

Multi-Protocol LAN - Printer Interface

Technical Reference Manual

Supports:

Windows, Novell, UNIX, DEC-LAT,
and EtherTalk (Apple)

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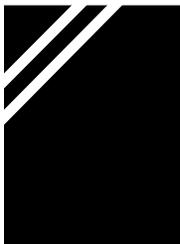
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Because of the fast pace of software development it is possible that there will be minor differences between the manual and the program.

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What is the Multi-Protocol LAN Printer Interface?

The LAN printer interface - often referred to as a printserver - is a device that connects a printer to a Local Area Network (LAN), enabling quick and easy printing from any number of workstations on that network and avoiding the need to have a dedicated PC to manage the printer.

The interface allows the full features of the printer to be used. High quality images, layout and speed will be maintained, while fonts, text enhancement features, portrait/landscape mode and graphics will be printed as required across the network.

The interface auto-detects all major protocols (including TCP/IP, NETBEUI, NCP, UDP and SPX/IPX) and communicates with any of these protocols simultaneously, allowing the user to send print jobs from a number of different platforms.

Once installed in all your printers and connected to the network, the interface gives the opportunity to select the printer that meets your printing requirements directly from your workstation, allowing maximum flexibility and practicality for your printing needs.

About This Manual

Once the interface is installed in the printer, this manual provides all the information required to configure the interface to a LAN. The procedure required for this will be dependent on the type of network you have. *It is advised that you check through the whole manual to find the sections that will be relevant to the specifications of your network.*

Once the interface has been configured, the manual provides the details of how to set up a workstation to print through the the interface. *Again, it is advised that*

you check the manual to find the most suitable procedure for your network and workstation platforms.

The manual contains details on how to install and use the software supplied with the interface, including the Printset™ 2000 printer interface management utility described in greater detail in the following chapter.

The appendices provide useful information, including how to upgrade the firmware on the interface, how to reprogram the interface settings from the LAN system setup parameters to satisfy individual requirements, plus a troubleshooting guide for any difficulties encountered during the installation and configuration of the interface.

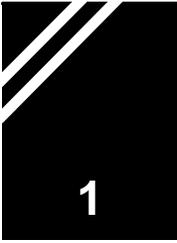
Important Note

All protocols are enabled by default, but behave passively, i.e. will not transmit until at least one packet from that protocol has been received.

With Novell protocol the interface will try and communicate with all file servers that send SAP broadcasts to it.

On a Novell system with a dial-up router this could cause the interface to try and communicate with file servers over the dial-up line if it receives a SAP broadcast from these servers.

To avoid the unnecessary calls use the **Fileserver Restriction** (set via Printset™ 2000 - **NetWare** page) to restrict the interface. Turn Novell off by entering the fileserver name **Novell_OFF** or **Disable**, set the operating mode to **Printserver** and Untick the **Fileserver Scan** box.



Introduction

Printset™ is a set of programs that run on a DOS/Windows PC, UNIX host or Apple Macintosh. It allows the configuration, viewing and management of the LAN printer interface. A different version of the software needs to be installed depending on the operating system. These will be contained on the CD-ROM supplied with the interface, including the following:

Printset™ 2000 for Windows

Suitable for Windows 95/NT 4.0 and above. This program can use both TCP/IP and IPX/SPX protocols to communicate between the workstation and the interface/s (ideally suited to Novell networks and any other network providing IPX is loaded on the workstation running Printset™ 2000).

Printset™ for Windows 3.1/WfW

Suitable for Workgroups for Windows (WfW) and 3.1. **Note:** if installing on these platforms please contact our Technical Support department.

Printset™ for DOS

The DOS version uses IPX/SPX to communicate between the workstation and the interface/s (again ideally suited to Novell networks and any other network providing IPX is loaded on the workstation running Printset™).

Printset™ for UNIX

This uses the UDP protocol.

Apple Mac Printset™

This uses EtherTalk.

Installing Printset™

Important

If using Printset™ with IPX - especially on a Token Ring workstation - it is recommended that IPXODI drivers be used.

Following is an example of an Autoexec.bat entry for using IPXODI drivers:

```
C:\Printset\Lsl.com  
C:\Printset\Token.com  
C:\Printset\IPXODI.com
```

Printset™ 2000 for Windows

- 1 Insert **Utilities** CD into the CD Drive of the workstation and use *Windows Explorer* to navigate to the following path:

CD drive (for example) **E:\Software\Printset**

and double click on **Setup.exe**. Follow the on-screen instructions to complete the installation.

- 2 Printset™ 2000 can be opened from the start menu using the following path:

Start\Programs\Ringdale\Printset 2000

Printset™ for Windows 3.1/WfW

If installing Printset™ onto these platforms please contact our Technical Support department. The version of Printset™ to use is in the following location on the **Utilities** CD:

Other Operating Systems\Win3.1\PSet551.exe

Printset™ for DOS

Insert **Utilities** CD into the CD Drive of the workstation and locate the Printset™ program at the following location:

CD drive (for example) **E: other operating systems dos pdosn440**

Printset™ for UNIX

This is supplied in TAR format as source code and has to be built for each system. Unix files are located at the following location on the **Utilities** CD:

Other Operating Systems\Unix

System requirements are: C++ Compiler. See the documentation accompanying C++ Compiler disks for full installation procedure.

Apple Mac Printset™

Insert **Utilities** CD into the CD Drive of the workstation. The Mac version is found at the following location:

Other Operating Systems\AppleMac

Installing the Network Interface on the Network

Before attempting to use Printset™, ensure that the interface is installed on the network (see the separate *Quick Installation Guide* for full details on this).

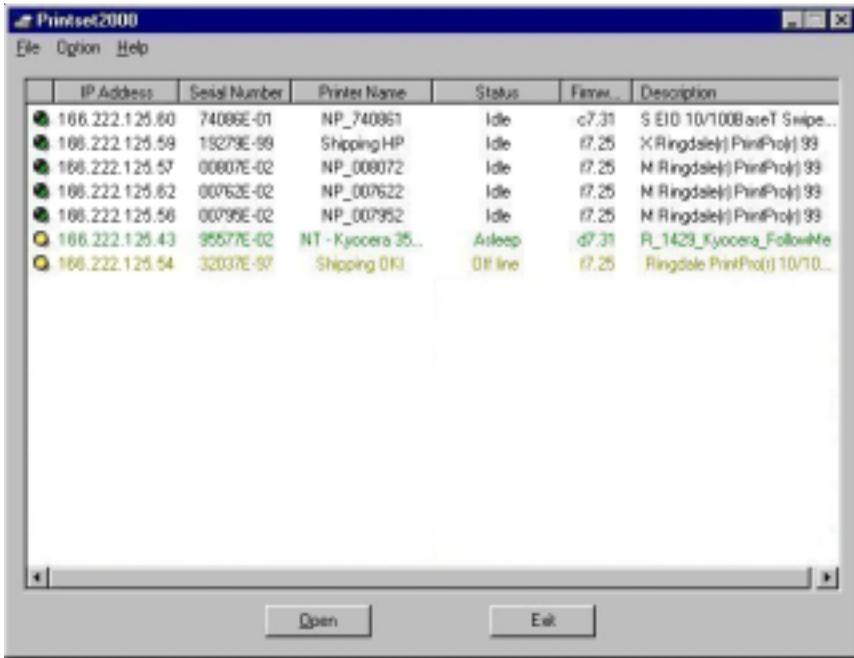
Waiting at least one minute after the printer has been switched on to allow the interface to stabilise, print out a *Status Page*.

The status page will display the required information for the IP Address, Novell printserver name and operating mode.

Using Printset™

The following instructions are for Printset™ 2000, the Windows based program. Other versions of Printset™ will be virtually identical to use, though the look and layout will be slightly different.

Printset™ 2000 Main Window



Open Printset™ from the **Start** menu. The path will be **Programs/Ringdale/Printset2000**. This will display the Printset™ main window as shown above.

Printset™ will automatically search the network and locate all Ringdale network interfaces, which will be displayed in the main window.

A new device that has just been connected will be displayed with the factory default IP address of:

11.22.33.44

Important: if installing more than one device it is advised that each is configured immediately after installation before the next is installed onto the network. There will be difficulties in identifying which device is which if more than one unconfigured device is on the network sharing the same factory default IP address.

Locating Devices on Different Networks/Subnets

If the device is on a different network/subnet to the PC running Printset™ it will not be instantly identified by the program. From the **Option** menu at the top of the window, select **Network Restrictions** to display the following dialog box:



Click on the **Add** button to display this dialog box:

Use the subnet address or the IP Address of the device (xxx.xxx.xxx.255 will find all devices on the network without having to enter a specific IP address) and click **OK**. The address will appear on the list in the *Network Restrictions* dialog box. Ensure that the address is selected before clicking the **OK** button again. The device will now be listed in the main window.

From the drop down menus the following facilities are available:

FILE:

Exit: This will exit Printset™.

OPTION:

Network Restrictions: See previous paragraph for details on this option.

Refresh Rate:

This is the rate at which Printset™ updates the information it receives from the device . The default is set to 5 seconds. Select this option to alter this (it can be changed to any value between 5 and 1800).

Sorting Options:

This presents a number of options for sorting the list of devices displayed in the main window. These include:

Network, Serial Number of the printer, printer Name, Status of the printer, Firmware Version or Hardware Description.

Discovery Protocol:

Set the protocol to be used in the discovery of the devices. This will be either *TCP/IP* or *IPX*.

Error Logging:

If this is enabled then a log file will keep a record of the status of the printer. Selecting this option will bring up the window shown following. By clicking in the box in the top left corner the facility is enabled. Select the printer required by clicking on it within the **Printers** list, then from the **Status** list select those printer statuses required to be logged. The **Log File Size** and **Log File Name** boxes at the bottom of the window are set at the defaults shown. When the required selections have been made select the **Close** button.



Download Firmware:

Important: before attempting a firmware upgrade please read Appendix A of this manual. Use this to update the firmware in the device. The following window will be displayed:



Click on the **Browse** button and locate the firmware file for the update. Select the devices to be upgraded and click the **Download Now** button.

Configuring the Network Interface

In the Printset™ main window, click twice on the device to be configured, or highlight the device on the list and click the **Open** button. This will display the property pages for the interface.

The number and type of property pages that will be displayed will vary according to the type of interface that is being configured. Following is a general overview of the most commonly available pages.

Important: how the device is configured will be specific to each installation and the kind of network being used - if unsure of these details contact the network administrator.

The General Page

An example of this page is shown below:



This will display information about the device, including its **Node Address**, **Serial Number**, **Firmware Version** and **Hardware Type**.

In the **General Name** field, give the device a name that will allow it to be easily identified - this is the name that will appear on the list in the main window.

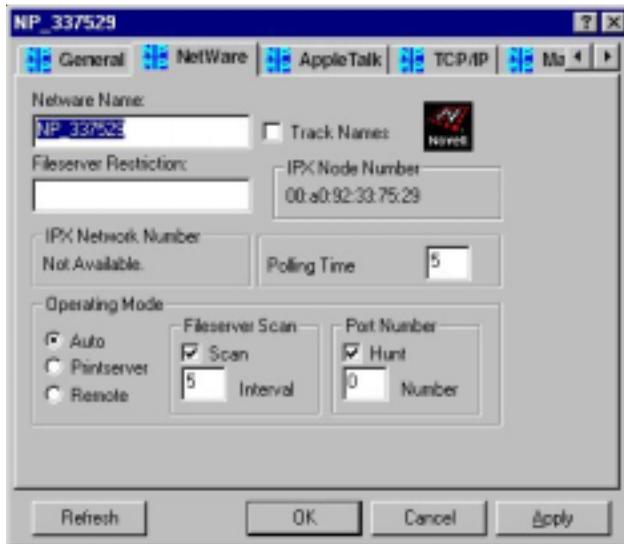
Check the **Track Names** box to allow the *General Name* to be linked to the Novell *NetWare* and *Apple* names (as they can be different) if required. If the box is checked, the *NetWare* and *Apple* names will automatically update to the *General Name*.

In the **Busy Timeout** field, set the time (in seconds) before the printer busy signal notifies that the printer is *offline*. The default setting is 15 seconds.

In the **Sharer Timeout** field, set the time (in seconds) before the device will switch to the network port (where applicable) if the sharer port is inactive.

The Netware Page

For use with Novell networks. Select the **Netware** tab to display the following page:



In the **NetWare Name** field will be the current Novell printserver name which can be replaced by any name up to 48 characters, and will be used to update the printserver.

The **Track Name** option links the Novell *NetWare Name* with the *General Name* and *Apple* printserver name, if required.

The **Fileserver Restriction** option can be used to limit the number of fileserver that the device can log on to - useful if there are more than fifty fileserver. Enter the name of the fileserver required into the field.

The **IPX Network/Node Number** field is for information only.

The **Polling Time** field displays the frequency (in minutes) with which the device checks the network connection - the default setting is five minutes.

Set the **Operating Mode** to the requirements for the specific Novell network:

Auto: auto switches between printserver mode and remote printer mode when a printserver of the same name is already present.

Printserver: use as a printserver only.

Remote: powers up as a remote printer only.

For full details on these NetWare options consult the Novell documentation. Additional NetWare features on this page include:

Fileserver Scan:

Scan: This enables/disables a regular search of fileserver binderies for the presence of the printserver, allowing automatic log on as soon as a change is made.

Interval: This sets an interval in minutes for fileserver scans.

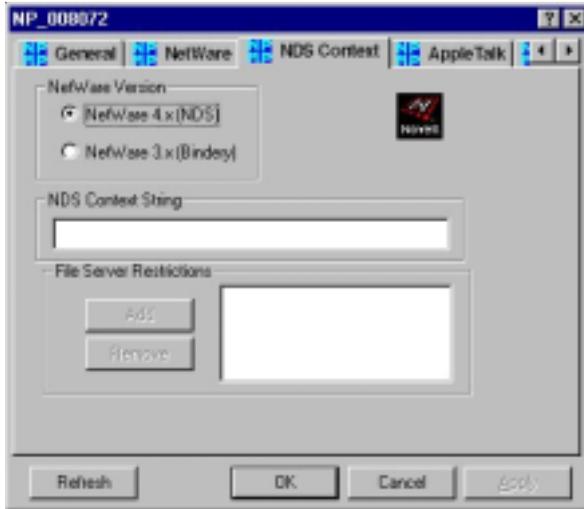
Hunting:

Hunt: When on, finds next free printer if specified remote printer number is not available. When off, only logs onto specified printer number.

Number: This is an IPX address a printer can be logged on to.

The NDS Context Page

This page will be present only for printservers that are carrying the NetWare NDS packet (NDS is a component of NetWare 4.x). It can be used to give the printserver a Valid NetWare NDS Context. An example of the page is shown below:



Select the **NetWare Version** of Novell NetWare that is currently being used.

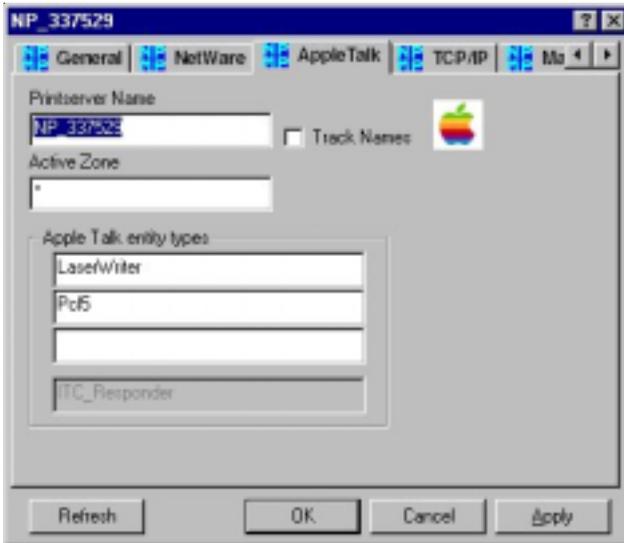
The **NDS Context String** field is activated only if *NetWare 4.x (NDS)* is selected for NetWare Version (above).

The **Fileserver Restrictions** facility will only be available when *NetWare 3.x (Bindery)* option is selected. Use the **Add** and **Remove** buttons to enter any fileserver restrictions.

For full details on these NetWare options consult the Novell documentation.

The AppleTalk Page

For use with macs and Apple networks. Select the **AppleTalk** tab to display the following page:



Enter a **Printserver name** into the field. The Apple printserver name shown here may be different from the Novell and General printserver name (for more information and an explanation of the **Track Names** check box, see the description in the General Page details).

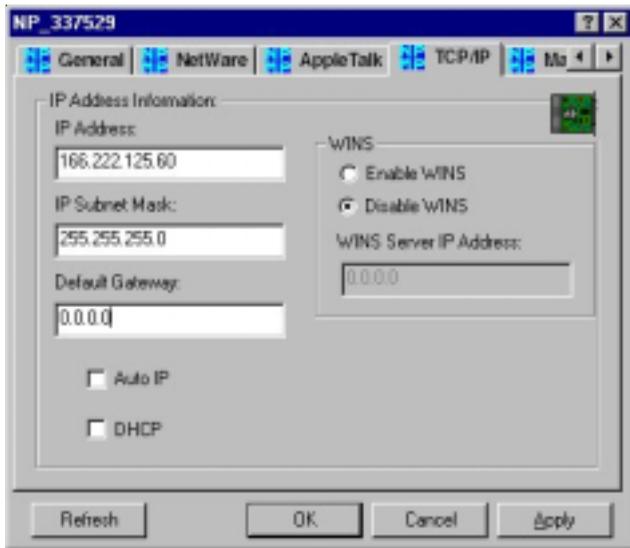
The following additional features are displayed on this page, for more details on these consult the Apple Mac documentation:

Active Zone: This field shows the specific zone that the device operates in.

AppleTalk Entity Types: The entity types *Laserwriter* and *ITC Responder* are fixed entities and appear by default. The *Laser Shared* entity can be added for Apple share printserver support.

The TCP/IP Page

For use with TCP/IP networks. Select the **TCP/IP** tab to display the following page:



Enter a valid **IP Address** for the device.

If necessary, enter an **IP Subnet Mask**. This option allows you to set the device's subnet mask to match that of the network it is located in (this is particularly important if the 'local' part of the mask is not 0).

If required, enter the IP address of the **Default Gateway** - this will be necessary if the *Mailserver* feature is to be used and the server is on a different subnet. If the device needs to be accessible across the Internet (see the section *Configuring the Interface using a Web Browser* at the end of this chapter) then the Gateway will need to be entered here.

Auto IP Address: When this facility is selected, you can automatically change the IP Address utilising the **Ping** and **arp** facility in **MS-DOS**..

Example of PING and arp commands:

- UNIX** a) Enter command arp -s [IP ADDRS] [Ethernet address]
 e.g. arp -s 133.200.3.181 00:02:21:10:45:93

-
- b) PING the new IP address
e.g. PING 133.200.3.181

Example of PING and arp commands:

Windows a) Enter command arp -s [IP ADDR] [Ethernet address]
e.g. arp -s 133.200.3.181 00-02-21-10-45-93

- b) PING the new IP address
e.g. PING 133.200.3.181

Note: arp is a lower case sensitive command.

If a **DHCP** system is being used check this box. When the DHCP check box is selected, information on this page cannot be altered. When this option is deselected, TCP/IP facilities are available.

If the network uses the **WINS** (Windows Internet Naming Service) system, then the service can be enabled or disabled here as required. If WINS is enabled, the IP address of the WINS server will need to be entered into the field.

The Mailserver Page

Many Ringdale interfaces have the ability to be set up to receive and print text E-mails and embedded, pre-formatted print files. Similarly, once set up, internet faxes can be sent straight to the printserver's E-mail address to be printed by the printer. The *Mailserver* page will be present within Printset™ 2000 if the device has this capability.

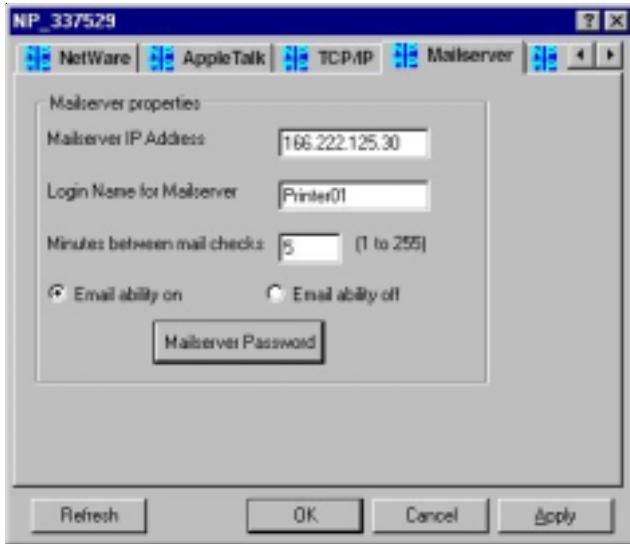
Note: to use this facility it is necessary to have the POP-3 protocol installed on your E-mail server.

Select the **Mailserver** tab to display the page shown following. Detailed below are instructions on how to set up the interface to receive E-mails:

Enter the **Mailserver IP Address** into the field (and ensure that the **Default Gateway** IP address has been entered on the *TCP/IP* page).

Enter the **Login Name** for the interface to ensure connection to the mailserver.

e.g. "e-mailfax".



If a login password has been set on the mailserver, click on the **Mailserver Password** button and enter the password to login.

Note: the login name and password will also have to be added to the **User Accounts** on the mailserver.

Send an E-mail to the interface by entering the E-mail address as you would a normal mail recipient

e.g. "e-mailfax@####.co.uk

The file will be sent to the attached printer via the mailserver (allow a few minutes).

Enter the frequency required for the interface to check with the mailserver if any new mail has arrived in the **Minutes between mail checks** field.

Once set up, the interface automatically logs on to the mailserver at power-up.

These settings enable the interface to receive internet faxes in the same way.

Turn the E-mail ability of the device off and on as required on this page.

The Passwords Page

It is recommended that the password feature is used to protect the configurations for each device that is set up. Click on the **Passwords** tab to display this feature. This gives the ability to restrict access to who can change the configuration.

If a Novell system is being used, click the **NetWare Password** button and set the password.

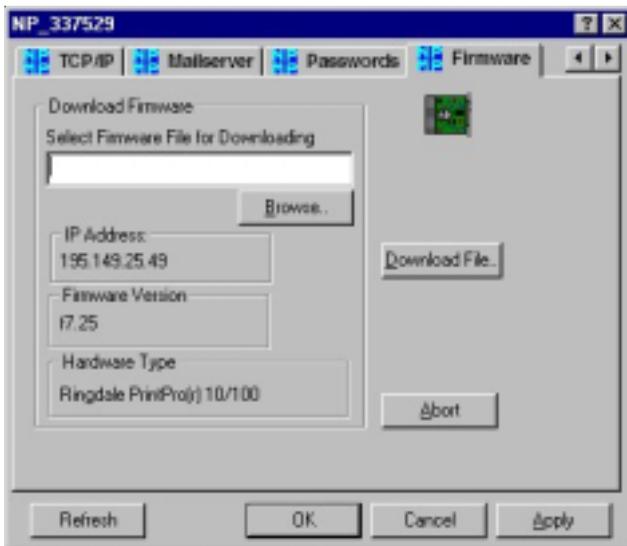
For other systems, click the **Security Password** button and set the password.

When the **Password Active** text is black, this indicates that a password has been set up. When greyed-out, no password is currently set up.

The Firmware Page

This page provides an alternative method for upgrading the firmware for an individual device. **Important: before attempting a firmware upgrade please read Appendix A of this manual.**

Click on the **Firmware** tab to display the page, an example of which is shown below:



Click on the **Browse** button and locate the firmware file for the update. Click the **Download File** button. To stop the download at any time click the **Abort** button.

Configuring the Interface using a Web Browser

Once the device has been assigned a valid IP address (see the *TCP/IP* page for details of this) any future changes to the configuration of the interface can be made using a web browser, if required.

Enter the device's IP address into the browser to access the property pages, an example of which is shown below:

Network Parameters

General	TCP/IP	Novell	Apple	LAT
Firmware:f7.25		Model: Ringdale PrintPro(r) 10/100		
Status: Off Line	Password	<input type="text"/>		
	New Password	<input type="text"/>		
	Confirm New Password	<input type="text"/>		
	Name	<input type="text" value="Shipping OK"/>		
	Busy Timeout	<input type="text" value="15"/>		
		<input type="button" value="Submit"/>		<input type="button" value="Reset"/>

[Technical Support](#)

The default visible page is the **General Page**.

This configuration mode has a password option to restrict access to change the information on the device's property pages. The default set password is **PASSWORD**.

Other pages can be accessed by clicking on the underlined headings as required.

In the Novell NetWare environment, the interface can be set up as either a printserver or a remote printer. Faster printing is achieved by configuring the interface as a printserver, however, each printserver on the network takes up one user connection.

Using the Interface as a Printserver

There are three main scenarios for configuring the interface as a NetWare printserver:

- 1) Configuration procedure for NDS firmware - fully compatible with NetWare Directory Services.
- 2) Configuration procedure for non-NDS firmware in an NDS system - requires bindery emulation/context.
- 3) Configuration procedure for NetWare 3.x systems, only bindery mode exists.

To start, first obtain the interface's **Status Page** (this can be done by pressing the small black button on the interface itself and the page will automatically be printed).

If the page displays an **NDS Context** then NDS firmware is present, and instructions **3.1** should be followed. If NDS Context is not present follow instructions **3.2** or **3.3** according to your particular Novell system.

2.1 Configuration Procedure for NDS Firmware

Only follow this procedure if the Interface Status Page displays an **NDS Context**.

- 1) Log-on as **Administrator** or equivalent.
-

-
- 2) Create **Print Queues, Printers** and **Printservers** in your required context (see Novell documentation to do this).
 - 3) Set the **NDS Context** from the **NetWare** page of Printset™ using the following syntax as an example:

OU=Container.O=Organisation or Container:Organisation (no leading dots)
 - 4) The printserver will now attempt to log-on, which can take several minutes. By placing the fileserver which contains the majority of the print queues into **Fileserver Restriction** on the NetWare page of Printset™, the process will speed up and this will not restrict NDS log-on to just that server.

2.2 Configuration Procedure for Non-NDS Firmware in an NDS System

Follow this procedure for interfaces **without** NDS protocol (Version 5.xx firmware).

Important Note: if the printserver is to log-on to a server with NLSP routing implemented, then the NLSP mode must be replaced with RIP/SAP operation by unloading IPXRTRNM and IPXTRTR, and then reloading IPXRTRNM and IPXTRTR. The *inetcfg* file or *Autoexec.ncf* should also be updated to turn off NLSP.

Requirements: A bindery context must be set using **Set Bindary Context** on a fileserver. The **Printserver Object** and **Print Queue** exist in this context for the printserver to log-on. These are all **Directory Services** objects.

- 1) Create **Printserver, Print Queue** and **Printer Objects** in the desired context, using **NWADMIN** or **PCONSOLE**.
 - 2) Set **Bindery Context** to include the context above. Up to 16 bindery contexts can be set on a 4.11 fileserver.
 - 3) Set the interface's **Printserver Name** using Printset™.
 - 4) After a minute or two obtain another interface status page, and this should have **Total Queues Logged** equal to the number that you have assigned to this printserver. The interface is now ready to accept print jobs.
-

2.3 Configuration Procedure for NetWare 3.X Systems

Configuration of NetWare 3.x systems is achieved using Novell's **PCONSOLE** and **Printset™**. Note that when using **PCONSOLE** to delete queues from printserver information, this does not delete the printserver from the queue information, and therefore the interface will still log-on.

- 1) Run **PCONSOLE** (you must have **Supervisor** rights to create Printservers and Queues).
- 2) From the **Printservers** menu, press **Insert** to create a new printserver.
- 3) Select **Printers** from the sub-menu for that printserver and this will display a blank list of defined printers.
- 4) Press **Insert** to create a new printer.
- 5) Press **Enter** on the new printer to show the **Printer's Configuration**, and then move down to **Print Queues Assigned**. Press **Enter** to see list of queues.
- 6) Press **Insert** on the blank **Queue List** to see all available queues and if necessary press **Insert** to create a new queue.
- 7) Select the queue or queues, the appropriate priority, and then press **ESC** to get back out of **PCONSOLE**.
- 8) Now give the interface the new **Printserver Name** using **Printset™** (see Previous chapter).
- 9) After a minute or two obtain another **Interface Status Page**, and this should have **Total Queues Logged** equal to the number you have assigned to this printserver. The interface is now ready to accept prints.

Using the Interface as a Remote Printer

Overview

The Interface functions as a Remote Printer on the Novell NetWare network. It effectively takes the place of a workstation running the **RPRINTER** program. It will be of benefit to users who are unfamiliar with the Novell printing environment to obtain the Novell flip-guide entitled **Novell Quick Access Guide**. This guide forms part of the documentation supplied with the Novell system, and should be available from the System Supervisor. Read the section entitled **Printing**.

Once the LAN system, the Interface and the printer have been set up, you are ready to print documents.

When installing the Interface on the LAN system, first print a straightforward **ASCII** file before you attempt to print documents from your WP package.

Printing a File on the Novell System

Print a file from the LAN system in the usual way, e.g.:

```
NPRINT FILENAME.TXT
```

Printing from Novell

Except for a one-time set-up procedure to 'tell' the interface which server and printer to attach to, the Interface uses the same servers, queues and print procedures as with any other standard network printer. If your network does not already have print queues and printservers configured, this must be done. Use the Novell Quick Access Guide to assist. For each device, a remote printer needs to be defined on any printserver. When defined, the remote printer may have its print port defined (LPT1, COM2, etc.). The interface currently ignores this setting, but to maintain compatibility, it is advised that a remote printer with port **LPT1** be defined. It is possible for the fileserver to act as a printserver. Type **LOAD PSERVER [name]** at the fileserver command line prompt. This is often the most convenient place to put the printserver. Network performance is enhanced if the fileserver is also the printserver, as queue queries and output data do not then need to be sent over the network, reducing congestion on a busy network.

Attaching to the Printserver

The operation of the interface is analogous to a workstation running **RPRINTER**. At power-up, the interface will attempt to attach to a printserver (elsewhere on the network) and act as a particular printer of that printserver. In order to be able to do

this, it needs to 'know' which printserver to attach to, and which printer of that printserver to use. This is similar to the need to specify these parameters in the RPRINTER command line (or to interactively choose them from the RPRINTER program).

Once set up, the interface will 'remember' the settings, and so this procedure will normally only need to be done once at the time of installation, unless a change is needed at a future date.

In the case that the specified printer number of the designated printserver is already attached (say, to another interface), it may either be set up to stop at this point, and re-attempt connection to that specific printer from time to time, or connected to the next (higher) available printer. This is useful where it is desired to have a 'pool' of printers serving one print queue. Several continuous printers on one printserver are assigned to the same queue. The interfaces are all set up to attach to the first available printer after the first of the group. A job sent to this print queue will then be serviced by the first available printer of the group.

NetWare 4 Set up

In **Network Printer** mode where the Printserver is an NLM on the Server, Bindery Emulation is not required, and configuration is carried out entirely in **Directory Services** mode. Up to 255 printers can now be attached to one Printserver.

Configuring the Interface as a Remote Printer

To configure the network interface as a network printer (remote) follow these steps:

- 1) Login as **ADMIN** on a NetWare 4 Workstation (to get the full NDS featured supported).
- 2) Run **PCONSOLE**. The following screen is displayed:

Available Options
Print Queues
Print Servers
Quick Setup
Change Current NetWare Server

- 3) If the current context is not the one you wish the printer to be in, use **Change Context** to choose another.

-
- 4) Select **Quick Setup**. This allows configuration of printserver, printer and queue all on one screen.
 - 5) Enter details of printserver, printer and queue.
 - 6) For printer type, press **Enter** and select **Other/Unknown**. This removes **NPRINTER** options).
 - 7) Press **F10** to save changes; a new Printserver etc. will be created.
 - 8) Use Printset™ to change the **Printserver Name** to the **Advertising Printserver Name** entered above, and select **Remote Printer Only** along with printer number 0-254.
 - 9) On the fileserver, enter the following command:

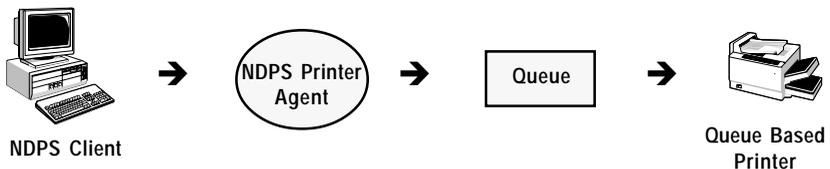
LOAD PSERVER <Printserver name>

This starts the printserver running, and gives a menu for accessing printer status and printserver status.

- 10) Cycle power on the network interface and get a **Status Page**, which should indicate the RPRINTER number logged.

2.4 Configuration Procedure for NDPS™.

Having configured the printserver as a queue server, Novell® Distributed Print Services™ (NDPS™) can be set up to print to this printserver as shown in the diagram below:



To configure the NDPS™ Printer Agent to redirect print jobs to a NetWare® queue, follow this procedure:

- 1) In **NetWare Administrator**, select the container where you want the NDPS Printer object to reside.
- 2) Select **Create** from the **Object** menu, the **New Object** dialog box will appear.
- 3) Select **NDPS Printer**, the **Create NDPS Printer** dialog box will appear.
- 4) Type the name of your choice in the **Printer Name** field.
- 5) Select **Create a New Printer Agent** from the **Printer Agent Source** field, then click **Create** to open the **Create Printer Agent** dialog box.
- 6) Confirm the Printer Agent name (this will be the default name) and browse to select the **NDPS Manager** you want to assign to it.
- 7) Select the **Novell Printer Gateway** at the **Gateway Types** window and the **Configure Novell PDS** dialog box will appear (for more information about using gateways see the Novell guide: *Selecting the Correct Gateway to Use*).
- 8) Configure the Novell PDS by selecting the **Printer Type** and **Port Handler Type**, then click OK. This will start the Configure Novell Port Handler Configuration Wizard.
- 9) Click **Forward Jobs to a Queue** at the **Connection Type** field and then click **Next** (the Port Type options will be faded out when you select the Queue connection type). A dialog box with the **Queue Name** and **Queue User Name** will open.
- 10) Enter the Queue Name and Queue User Name. Browse for the target print queue. If no queues are listed, none exist in the current context. Browse the tree to find a queue in a different context. The queue you select must exist in the current tree, otherwise you will need to create a *bindery reference queue* in your own container to allow access to the actual queue (see Novell guide: *Using Bindery reference Queues*). The user you specify might need to log in to the

server on which this queue resides, ensure they have full rights to manage this queue.

- 11) Click **Finish**. The **Select Printer Drivers** dialog box will appear.
- 12) Select the printer driver for each client operating system. These drivers will be automatically downloaded to user's workstations when they install this printer in the future. Select a driver for each operating system.
- 13) Click **Continue**. The main browser window appears with your new controlled access printer listed.

Interface Operation with TCP/IP Protocol

The interface is able to function as a remote printer on systems using TCP/IP transfer with 'lpd' (lpr protocol), standard 'ftp' (file transfer protocol), or TCPF (Raw Socket Printing).

Setting up an IP Address

Note: All devices operating with TCP/IP have to be assigned an unique **IP Address**.

There are three methods of assigning the IP Address to the interface:

1) Use PING in the MS-DOS Prompt

- a) Obtain status page of interface (for Node Address).
- b) Use the arp command to set the IP address:

UNIX: `arp -s 133.200.3.181 00:02:21:10:45:93`
Windows (DOS): `arp -s 133.200.3.181 00-02-21-10-45-93`
- c) Use the PING command to verify that the IP address has been set:

UNIX or Windows (DOS): `PING 133.200.3.181`

2) Printset™

For UNIX, or DOS Printset from DOS W/S with IPX loaded (PSDOS1.EXE).

3) Shell Script

On the CD supplied with the interface, there are two scripts for setting up the IP address in the interface and adding an entry to the system's configuration files.

BSDPRINT.SH For use on BSD Systems
SYSTEM5.SH For System 5 UNIX.

Updating Hosts File

Once the IP address is defined, the file `/etc./hosts` need to have this IP address and host name added:

e.g. `132.147.69.4 LAN_PRINTER`

Testing the Connection

Use PING to test if the interface is responding:

e.g. `PING LAN_PRINTER`

If it is you can carry on and print. If not, check IP address on status page and details in **`/etc./hosts file`**.

Note: if your host does not support any devices where the first three numbers of the internet address are different to the network you are working with, then you may temporarily change the **Subnet Mask** in your file **Hosts** which is located on the fileserver, as well as on the workstation you are sending the print from. After you have set up the network interface, set the Subnet Mask back to its previous setting. A Subnet Mask of `000.000.000.000` will allow any internet address on the system.

Printing Via lpr

Once the IP address has been assigned to the interface, all the host computers which will be using it to print through, need to have its address added to their **ETC/Hosts** file. The method for achieving this differs from system to system, and so the Systems Administrator should be consulted.

After the host has had the interface entered as a valid network object, it is necessary to set up the remote printer details. Here, the **lpr** protocol program is given the

name of a remote printer, and a host name on which it resides. It is looking for 3 names to link together:

- i) The name of the local printer which will henceforth be redirected to the interface. The default printer name is often used here (e.g. lP).
- ii) The name of the remote printer. This may be any name, as the interface will always honour a print request. See **Filters** for more information.
- iii) The host name to which the printing is to be sent. This must be the name assigned to the interface IP address (above).

Setup Summary

- 1) Give the interface a unique IP address using a Shell Script or Printset™.
- 2) Enter its address into the host computer, and give it a host name, automatically entered when a script is used.
- 3) Use the system's set up utility, e.g. lpadmin, to configure a remote printer, or use an ftp script.

Operation

Once the setting up as above has been done, **lp** or **lpr** may be used from any host to direct a print file to the interface. If carriage returns are missing from the printout refer to **Filters**. Host filters like Banners are not implemented on the interface. To print Banners, print locally and redirect to network.

Printing a file

At the prompt type (example) **lpr -PLAN-PRINTER filename** or **lp -d LAN-PRINTER filename**.

Checking Printer Status

To check printer status, use **lpq** or **lpstat -t** and this will return printer and job information.

Technical

For programmers' information, the interface TCP/IP mode responds only to arp packets and to TCP/IP connections made to port (socket) 515, 9100, and ftp socket. Connection attempts to other port addresses will meet with no response. All data

arriving at 515 is assumed to be following valid lpr protocol, i.e. you cannot just send data to this port. However data can be sent to 9100 directly e.g. Telnet.

Instead of lpr, which may strip control characters (use -l to avoid this), ftp may be used to print. Enter **ftp**, then **Open** the interface, by entering its host name (e.g. "open bandprinter"). A file may be printed simply by sending it (e.g. "send filename"). **Console** commands may be used, or **Scripts** exist to automate this process, and create ftp spool queues.

Filters for FTP and LPR

If you experience problems with print staggered across a few lines, or the page not ejecting, then you may need to use filters.

Both LPR and FTP have output filters available, which are capable of

- i) translating a UNIX line-end to a normal line-end by inserting a carriage return byte.
- ii) sending a formfeed at the end of a file in order to eject a page.

The means of invoking these filters differs between FTP and LPR as follows:

FTP (Line ending)

As default, FTP runs with binary file transfer. This may be changed to ASCII file transfer by simply entering the command **ASCII** on the FTP command line. When in ASCII mode, the interface will convert incoming UNIX line-ends to include a carriage return. To change back to binary mode, enter the command **BINARY** on the FTP command line.

FTP (Formfeed)

The interface will append a formfeed to the end of the print job if the destination file is given the name of **FEED** or **feed**. E.g. to send a text file called **txtfile** to the interface in ASCII mode, and append a formfeed, the following FTP commands are used:

```
ascii
send txtfile feed
```

LPR - Filters

Filters for LPR are controlled by the name given to the remote printer parameter e.g. rp = lpaf entry in **Printcap**.

Many printers may be set up with different remote printer names all directed to the same interface remote host. Different types of print jobs may thus be sent to different printer names, which will then all print out on the same printer.

Note: it is the name of the local printer that is used in the LPR entry on the LPR command line to direct the print.

The remote printer names used to invoke the different filters are as follows:

lpb	-	Binary files (no filters)
lpa	-	ASCII files (Carriage returns at line ends)
lpbf	-	Binary file with formfeed at file end
lpaf	-	ASCII file with formfeed at file end

All other printer names will be treated the same as lpb.

Setting up various TCP/IP Systems

1) Setup for Windows NT Ver 3.5/4

Note: for Windows 2000/XP see **option 7 Printing to Raw Data Socket which is following.**

The Windows NT server must have the TCP/IP protocol installed and a valid IP address configured.

- Double click on **Print Manager**.
- Click on **Printers**.
- Select **Create Printer**.

We must now enter the **Printer Name**, select a suitable **Driver** and enter a description.

The box marked **Print To:** must be opened and the option **Other...** can be selected.

The **Print Destinations** box shows available print monitors. Select **LPR Port**. A box **Add LPR Compatible Printer** requires the name or address of host providing lpd: enter the interface's IP address. In **Name of the Printer on the Machine** enter the printer's name. Click on **OK** to exit Add LPR compatible printer box. Click on **OK** to exit Create Printer box.

Select the newly-created printer as the **Default** printer and submit a test print to confirm the setup is correct.

2) Set Up for SCO UNIX and Other Systems Using FTP Scripts

Some UNIX systems, such as SCO, do not support the Berkeley lpr print function, and using the rlp process is not recommended. The following scripts allow you to print from within some applications using FTP, which is supported on most TCP/IP systems. The two scripts have been tested for SCO UNIX, but may require modification for other systems. Either script can be used.

.In SCO UNIX the original printer model scripts are located in directory:

usr/spool/lp/model.

The process of creating a printer using the **SCO** administration program (**SYSDMSH**) copies these files to **/usr/spool/lp/admins/lp/interfaces** (You could place the script directly into your interface directory). Alternatively use **/usr/lib/lpadmin -p Printer -v/dev/null -i/etc/INTERFACE SCRIPT** where **PRINTER** is Printer name used in **lp -dPRINTER** and **INTERFACE SCRIPT** is the name of the file containing the ftp script.

Script 1. General Interface Program File

```
NETPRINTER="basename $o"
copies=$4
shift;shift;shift;shift;shift;
files="$*"
i=1
while [ $i -le $copies ]
do
  for file in $files
  do
    echo binary > /tmp/ftp.$$
    echo put $file >> /tmp/ftp.$$
    echo quit >>/tmp/ftp.$$
    /usr/bin/ftp -n $NETPRINTER < /tmp/ftp.$$
    /bin/rm /tmp/ftp.$$
  done
  i=`expr $i+1`
done
exit 0"
*end of script
```

Script 2.

```
TEMPFILE=/tmp/ftpprint.$$
printer='kyocera'
/usr/spool/lp/model/standard "$@" >$TEMPFILE
ftp -n $printer <<EOF
send $TEMPFILE
quit
EOF
rm $TEMPFILE
exit
```

This script intercepts the print command and runs another printer interface script, in this case the printer standard, using the same options (\$@), redirecting the output to a temporary file. The script then opens an FTP session with the printer, sets binary mode and sends the temporary file to the printer. The temporary file is then removed.

Note: the name of the model and interface directories used by your UNIX system may differ from SCO.

3) Solaris

Versions 2.0-2.51

The procedure for setting up the interface on a Solaris 2.0-2.51 host is as follows:

- 1) Update Host's files with Interface's **Hostname**.
- 2) Type: **LPSYSTEM - t bsd Hostname**.
- 3) Then type: **lpadmin - pPrinterName - s Hostname\!lpaf**.
- 4) Type: **accept Printername**.
- 5) Type: **enable Printername**.
- 6) Print by typing: **lp -d Printername filename**.

Versions 2.6 and Above

The procedure for setting up the interface on a Solaris 2.6 (or above) host uses netstandard interface script and is as follows:

To create a queue to the printserver on the **lpaf** port, the syntax is:

```
# lpadmin -p queue -o protocol=bsd,dest=ringdale-box:lpaf -v /dev/null -
m netstandard -I any -T unknown
```

(please note that you can also print 'raw' using 'protocol=tcp' as opposed to 'protocol=bsd'.)

```
# enable queue
# accept queue
```

Where 'queue' is the name of the solaris queue to print to via lp or lpr.

Where 'ringdale-box' is the hostname or IP address of the printserver device.

Where 'netstandard' is the supported interface file with which to print to the network device.

4) Set Up for IBM AIX Systems (e.g. RS/6000)

AIX implements the **lpr** function, which is set up using the utility called **Smit**.

- a) Set up the printserver as detailed in the manual. To set the IP address you can use arp and PING.
- b) Modify the `\etc\hosts` file to include the printserver, and verify network operation using **ftp** to copy a file to the printserver.
- c) Invoke **SMIT** as the super user and follow the sub menus as below:

```
select "DEVICES"
      "PRINTER/PLOTTER"
      "MANAGE REMOTE PRINTER SUBSYSTEM"
      "CLIENT SERVICES"
      "REMOTE PRINTER QUEUES"
      "ADD REMOTE QUEUE"
```

From the displayed screen enter the data shown below as required:

Name of Queue	
Activate the Queue	Yes
Will this become the default Queue	
Queue discipline	First come first serve
Accounting Pathname	
Destination Host for remove jobs	/USR/LP/LP
Pathname for Short Filter	/USR/LP/AIXSHORT
Pathname for Long Filter	/USR/LP/AIXLONG
Name of Queue for Remote Printer	LPAF Name of Device to Add
Backend program Pathname	USR/LP/REMLAK

- d) Filters: specify lpa, lpaf or lpb in **Name of Queue on Remote Printer**, to invoke filter.

5) BSD Systems (e.g. SUNOS)

On BSD Systems, information regarding **Remote Host** and **Remote Printer** is stored in the **/etc/Printcap** file, examples of which are shown below:

```
Printer1:\
: lp= : rm = LAN_PRINTER : rp = lpb : sd =/var/spool/printer1:
```

The **BSDPRINT.SH** script will make the required entry.

6) Set Up for HP-UX System

There are two methods of printing from HP-UX, **FTP** and **rlp (lpr)**. Both are set up using **SAM**. Enter the **IP** and **Host** name in the **/etc/hosts** file before starting SAM.

FTP Script

Type:

```
lpshut
lpadmin-p{spoolername}-m{modelsript}-v/dev/null
accept {spoolername}
enable {spoolername}
lpsched
```

Then create a model script:

```
vi /usr/spool/lp/model/lan.model
```

and enter:

```
MODEL='basename $0'  
REALMODEL='echo $0 /sed -e "s%$MODEL %model.lan  
/$MODEL%"
```

This variable may be initialised when the script is installed in the spooler. # If not use the name:

```
PERIPH= if ["$PERIPH"=""]
```

then:

```
PERIPH=$MODEL  
fi
```

Path for output of the original model:

```
TMPPATH=/tmp/$MODEL.data
```

invoke original model and write to temporary file:

```
$REALMODEL "$@"TMPPATH
```

Login to peripheral switch to binary and send temporary file:

```
( echo user xx  
echo binary  
echo put $TMPPATH  
echo bye  
) ftp -i -n $PERIPH  
ERRSTAT=$?  
/bin/rm $TMPPATH  
exit $ERRSTAT  
* End of Script *
```

RLP Set Up

On the remote printer definition page of **SAM** use the following settings (n.b: not Network Printer):

Printer Name:	Any name
Remote system name:	Use the host name in /etc/hosts
Remote Printer name:	nothing or 'lpa' , 'lpaf' etc if using filters. Remote Cancel
Model:	/bin/true
Remote status Model:	/bin/true
Make system default:	Enter as appropriate
Printer Class:	Leave out
Restrict Cancel:	Leave out
Remote Printer on BSD system:	Leave out

Use 'lp - d printer name' to print or lp.

7) Printing to Raw Data Socket

The interface can also print directly to Socket 9100 (decimal). This can be used in some UNIX Systems which allow direct printing to a socket, or which use TCP/IP (e.g. ICL Systems). This option is suitable for use with Windows 2000/XP.

Below is a C program for UNIX which prints data to Socket 9100:

```
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>

const char *usage="<filename> <address> [<port>]";

int main(int argc, char *argv[])
{
    unsigned short port;
    unsigned long addr;
    struct sockaddr_in inaddr;
    FILE *fp;
    int sock;
    char c;

    switch(argc)
    {
        case 3:
        case 4:
            if(argc==3)
                port=htons(9100);
            else
                port=htons(atoi(argv[3]));

            if((addr=inet_addr(argv[2]))==0)
            {
                fprintf(stderr,"%s: address must be in the form a.b.c.d\n",
                    argv[0]); return 1;
            }
            if((fp=fopen(argv[1], "r"))==NULL)
            {
                perror(argv[1]);
                return 1;
            }
    }
}
```

```

inaddr.sin_family=AF_INET;
inaddr.sin_port=port;
inaddr.sin_addr.s_addr=addr;
    if((sock=socket(AF_INET, SOCK_STREAM, 0))<0)
        {
            perror("socket");
            return 1;
        }
}

if(connect(sock,(structsockaddr*)&inaddr,sizeof(inaddr))<0)
    {
        perror("connect");
        return 1;
    }
while(!feof(fp))
    {
        c=fgetc(fp);
        write(sock, &c, sizeof(c));
    }
shutdown(sock, 2);
close(sock);
fclose(fp);

break
default
    fprintf(stderr, "usage: %s %s\n", argv[0], usage);

    return 1;
}
return 0;

```

8) AS/400 TCP/IP Set Up for Printing using LPR

The AS/400 Output Queue can be set up so that it can print using lpr to the LAN interface. The settings for the queue are as follows:

Remote System	= *INTNETADR
Remote Printer	= LPAF (or other filter)
Writers to Autostart	= ONE
Connection Type	= *IP
Destination Type	= *Other
Transform SCS	= *YES
Manufacturer Type	= HP 4
IP Address	= xxx.xxx.xxx.xxx (LAN Interface's IP address)

Start the queue and printing should be sent to the defined IP address. See Filter section for details on different types of filters.

Note: The interface only supports printers for which an Apple driver has been provided by the printer manufacturer or which is already supported by a standard configuration of the Apple system, i.e. when using the Apple Laserwriter driver. Standard Adobe Postscript level 1 printers will work in conjunction with the particular interface if it has EtherTalk protocol implemented.

EtherTalk Zoning

New from factory, or after being reset to factory defaults, the LAN printer interface will be seen on all EtherTalk zones, with a printer name of **NPxxxxxx**, where xxxxxx is a 6 digit number, unique to every interface.

Setting a Zone for the Printer

Zoning and naming of the interface may be carried out by means of the Printset™ utility which may be used from any Apple Mac attached to the network, operating system 7.x.x (see chapter 1 for details of installation).

Once Printset™ is opened, the first screen will provide a list of printers found by the management software on your network. Use the mouse to select the printer you require. Then press the **Apple** button to configure printer name and zone.

Selecting your Printer

Activate the **Chooser** from the **Apple** menu.

Select the icon which represents your printer driver (LaserWriter).

If the appropriate printer icon does not appear in the Chooser, the printer resource files are not correctly installed. See the Apple documentation for instructions on installing the printer resource files on your Macintosh.

If EtherTalk is not active, an alert dialog box appears on your screen. Choose **OK**. The **Active** button will turn it on.

If your network is linked to other networks the **AppleTalk Zones** list box appears in the Chooser. Zones are groups of users, machines and devices. They can be grouped by physical location (for example zone A may contain all the printers on the network in building A), but may also be grouped by logical zones (for example, all printers used in the Finance Department).

If applicable, choose the zone in the AppleTalk Zones box where your printer is located (you may need to scroll through the zones to locate the one you want). By default, the interface will appear in the default zone. Use Printset™ to change zones.

Select the printer name you want to use in the **Peripheral Names** list. If the printer's name does not appear in the Peripheral Names list, make sure that **EtherTalk** is selected in the **Networks** menu. *n.b: Not LocalTalk.*

If your printer is the only name listed in the box you must still select it. Your printer will remain selected until you choose a different printer with the Chooser.

For System 6.x users, if you would like to display your user name on the network when you are printing documents, enter your user name in **User Name** in Chooser. The user name identifies the Macintosh that sent the print job; entering a user name does not affect your printer selection.

For System 7.x users, go into the **Control Panel** on your Macintosh, select **Sharing Setup**, then enter your owner name.

Click the **Close** box to exit the Chooser.

Print your document.

To Verify the Configuration

Select one of the following from the **File** menu (the selection depends upon your configuration):

- for **System 6.x**, choose **Print Director**
- for **System 7.x** choose **Print Window** or if no window is open, choose **Print Desktop**

Click **Print**.

If your printer prints the job, you have connected your printer to your network correctly.

Replacing an Internal Network Option Card

If it is necessary to replace the internal Network Option Card on the EtherTalk network, follow these procedures:

Replace the internal Network Option Card following the installation instructions supplied with the interface.

Rename the printer, refer to the chapter *Reprogramming of Setup Commands*.

Use the Chooser to reselect your printer, refer to the **Selecting Your Printer** section earlier in this chapter.

Overview of Operation

The interface supports the DEC LAT (DEC Local Area Transport) protocol. When the protocol is correctly configured it will allow printing from any VMS system on the network. Most users who are familiar with the general principles employed in setting up a port on a DEC terminal server will be able to configure the interface with ease.

Before configuring the DEC host have the interface name available, this can be obtained by printing a status sheet after installing the device with your printer.

Setting up the Interface

Every interface will be supplied with a unique name; either use this name or change it to reflect your site's node naming convention.

To set the printserver name use the Novell management utility supplied or, if a Novell client is not available, refer to the *Reprogramming of Setup Commands* chapter for more information on setting this parameter.

Configuring the DEC Host

In order to print to an interface the LAT protocol must be installed and running on the host machine you wish to print from.

Create a LAT port using the following VMS and LATCP commands (for example):

```
$      MC LATCP  or      $      run sys$system:latcp
>      create port lta500:/application
>      set port lta500:/node=np_141516/port=Port_1
>      exit
$
```

where:

\$ = VMS Prompt
>= LATCP Prompt
500 = LAT PORT number of your choice
np_141516 = Printserver name

Edit the file **lat\$startup.com** to ensure the port is recreated at boot time. For versions of VMS before 5.5.x the file may be called **LTLOAD.COM**. Check with your System Manager for more details.

Set Terminal Characteristics

Use the following VMS command to set the characteristics, generally these settings allow most files to print correctly.

```
$      set term LTA500:/passall/pasthru/tab/form/perm
```

Initialise a VMS Queue

```
$      init/que/start/proc=latsym/on=lta500: TESTQUEUE.
```

This VMS command will create and start a queue named **TESTQUEUE**. Other options such as **/retain=error** or a specific printer form may be required; ask your System Manager for details. You can look at the queue using the VMS command:

```
$      show/que TESTQUEUE /full
```

You should now be able to print to the queue TESTQUEUE

```
$      print/queue=TESTQUEUE anyfile.txt
```

Windows NT4, 2000 and XP can all be set up to print using two alternative protocols, TCP/IP or DLC. The following directions detail the procedures for installing and operating both.

Using TCP/IP

The TCP/IP protocol will need to be installed on the PC to use this option. 2000 and XP should have this pre-installed by default - if any difficulties are encountered see the Windows helpfile.

Following are details of how to install TCP/IP in NT4 only:

From the **Start** menu select **Settings** and then **Control Panel**.

Double click on the **Network** icon.

Select the **Protocols** tab.

From the displayed list of protocols select **TCP/IP** and then click on the **Add** button.

Select the **Services** tab.

Select **Install** and then select **Microsoft TCP/IP Printing**.

Click the **OK** button and exit.

Re-boot your system for the installation to take effect.

Setting the Port Details - Windows 2000/XP

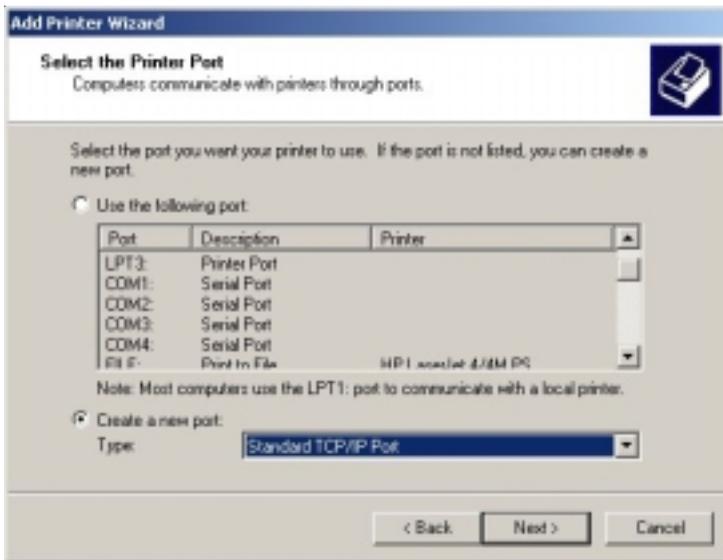
The procedure detailed here is for Windows 2000. The procedure for XP will be very similar, though some options might appear slightly different.

Before starting ensure that the interface is installed on the network with a valid IP address - obtain a status page to confirm the settings.

From **Start** select **Settings** and then **Printers**.

Click twice on the **Add Printer** icon, this will take you into the *Add Printer Wizard*.

Click **Next**, and then select **Local Printer** and click **Next** again to display the following window:



Select **Create a New Port** and from the drop-down list select **Standard TCP/IP port**. Click **Next** and then **Next** again.

Enter the IP address for the interface and click **Next**. Windows will automatically locate the interface. Follow the on-screen instructions to complete the setup by selecting the **Make** and **Model** of the printer, or browsing to locate the driver file (depending on the printer being used).

Setting the Port Details - Windows NT4

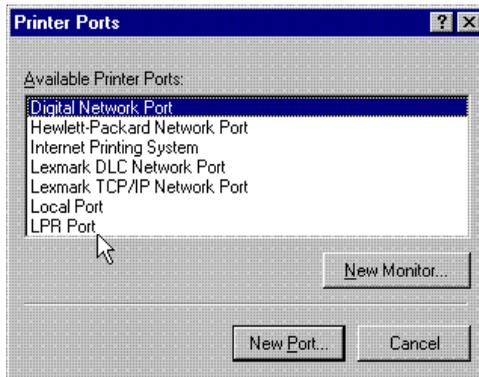
Before starting ensure that the interface is installed on the network with a valid IP address - obtain a status page to confirm the settings.

From **Start** select **Settings** and then **Printers**.

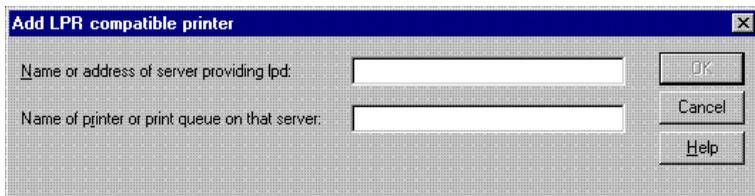
Click twice on the **Add Printer** icon, this will take you into the *Add Printer Wizard*.

Click **Next**, and select **My Computer** (for details on how to use the **Network Printserver** option consult your Microsoft NT manual).

Click **Next** again and click **Add Port** to display the following window:



Select **LPR Port** and click on the **New Port** button to display the following window:



Enter the IP address of the interface and the relevant name. Click **OK**, then click **Next**. Follow the on-screen instructions to complete the setup by selecting the **Make** and **Model** of the printer, or browsing to locate the driver file (depending on the printer being used).

Using DLC

The DLC protocol will need to be installed on the PC to use this option.

Windows 2000/XP

The procedure detailed here is for Windows 2000. The procedure for XP will be very similar, though some options might appear slightly different.

From the **Start** menu select **Settings** and then **Control Panel**.

Double click on the **Network & Dial Up Connections** icon.

Double click on **Local Area Connection** and then click on **Properties**.

Click on **Install** and then double click on **Protocol**.

From the displayed list of protocols select **DLC Protocol**. The protocol will appear on the list in *Properties*.

Exit all windows.

Windows NT4

From the **Start** menu select **Settings** and then **Control Panel**.

Double click on the **Network** icon.

Select the **Protocols** tab.

From the displayed list of protocols select **DLC** and then click on the **Add** button.

Select the **Services** tab.

Select **Install** and then select **DLC Services**.

Click the **OK** button and exit.

Re-boot your system for the installation to take effect.

Setting the Port Details - Windows 2000/XP

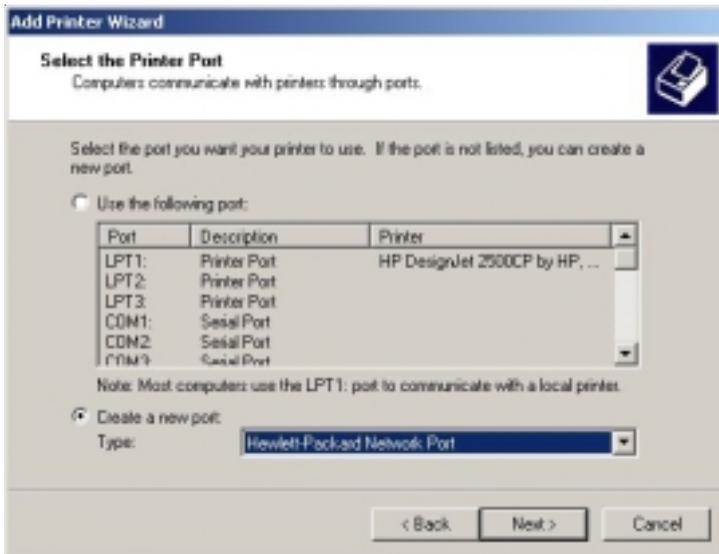
The procedure detailed here is for Windows 2000. The procedure for XP will be very similar, though some options might appear slightly different.

Before starting ensure that the interface is installed on the network.

From **Start** select **Settings** and then **Printers**.

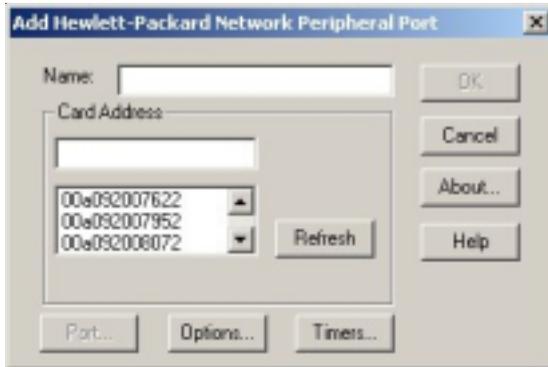
Click twice on the **Add Printer** icon, this will take you into the *Add Printer Wizard*.

Click **Next**, and then select **Local Printer** and click **Next** again to display the following window:



Select **Create a New Port** and from the drop-down list select **Hewlett-Packard Network Port**.

Click **Next** and then **Next** again to display the window shown following:



In the **Name** box, enter the **Printer's Icon Name** or **Alias**.

The devices available for selection are listed as **Node Numbers**, choose the one required by clicking upon it.

Click on the **Timers** button to bring up the following window:



Ensure **Job Based** is selected (*Continuous* will be the default setting until this is changed here). Click **OK** and then **OK** again.

Follow the on-screen instructions to complete the setup by selecting the **Make** and **Model** of the printer, or browsing to locate the driver file (depending on the printer being used).

Setting the Port Details - Windows NT4

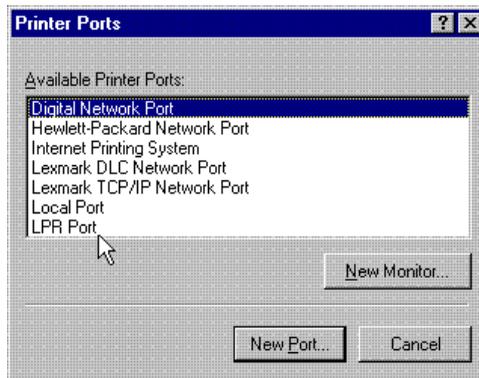
Before starting ensure that the interface is installed on the network.

From **Start** select **Settings** and then **Printers**.

Click twice on the **Add Printer** icon, this will take you into the *Add Printer Wizard*.

Click **Next**, and select **My Computer** (for details on how to use the **Network Printserver** option consult your Microsoft NT manual).

Click **Next** again and click **Add Port** to display the following window:



Select **Hewlett-Packard Network Port** and click on the **New Port** button. Proceed to the finish as per the Windows 2000/XP instructions.

To print from Windows 95/98/ME install the **Internet Printing System (IPS™) Lite** software on to the PC. This program is found on the **Utilities CD** supplied with the interface at the following location:

CD Drive/Software/IPS-Lite/Setup.exe

Follow the on-screen instructions to complete the installation.

Important: the TCP/IP protocol will need to be installed on the PC - see the Windows helpfile for details on this. The interface will need to be installed on the network with a valid IP address.

IPS™ Lite can also be installed on NT4 and 2000 PCs if required.

Adding a New Printer

Use the following procedure to add a new printer to your PC:

Note 1: IPS™ Lite works with existing printer drivers.

Note 2: to print to a printer using IPS™ Lite, you will need to know the IP address of the printer.

Note3: if the printer you want to print to is already displayed on your list in the *Printers* window (select *Settings* from the *Start* menu to access this) go straight to the next section *Adding a TCP/IP Printer Port*.

- 1) In the **Start** menu, click on **Settings**, then on **Printers**.
- 2) In the *Printers* screen, double click on the **Add Printer** icon. This will take you into the *Add Printer Wizard*.

-
- 3) Click on the **Next** button and then select **Local**.
 - 4) Select **Next**. Select the **Make** and **Model** of the printer, or browse to locate the driver file (depending on the printer being used).
 - 5) Click **Next** again. From the list of available ports select **LPT1: Printer Port**, or some other convenient port. Then click on **Next**.
 - 6) In the following dialog box, type a name for the printer.
 - 7) Click on **Next**. The dialog box appearing next will ask if you want to print a test page. Answer **No**.
 - 8) After clicking **Finish**, the *Add Printer Wizard* should be complete.

The printer you have just added should now appear in *Printers* under *Settings*.

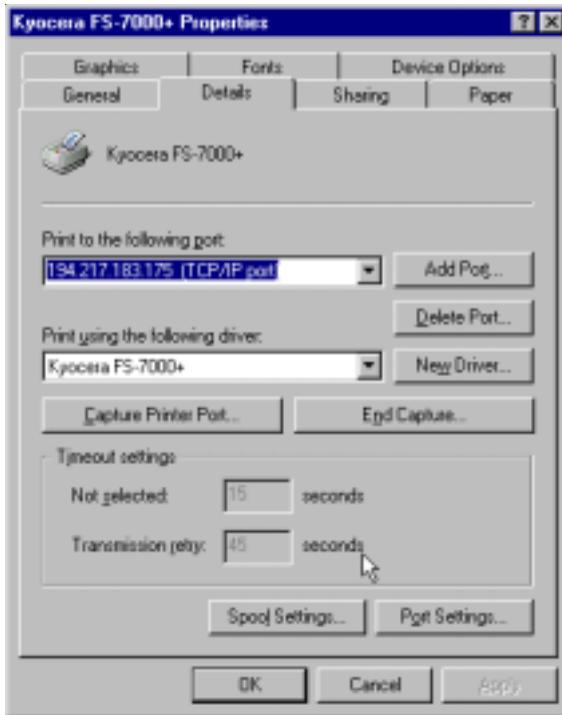
Adding a TCP/IP Printer Port

Use the following procedure to add a TCP/IP port for a printer listed on your PC:

Note 1: if the printer you want to print to is not on your list in the *Printers* window (select *Settings* from the *Start* menu to access this) see the previous section *Adding a New Printer* before completing the procedure detailed here.

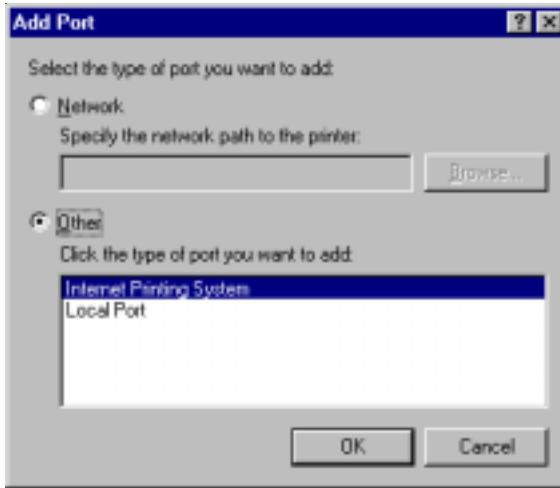
Note 2: to print to a printer using IPS™ Lite, you will need to know the IP address of the printer.

- 1) Open the **Printers** window (select *Settings* from the *Start* menu to access this) and select the printer you want to configure.
- 2) Click on the **Properties** option from the **File** menu. (You can also select *Properties* by selecting the printer icon, right-clicking on it, and then selecting the *Properties* option from the pop-up menu.)
- 3) Click on the **Details** tab in *Properties*. The dialog box shown following will appear:

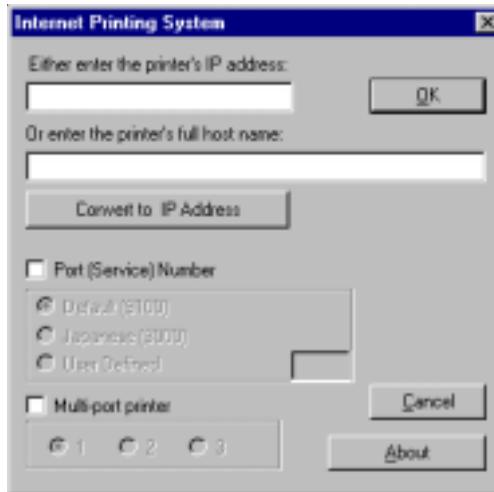


Note: some printers have a bi-directional facility which must be disabled before IPS™ Lite can be used. This can be done by clicking on the **Spool Settings** button and then clicking on **Disable bi-directional support**. Click on **OK** and the printer will be ready to be configured for IPS™ Lite.

- 4) Click on the arrow next to the list box labelled *Print to the following port* to view a list of available ports.
- 5) If a suitable port is displayed, for example the IP address of the printer followed by (TCP/IP), select that port. If the IP address is not displayed, click on the **Add Port** button to display the dialog box shown following.
- 6) Click on **Other** and highlight **Internet Printing System** or **IPS** (whichever is listed).



- 7) Click on **OK**. The following dialog box will appear:



- 8) Enter the printer's **IP address** in the box provided.

If you do not know the IP address of the printer, enter the printer's full host name (Domain Name) in the designated box. Click the **Convert to IP Address** button. If the domain name can be translated, the IP address will automatically be entered into the IP Address field.

-
- 9) If the printer has multi-port functionality, tick the **Multi-Port Printer** box and select the printer port you wish to use. Your choice will be shown following the IP address as a [1], [2], or [3], corresponding to the selected port. By not making a selection here, you allow the system to default to port 1. The default status is indicated by a [0] at the end of the IP address.
- 10) The **Port (Service) Number** option will not normally need to be set for printers in Europe or North America.

The majority of network cards attached to printers in Europe and the USA use the port number 9100. However, many printers, in particular those built for the Japanese market, use a different port number (for example port 3000). Other printers use yet another port number (for example many Digital printers require port 3001).

To meet these varying requirements IPS™ Lite can use any port number, with 9100 as the default.

- 11) When the dialog box has been configured as required, click the **OK** button. The IP address will appear in the *Print to the Following Port* box of the *Details* page.

Timeout Settings

The timeout setting determines how long IPS™ Lite will attempt to connect and send data to a remote printer before aborting the print job. The default timeout setting is 30 seconds.

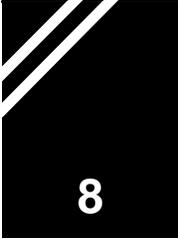
Some printers (especially colour printers) may require a longer timeout setting but be aware that a very long timeout setting may slow down other applications running concurrently on your PC. For fast printers choose shorter timeout settings.

Alter the timeout setting for each TCP/IP port by selecting the **Port Settings** button on the *Details* page. Change the timeout setting as required and click on **OK**.

- 12) Click on **Apply**, configuration is now complete. Print a sample page.

Repeat the procedure to set up as many printers as required.

To use IPS™ Lite to print from any application on your PC, simply go to print in the normal way. The print job will be directed through IPS™ Lite.



Interface Support for SNMP

The Lan interface supports the Simple Network Management Protocol (SNMP), using the MIB-II (RFC 1213) and Host MIB (RFC1514) specifications. The SNMP MIBs can be interrogated with **Get Req**, **GetNextRequest** and **SetReq**, over TCP/IP or IPX protocols. No Traps are currently supported.

SNMP/MIB responses

The Community name is usually **Public**, but the interface will respond to any community name. System values returned are:

- Systemdescription - Gives details on interface type and version (as on status page).
- SystemObjectID - The Object ID of the interface (1.3.6.1.4.1.961.1.1)
- SystemUpTime - The length of time since the interface was last reset.
- SystemName - The interface's General Printserver name (this is Read/write and can be set using SetReq).

Host Mib values:

The interface returns values for the following **Device Table** and **Printer Table** entries:

- Device status: 2=running, 3=running, 5=down.
- PrinterStatus: 3=Idle, 1=other (usually error), 4 = Printing, 5=Warming up.

The actual error condition is given in the following object.

Printer Detected Error State:

- Bit 0 = Not used
- Bit 1 = Paper empty
- Bit 2 = Not used
- Bit 3 = Toner Empty
- Bit 4 = Cover Open
- Bit 5 = Paper Jammed
- Bit 6 = Offline
- Bit 7 = Service Requested

The error is reported as an octet string of 8 bits, which might be a combination of any of the above states, e.g. Cover open and Offline would be displayed as **50**.

PeripheralVision®

The PeripheralVision® network management software package can be used to monitor your interface/printserver and the whole of your network once the SNMP protocol has been installed.

PeripheralVision® is supplied on the Utilities CD with the interface and can be installed on any Windows 95/NT4 or above workstation on your network.

How to Update the Program for the Interface Using Flash EPROM

Flash LAN printserver products have an on-board reprogramming capability. The firmware can be updated in the several ways shown below (or by using any protocol to send the DLD file to print through the interface. The file is completely ASCII, so should have no problems using any method to print). Whichever method is chosen, please observe the power-up caution shown below.

First obtain the new firmware in the form of a computer file (contact Ringdale Technical Support for this). The filename file has a **DLD** extension. For the benefit of customers with a DOS PC, each file is also available as a self-extracting compressed file (with a **EXE** extension). These must be **Run** to obtain the DLD file.

Important Note: before downloading new firmware, the printserver should be power cycled. Ensure that the printer is ready and able to accept a print job.

CAUTION: *after the download is complete, it is necessary to power cycle the printserver again. This causes the FLASH to erase. Do not, under any circumstances, power down the interface during the first minute following power-up, otherwise all programs may be lost, and the interface will need to be returned to factory for re-programming.*

If after 3 minutes the interface is not ready (e.g. status page will not print), power-cycle the interface again, as above.

Obtain a status page from the interface. If the version number does not show the correct (new) version, power cycle the interface twice more, allowing 2 minutes of power-up each time, and try again. If the unit consistently does not program, check that the **.DLD** file is the correct one for the interface type (e.g. it is not a Token Ring download being sent to an Ethernet unit, or an In-line sent to an MIO).

Using PeripheralVision®

This software is supplied on a CD with the interface. Once installed on a PC on your network it can be used to download new firmware remotely by accessing the device's property pages and selecting the **Firmware** page. *This function will operate whether PeripheralVision® is licenced or not.*

Using Printset™ 2000

There are two ways to upgrade the firmware using Printset™ 2000. See the Printset™ 2000 chapter in this manual for details.

Using FTP

Save the new firmware file (e.g. newfirmware.dld) in any directory. From the DOS prompt in that same directory type **ftp** "**IP Address of the printserver**"

You will see the following response:

```
Connected to "IP Address"  
User (IP Address: (none)):
```

Respond by pressing **Enter** and you will get:

```
230 ITC Log-in Complete  
ftp>
```

Type in **put newfirmware.dld** and you should get the following response:

```
200 ITC Port command successful.  
150 ITC Opening Binary Data Connection  
226 ITC Transfer complete.  
202898 bytes sent in 9.00 seconds (22.54 Kbytes/sec)
```

You will not get an ftp command prompt because the update changes the IP address of the interface to a default value of 11.22.33.44 and the connection with the interface is lost.

Get a status sheet and verify the new version number and date. Use Printset™ 2000 to set the IP address to the correct one.

If required, it is possible to reprogram the interface settings from the LAN system setup parameters to satisfy individual needs.

Setup Mode Commands for the LAN Interface

To get into setup mode the interface should be turned on with the **Reset** button held in for approximately 5 seconds. The interface will then be ready to receive a setup file through the serial input port or from the network.

If the button is not released for a further 20 seconds, it will enter **Reset** mode at which point any existing user setups will have been reset to the default values. A page will be sent to the active printer port warning that either setup mode is active, or that the unit has been reset.

Note: a printer capable of printing ASCII text will need to be connected to view this page.

In order to communicate setup instructions to the interface via its serial port, a serial (RS232) cable needs to be connected to it from any PC with a serial output (COM) port.

For In-Line and Professional interfaces whilst in Setup Mode, the serial port is always set to 1200 baud, 8 data bits, 1 stop bit and no parity.

For External Version and Internal Version Interfaces with Setup Button

Use the following procedure to set up the unit:

- 1) Turn off the interface (or printer).
 - 2) Press and hold in the front panel button.
 - 3) Turn on the unit. Keep the button held in for about 5 seconds.
 - 4) Release the button.
-

-
- 5) After releasing the button a warning page will be printed if there is a printer connected and it is online.

Note: the **COM** port must be set up with the following parameters prior to sending a print job: **9600 baud, no parity, 8 data bits, 1 stop.**

For Built-In Interfaces with Print Sharer Input

Use the following procedure to set up the unit:

- 1) Switch the printer on.

During the first 100 characters after the printer has been powered up the sharer input is in setup mode and expecting the **START:** command. If any other data is received it switches automatically to normal sharer mode and does not alter the setup.

- 2) Send the setup file from a PC through the PC sharer port on the interface.

The interface will now accept setup commands sent to it through its PC sharer port or through the network. There are a number of ways of generating the appropriate commands on the workstation. The commands may be set up in a small file using any text editor and the file copied to the serial port, or a communications program may be run, and the commands typed in directly from the keyboard. Any control characters sent to the interface are ignored.

Note: the interface ignores all data prior to the **START:** command, and will print out the settings and reset after receipt of the **EXIT:** command. This latter fact gives a clear indication that the commands have been accepted.

The most commonly recognised setup commands currently implemented are as follows (this is not an exhaustive list): all commands must be uppercase:

```
START:
#    FILESERV:sssssssss+00
+    PRINTSERV:sssssssss+00
#    NUMBER:nn:
#    MATCH:
#    NOMATCH:
SOUTPUT:
POUTPUT:
```

```
BAUD:nnnn
BITS:n
STOP:n
PARITYOFF:
PARITYODD:
PARITY EVEN:
SHARETIME:nn
* NETTIME:nn
* INTERNET:nnn.nnn.nnn.nnn
# REMOFF:
# REMON:
# REMAUTO: *
  AUTOIPON: *
  AUTOIPOFF:

RESET:
EXIT:
```

```
# Novell Systems only
* TCP/IP Systems only
+ Ethernalk
```

Note: all the above commands are case sensitive.

The following explains the above commands in detail.

START: This is the required starting command. All data prior to this will be ignored.

POUTPUT: (Default) selects the PARALLEL OUTPUT.

SOUTPUT: Selects the SERIAL OUTPUT.

REMON: (Novell Remote Printer Only) this command enables remote printing mode in Novell.

FILESERV: (Novell Only) this may be followed by the name of a preferred fileserver to be used. The name must be terminated with the characters +00. Usually, a fileserver is not defined, as the interface will attempt to connect to all file servers on the network which have the defined print server running. This is particularly useful if only one file server is to be used with the interface.

NUMBER: (Novell Remote Printer Only) this command is followed by a 1 or 2 digit number between 0 and 15. It determines the first printer that the unit will attempt a

connection to on the designated printserver. This printer number should be defined as a **Remote Printer** on the printserver.

MATCH: and NOMATCH: (Novell Remote Printer Only) these commands determine whether the interface will connect only to the specified printer (**MATCH**) or to the next available printer number, should the designated printer be unavailable (**NOMATCH**).

REMOFF: (Novell Printserver Only) this command allows the unit to log on to Novell systems only as a printserver.

REMAUTO: (Novell Only) (Default) the unit will log on to a Novell system as a print server if PSERVER.EXE or PSERVER.NLM is not already running as the designated printserver. Otherwise, it will attempt to attach to the already running printserver as a remote printer.

PRINTSERV:nnn (Novell Only) where **nnn** is the name you wish to assign to the printserver; if not specified **NP_XXXXXX** will be the default name. The name must be terminated with the characters **+00**. A valid printserver must be defined in order to print from Novell.

Example:

```
START:  
PRINTSERV:RP21_PSERVER+00  
REMOFF:  
EXIT:
```

Note: use NetWare's PCONSOLE printer utility program to configure a printserver, and any print queues that the print server will service. Remember to insert the new print server name if it was specified in the interface setup file, or insert the default name **NP_00A899**.

AUTOIPON: This command allows the automatic setup of the IP address using arp and PING (see chapter 3).

AUTOIPOFF: This command disables the automatic setup of IP address with arp.

INTERNET: (TCP/IP Only) this command is followed by 4 decimal numbers interspaced with full stops. It specifies the internet address for the unit.

SHARETIME: (Where Applicable) this specifies the number of seconds that must elapse following the end of data on the sharer port, before network printing may begin. Default 15 seconds.

RESET: This command resets all parameters to their factory default setting. It may be used as the first command after **START:** in the setup command string to set everything to a known state. Thereafter, only the parameters which need altering need be sent. **RESET:** will *not* change the node address of the device.

EXIT: This must be sent as the last command. As soon as it is received, the interface will print out its current settings and then reset. If this does not happen, it indicates that the setup commands have not been recognised, either due to errors in the commands, or to bad serial communication.

Note: after receiving this command and printing its settings, the interface checks to see if any LAN parameters have been changed. (e.g. internet address, server name etc.) If so, there will be a delay followed by the unit re-setting, so as to reinsert onto the network with the modified settings.

Novell Example:

The following is an example setup file, which also configures the unit to act like a remote printer.

```
START:
REMON:
FILESERV:+00
PRINTSERV:NETPRINTERS+00
NUMBER:0:
NOMATCH:
BAUD:9600
BITS:8
STOP:1
PARITYOFF:
SHARETIME:15
EXIT:
```

After this setting, should a printserver named **NETPRINTERS** be configured for the network, and set running, the interface will connect itself to the first available remote printer configured on that printserver.

TCP/IP Example:

```
START:
INTERNET:11.22.33.44
EXIT:
```

For Kyocera built in interfaces the setup is performed through the printers parallel port. All instructions must be preceded by the Kyocera Prescribe Command **SIOP** and printserver/fileserver names do not end with **+00**.

Example:

```
!R! SIOP 'START:';SIOP':INTERNET:11.22.33.44';  
SIOP 'PRINTTIME:15';EXIT
```

SIOP2 commands support second generation option interfaces. SIOP2 command is supported from PowerPC models on.

IP Address

Use the IP command to change the IP address:

Syntax: !R! SIOP2, "IP:xxx.xxx.xxx.xxx"; EXIT;

Example: !R! SIOP2, "IP:132.144.222.233"; EXIT;

Subnet Mask

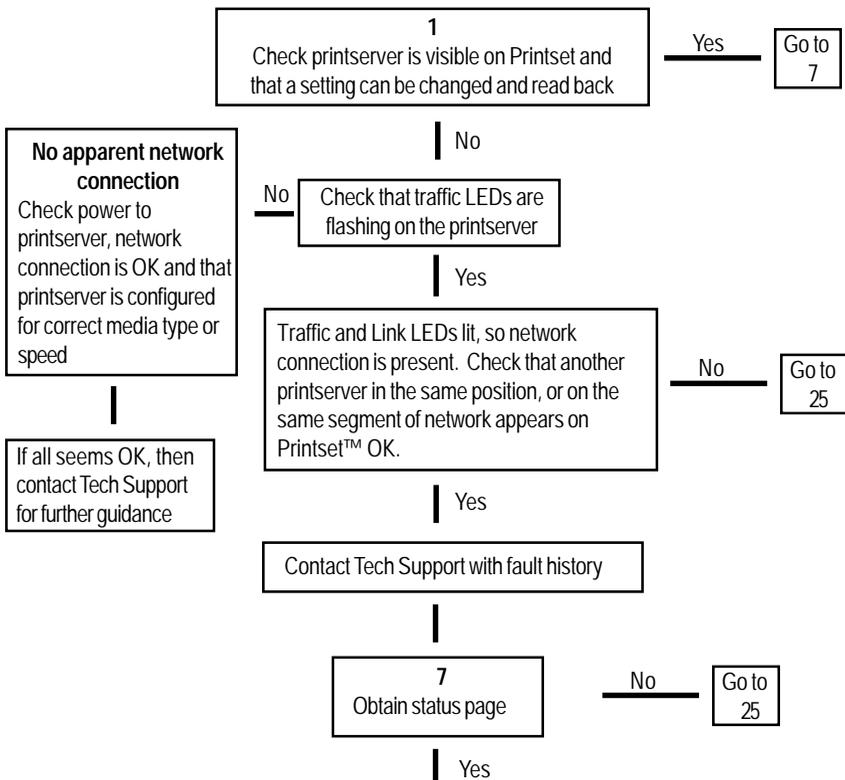
Use the SUBNET command to change the subnet mask.

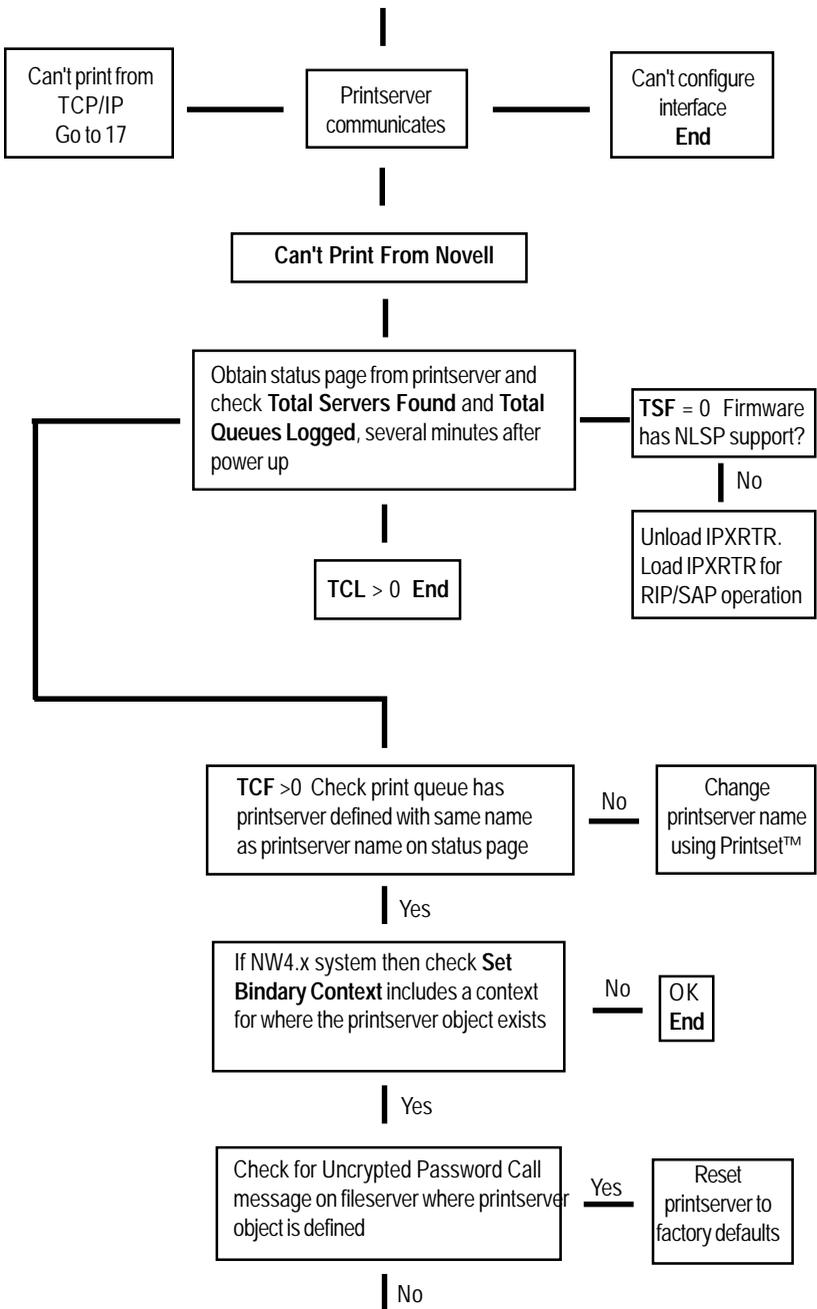
Syntax: !R! SIOP2, "SUBNET:xxx.xxx.xxx.xxx"; EXIT;

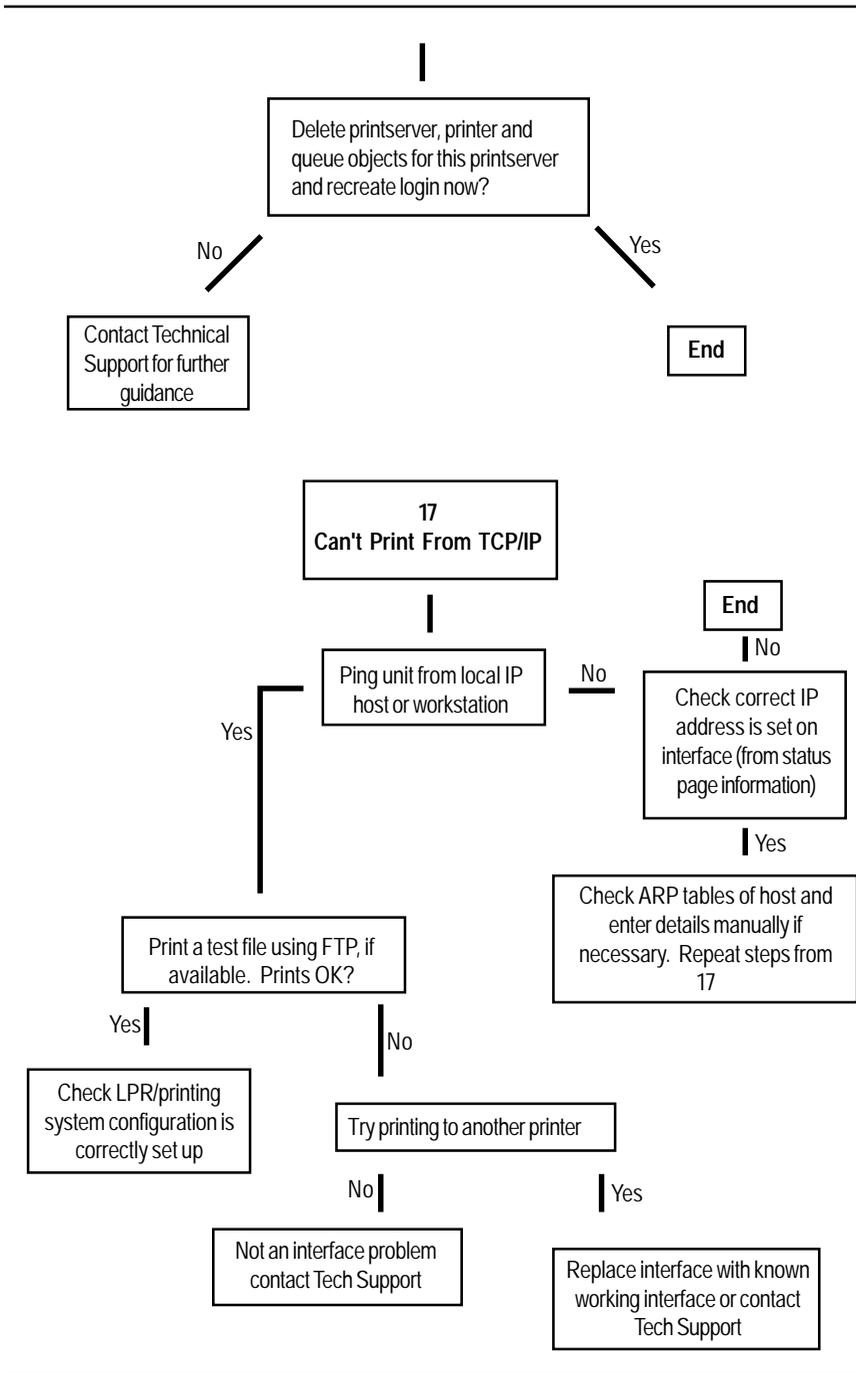
Example: !R! SIOP2, "SUBNET:255.255.255.000"; EXIT;

Note: it is necessary to enter three digits for each section of the subnet mask/IP address, for example if the number is 111.222.111.54 then the 54 must have a zero in front of it. The address would therefore be entered as 111.222.111.054 etc.

Can't Print or Configure?







25
No Status Page

|

Check printer is ready
and able to print

No

Correct and retry

Yes |

Power cycle interface/printer
prints status page?

Yes

End

No |

Contact Technical Support

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