WINDOWS 2000/XP/2003 LPR CONFIGURATION

Overview

This chapter discusses the M202, M202Plus, M205, M305 and M307's support for Windows NT4.0/2000/XP, describing a complete Windows setup including:

1. Identifying the M202, M202Plus, M205, M305 and M307 on the network using TCP/IP as the underlying protocol.
2. Configuring the M202, M202Plus, M205, M305 and M307 with its mandatory TCP/IP settings (i.e. IP address and subnet mask).
3. Configuring a new printer on the Windows station.

Note: M202 has to have firmware version 5.6.10 and M202Plus has to have firmware version 6.1.2.1 to work with Windows 2000 and Window XP.

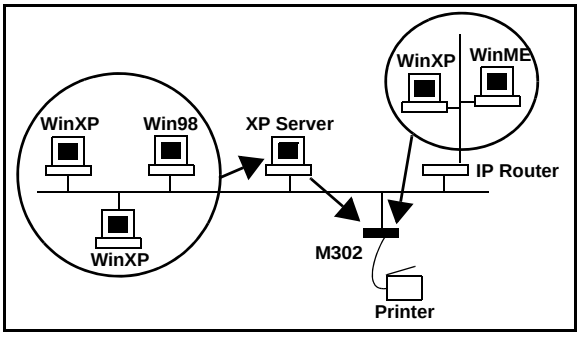
See these sites for more information:

http://www.microplex.com/support/distrib/m202m212.html
http://www.microplex.com/support/distrib/m202plus.html

Environment Description

The M202, M202Plus, M205, M305 and M307 supports network printing under Windows environments by utilizing TCP/IP. There are two common setups for printing in a Windows environment: setup a printer on an NT server to be shared by Windows 95/98/ME and Windows NT/2000/XP clients, or have each Windows station print directly to the M202, M202Plus, M205, M305 and M307. Figure 1: *Windows Integration* outlines these two types of setups.

Figure 1: Windows Integration



M202, M202Plus, M205, M305 and M307 Configuration

Mandatory

Since TCP/IP is relied upon for Windows printing, the M202, M202Plus, M205, M305 and M307 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

You can use *Configure IP Address Using ARP* on page 2. Once you have the TCP/IP settings stored on the M202, M202Plus, M205, M305 and M307, the next section will help you setup a new network printer on your Windows station.

Configure IP Address Using ARP

To configure the M202, M202Plus, M205, M305 and M307 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 M202, M202Plus, M205, M305 and M307 since ARP is limited to subnets.
2. Find the Ethernet address for the M202, M202Plus, M205, M305 and M307 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 M202, M202Plus, M205, M305 and M307. This is the most common syntax for this command:
   arp -s *ipaddress ethernetaddress*

   Example for Microsoft TCP stacks:

   ```
   arp -s 192.168.11.9 00:80:72:0A:00:60
   ```

   This example specifies an M202, M202Plus, M205, M305 and M307 using IP address **192.168.11.9** and Ethernet address **00:80:72:0A: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 M202, M202Plus, M205, M305 and M307 can be seen on your network.

   At this point, you should be able to communicate with the M202, M202Plus, M205, M305 and M307 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 M202, M202Plus, M205, M305 and M307 is power cycled, these settings will disappear unless you store them into Flash. To do this, you will need to:

HTML Method

1. Load a Web browser on your Unix station and direct it to the URL "***`http://M202, M202Plus, M205, M305 and M307IPaddress/networkConf.html`***" (e.g. "**`http://192.168.11.9/networkConf.html`**").

   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.

2. At the "Network Configuration" HTML form that displays, click in the field below the "IP Address" heading and type in the IP address for the M202, M202Plus, M205, M305 and M307.

3. Under the "Subnet Mask" heading, enter the M202, M202Plus, M205, M305 and M307's subnet mask.

   Note: If you would like to communicate with the M202, M202Plus, M205, M305 and M307 from across routers, you will need to fill in an entry within the "Routing" section. See "Communicating Across Routers" on page 50 for further details.

4. Click on the "Submit" button when done.

5. Go to the "System" page and click the "reboot" button to make the new settings take effect.

Manual (Telnet) Method

1. Start a Telnet session with the M202, M202Plus, M205, M305 and M307. Type:
   `telnet M202, M202Plus, M205, M305 and M307IPaddress`

2. Login to the M202, M202Plus, M205, M305 and M307 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 M202, M202Plus, M205, M305 and M307's IP address followed by a colon, then root. For example:

   `IPaddress:root>`

3. Store the new IP address and netmask in EEPROM so that the M202, M202Plus, M205, M305 and M307 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 M202, M202Plus, M205, M305 and M307 since there is only one network interface.

   Note: If you would like to communicate with the M202, M202Plus, M205, M305 and M307 from across routers, you will need to fill in an entry within the "Routing" section. See "Communicating Across Routers" on page 50 for further details.

4. [**Optional, but recommended**] Configure root and guest user passwords with the following commands:
   `set user passwd root newRootPssswd`

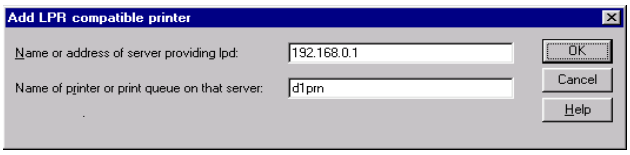
`set user passwd guest` ***`newGuestPasswd`***

5. Save these configurations to EEPROM. Enter:
   `save`
6. Verify the IP address and netmask. Enter:
   `list stored tcpip`
7. Logout of the Telnet session with **quit**. Then reboot the M202, M202Plus, M205, M305 and M307 by powering the unit off and on.
8. Test the equipment and configuration after the installation is complete. Enter "**`ping`** ***`IPaddress`***" at the shell prompt.

Changing Destination Names (LPR setups)

When defining some printers within Windows environments, the M202, M202Plus, M205, M305 and M307 requires that you specify a predefined destination rather than any name you'd like. For example, when creating a new LPR printer under Windows NT/2000/XP, you are faced with a screen similar to .

Figure 2: Windows NT LPR Print Setup Dialogue Box



The first field specifies the IP address for the M202, M202Plus, M205, M305 and M307 and the second field must be filled in with an existing destination on the print server (e.g. d1prn). Otherwise, the M202, M202Plus, M205, M305 and M307 won't accept this as a valid network printer.

The default names are Table 1: *M202/M202Plus* on page 5 and Table 2: *M205/M305* on page 6:

Table 1: M202/M202Plus

Name	I/O Port
d1prn1	prn1
d2prn2	prn2
d3com1	com1
d4com2	com2
d5prn1	prn1
d6prn2	prn2
d7com1	com1
d8com2	com2

Table 2: M205/M305

Name	I/O Port
d1prn	prn
d2prn	prn
d3prn	prn
d4prn	prn

Each of these names can be changed to something more meaningful. To do this, you will need to:

HTML Method

1. Load a Web browser on your Windows station and direct it to the URL "***`http://IPaddressOf-PrintServer/destConf.html`***" (e.g. "**`http://192.168.11.9/destConf.html`**").

   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.

2. At the "Print Path Configuration" HTML form that displays, select a destination link from the top of the page to bring up the appropriate destination's form. By default, you should see a line near the top of the form showing all of the four destinations listed above.
3. Once the desired destination's HTML form displays, highlight the "Name" field and type in the new name for this destination.

   Note: When renaming a destination, you should keep the name similar to the I/O port or printer it points to on the M202Plus and M305. For example, if you have an HP LaserJet IV attached to the PRN port, you may want to use a name like "**`lsr4prn`**" for identification purposes.

4. Click on the "Submit" button when done.
5. Go to the "System" page and click the "reboot" button to make the new settings take effect.

Manual (Telnet) Method

1. Telnet to the print server. This will bring up a login screen:
   `telnet `*`ipaddress`*

   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.

2. You should now see a prompt displayed that has the M202, M202Plus, M205, M305 and M307's IP address followed by a colon then root.
   `ipaddress:root>`

3. Change the current name of the *destination* to a new name as indicated by *newname*. This *newname* must be nine characters or less or else it will be truncated and these names are case sensitive.

Note: When you change a destination name, you may have to reconfigure the host to reflect the change.

`set dest` *`destination`* `name` *`newname`*

```
set dest d1prn name lsr4prn
```

Note: When renaming a destination, you should keep the name similar to the I/O port or printer it points to on the M202, M202Plus, M205, M305 and M307. For example, if you have an HP LaserJet IV attached to the M202, M202Plus, M205, M305 and M307, you may want to use a name like "**`lsr4prn`**" for identification purposes.

4. Save these configurations to Flash. Enter:
   `save`
5. Logout of the Telnet session with "**`quit`**". Then reboot the M202, M202Plus, M205, M305 and M307 by powering the unit off and on.

Host Configuration

There are a number of possible ways to configure a printer in a Windows environment. These include:

1. Direct TCP/IP printing with MPS (Microplex Printing Solution).
2. LPR (Berkeley's Line Printer Protocol which uses TCP/IP to transfer data to the print server's built in Line Printer Daemon).

Note: Which method you choose depends on your particular Windows software and operating system. Microplex recommends the use of MPS (Microplex Printing Solution) for Windows 95/98/ME printing 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 so that print jobs won't be lost due to the connection timing-out, as can occur in a NetBIOS setup.

The following list shows which print methods are supported by each operating system:

Table 1: Windows Print Methods

Operating System	Print Methods
Windows NT/2002/XP	LPR

Note: LPR printing is supported in the Windows 95/98/ME environment with third party software.

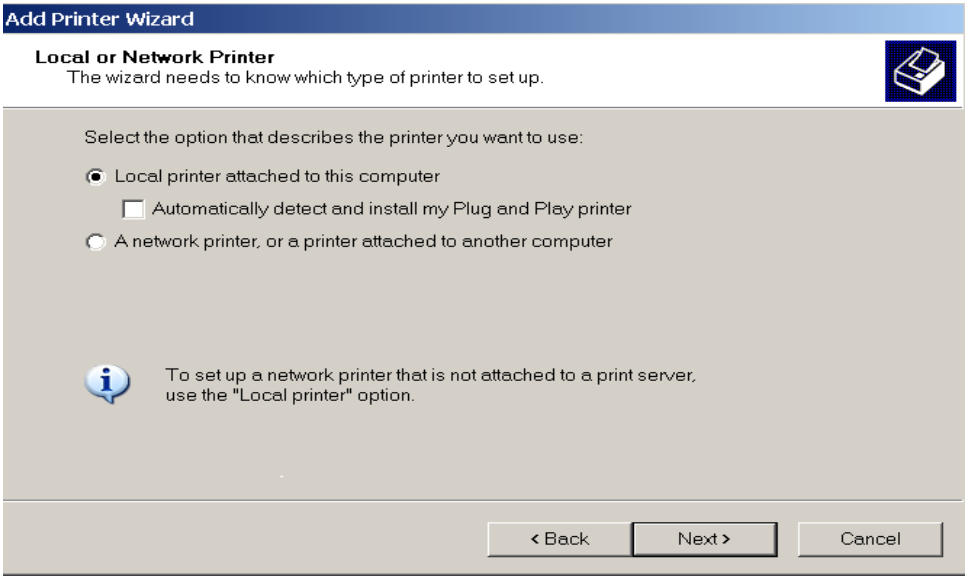
Host Printer Setup

Creating an LPR Printer On Windows 2000/XP

To configure a new LPR printer on a Windows 2000/XP station/server, you will need to:

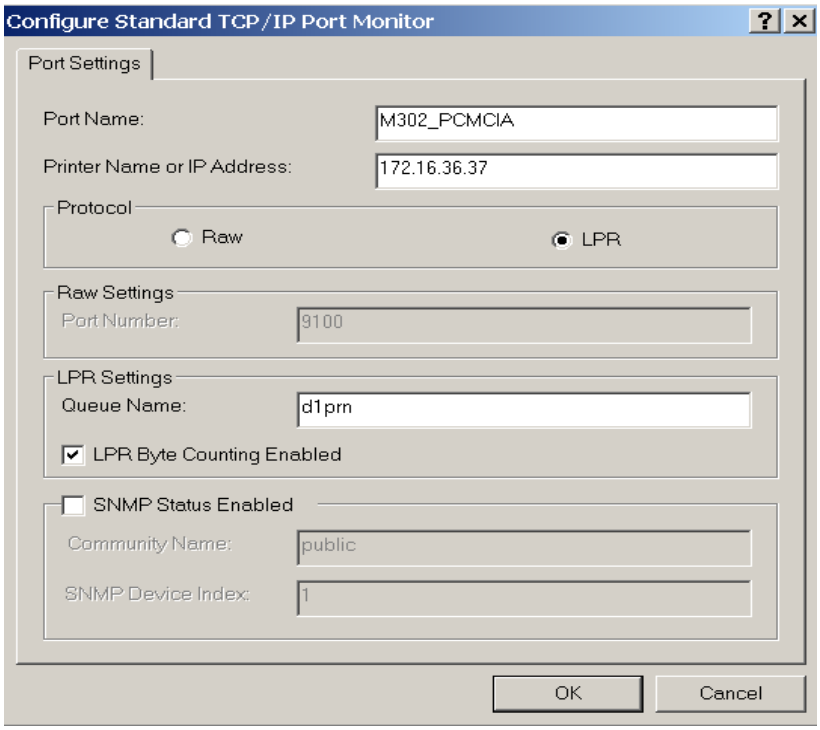
1. Select “Printers” from the “Settings” sub-menu on the “Start” menu.
2. Double click on the “Add Printer” icon.
3. Click On Add Printer. and select "Local Printer".
4. UnSelect "Automatically detect and install my Plug and Play printer", see Figure 3: *Add LPR compatible Printer Dialogue Box* on page 9.

Figure 3: Add LPR compatible Printer Dialogue Box



5. Click On "Next" and click "Create a new port".
6. Select Type: "Standard TCP/IP Port".
7. Click On "Next" and enter the DNS name or IP address in Printer Name or IP Address, eg. "192.197.122.101".
8. You can leave the Port Name unchanged or rename it. Default based on above IP address will be "IP_192.197.122.101".
9. Click On "Next". Device TypeSelect "Custom".
10. Click on "Settings" and Select "LPR" as the protocol.
11. You can name the Printer name anything you want.
12. For "Queue Name:" enter "d1prn".
13. Select "LPR byte counting Enabled".
14. Click on "OK" and "Finish". See example Figure 4: *Port Settings* on page 10

Figure 4: Port Settings



15. Click on “Next >”, decide if you want to share the printer, and then click on “Next >” again.
16. 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 LPR over TCP/IP as the underlying protocol to print to the M202, M202Plus, M205, M305 and M307.

Installing LPR Network Software on Windows NT4

Make sure that “Microsoft TCP/IP Printing” is installed in your Network control panel. If not, you’ll need to perform the following steps:

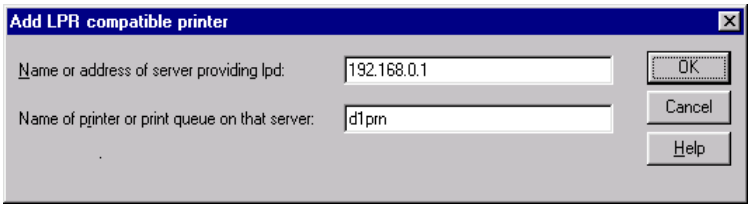
1. Select “Control Panel” from the “Settings” sub-menu on the “Start” menu.
2. Double click on the “Network” icon.
3. Click the “Add...” button on the “Services” tab.
4. Select “Microsoft TCP/IP Printing” in the “Network Service” list, and click “OK”.
5. Click “OK” and answer “Yes” when prompted to reboot.

Creating an LPR Printer On Windows NT4

To configure a new LPR printer on a Windows NT4 station, you will need to:

1. Select “Printers” from the “Settings” sub-menu on the “Start” menu.
2. Double click on the “Add Printer” icon.
3. Select the “My Computer” radio button in the “Add Printer Wizard” that loaded, and click on “Next >”.
4. Click on “Add Port...” to bring up the “Printer Ports” dialogue box.
5. Select the “LPR Port” entry from the “Available Printer Ports” list, and click on the “New Port...” button to bring up a dialogue box similar to the one found in .

Figure 5: Add LPR Compatible Printer Dialogue Box



6. Type in the IP address or host name of the M202, M202Plus, M205, M305 and M307 in the first field.
7. Type in the name of a *predefined destination/queue* on the M202, M202Plus, M205, M305 and M307 in the second field.

   Note: The *predefined destination/queue* names are used in this example. See Table 1: *M202/M202Plus* on page 5 and Table 2: *M205/M305* on page 6 for more information on *predefined destination/queue*. It must be *lowercase* by default. “**d1prn**” for the single prn port, M205 or M305 print server and “**d1prn1**” for the first prn port of the M202 or M202Plus print server. To use a different name, please see *Changing Destination Names (LPR setups)* on page 5

8. Click “OK” when done specifying these two fields.
9. Click on “Close” to close the “Printer Ports” dialogue, and then click on “Next >”.
10. At the next window, select the appropriate printer manufacturer and model of the printer attached to the M202, M202Plus, M205, M305 and M307 and click on “Next >”.
11. Fill in a “Printer 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.
12. Click on “Next >”, decide if you want to share the printer, and then click on “Next >” again.
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 LPR over TCP/IP as the underlying protocol to print to the M202, M202Plus, M205, M305 and M307.

M202, M202Plus, M205, M305 and M307 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 M202, M202Plus, M205, M305 and M307 from a Windows station on the *same subnet*? The print server can only be seen locally unless you configured a routing entry earlier on.
- If you look at the front of the M202, M202Plus, M205, M305 and M307, 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 M202, M202Plus, M205, M305 and M307 is working correctly? Trying different network cables and locations will help narrow down the problem.

HTML Configuration Forms Won't Display

- Can you "`ping`" the M202, M202Plus, M205, M305 and M307 from your Windows station? If not, please see section above on *M202, M202Plus, M205, M305 and M307 Won't Talk on the Network.*
- Have you used the correct URL for the M202, M202Plus, M205, M305 and M307's home page? It should be **`http://M202, M202Plus, M205, M305 and M307IPaddress (e.g. "http://192.168.11.9`**").

Errors Occur When Defining an LPR Printer

- Can you "**`ping`**" the M202, M202Plus, M205, M305 and M307 from your Windows station? If not, please use ***IPAssign*** to find the unit.
- Did you specify the correct IP address or host name for the M202, M202Plus, M205, M305 and M307 in the first field of the "Add LPR Compatible Printer" box?
- Did you specify a valid destination/queue on the M202, M202Plus, M205, M305 and M307 in the second field of the "Add LPR Compatible Printer" dialogue box? If so, did you also enter it in lowercase letters, *d1prn*?

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 95/98 and ME stations, a busy printer can cause Windows to display a printer error message. This is because Windows 95/98 and ME 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.
- Have you tried restarting the spooler under the "Services" control panel? 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 M202, M202Plus, M205, M305 and M307 has nothing to do with this problem so it can be left alone.

Queue hangs

Hanging print jobs or queues with Windows usually means there's a problem at the host end. Most likely the printer and print server are sitting on the network waiting for some form of activity but the host is not doing anything. This is very typical for any LPR printing with Windows and is possible with other setups as well.

The first thing to check is that the printer is in fact ready to go, meaning it is willing to accept more data. The best way to do this is to the use the "**`lpstat`**" command found on the print server. In fact, this command's output will tell you where exactly the problem is. Therefore, you'll want to telnet into the unit when the hanging occurs and issue "**`lpstat`**". Search under the appropriate I/O port you are printing to and see if you see any messages like:

- "printing data - blocked"

  If you see this message with the seconds to the right of the "blocked" message incrementing with every "**`lpstat`**" command you issue, then the printer is not allowing the print server to pass data to it. This will hang the print queue because the print server cannot take more data in its output buffer until the "blocked" message goes away (i.e. the printer sends the signal saying it's okay to send more data).

  Once the printer is cleared of any error situation and the "blocked" message goes away, the print job should then go through and the queue should move along properly.

  However, if the printer is in fact on-line and ready to print but you're still seeing "blocked" messages, there may be a problem with the communications between the print server's I/O port and the printer. Possibly the cable is faulty and the send signal isn't getting through to the print server or maybe the printer and print server aren't communicating properly. If this is the case, you need to look closely at the settings on both the printer's interface and the print server's I/O port interface. Another option is to try another printer to see if it works any better.

- "printing data - waiting"

  Anytime you see this message, the print server says it knows about the print connection but it is waiting for the host to send data. Currently the unit's buffer has some room in it for more data but the host is not cooperating. Therefore, you need to look to the host to see why it is hung up. Look for errors that might lead you in the right direction and definitely make sure the host can still see the print server on the network using "ping" or "telnet".

Other Errors

Printing in a Windows environment can produce various errors that are not always meaningful to the user. Some common ones are “Windows cannot write to this file.” or “A network error has occurred.”

These errors come up because the print server cannot take more data for some reason (i.e. the printer is in an error state). Windows has a real problem if it can’t send all of the print job data right away so if it’s blocked from sending data, its spool file builds and builds leading to an error like the ones mentioned. Be sure to check the “**`lpstat`**” output on the print server to determine where the problem is and if it’s host related, keep the LPR bug in mind.