M205/M206 Print Server Quick Installation and Configuration Guide

Manual Version 5.6.1

For firmware versions up to and including 5.6.5

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Master Table of Contents

The *Table of Contents* includes listings for both the *M205/ M206 Print Server Quick Installation and Configuration Guide* as well as the Appendices. The appendices are included on a disk included with your M205/M206. The files are called:

windows.pdf	Appendix A
unix.pdf	Appendix B
novell.pdf	Appendix C
apple.pdf	Appendix D
extra.pdf	Appendix E
specs.pdf	Appendix F
command.pdf	Appendis G

MANUAL OVERVIEW

This manual describes the installation and configuration of an M205/M206 on your network. It describes a *basic setup* for each supported network environment. For more detailed information about configuration and management, please see the Portable Document Format (PDF) files available on disks supplied with the M205/M206 or from the Technical Support section of Microplex's Web site, "**http://www.microplex.com/**".

PDF File Index

Table 1 lists the PDF files that are available on the disk included with your unit. *Please refer to these documents if you can't find what you're looking for in this manual*.

Table 1: Microplex PDF Files

Filename	Description
windows.pdf	Appendix A - Print setups for Windows environments.
unix.pdf	Appendix B - Step-by-step *manual configuration* instructions for Unix environments.
novell.pdf	Appendix C - RPRINTER configuration and other Novell information.
apple.pdf	Appendix D - Additional configuration for AppleTalk environments.
extra.pdf	Appendix E - Details about the M205/M206's additional features such as printer logging.

Table 1: Microplex PDF Files

Filename	Description
specs.pdf	Appendix F - Additional specifications for the M205/M206 hardware.
command.pdf	Appendix G - In depth look at the M205/M206's internal command shell. (for commonly used commands, see *Common npsh Commands* on page 52.)

Documentation Conventions

Command syntax and examples are formatted as follows:

- The Courier font in **boldface** indicates commands that you type.

      $ **ping ftp.microplex.com**

- Regular Courier font indicates displayed results.

      ftp.microplex.com is alive

- Example names and numbers described in text are **bold**.

      sends data to the M205/M206 named **spike**...

      The **model** directory...

- Variable values are shown in *italics* both in command syntax, output, and in text. *Italics* also add emphasis.

      ping *ipname*

      ipname is alive

      Please enter the ***ipname*** at the prompt.

      Make sure you *first* contact...

M205/M206 INTRODUCTION

Overview

The purpose of this chapter is to acquaint you with the M205/M206's architecture and special features.

What is the M205/M206?

The M205/M206 Print Server allows you to locate your printer anywhere on the LAN rather than attaching it directly to a host system. After following some simple configuration steps, the printer can be *simultaneously* shared with users on Unix (TCP/IP), Windows (NetBIOS over TCP/IP), Novel (IPX), or AppleTalk (EtherTalk) networks. Multiple users and multiple protocols are supported simultaneously.

Note: The M205/M206 is compatible with most printers with a Centronics parallel interface.

The M205/M206's key physical components are:

*   a network interface connector to connect to the network,

*   one parallel port,

*   Flash memory to store firmware and user-configurable settings,

*   RAM.

How Does the M205/M206 Work?

Print Path

The **print path** is the path data takes when the host sends a job to a printer through the M205/M206. This print path can be divided into the three components (refer to *Figure 1*).

Figure 1: Print Path Components
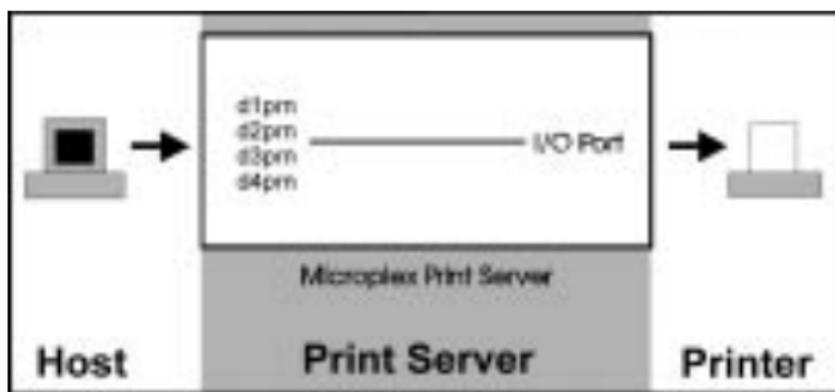
Host	The host sends the job to a pre-defined **destination** (e.g. d1prn) on the print server, not directly to an I/O port. The destination is one of four available on the device.
Print Server	The job passes through the destination's associated **model** (e.g. m1) for optional processing and then continues through the destination's associated **logpath** (e.g. l1) where logging information is recorded. The data then ends up at the destination's associated **I/O port**, prn.
Printer	The data passes from the print server's I/O port to the attached printer for output.

There are four destinations on the M205/M206, each with its associated model and logpath. The **model** determines if any extra data processing (e.g. ASCII to PostScript conversion) needs to be done and the **logpath** determines whether

job logging or printer errors (e.g. user ID) needs to be reported. A model or logpath can be associated with more than one destination.

Product Features

The M205/M206 offers an extensive list of features including:

- IPAssign utility for automated TCP/IP configurations in a Windows environment (disk labelled "setup");

- Ezsetup utility for automated Unix print configurations;

- MPS utility for error-free printing in Windows 95 and Windows NT environments;

- a detailed and easy-to-use command shell, "npsh";

- multi-level configuration security through passwords, permission levels, and access lists;

- numerous printer logging methods (e.g. automatic e-mail) to record printer errors and usage;

- remote management through Telnet sessions, "**rsh/ rcmd/remsh**" commands, SNMP, and pre-defined log methods;

- extensive built-in troubleshooting tools;

- built-in "**telnet**" and "**ping**" clients;

- configurable memory usage by disabling protocols and destination services;

- multiple destinations for versatile printer manipulation and distinct print setups;

- header and trailer strings to instruct printers on tray selection, font, pitch, simplex/duplex, etc.;

- autosensing of job format for ASCII to PostScript conversion or to automatically switch printer emulations;

- flexible naming conventions;

- free Flash upgrades over TCP/IP networks;

- multiple speeds on the parallel port for additional printer compatibility;

- simultaneous printing on all supported protocols.

M205/M206 INSTALLATION

Overview

This chapter discusses the preparation and installation steps necessary to use the M205/M206 on your network.

Unpacking the M205/M206

Upon receiving the M205/M206, check the packaging for any damaged or missing pieces (refer to Table 2, "M205/M206 Packing List," on page 7. Immediately report problems to the shipping company or vendor. If everything is in order, fill out the **Warranty Registration** card:

Contact Options
☐ Fill out the Warranty Registration Card included with your product and mail it to Microplex.
☐ Fax the card to Microplex at +1 604 444-4239.
☐ Fill out an on-line version on our Web site at: "http://www.microplex.com/".

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Table 2: M205/M206 Packing List

Print Server	• M205/M206 • Power Supply
Documentation	• Quick Reference and Installation Guide • Disk with PDF files

Table 2: M205/M206 Packing List

Software	• Three installation disks which contain:
	
	  • **IPAssign** - TCP/IP configuration tool
	
	  • **MPS** - Alternate printing solution for Windows 95 and Windows NT environments
	
	  • Unix host files

Packaging	• Shipping Box • Cardboard Insert

Attaching to the Network

Site Requirements

Prepare to install the M205/M206 in a clean, well-ventilated environment protected from extremes of temperature, humidity, mechanical shock, or vibration. Provide enough space at the rear of the unit for Ethernet cable connections.

Prepare to install the M205/M206 within four meters (13 feet) of a grounded 115 or 220 VAC outlet. Power is supplied to the M205/M206 from an external transformer through a two-meter (six-foot) output cord to a 6 position mini din. The external transformer connects through a two-meter (six-foot) line cord to a 3-prong 115 or 220 VAC outlet.

Network Connections

The M205 and M206 are identical except for their network connections. The M205 provides a 10Base-T RJ45 (UTP) connector and the M206 provides a 10Base-2 BNC (Thin Ethernet) connector. Refer to *Figures 2 through 4*.

Note: The front view of both models is identical.

Figure 2: M205/M206 Common Front View
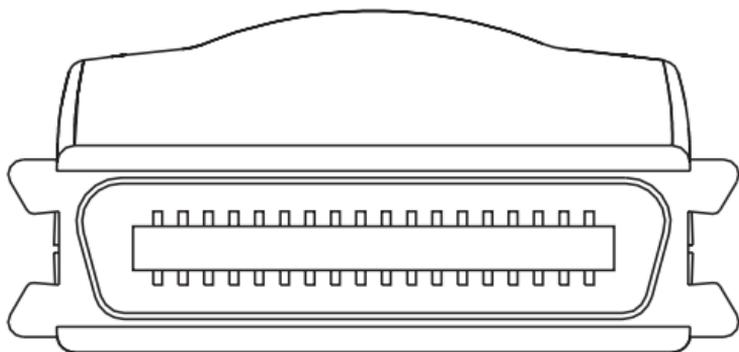
Figure 3: M205 Rear View - UTP Only
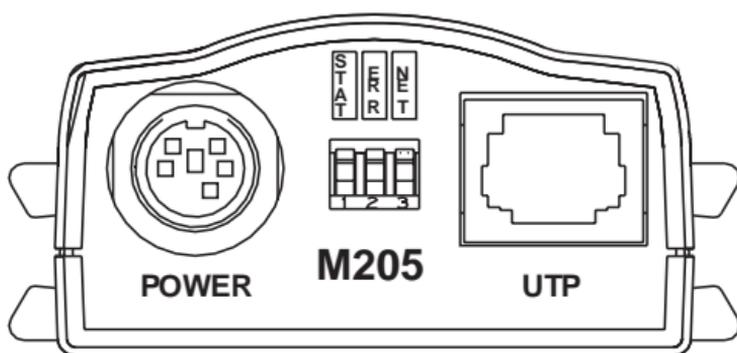
Figure 4: M206 Rear View - BNC (Thin Ethernet)
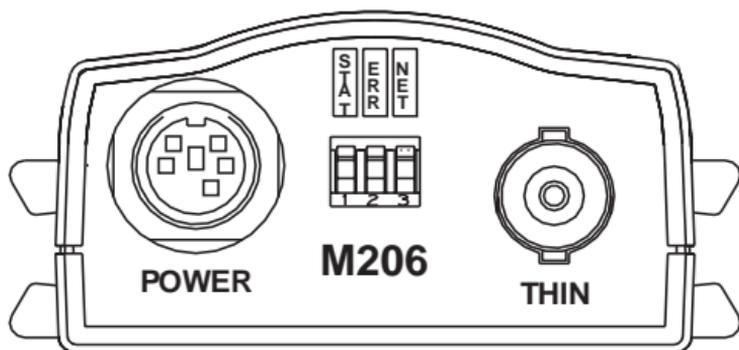
Printer/ Port Connections

One printer may be attached via the M205/M206's 36-pin male Centronics connector (with an IBM PC compatible pinout). The port can be configured with various parameters depending on the attached printer. These parameters include:

- **slow** for slower parallel interfaces that need a slower transfer rate;

- **cen** Centronics mode. Used with older impact printers (e.g. dot matrix or line printers);

- **pc** default mode. Will work with most printers;

- **fast** for high-performance parallel interfaces that can handle an increased transfer rate (like the HP 4 and 5 series printers); and

- **bb** bit bucket (for simulating an attached printer even if one isn't attached).

Printing Test Pages

A test page feature has been added in **version 5.6.3 and higher,** allowing one to test the M205/M206 and printer communications without a network connection. To output test pages:

1. **Power off** the M205/M206 and the printer.

2. Set **Dipswitch 1** and **Dipswitch 2** of the M205/M206 to the "**on**" position (i.e. down).

3. **Power on** the printer then **power on** the M205/M206. The M205/M206 will generate two test pages automatically.

4. When done, **power off** the M205/M206 then **power off** the printer. Set **Dipswitch 1** and **Dipswitch 2** to the "**off**" position (i.e. up) again for normal operations.

Note: Return the dipswitches to their default states once you are finished with the test pages.

Connecting to the Network

To attach the M205/M206 to the network as illustrated in *Figure 5*, you will need to:

1. Connect the M205/M206 to the network via the appropriate network connector.

2. Attach the unit to the parallel port of the desired printer. Ensure that the printer is turned off when you plug in the print server.

3. Turn the printer on and unpack and plug in the M205/M206's power supply. The connector plugs into the back of the M205/M206.

Watch the lights on the front panel of the device as they cycle through the power-on self test. When the test is complete, the STAT LED flashing once per second.

Figure 5: Physical Setup
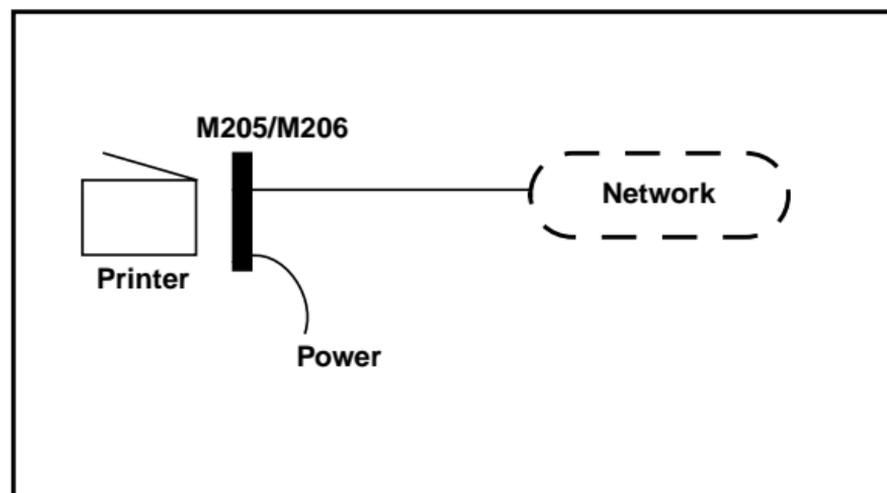
Dipswitches

On the back of the M205/M206 you will find three dipswitches labeled 1, 2, and 3. Their function is explained below:

Dipswitch 1 - Reserved

This dipswitch is not for customer use and should be in the "**off**" position. *The default is "off".*

Dipswitch 2 - Factory Defaults

With this dipswitch in the "**on**" position, the unit will boot up with its factory default settings (including the default IP address) as if were a new unit. This means that the unit will use the factory default settings rather than the settings stored in EEPROM.

With this dipswitch in the "off" position, the unit will boot up using the settings in EEPROM rather than the default settings. This dipswitch is in the "off" position from the factory so that the new settings that you store will be used.

Note: Setting this dipswitch "on" will not clear any settings that you have stored in EEPROM. It simply boots the unit in a different state with the settings in EEPROM temporarily ignored.

If you would like to return all the stored settings back to factory defaults, issue the "**save default**" or "**store tcpip from default**" commands at any point. Just remember to boot the unit with this dipswitch set to "**off**" so these new stored settings will be used.

Dipswitch 3 - Link Integrity Disable

This dipswitch determines whether link integrity is turned on or off on the unit. For example, it may be necessary to turn link integrity off if the unit is connected to an older hub. Link integrity is only applicable to the M205 because of its 10Base-T Ethernet connector. *The default is "off" (i.e. link integrity is enabled).*

CONFIGURATION TOOLS

Overview

This chapter outlines all of the configuration tools available to you when using an M205/M206.

Two-Part Configuration

When talking about configuration, it's important to understand that there are two parts to an M205/M206 setup:

1, Configuring the M205/M206 so that it can be seen on the network. This involves network-related settings (e.g. an IP address within TCP/IP environments) configured through the built-in command shell, npsh.

2. Configuring a host with a new printer so it knows how to send data to the M205/M206. Just being able to see the print server on the network doesn't mean you can automatically print to it. A host has to be told where to send the data.

Note: There are some network environments that do not require any network settings to be configured on the M205/M206. However, *all* network setups require configuration on the host end.

Available Tools

IPAssign

This is a Windows utility that helps identify the M205/M206 on the network. Relying on TCP/IP as the underlying protocol, the print server can be assigned an IP address and subnet mask once detected on the network. When this is completed, other tools can be used to do additional M205/M206 configuration.

Figure 6: IPAssign Sample Interface
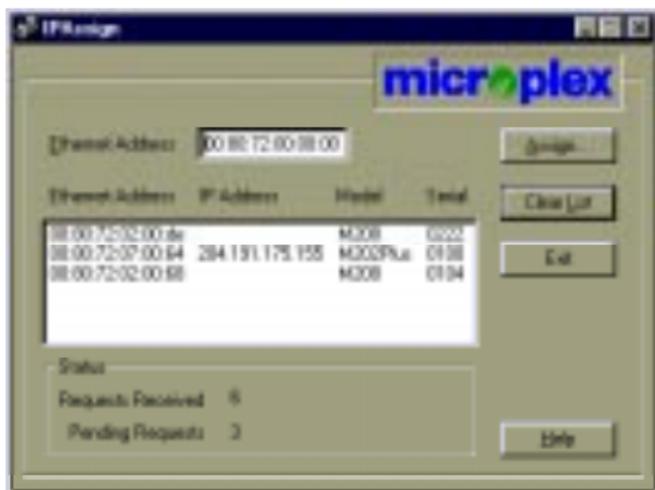
Ezsetup

This is a Unix shell script that helps configure M205/M206 settings *and* host print setups. It's compatible with *all* Unix flavours and has a Main Menu similar to *Figure 7*.

Figure 7: Ezsetup Main Menu Screen

Configuration Alternatives

Besides the software provided by Microplex, the M205/
M206's internal command shell, npsh, can also be reached
using these common methods:

Telnet   A TCP/IP command that helps configure
                    M205/M206 settings remotely. A TCP/IP
                    host starts a Telnet session with the print
                    server and logs in to the device's com-
                    mand shell to alter and view settings.

                    Example:

                    telnet 192.75.11.9

Remote Shell   (e.g. "**rsh**", "**rcmd**", "**remsh**") A TCP/IP
                    command that helps configure print server
                    settings remotely. A TCP/IP host uses this
                    command to remotely execute a *single*
                    command on the M205/M206.

                    Example:

                    rsh spike list prn

                    This command remotely executes the npsh
                    command, "**list prn**" on the M205/
                    M206 named **spike**.

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WINDOWS CONFIGURATION

Overview

This chapter discusses the M205/M206's support for Windows 3.x/95/NT, detailing a complete Windows setup including:

1. Identifying the M205/M206 on the network using TCP/IP as the underlying protocol.

2. Configuring the M205/M206 with its mandatory TCP/IP settings (i.e. IP address and subnet mask).

3. Configuring a new printer on the Windows station.

Please see *Appendix A - More on Windows* (the PDF file called windows.pdf) for more information about Windows environments.

Environment Description

The M205/M206 supports network printing under Windows environments by utilizing TCP/IP. Windows NT uses TCP/IP as the network protocol; Windows 95 and Windows for Workgroups (3.x) use NetBIOS over TCP/IP.

Figure 8 outlines two of the most common Windows setups you will see with the M205/M206. The **ideal configuration** is a network printer defined on the NT server to be shared by Windows 95 clients. However, any Windows station can also print directly to the M205/M206 (known as peer-to-peer printing). It is recommended that you use the Microplex **MPS** application if you plan to use this printing topology. See "Alternate Windows Printing Solution" on page 24 for more information and setup instructions.

Figure 8: Windows Integration
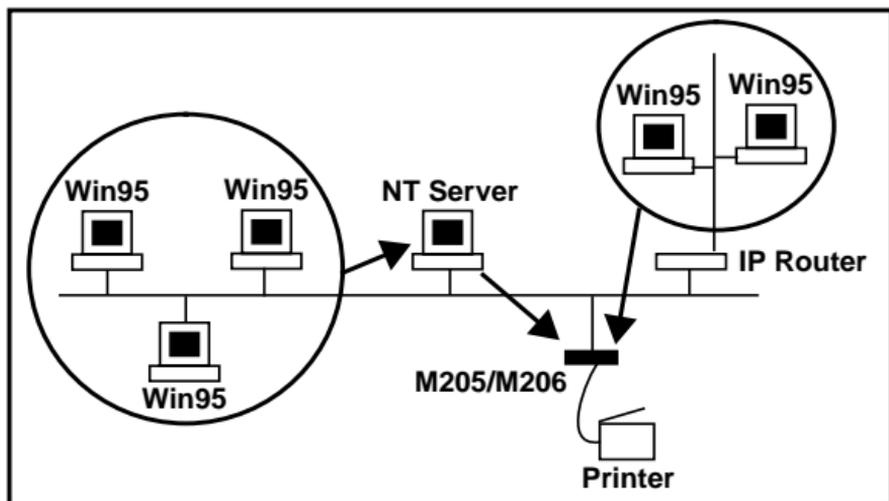
M205/M206 Configuration

Mandatory

Since TCP/IP is relied upon for Windows printing, the M205/M206 must be configured with an IP address and subnet mask before it can be seen on the network.

Optional

Additional settings like routing entries can also be configured, allowing communication across subnets.

Configuration Steps

To configure an IP address and subnet mask on your M205/M206, you will need to:

1. You must have the TCP/IP protocol and services enabled on this Windows station before proceeding.

2. Insert the Microplex diskette labeled "IPAssign" into the floppy drive.

3. Load up the File Manager or WinFile and look under the floppy drive for an IPAssign self-extracting file called **setupex**.

4. Double click on **setupex** to launch the install program.

5. When prompted to install, click on YES to load the InstallShield Wizard.

6. Answer the prompts throughout the wizard.

7. Once the install process is complete, you will be prompted to view the "ReadMe" file. Select "Yes" to read this and when done, close the file.

8. Find the new IPAssign program group and double click on the "IPAssign" icon to load the program.

9. You should see an entry for your M205/M206 appear in the "IPAssign" dialog box. If not, give IPAssign another minute or two to find the device on the network. *Figure 9* shows an example screen.

Figure 9: IPAssign Main Screen
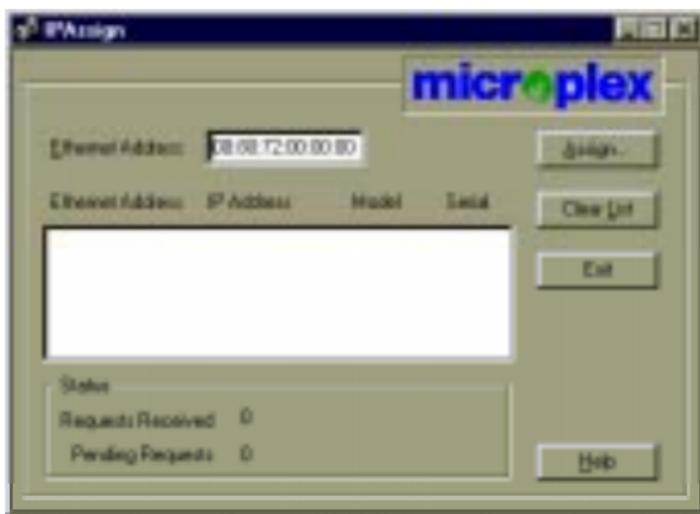
10. Once your M205/M206's Ethernet address appears in the list box, select it and press ASSIGN.

11. At the "Assign IP" dialogue box that displays next, fill in the IP address and subnet mask for this M205/M206.

    Note: *Optional*. You can also assign a default router/gateway entry within this dialogue box allowing your M205/M206 to communicate across subnets.

12. Click SET when done to assign these TCP/IP settings to the M205/M206. IPAssign will then display two dialogue boxes informing you of its progress.

Once you see the message about successfully assigning the settings, click OK. These TCP/IP settings are now in the M205/M206's current memory where they will remain until the unit is powered off.

To ensure these settings are not lost after a power cycle (unit turned off then on), you will need to store these settings into the device's EEPROM. To do this, you will need to:

1. Begin a Telnet session with the print server using the IP address you have just assigned it.
   telnet *M205/M206ipAddress*

2. Log in as "root" when prompted for a login name and press ENTER at the password prompt since, by default, there is no password.

3. Once successfully logged in, enter these commands to store the IP address and subnet mask into EEPROM:
   store net 1 addr *IPaddress*

   store net 1 mask *netmask*

4. If you want to store a default router entry allowing for communication across subnets, you will need to enter this command specifying the IP address of your subnet's default router in the routerIPaddress variable:
   store net route add default *routerIPaddress* 1

5. Re-power the M205/M206 to make these settings take effect:
    reset

At this point, your Telnet session will be closed and the M205/M206 will re-boot. This ensures that the new TCP/IP settings are stored in EEPROM and they will be used. You will not lose these settings unless they are changed deliberately.

Workstation Configuration

Windows NT New Printer Setup

To configure a new printer on a Windows NT station, you will need to:

1. Open the "Control Panel".

2. Double click on "Printers".

3. Select "Create a Printer" from the "Printer" menu to display the dialogue box in *Figure 10*.

Figure 10: Create a Printer Dialogue Box

4. Define a name to represent this print setup and select the appropriate driver for the printer that will be used in this M205/M206 print setup.

5. Under the "Print To" field, select "Other...".

6. Select "LPR Port" from the list that displays and click OK to bring up a dialogue box similar to the one found in *Figure 11*.

Figure 11: Add LPR Compatible Printer Dialogue Box

7. Type in the IP address or host name of the M205/M206 in the first field.

8. Type in the name of a pre-defined destination/queue on the M205/M206 in the second field.

    Note: This name *cannot* be any name you'd like. It must be a name of an existing destination/queue on the M205/M206 and it must be *lowercase* by default. You will most likely use "**d1prn**" for the prn port.

9. Click OK when done specifying these two fields.

You now have a new network printer which relies on the standard TCP/IP print protocol, LPD, to print remotely to a printer attached to the M205/M206.

Windows 95 New Printer Setup

To configure a new printer on a Windows 95 station, you will need to:

1. Select "Settings:Printers" from the "Start" menu.

2. Double click on the "Add Printer" icon.

3. Select "Network Printer" from the second window of the "Add Printer" wizard that loaded.

4. At the next window, click on BROWSE to help fill in the network path of this printer.

5. At the "Browse for Printer" dialogue box that displays, double click on the appropriate workgroup containing the M205/M206. By default, the print server falls under the workgroup, "WORKGROUP".

6. Continue searching the network until you see the M205/M206's name, "M_*xxxxxx*", where "*xxxxxx*" equals the last six digits of the print server's Ethernet address found on the bottom of the device. (e.g. M_001C1A)

7. Once you see the M205/M206, double click on it to display a list of four pre-defined destinations/queues to choose from.

8. Select a destination/queue for the printer; most likely you will use "**d1prn**".

9. Click OK once you have selected the destination.

10. Back at the network path window, select NEXT since this path should now be filled in for you.

11. At the next window, select the appropriate printer manufacture and model of the printer attached to the M205/M206 and click on NEXT.

12. Fill in a name for this new network printer at the next window and decide if you want this to be the default printer. This printer name can be anything you'd like as long as it's unique.

13. When prompted for a test page, select either "Yes" or "No" depending on the state of the attached printer and click on FINISH.

    Note: Windows may ask for a disk or CD-ROM to load the appropriate printer driver to complete this new printer setup.

There should now be a new printer icon within the 'Printers" folder. This new network printer relies on NetBIOS over TCP/IP as the underlying protocol to print to the M205/M206.

Alternate Windows Printing Solution

Microplex Printing Solution (MPS)

Prior to version 5.6.5 of the M205/M206, the only Windows print methods available were those provided with the operating system. With this new firmware version, Microplex has introduced "MPS" as an alternative direct socket print method for Windows NT and Windows 95 environments.

The key advantage to using MPS is that it allows true peer-to-peer printing in a Windows environment. Using MPS ensures that your connection to the print server remains open indefinitely, ensuring print jobs won't be lost if the print server or printer re-powers or, if using NetBIOS, that multiple jobs won't be lost due to the connection timing-out.

There are three basic Windows printing setups:

1. Peer-to peer without MPS. This implies that the workstation is tied up until the print job finishes printing. As well, your print job will have to wait until any jobs currently printing are done. The end result is users and their system resources waiting for print jobs.

2. Print to a NT server set up to act as a print spooler. The biggest problem is the cost of acquiring the NT server, whether it be a dedicated server or someone's workstation.

3. Peer-to-peer printing with MPS. This combines the low cost and convenience of peer-to-peer printing with the advantages of using a print spooler. Print jobs are sent to MPS promptly, ensuring that the user does not

have to wait long periods for the print server or printer to become available. MPS works in the background, spooling the job to the print server as the print server's resources become available.

Note; For additional information about printing in Windows environments, please refer to *Appendix A - More on Windows (windows.pdf)*.

To configure a new MPS printer on a Windows station, you will need to:

1. Insert the Microplex diskette labeled "MPS" into the floppy drive.

2. Load up the File Manager or WinFile and look under the floppy drive for an MPS ZIP file.

3. Double click on the MPS ZIP file to extract all files within it to a directory on the Windows station.

4. Once extracted to a directory, find the "Setup" file and double click on this to load the InstallShield Wizard.

5. Answer the prompts throughout the wizard and select "Yes" to restart your computer at the end.

6. Once your computer is rebooted, open the Settings:Printer folder to view your existing printers.

    Note: MPS will only work with an existing printer. If you don't have an existing printer that you can alter, create one now (use any port settings you like since they will be changed in the following steps).

7. Select the printer that you want to use with MPS and click on the right mouse button to bring up a sub-menu.

8. Select "Properties" from this menu to display the current settings for this printer.

9. Click on the "Details" tab to display the printer's port settings.

10. Click on the ADD PORT button.

11. At the "Add Port" dialogue box that displays, click on the radio button labeled "Other".

12. Click on "Microplex TCP/IP Printer Port" from within this "Other" list.

13. At the next dialogue box that displays, fill in the host name or IP address of the M205/M206 in the first field.

14. Fill in a valid TCP port number on the M205/M206 in the second field. Since there is only one port on this print server model, this will always be **4400**.

15. Click OK when done to return to the "Details" window. You should now see something about "MPS Port" within the "Print to following port:" field.

16. Click OK to close this printer's properties window.

You now have a new network printer which relies on MPS to print remotely to a printer attached to the M205/M206.

Troubleshooting Tips

IPAssign Can't Find the M205/M206

• Have you loaded IPAssign onto a Windows station sitting on the *same subnet* as the M205/M206? IPAssign cannot see print servers across routers unless BOOTP broadcast packets can travel from subnet to subnet.

• Have you waited a couple of minutes for IPAssign to recognize the M205/M206 or have you tried re-powering the print server to speed this identification process?

• Do you have a DHCP, RARP, or BOOTP server running that may be providing the M205/M206 with an IP address upon boot up? If so, IPAssign isn't needed to assign an IP address to the print server.

> **Note**: If the M205/M206 has an IP address, it will no longer send out a BOOTP packet. This means IPAssign will not be able to see the device on the network.

M205/M206 Won't Talk on the Network

- Have you assigned it a unique and valid IP address which corresponds with the other IP addresses on your network? For example, are you sure no other device is using this IP address?

- Are you sure you are trying to talk to the M205/M206 from a Windows station on the *same subnet*? Currently, the print server can only be seen locally unless you configured a routing entry earlier on.

- If you look at the front of the M205/M206, is the STAT LED flashing once a second or is it quicker than that? A slower, once-a-second rate tells you that the print server is in fact configured with an IP address. A faster rate says it knows nothing about this so you may need to try the configuration process again.

- Have you confirmed the network connection to the M205/M206 is working correctly? Trying different network cables and locations will help narrow down the problem.

Errors Occur When Defining an LPR Printer

- Can you "`ping`" the M205/M206 from your Windows NT station? If not, please refer to *M205/M206 Won't Talk on the Network* on page 27.

- Did you specified the correct IP address or host name for the M205/M206 in the first field of the "Add LPR Compatible Printer" box?

- Did you specify a valid destination/queue on the M205/M206 in the second field of the "Add LPR Compatible Printer" dialogue box? If so, did you also enter it in lowercase letters? Please see Figure 16: *M205/*

M206 Default Names on page 50 for the default destinations.

Can't Browse the M205/M206 on the Network

- Have you looked under the right Windows workgroup? By default, the M205/M206 will be found under "WORKGROUP".

- Are you able to browse other Windows stations and devices on the network from this same station?

- Has this Windows station been given enough time to update its registry so it can see the newly added workgroup device? Sometimes Windows stations can take a while depending on the size of the network and the decision process used to figure out which station will act as the Master Browser. Having a designated Master Browser station can speed this process up since it eliminates any need for negotiation.

Printer Errors When Printing or No Output

- Is a large job currently printing (and taking up all of the printer's resources)? Usually when printing from Windows 95 stations, a busy printer can cause Windows to display a printer error message. This is because Windows 95 demands immediate printer attention rather than holding the data until the printer is ready again. If this is a frequent problem, it is better to use a central spooling station like an NT server or use MPS.

- Have you tried restarting the spooler under Control Panel:Services? Sometimes this is needed to get printing going.

  Note: As a last resort, you may want to try re-booting the Windows station. Sometimes this is the only option to completely clear this situation. Usually the M205/M206 has nothing to do with this problem so it can be left alone.

UNIX CONFIGURATION

Overview

This chapter describes a complete Unix setup including:

1. Configuring the M205/M206 with its mandatory TCP/IP settings (i.e. IP address and subnet mask).

2. Configuring a new printer on the Unix station.

For additional information about Unix environments, please see *Appendix B - More on Unix* (unix.pdf).

Environment Description

The M205/M206 supports network printing under various TCP/IP environments including *all* flavours of Unix. Printing can come from multiple hosts directly or through central spooling machines. *Figure 12* illustrates this for you.

Figure 12: Unix Integration
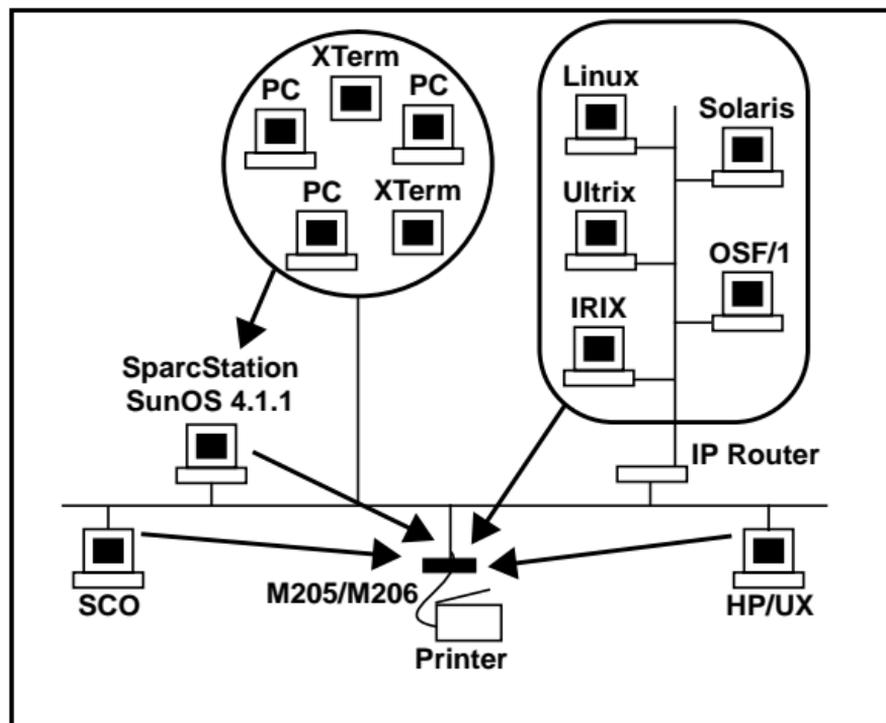
M205/M206 Configuration

Mandatory

Since TCP/IP is used, the M205/M206 must be configured with at least at an IP address and subnet mask before it can be seen on the network.

Optional

Additional settings, like routing entries, can also be configured to allow communication across subnets.

Configuration Steps

To configure an IP address and subnet mask on your M205/M206, you will need to:

1. Log in as root or superuser on your Unix host.

2. Insert the Microplex Unix host software diskette into a floppy drive.

3. "**cd**" to a directory with at least three megabytes of free space.

4. Transfer the compressed tar file from the diskette onto the host.

   tar xvf /dev/*devicename*

   where **_devicename_** is usually "**fd0**" for a diskette.

5. Uncompress this file.

   uncompress npdist.tar.1.Z

6. Untar this file.

   tar xvf npdist.tar.1

   A list of files will display and scroll up the screen. Several files and sub-directories are created including a copy of Ezsetup, the Unix script used for print server *and* host configuration.

7. [Optional] Assign an IP address and host name to the M205/M206 in the host table (/etc/hosts, host NIS map, or DNS name tables).

8. Run Ezsetup from the command line. Follow this syntax for most Unix operating systems:

    ./ezsetup

    For HP/UX, use:

    ksh./ezsetup

9. Answer the prompts that appear (so Ezsetup can learn about the Unix host it's running on) and wait for the Main Menu to display. It will look like *Figure 13*.

Figure 13: Ezsetup Main Menu

10. Enter "1" for "Configure New Unit" since you want to configure an M205/M206 with its TCP/IP settings.

11. Follow the prompts on each screen as Ezsetup steps through the configuration of the M205/M206's IP address, subnet mask, optional default router/gateway, and optional root and guest passwords.

Once you receive a message that this configuration completed successfully, you should be able to communicate with the print server over the network. However, Ezsetup will now automatically lead you into the second part of con-

figuration, "Configure Host Setup", since you cannot print to a printer attached to the M205/M206 until this is completed.

Note: If doing a print setup on a System V Unix host, a very simplistic Microplex interface script, "raw-sysv.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") method.

Host Configuration

The second half of Ezsetup helps configure a new printer on your Unix host (just being able to talk to the M205/M206 doesn't mean you can print to it). You also have to define a printer so the host knows where to send the data.

Ezsetup will continue prompting you for information about your host and printer. Answer these prompts until the host configuration is complete. If you have any questions about the screens that display, please refer to *Ezsetup Tips* on page 32.

At the end, you will have a new network printer that sends data to a printer off of the M205/M206.

Ezsetup Tips

- When asked for a **print method**, follow these rules:

    1   If your Unix host uses the BSD print system, select "BSD Remote (LPD)" option.

    2   If your Unix host is a System V derivative, select the "System V Interface Script" option.

- When asked for a **printer name**, choose the name of the print setup on this host (i.e. the name entered in the print command). For example, a print setup including an HP III laser printer might be called "laser".

- When asked for a **destination**, choose one of the four pre-defined destinations/queues on the M205/M206. Normally you would choose "dlprn".

- When asked which **I/O port** or **port**, choose "prn".

- If asked to name an **interface script**, name it something meaningful. For example, the HP III laser printer example might have a script called "laser.if".

- If using an interface script setup, keep in mind that a "**dummy device file**" or "**device file**" is an empty text file that stores data like spooler errors and request IDs of the jobs printing. The name should also reflect the print setup for easy identification. (e.g. "/dev/laser")

- Near the end of Ezsetup's "Configure Host Setup" section, the script mentions **carriage return insertion** and **formfeeds**. Carriage return insertion is needed if Unix text jobs are going to be printed through this setup. Formfeeds are needed only if printing Unix text jobs through a "BSD Remote (LPD)" setup.

Troubleshooting Tips

Ezsetup's Menus are Incomplete

- Are you running Ezsetup on an HP/UX host? If so, did you remember to run Ezsetup with this command:

  ksh./ezsetup

Ezsetup Stops With an Error

• Are you using a common operating system like SCO, Solaris, or HP/UX? If not, you may have run into a compatibility issue. Please see *Appendix B - More on Unix* (unix.pdf) for manual setup instructions. These will guide you through a setup without using Ezsetup.

M205/M206 Won't Talk on the Network

• Have you configured it with a unique and valid IP address which corresponds with the other IP addresses on your network? For example, are you sure no other device is using this IP address?

• Are you sure you are trying to talk to the M205/M206 from a Unix station on the *same subnet*? The print server can only be seen locally unless you configured it with a routing entry.

• If you look at the front of the M205/M206, is the STAT LED flashing once a second or is it quicker than that? A slower, once-a-second rate tells you that the print server is configured with an IP address. A faster rate indicates that the print server is not configured properly. You may need to try the configuration process again.

• Have you confirmed that the network connection to the M205/M206 is working correctly? Trying different network cables and locations will help narrow down the problem.

Nothing Prints

• Can you "**ping**" the M205/M206 from your Unix station? If not, please refer to *M205/M206 Won't Talk on the Network* on page 34.

• Is the M205/M206 able to communicate with the attached printer? To test this, you can:

1   "**telnet**" to the print server (e.g. "**telnet 192.75.11.9**") and log in as "**root**".

2   Enter the command "**start fox** *portname*" where *portname* is "**prn**".

3   Execute "**stop** *portname*" after starting the test.

This FOX test will send the same text line over and over to the attached printer.

- Is the job getting stuck in the Unix host's queue? If so, check that the printer is ready to go. If the printer is set but the job keeps getting stuck in the queue then there is a configuration error on the Unix station so creating a new print setup may be necessary.

- Is the printer's console or control panel showing any activity (does it look like it's receiving data?) If it is receiving data but nothing is printing, check to see if a manual formfeed is needed. Also, ensure that the printer can support the type of job coming through. For example, a PostScript printer will not be able to print a non-PostScript job.

- Do all jobs fail or just certain ones? For example, jobs from a certain application may be the only ones to fail. If so, check the type of data it's sending to make sure it matches the printer's emulation and check the application's printer configuration for mistakes.

Stair-Stepped Output

Stair-stepped output occurs when the output starts at the top left of the page but every line thereafter starts a little further to the right. It also refers to Unix jobs that print one line of text at the top of a page followed by a series of blank pages.

This unique output will happen only with Unix text jobs if carriage return insertion is not incorporated into the print setup. The printer may be told to do a linefeed but the Unix job does not specify anything about a carriage return to follow this.

To fix this, carriage return insertion must be enabled somewhere in the print setup. The easiest and most common location is on the M205/M206 itself within the appropriate model. The feature is called "onlcr" and the command syntax is:

```
set model modelname stty onlcr
save
```

For example, if printing to the destination, **d1prn**, the associated model is **m1**. Therefore, the command is:

```
set model m1 stty onlcr
save
```

For default destination-model mappings on the M205/M206, please see *M205/M206 Naming Scheme* on page 49.

No Formfeed or Extra Page Comes Out

Unix text jobs may also have problems outputing the last page of a job especially when the BSD Remote (LPD) print method is used. This means the formfeed button on the printer has to be pressed to print the last page.

To automate this process, tell the M205/M206 to handle this task for you by setting this feature on in the appropriate model. The command syntax is:

```
set model modelname trailer $FF
save
```

For example, if printing to the destination, **d2prn**, the associated model is **m2**. Therefore, the command is:

```
set model m2 trailer $FF
save
```

For default destination-model mappings on the M205/M206, please refer to the section entitled *M205/M206 Naming Scheme* on page 49.

NOVELL CONFIGURATION

Overview

This chapter details a complete Novell setup including:

1   Identifying the M205/M206 on the network.

2   Configuring the M205/M206 with its mandatory print setup settings.

3   Configuring a new print queue on the file server.

Please see *Appendix C - More on Novell* (novell.pdf) for additional information about Novell environments.

Environment Description

The M205/M206 supports network printing under Novell environments by utilizing IPX. It supports all versions of NetWare including the latest version 4.x level. *Figure 14* provides a Novell setup overview.

Figure 14: Novell Integration
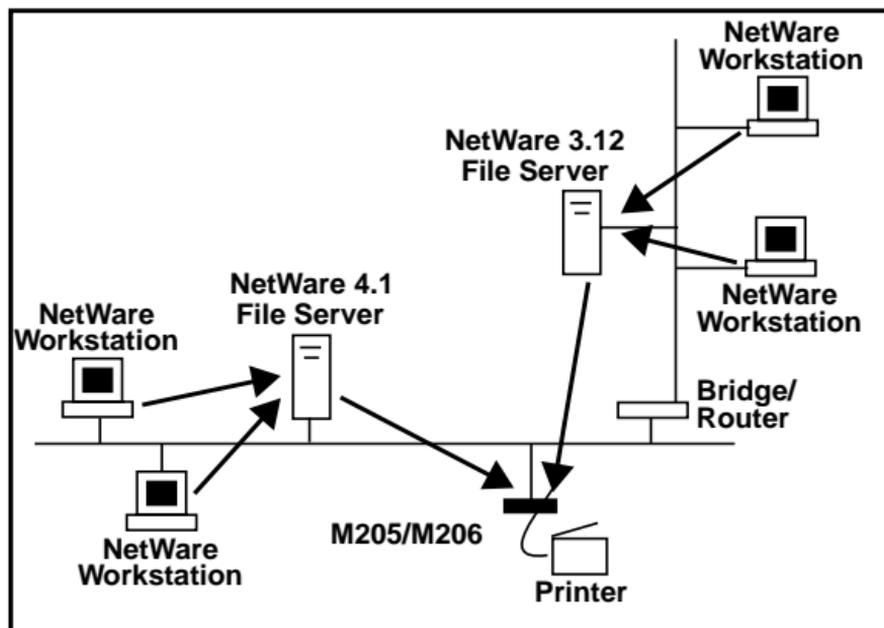
M205/M206 Configuration

Mandatory

Under *all* Novell environments, the M205/M206 does *not* require any network settings to make it visible on the network. Simply plug it in to your network and power it on. However, with a new print queue setup on a Novell file server, there can be some mandatory settings needed on the M205/M206. Please see *Host Configuration* for further details under all NetWare versions.

Optional

This firmware version introduces a slight modification to the preferred server feature under Novell environments (this helps with file server connections in larger installations). With version 5.6.5, *if there are more than 16 file servers in total*, the desired file server should be set as a preferred server on the M205/M206. See "Common Commands" on page 52.

Note: if you have **any version prior to 5.6.5**, the **preferred server feature should not be used**. If you have more than 16 file servers or would like improved file server connection, please upgrade to version 5.6.5.

Host Configuration

Under all versions of NetWare, both PSERVER and RPRINTER setups are supported by the M205/M206. Since a PSERVER setup is the most common, you will find the necessary steps to configure the M205/M206 as a PSERVER within this section. For RPRINTER and NPRINTER setup information, please see the *Appendix C - More on Novell* PDF file (novell.pdf).

Note: The M205/M206 can service up to 16 file servers and 32 queues at one time.

NetWare Version 3.x PSERVER Setup

To configure a print queue on a NetWare 3.x network, you will need to:

1   Log on to the Novell file server as Supervisor.

2   Enter PCONSOLE.

3   Select "Print Queue Information" from the PCONSOLE Main Menu.

4   Press INSERT to add a new queue to the list of currently-defined queues showing.

5   Type in the name of this new queue when prompted and press ENTER. This can be any name you'd like.

6   Press ESCAPE to return to the PCONSOLE Main Menu.

7   Select "Print Server Information" and press ENTER.

8   Press INSERT when the list of existing print servers displays to add a server.

9   Type the name of the M205/M206 when prompted for a print server name and press ENTER when done. By default, the M205/M206 is named "M_*xxxxxx*" where "*xxxxxx*" equals the last six digits of the print server's Ethernet address found on the bottom of the device (e.g. M_071C1A).

10 Back at the print server list, select this newly-defined M205/M206 and press ENTER.

11 Select "Print Server Configuration" from the menu that displays.

12 Select "Printer Configuration" from the next menu to display a list of configured printers.

13 Select the first item listed as "NOT INSTALLED" and press ENTER.

14 Type in the name of the default destination on the unit for the "name" field (e.g. d1prn, d2prn, etc.) and go to the "type" field.

15 Press ENTER to see the possible choices.

16 Select "Defined Elsewhere" from this list.

17 When done, press ESCAPE and select "Yes" to save the changes to this new printer.

18 Press ESCAPE again to return to the "Print Server Configuration" menu.

19 Select "Queues Serviced by Printer".

20 Select one of these printers from the printer list that displays and press ENTER.

21 Press INSERT to service this printer.

22 Select the queue created earlier in these steps and press ENTER.

23 When prompted for the priority, press ENTER to select the default or select a priority.

24 Press ESCAPE until back at the PCONSOLE Main Menu.

25 Re-power the M205/M206 by unplugging and plugging in the power supply.

26 Wait two minutes and then select "Print Queue Information" from the PCONSOLE Main Menu.

27 Select this new queue and from the menu that displays, select "Currently Attached Servers" to see which print server is servicing this queue.

28 Press ESCAPE until you have exited PCONSOLE.

At this point, the M205/M206's name (e.g. M_071C1A) should show within this window. This means the M205/M206 knows about this new Novell print queue it must ser-

vice as a PSERVER. Therefore, it will poll this queue regularly looking for jobs to print.

NetWare 4.x PSERVER Setup

Netware 4 introduced NDS and some new frame types. The M205/M206 can be used in a Netware 4.x environment with either of these options:

• Set the M205/M206 up as a PSERVER replacing a dedicated workstation running PSERVER.EXE or PSERVER.NLM on the file server. The M205/M206 **replaces** these loadable PSERVERs so they are no longer needed.

• Set the M205/M206 up as a RPRINTER/NPRINTER interacting with an existing PSERVER. A RPRINTER/NPRINTER setup is included in the *Appendix C - More on Novell* PDF file (novell.pdf).

   Note: if following a PSERVER setup, bindery emulation is required.

To configure the unit as a PSERVER in a NetWare 4.x environment, you need to:

1 Login as a supervisor using a bindery connection to the Novell server of your choice, or login under NDS as a user in the server's bindery context in NDS who has administrative privileges.

2 Enter PCONSOLE.

3 If you logged in using NDS, press F4 to put you in bindery emulation mode and display the Main Menu.

4 Select PRINT QUEUES to view a list of currently-defined print queues.

5 Press INSERT to add a queue.

6 Type in the new queue name and press ENTER.

7 Press ESCAPE to return to PCONSOLE's main menu.

8   Select PRINT SERVERS to view a list of existing print servers.

9   Press INSERT to add a new print server.

10 Type the name of the M205/M206. By default, it is M_xxxxxx equals the last six digits off the unit's Ethernet address (e.g. M_000BF5). The new print server is added to the list.

11 Select this new print server and press ENTER. PRINT SERVER INFORMATION menu displays.

12 Select PRINTERS to view list of defined printers.

13 Press INSERT to add a printer to the list.

14 Type in the name of one of the eight default destinations on the unit for the NAME field (e.g. d1prn, d2prn, etc.) and go to the printers TYPE field.

15 Press ENTER at this field and then select DEFINED ELSEWHERE. If DEFINED ELSEWHERE is not available, choose OTHERS/UNKNOWN. This brings you back to the printer's window.

16 Press ENTER on the PRINT QUEUES ASSIGNED field to view a list of available queues.

17 Press INSERT to display all queues; select the one you defined earlier and press ENTER.

18 You are prompted for a priority. Select one and press ENTER. Priority 1 should be fine. The PRINTERS window now displays the list of defined printers, including the one you just added.

19 Press ESCAPE until you are back to MAIN MENU.

20 Reboot the print server by unplugging and the plugging it back in. It will attach to the queue in approximately 30 seconds.

21 Check the PRINT QUEUES menu and select ATTACHED PRINT SERVERS for the queue defined earlier. You should see the print server's name displayed.

22 Press ESCAPE until you are out of PCONSOLE. You will be back at the command line and the M205/M206 is now configured.

Troubleshooting Tips

NetWare 3.x - No PSERVER Connection

- Has the M205/M206 been power cycled once the PCONSOLE steps were completed? This will make the print server boot up and realize which print queue and file server it needs to service.

- When defining a new "**print server**" within PCONSOLE, did you use the correct name for the M205/M206 (e.g. M_071C1A)? By default, it only recognizes itself as "M_*xxxxxx*" where "*xxxxxx*" equals the last six digits of its Ethernet address found on the bottom of the device.

- When defining a new "**printer name**" within PCONSOLE, did you use a pre-defined destination/queue rather than a name of your own? By default, the M205/M206 only recognizes names like "**d1prn**". All else will be ignored by the device. Please see *M205/M206 Naming Scheme* on page 49 for a list of all default destination names.

- Is there an available NetWare user license for the M205/M206 to utilize while it acts as a PSERVER? Every PSERVER takes up one user license since it logs in to the Novell file server.

- Has the password been assigned to the PSERVER in PCONSOLE but not in the M205/M206?

• Have you given the connection process some time after re-powering the M205/M206? In larger Novell environments, sometimes the file server identification and connection process can take several minutes.

NetWare 4.x - No PSERVER Connection

• Has the M205/M206 been power cycled once the MPAdmin steps were completed? This will make the print server boot up and realize which print queue and file server it needs to service.

• **"debug novell fserver"** can be used to monitor connections to fileservers. The status should be "logged in".

• "**debug novell pserver**" can be used to monitor servicing of the queues. You should see the queue names in the list.

APPLETALK CONFIGURATION

Overview

This chapter details a complete AppleTalk setup including:

1.   Configuring a new printer on an Apple station.

For additional information about AppleTalk Configruations, please refer to *Appendix D - More on AppleTalk*.

Environment Description

The M205/M206 supports network printing under Apple-Talk environments by utilizing EtherTalk, not LocalTalk. Multiple Apple stations in multiple zones can print simultaneously to the M205/M206 as seen in *Figure 15*.

Figure 15: AppleTalk Integration
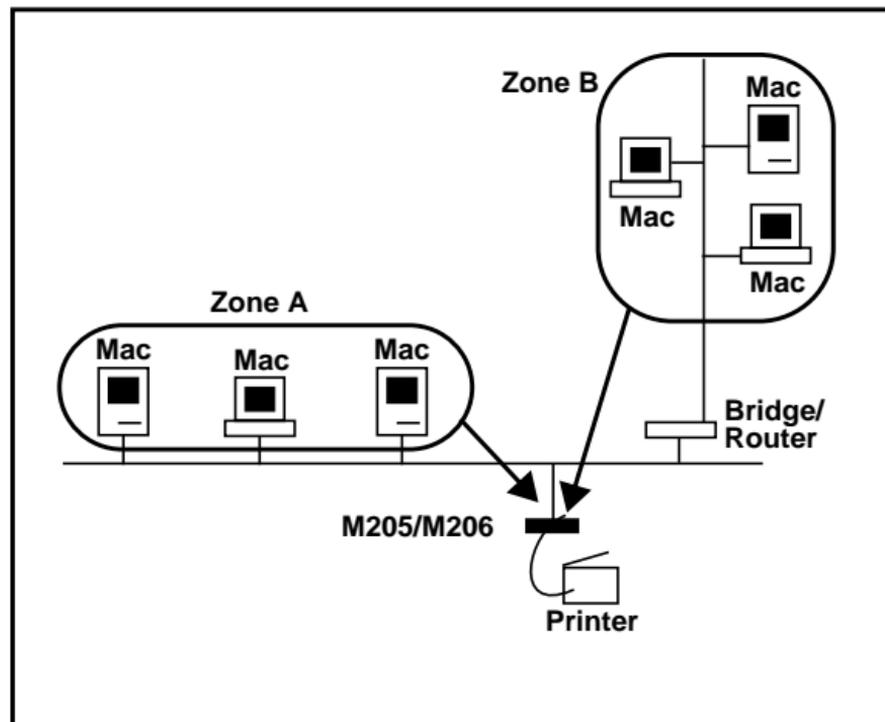
M205/M206 Configuration

Mandatory

Under AppleTalk environments, the M205/M206 does *not* require any network settings to make it visible on the network. Simply plug it into your network and power it on.

Optional

Additional settings are available to fine-tune the M205/M206's AppleTalk functionality. For example, you may want to set a particular zone for the device to come up in or you may want to disable some Microplex printers from showing in the Chooser. Please refer to *Appendix D - More on AppleTalk* (apple.pdf) for additional information.

Host Configuration

To configure a network printer on an Apple station, you will need to:

1. Select Chooser from the Apple Menu to bring up the Chooser window.

2. Select the LaserWriter icon to produce a list of available printers on the right side of the Chooser window.

   By default, these M205/M206-related printers will be in the format "*M205/M206name_papname*" where "*M205/M206name*" is the name of the print server and "*papname*" is the name of an I/O port on the device. The print server name will be "*M_xxxxxx*" where "*xxxxxx*" equals the last six digits of the M205/M206's Ethernet address found on the bottom of the device and the I/O port will be prn.

   Example name for a printer off of the **PRN** port of an M205/M206 named **M_001C1A**:

   ```
   M_001C1A_prn
   ```

3. Choose one of these listed printers to print to and click on OK to close the Chooser window.

This new printer is now a valid network printer which this Apple station can print to.

Troubleshooting Tips

Printer Won't Show in the Chooser

- Have you confirmed you are using EtherTalk and not LocalTalk? The M205/M206 does *not* support Local-Talk.

- Have you clicked on the LaserWriter icon within the Chooser window? By default, the M205/M206 supports the LaserWriter printer driver. To change this, please see the Microplex PDF file, "apple.pdf" for details.

- Does the M205/M206 need to be configured for a particular zone? By default, the print server will come up in the default zone. Please see *Common npsh Commands* on page 52 for the command syntax to change this.

- Do the M205/M206 printers appear correctly within the Chooser if you try this from another Apple station?

Have you tried another network connection to the M205/M206 to guarantee it can be seen on the network?

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M205/M206 REFERENCE PAGES

Overview

This chapter describes some of the most common features of the M205/M206 including:

- important pre-defined names,

- a description of the built-in command shell, npsh, along with a table of the most common commands,

- how to reset the unit to factory default settings,

- a complete overview of the Flash upgrade procedure.

M205/M206 Naming Scheme

The M205/M206 always follows this naming scheme:

M_xxxxxx   (e.g. M_001C1A) Default name of M205/M206 in Windows, Novell, and AppleTalk environments. "*xxxxxx*" equals last six digits of Ethernet address found on bottom of the print server.

Workgroup   Name of default workgroup M205/M206 can be found under in a Windows environment.

Refer to *Figure 16* for an illustration of the default names.

Figure 16: M205/M206 Default Names

Host/Workstation
(Windows, Unix, Novell, AppleTalk)

MODEL

LOG PATH

m1 — d1prn — — — — — — l1

m2 — d2prn — l2

m3 — d3prn — l3

m4 — d4prn — l4

PRN I/O PORT

– — – — – Configuration and Status Data
————— Print Data
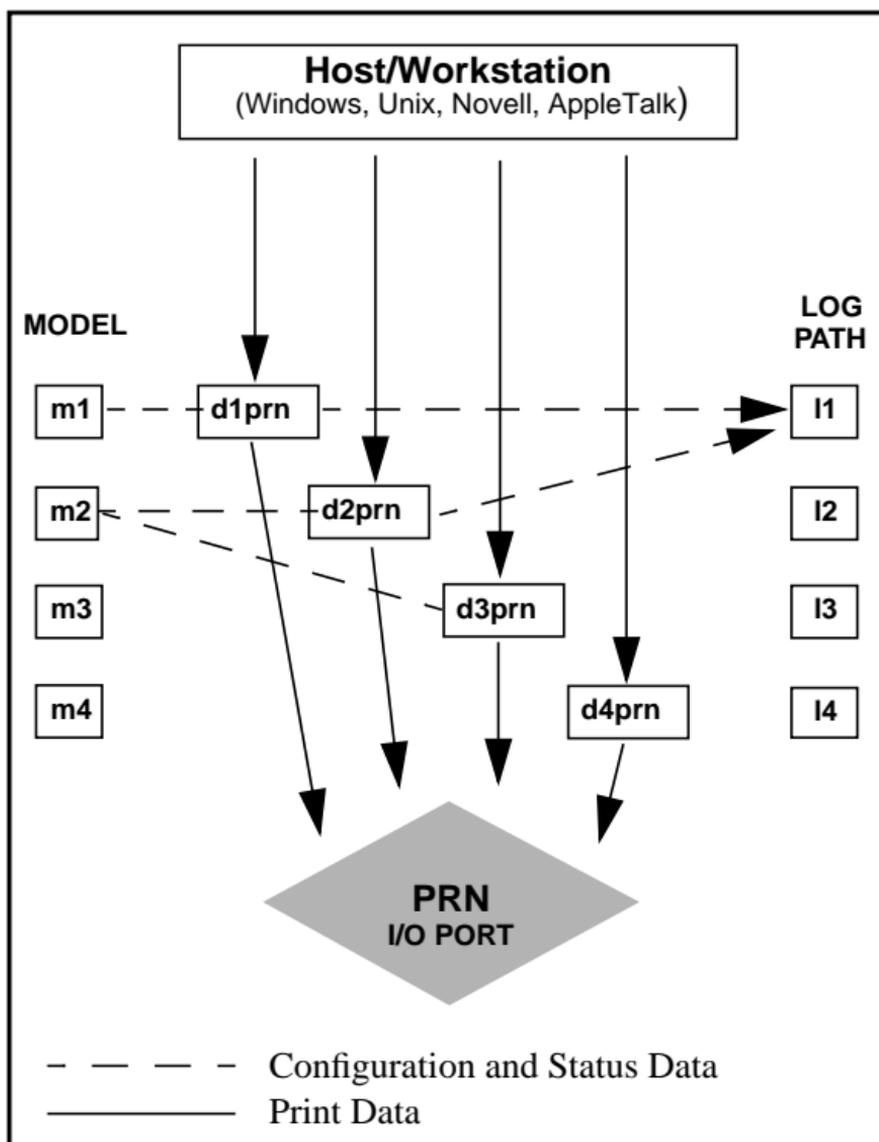
M205/M206 Command Shell

Within the M205/M206, a command shell is built into the firmware called "**npsh**". It allows you to manipulate objects like destinations, models, and I/O ports and provides some monitoring and troubleshooting capabilities as well.

npsh Access Methods

Access the command shell using these methods:

Telnet Session   Opening a Telnet session with the M205/M206 allows you to log into the device and access the npsh command shell. (e.g. "`telnet 192.75.11.9`")

Remote Shell Command Remotely executes one npsh command at a time from your local TCP/IP station. (e.g. "`rsh spike list prn`")

Main npsh Command Prefixes

The four main command prefixes within the npsh command shell are:

1. "`store`" - change settings stored in Flash.

2. "`set`" - change current/working settings in memory.

3. "`list`" - view current/working settings in memory.

4. "`debug`" - view certain debugging information.

Note: If the "`store`" prefix is used, the M205/M206 must be repowered to make the changes take effect. Since "`store`" affects Flash settings only, the print server must reset and read the new settings now in Flash.

Note: If the "`set`" prefix is used, a "`save`" command must be executed as well so that the new settings are retained after power cycles. Since "`set`" only affects the settings in memory, they will be lost after a power cycle unless they are told to be saved into Flash ROM.

Common npsh Commands

The npsh command shell consists of more than 50 commands. *Table 3* outlines some of the more common commands. For a complete command reference, please refer to *Appendix G - More on Commands* (command.pdf).

Note: When you encounter the word "**ifnum**", substitute in "**1**" to represent the network interface (i.e. Ethernet) supported by the M205/M206.

Table 3: Common Commands

Command Syntax	Description
`store tcpip ifnum addr IPaddress`	Store the IP address for the M205/M206.
`store tcpip ifnum mask netmask`	Store the subnet mask for the M205/M206.
`store tcpip route add default routerI-Paddress ifnum`	Store a default router/gateway for the M205/M206 to forward remote packets to.
`store tcpip ifnum opts [[-]rarp] [[-]bootp] [[-]dhcp]`	Control RARP, BOOTP, and DHCP requests for IP addresses.
`store pserver name newname`	Configure the M205/M206's name used within Windows, Novell, and AppleTalk setups.

Table 3: Common Commands

Command Syntax	Description
`store pserver novell fserver add fileservername`	Tell the M205/M206 about a particular Novell file server. If there are more than 16 file servers in total, the desired file server should be set as preferred.
`debug novell fserver`	To view the fileserver the M205/M206 does acknowledge at a given time.
`store pserver apple zone zonename`	Tell the M205/M206 which AppleTalk zone to be in.
`set prn mode slow|cen|pc|fast|bb`	Configure the speed of the parallel port.
`set dest name newname`	Change the name of a destination/queue.
`set sysinfo module [[-]novell] [[-]appletalk] [[-]netbios]`	Control which protocols are enabled on the M205/M206.
`list tcpip`	List the current TCP/IP network settings.
`list prn`	List the current settings of the I/O port.

Table 3: Common Commands

Command Syntax	Description
`list dest`	List the current destination/queue settings.
`list model`	List the current model settings.
`list sysinfo`	List current system information for the M205/M206
`cancel jobID`	Cancel a queued job.
`save`	Save all current settings to Flash.
`reset`	Reset the M205/M206.
`ping IPaddress`	"`ping`" another TCP/IP host on the network.
`telnet IPaddress`	"`telnet`" to another TCP/IP host on the network.
`start fox prn`	Start the FOX test on the I/O port testing M205/M206-to-printer communications.
`stop prn`	Stop the FOX test on the I/O port.
`quit`	Quit out of the npsh command shell.

Back to Factory Defaults

Sometimes it is beneficial to return the M205/M206 to its factory default state. For example, if you are having problems communicating with the print server over the network, you may want to put it back to a default state and reconfigure the network settings. To do this, you will need to move dipswitch 2 to the "**on**" position and reboot the unit by cycling the power off then on. Please refer to the section entitled *Dipswitches* on page 11 for instructions about how to do this.

You now have the M205/M206 booted up in a default state, meaning its current/working settings are those stored at the factory. All settings configured and stored in Flash are ignored while this jumper sits in the "Factory Settings" position.

At this point, you can use npsh commands on the M205/M206 to configure certain settings. Here are some common examples of steps taken when the device is in a default state:

1. **Forgotten Password**

   If you have forgotten a password set on the M205/M206, you can reset the user settings using these commands:

   set user from default

   save

2. **Restore All Settings in Flash to Defaults**

   Since this default state is temporary and you may want to make sure *all* settings sitting in Flash are back to their factory default values, you will need to use these commands:

   save default

   store tcpip from default

Firmware Upgrades

Since the M205/M206's firmware is stored in Flash ROM, upgrading is easy. Using the File Transfer Protocol (FTP) on a TCP/IP network, the print server can be upgraded to a newer firmware version without needing new hardware.

Upgrade Files

There are two files involved with the upgrade process:

New Firmware	("**m205hex.Z**") is the print server binary.
	("**m205dl.hex.Z**") File containing the new downloader code.
Upgrade Instructions	("**TCPupgrade.txt**") Detailed steps explaining what needs to be done during the upgrade.

These files are always available at Microplex's FTP site ("**ftp.microplex.com**") and at Microplex's Web site ("**http://www.microplex.com/microplex/support/ distrib**") or they can be ordered through Microplex Technical Support. Please see *Help Methods Available* on page 57 for further information.

GETTING HELP

Help Methods Available

"Troubleshooting Tips" Sections

Troubleshooting tips are listed at the end of each network configuration chapter. The tips listed are the ones most commonly used. There are additional troubleshooting tips in the appendices as well.

Web Site

Microplex's Web site, **http://www.microplex.com**/, contains information about the company and its products. You will find a link to the Technical Support page which contains the "Support Shack", a central location for technical bulletins and firmware and software histories and files.

Figure 17: The Support Shack
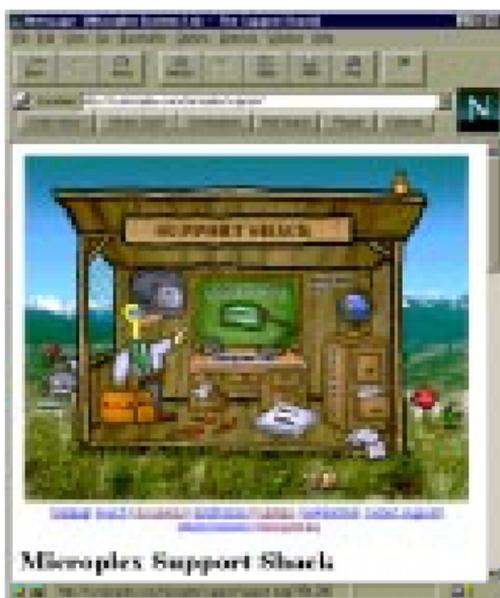
If you cannot find what you're looking for at this site, use the Support Request Form found at "**http://www.microplex.com/microplex/support/forms/support.html**".

FTP Site

Microplex's FTP site, "**ftp.microplex.com**" contains firmware and software for the M205/M206. Once logged in anonymously, you will need to change to the directory **/ support/m205**. Here, you will find several sub-directories pointing to software, firmware, documentation and miscellaneous files.

Contacting Microplex

If you need technical assistance from Microplex, please have this information on hand:

- M205/M206 serial number found on the bottom of the print server.

- Description of your network environment and peripherals attached.

- Description of the problem.

Contact Options
☐ Email **support@microplex.com**.
☐ Fax to "Support" at +1 604 444-4239.
☐ Call +1 604 444-4232 and select Technical Support from the list of options (#3).

Note: E-mail queries usually have the fastest response time

Repair Procedure

Warranty Description

Microplex Systems Ltd. warrants this product to be free from defects in workmanship and material for **three** (**3**) **years** from the time of the original purchase date.

During this period, Microplex will repair or replace a defective product with a new or rebuilt product at no extra charge except as stipulated below.

At no time shall Microplex's liability exceed the replacement cost of the subject item.

All expressed and implied warranties for this product including all warranties of Merchantability, Suitability, and Fitness for a particular application are limited to **three** (**3**) **years** from the time of the original purchase date. In no event shall Microplex be liable for Loss of Use, Loss of Profits or Revenues, or other Indirect, Incidental, or Consequential Damages. This warranty *does not imply the right to loaner or replacement units during the time required to perform repairs*.

This warranty *does not* cover any losses or damage caused by:

- shipping,

- improper installation, use, or maintenance,

- unauthorized repair, modification, alteration, or replacement of components,

- excessive environmental conditions including electrical power surges, temperature, humidity, or any other irregularities,

- negligence or abuse.

Returning for Repair

To obtain service under this warranty, you must *first* contact Microplex's Technical Support department to rule out configuration errors. A Support technician will have you do some tests to ensure the problem is definitely hardware-related. If so, a Return Merchandise Authorization (RMA) number will be given to you by the technician. The defective product should then be returned to Microplex for repair.

Please use the following guidelines when shipping goods back for warranty claim:

- Package the product securely, in original packaging if possible, to prevent damage during shipping.

- Indicate the RMA number clearly on the address label of the shipping carton.

- Include a copy of the invoice/receipt.

- You may use any courier company. However, we recommend using Federal Express due to its lower charges for customs.

- **Note**: Under a normal warranty repair, Microplex will only pay for the shipping charges to return the M205/M206 to you.

- If you ship from a country other than Canada, type (on any paper) a commercial invoice containing the following information:

  - your address,

  - Microplex's address (as "consignee"),

  - country of origin of the product (i.e. Canada),

  - number of packages in the shipment,

  - description of the product,

  - quantity,

  - total value of shipment (i.e. your total purchase price),

  - reason for return (e.g. warranty repair),

  - a declaration.

  Canada Customs requires that this invoice accompany the returned product. For an example, refer to *Figure 18: Sample Commercial Invoice* on page 61.

Figure 18: Sample Commercial Invoice

COMMERCIAL INVOICE from
Leslie Smith
ABC Corporation
1234 Western Parkway
Anycity, NC
USA, 27511

DATE OF EXPORT: 22/02/96

AIR WAYBILL NO: 123-12341234

CONSIGNEE:
Microplex Systems Ltd.
8525 Commerce Court
Burnaby, B.C.
V5A 4N3, Canada

IMPORTER (if other than consignee)
same as consignee

COUNTRY OF ORIGIN: Canada

# OF PKGS	DESCRIPTION	QTY	TOTAL VALUE
1	Ethernet Print Server	1	100.00

REASON FOR RETURN: warranty repair

I declare all information contained in this invoice to be
true and correct.

_____	Leslie Smith	24/03/96
SIGNATURE	**NAME**	**DATE**

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M205/M206 SPECIFICATIONS

Hardware Specifications

For additional hardware information, please refer to *Appendix F - More on Specifications* (specs.pdf).

Network Interfaces

The network interfaces provide compatibility with TCP/ICMP/IP and 8.2.3 Ethernet protocols.

UTP	IEEE 802.3 10BaseT UTP Ethernet female RJ45 connector (**M205 only**).
THIN Ethernet	IEEE 802.3 10Base2 thin-wire Ethernet female BNC connector (**M206 only**).

Printer Support

Parallel Port (prn)	IBM PC compatible male 36 pin parallel interface (Centronics). IEEE 1284-1 compliant. DMA-driven state-machine implementation supports data rates in excess of 65,000 characters per second.

Physical Dimensions

Metric	5.5 cm W x 3.0 cm H x 8.5cm L
Imperial	2.1" W x 1.2" H x 3.25" L
Weight:	0.06756 kg or 0.150 lbs without external transformer

Environmental Details

Operating:	0° C to 50° C

Storage: -40° C to 70° C

95% maximum humidity, non-condensing.

Electrical Details

Power Supply Options:
External transformer available in 120V/60Hz or 220-240V/50Hz.

Power Supply Requirements:

M205

Typical	115VAC +/- 10%	36mA, 60Hz
	220VAC +/- 10%	18mA, 50/60Hz
Maximum	115VAC +/- 10%	54mA, 60Hz
	220VAC +/- 10%	27mA, 50/60Hz

M206

Typical	115VAC +/- 10%	36mA, 60Hz
	220VAC +/- 10%	18mA, 50/60Hz
Maximum	115VAC +/- 10%	78mA, 60Hz
	220VAC +/- 10%	39mA, 50/60Hz

AC Power Requirements:

Voltage	16 VAC
Current, Typical	600mA
Current, Maximum	1A

DC Power Requirements

Voltage	6 VDC regulated

M205

Current, Typical	70mA
Current, Maximum	105mA

M206

Current, Typical	400mA
Current, Maximum	600mA

Customer-supplied external transformers must be rated at 20 VA or greater for proper operation.

Power Consumption (Unit only):

M205

Typical	420 mW
Maximum	630 mW

M206

Typical	2400 mW
Maximum	3600 mW

FCC Warning

This equipment generates, uses and can radiate radio frequency energy. If it is not installed and used as directed in this manual, interference to radio communications may result. The equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B 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 such a case the user will be required to correct the interference at the expense of the user.

CE Mark Conformity Declaration

The M205/M206 fulfills the requirements for radiated emission according to limit B of EN55022/1987 and the requirements for immunity according to EN50082-1/1992 residential, commercial, and light industry.

M205/M206 LEDs

STAT   System Status

ERR   System error

NET   Data to network

Power-on Self Test

The six-stage power-on self test performs diagnostics on the processor, RAM, ROM, parallel port, and network interfaces. The STAT, ERR, and NET LEDs indicate which test is currently in progress.

Run and Auto-reset Mode

Run Mode is the normal operating state of the M205/M206. Auto-reset mode is entered when the watchdog timer is triggered and the Print Server has reset itself. In either mode, the STAT LED flashes differently depending on whether the device's IP address is configured.

Table 4: STAT LED Patterns in Run and Auto-reset Modes

FLASH RATE	INDICATES
On once per second	Normal Mode, IP address configured
On 2.5 times per second	Monitor Mode, IP address not configured
Off once per second	Normal Mode, IP address configured
Off 2.5 times per second	Monitor or Download Mode, IP address NOT configured.
Off once per 2 seconds	Download Mode, IP address configured.

ERR LED Conditions

License Violation

An invalid license mask and key forces the M205/M206 into this mode *after three minutes* of operation. The mask and key settings are printed on the serial number label at the time of shipment.

Firmware Panic

Unrecoverable errors detected by the M205/M206 firmware force it into panic mode. Manually reset the M205/M206 to resume normal operation.

Watchdog Halt

The watchdog timer is a hardware device that resets the system if not serviced regularly by the CPU. It's purpose is to prevent the CPU from entering an infinite loop because of a hardware or firmware problem. After a watchdog interrupt, some diagnostic information is saved for debugging and the device resumes operation in Auto-reset Mode. The M205/M206 will auto-reset up to 16 times before entering non-operational Watchdog Halt.

Spurious Halt

Unsupported interrupts force the M205/M206 into this non-operational mode and typically indicate a hardware problem.

Hardware Exception

Internal errors such as bus errors, address errors or illegal instructions force the M205/M206 into this non-operational mode.

Software Specifications

Standards Supported

ARC	Ethernet Address Control Protocol
ARP	Address Resolution Protocol
BOOTP	Bootstrap Protocol
GOSIP RFC-1042	Government Open Systems Interconnection Profile
ICMP	Internet Address Resolution Protocol
IP	Internet Protocol
IPX	Internetwork Packet Exchange
LPD	Line Printer Daemon Protocol
NetBIOS/SMB	Network Basic Input Output System/ Server Message Block
PAP	Printer Access Protocol
PSERVER/RPRINTER/NPRINTER	
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
RARP	Reverse Address Resolution Protocol
RFC-1001	NetBIOS over TCP/IP
RSHD	Remote Shell Daemon
TCP	Transmission Control Protocol
TELNET	Telnet Protocol
UDP	User Datagram Protocol

TCP Port Numbers Used on the M205/M206

20	TCP Protocol for FTPD (data)
21	TCP Protocol for FTPD (control)
23	TCP Protocol for TELNETD port
514	TCP Protocol Remote Command daemon port
515	TCP Protocol BSD 4.3 LPD port
4410	TCP Protocol PRN port for logging
4400	TCP Protocol PRN port

Note: Client application software can send raw data to PRN by opening a socket to the associated TCP port number as defined above. Such connections are queued along with print jobs using other print methods (e.g. LPR/LPD).

UDP Port Numbers Used on the M205/M206

161   UDP port for SNMP

514   SYSLOG client support

68   BOOTP client port

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GLOSSARY

ARP	Address Resolution Protocol. Associates a selected IP address with a network device's Ethernet address.
banner page	A page printed before the print job which includes details about that job.
bps	Bits per second.
Centronics	Parallel port interface standard found on most printers.
Chooser	Feature within the Apple operating system that controls system devices (e.g. printers).
daemon	A continuously running process that handles system-wide functions like print spooling.
default router	Local device that forwards any IP packets destined for another subnet.
destination	Logical print queue on the M205/M206 which hosts send their print jobs to. There are eight destinations (two per I/O port) by default.
DNS	Domain Name Server. Host providing responses to queries for a given host name's IP address.
EEPROM	Electronically-Erasable, Programmable Read-Only Memory. Preserves data after power is removed. Also known as Flash memory.
Ezsetup	Quick and easy Microplex configuration script that runs on Unix hosts.

factory defaults	Settings shipped with the M205/M206.
flash	Permanent memory in the EEPROM. Stores firmware code and configurable settings. Allows for upgrades without replacing hardware inside the M205/M206.
header strings	Strings that precede print jobs; used to control the printer and set printing options.
ifnum	Interface Number. Represents the network interface. With an M205/M206, this will always be "1" for Ethernet.
interface script	Unix host filter file that processes the print job before it is sent over the network to the M205/M206.
I/O port	Port for attaching peripherals to. The M205/M206 provides one: PRN.
IPAssign	TCP/IP configuration utility.
logpath	Determines type of print job and printer logging needed per job. One logpath is associated with every destination.
LPD/LPR	Line Printer Daemon. The most common TCP/IP remote printing protocol that crosses all hardware utilizing IP.
MIB	Management Information Base. A set of variables (database) managed by an SNMP manager application.
model	Defines how a print job should be processed (e.g. banner pages added, ASCII to PostScript conversion) as it passes through the M205/M206. One model is associated with every destination.

MPS	Microplex Printing Solution (MPS). Alternative Windows printing solution.
NDS	Novell Directory Services. Novell's global directory structure for NetWare versions 4.0 and higher.
NetBIOS	Network Basic Input Output System. Common interface among PC networks.
netmask	see *subnet mask*.
NIT	Network Interface Tap. A module that serves as a generic interface between the data link protocol layer (i.e. Ethernet) and higher interface network protocol layers. Each NIT is indexed by an interface number (ifnum).
npsh	Extensive built-in command shell within the M205/M206.
papname	Printer access protocol name. An AppleTalk name for each printer defined on the host. Makes up the second half of the name listed in the Chooser and is transparently mapped to a M205/M206 destination.
PDF	Portable Document Format. Encodes different types of documents enabling them to be read across multiple platforms.
ping	Packet Internet Groper. A program used to test reachability of destinations by sending them an ICMP echo request and waiting for a reply. It is a standard command to test a TCP/IP connection. (e.g. "**ping 192.75.11.9**)

print path	Three-stage path a print job takes when it is sent from a host to a printer through the M205/M206.
PSERVER	Print Server. A Novell print method where the M205/M206 continuously polls the Novell file server's print queue looking for print jobs.
RAM	Random Access Memory. Volatile memory within the M205/M206 that contains current/working settings. Settings are lost once the power is removed.
RARP	Reverse Address Resolution Protocol. Allows a network device to discover its IP address dynamically upon bootup. The IP address doesn't need to be stored within the device itself permanently.
router	A device that forwards IP packets to their destination. Also called a gateway.
RPRINTER	Remote Printer. A Novell print method where the M205/M206 waits for jobs to be sent to it from a defined PSERVER.
serial number	Five-digit number found on the bottom of the M205/M206.
SNMP	Simple Network Management Protocol. A standard protocol used to monitor network devices called "SNMP agents".
socket	TCP connection between two hosts consisting of a source and destination TCP port number at each end.
spooling	Storing data in memory or in a file until it can be printed.

subnet mask	A binary value used to divide IP networks into smaller sub-networks or subnets. This mask is used to help determine whether IP packets need to be forwarded on to other subnets.
tar	Command for archiving data onto a permanent storage medium. Used in Unix networks.
TCP/IP	Suite of protocols that act as the base protocol for the Internet.
TCP port	A logical connection point in the software of a TCP host or device. When two IP devices talk, they establish a socket which consists of a source and destination TCP port number on both ends.
telnet	Command and protocol to establish a terminal connection between two hosts on an IP network.
trailer strings	Strings that follow print jobs; used to control the printer and set printing options.
zone	A pre-defined group of AppleTalk stations which helps divide up larger networks.

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INDEX

Symbols

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