

Windows NT Server (TCP/IP)

This Document explains how to configure and use the IOPRINT+ Print Server in the Windows NT Server TCP/IP environment.

Software Requirements

- Windows NT3.51 or later
- TCP/IP network protocol
- TCP/IP remote printing system (provided with Windows NT; configuration is described in this document).

Device Configuration

Note: The device should be configured FIRST.

Configuration of your IOPRINT+ Print Server can be done by any of the following methods.

Follow each link for more details.

<u>BiAdmin</u>	<p>This is the recommended program for configuration and management of the IOPRINT+ Print Server. It is used by the main SETUP program on the CD-ROM, and can also be installed using SETUP. BiAdmin requires Window 95/98 or Windows NT.</p> <p>BiAdmin can be used to assign an IP Address to the IOPRINT+ Print Server.</p>
<u>FTP</u>	<p>Command-line FTP (File Transfer Protocol) clients are supported.</p> <p>FTP can be used to assign an IP Address to the IOPRINT+ Print Server, provided that the Windows NT Host Configuration (described later in this document) has been completed.</p>
<u>WebAdmin</u>	<p>This runs on an NT Server and is accessed by a WEB browser. Details on installing and using this program are in this document.</p>
<u>Web Browser</u>	<p>The IOPRINT+ Print Server incorporates a HTTP server, allowing you to configure it with a Web Browser.</p> <p>This method can be used to assign an IP Address to the IOPRINT+ Print Server, provided that the Windows NT Host Configuration (described later in this document) has been completed.</p>

IP Address Configuration

The IOPRINT+ Print Server allows the following IP Addresses to be entered. (The entry in brackets shows the line number and token in the device's configuration file. This information is for people using FTP.)

IP Address (4000 IP_ADDR)	The IOPRINT+ Print Server is able to obtain an IP Address dynamically, or use a static IP Address assigned during configuration. Because of the support for dynamic IP Addresses, the IOPRINT+ Print Server ships with an IP Address of 0.0.0.0. See the following section for more details on using either a static or dynamic IP Address.
Gateway Address (4001 GATEWAY)	If your network segment has a router, enter the router address here. If there is no router, leave the address as 0.0.0.0.
Subnet Mask (4002 MASK)	If the Gateway Address above is 0.0.0.0 the Subnet Mask should also be left at 0.0.0.0. If you have a router, enter the Subnet mask for the segment to which the IOPRINT+ Print Server is attached.

IP Address

Because it is a Server, the IOPRINT+ Print Server is normally assigned a static IP Address.

If you leave the device IP Address at the default value of 0.0.0.0, its sequence for finding an address is as follows:

- DHCP
- BOOTP
- RARP

Using DHCP

Using DHCP is only possible if you have DHCP management software which allows you to take advantage of this feature. Otherwise, the IOPRINT+ Print Server's IP Address will be unknown, and connection to it will be impossible. In this case, configure the IOPRINT+ Print Server for a static IP Address. (See the preceding section.)

Using BOOTP or RARP

Neither of these systems are normally used with Windows NT Server, but should you require this information, refer to the [Unix - TCP/IP](#) document.

Other Configuration Settings

When assigning the IP Addresses, you should also check the following configuration settings.

Device Name	The default name will be in the form SCxxxxxx (SC followed by 6 numbers). This can be changed. The new name MUST NOT exceed 19 characters, nor include any spaces.
TCP Session Retry Interval	Sets how long the IOPRINT+ Print Server should wait before retrying a TCP/IP connection which is lost. Allowable values are from 0 to 255 seconds, with 2 as the default.
TCP Session Retry Count	Sets how many attempts at reconnection will be made. After that, the TCP/IP session will be terminated. Allowable values are from 0 to 255, with 254 as the default.

Serial Port Setup (if exists)

Baud Rate (bps)	Allowable values are 300, 600, 1200, 2400, 4800, 9600, 19200, 38400
Stop bits	Allowable values are 1 or 2
Parity	Allowable values are NONE, ODD, EVEN
Data bits	Allowable values are 7 or 8
Handshake	Allowable values are NONE, HARDWARE, XON/XOFF, BOTH

Logical Printers

Logical Printers can be used to create a “Virtual” printer. For example, to create a Landscape printer, you could define a Logical Printer as follows:

Pre-string	Printer Control codes to switch the printer to Landscape mode
Post-string	Printer Control codes to reset the printer, restoring the default settings.

Another logical printer could be used to print Unix-format text files for a DOS printer, by converting Unix-style LF (Line Feeds) to DOS-style LF/CR (Line Feed, Carriage Return) pairs.

IOPRINT+ Print Server models with 1 parallel port support 3 Logical Printers, otherwise they support 8 Logical Printers. The names (L1..L8) cannot be changed. Each Logical Printer has 4 settings as shown below.

Logical Printer Setup Data

Physical Port	IOPRINT+ Print Server Port to which the printer is attached (P1 to P3 for parallel ports and SP for the serial port).
String Before Job	The printer control string (in hex) to be sent to the printer before each print job.
String After Job	The printer control string (in hex) to be sent to the printer after each print job.
Convert LF to CR+LF	If ON, LF (line feed) characters are changed to CR+LF (carriage return + line feed). If OFF, no conversion is done.



The maximum size of a printer control string is 15 characters. Printer control strings must be entered in HEX.

Windows NT Host Configuration

This section covers configuration of a Windows NT host. The IOPRINT+ Print Server should be configured first. For Windows NT configuration in a Peer-to-Peer environment, see *Windows Peer-to-Peer Networking*.

IP Address Configuration

To have the IOPRINT+ Print Server recognized as a valid device, first configure it, then follow this procedure.

1. Add an entry for the IOPRINT+ Print Server to the hosts file:
`\SYSTEM32\DRIVERS\ETC\HOSTS`

The entry consists of the following line:

```
xxx.xxx.xxx.xxx Name
```

Where:

`xxx.xxx.xxx.xxx` is the IP Address you assigned to the IOPRINT+ Print Server. *Name* is the IOPRINT+ Print Server's name. If you have not changed the name, use the default name shown on a sticker on the base of the device. The default name is in the form SCxxxxxx (SC followed by 6 digits).

2. Add an entry to the ARP table by entering the following commands:

```
arp -s IP_address 00:c0:02:xx:yy:zz
```

Where:

`IP_address` is the IP Address used in step 1.

`00:c0:02:xx:yy:zz` is the physical address of the IOPRINT+ Print Server, determined by adding `00:c0:02` to the 6 digits of the default name.

Example:

```
arp -s 168.192.1.40 00:c0:02:12:34:56
```

3. Check the IP Address using the **ping** command:

```
ping Name
```

Where *Name* is the value used in step 1. You should receive a response. If you get a *Timeout* message, the above procedure has failed.

Preparing for TCP/IP Printing

To create a TCP/IP remote printer Microsoft TCP/IP printing support must be installed. The procedure is as follows.

Windows NT 3.51

1. Start the *Network* option in Control Panel. When the Network Settings dialog box appears, click the *Add Software* button to display the *Add Network Software* dialog box.
2. Select *TCP/IP Protocol And Related Components* in the Network Software list box, and then click the *Continue* button.
3. In the *Windows NT TCP/IP Installation Options* dialog box, check the *TCP/IP Network Printing Support* option.
4. Click the *OK* button. Windows NT Setup will display a message asking for the full path to the Windows NT distribution files. Provide the appropriate location and click the *Continue* button. All necessary files will be copied to your hard disk.
5. If you did not check the *Enable Automatic DHCP Configuration* option in the *Windows NT TCP/IP Installation Options* dialog box, you must complete all the required TCP/IP configuration procedures manually.
6. After you finish configuring TCP/IP, the *Network Settings* dialog box will reappear, click the *Close* button and then restart your computer for the changes to take effect.

Windows NT 4.0

1. Go to *Start-Settings-Control Panel-Network*.
2. Click the *Service* option and ensure that **Simple TCP/IP Service** and **Microsoft TCP/IP Printing** are enabled. If they are not enabled, select the *Add* option and enable them as usual.
3. If you added services in step 2, reboot the computer for the changes to take affect.

Adding a TCP/IP Remote Printer

Windows 3.51

1. From the *Printer* menu in **Print Manager**, select *Create Printer*
2. In the resulting dialog box, enter data as follows:

Printer Name	Enter a name (up to 32 characters). This name appears in the title bar of the printer window.
Driver	Select the appropriate driver for the attached printer.
Description	Enter a printer description for other network users to reference.
Print To	Select <i>Other</i> .

3. A *Print Destinations* dialog box will appear after selecting *Other*. In the *Available Print Monitor* list, select *LPR Port*, then *OK*.
4. An *Add LPR compatible printer* window will appear. Enter data in the fields as follows:

Name Or Address Of Host Providing LPD	Enter the IP address of the IOPRINT+ Print Server
Name Of Printer On That Machine	Enter the appropriate logical printer number (e.g. L1)

5. When the *Create Printer* dialog box reappears, check the *Share This Printer On The Network* option.
6. In the *Share Name* box, **Print Manager** creates a MS-DOS compatible resource name, which you can change if you wish. In the *Location* box, you can enter information concerning the printer location. Network users will see this information when browsing to find this printer.
7. Complete any other configuration information in the *Create Printer* dialog box.

Windows NT 4.0

1. Go to *Start-Settings-Printer* and invoke the *Add Printer* wizard.
2. When prompted with *This printer will be managed by*, select **My Computer** and click *Next*.
3. Select **Add Port** , then select **LPR Port** and click **New Port**.
4. In the *Name of Address of server providing lpd:* dialog box, enter the IOPRINT+ Print Server's IP address.
5. In the *Name of printer or print queue on that server* dialog box, enter the appropriate logical printer number (L1..L3, or L1..L8, depending on the model) as previously configured on the IOPRINT+ Print Server.
6. Click *OK*. When returned to the *Printer Ports* window, simply elect *Close* and then install your printer driver as usual.

7. When prompted whether or not the printer will be shared, select the **Sharing** radio button
8. In the *Shared* dialog box, enter the shared printer name. The shared name is how other users will see this printer.

Printing with Windows NT

Windows Applications

The IOPRINT+ Print Server's printers will appear as *Network Printers* to users on the LAN.

- To install the printer on each PC, use the *Add Printer* wizard. Select *Network Printer* when prompted, and then select the appropriate destination.
- To print a file from an application, select the remote printer as the destination, and print the file as usual.

Command Line

To print a file from the command prompt, type:

```
lpr -S NT_Host -P printer_name file_name
```

Where:

NT_Host is the name of the NT host on which the remote printer is configured.

printer_name is the name assigned to the remote printer

file_name is the name of the file you wish to print.

To check the print status, type:

```
lpq -S NT_Host -P printer_name
```

Using Telnet

Telnet can be used to monitor the status of the printers attached to the IOPRINT+ Print Server.

Operation

Establish a connection to the IOPRINT+ Print Server, by starting your Telnet program and providing the IP Address of the IOPRINT+ Print Server. (No port number is required.)

e.g.

```
telnet 192.168.0.21
```

The IOPRINT+ Print Server will respond with "Welcome to Print Server".

From the resulting prompt, 3 commands are possible:

- **Help:** Show brief help
- **Monitor:** show printer status
- **Exit:** leave telnet

Monitoring

The "Monitor" command will show the status of the printer, on each port, as shown in the following example.

```
(P1)STATE: Idle
TYPE: Parallel
PRINTER STATUS: Out Of Paper

(P2)STATE: Printing
TYPE: Parallel
PRINTER STATUS: On-Line
BYTES SERVICED:      75264
OCCUPIED BY: LPD

(SP)STATE: Idle
TYPE: Serial
PRINTER STATUS: Offline
```

The display is updated once per second.