

## Table of Contents

<b>Overview</b> .....	<b>B-1</b>
Key Features .....	B-1
New Features .....	B-1
<b>M205/M206 Configuration</b> .....	<b>B-2</b>
Using the Microplex Unix Host Software .....	B-2
Ezsetup Advantages .....	B-3
Configure IP Address Using ARP .....	B-4
Configure IP Address Using RARP .....	B-5
Configure IP Address Using BOOTP .....	B-6
Communicating Across Routers .....	B-7
<b>Host Configuration Overview</b> .....	<b>B-8</b>
<b>Direct Printing Without the Spooler</b> .....	<b>B-8</b>
npwrite .....	B-9
rsh/rcmd/remsh .....	B-9
<b>Printing Via the Spooler</b> .....	<b>B-10</b>
npr.if Interface Script .....	B-10
Custom Interface Scripts .....	B-11
Compiling Host Software .....	B-12
Modifying Your Script .....	B-12
Using npd and Your Own Script .....	B-13
<b>Manual System V Host Setup</b> .....	<b>B-13</b>
Setting up an Interface Script .....	B-14
<b>Manual LPR/LP Host Setup</b> .....	<b>B-16</b>
LPD Remote Printing .....	B-16
BSD Interface Script Printing .....	B-18
Setting up an Interface Script .....	B-18
HP OpenSpool Setup .....	B-20
Solaris 2.X LPR Setup .....	B-21
<b>Printing from AIX</b> .....	<b>B-22</b>
<b>Manual Printing with FTP's PC/TCP</b> .....	<b>B-23</b>
<b>Printing Using FTP Daemon</b> .....	<b>B-24</b>
<b>Direct Socket Printing</b> .....	<b>B-24</b>
<b>Device Printing - Microplex's NPD</b> .....	<b>B-25</b>
Finding NPD .....	B-26
Starting NPD .....	B-26
NPD Locks .....	B-26
Testing NPD .....	B-27
Modifying a Host to Use NPD .....	B-27
Stopping NPD .....	B-27
Applications Using NPD .....	B-28
Sun NeWSprint .....	B-28
Adobe TranScript .....	B-29

<b>Troubleshooting</b> .....	<b>B-30</b>
Communication Related .....	B-30
Cannot ping the M205/M206 .....	B-30
Cannot Telnet to the M205/M206 .....	B-31
Printing Related .....	B-31
Print Setup Complete but nothing Prints .....	B-31
Print Job Formatted Incorrectly .....	B-33
Data comes out Garbled .....	B-33

## Appendix B - More on Unix

### Overview

This file provides additional information for Unix environments. It should be used if you cannot find what you need in the M205/M206 Quick Reference Guide.

### Key Features

- M205/M206 manual configuration methods - See “M205/M206 Configuration” on page B-2
- Communicating between different subnets - See “Communicating Across Routers” on page B-7.
- a manually configured print setup under System V Unix - See “Manual System V Host Setup” on page B-13.
- a manually configured LPR/LPD under BSD Unix - See “Manual LPR/LP Host Setup” on page B-16.
- HP OpenSpool setup - See “HP OpenSpool Setup” on page B-20
- AIX print setups - See “Printing from AIX” on page B-22.
- How to use FTP to print - See “Manual Printing with FTP’s PC/TCP” on page B-23.
- Printing directly to TCP ports - See “Direct Socket Printing” on page B-24.
- Using Unix devices such as NPD to print - See “Device Printing - Microplex’s NPD” on page B-25.
- Troubleshooting your print server - See “Troubleshooting” on page B-30

### New Features

- New and improved Unix host software - See “M205/M206 Configuration” on page B-2
- Ezsetup replaces Npconfig as the tool to use for your unix configurations - see See “Ezsetup Advantages” on page B-3

## M205/M206 Configuration

As mentioned in the *M205/M206 Quick Installation and Configuration Guide*, there are mandatory TCP/IP settings (i.e. an IP address and subnet mask) needed before the print server can be detected on the network. There are also some additional settings that you may want to configure but these are optional.

The following sections offer different methods for configuring your M205/M206 within a Unix environment. Some of the more common optional settings available are discussed.

Alternative methods for configuring the M205/M206 include computer-aided configuration with the Microplex ezsetup utility or manual configuration with RARP, BOOTP or ARP. Once you have completed any one of these methods, you will notice the STAT LED flashing once per second. This means the M205/M206 is configured and organizable on the network. At this point, you can then configure a host for printing by continuing with the See “Host Configuration Overview” on page B-8. This will complete your entire print setup.

### Using the Microplex Unix Host Software

Microplex’s Unix host software, which comes with each Microplex product, has now been improved making it easier to use.

The Unix host software provided with Microplex products comes compressed and tarred using standard Unix utilities. The file is called “**npdist.tar.1.Z**” so once copied onto your Unix system, you will need to uncompress and untar it for use in a temporary directory.

Once undone, you will have a configuration script like “**ezsetup**” and a directory called “**npdist**”. The directory contains extra files such as processing binaries, source code, and interface scripts which are *not* always mandatory in a Microplex print setup.

**Prior to the latest version 5.7 software release**, Microplex products could be configured for TCP/IP environments using either “npconfig” or “ezsetup”, Microplex’s two configuration software programs written for several flavours of Unix. “npconfig” was for more detailed configurations and “ezsetup” was the program to run if you needed a simple, quick configuration of the print server or a print setup on your host.

With the version 5.7 release of the Unix host software, “*ezsetup*” is now *the only Unix installation program provided*. Therefore, to configure a print server with TCP/IP settings (i.e. IP address, subnet mask) and to configure a print setup on your Unix host, you just need to run “ezsetup” from your Unix command line once you’ve logged on as root or superuser. This method is described more fully in the Quick Reference Guide - See “M205/M206 Configuration” on page 30. The syntax to initiate Ezsetup is:

```
./ezsetup
```

**Note:** If you have HP/UX, you must run “ezsetup” like this to ensure the proper menus appear:

```
ksh ./ezsetup
```

You will be prompted about your type of Unix system and then a Main Menu will appear providing these choices:

1. **Configure New Unit**
2. **Configure Host Setup**

If you'd like to configure the Microplex print server with an IP address and subnet mask, select “1”. If you can already communicate with the print server over TCP/IP, then you can select “2” to create a print setup on this Unix host which can send print jobs to the print server. Simply follow the prompts until “ezsetup” tells you it has completed its steps.

### **Ezsetup Advantages**

The key advantages to this new “ezsetup” besides its ease of use are:

- It will work with all Microplex print server models including the M200/M201, M202/M212, M202Plus, M204, M205/M206, and M208. You do not need different versions of the software for each model.
- It will work with all firmware versions going back as early as version 4.0. You do not need to worry about firmware compatibility issues any longer.
- If doing a print setup on a System V Unix host, a very simplistic Microplex interface script, “rawsysv.if”, will now be used eliminating the need for any extra host binaries or compilation. This also holds true if you have a BSD-type Unix system but you want to use an interface script within the printcap file rather than the standard LPD (or “remote printer”) print method.

With the rest of the Unix host software (i.e. the files contained within the “npdist” directory), the only difference from earlier software versions is the interface scripts provided. If interface scripts are needed for a Unix print setup, the concentration is now on short, simplistic scripts which do not require any additional host binaries or compilation. The scripts simply capture the spooled data, send it to standard out, and then redirect this data over the network to the print server. Any extra processing like carriage return insertion can then be done on the print server.

**Note:** All other binaries and source code are the same as before.

### **Configure IP Address Using ARP**

To configure the M205/M206 with its TCP/IP settings using a manual “**arp**” command, you will need to:

1. Log on to a Unix station as superuser or root. This station must be located on the *same* subnet as the M205/M206 since ARP is limited to subnets.
2. Find the Ethernet address for the M205/M206 on the bottom of the device. It must be entered as part of this procedure.
3. Use the “**arp**” command to add an entry into the Unix station’s ARP table (*/etc/hosts*, **hosts nis** map, or **DNS name** tables) for this M205/M206. This is the most common syntax for this command:

```
arp -s ipaddress ethernetaddress
```

Example for Microsoft TCP stacks:

```
arp -s 192.75.11.9 00:80:72:07:00:60
```

This example specifies an M205/M206 using IP address **192.75.11.9** and Ethernet address **00:80:72:07:00:60**.

**Note:** if this syntax doesn’t apply, look in your host’s reference manual to find the proper syntax for the **arp** command.

4. Check to see if the ARP entry was set properly.

```
arp -a
```

You should see an entry in the listed ARP table with the IP address and Ethernet address specified in Step 3.

5. Try to “**ping**” this IP address to see if the M205/M206 can be seen on your network.

At this point, you should be able to communicate with the M205/M206 from your *local* Unix station. This means the print server knows about an IP address and subnet mask to abide by and has these settings in its *current* memory. However, if the M205/M206 is power cycled, these settings will disappear unless you store them into Flash. To do this, you will need to:

6. Start a Telnet session with the M205/M206. Type:  

```
telnet M205/M206IPaddress
```
7. Login to the M205/M206 through an **npsh** session as a root user.

**Note:** If prompted for a “User ID” and password first, type in “**root**” for the ID and press ENTER at the password prompt since there’s no password by default.

**Note:** The following WARNING message is normal at this point and may be ignored.

```
STORED AND CURRENT VALUES DIFFER
```

You should now see a prompt displayed that has the M205/M206's IP address followed by a colon, then root. For example:

```
IPaddress:root>
```

8. Store the new IP address and netmask in EEPROM so that the M205/M206 can remember its configuration after it re-boots. To do this, enter:

```
store tcpip ifnum addr ipaddress
```

```
store tcpip ifnum mask netmask
```

**Note:** *ifnum* is the index to a particular network interface. It will always be **1** for the M205/M206 since there is only one network interface.

**Note:** If you would like to communicate with the M205/M206 from across routers, you will need to fill in an entry within the "Routing" section. Please see *Communicating Across Routers* on page 7 for further details.

9. **[Optional, but recommended]** Configure root and guest user passwords with the following commands:

```
set user passwd root newRootPssswd
```

```
set user passwd guest newGuestPasswd
```

10. Save these configurations to EEPROM. Enter:

```
save
```

11. Verify the IP address and netmask. Enter:

```
list stored tcpip
```

12. Logout of the Telnet session with **quit**. Then reboot the M205/M206 by powering the unit off and on.

13. Test the equipment and configuration after the installation is complete. Enter "**ping IPaddress**" at the shell prompt.

### Configure IP Address Using RARP

RARP allows you to dynamically assign an IP address to the M205/M206 upon bootup. When a RARP-configured TCP/IP host boots, it broadcasts a RARP request for an IP address. Your network must have this daemon running on some host. If you do not know whether your network has one, please ask your system administrator for configure the M205/M206 with one of the other methods.

To configure the M205/M206 with its TCP/IP settings using RARP, you will need to:

1. On your RARP server, make an entry in the `/etc/ethers` file for the M205/M206.

Syntax:

```
ethernetaddress M205/M206IPaddress
```

Example:

```
00:80:72:07:00:60 192.75.11.9
```

2. Start the RARP daemon on the RARP server if it isn't running already. If it is running, send a HUP signal to it with the "`kill`" command:

Syntax:

```
kill -HUP pid
```

where *pid* is the process ID of the RARP daemon.

3. Power on the M205/M206 so that it immediately sends out a RARP request. Wait one minute to allow the address assignment process to complete. You should see the STAT LED on the front of the M205/M206 slow down indicating it knows about an IP address to use.
4. Try to "`ping`" the M205/M206's IP address from a local Unix station to see if it can be seen on your network.

**Note:** You will only be able to communicate with the M205/M206 from a network station on the *same* subnet as the print server. The M205/M206 needs to be told about a default router/gateway so any packets that come in from a different subnet can be returned via this gateway. Please see See "Communicating Across Routers" on page B-7 to set this up.

5. [Optional but recommended] Set up the user passwords. Please refer to See "Set Commands" on page G-6

If no response is given by the M205/M206, the RARP process probably failed. Re-boot the unit and try one of the other configuration methods.

### **Configure IP Address Using BOOTP**

BOOTP allows you to dynamically assign an IP address to the M205/M206 upon bootup. During the boot sequence, the print server can broadcast a BOOTP request. If a BOOTP server is running on the network configured to respond to the requesting device, it will provide the M205/M206 with it's IP address, netmask, default router, and a time server from which to query the current time (GMT) and the time zone in which the M205/M206 is located.



By default, the print server will broadcast a BOOTP request when it boots. The following command can be used to control this request:

```
store tcpip ifnum opts [[-]rarp] [[1]bootp]
```

1. On your BOOTP server, make an entry in the /etc/bootptab file for the M205/M206.

```
M205/M206IPname:\
:sm=netmask:\
:hd=homedirectory:\
:bf=null:\
:gw=defaultgateway:\
:ht=ethernet:\
:ha=ethernetaddress:\
:ip=ipaddress:\
:ts=timeserver:\
:to=timezone:
```

For example:

```
spike:\
:sm=255.255.255.0:\
:hd=/usr/null:\
:bf=null:\
:gw=192.75.11.1:\
:ht=ethernet:\
:ha=008072070060:\
:ip=192.75.11.9:\
:ts=192.75.11.7:\
:to=25200:
```

2. Turn the M205/M206 on so that it immediately sends out a BOOTP request. Wait one minute to allow the IP address assignment process to complete. You should see the STAT LED on the front of the M205/M206 slow down indicating it knows about an IP address to use.
3. Try to “ping” the M205/M206’s IP address from a network station to see if it can be seen on your network.

**Note:** You will be able to communicate with the M205/M206 from network stations on different subnets if the print server has been told about its default router/gateway in the BOOTP response from the BOOTP server.

### Communicating Across Routers

Since Unix environments rely on TCP/IP to communicate with the M205/M206, crossing routers becomes an issue.

After following one of the M205/M206 configuration methods mentioned within the Quick Reference Guide and within this file (besides the BOOTP method), you will most likely only be able to communicate with the print server from the *same* subnet. This means any hosts across a

router will *not* be able to see your M205/M206. For this to happen, it's best to store a default router/gateway within the print server so that any packets destined for another subnet get forwarded to this router automatically. The router (or series of routers) can then take over ensuring the packets get to their final destination on another subnet on your network.

To configure a default router/gateway within the M205/M206, you will need to:

1. Start a Telnet session with the M205/M206. Type:  
**telnet M205/M206IPaddress**
2. Login to the M205/M206 through an **npsh** session as a root user.

**Note:** If prompted for a "User ID" and password first, type in "root" for the ID and press ENTER at the password prompt since there's no password by default.

You should now see a prompt displayed that has the M205/M206's IP address followed by a colon, then root. For example:

```
IPaddress:root>
```

3. Store the default router/gateway address for the M205/M206 to forward remote packets to. Save it in EEPROM so that the M205/M206 can remember it after it re-boots. To do this, enter:  
**store tcpip route add default routerIPaddress ifnum**

**Note:** *ifnum* is the index to a particular network interface. It will always be **1** for the M205/M206 since there is only one network interface.

You can view the current routing entries (and all the other properties of the TCP stack) by entering:

```
list tcpip
```

## Host Configuration Overview

The M205/M206 Quick Reference Guide covers a Unix setup using Microplex's installation script, Ezsetup (See "Host Configuration" on page 32). However, there may be times when you'd prefer to or have to setup a new printer definition manually. There may also be times when you require a less common print solution such as direct socket capabilities. The following sections cover these additional setups.

## Direct Printing Without the Spooler

Before configuring the spooling system, test that basic communications are working with the M205/M206 and attached printers. Perform tests by sending print jobs directly to the M205/M206 and bypassing the spooler altogether. You can send print jobs directly to the M205/M206 with either **npwrite** or **rsh/rcmd/remsh**.

The **rsh/rcmd/remsh** program provides the same functions as the **npwrite** program except that the **rsh/rcmd/remsh** program exits with an error code when the network connection is down. **npwrite** continually tries until the job is completed. Remember this behavior when you are manually modifying your interface script because some spooler systems simply send a message about the error but the job gets flushed. The **npr.if** interface script gives you examples of how this behavior should be handled.

### **npwrite**

The data transfer program **npwrite** is provided with the host software shipped with the M205/M206. It sends data to the Print Server over a TCP connection. Data is read from a file or, if no file is specified, from standard input. The format of the data is not altered by this program so make sure it is in printer-ready format.

The syntax for **npwrite** is:

```
npwrite ipname portname [filenames]
```

where:

*ipname* M205/M206 IP name or IP address.

*portname* I/O port on the M205/M206 (i.e. **prn**).

*filenames* [optional]. Filename(s) to be printed. If no filename is specified, data is read from standard input.

```
npwrite 192.75.11.32 prn testfile.txt
```

For example:

```
cat testfile.txt | npwrite 192.75.11.32 prn
```

where **spike** and **192.75.11.32** are the M205/M206's IP name and IP address.

If the **npwrite** binary is not available for your UNIX machine, use **rsh/rcmd/remsh** instead.

### **rsh/rcmd/remsh**

The **rsh/rcmd/remsh** programs are remote command execution clients that talk to the **rshd** server in the M205/M206. **rsh**, **rcmd**, and **remsh** are actually the same programs but have different names on different UNIX systems; some systems may even have another name for remote command. Enter **man rshd** to display the on-line manual pages for information on the remote shell server for your version of UNIX.

The Print Server provides **lp**, **lpstat**, and **cancel** programs for print services through the **rshd** server. The **lp** command reads data from standard input and sends it to the specified port as follows:

- on SCO UNIX, either of the following:

```
rcmd spike lp -d dlprn < testfile.txt
```

```
cat testfile.txt | rcmd spike lp -d dlprn
```

- on Sun UNIX, either of the following:

```
rsh spike lp -d dlprn < testfile.txt
```

```
cat testfile.txt | rsh spike lp -d dlprn
```

where **spike** is the M205/M206's IP name and **dlprn** is the destination.

## Printing Via the Spooler

Once you know your communications are correct and you can successfully print directly to the Print Server, you can integrate the spooler.

Interface scripts play important roles in BSD spooling environments and especially with System V print spoolers. BSD systems also provide a remote printing method that utilizes the spooler but needs *no* script or host software at all.

The following sections elaborate on different spooling environments and provide the manual steps for full host configuration in various environments. In most cases, **ezsetup** can be used instead to simplify the setup process. Please see *Ezsetup Tips* on page 32 of the *Quick Reference and Installation Guide* for further details.

### npr.if Interface Script

The **npr.if** interface script provided works in most environments, but it can be replaced by a custom interface script if you have other requirements. It is usually a UNIX script which reads parameters from the command line, processes the job according to the parameters, and sends it to the destination.

Two interface scripts, **nprbsd.if** and **nprsysv.if**, are shipped in *raw* state. These interface scripts can be named anything you would like. Load the appropriate one for your system spooler type and use it in this state. The M205/M206 itself contains enough processing options, when they are turned on, to handle most processing needs *without* the need for host software. Some of these options include ASCII to PostScript conversion and carriage return insertion (see list below). Therefore, host software may be unnecessary and you can turn off all processing options on the host.

**a2ps**    ASCII to PostScript conversion

**onlcr** For carriage return insertion

**banner** For banner page generation

**chr** For echoing ASCII characters and strings to standard output

**npstramble** For print job scrambling (a form of security)

**npd** For bi-directional communications when printing

**npwrite** For direct socket printing

**chr** is the only mandatory binary when using one of the interface scripts for printing. The extra processing binaries (**a2ps**, **onlcr**, **banner**) can be configured for the host to perform or they can each be set on the M205/M206. See “Set Commands” on page G-6.

**Note:** To be used on a host, these binaries must be used in conjunction with an interface file. However, if you set these features using the M205/M206, you may only have to compile **chr** (See “**Compiling Host Software**” on page B-12).

**Note:** If you require high-speed printing, use one of the interface scripts with host processing turned on. This removes processing load from the Print Server and increases printing throughput.

**ezsetup** utilizes the appropriate interface script by renaming it to **nprprintername.if**, where *printername* is the name of the printer on the host. To install one of these scripts manually, please refer to the section that applies to your host: the Manual LPR/LP Host Setup section starting on page B-16 or the Manual System V Host Setup section starting on page B-13.

### Custom Interface Scripts

If an interface script is to be used for your print setup, you have three choices:

1. Use **npr.if** provided in the host software.
2. Use a pre-defined script for your particular printer.
3. Use a script you have created yourself.

The **npr.if** method is explained throughout this section. However, if you have a pre-defined printer script or a script of your own, there are certain modifications you must make in order for it to work with the M205/M206.

The important part of an interface script is where it sends the print job. With the M205/M206, the data must be captured and sent over the network for printing, since your printer is no longer locally attached. There are two possible ways to make this happen with your current script:

1. Encapsulate your script's code with brackets ( ) and after the closing bracket, add a command to send the data to the M205/M206 for printing.
2. Use **npd** as the print method.

### Compiling Host Software

Some compilation may be needed before adding print setups to your host unless you have SunOS 4.1.x, Solaris 2.x, or SCO Unix. Pre-compiled binaries are provided for these operating systems. As well, this version 5.7, we offer a very simplistic Microplex interface script, "rawsysv.if" that is designed for System V hosts. Using this script will eliminate the need for extra host binaries or compilation. This also holds true if you have a BSD-type Unix system but you want to use an interface script within the printcap file rather than the standard LPD (or "remote printer") print method.

### Modifying Your Script

If you choose to simply edit the script, you need to understand how an interface file works. The structure of any standard interface file should be as follows:

```
process options
(
generate printer setup characters
generate banner page data for each file
translate data to printer format
) | communication program
```

where *communication program* is the command executing **rsh/rcmd/remsh** or **npwrite** so the print job is redirected over the network to the M205/M206. For example:

```
(
FILE=$6
#the spool file is found in the sixth parameter on
System V
cat $FILE | onlcr
#filter the job
) | rcmd spike lp -d d1prn
```

where **spike** is the name of the M205/M206 and the print jobs are being sent to its destination **d1prn** by remotely executing the print server's **lp** print command.

Please see See "npwrite" on page B-9, See "rsh/rcmd/remsh" on page B-9, and See "lp options -d destname" on page G-22 for more details the command syntax.

**Note:** Even if you have a very simplistic script, it's important that you enclose your script with brackets and then add in a *communication program* at the end.

#### Using npd and Your Own Script

If **npd** is the print method you would like to use with your interface script, you need to start the **npd** daemon on your host and then incorporate it into your print setup. Please see See “Device Printing - Microplex’s NPD” on page B-25 to find out more about **npd** and how to get it started.

Once you have this daemon running, you can go ahead and work it into your printer configuration. For BSD systems, this requires an **lp=** field in your printcap entry along with the standard **if=** field for the name of your interface script. The **lp=** field is filled in with the name of the **npd device-file** used in **npd**'s start-up command. If you have a System V setup, the **-v** option in the **lpadmin** command will equal the **npd devicefile**.

#### Manual System V Host Setup

Version 5.7 includes a new interface script, “rawsysv.if” that is designed for System V hosts. Using this script will eliminate the need for extra host binaries or compilation

However, you may still do a manual setup for any Unix operating system utilizing System V print spooling (e.g. SCO, Solaris, HP/UX, DG/UX, etc.). This means an interface file is used for each defined printer and in the case of any System V print setup involving an M205/M206, the RSHD protocol is used to transfer data from the host to the print server.

Printing in a System V environment *requires* the use of an interface file. It also consists of:

- the **lp** printer interface program,
- the **lpsched** printing scheduler,
- a set of programs that act as interfaces between scheduler and printing device.

The scheduler copies the file into a spooling directory and calls the interface program when the job is ready to go to the M205/M206. It processes the job according to the script's settings and then sends it over to the Print Server for printing.

The interface script is usually kept in **/usr/spool/lp/admins/lp/interfaces** and carries the same name as the associated printer. It is copied there from the original interface file in **/usr/spool/lp/model** when the **lpadmin** command is executed.

The interface script is called with the following syntax:

```
ps203 reqid username title copies options file1...
```

where:

<b>ps203</b>	Name of the interface script which is also the printer name on the host.
<b>reqid</b>	Print job identification.
<b>username</b>	ID of the user requesting the job.
<b>title</b>	Title of the print job if desired.
<b>copies</b>	Number of copies of each file to be printed.
<b>options</b>	Additional switches for extra job processing options.
<b>file1</b>	Spool file.
<b>...</b>	Indicates additional spool files.

### Setting up an Interface Script

The following steps are the manual instructions for setting up your host with **npr.if**:

**Note:** The example commands provided represent a print setup involving a printer named **hp**, an M205/M206 named **spike**, and a printer attached to the Print Server's **prn** port.

1. Copy the **nprsysv.if** file from the host software medium to the model directory. Copy the file as **npr.if** or name it something more meaningful.

```
cp nprsysv.if /usr/spool/lp/model/npr.if
```

2. Edit the **npr.if** variables to match your system requirements. Look for the comment section beginning with "EDIT THESE VARIABLES" and at the end of this large comment block, you will find these:

**Note:** When defining these variables, remember that each is *case sensitive*. Please define them as seen in these descriptions. In addition, a further description of these variables is included in the large comment block before them.

**NPDIR\_PATH**(mandatory) Define the directory location of **chr**, **banner**, **onlcr**, **a2ps**, and **npsscramble** binaries. Usually **/usr/local/bin**. See "npr.if Interface Script" on page B-10 for more information.

**Note:** These binaries must be copied over from the host software medium.



**COMM\_PROG**(mandatory) Specify a communication program to transfer data to the M205/M206 (i.e. **npwrite**, **rsh**, **rcmd**, **remsh**). If the program is **npwrite**, define the **UNIT\_PORT** variable. Otherwise define the **LP\_DEST** variable.

**PRINTER\_TYPE**(mandatory) Specify printer type (i.e. **raw**, **ascii**, **ps**, **hp**, **pcl-ps**, **gen7170**).

**UNIT\_NAME**(mandatory) Define the M205/M206 IP name.

**UNIT\_PORT**(conditional) Specify the M205/M206 port name (i.e. **prn**) Use only when **COMM\_PROG** is defined as **npwrite**.

**LP\_DEST**(conditional) Specify M205/M206 destination name. Use only when **COMM\_PROG** is defined as **rsh**, **rcmd**, or **remsh**.

```
#END_MARK_1
NPDIR_PATH=/usr/local/bin
COMM_PROG=rcmd
UNIT_NAME=spike
LP_DEST=d1prn
PRINTER_TYPE=hp
BANNERPAGE=1
#START_MARK_1
```

**Note:** Additional variables can also be defined within this variable section as indicated by **BANNERPAGE=1**. Some other options are ASCII to PostScript conversion, carriage return insertion, and scrambling. By setting a particular variable to a 1, this option is then turned on and a 0 turns it off. These too are described further in the beginning of **npr.if**.

3. Create a dummy device file that acts as a locking mechanism between contending print jobs.

```
touch /dev/M205/M206name.portname
```

where *M205/M206name* is the host or IP name of the print server and *portname* is its I/O port. For example:

```
touch /dev/spike.prn
```

4. Change permissions on this file to “777”. For example:

```
chmod 777 /dev/spike.prn
```

5. Create this new printer on your Unix host using the “**lpadmin**” command.

```
/usr/lib/lpadmin -pprintername -mscriptname -  
vdummydevicefile
```

where *printername* is any name you'd like to give to this new printer, *scriptname* is the name of the interface file edited in the last few steps, and *dummydevicefile* is the file created earlier. For example:

```
/usr/lib/lpadmin -plaser -mrawsysv.if -v/dev/  
spike.prn
```

6. Start the scheduler by entering:

```
lpsched
```

7. Enable this new printer; for example:

```
/usr/bin/enable laser
```

8. Tell this new printer to accept print job requests. For example:

```
/usr/lib/accept laser
```

You now have a new printer which relies on RSHD and an interface script to print to an M205/M206 printer. Use the following command to test printing:

```
lp -dprintername filename
```

For example:

```
lp -dlaser /etc/hosts
```

## **Manual LPR/LP Host Setup**

The M205/M206 also supports Unix operating systems which follow a BSD print system (e.g. SunOS 4.1.x). This means a printcap file is used to define all printers available on the host and interface scripts are not commonly used. Instead, LPR/LPD printers are defined.

### **LPD Remote Printing**

The **lpd** daemon spools files locally, then sends them to an M205/M206 acting as a remote printer. As interface scripts cannot be used with this spooling method, processing must be done by the Print Server.

This method should be used in the following conditions:

- your UNIX host supports BSD 4.3 LPD protocol,
- no bi-directional communication is required between the printer and printing application,
- you want to avoid using special host software.

In BSD printing, two files are sent to the Print Server, a data file and a control file. The control file contains information about originating user and host. However, since the control file may not arrive before the data file in the current LPD standards, fully detailed banner pages cannot be guaranteed.

To manually configure an LPR/LPD printer on a BSD Unix system, you will need to add an entry to the `/etc/printcap` file and then create its associated files and directories.

1. Define an entry for this new printer within the `printcap` file, `/etc/printcap`.

```
printername:  
:sh:pw#80:mx#0:\  
:rm=M205/M206name:\  
:rp=M205/M206destination:\  
:lp:\  
:sd=/usr/spool/lpd/printername:\  
:lf=/usr/spool/lpd/printername/log:\  
:af=/usr/spool/lpd/printername/acct:
```

where *printername* is any name you'd like to give to this new printer, *M205/M206name* is the host or IP name of the print server, and *M205/M206destination* is one of the pre-defined destinations/queues on the device. For example:

```
laser:  
:sh:pw#80:mx#0:\  
:rm=spike:\  
:rp=d1prn1:\  
:lp:\  
:sd=/usr/spool/lpd/laser:\  
:lf=/usr/spool/lpd/laser/log:\  
:af=/usr/spool/lpd/laser/acct:
```

2. Create the spool directory specified by the “`sd=`” entry in the `printcap` entry for this printer. For example:

```
touch /usr/spool/lpd/laser
```

3. Create the log and account files specified by the “`lf=`” and “`af=`” entries in the `printcap` entry for this printer. For example:

```
touch /usr/spool/lpd/laser/log
```

```
touch /usr/spool/lpd/laser/acct
```

4. Change permissions and ownership on the spool directory and everything within it. For example:

```
chmod -R g+rwX,o+rX /usr/spool/lpd/laser
```

```
chmod -R daemon.daemon /usr/spool/lpd/laser
```

5. Start the printer daemon for this new printer. For example:

```
lpc start laser
```

You now have a new printer which relies on LPR/LPD to print to an M205/M206 printer. Use the following command to test printing:

```
lpr -Pprintername filename
```

For example:

```
lpr -Plaser /etc/hosts
```

### **BSD Interface Script Printing**

If you decide not to go with a remote printer setup, you can use an interface file instead. This interface script is specified in **/etc/printcap** with the **if=** entry instead of the **rm=** and **rp=** entries. The script is called by the **lpd** daemon with the following syntax:

```
nprbsd.if -width -llength -iindent -nlogin -hhost  
acct_file
```

where:

**nprbsd.if** Name of the interface script.  
**width** Width of page in characters.  
**length** Length of page in lines.  
**indent** Number of characters of indent from left margin.  
**login** Login name of person originating the print request.  
**host** Name of host where the print job originates.  
**acct\_file** File where accounting data is stored.

### **Setting up an Interface Script**

To manually set up your host with an interface file, you need to add an entry to the **/etc/printcap** file and then create and edit its associated files and directories.

Here is an example of what the printcap entry should look like followed by a description of the commands necessary to create these entries:

```
hp:\  
:sh:pw#80:mx#0\  
:lp=/dev/spike.prn:\  
:sd=/usr/spool/lpd/spike/prn:\  
:lf=/usr/spool/lpd/spike/prn/log:\  
:af=/usr/spool/lpd/spike/prn/acct:\  
:if=/usr/spool/lpd/spike/prn/npr.if:
```

where **hp** is the printer name sending jobs to the M205/M206 named **spike** through the interface file **npr.if**.

To create these entries, please do the following:

- 1 Create the printer's spooling directory and associated files.

```
cd /usr/spool/lpd
mkdir spike
mkdir spike/prn
touch spike/prn/log spike/prn/acct
chown -R daemon.daemon spike
chmod -R g+rwX,o+rX spike
```

- 2 Copy the **nprbsd.if** file from the host software medium to the spooling directory. Copy the file as **npr.if** or name it something more meaningful.

```
cp nprbsd.if /usr/spool/lpd/spike/prn/npr.if
cd /usr/spool/lpd/spike/prn
chown daemon.daemon npr.if
chmod g+rwX,o+rX npr.if
```

- 3 Edit the **npr.if** variables to suit your system environment. Look for the comment section beginning with "EDIT THESE VARIABLES" and at the end of this large comment block, you will find these:

**Note:** When defining these variables, remember that each is *case sensitive*. Please define them as seen in these descriptions. In addition, a further description of these variables is included in the large comment block before them.

**NPDIR\_PATH** (mandatory) Define the directory location of **chr**, **banner**, **onlcr**, **a2ps**, and **npsscramble** binaries. Usually **/usr/local/bin**.

**Note:** These binaries must be copied over from the host software medium. See "npr.if Interface Script" on page B-10 for more details.

**COMM\_PROG** (mandatory) Specify a communication program to transfer data to the M205/M206 (i.e. **npwrite**, **rsh**). If the program is **npwrite**, define the **UNIT\_PORT** variable. Otherwise, define the **LP\_DEST** variable.

**PRINTER\_TYPE** (mandatory) Specify printer type (i.e. **raw**, **ascii**, **ps**, **hp**, **pcl-ps**, **gen7170**).

**UNIT\_NAME** (mandatory) Define the M205/M206 IP name.

**UNIT\_PORT** (conditional) Specify the M205/M206 port name (i.e. **prn**) Use only when **COMM\_PROG** is defined as **npwrite**.

**LP\_DEST** (conditional) Specify M205/M206 destination name. Use only when **COMM\_PROG** is defined as **rsh**.

For example:

```
#END_MARK_1
NPDIR_PATH=/usr/local/bin
COMM_PROG=rsh
UNIT_NAME=spike
LP_DEST=d1prn
PRINTER_TYPE=hp
BANNERPAGE=1
#START_MARK_1
```

**Note:** Additional variables can also be defined within this variable section as indicated by **BANNERPAGE=1**. Some other options are ASCII to PostScript conversion, carriage return insertion, and scrambling. By setting a particular variable to a 1, this option is then turned on and a 0 turns it off. These too are described further in the beginning of **npr.if**.

- 4 Create the **lp=** device that is used as a locking mechanism for contending print jobs.

```
touch /dev/spike.prn
chmod go+rw /dev/spike.prn
```

- 5 Start the print spooler.

```
lpc start hp
```

- 6 Try printing with the following syntax:

```
lpr -Pprintername filename
```

## HP OpenSpool Setup

Hewlett-Packard's OpenSpool product is a powerful print spooler which can function with a Microplex Print Server. Unfortunately, Microplex's Unix setup tool, ezsetup, will not properly configure an OpenSpool environment. To configure OpenSpool to work with a Microplex Print Server, you must use HP's graphical interface tool - npux.

To configure OpenSpool to use a Microplex Print Server:

1. Select the following menu items from the npux menu:  
**Configuration/Update Configuration/Super Update**
2. This will pop up a menu window. Enter the appropriate printer type, and fill in the device name and comment fields as you wish. Under the **connection type** field, select: "np lpd out".

This will tell OpenSpool to treat the Microplex Print Server as a BSD remote printer - one of the many protocols which the Microplex Print Server understands.

3. Click on the “OK” button to complete this stage of the setup.
4. The npux tool you’ve just used will create a configuration file. It is now necessary to manually edit this file. The file name should be:  
`/usr/lib/openspool/sw-master/customer-sw/networkif/etc/<device name>`

Where <device name> is the name you entered in the “device name” field in the npux tool. Open this file for editing.

5. You will need to change two fields in the file. Change the Hostname line to refer to the ip name or ip address of the Microplex Print Server. For example:  
`hostname=192.168.200.100`

Change the Queue Name line to refer to the destination name of the destination you wish to print to on the Microplex Print Server. For example, for printing to the PRN port, the default destination name is d1prn.

See “Destinations” on page E-2 if you require an explanation of printer destinations.

You have now completed configuring OpenSpool to print to a Microplex Print Server. Should you need more information regarding OpenSpool, or other Hewlett-Packard OpenView tools, please refer to their web site at: <http://www.hp.com>

At the time of this writing, information regarding OpenSpool could be found at: <http://www.hp.com/openview/products/opnspe.html>

### **Solaris 2.X LPR Setup**

One can manually add an LPR setup for Solaris 2.X systems by executing the following command as root user.

```
lpsystem -t bsd ipname
lpadmin -p localqueue -s ipname!destination
accept localqueue
enable localqueue
```

For example:

```
lpsystem -t bsd np5353
lpadmin -p myqueue -s np5353!d1prn
accept myqueue
enable myqueue
```

## Printing from AIX

IBM has a unique print spooler system that uses the **qdaemon** program. Version 4.0 and higher of AIX offers LPR/LPD support for network printing. This means to set up a new printer under this operating system, you only need to define these two parameters:

- **M205/M206 IP address** - the IP address or host name of the print server you want to print to.
- **M205/M206 destination/queue** - a pre-defined name on the print server telling the device which I/O port to send the jobs to. You will most likely use “**d1prn**” for the PRN port.

Use the following steps to interface with the M205/M206 using **rsh**:

**Note:** These steps and associated examples refer to a setup with a queue named **queue2**, a queue device named **lp0**, printing to the destination **d1prn** on the M205/M206 named **spike**.

1. Create a device. Enter:  
`smit pdp`
2. Select **Printer/Plotter** and then **Add a Printer/Plotter**. Follow the prompts until SMIT executes the “**mkdev**” command to create this device.

Select these options:

interface	“parallel”
port number	p
adapter	ppa0
printer type	choose type that best matches what you are using
device	lp0

**Note:** If **lp0** device is not available, go back and select “Remove a Printer/Plotter” and remove **lp0** making it available for your next run through.

AIX has a limit of four physical devices. If you run out, IBM suggests deleting the device after completing a print setup thus making it available for future setups.

3. Create a new queue. Enter:  
`mkque -q queue2`
4. Create a queue device to do the one-to-one mapping with the printer and specify the back end program for the **qdaemon** to send print jobs to. Enter:  
`mkquedev -d lp0 -q queue2 -a `backend = /usr/lib/lpd/piobe``



**Note:** Sometimes `/usr/lpd/piobe` is the location of this back-end program.

5. Create a virtual printer. This associates the queue, queue device, printer/plotter name, data type, and printer/plotter type. Enter:  
`mkvirprt -q queue2 -d lp0 -n lp0 -s pcl -t hplj3`

**Note:** `-s` is usually `pcl` but can also be `ps` (**Postscript**) or `asc` (**ASCII**). This does not seem to affect the output on the printer so it may be best to use `pcl`.

6. Change the **pio-file** for your queue. This will be located in `/usr/lib/lpd/pio/custom` and will be called `queue2:lp0` after the queue and queue device names. Change the line beginning with `307 mo:.`. Enter:  
`307 mo::rsh spike lp -d d1prn`

**Note:** This file is only created after the `mkvirprt` command has been executed in Step 5. This step redirects the print job over the network to the M205/M206.

For destinations other than `d1prn`, please see *M205/M206 Naming Scheme* on page 49 of the *Quick Reference and Installation Guide*.

7. Run `chvirprt` since the print setup has been altered and needs updating. Enter:  
`chvirprt -q queue2 -d lp0`

**Note:** If you need to delete an entire print setup, use the `rmvirprt` command.

This is the `/etc/qconfig` entry created for this particular setup:

```
queue2:                                queue stanza
  device = lp0                          by mkquedev (queue
                                         device)
  up = TRUE                              printer's ready to go
lp0:                                     queue device stanza
  backend = /usr/lib/lpd/piobe           for local printing
```

For further information on these commands, please see your AIX system documentation.

### **Manual Printing with FTP's PC/TCP**

FTP Software markets a package called **PC/TCP** which provides an `lpr` client for DOS that is compatible with the M205/M206.

Jobs can be sent to the M205/M206 directly with the following command syntax after an entry has been made for the Print Server in the host table:

```
lpr -Sipname -Pdestname
```

where *ipname* is the M205/M206's IP name or IP address and *destname* is the name of an M205/M206 destination. For example:

```
lpr -Sspike -Pd1prn
```

This command sends a print job to **d1prn** on the M205/M206 named **spike**.

**Note:** FTP's package also provides Windows printing along with several other software packages on the market.

### Printing Using FTP Daemon

The following example shows how to print a file using FTP. For additional information about using the FTP Daemon.

1. Change to the local directory where the file to print resides.
2. Login to the M205/M206 using **ftp**.  
**ftp *ipname***
3. Login as **guest**, **root**, or **anonymous**.

**Note:** **Guest** and **root** users require the use of passwords as configured in the unit's user list. **Anonymous** is a special login that does not require a password.

4. Change to the **/dest** directory that you want to print to.  
**cd *dest/destinationname***
5. List the contents of this directory using the "**dir**" command and determine which destination/queue you'd like to send the print job through. Most likely you will select "**d1prn**" for the PRN port.
6. Change to this destination directory. For example:  
**cd *d1prn***
7. Change the mode to correspond to the type of file to be printed. Choose binary mode if the file to be printed contains both text and graphics and ASCII mode if the file is text only. The default mode is always ASCII.  
**bin**
8. Copy the file you want to print to this directory.  
**put *filename***  
  
The file is spooled and printed.
9. Logout of the FTP session.  
**quit**

### Direct Socket Printing

Within TCP/IP environments, there are some setups which require the host to print directly to a TCP port number on the M205/M206 bypassing all of the higher level destination/queue names. If you run into a setup which requires this, you will need to define two parameters for a new print setup:

1. **M205/M206 IP address** - the IP address or host name of the print server you want to print to.

2. **M205/M206 TCP port number** - a pre-defined number (**4400**) for the I/O port on the print server.

Though the host will be sending directly to the TCP port number on the M205/M206, the port number is still mapped to destinations/queues in case there is some type of special processing or logging to be done to the job. However, the destination name doesn't come into play within this type of printer definition. Just the two parameters mentioned above need to be defined for printing to work.

**npwrite** is a sample program that performs in this way. It is included in the host software shipped with your M205/M206.

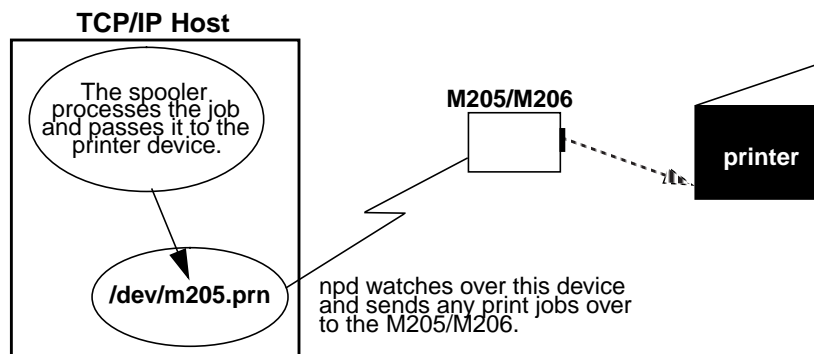
### Device Printing - Microplex's NPD

When printing from Unix, there is sometimes a need to send data directly to a device on the Unix station. The M205/M206 will work with these print setups as well using proprietary software called "NPD".

NPD is a pseudo-tty daemon that continuously runs on the Unix station watching over a pre-defined device. It is used when bi-directional communications is required between the printer and printing application and when changes to the printer's interface script are undesirable. Anytime data goes to this device, NPD grabs it and passes it over the network to the M205/M206 for printing.

Some applications like Sun NeWSprint and Adobe TranScript work best with a bi-directional communications channel to the printer because they can provide more details on the printer status. For example, PostScript printers can send error messages back to the application as they occur. **npd** is used in this case making use of the TCP protocol and pseudo-tty device drivers.

Figure 1: npd Overview



#### Finding NPD

NPD comes on the Microplex diskette labeled “Unix Host Software”. By default, binaries are provided for SunOS 4.1.x and for System V derivatives like Solaris and SCO. These can be found within the **npdist/bin** path. Source code and a makefile for compilation are also provided within **npdist/hostsrc**.

#### Starting NPD

Starting the NPD daemon is all that is needed to utilize NPD. The syntax is:

```
npd devicefile M205/M206name portname
```

where *devicefile* is the name of a pseudo-tty’s slave device acquired by NPD, *M205/M206name* is the host or IP name of the print server, and *portname* is prn.

**Note:** The file specified by *devicefile* cannot already exist on your Unix station or NPD will fail to start. For example:

```
npd /dev/spike.prn spike prn
```

Starts an NPD daemon to watch over the device file, **/dev/spike.prn**, looking for data to send to the **PRN** port off of the M205/M206 named **spike**.

By default, npd looks in the /dev directory to find a free pseudo-tty pair (for example, /dev/pty?? and /dev/tty?? files). However, if your UNIX system has these files in a different directory, you can specify the directory pathname with a **-p** option. For example:

```
npd -p /dev/pty /dev/spike.prn spike prn
```

where **/dev/pty** is the directory to be searched for a free pseudo-tty pair.

Some systems such as HP-UX place the master and slave devices in separate directories (e.g. **/dev/ptym** and **/dev/pty**). Specify where each of the pairs reside with the **-pm** and **-ps** options. For example:

```
npd -pm /dev/ptym -ps /dev/pty /dev/spike.prn spike  
prn
```

where **/dev/ptym** is the directory searched to find a free pseudo-tty pair’s master device and **/dev/pty** is the directory used for locating the pseudo-tty pair slave device.

#### NPD Locks

As **npd** acquires an exclusive lock on the M205/M206 port, it is possible to lock out other daemons that may reside on other UNIX hosts. Therefore, **npd** is designed to time-out and release the lock if the pseudo-tty pair is idle for a specified time (30 seconds is the default). You can modify this value with the **-t** option. For example:

```
npd -t 60 /dev/spike.prn spike prn
```

This sets the time-out to occur in **60** seconds.

### Testing NPD

Once NPD has been started, it's a good idea to test and see if it is working properly. The best test method is to send data directly to the device once you know the printer attached to the M205/M206 is ready to go.

```
cat filename > devicefile
```

For example:

```
cat /etc/hosts > /dev/spike.prn
```

This redirects the **cat** output of **/etc/hosts** to the **npd** device **/dev/spike.prn** which is then sent to the M205/M206 named **spike**.

### Modifying a Host to Use NPD

If you want the **npd** daemon to start every time you reboot your UNIX machine, edit your **.rc** file to include the appropriate **npd** start-up command line (from the previous section). After **npd** starts, integrate the print spooler into this pseudo-ty setup.

In BSD print spooler systems, modify the **lp=** field in the appropriate printer entry in the **/etc/printcap** file. Set **lp=** to the *devicefile* argument of the **npd** program.

On System V systems, the **-v** option in the **lpadmin** command will equal the *devicefile*.

### Stopping NPD

Whenever an NPD daemon starts, it makes a log entry in the **/usr/adm/npdlog** file. The contents of this file are:

```
pid M205/M206name portname masterfile slave-  
file devicefile
```

where:

<i>pid</i>	Process ID of the NPD daemon.
<i>M205/M206name</i>	Host or IP name of the M205/M206.
<i>portname</i>	One of the four I/O ports on the print server.
<i>masterfile</i>	Master device used by NPD.
<i>slavefile</i>	Slave device used by NPD.
<i>devicefile</i>	Name linked to <i>slavefile</i> by NPD.

By acquiring the process ID of the NPD daemon, you can kill the process using this command syntax:

```
kill -TERM pid
```

For example:

```
kill -TERM 153
```

## Applications Using NPD

### Sun NeWSprint

Sun NeWSprint page accounting works with PostScript printers.

If the printer is attached to one of the parallel ports, no page information comes back from the printer. This causes Sun NeWSprint to assume a communication problem and disable the queue. To avoid this, remove the **af=** field in the **/etc/printcap** entry and set the **HANDLER\_INTERFACE** variable to **PARALLEL** in the **.param** file located in the printer's spooling directory.

Add a new Sun NeWSprint printer entry with the **add\_np\_printer** program. The pseudo-tty device is a serial interface. Therefore, when this program prompts you for a device interface, select **Serial** and device suffix **a** for *any* port on the unit.

After NeWSprint creates the necessary spooling directory and entry in the **/etc/printcap** file, set the **lp=** field in the new entry to the **devicefile** argument of the **npd** program.

For example, the modified **/etc/printcap** entry looks like this for a PostScript printer named **ps** attached to **prn** on the M205/M206 named **spike**:

```
# entry for a PostScript printer on the parallel
port
ps|PostScript|PostScript on spike's prn port:\
:lp=/dev/spike.prn:\
:sd=/b/newsprint/lpd/spike/prn:\
:lf=/b/newsprint/lpd/spike/prn/log:\
:af=/b/newsprint/lpd/spike/prn/acct:\
:if=/b/newsprint/lpd/if:\
:gf=/b/newsprint/lpd/gf:\
:nf=/b/newsprint/lpd/nf:\
:tf=/b/newsprint/lpd/tf:\
:rf=/b/newsprint/lpd/rf:\
:vf=/b/newsprint/lpd/vf:\
:cf=/b/newsprint/lpd/cf:\
:df=/b/newsprint/lpd/df:\
:of=/b/newsprint/lpd/of:\
:mx#0:\
```

```
:sf:\
:sb:\
:br#19200:\
:xc#0177777:\
:ms=-parity,ixon,-opost,-ixany:
```

**Note:** If you are using a PostScript printer, remember to include **:sh:\** in this entry to suppress the standard LPD header.

#### **Adobe TranScript**

Adobe TranScript page accounting works with PostScript printers.

If the printer is attached to one of the parallel ports, no page information comes back from the printer. This causes Adobe TranScript's **pscomm** to assume a communication problem and disable the queue. To avoid this, replace the **pscomm** program with Microplex's equivalent **npcomm.sh** program in the **.options** file which redirects the data to the M205/M206. **npcomm.sh** is found in the host software.

Create and edit this **.options** file in the printer's spooling directory with global *read* permissions. This setup uses **rsh/rcmd/remsh** or **npwrite** to talk to the unit.

Add the following variable definitions in this **.options** file:

**NPDIR\_PATH** Define the directory location of **npcomm.sh** program. Usually **/usr/local/bin**.

**PSCOMM** Redefine the communication program used by **psint.sh** to use **npcomm.sh** instead of **pscomm**.

**RCMD** Specify the name of the remote shell command to use for transferring data to the M205/M206 (i.e. **rsh**).

**UNIT\_NAME** Define the M205/M206 IP name or IP address.

**LP\_DEST** Specify the M205/M206 destination name.

Use the **mkprinter.sh** program to add a new Adobe TranScript printer entry. For now, use **/dev/ttypA** as the device interface for any port on the M205/M206. When the program creates the spooling directory and entry in **/etc/printcap** file, set the **lp=** field to the **devicefile** argument from **npd**.

For example, for a PostScript printer named **ps** attached to **prn** on the M205/M206 named **spike**:

```
ps|PostScript|PostScript on spike's parallel port:\
:lp=/dev/spike.prn:\
:sd=/usr/spool/lpd/spike/prn:\
:lf=/usr/adm/printers/ps-log:\
:af=/usr/adm/printers/ps-acct:\
:br#19200:rw:fc#0000374:fs#0000003:\
```

```
:xc#0:xs#0040040:mx#0:sf:sb:\
:if=/usr/local/lib/ts/psif:\
:of=/usr/local/lib/ts/psof:\
:gf=/usr/local/lib/ts/psgf:\
:nf=/usr/local/lib/ts/psnf:\
:tf=/usr/local/lib/ts/pstf:\
:rf=/usr/local/lib/ts/psrf:\
:vf=/usr/local/lib/ts/psvf:\
:cf=/usr/local/lib/ts/pscf:\
:df=/usr/local/lib/ts/psdf:
```

**Note:** Using **:sh:\** in this entry will suppress headers and also prevent TranScript from printing out banner pages if they are set in the **.options** file.

## Troubleshooting    Communication Related

### Cannot ping the M205/M206

There are a number of possible reasons for this:

- Have you rebooted the Print Server? Sometimes something this simple will solve various communication problems.
- Is the network connector fastened on tightly to the Print Server?
- Have you checked your network connection to the M205/M206? Try it at a new location on your network if possible or swap in another device.
- Have you made an entry in your host table (**/etc/hosts**, **host nis** map, or DNS name table) for the M205/M206?
- Have you tried to **ping** with the IP address instead of the IP name? This will eliminate any name-lookup issues and focus more on the communications between the M205/M206 and your host.
- Is it possible that a duplicate IP address has been assigned?
- Did you use the correct netmask for your particular environment?
- Has the M205/M206 been moved from another network? If so, it needs to be reconfigured to integrate with its new location. This includes a new IP address and netmask at the minimum. Please see *Back to Factory Defaults* on page 55 of the manual. See “M205/M206 Configuration” on page B-2 See “M205/M206 Configuration” on page 30 of the manual or for possible configuration methods.



- Is there a router between the M205/M206 and your host? If so, a default router or a static route must be configured on the unit so the Print Server knows how to get its response back to the originating host. Please see See “Store Commands” on page G-16.
- Have you set any hosts or networks in the M205/M206’s TCP access list? If so, only these entries can access the unit. Please see See “list [default|stored] tcpip” on page G-5 to view current entries.
- Do you have a RARP or BOOTP server running on your network? By default, the M205/M206 comes with the RARP and BOOTP request turned *on* so although you may have stored a particular network configuration in the units EEPROM, a RARP or BOOTP server may supply new *network* parameters upon bootup. To turn off RARP and BOOTP on the unit, please see See “list [default|stored] tcpip” on page G-5.

If none of these help, try the following:

- Reset the unit to default settings. Please see *Back to Factory Defaults* on page 55 of the manual. Once the unit is in the default state, use one of the configuration options listed in See “M205/M206 Configuration” on page B-2 or See “M205/M206 Configuration” on page 30 of the manual to reconfigure it.

#### **Cannot Telnet to the M205/M206**

If you are unable to **ping** the Print Server as well, please see See “Communication Related” on page B-30. If it is **telnet** only that you are having problems with, these points should be considered:

- Are you able to **telnet** to another host on your network or **telnet** from another host? If not, look into your host’s TELNET configuration.
- Have you tried rebooting the M205/M206?
- Does the fourth octet of the M205/M206’s given IP address equal 0 or 255? Each of the four octets in the IP address should be between 1 and 254.

#### **Printing Related**

##### **Print Setup Complete but nothing Prints**

This can be the most frustrating problem since you’ve gone through the configuration process and suddenly you don’t know what’s happening - “it’s supposed to work now.” Here are some things to check over:

- Are you able to communicate with the M205/M206? If you are having communication problems, please see See “Communication Related” on page B-30.
- Is the printer on-line and in the correct mode for the file being sent to it?
- Is the printer spooler up and running on the host?
- Have you confirmed communications between the M205/M206 and the printer? This can easily be done with the ASCII output tests provided on the unit. Please see See “start fox|tts|loopb prn” on page G-23 for information on these various tests. If you are not successful with these, look at flow control, I/O port settings, or possibly the cable.
- Is anything happening on the printer when the print job is sent? Sometimes, the print job may have gotten to the printer but just may need a manual form-feed. If this is the case, please see See “set model model trailer trailerstring” on page G-10 for information on trailer strings.
- Is the print job data even getting to the M205/M206? Once you’ve sent the job from the host, try continuous **lpstat** commands on the Print Server. You should see the byte count for that particular port incrementing as the job passes through. If you are not seeing this happen, you may need to try a larger job or else consider some of the other suggestions in this section.
- If you’re using **npr.if** to print, are the host binaries installed on your system in a general directory such as **/usr/local/bin**? Please see See “Printing Via the Spooler” on page B-10 for more on interface file printing.
- Are there any error messages in your e-mail, a log file, or other standard error files on your particular host? These messages can be very helpful in narrowing down the problem.
- Are all permissions correct on relative directories and files? Usually the error message files will indicate permission problems but it’s still something to confirm.
- Might the destination or I/O port on the M205/M206 be disabled? Please see See “Debug Commands” on page G-3.

If you are not able to print successfully yet, try the following:

Avoid the print spooler altogether by printing directly to the M205/M206 from your host. If you are successful, go over your host’s print setup. For example:

```
cat test.txt | rsh spike lp -d d1prn
```

sends **test.txt** to the M205/M206 named **spike** to be remotely printed on the printer attached to **d1prn**. The print spooler is not used at all.

**Note:** **npwrite** can also be used to send print jobs without spooler intervention. Please see See “Direct Printing Without the Spooler” on page B-8.

#### **Print Job Formatted Incorrectly**

In a TCP/IP environment, this generally happens if no carriage return insertion has been incorporated into the printing process. The M205/M206 can handle this task or it can be set on the host system with the use of **onlcr**. To set this feature on the Print Server, please see See “Set Commands” on page G-6. For the host, a variable, **ONLCR\_YN**, in the provided interface file, **nprbsd.if** or **nprsysv.if**, must be set to 1. Please see See “Printing Via the Spooler” on page B-10.

#### **Data comes out Garbled**

This tends to happen when PCs are used with a TCP/IP software package and they are printing to a Unix system or directly to the M205/M206 where **onlcr** is turned on. DOS jobs have difficulty with this carriage return insertion and will therefore, print out incorrectly. To solve, make sure **onlcr** is turned off in the model associated with the destination that you are printing to and it is not set in the interface script if one is used somewhere in the print path.

**Note:** Any printing from PCs should have a “raw” setup.

Some other things to consider when garbled data persists are:

- tab expansion (**xTAB**) set on with graphic jobs,
- cable used between the M205/M206 and the printer,
- type of flow control being used on the M205/M206 and a printer.

If you cannot eliminate the garbling, you may want to try printing *without* the Print Server to see if the problem persists.