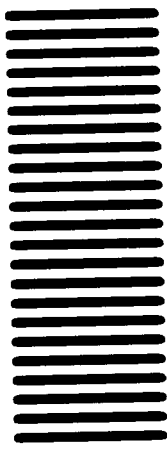# OMNI-PRINT
LAN Ethernet
PRINTER
INTERFACE

INSTALLATION GUIDE
USER'S GUIDE

For

Novell 2.2x, 3.xx, 4.xx as Print Server and Remote Printer

UNIX as Print Server supporting LPR, LPQ and FTP

Windows for Workgroups using TCP/IP

Omniprint Interface

for **SPX/IPX-Protocol**
TCP/IP-Protocol

For Laser, Matrix, Plotters and Line Printers.

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DISCLAIMER

TRADEMARKS

Table of Contents

1. Product Introduction

This guide provides all the information you need to install the Omniprint Interface between your Ethernet system and your printing device

IMPORTANT: For fuss-free installation, please read through this entire manual once before starting the job!

WHAT IS THE OMNIPRINT?

The Omniprint Interface is an external box that plugs into a printers parallel to allow the printer to accept print jobs from the Ethernet network

WHAT DOES THE OMNIPRINT DO?

The Omniprint emulates a Client on the network. Printer output from the Print Server is converted into the format that is used by the printer for which the text has been formatted.

Once installed, you can produce documents on the Ethernet system which will make use of the high quality image, layout and speed advantages of the printer

For example, files and documents can be printed in portrait or landscape mode, with a selection of fonts and using text enhancement features such as italics, emboldening, underlining, superscript and subscript, or the printout of drawings with graphics.

The installation procedure that you follow is described in Chapter 2.

Any printer with a standard parallel (centronics type) input will work with the Omniprint Interface.

OPERATION

The printer and Interface are both configured for Centronics operation in the normal way.

When the Interface is installed, read Chapter 3 on how to print documents from Novell with the Omniprint acting like a remote printer.

Chapter 4 describes how to print documents from Novell with the Omniprint acting like a print server.

Chapter 5 describes how to setup and use the Omniprint in a UNIX environment under TCP/IP.

2. Installation Procedure

This Chapter describes the procedure for installing the Omniprint on the Ethernet Local Area Network System.

If your system is different from that described in this chapter please ask your systems administrator for help.

Prior to installing the Omniprint onto the Ethernet System, the printer should be installed and ready to run.

INSTALLATION PROCEDURE

Preparing The Interface

For installation, the following items are required:

Interface box
This manual
Printset & Windows Printing System diskettes
Power pack
Power cable

Configuration for 10baseT Input

The Good Link (SQE) will be automatically selected at power on.

Parallel Interface 25 way 'D' Type

Power

Push Button

RJ45 Connector
10baseT input

Green LED
(Network Activity)
Red LED
(Good Link indicator)
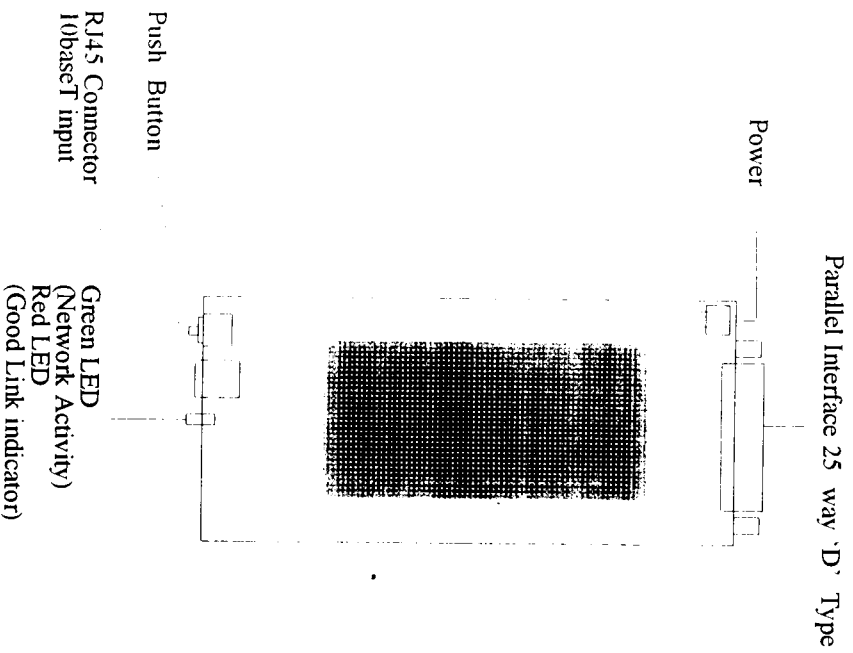
LEDs

The green LED flashes for all network activity. The RED is the Good Link or SQE. LED

CONNECTING THE INTERFACE TO THE PRINTER AND LAN SYSTEM

The interface is factory configured for 10baseT input.

1. Connect the cable from the LAN system to the Omniprint

2. Connect the parallel cable to the printer

3. Switch the printer and the Omniprint ON.

When the printer becomes ready press the push button on the interface box. A status page showing the default settings will be printed, as shown below

TEST MESSAGE (e.g.):

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HBM LAN Printer Interface

Release 04.xx XM Inline Ethernet Flash (AF@48E7)

Node Number : 00:A0:92:16:17:18
Serial Port : 9600,8,N,1

TCP/IP

IP Address : 0.0.0.0
Subnet Mask : 0.0.0.0
Auto IP Address : Enabled

NOVELL

Printserver : "NP_161718"
Fileserver Limited : ""
Remote Printer : Auto
Printer Number : 0
Remote Hunting : Enabled
Total Servers Found : 0
Total Servers Logged : 0
Total Queues Logged : 0
Logged as Rprinter # : --

QUICK INSTALLATION GUIDE

For all Systems

1) Switch on your printer and Omniprint box - wait until the printer is ready. - then press the push button on the Omniprint box.

A status page will be printed giving you the unique print server name of the Network Adapter i.e. NP_xxxxx.

It also gives you the unique Node Address and the currently selected IP ADDRESS.

On Novell Systems

1) Log in on a Workstation and make sure your logon has supervisor access rights.

2) Now run the Novell utility PCONSOLE and create a new print server with the unique print server name as printed on the status page.

3) Set up printer 0 for this print server to print to LPT1 local.

4) Set up the Notify option as to who you want to notify of printer related status messages.

5) Now use PCONSOLE to set up a new QUEUE using the Manage Queues option from the main menu - or go directly to step 8 if you want to use an existing queue.

6) Now select the Queue(s) you want to be served by the print server and assign this print server (NP_xxxxxx) to it.

PRINTSET UTILITY

The utility diskette supplied with the Omniprint contains a file called 'PRINTSET.EXE', this can be used on a workstation with 'IPX' loaded, to monitor, alter and update the parameters in the Omniprint on that network.

This utility is menu driven and will automatically display all Omniprint and allow selection of a single Omniprint for editing or examining the setup parameters

See Chapter 6 for further instruction.

UNIX

1) To set the IP address that is required for your system you can use the ARP and PING functions of UNIX

   NB. The interface has to be 'local' to the host that you are using to set it up with.

   a) Enter the command ARP -s IP-address Node-Address, where IP address is the new IP address of the interface and Node address is it's Ethernet address (see status page)

   Example:

   ARP -s 133.200.3.181 00:02:21:10:45:93

   b) Enter the ping command followed by the IP address to be set.

   Example:

   PING 133.200.3.181

   The unit is now set to the new IP address this can be confirmed by pressing the Network Adapter's status button, to print a status page

2) Set the Network adapter IP as a Remote Printer on your Unix System. The operation depends on which Unix System you are using. Here are some examples, more details in TCP/IP section:

   1. HP-UX - use SAM and configure Remote Printer.
   2. SOLARIS - use IP system to BSD host name.
      IP admin -p Printer -s host name\lpb.
   3. AIX - use SMIT and confirm Remote queues.
   4. SCO - use FTP script or lp if remote lpr supported.
   5. SUNOS - modify Printcap with :rm = host name.
   6. Other - use FTP script. or setup as Solaris.

3. Printing Documents
with Novell as Remote Printer

OVERVIEW

The Ethernet interface can functions as a Remote Printer on the Novell Netware network. It effectively takes the place of a workstation running the "RPRINTER" programme. 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 laser 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 setup procedure to 'tell' the interface which server and printer to attach to (see chapter C), 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 Interface unit, a remote printer needs to be defined on any print server. 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.

As each printserver may have up to 16 printers defined, it is possible to run 16 interfaces from each printserver. It is possible for the fileserver to act as a printserver also. 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 Ethernet wire, 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" programme).

These things are set up very easily on the Interface by sending special "setup" commands to it (see Chapter C). 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 contiguous printers on one printserver are assigned to the same queue. The interfaces are all setup 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, in 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 Print Server.

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 Print server printer and queue all on one screen.

5. Enter details of print server, 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 Print Server etc will be created.

8. Use PRINTSET to change the Print Server name to the Advertising Print Server name entered above, and select 'REMOTE printer only' along with printer number 0-254.

9. On the File server, enter the following command:

   :LOAD PSERVER <Printserver name>

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

10. Cycle power on the Network Interface and get a status page, which should indicate the Rprinter number logged.

---
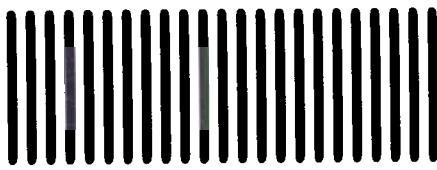
4. Printing Documents with Novell (as Print Server)

INSTALLING THE INTERFACE ON THE NETWORK

To get your interface working on your network you can use the PCONSOLE utility program supplied with the Novell NetWare system.

NOTE: *You must have "Supervisor" privileges on the network.*

Installation on the Network

Log on as a Supervisor under Novell NetWare.

At the screen prompt type PCONSOLE. This will bring up the

AVAILABLE OPTIONS MENU

Available Options
Change Current File Server
Print Queue Information
Print Server Information

Under the Available Options menu, select *Print Server Information* using the cursor keys. Press ENTER to select.

N.B. Menu screens will differ slightly on **NETWARE 4.0** and BINDERY EMULATION has to be selected. (press F4 to switch between DIRECTORY SERVICES and BINDERY EMULATION).

This calls up a list of available print servers

```
┌─────────────────┐
│  Print Servers  │
├─────────────────┤
│  ACCOUNTS_      │
│  ADMIN_         │
│  STORES_        │
└─────────────────┘
```

Enter the interface as a print server by pressing "INSERT" and then typing in the new name.

```
┌──────────────────────────────────┐
│ New Print Server Name:  NP_xxxxx │
└──────────────────────────────────┘
```

The factory default name of the interface is "NP_XXXX" where XXXX is part of the units Ethernet address. You can assign a new name to the device if you wish.

Each interface on the network which is configured as a printserver must be set up with a different, unique name.

Note: If you assign a new name to your interface unit under PCONSOLE, you also need to change its name in the interface using PRINTSET utility, supplied on accompanying diskette.

NOTIFY

It is possible to define who to notify if the interface encounters problems during a print (Paper out, paper jam etc.). The interface uses the standard PCONSOLE NOTIFY list for printer 0 of the print server. After defining a printer 0 for the print server, setup the desired notify list for that printer

From the New Print Server Name field, select the name that you used to identify the interface as a new print server. With the name selected, press ENTER to go to the Print Server Information menu. Choose the *Full Name* option, and press ENTER again.

PCONSOLE will display an entry box for a name up to 20 characters long (see below). Type the name that you wish to appear in NetWare's notification message, then press the ENTER key. You won't see a visual confirmation of your entry, but NetWare will remember the name

To return to the Available Options menu, press the ESCAPE key twice

PRINT QUEUES

Select the Print Queue Information from PCONSOLE MAIN MENU and press ENTER. This calls up a list of existing print queues.

If you wish to create a new print queue to be served by the interface, press INSERT. Type the name of the new queue, press ENTER, and the new name will appear in the queue list. Repeat this process if you wish to create additional print queues.

Under the Print Queue Information menu, choose a queue from the Print Queue list. Then select Queue Servers from the Print Queue Information menu. Press INSERT to bring up the Queue Server Candidates entry box. Choose the queue server you wish to add. The selected server name will appear on the list of servers (see below). Repeat the procedure as often as you wish, keeping in mind that your interface can manage a maximum of 16 different queues.

EXITING PCONSOLE

When you have completed the entry procedures, you may press the ESCAPE key three times and select YES to exit NetWare's PCONSOLE utility.

PCONSOLE INSTALLATION SUMMARY

Call up NetWare's PCONSOLE printer utility program. (You must have "Supervisor" privileges.)

From the Available Options menu, go to the Print Server Information menu and then press INSERT. Enter the name NP_xxxxxx as a print server. (You will also need to make sure you change the device's name with the interface Setup Mode.)

If you wish to use the "Notify" function in NetWare, go to the Print Server Information menu and select the Full Name option.

Then enter a name.

From the Available Options menu, select Print Queue Information. (Press INSERT to create one or more new print queues to be served by the interface.)

Under the Print Queue Information menu, use the Queue Servers and Queue Server Candidates menus to identify the print queues your interface will serve. Each interface will manage up to 16 queues.

It is possible to print a test file under PCONSOLE when selecting the Current Job Entries option under the Print Queue Information menu. You may also print test files using NetWare's NPRINT or CAPTURE utilities.

Note After altering any of the interface's parameters with PCONSOLE, the affected interface must be powered off, then on again, for any changes to take effect

Netware 4 Set up

For Print Server operation, the definition is created in 'Bindery Emulation' mode which makes the print server object compatible with Netware 3.1x. This does not have an effect on NDS operation as the print server will still display as a leaf object, etc.

Configuring the Network Interface as a Print Server

To configure the Network Interface as a print server, follow these steps

1. LOGIN as ADMIN on a Netware 4 or Netware 3.1x workstation

2. Run PCONSOLE

3. If you are using a Netware 4 workstation press F4 to select Bindery Emulation. On a Neware 3 workstation PCONSOLE defaults to Bindery Emulation.

4. Use 'Quick Setup' to configure the Print Server, printer and queue all on one screen.

5. Set 'Printer Type' = Other/Unknown.

6. Use PRINTSET to configure the Network Interface with the correct Print Server name and other details

7. Power the Print Server off/on to configure the Network Interface and obtain a status page to ascertain that it has logged in and is servicing Netware 4 queues.

5. Printing Documents with TCP/IP in UNIX

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 IP Address

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

There are conventions surrounding how to make up an IP Address, which are discussed later. In the most complex case, where a network is capable of communicating with other networks worldwide, it is necessary to have some of the numbers assigned by an international body which co-ordinates the numbering.

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

1. **Use PING**

   a) Obtain status page of interface (for NODE addrs).

   b) Enter command ARP-S IP ADDRS NODE Addrs
      e.g. ARP-S 133.200.3.181 00:02:21:10:45:93

   c) PING the new IP address
      e.g. PING 133.200.3.181

   and the interface will be set to this IP address.
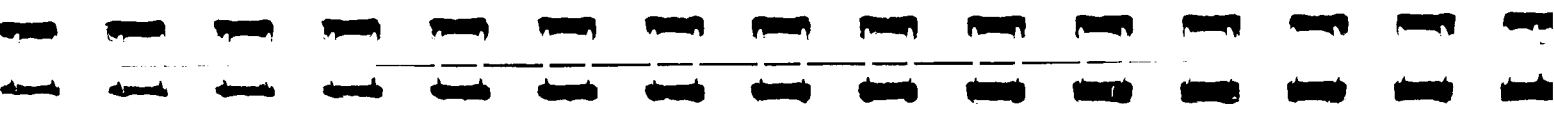
2. Printset

(for UNIX or Dos Printset from Dos W/S with IPX loaded.

3. Shell Script

On the utility diskette supplied with the interface, there are two scripts for setting for up the IP address in the interface and adding an entry to the systems 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 Net Sub 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 Net Sub Mask back to its previous setting. A Net Sub Mask of 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 setup the remote printer details. Here, the **'lpr'** protocol programme 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).

PRINTCAP file

Typically, the above information 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

For Unix systems without Printcap files, see the section on scripts at the end of the chapter, or use the 'SYSTEM5.SH' script

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) In the host's **'lpr'** setup utility, enter the name of a printer which is to be redirected to the interface, enter any name for the remote printer (may be the same as the local), and enter the host name as given in (2).

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

The interface is able to handle many separate communication channels simultaneously. The interface will respond to an **'lpq'** print query by sending back details of the current print job, as well as all stacked prints. If a connection request is received after all available connections are taken up, the interface will not respond to the connection attempt.

Note: An LPQ enquiry may show "missing" stack entries ; e.g. only jobs 2,5 and 7 show. The missing entries (3,4 and 6) will be print jobs sent by a different protocol (e.g. Novell or Lan Manager).

Printing a file

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

Technical

For programmers' information, the interface TCP/IP mode responds only to ARP packets and to TCP/IP connections made to port (socket) x0203, and **'ftp'** socket. Connection attempts to other port addresses will meet with no response. All data arriving at this port is assumed to be following valid **'lpr'** protocol, i.e. you cannot just send data to this port

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

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 are different 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. When setting up an LPR printer entry, a name is entered for:

i) the local printer name to be re-directed

ii) the host name of the station to which the print is sent

iii) the remote printer name (name of the printer port on the remote station).

It is this last name that the interface uses to determine which filters to use.

Many different remote printer names may be set up, all directed to the same interface remote host, and each is given a different local printer name to be redirected. Different types of print jobs may thus be sent to different printer names, which will then all print out on the same printer, through the same interface, but using different filters.

Note. To eliminate confusion, it is a good policy to give the local and remote printers the same name, except where an existing local default name is required.

*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 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"

Note: Some versions of LPR strip out all control characters and carriage return characters from a file before it is being sent, making it unsuitable for on -image files or font download files. In many cases the "-l" option may be used on the LPR command line to prevent this happening (worth trying even if this option is not documented)

Example of sending a text file "txtfile" via LPR with a formfeed appended

lpr -Plpaf txtfile

SET UP VARIATIONS FOR DIFFERENT UNIX OS

Here are some scripts and setup examples for different types of Unix systems:-

1. GENERAL INTERFACE PROGRAM FILE

```
$NETPRINTER="132.200.69.4"
copies=$4
shift;shift;shift;shift;
files="$*"
i=1
while [$i -le $copies]
    do
    for file in $files
        do
        /bin/cat /tmp/ftp.$$<!
bman,
put $file
quit
;
    /usr/bin/ftp -n $NETPRINTER /tmp/ftp.$$
    /bin/rm /tmp/ftp.$$
    done
    j=expr $i+1
    done
exit 0

*end of script *
```

2. SET UP FOR SCO UNIX

Some UNIX systems, such as SCO, do not support the Berkeley 'lpr' print function. The following script allows you to print from within some applications using FTP, which is supported on most TCP/IP systems. The script has been tested for SCO UNIX, but may require modification for other systems.

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 programme (SYSADMSH) copies these files to /usr/spool/lp/admins/lp/interfaces. (you could place the script directly into your interface directory).

The following script should have the same name as the host name you gave the printer

```
TEMPFILE=/tmp/ftpprint.$$
printer='laser'
/usr/spool/lp/model/standard "$a" >$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 ($a), 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.

Solaris 2.x

The procedure for setting up the Interface on a Solaris 2.x host is as follows:

1. Update Hosts files with Interface's *Hostfile*.

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*.

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"
```

You will finally see a screen as below, fill in the data 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	
Pathname for short filter	/USR/LPD/
Pathname for long filter	/USR/LPD/AIXSHORT
Name of queue for remove printer	/USR/LPD/AIXLONG
Name of device to add	LPAF
Backend program pathname	/USR/LPD/REMBAK

You will finally see a screen as below Fill in the data as required

Name ot Queue	HBM
Queuing discipline	first come first serve
Activate the queue	yes
Destination Host	11 22 33 44
Pathname short filter	
Pathname long filter	
Name of queue for remote printer	

Check the entry for your queue under Remote Printer Queue devices It will have the queue name and printer capabilities

You may then have to start the queue (use MANAGE LOCAL PRINTER SUBSYSTEM, AND LOCAL PRINTER QUEUES)

d) The /etc/qconfig file will look like this:

```
hbm:
        device =hbmprn
        up=true
        host = 200.200.200.99
        rq =

hbmprn:
        backend =/usr/lp/rembak
```

e)You may also specify a Remote Device = lpar:, lpaf:, etc. for using filters. (see manual for details)

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{modelscript} -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 printer definition page of SAM use the following settings:

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 Council Model:	/etc/true
Remote status Model:	/etc/true
Make system default:	Enter as appropriate
Printer Class:	Leave out
Restrict Council:	Leave out
Remote Printer on BSD system:	Leave out

Use lp - d printer name to print or rlp.

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 TCPF (e.g. ICL Systems).

Below is a 'C' Program for Unix which prints data to Socket 9100

```c
#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: addredd must be in the form a.b.c.d\
                    argv[0]); return 1;
            }

            if((fp=fopen(argv[1], "r"))==NULL)
            {
                perror(argv[1]);
                return 1;
            }
```
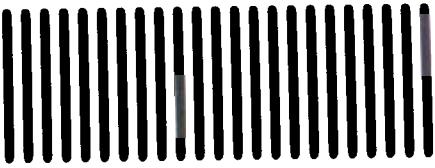
```c
inaddr.sin_family=AF_inet;
inaddr.sin_port=port;
inaddr.sin_addr.s_addr=addr;
if((sock=socket(AF_INET, SOCK_STREAM, 0))<0)
{
    perror("socket");
    return 1;
}
if(connect(sock, (struct sockaddr *) &inaddr, sizeof(inaddr))<0)
{
    perror("connect");
    return 1;
}
while(!feof(fp))
{
    c=fgetc(fp);
    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;
}
```

6. PRINTSET

INTRODUCTION

Printset is a set of programs that run on a DOS/WINDOWS PC, UNIX host or an Apple Macintosh. It allows the viewing and configuration of the LAN Printer Interface.

The DOS/Windows Printset programs use IPX/SPX to communicate between workstations and Interfaces, so they are ideally suited to Novell networks, although they can be used on any other network providing IPX is loaded on the Workstation running Printset. UNIX Printset uses UDP.

SET UP UTILITY DISKETTE

A Setup Diskette is distributed with every HBM LAN Printer Interface. This contains the following software:

Contents

| Directory	Contents
Novell	Dos Printset
Windows	Windows Printset
UNIX	UNIX Install Scripts

PRINTSET FOR WINDOWS

To install the Windows version of Printset follow these steps:

Step 1 - Insert 'HBM setup utilities diskette' in drive A.

Step 2 - Install by typing a:\windows\install in the Run option from the file menu of Program manager.

or:- from DOS go to A: and type inst_win, this will start Windows and Install Software.
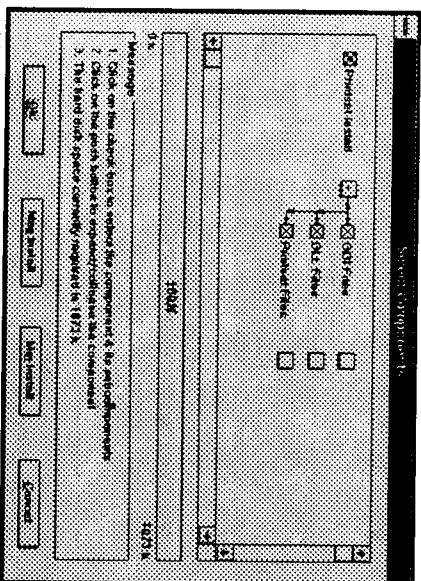
Step 3 - Wait while setup initialises, and then gives a configuration screen.

Step 4 - You can change the installation directory from the default c:\PSET as well as the installation options below:

1. Printset for windows - necessary to run Printset.
2. Novell DLLs - necessary to run Printset, but may already be present.
3. Novell ODI drivers - Network Card drivers may already be present.

Step 5 - Install copies of all the necessary files to the installation directory (default c:\Printset).

Step 6 - Setup then creates a new Group, Printset for Windows, and places the Printset icon within it.

Note It is important to use the IPXODI Drivers especially on the Token Ring Workstation.

Example of Autoexec.bat entry for using IPXODI drivers:

    C:\printset\Lsl.com
    C:\printset\Token.com
    C:\printset\IPXODI.com

Step 8 - to run Printset double click the Printset icon

INSTALLING PRINTSET FOR DOS

To install Dos Printset, TYPE A:. Run_INST_DOS.

The appropriate files will be copied to C:\PRINTSET.

To run Printset, TYPE 'PSDOSN'.

INSTALLING UNIX PRINTSET

This is supplied in compressed format, (UU encoded compressed TAR file) as source code, and has to be built for each system.

System requirements are: MOTIF developers kit
    C++ compiler
    >20MB disk space (for building).

See documentation accompanying disks for full installation procedure.

INSTALLING THE PRINTSERVER TO THE NETWORK

The Interfaces should be installed onto the network as follows:

1. Connect the printserver to the correct network topology e.g. either 10baseT, 10base2 or 10base5. The printserver will automatically sense the connection that has been made.

2. Power on the printserver and allow one minute for the unit to stabilise (external units).

3. Connect the parallel or serial cable from the printer to the printserver.

4. For internal printserver cards power the printer on.

5. Press the setup button on the printserver and a status page will print on the connected device.

6. The status page gives you the required information for the IP Address, Novell printserver name, and operating mode.

7. The Printset program will list the printserver name, its serial No. and the printers status. This information appears in the main printset windows screen. You should allow a few minutes for the initial information to be presented on the screen.

PRINTSET MAIN MENU

On the main printserver summary screen the current print server configuration information will be shown as below

The printserver information is updated every few seconds and will display the current printer status.

CONFIGURING THE PRINTSERVER FROM THE PRINTSET MAIN MENU

On the main screen there are four windows buttons in the configuration mode

    When the general parameter button is selected the following screen will appear

From the general printset screen the following information can be viewed:

Hardware Type: The printserver hardware type. e.g. Ethernet Inline, will be displayed in this field.

Serial Number: The printserver has a unique serial number which will appear in this field.

Version: The printservers firmware level is displayed in this field.

Node: The Ethernet/Mac address of the printserver.

These settings can be changed:

Printserver name: The General printserver name, used for DEC LAT and LAN MANAGER systems.

Busy Timeout: Time in seconds before printer busy signal is notified as an 'off line' state.

Sharer Timeout: Timeout between sharer port inactive and switching to the network port

Output: On external boxes, either serial or parallel (default) printer ports can be selected

Baud Rate: Serial port baud rate (input or output).

Once you have made any changes within the printserver general parameters the information should be saved. Any changes will be updated to the printserver and the main menu will show new information. Restart printer to ensure changes.

CONFIGURING NETWARE PARAMETERS

By selecting the Netware button the printserver Novell configuration screen will be accessed. The following screen will appear.
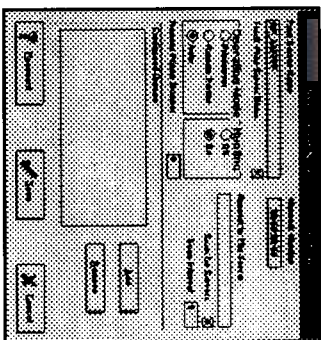
Printset can automatically add printservers and queue information on the file server, avoiding the need to run PCONSOLE to set up a new printserver. The file server bindery is updated when SAVE is selected. if you do not want to create a new printserver or queue, select CANCEL

PRINTSERVER NOVELL CONFIGURATION

Printserver name: Current Novell printserver name which can be modified to any name up to 32 characters. This will be used to update the file server bindery information.

Network Number: For information only.

Track printserver name: This links the general printserver name with the Novell name (as they can be different). The general name is displayed on the main screen.

Restrict file server: This limits the number of file servers that the printserver can log on to. To one particular server - useful if there are more than fifty file servers.

Scan for servers: This enables/disables a regular search of file server binderies for printserver presence, allowing automatic logging in as soon as a change is made.

Scan interval: This sets an interval for the automatic search in minutes.

OPERATING MODE

Printserver: Printserver only.

Remote printer: Powers up as remote printer only.

Auto: Auto switches between printserver mode and remote printserver mode. (if a printserver of the same name is already present).
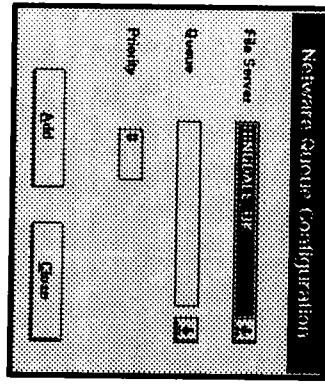
Remote printer Number: Number = 0 to 15.

Hunting: On = remote printer mode find next free printer if specified printer number is not available.

Off = only logs into specified printer number

Configuring queues: Select the Add button to assign specific file servers/printservers to various queues.

Add...

Select file server to attach to selected queue or add new queue and queue priority.

SAVE or CANCEL.

PASSWORD

Password is defined in PCONSOLE. i.e. login password for printserver, no configuration will be allowed unless passwords match. The default is equal to no password enabled.
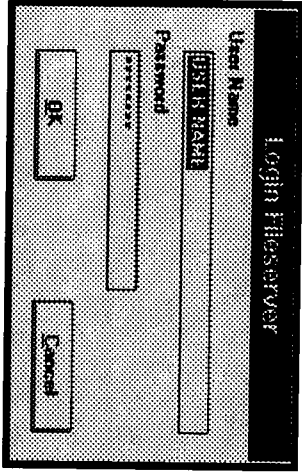
CONFIGURATING TCP/IP PARAMETERS
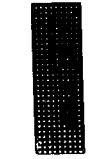
By selecting the TCP/IP button the printserver TCP/IP configuration screen will be accessed. The following screen will appear
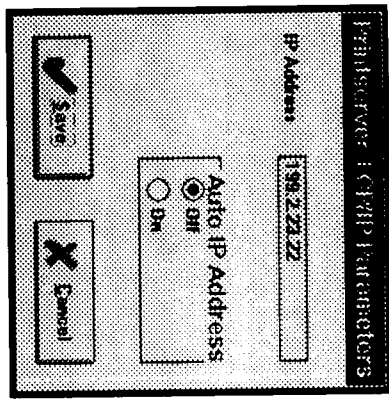
PRINTSERVER TCP/IP CONFIGURATION

IP Address: Enter new IP Address.

Auto IP Address: When this facility is set to OFF you are unable to automatically change the IP Address utilising the PING or ARP facility.

Example of PING and ARP commands:

a.   Enter command ARP-S IP ADDRS Ethernet addrs
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

You have completed Printset and may now exit.

7. Workgroups Printing Systems

Before you start

This guide takes you through the various steps necessary to install and configure the HBM Workgroup Printing System. By installing and configuring this software you will be able to access your printer over your network cabling system.

Workgroups Printing System is designed for stand alone Workgroups Systems or Workgroups connected via TCP/IP to other Networks.

! **Do not install Workgroups Printing System if you are using a second Network, for example NOVELL. You can easily print by redirecting LPT ports to a NOVELL QUEUE.**

There are three parts to loading the Workgroup Printing System. Part 1 requires you to load all the software from the distribution disk supplied with the HBM network interface. The second part requires you to install the TCP/IP-32 software that was copied to your hard disc during Part 1 of the installation. The third and final part requires you to configure Workgroups for your printer.

At the very least we recommend you read the section entitled IP address and how to use them. This small section discusses IP addresses and how they work.

PART 1

- Start your Windows for Workgroups software by typing WIN at your DOS prompt.

- Once Windows has started Click on "File" at the top of the Program Manager screen.

- Now click on "Run" and type in A:\INSTALL. Once you've done that, click on the "OK" button.

Run

Current Directory A:\

Command Line:
A:\INSTALL|

☐ Run Minimized

OK   Cancel   Help
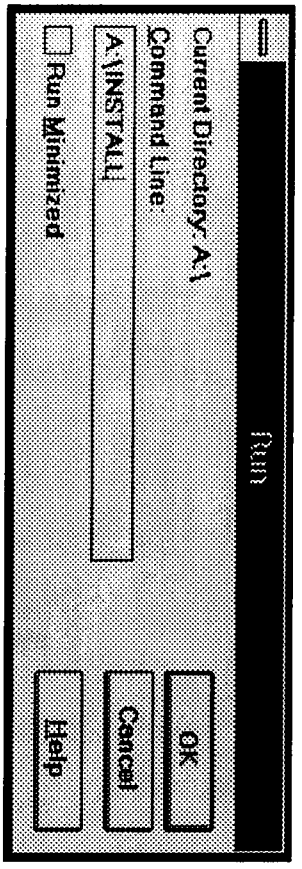
At this point your computer will look at your floppy diskette drive for the install program. Once it has located it you will have to wait a few seconds before the screen clears and the following appears:

Welcome

Message:
This will install the ITC Workgroups Printing System
(v2.0) 30/1/95 *READ THE README.TXT FIRST*
Copyright (c) 1994 1995 ITC

Install   Don't Install
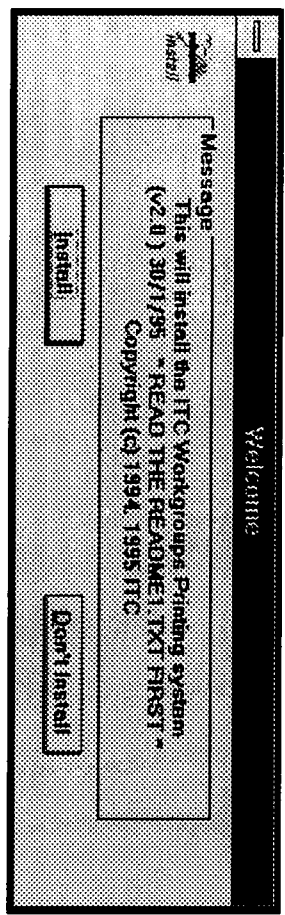
You now have two options, you can install the ITC Workgroups Printing System by clicking on the "Install" button, or alternatively, you can cancel the software installation by clicking on the "Don't Install" button.

- As we wish to install the Workgroup Printing System software we will click on the Install button. This will produce the following screen

Directory
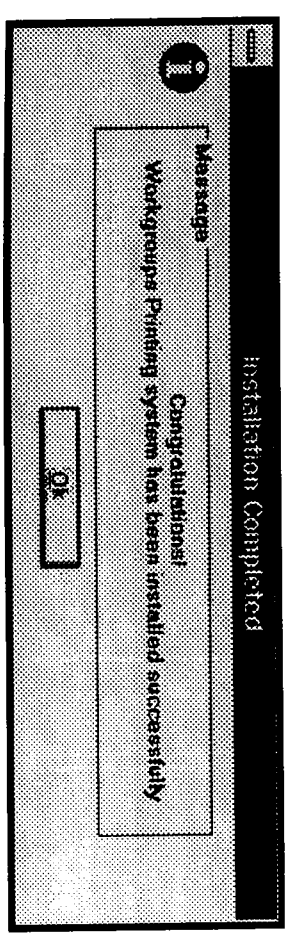
Workgroups Printing system will be copied to

OK   Cancel
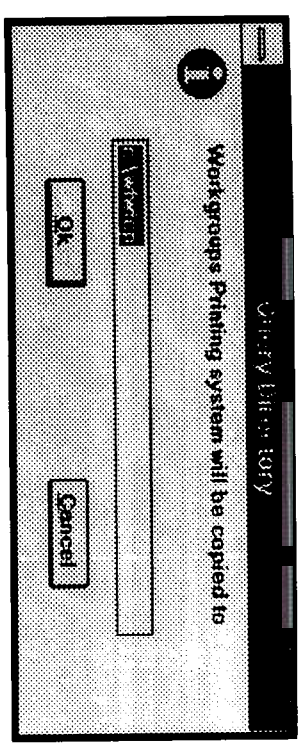
We must now tell the installation software where we wish to install the software. The default directory that we recommend you use is WFWTCP. You can change the directory name if you wish.

- Once you are happy with the directory name that the Workgroup Printing System software will reside in click on the "OK" button.

Workgroups Printing system

Copying
From: a:\intcgip32.hlp
To: c:\wfwtcp\intcgip 32.hlp

25%

Cancel
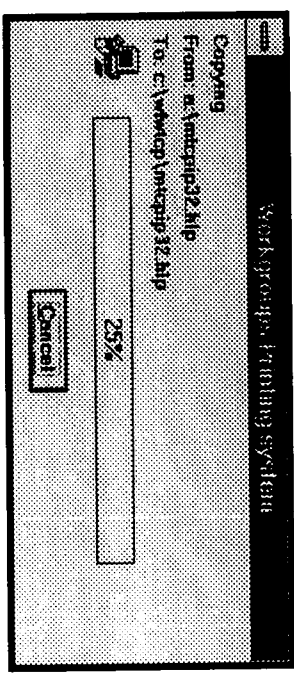
A screen similar to the one above will be displayed. As the software is installed the percentage readout will increase. Once all of the software has been copied onto your computer the following screen will appear:

Installation Completed

Message
Congratulations!
Workgroups Printing system has been installed successfully

OK

- You have now completed Part 1 of the installation process. Click on the "OK" button to continue with Part 2.

PART 2

We must now configure your Workgroup system to use the TCP/IP software that is now on your hard disc drive. To do this we must run the Network Setup program that resides in your Network Folder.
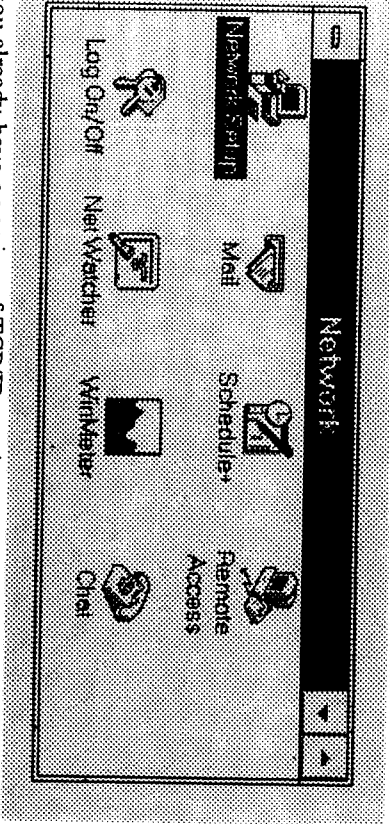
If you already have a version of TCP/IP running on your system, skip this part and reboot your PC. Workgroups Printing System should still operate, providing the TCP/IP is Winsock.dll compatible.

- Double click on the Network Setup Icon to display the following screen:
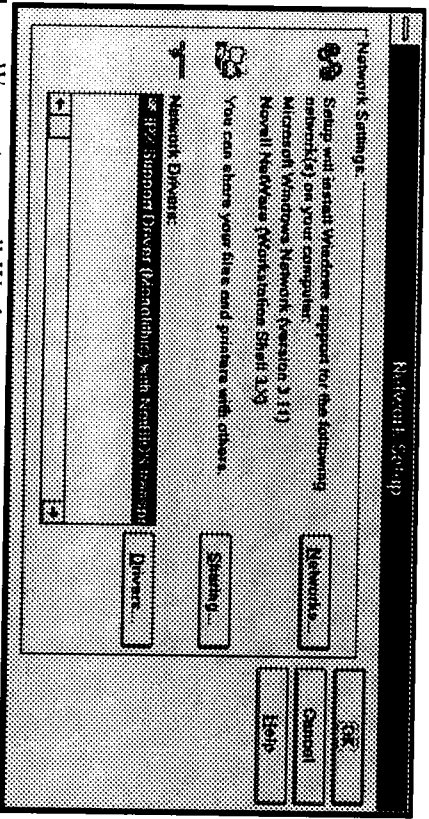
- We must now tell Workgroups to use the Microsoft TCP/IP protocol. To do this we must click on the "Drivers" button.

By clicking on the drivers button a screen similar to the one below will be displayed:
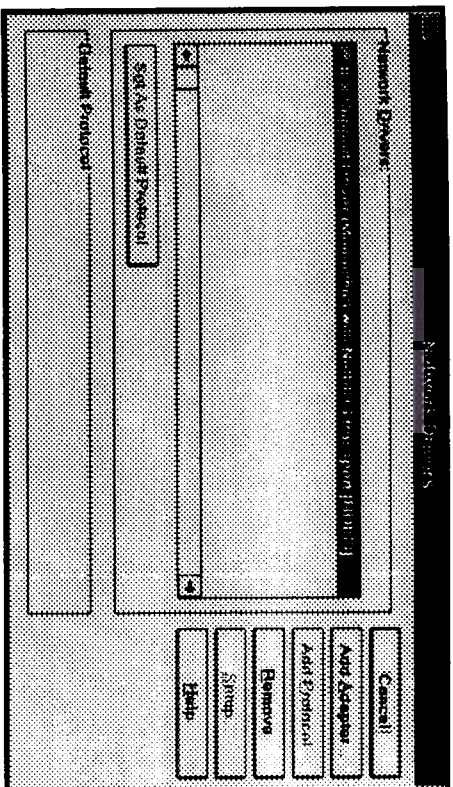
- As we wish to add a new protocol we simply click on the "Add Protocol" button.

Once you've clicked on the Add Protocol the following screen will be displayed:
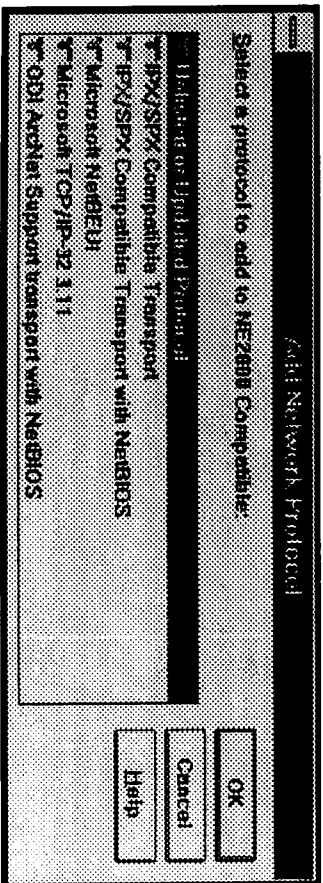
As the Microsoft TCP/IP protocol isn't supplied with Workgroups for Windows as standard we must select the "Unlisted or Updated Protocol" option. By selecting this option we can force Workgroups to look at either the floppy diskette or hard disc drive for additional protocols.

- Click on the "OK" button to select the Unlisted or Updated Protocol option, and enter the name of the directory that you specified at the beginning of this installation.
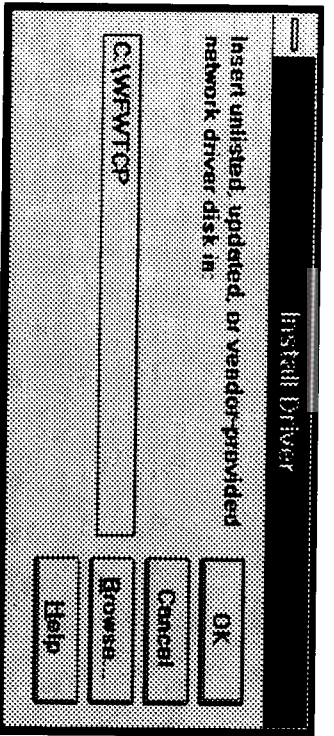
- This will force the installation software to look in the directory name that we have specified. Once you click on "OK" the following screen will be displayed:
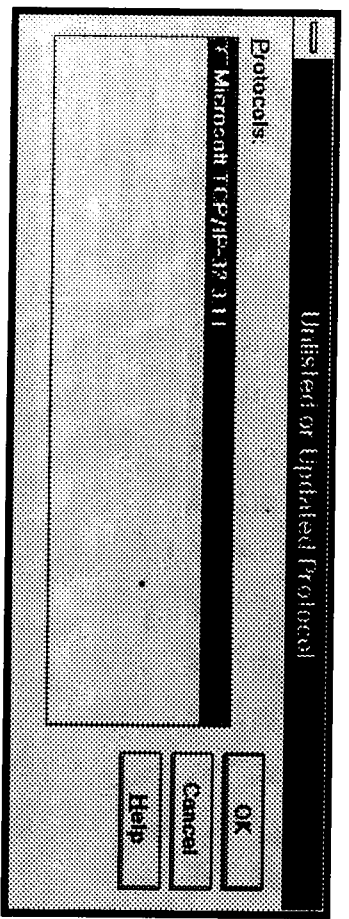

The installation software is telling us that it has found a protocol driver called "Microsoft TCP/IP-32 3.11" in the directory that we specified.

- As this is the protocol that we wish to use we simply click on the "OK" button.
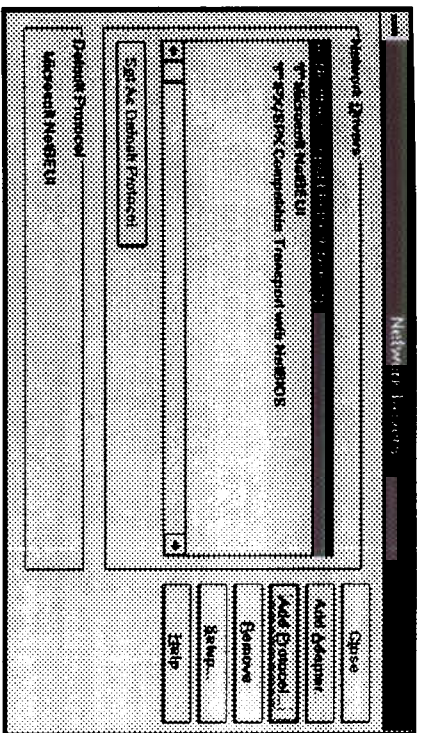
After a few seconds (depending on the speed of your computer) the Network Drivers screen will be displayed. As you can see from this screen, we have gained a protocol, namely the Microsoft TCP/IP protocol.

We must now configure the protocol so that it can work with our computer. To do this, highlight the Microsoft TCP/IP-32 3.11 line and click on the "Setup" button. This will display the following screen:
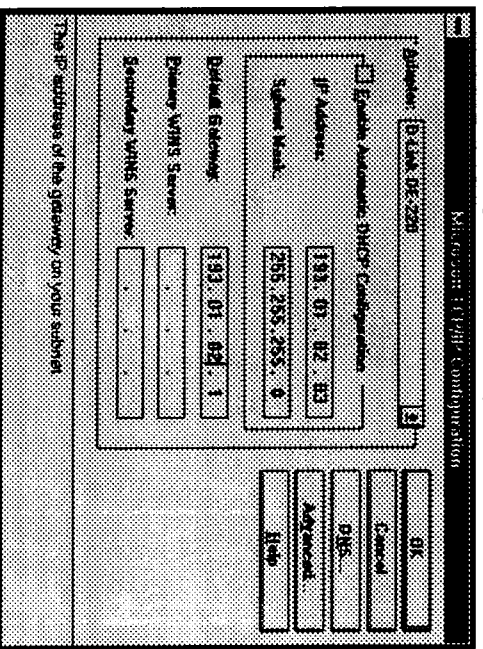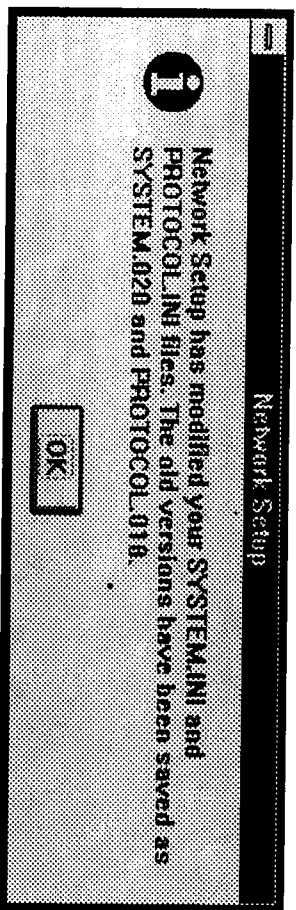

As we are using the TCP/IP protocol we must supply an IP address. The IP address must be unique to your computer. At this point we strongly recommend that you talk to your system administrator for a valid IP address. If you use an IP address that is already being used by another person on your network, you will cause problems for your network administrator.

Do not type in the IP address shown. The computer IP address 193.01.02.03 is there only for illustration purposes.

- If your Workgroups is not connected to any other IP System, use an IP address in the range 11.22.33.1 to 11.22.33.250 (not 11.22.33.441)

- Once you have obtained and entered a valid IP address, click on "OK".

- You will then go back to the Network Drivers screen. Click on the "Close" button which will take you back to the main Network Setup screen. Now click on the "OK" button to exit the Network Setup options.

As you have changed the way that Workgroups works, your computer must now modify some of its system files. This will happen automatically, however you will be warned that various files are being modified.


```
                    Network Setup

   [i]   Network Setup has modified your SYSTEM.INI and
         PROTOCOL.INI files. The old versions have been saved as
         SYSTEM.020 and PROTOCOL.018

                         [ OK ]
```

This screen tells us that the SYSTEM.INI, WIN.INI and PROTOCOL.INI files are all being modified. As Workgroups modifies the files it creates backup copies of all files that it changes. In this case a backup of the SYSTEM.INI file is created called SYSTEM.002; a backup of the WIN.INI files is created called WIN.001 and a backup of the PROTOCOL.INI file is created called PROTOCOL.002. If you encounter problems with the TCP/IP software then you can always put your system back to its original state by renaming the various backup files back to their original state.

Once Workgroups has finished telling you that files it is making backup copies of, you will have to re-boot your Workgroups software, this will happen automatically.

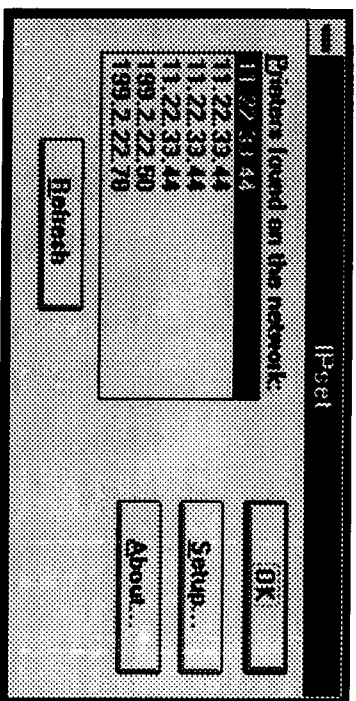- Click on "Restart Computer" and watch your PC re-boot Windows.

PART 3

All we have to do now is tell Workgroups that there are some printers out there to be serviced. The first step is to give the Printer an IP address. If your computer has an address 11.22.33.xx then you can use the IPSET utility, otherwise refer to the TCP/IP chapter for details of setting an IP address from a UNIX host etc. (ARP, PING).

IP Set Utility is located in the Control Panel program which is in the Main group.

- Double click on the "IP set" icon.

After a few seconds a screen similar to the one below will be displayed:


```
                    IP-set

   Printers found on the network
   11.22.33.44                          [ OK ]
   11.22.33.44
   11.22.33.44                        [ Setup... ]
   192.2.22.50
   199.2.22.78                         [ About... ]

        [ Refresh ]
```

This screen tells us that the IP set software has found some networked printers. As four interfaces have the same IP address, these have to be set up one at a time i.e. power up only one of them, configure, and power off. N.B. The units with 199.2.22.xx can only be configured by a computer with address 199.2.22.xx.

- To setup an IP address, highlight the current IP address, and click on 'setup....'.

- This displays the current IP address and a box to type in the new IP address. Then click OK.

Once you have finished registering your IP address click on the "OK" button. This will return you back to the Control Panel screen.

All we have to do now is configure our printer to use the IP address that we have setup on the Interface. To do this we will have to double click on the Printers Icon which you'll find in the Control Panel.

Workgroups Printing System works by redirecting LPT1, LPT2 or LPT3 to an IP address of a Printer. Therefore we have to tell Workgroups which LPT port is to be redirected to which IP address.

By clicking on the 'Connect' button the following screen will be displayed:
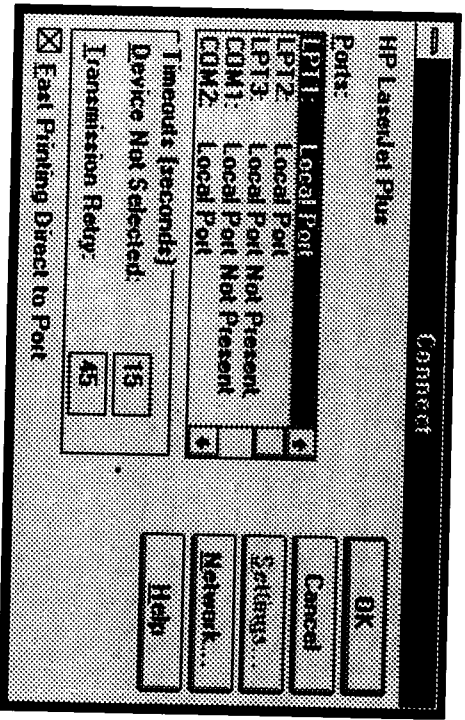
At the moment LPT1-3 are local ports. Select 'Network' button to set them up for IP address from the next screen, select the 'Other' and the TCP/IP printing system dialog box will be displayed.
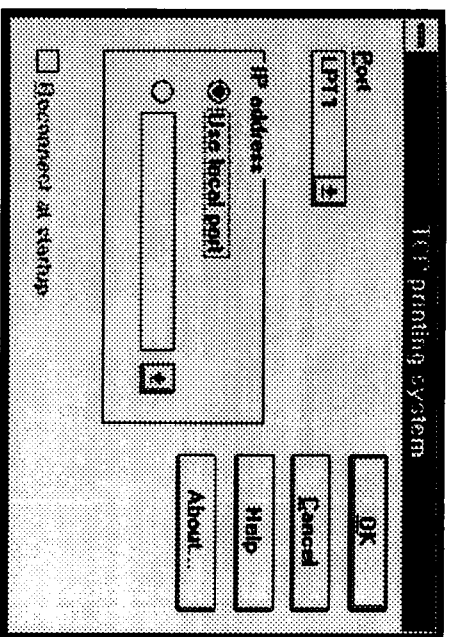
Select the LPT port you wish to redirect and then select 'IP address' to view a list of network printers. Highlight the IP address and click 'OK' until you are back to the 'Connect' screen. This now displays LPT2 and IP address as below:
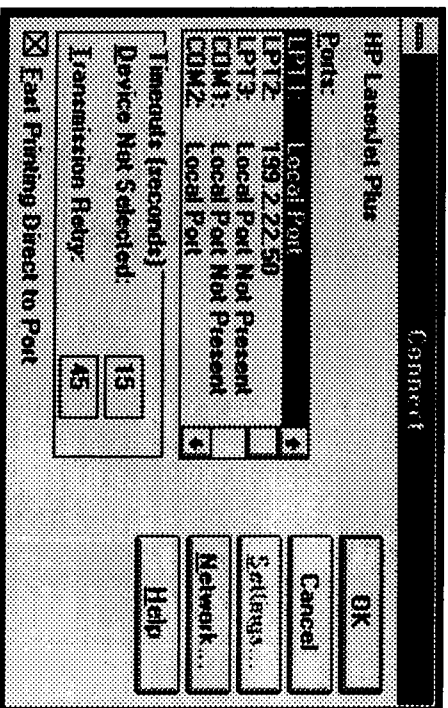
Your Workgroup System is now configured. Printing is in the normal way - select a driver, connect to LPT2 and the print will appear on the network printer.

FCC WARNING

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

NOTICE

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

ATTENTION

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la class A prescries dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.