) and 'LAN-to-LAN Internet Server'; and a 'Change Password' section with 'Old Password', 'New Password', and 'Confirm Again' fields. Below the 'LAN-to-LAN Internet Server' option, there are fields for 'Global IP Address', 'Subnet Mask', and 'Default Gateway', all showing '0.0.0.0'.

**Server Name:** This is an arbitrary name up to fifteen characters long and containing no spaces. The factory-set name is “IS-” and the last six characters of the unit’s MAC (media access control) address (in hexadecimal notation). To change this setting, click or drag in the Server Name box and type the name you want. The name you assign will appear in the Server Name list box whenever the Discover Server function is carried out.

**Change Password:** You can set a password to prevent unauthorized persons from changing your Internet/print server’s settings. Use the Configuration dialog box’s Change Password controls to create, alter, or clear this password. If you set a password, you will be prompted to enter it whenever you work with the server via IS Admin, Telnet, or a Web browser.





Remember that this password is for the Internet/print server only; it is unrelated to the password(s) for your Internet access account(s).

**Local LAN:** The Local LAN section's IP Address control performs the same function as the Change IP Address command; see the preceding chapter for details. The Subnet Mask control is set by default to 255.255.255.0; do not change this setting unless you are extremely knowledgeable about IP addresses and the configuration of your LAN.

**DNS IP Address:** The IP address of a nearby Domain Name System (DNS) server is one of the items of information your ISP supplies when you establish an Internet access account. Ordinarily you will input this address during the Quick Configuration process (see preceding chapter). You can also input the address, or change it if necessary, by clicking and typing in the boxes provided here.

**Maximum Idle Time:** To help keep your phone bills down, your Internet/print server comes set to hang up automatically if the connection to your ISP is unused for 30 minutes. You can change this to any number of minutes from 1 to 65535 by clicking and typing in the Maximum Idle Time box.

**Operation Mode:** The majority of instructions in this manual assume that you will connect to your ISP directly through the Internet/print server and any attached modem(s) or TA(s). This is known as *LAN-to-WAN operation mode*.

In some cases, you might need to use the server in *LAN-to-LAN operation mode*. In this mode, instead of using a modem or TA, the server uses a router on your network for access to an ISP. IP addresses are assigned in such a way that the server and the router, although on the same physical network, are considered to be on different “logical” networks. *Setting the server up for LAN-to-LAN mode requires extensive technical knowledge.*

When you click the LAN-to-LAN Internet Server option, the Global IP Address, associated Subnet Mask, and Default Gateway controls are enabled. The Global IP Address setting is the *network* address of the LAN segment the router is on; the Subnet Mask setting is the associated address mask; and the Default Gateway setting is the *host* address assigned to the router's LAN interface.

Note that when used in LAN-to-LAN mode, the Internet/print server cannot provide outside access to World Wide Web, FTP, Gopher and similar servers on your LAN; settings in the Server Address panel of the Configuration dialog box will have no effect.

## **WAN Port**

The controls in the WAN port panel(s) of the Configuration dialog box correspond exactly to, and perform the same functions as, controls in the WAN Port – Modem, WAN Port – ISP Account, and WAN Port – Login Script panels of the Quick Configuration dialog box. These controls are explained in detail under “Quick Configuration” in the preceding chapter.

The screenshot shows the 'WAN Port' tab of a configuration window. The window has a title bar with tabs: 'System', 'WAN Port' (selected), 'Print Server', 'DHCP Server', and 'Server Address'. The 'WAN Port' section includes a 'Line Type' dropdown set to 'Dial Up', a 'Baud Rate' dropdown set to '115200' with 'bps' as the unit, and an 'ISP Account' section with fields for 'Phone Number', 'User ID', 'IP Address' (four boxes each containing '0'), and 'Password'. Below this is the 'Modem AT Command' section with 'Init. String' (AT&F), 'Dial Prefix String' (ATDT), and 'Hangup String' (+++++ATH0), along with a 'Browse...' button. The 'Login Script' section has 'Prompt String' and 'Keyin String' fields, and a list area with 'Add', 'Insert', and 'Delete' buttons.

## **Print Server**

The Configuration dialog box's Print Server panel is divided into three sections: Parallel Port, NetBEUI, and AppleTalk. This panel is illustrated and explained below.

The screenshot shows the 'Print Server' configuration window. It has five tabs: 'System', 'WAN Port', 'Print Server', 'DHCP Server', and 'Server Address'. The 'Print Server' tab is selected. The window is divided into three main sections: 'Parallel Port', 'NetBEUI', and 'AppleTalk'. The 'Parallel Port' section contains three fields: 'Port Name' (IS-D1381E-P1), 'Speed' (High), and 'P/L Printer' (No). The 'NetBEUI' section contains two fields: 'Workgroup Name' (WORKGROUP) and 'Maximum Connected Stations' (32). The 'AppleTalk' section contains three fields: 'Printer Type' (LaserWriter), 'PostScript Level' (Level 2), and 'Font Group' (Standard 35).

**Parallel Port:** This section contains controls that relate directly to the physical server-printer interface and interaction between the two devices.

**Port Name:** Some network-based printing protocols require that each printer have a textual name. The factory-set name is IS-xxxxxx-P1, where xxxxxx is the last six digits of the server's MAC (media access control) address in hexadecimal notation. To change the setting, click or drag in the Port Name box and type in the new name. The name must not contain any spaces.

The Internet/print server can hold a port name up to 32 characters long. Note, however, that the name can be no more than 12 characters long if it will be used in Windows NT 4.0 client software and no more than 8 characters long if it will be used in Microsoft LAN Manager client software.

**Speed:** The server's parallel port has two modes of operation: a high-speed mode suitable for most printers today, and a comparatively low-speed mode suitable for very old printers. The default setting is High. If the printer loses characters at this setting, open the Speed list box and select Low.

**PJL Printer:** If the connected printer supports Hewlett-Packard's Printer Job Language (PJL), the server can use PJL commands to retrieve status information from the printer. The default setting for this control is No. Printers that support PJL include PCL Level 5 printers such as the LaserJet IIISi and 4Si. To change the setting, click the PJL Printer list box and select Yes.

**NetBEUI:** The NetBEUI section of the Print Server panel contains controls related to IBM's NetBIOS Extended User Interface protocol, a protocol used by Microsoft Networking products such as Windows for Workgroups and Windows NT.

**Workgroup Name:** The workgroup name is a name shared by a group of stations and resources on a Microsoft Networking-based LAN. The default setting is WORKGROUP. To change the setting, select the Workgroup Name box and type in the desired name. This name can be up to 15 characters long and must not contain any spaces. Stations and resources that are set for the same workgroup name will automatically appear together in displays of the network's structure.

**Maximum User Connections:** This is the maximum number of people who can use the printer at the same time. The default setting is 32. Setting this control to the actual number of stations that will print using NetBEUI-based protocols can help ensure that your Internet/print server will work at maximum efficiency.

To change the setting, select the Maximum User Connections box and type in a number from 16 to 100.

**AppleTalk:** The AppleTalk section of the Print Server panel contains settings required for using the printer on a network that uses AppleTalk over Ethernet (also known as EtherTalk).

**Printer Type:** This is a text string up to 32 characters long that tells AppleTalk stations what kind of printer is attached. It usually is the same as the name of the printer driver on a Macintosh-type computer. You can change the setting by clicking or dragging in the Printer Type box and typing the new name in. For most PostScript printers, this string *must* read LaserWriter (this is the default setting).

**PostScript Level:** This control lets the server tell AppleTalk stations whether the attached printer uses Level 1 or Level 2 PostScript. The default setting, Level 2, lets stations take advantage of a Level 2 PostScript printer's more advanced capabilities. The Level 1 setting will work with all PostScript printers. To adjust this control, open the PostScript Level box and select the desired setting.

**Font Group:** This control lets the server tell AppleTalk stations what fonts are built into the attached printer. The default setting is Standard 35, meaning the fonts built into the majority of PostScript printers. A setting of Standard 13 is suitable for very old PostScript printers; see the printer manual for details. If this control is set to No Font, AppleTalk stations will download to the printer all the fonts they need for a job; if the All Font setting is used, stations will not download any fonts to the printer. To adjust this control, open the list box and select the desired setting.

## **DHCP Server**

DHCP (Dynamic Host Configuration Protocol) is an advanced feature adjustable only through the Configuration dialog box.

The screenshot shows a configuration window with tabs: System, WAN Port, Print Server, DHCP Server (selected), and Server Address. In the DHCP Server tab, there are two radio buttons: 'Disable' and 'Enable' (which is selected). Below this is the 'IP Address Range' section with 'From' and 'To' fields. The 'From' field contains the IP 192.168.100.101 and the 'To' field contains 192.168.100.150. Below that is the 'Lease Time' section with a text box containing '1440' and the unit 'minutes'. At the bottom is the 'IP Reserve Table' section, which includes a table with columns for 'IP' and 'MAC'. The table is currently empty. To the right of the table are 'Add' and 'Delete' buttons.

**Disable/Enable:** DHCP is a function whereby the Internet/print server dynamically assigns IP addresses to machines on your LAN. Click Enable or Disable according to whether you want the server to perform this function. For DHCP to work, both the Internet/print server and the other machines on your LAN must be set up to use it. Most of today's network-capable operating systems have DHCP capability; see your machines' operating system manual(s) for details.

**IP Address Range From/To:** In these boxes, supply the first and last IP addresses of the range from which the Internet/print server is to assign addresses to machines on your LAN. This range must be within, or the same as, one of the address ranges set aside by

Internet authorities for private use; see “Change IP Address” in the preceding chapter for details.

**Lease Time:** The “lease time” is the maximum amount of time a dynamically assigned IP address can be “owned” by the machine it is assigned to. When this time is up, the server again makes the address available for any machine issuing a DHCP request. The default setting is 1440 minutes (24 hours); you can input any whole number of minutes from 5 to 65535.

**IP Reserve Table:** You can reserve addresses in the DHCP IP address range for particular machines. The server will then assign each reserved address to the indicated machine and never to any other. For each machine, type the desired IP address and the machine’s MAC address, then click the Add button. To cancel an assignment, click it and click the Delete button. If you use DHCP *and* allow outside access to Web, FTP, and similar servers on your LAN (see “Server Address,” below), be sure add those servers’ addresses to the IP reserve table so the addresses do not change.

## **Server Address**

When you use an Internet/print server, all the machines on your LAN appear to have the same IP address to other machines on the Internet. This can be a problem if you have machines running server software and you wish people outside your LAN to be able to connect to those servers. To solve this problem, your Internet/print server can store a table of local servers and the service(s) that users outside your LAN can request from them. Click the Configuration dialog box’s Server Address tab to view and modify the contents of this table.



The screenshot shows a window titled 'Server Address' with tabs for 'System', 'WAN Port', 'Print Server', 'DHCP Server', and 'Server Address'. The 'Server Address' tab is active. Inside the window, there is a 'Server Address Table' section. It contains three input fields for 'Local IP Address' (each with a dot separator), a 'Protocol' dropdown menu set to 'TCP', and a 'Port Number' dropdown menu set to 'telnet'. Below these fields is a large empty rectangular box representing the table. To the right of the table are two buttons: 'Add' and 'Delete'.

The controls in this panel let you create and delete server address table entries. The maximum number of entries in the table is 16.

**Local IP Address:** To begin creating an entry, type into these boxes the IP address assigned to a machine running server software you wish to make accessible from outside. If DHCP is enabled, make sure that the machine has a static IP address and that that address is listed in the DHCP Server panel's IP reserve table.

**Protocol:** The Protocol control has two possible settings, TCP (Transmission Control Protocol) and UDP (User Datagram Protocol). Common high-level services such as Telnet, FTP, Gopher, and WWW all run on TCP; only in special cases requiring extensive technical knowledge will you need to set this control to UDP.

**Port Number:** In networking software, services are identified by numbers called "port numbers." IS Admin lets you identify four

common services by their names: Telnet, FTP, Gopher, and WWW (port numbers 23, 21, 70, and 80, respectively). To select one of these, open the Port Number list and click the name. For any other service, click or drag in the Port Number box and type the correct port number in.

When the Local IP Address, Protocol, and Port Number settings are all correct, click Add to place the entry in the server address table. To remove an entry, click the entry in the table and click Delete.

## **Advanced Control**

The Configuration dialog box's Advanced Control panel gives you access to a number of extremely powerful functions. Note that for some of these functions to work, the IS Manager Server software package must be running on a computer on your LAN. IS Manager Server is ordinarily included with IS Admin and with newer Internet server and Internet/print server models.

To display the Advanced Control panel, click the rightward-pointing arrowhead near the top right corner of the Configuration dialog box. The tabs in the dialog box will shift leftward, and the Advanced Control tab will appear. Click this tab to display the panel.

The screenshot shows the 'Advanced Control' panel of the IS Admin software. The panel has four tabs: 'Print Server', 'DHCP Server', 'Server Address', and 'Advanced Control'. The 'Advanced Control' tab is selected. The panel is divided into three main sections: 'Manager Server', 'Traffic Control', and 'Routing Table'. The 'Manager Server' section includes a 'Manager Server IP Address' field with four boxes (0, 0, 0, 0), a 'Log and Filter' dropdown menu set to 'No', a 'Dial Up Schedule' dropdown menu set to 'No', and a 'Dial Up Mode' dropdown menu set to 'Dial on Demand'. There are also 'Schedule Table' and 'Holiday Table' buttons. The 'Traffic Control' section has three checkboxes: 'By User Connection', 'By Utilization', and 'By Load Balance', each with a 'Change Value' button. The 'Routing Table' section has an 'Edit' button and a 'Filter NetBIOS over TCP/IP' dropdown menu set to 'Yes'.

The controls in this panel fall into three categories: those related to IS Manager Server, those having to do with traffic control, and those with miscellaneous functions. Note that the Traffic Control section of this panel will be entirely “grayed out”—that is, disabled—if your Internet/print server has only one WAN port.

**Manager Server IP Address:** This is the first and most important of the controls related to IS Manager Server. To be able to use the functions provided by IS Manager Server, type into these boxes the IP address of the machine that IS Manager Server is running on. If you are using your Internet/print server’s DHCP function, make sure this machine has a static IP address and the address is listed in the DHCP Server panel’s IP reserve table.

**Log and Filter:** The Log and Filter control determines whether your Internet/print server will report connection activity to IS Manager Server and accept filtering commands from that program. See your IS Manager Server manual for instructions on setting up

filters. The default setting of the Log and Filter control is No. To put filtering into effect, or just to have connection activity logged (that is, reported to IS Manager Server), set this control to Yes. Remember that the Manager Server IP Address control must be set correctly, and IS Manager Server must be running, for logging and filtering to work.

**Dial Up Schedule:** Using the Schedule Table, Holiday Table, and Dial Up Mode controls (see below), you can specify a timetable and conditions for making connections to your ISP. The Dial Up Schedule control determines whether your Internet/print server will operate according to your timetable and conditions. The default setting of this control is No. This allows the Internet/print server to connect on demand at any time. To change this, first set this control to Yes, then create a timetable and conditions through the Schedule Table, Holiday Table, and Dial Up Mode controls. Note that in order to guarantee that your Internet/print server will stay on schedule, the Manager Server IP Address control must be set correctly, and IS Manager Server must be running at all times.

**Schedule Table:** When the Dial Up Schedule control (see above) is set to Yes, you can click the Schedule Table button to create, view, or modify a list of times when connection to your ISP is allowed. Clicking this button displays the Schedule Table dialog box, which is illustrated below.

**Schedule Table**

Day: **Monday** Start Time: **00** : **00** Stop Time: **00** : **00**

00:00 06:00 12:00 18:00 24:00

Monday Tuesday Wednesday Thursday Friday Saturday Sunday

Add Delete OK Cancel

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

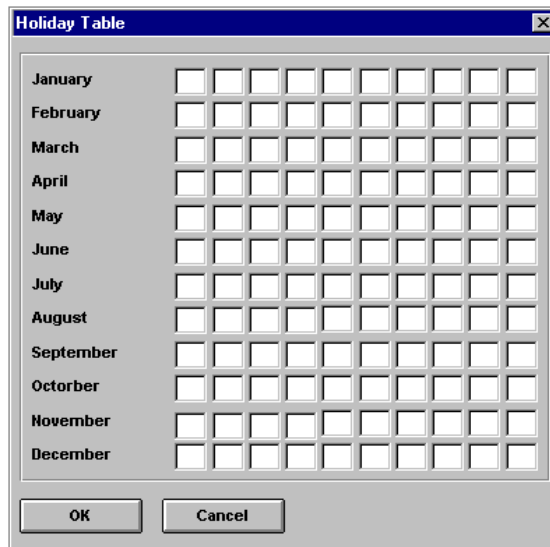
To specify a time period during which connection to your ISP is allowed, select a day of the week, a start time, and a stop time from the drop-down list boxes at the top, then click the Add button. The corresponding portion of the bar graph for that day will change to red. The specified time period will also appear in figures in the bottom part of the dialog box.

To remove a period of time that you have already specified, set the list boxes at the top to show that day, start time, and stop time, then click the Delete button. The corresponding red portion of that day's bar graph will change back to green, and the figures at the bottom of the dialog box will change accordingly. You can delete an entire specified period, or any portion of a period, in this way.

Click OK to exit this dialog box and confirm any changes in the settings, or click Cancel to exit and leave the previous settings unchanged.

**Holiday Table:** The holiday table is a list of dates on which the Internet/print server should *not* connect to your ISP. This table is meant to be used together with the timetable you set through the Schedule Table button (see above). When the Dial Up Schedule control is set to Yes, the Internet/print server will operate according to your timetable *except* on dates specified in the holiday table. On these dates, connection will not be allowed. You can specify up to ten such dates for each month of the year.

To view or modify the holiday table, first make sure the Dial Up Schedule control is set to Yes, then click the Holiday Table button. The dialog box shown below will appear.



To specify a holiday, click in any box to the right of the desired month and type the desired date. For example, to set International Labor Day, May 1, as a holiday, click in any empty box in the row following “May” and type the number 1. (If you have set other holidays in May, IS Admin will automatically put the dates in the correct order after you confirm your settings.) To remove a holiday you have set, click in the box the date appears in and remove the date with the Backspace or Delete key. Click OK to exit the dialog box and confirm any changes, or click Cancel to exit and leave the previous settings unchanged.

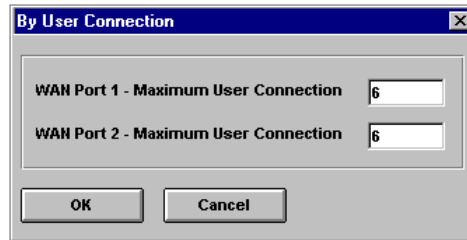
**Dial Up Mode:** When your Internet/print server is set to operate according to your schedule (that is, when Dial Up Schedule is set to Yes), it can either (a) connect to your ISP only when necessary during the time periods you have specified, or (b) connect automatically at the beginning of each time period, stay connected throughout the period, and disconnect when the period ends. The Dial Up Mode control determines which method the Internet/print server will use. The default setting, Dial on Demand, makes the Internet/print server wait until someone on your LAN requests an outside connection during a time when outside connections are allowed. To make the Internet/print server stay connected throughout the times you have specified, pull down the Dial Up Mode list box and select Auto Dial. In either case, the Internet/print server will not connect at all on holidays and at times not specified in your schedule.

**Traffic Control settings:** The Traffic Control section of the Advanced Control panel will be “grayed out”—that is, disabled—if your Internet/print server has only one WAN port. For an Internet/print server with two WAN ports, the Traffic Control section provides three different ways of distributing the connection load between the two WAN ports.

**By User Connection** is the default setting. Numbers in square brackets show the number of user connections that can be made on one WAN port before the Internet/print server will start using the other WAN port for additional user connections. The default setting is [6], [6]. This means that the Internet/print server will use WAN 1 for up to six user connections, then WAN 2 for up to six more, and finally alternate between WAN 1 and WAN 2 if each port is serving six or more users and additional user connections are requested. Once a user is connected through one WAN port, additional connections for that user are made through the same port. Of the three traffic control options, traffic control by user connection is best for minimizing the number of calls placed to your ISP.

You can change the number of connections that acts as the “switch point” by clicking the By User Connection option’s Change Value button. The By User Connection dialog box will appear.





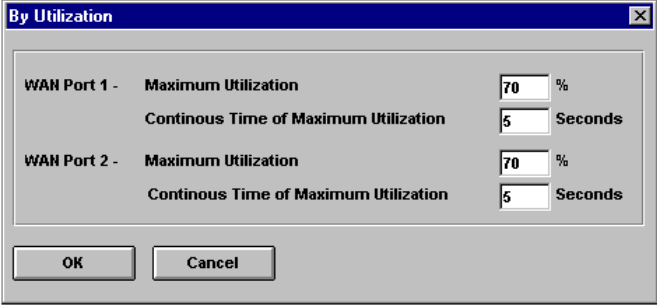
“Maximum” in this dialog box means not the total number of connections permitted but the number of existing connections above which the Internet/print server will switch ports or (if both ports are at their “maximum”) start alternating between the ports. To change the setting for either port, click in the appropriate box and edit the number there. Click Cancel if you decide to leave the original settings unchanged, or click OK to confirm any changes.

**By Utilization:** This setting distributes the load between the two WAN ports on the basis of “bandwidth utilization,” that is, how much of each port’s signaling capacity is actually used and for how long. Traffic control by utilization allows different connections from the same user to be carried by different WAN ports. This can greatly increase performance for Web applications, since a browser technically establishes a new connection each time it gets a graphic. This setting is recommended in cases where some users require much more bandwidth than others.

Computers exchange data in packets, so even when data flow seems continuous there can be stops and starts in the signaling process. Traffic control by utilization measures what percentage of a given time period is spent in actual signaling. Connections will be made through WAN 1 unless utilization exceeds the specified percentage for the specified number of seconds and a

new connection is requested. That connection will be made through WAN 2. If both WAN ports “fill up,” the Internet/print server will alternate between the ports in making any additional connections. The default setting for both WAN ports is 70% utilization for five seconds.

To use traffic control by utilization, click this option so an **x** appears in its check box. If you wish, you can then change the percentage and duration figures. To do this, click this option's Change Value button. The By Utilization dialog box will appear.

The image shows a Windows-style dialog box titled "By Utilization" with a close button (X) in the top right corner. The dialog box has a light gray background. It contains two sections, one for "WAN Port 1" and one for "WAN Port 2". Each section has two rows of controls: "Maximum Utilization" and "Continuous Time of Maximum Utilization". For WAN Port 1, the Maximum Utilization is set to 70% and the Continuous Time is 5 Seconds. For WAN Port 2, the Maximum Utilization is also set to 70% and the Continuous Time is 5 Seconds. At the bottom of the dialog box, there are two buttons: "OK" and "Cancel".

Port	Maximum Utilization	Continuous Time of Maximum Utilization
WAN Port 1	70 %	5 Seconds
WAN Port 2	70 %	5 Seconds

“Maximum” in this dialog box means not the maximum utilization rate allowed but the utilization rate above which—if it lasts for the indicated number of seconds—the Internet/print server will start using WAN 2 or (if both ports are at their “maximum”) start alternating between the ports. To change the percentage or duration figure for either port, click in the appropriate box and edit the number there. Click Cancel if you decide to leave the original settings unchanged, or click OK to confirm any changes.

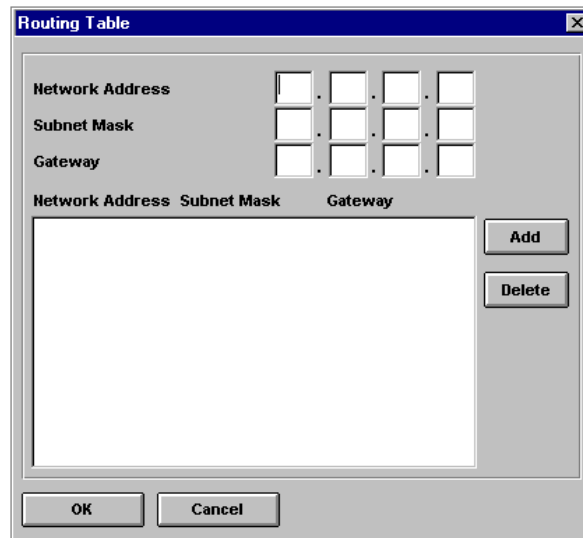
**By Load Balance:** Traffic control by load balancing means alternating between the two WAN ports to keep the number of connections on the two ports equal or about equal. Like traffic

control by utilization, this allows different connections from the same user to be carried by different WAN ports. Traffic control by load balancing is more suitable in cases where all users have approximately the same bandwidth requirements. To select this option, click it so an **x** appears in its check box.

**Routing Table—Edit Button:** The routing table Edit button is the first of the “miscellaneous” controls at the bottom of the Advanced Control panel. A routing table lists destination networks or subnets and, for each network or subnet, the “gateway” (usually a router or a similar device such as another Internet/print server) through which the network or subnet can be reached. A routing table is necessary if you have a router or similar device on your LAN and you wish the network(s) or subnet(s) to which that device leads to be reachable from your LAN.

Note that if you are using the Internet/print server in LAN-to-LAN operation mode, you should *not* create an entry in the routing table for the router that provides the connection to your ISP. For details see the description of the System panel's Operation Mode control, earlier in this chapter.

To create or change a routing table, click the Edit button. The Routing Table dialog box will appear.



The image shows a Windows-style dialog box titled "Routing Table". At the top, there are three input fields for "Network Address", "Subnet Mask", and "Gateway", each consisting of four small boxes separated by dots. Below these fields is a table with three columns: "Network Address", "Subnet Mask", and "Gateway". The table is currently empty. To the right of the table are two buttons: "Add" and "Delete". At the bottom of the dialog box are "OK" and "Cancel" buttons.

The routing table is initially empty, and should be left empty if there are no gateways on your LAN besides the Internet/print server or router that provides access to your ISP.

To create an entry, you must know the IP *network* address and subnet mask of a particular destination network or subnet, as well as the local IP *host* address (the address on your LAN) of the gateway leading to that destination network or subnet. Type these numbers into the boxes provided, then click the Add button to place the entry in the table. To remove an entry from the table, click the entry to select it, then click the Delete button. Finally, click OK to confirm all displayed entries, or click Cancel to leave the routing table unchanged.

**Filter NetBIOS over TCP/IP:** NetBIOS is a means of requesting services over a network. Because it was designed for small, stand-alone networks, it generates many broadcasts and provides little security. It is used extensively in Windows-based networking.

NetBIOS requests can be encapsulated in TCP/IP packets. Although the requests are intended for nearby computers, the packets can appear to be intended for external destinations. This can result in unnecessary calls and increase the load on the WAN port. In addition, the information in such packets, if allowed onto the Internet, can be used to compromise the security of your LAN. When Filter NetBIOS over TCP/IP is set to Yes, the Internet/print server ignores TCP/IP packets containing NetBIOS requests. This allows NetBIOS to be used on the LAN without causing unnecessary calls or security risks. The default setting of this control is Yes.

You should set Filter NetBIOS over TCP/IP to No only when the Internet/print server is used in LAN-to-LAN operation mode and you wish Windows-based computers to be able to share resources across the link between the LANs.

## **Ending Configuration**

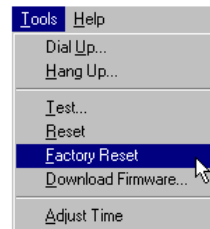
Any time the Configuration dialog box is on the screen, you can exit and send all settings in all panels to the Internet/print server by pressing Return or clicking the Save button, or exit and leave all settings unchanged by pressing Esc or clicking the Cancel button. When you click Save, IS Admin will ask for confirmation before actually sending the settings to the Internet/print server.



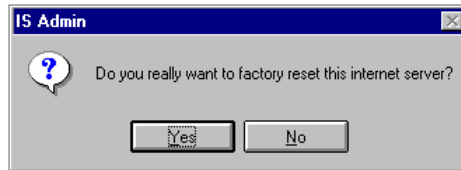
## **Factory Reset**

---

The Factory Reset function restarts the Internet/print server in a similar way to the Reset function described above while it also returns the device's variable settings to their original factory values. To use this command, make sure the desired server's name is selected in the Server Name list box, then click Factory Reset in the main window or choose it from the Configuration menu.



Remember that all of your adjustments to server settings will be undone by a factory reset. You will be asked for confirmation before the command is carried out:



---

## Download Firmware

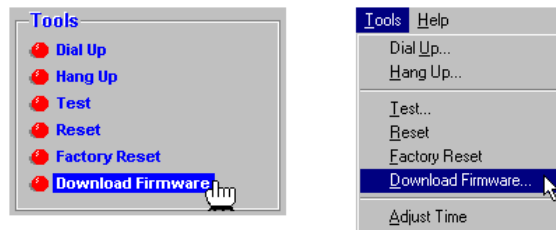
---

The Internet/print server's internal software is stored in "flash" memory, which allows you to upgrade it to an new version without sending the device back to your distributor. Consult your dealer for information about when updated Internet/print server firmware versions will be available.

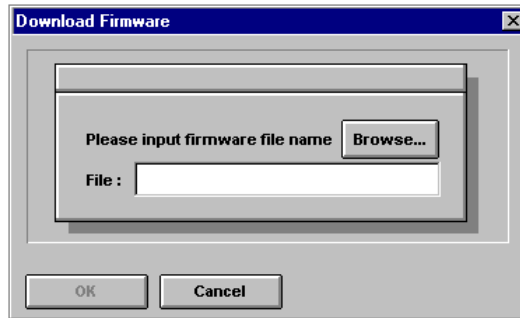
The Internet/print server's firmware can only be upgraded using IS Admin. Firmware upgrade files will always have a .BIN extension.

To perform the download:

1. Choose **Download Firmware** from the IS Admin main window or the Tools menu.



IS Admin will ask for the name of the new .BIN image file.



2. Type in the pathname of the .BIN file, or click the **Browse...** button to locate the file using a standard dialog box.
3. Click **OK**. IS Admin will display an informational warning message about not disconnecting the Internet/print server during the download.
4. Click **OK**. The download will begin. You should see a status bar displaying the progress of the download. The process takes a few seconds to complete.
5. When the download is complete, IS Admin will display a message.

**WARNING:** *When downloading the new firmware file, be very careful not to interrupt the transfer by powering down the Internet/print server or disconnecting it from the network. The server should be able to recover from an interrupted transfer in most cases; however, in some situations it may be necessary to return your Internet/print server for service to recover from an interrupted download.*

---

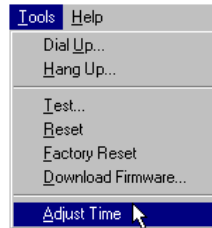
Note that the values entered in all variables should be maintained and it isn't necessary for you to re-enter that data. The device will automatically reset after the new firmware data finishes downloading.



## Adjust Time

---

The Adjust Time command appears only in the Tools menu accessible from the IS Admin menu bar.



This command instructs the Internet/print server to get the current date and time from IS Manager Server immediately. The Internet/print server ordinarily gets the current date and time from IS Manager Server automatically once an hour. (For the Internet/print server to get the current date and time either on command or automatically, the Manager Server IP Address control in the Configuration dialog box's Advance Control panel must be set correctly, and IS Manager Server must be running on the machine at that address.)

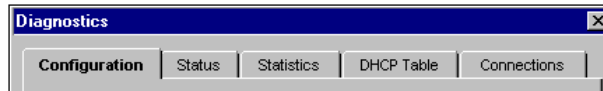
## Diagnostics

---

The Diagnostics command lets you check the current configuration and operating status of an Internet/print server. You can choose this command from the Information section of the IS Admin main window or from IS Admin's Information menu.

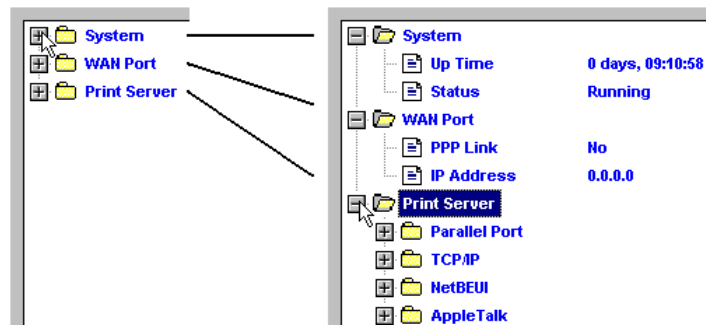


Choosing the Diagnostics command displays a dialog box with five tabbed panels:



The Diagnostics panels are all purely informational; you cannot change any Internet/print server or IS Admin settings through them.

The Configuration, Status, and Statistics panels contain expandable multi-level lists of device settings, states, and counts. Only the top-level headings are initially shown; to see or hide lower-level headings or details, click the plus or minus sign next to a heading. The following example is from the Status panel:



The meanings of all items in the Configuration and Status panels are easily understood by anyone who has configured an Internet/print server or read this manual carefully. The Statistics panel shows device operating statistics in a form that is familiar to network administration personnel. The information in these three panels can be saved in ASCII format using the Save to File button at the bottom of the dialog box:



The DHCP Table panel shows the current dynamic address assignments (assuming DHCP is enabled; if it is not, the panel shows an empty table): IP address, the MAC address of the host to which the IP address is assigned, and the amount of “lease time” remaining. The Connections panel shows which machines on your LAN are currently accessing the Internet through the server: source and destination IP addresses, protocol and path used, and number of minutes idle. DHCP assignments and Internet connections can change from moment to moment; to update the display at any time, click the Refresh button.

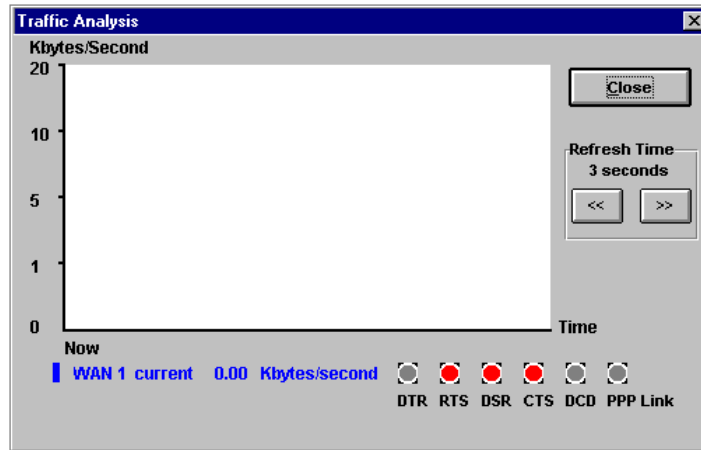
## ***Traffic Analysis***

---

The Traffic Analysis command gives you an automatically updated graphical view of traffic volume and signal status on the Internet/print server's WAN port. You can choose this command from the Information section of the IS Admin main window or from IS Admin's Information menu.



The Traffic Analysis dialog box will appear:



The graph in this dialog box shows the number of kilobytes per second transferred through the Internet/print server's WAN port. Each bar represents the average number of kilobytes per second transferred during a period equal to the refresh time. Click the Refresh Time buttons to adjust the refresh time to 1 to 15 seconds.

Signal indicators at the bottom right show the state of the WAN port's handshaking lines: DTR (Data Terminal [i.e., server] Ready [to receive]), RTS (Request [by server] To Send [to modem/TA]), DSR (Data Set [i.e., modem/TA] Ready [to receive from server]), CTS (Clear [for server] To Send [to modem/TA]), and DCD (Data Carrier Detect[ed by modem/TA]). The PPP Link indicator shows whether the Point-to-Point Protocol is in operation, that is, whether all the preliminaries have been taken care of and your Internet/print server is in communication with its "peer" at the other end. A signal or PPP indicator is red when the signal or protocol is "on."

## **Setting Up Microsoft Network Printing**

Microsoft Networking services, based on the NetBEUI protocol, provide network users with peer-to-peer network services. In addition to accessing files and printers on a central server, any workstation can share its file directories and printer ports, making them accessible to other workstations.

The Internet/print server is also capable of making attached printers accessible to Microsoft Networking workstations running network operating systems such as:

- ◆ Microsoft Windows for Workgroups 3.x
- ◆ Microsoft Windows 95 (or later)
- ◆ Microsoft Windows NT 3.51, 4.0 or later
- ◆ Microsoft LAN Manager
- ◆ IBM LAN Server

To improve printing efficiency, Microsoft Networking services clients can choose to print to a print queue stored on a Windows NT server, which can then forward the print jobs to the Internet/print server.

### ***Printing from Client Workstations***

---

This section tells how to make it possible for your Microsoft Networking client workstations to access printers connected to your Internet/print server.

## **Windows 95 Client Workstations**

To allow your Windows 95 (or later) workstation to print over the network directly through your Internet/print server—

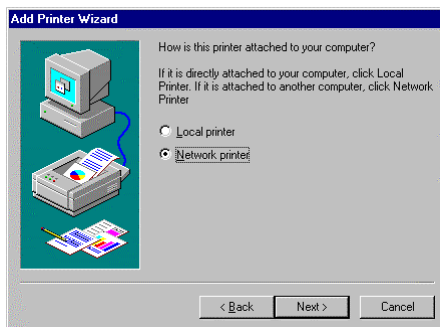
1. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
2. Double-click the **Add Printer** icon in the Printers folder. Windows will start the Add Printer Wizard.



3. Click the **Next >** button to continue to the next screen.



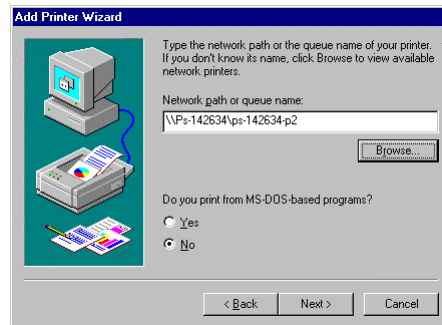
4. Select **Network printer** and click **Next >** to continue.



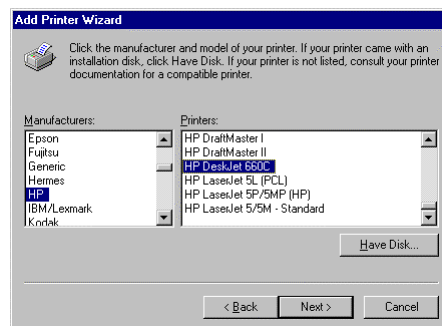
5. Enter the network path for your Internet/print server, specifying which port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P2 on the Internet/print server named PS-142634, enter:

```
\\PS-142634\PS-142634-P2
```

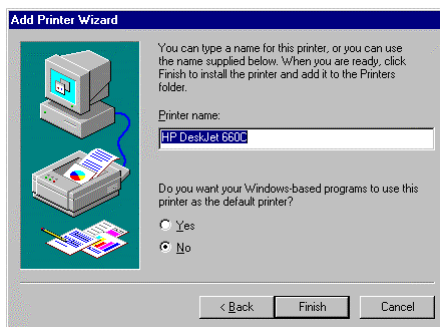
As an alternative to entering the network path, you can also use the **Browse...** button to locate the Internet/print server and printer. Click the **Next >** button to continue.



6. At this point Windows will ask you to select the correct printer driver for the printer. Select your printer's make and model from the list, or use the driver disk included with the printer. When you have selected the correct printer, click **Next >** to continue.



7. Windows will ask for a name for the printer. Enter a name, or accept the default. Click **Finish** to complete the installation.



## **Windows NT 4.0 (and later) Client Workstations**

To allow your Windows NT 4.0 (or later) workstation to print over the network directly through your Internet/print server—

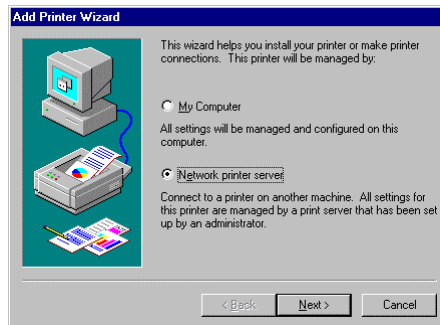
1. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
2. Double-click the **Add Printer** icon in the Printers folder.



Windows will start the Add Printer Wizard.

3. Select the **Network printer server** option and click the **Next >** button to continue.

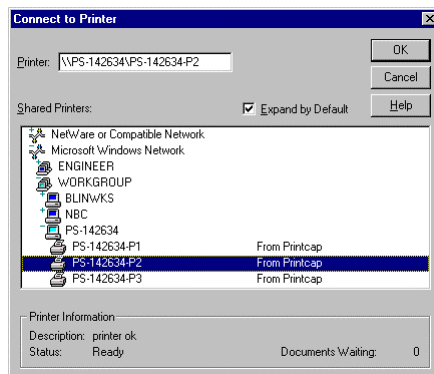




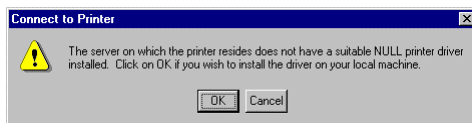
4. Enter the network path for your Internet/print server, specifying which port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P2 on the print server named PS-142634, enter:

\\PS-142634\PS-142634-P2

As an alternative to entering the network path, you can also browse the network to locate the Internet/print server and port. Click the **OK** button to continue.



5. Windows will display the following message. Click **OK** to continue.



6. At this point Windows will ask you to select the correct printer driver for the printer. Select your printer's make and model from the list, or use the driver disk included with the printer. When you have selected the correct printer, click **OK** to continue.
7. If you already have a default printer, Windows will ask if you wish to use the newly installed printer as the new default.
8. When installation is complete, Windows will display the following dialog. Click **Finish** to complete installation.



## Windows NT 3.51 Client Workstations

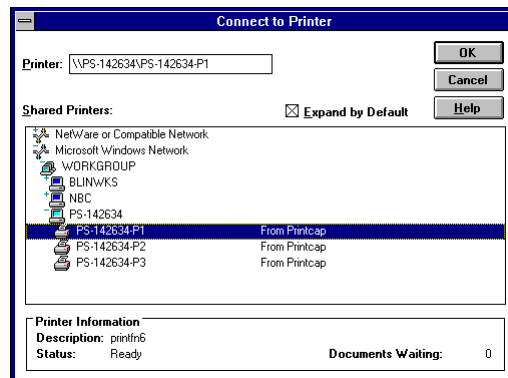
To allow your Windows NT 3.51 workstation to print over the network directly through your Internet/print server—

1. Double-click the Print Manager icon in the Main program group.
2. In the Print Manager, choose **Connect to Printer...** from the **Printer** menu.

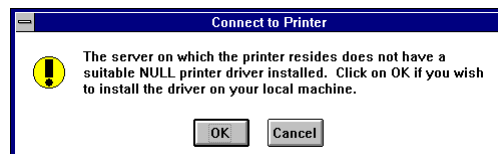
3. Enter the network path for the Internet/print server, specifying which printer port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P2 on the Internet/print server named PS-142634, enter:

\\PS-142634\PS-142634-P2

As an alternative to entering the network path, you can also browse the network to locate the Internet/print server and port. Click the **OK** button to continue.



4. Windows will display the following message. Click **OK** to continue.

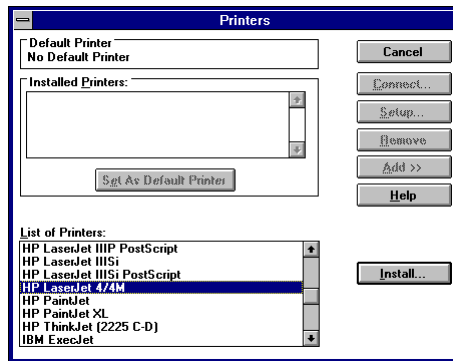


5. Windows will ask you to select the correct printer driver for the printer. Select a driver and click **OK**.
6. The printer should now be available for use.

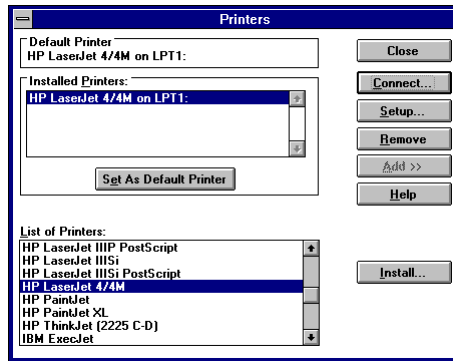
## **Windows for Workgroups Client Workstations**

To enable network printing to your Internet/print server from your Windows for Workgroups 3.11 workstation—

1. Start the Print Manager by double-clicking its icon in the Main program group.
2. From the Print Manager's **Options** menu, choose **Printer Setup....** The Print Manager will display the Printers dialog window.



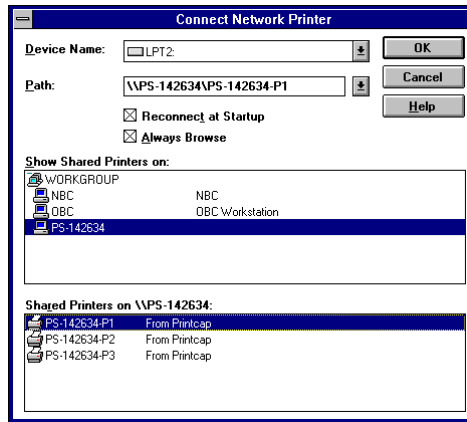
3. From the List of Printers, select the appropriate printer type and click **Install**. If your printer type is not listed, you may have to choose “Install Unlisted or Updated Printer” and use a driver diskette provided by the printer manufacturer. The Print Manager program will install the printer's driver program, prompting you to insert diskettes as necessary. When driver installation is complete, the printer will show up in the Installed Printers list.



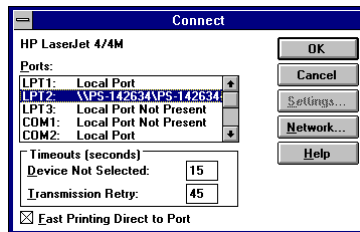
4. Select the printer in the Installed Printers list and click the **Connect...** button.
5. From the Connect dialog window, click **Network...** The Connect Network Printer window will be displayed.
6. In the Device Name field, select a free printer port to be assigned to the network printer. (Any free port name will do.) Once the connection is made, all requests to print to that printer port will be redirected to the network printer.
7. Enter the network path for your Internet/print server in the Path field, specifying which port you want to connect to. For instance, to use the printer connected to the port named PS-142634-P1 on the Internet/print server named PS-142634, enter:

\\PS-142634\PS-142634-P1

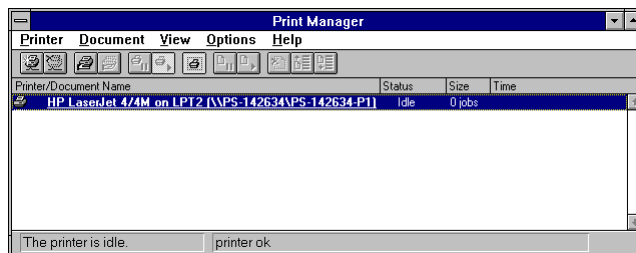
As an alternative to entering the network path, you can also browse the network to locate the Internet/print server and printer. Click **OK** to continue.



8. Select the newly connected printer port in the Connect dialog window, and click **OK**.



9. Click **Close** to close the Printers dialog window.
10. The printer will now appear in the Print Manager window, and will be accessible from all Windows applications, as well as for DOS applications executed from Windows.



## **MS-DOS/PC-DOS Workstations**

To connect your MS-DOS/PC-DOS workstation using client software such as

- ◆ Microsoft LAN Manager client
- ◆ Microsoft NT Server client
- ◆ Microsoft Windows for Workgroups (DOS client)

you will normally use the `NET USE` command. To connect a DOS-based NetBEUI client to a printer attached to your Internet/print server—

1. Select a free printer port (LPT1, LPT2, or LPT3) not being used on the workstation. If you never connect a printer directly to the workstation's physical printer port, you should probably select LPT1.

2. Type the command

```
NET USE port \\computer name\printer name
```

where *port* is the name of the free printer port, *computer name* is the name of the Internet/print server, and *printer name* is the name of the Internet/print server's port. For example, to connect LPT1 to the printer on port PS-142634-P1 on the Internet/print server PS-142634, use the command:

```
NET USE LPT1 \\PS-142634\PS-142634-P1
```

3. You can add the above line to your `AUTOEXEC.BAT` file if you always wish to be connected to the printer.

## ***Keeping the Print Queue on a Windows NT Server***

---

Because Microsoft Windows Networking is a peer-to-peer network, it is possible for clients workstations to connect directly to the Internet/print server. However, because the Internet/print server's memory is limited, a client may have to wait for large print jobs to complete instead of letting the Internet/print server queue the entire job.

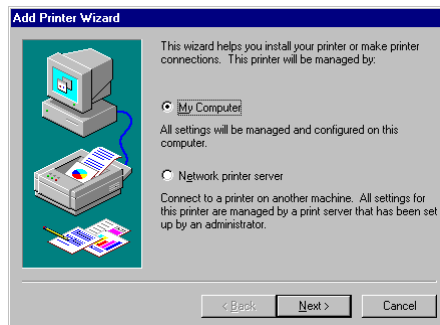
To reduce wait times for clients, you may wish to store the print queue on a Windows NT Server. For a Windows NT 4.0 server:

1. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
2. Double-click the **Add Printer** icon in the Printers folder.



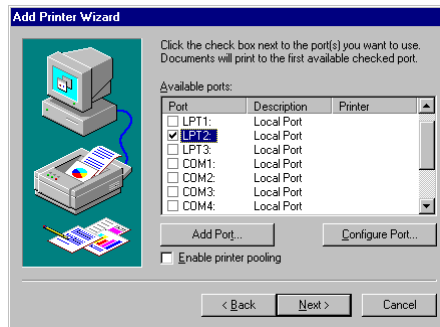
Windows will start the Add Printer Wizard.

3. Select the **My Computer** option and click the **Next >** button to continue.

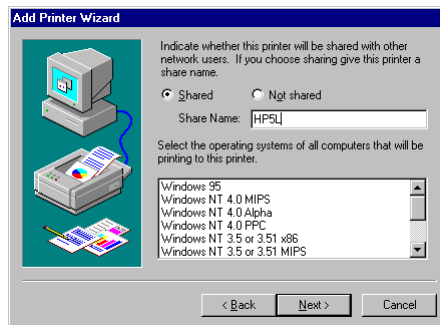


4. Check the box for an unused local port on your server, usually LPT2 or LPT3. Click **Next >** to continue.





5. At this point Windows will ask you to select the correct printer driver for the printer. Select your printer's make and model from the list, or use the driver disk included with the printer. When you have selected the correct printer, click **Next >** to continue.
6. Windows will give you the opportunity to share the printer. Select the **Shared** option, give the printer a share name, and click **Next >** to continue.



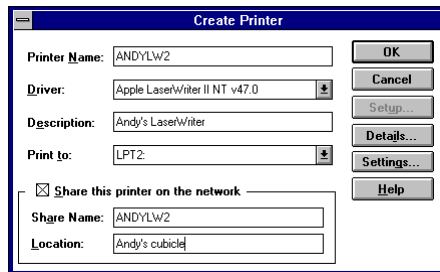
7. After you are finished adding the printer to the server, you need to redirect the local port to the Internet/print server using a NET USE command typed in from the command prompt:

```
NET USE LPT2 \\PS-142634\PS-142634-P1
```

You will need to execute this command every time the server is rebooted. You may wish to place it in a batch file, executed from the Startup program group.

For a Windows NT 3.51 server:

1. Double-click the Print Manager icon in the Main program group.
2. Choose **Create Printer...** from the **Printer** menu.
3. In the Create Printer dialog window, supply a name for the printer, select the proper driver, and select an unused local printer port. Click the check box to allow the printer to be shared, and supply a share name (the name by which the printer will be known to network clients). Click **OK** to continue.



4. After you are finished adding the printer to the server, you need to redirect the local port to the Internet/print server using a NET USE command typed in from the command prompt:

```
NET USE LPT2 \\PS-142634\PS-142634-P1
```

You will need to execute this command every time the server is rebooted. You may wish to place it in a batch file, executed from the Startup program group.

## Setting Up AppleTalk Printing

The AppleTalk network protocol is used with computers using the MacOS operating system. It can be used for network communications over standard Ethernet or Fast Ethernet using the EtherTalk transport, or over a proprietary low-speed LocalTalk transport.

Your Internet/print server can be used for network printing to PostScript printers. You can print from any MacOS computer connected to your Ethernet network, either directly using an EtherTalk connection, or indirectly through a LocalTalk-to-EtherTalk router.

**NOTE:** *The Chooser name of a printer connected to one of the Internet/print server's ports is the same as its port name. If you are using AppleTalk printing, you will need to make sure that every port name is unique among all of the network printers in your AppleTalk zone.*

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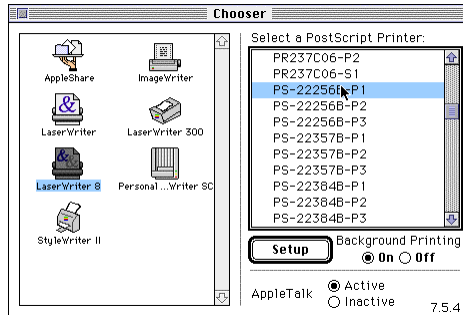
### ***Printing from MacOS Client Workstations***

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The exact procedure for selecting a PostScript printer connected to your Internet/print server may vary slightly, depending on what printer driver version you are using. The procedure described below assumes you are using the LaserWriter 8 print driver, included with recent versions of the MacOS operating system.

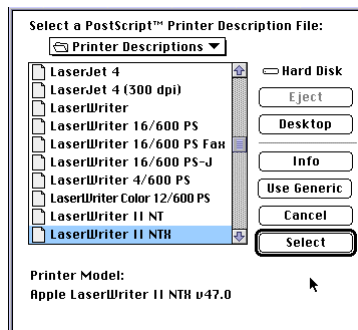
To select a printer connected to your Internet/print server as your MacOS workstation's default printer—

1. Open the Chooser by selecting **Chooser** from the Apple menu.
2. Select the LaserWriter 8 icon on the left. Make sure that AppleTalk is set to Active.
3. A list of all networked PostScript printers will be displayed:



Click the name of the printer (port) you wish to use.

4. If you previously have not set this printer as the default, your computer will prompt you for a PostScript Printer Description file. Choose the appropriate printer description file for your printer and click **Select**. If your printer is not listed, click **Use Generic** to use a generic printer description.



If you wish to access this setting in the future, you can use the **Setup** button in the Chooser window.

5. At this point the selected printer will become your computer's default printer. You may need to choose **Page Setup...** in any applications you might have open.

## Setting Up UNIX TCP/IP Printing

The Internet/print server can provide print services to systems using the `lpr/lpd` network printing protocol. Most UNIX systems are capable of supporting `lpd`.

This chapter explains how to configure your Unix workstations to print to the Internet/print server.

### ***Printing Text Files from Unix***

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Text files on Unix systems contain lines that end with “newline” characters, as opposed to MS-DOS and the Windows-related operating systems that end with a carriage return followed by a linefeed. Most printers require a carriage return/linefeed pair at the end of each line, making it necessary for some translation to be done before Unix text files can be printed on most printers.

For this purpose, you can define two “printers” for the same printer port, one that prints to the port itself, and one that prints to the port name with `_TEXT` added to the name. Files printed to the second port will be translated so that the printer has the carriage return/linefeed pairs that it needs.

For example, you could define a printer `hp51` that prints to port `PS-142634-P1`, and a printer `hp51t` that prints to port `PS-142634-P1_TEXT`. Your graphics files could then be printed to the `hp51` printer, and “raw” text files could be printed to the `hp51t` printer.

## ***Printing from BSD Unix Versions***

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For “flavors” of the Unix operating system derived from or related to the BSD releases, such as SunOS 4.x, Linux, BSD/OS, FreeBSD, or NetBSD, you can use the following procedure to enable users to print to a printer connected to your Internet/print server:

1. Log in as the superuser (root).
2. Add an entry for the Internet/print server in the host's `/etc/hosts` file, giving a hostname for the Internet/print server's IP address. A line in `/etc/hosts` contains an IP address and one or more aliases for the host. For example:

```
202.39.74.40  ps-142634  ps-142634.abc.com.tw
```

If you use DNS (the Domain Naming Services protocol), you can add an address record entry to your DNS database for the Internet/print server.

3. Create a spool directory for the printer:
  - ◇ On SunOS systems, create the directory as a subdirectory of `/var/spool`, with the same name as the printer (e.g., `/var/spool/hp51`).
  - ◇ On Linux systems, create the directory as a subdirectory of `/usr/spool/lp`.
  - ◇ On BSD/OS, FreeBSD, or NetBSD systems, create the directory as a subdirectory of `/var/spool`.
4. Change the owner and permissions of the directory so that it is owned and writable by group `daemon`, using the following commands:

```
chown bin.daemon /var/spool/hp5l  
chmod 775 /var/spool/hp5l
```

5. Add an entry for the printer to `/etc/printcap`, similar to the following:

```
hp5l:\  
:lp=:sd=/var/spool/hp5l:mx#0:\  
:rm=ps-142634:rp=PS-142634-P1:
```

The meaning of each of the entries is described below. The directory path in the `sd` spool directory entry should match the directory name you created above. If your entry requires more than one line you can escape the newline with a backslash.

6. Issue the command

```
lpc start hp5l
```

to start a spool daemon for the printer. The printer will now be available for use.

7. Optionally, add another `printcap` entry (and issue another `lpc start` command) for a second printer, using the `port_TEXT` port. This second printer name can be used for printing text files.

Entries in `/etc/printcap` begin with a name for the printer or a list of names, separated by `|` (a vertical bar). The entries used above are:

- ◆ **lp=** The `lp` entry is used to specify a local printer device. Since the printer is a remote printer, this entry should be blank.
- ◆ **sd=dir** The location of the printer's local spool directory.
- ◆ **mx#blocks** The limit for print job files in the local spool directory; 0 means no limit.



- ◆ **rm=address** The host where the remote printer is located, in this case the Internet/print server.
- ◆ **rp=printer** The name of the printer on the remote host. For the Internet/print server, the port name should be used.  
**Note:** this entry is case-sensitive.

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## Printing from SCO Unix System V/386

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To allow printing to a printer attached to your Internet/print server from a SCO Unix System V/386 host—

1. Login as the superuser (root).
2. Add an entry for the Internet/print server in the host's `/etc/hosts` file, giving a hostname for the Internet/print server's IP address. A line in `/etc/hosts` contains an IP address and one or more aliases for the host. For example:

```
202.39.74.40  ps-142634 ps-142634.abc.com.tw
```

If you use DNS (the Domain Naming Services protocol), you can add an address record entry to your DNS database for the Internet/print server.

3. Change to the `/dev` directory, and issue the command

```
mkdev rlp
```

4. The script will ask:

```
Do you want to install or delete remote
printing (i/d/q)?
```

Answer `i` and press the Enter or Return key to continue.

5. The script will ask:

Do you want to change the remote printer description file `/etc/printcap`(y/n)?

Answer `y` and press Enter or Return to continue.

**6.** The script will ask:

Please enter the printer name (`q` to quit):

Enter an alias for the printer on the local machine and press Enter or Return. This name should be the same as the destination port name.

**7.** Answer `r` (remote printer) to the question

Is *printer* a remote printer or a local printer (`r/l`)?

**8.** When prompted with the question:

Please enter the name of the remote host that *printer* is attached to:

then enter the address of the Internet/print server. You can use the name you added to `/etc/hosts` in the step above.

**9.** Confirm that your entries are correct.

Is this correct? (y/n)

**10.** Answer the question:

Would you like this to be the system default printer? (y/n)

**11.** When you are done adding remote printers, enter `q` for the printer name.

**12.** Answer `y` to the question

Do you want to start remote daemon now (y/n)?

Once remote printing is set up, you can use the `lp` command to print jobs to the new printer. For more information, consult your SCO Unix documentation.

## ***Printing from Solaris***

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To allow printing from a Sun Solaris workstation—

1. Login as the superuser (`root`).
2. Add an entry for the Internet/print server in the host's `/etc/hosts` file, giving a hostname for the Internet/print server's IP address. A line in `/etc/hosts` contains an IP address and one or more aliases for the host. For example:  

```
202.39.74.40  ps-142634  ps-142634.abc.com.tw
```

If you use DNS (the Domain Naming Services protocol), you can add an address record entry to your DNS database for the Internet/print server.
3. In OpenWindows, start the `admintool` program.
4. Click the **Printer Manger** icon.
5. From the **Edit** menu, select **Add Printer**, then **Add Access to Remote Printer...**
6. Enter values for the fields as follows:
  - ◇ **Printer Name** This field should contain the name of the printer port you wish to use. The field is case-sensitive.
  - ◇ **Printer Server** This field should contain the IP address of the Internet/print server, or the alias name you added in step two.

◇ **Printer Server OS** This field should be set to BSD.

7. Confirm the addition.
8. Optionally repeat the addition to add another printer for printing text files, with `_TEXT` appended to the port name.

Once you have added the new printer, you can use the `lp` command to print files to the printer. Consult your Solaris documentation for details.

## ***Printing from Windows NT***

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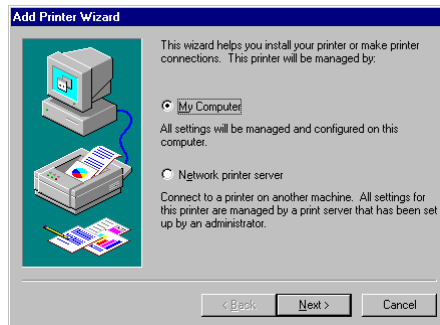
Windows NT versions 3.51 and later support printing using the `lpd` protocol. To print to your Internet/print server from a Windows NT 4.0 workstation or server—

1. Make sure that you have installed the TCP/IP protocol and the Microsoft TCP/IP Printing service. You can install these from the Network control panel if necessary.
2. From the **Start** menu, choose the **Settings** submenu, then the **Printers** item within it. Windows will display the Printers folder.
3. Double-click the **Add Printer** icon in the Printers folder.

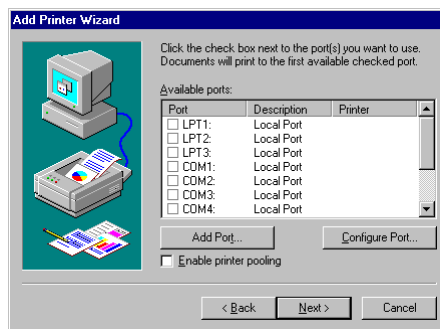


Windows will start the Add Printer Wizard.

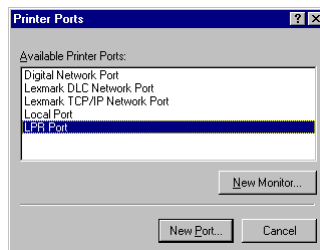
4. Select the **My Computer** option and click the **Next >** button to continue.



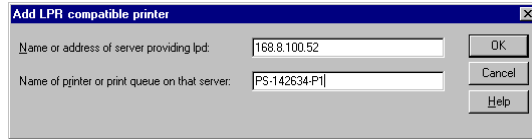
5. Click the **Add Port...** button to add the lpd Internet/print server to the list of ports.



6. Select the LPR Port type and click **New Port...**



7. Enter the IP address of your Internet/print server, and the port name of the printer you wish to use.



8. Click **OK** to return to the Printer Ports window, then click **Close** to return to the Add Printer Wizard.
9. Click **Next >** to continue installing the printer, following the on-screen instructions. The Add Printer Wizard will ask you to select the proper driver for the printer, and will ask you to give a name to the printer.

When you are done installing the printer, you will be able to use any of the usual printing commands to print to your printer.

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## ***Printing using TFTP***

For testing purposes, you can also use the Trivial File Transfer Protocol (TFTP) to print to the Internet/print server. This is not a recommended method for ordinary printing, since it will not work if the Internet/print server is already printing.

On most systems, you can enter the command

```
tftp ip-address
```

to start the `tftp` client program. At the `tftp` prompt, you can type

```
put file dest-port
```

to print the local file named *file* to the Internet/print server port named *dest-port*. (Case is sensitive in the *dest-port* name.)

## ***Printing using FTP***

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You can also use the Internet's standard File Transfer Protocol (FTP) to print to the Internet/print server. As with the TFTP method, this is recommended only for testing.

You can use any FTP client, including client programs with graphical interfaces. To use a command line version of FTP, on most systems you can enter the command

```
ftp ip-address
```

to start the `ftp` client program. At the `ftp` prompt, you can type

```
put file dest-port
```

to print the local file named *file* to the Internet/print server port named *dest-port*. (Case is sensitive in the *dest-port* name.)