7411™ Print Server
802.11b/g Wired/Wireless
Operating Instructions

Monarch®
9825®
Printers
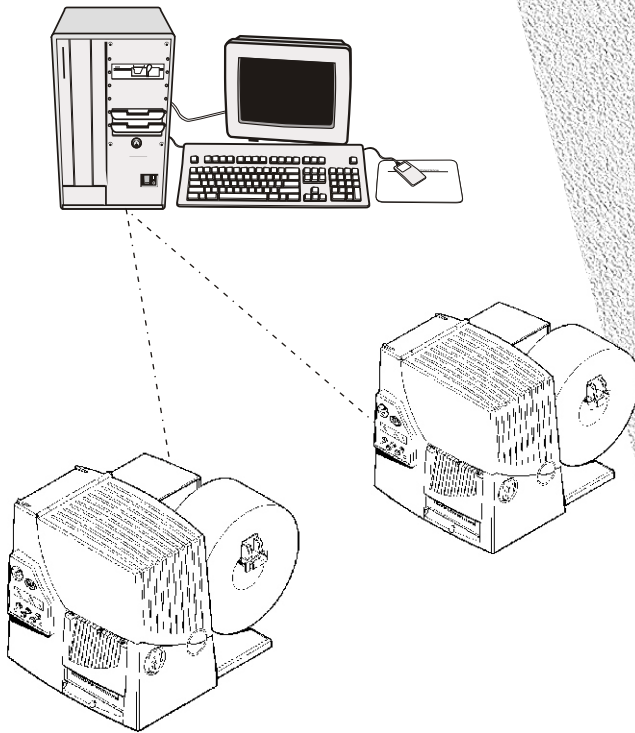
AVERY DENNISON

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GETTING STARTED

The Monarch® 7411™ Print Server lets you communicate with the Monarch® 9825® printer on a wired Ethernet 802.3 network, or on an 802.11b or 802.11g wireless network. 802.11b/g refers to 802.11b and 802.11g in this manual.

Information in this document supercedes information in previous versions. Check our Web site (www.monarch.com) for the latest documentation and release information.

Overview

You can use the print server in Ad-Hoc (peer-to-peer) or infrastructure (access point) wireless mode. The print server operates at speeds of up to 11 Mbps on any IEEE 802.11b and 54 Mbps on any IEEE 802.11g wireless compatible networks.

The wireless print server includes a dual-mode built-in wired Ethernet (802.3) connection so the print server automatically switches between wireless and wired Ethernet mode within the same subnet address. When switching between wired and wireless mode on different subnets, turn off the printer and then turn it back on to reinitialize the print server.

Follow the instructions in this manual to configure the wireless print server for your printer. For more information and software downloads, see Chapter 5, "Troubleshooting."

System Requirements

To use the print server for printing from a wireless network, you need an 802.11b/g wireless network. The wireless network consists of either of the following:

♦ An 802.11b/g wireless enabled PC printing straight to the printer (Ad-Hoc or Peer-to-Peer Mode).

♦ An 802.11b/g wireless access point allowing wireless and wired Ethernet enabled computers to print to the print server (Infrastructure Mode).

To configure and print, you need the following:

1. The MAC address from the label of the print server (for example: 004017023F96).

2. The following information from your wireless network administrator:

♦ Wireless Mode (Infrastructure or Ad-Hoc)

♦ The SSID (service set identifier) for your wireless network.

♦ If you are using TCP/IP (recommended for Windows Networks) and are not connected to a server that automatically assigns your IP address, you need to set the printer in Static mode and assign a unique IP Address for the wireless print server (for example: 192.168.1.14) and a subnet mask. A router (default gateway) address is optional.

Network Protocols Supported

♦ TCP/IP:
  LPD/LPR, FTP, or IPP
  Raw TCP/IP (port 9100 or any chosen port)
  NetBIOS over IP (with SMB)
  NetWare (NEST)
  NetBEUI
  DLC

♦ Telnet

♦ WINS

♦ DHCP

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Checking the Print Server Hardware

The print server comes preinstalled and tested in your printer. Do not plug any cables into the parallel port when using the print server. A printer with this print server cannot use the parallel port. However, the serial port is still active.

Antenna

Test/Reset Button

Serial Port
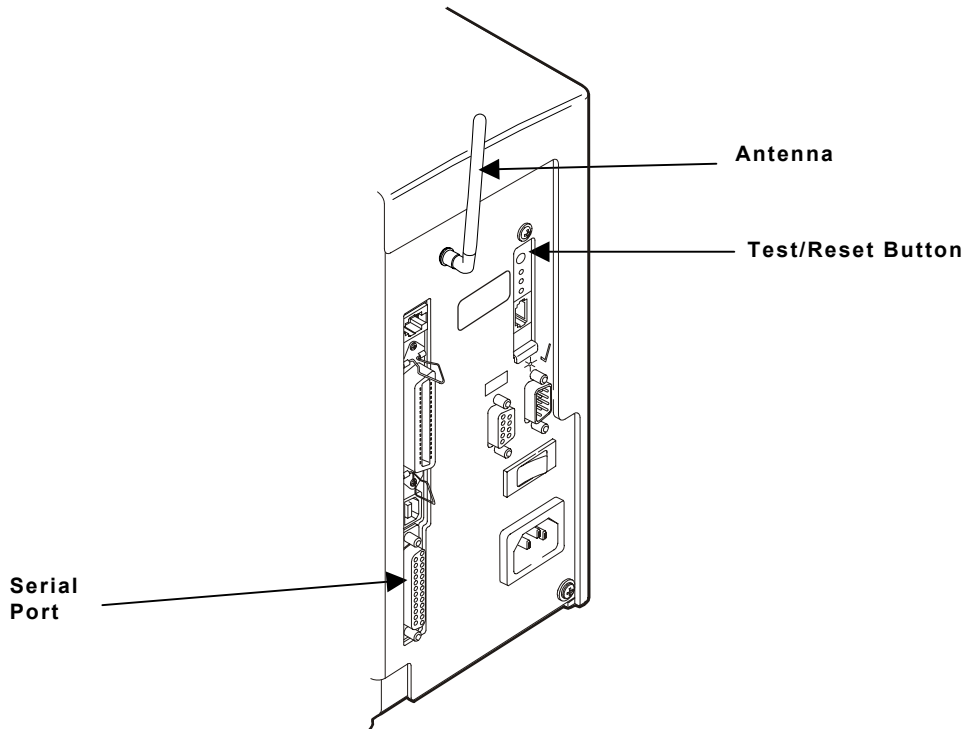
Verifying Successful Installation

When the print server is turned on, it goes through the following startup sequence:

♦ It runs through a set of power-up diagnostics for a few seconds. The top orange light comes on when the unit is turned on. The middle light comes on solid yellow when an Ethernet link (wired 10baseT) is established. The bottom comes on solid green when an Ethernet (wired 100baseTX) link is established. Both the yellow and green lights will come on solid when a wireless link is established. The yellow and green lights blink during network activity. The top light blinks orange if there is an error.

Test/Reset Button	Press this button down for less than 5 seconds to print a test page on the printer. The test page shows the current wireless and network settings of the print server. See "Sample Test Page" for more information. If the test page does not print, see Chapter 5, "Troubleshooting."
	Press this button down for more than 5 seconds while turned on to reset the print server to its factory default parameters. The print server re-initializes automatically.
LED Status Indicators	The top orange light comes on when the unit is turned on. The middle light comes on solid yellow when an Ethernet link (wired 10baseT) is established. The bottom comes on solid green when an Ethernet (wired 100baseTX) link is established. Both the yellow and green lights come on solid when a wireless link is established. The yellow and green lights blink during network activity. The top light blinks orange if there is an error.
Antenna	A rugged 802.11b/g compatible antenna, mounted on the back of plastic-cover printers or on the top of metal-cover printers.

Sample Test Page

The test page is best displayed using 4" wide by 6" long labels. If the label is too small, some information may print outside the label edges.

Firmware versions →

MAC address →

WiFi settings →

Security setting →

Should be at least 60% →

Actual SSID should match WiFi SSID →

TCP/IP settings →

Set method should match defined Method →

How print server is communicating →

```
PAXAR

------------- MonarchNet Print Server Status -------------

MonarchNet Network Adapter-PLUS
FW Ver. CTMO -7.01E (2006.03.10)        Netware Retries:            0
Boot Ver. 1.0                            Frame type Network      Count
Ethernet:  00-40-17-1e-85-92   EN_11     Unknown                  1126
Node name:  MON_002077                   EN_802.2  Unknown        1126
                                         EN_802.3  Unknown        2718
Active Services:                         EN_SNAP  Unknown         1126
PXRIE8592_X1
BINARY_X1                                AppleTalk Name:
TEXT_X1
POSTSCRIPT_X1                            AppleTalk Zone:
PCL_X1
                                         NetBIOS Computer Name:

                                         NetBIOS Domain:

                                         Primary WINS server

                                         Secondary WINS server

TCP/IP          Enabled
Netware         Enabled                  WiFi Channel:               0
AppleTalk       Disabled                 WiFi SSID:                AAA
POP3            Enabled                  WiFi Mode:    INFRASTRUCTURE
DLC             Disabled                 WiFi Speed:                54
NetBIOS/IP      Disabled                 WiFi WEP:            Disabled
NetBEUI         Disabled                 WiFi Signal Quality:      75%
LAT             Disabled                 Actual SSID:
Banyan          Disabled
                                         Wired/Wireless:    WIRED
IP address       192.0.0.192
Subnet mask      255.255.0.0             NETWORK STATISTICS
IP Gateway       192.0.192.0             Packets Received        17881
   (via DHCP     192.0.1.1)              Bytes Received         808113
Boot method      DHCP                    Bad Packets Received        0
Boot tries       3                       Receiver error mask      0000
                                         Receiver overruns           0
Netware Status:  Not                     Packets Transmitted      4903
Mode:  Queue Server                      Bytes Transmitted      505531
Server Name:                             Packet Collisions           0
                                         Transmit packet fail        0
```

CONFIGURING THE 802.11b/g AND IP SETTINGS

<div style="float:right">**2**</div>

Configuring the Print Server

To configure the print server for a 802.11b/g wireless network, you must set the wireless mode (Ad-Hoc or infrastructure), SSID, channel (Ad-Hoc mode only), data rate and security. All nodes of a wireless network need to have the same settings in order to communicate with each other.

Before You Begin

Properly configure your computer for communication on a wireless network before you continue. If you are connecting to the device through an access point, your computer should be in infrastructure mode and associated with the access point. If you are connecting directly to the device without an access point, you should be in Ad-Hoc mode.

Note: If your wireless adapter includes an option for 802.11 Ad-Hoc, you must select it if you need to use the printer in Ad-Hoc mode. If it does not include this option, select Ad-Hoc Computer-to-Computer, or whatever mode your adapter uses to communicate on a wireless network without an access point.

If you are using WEP (Wired Equivalent Privacy) encryption or other advanced security, such as WPA (Wi-Fi Protected Access), on your wireless network, temporarily disable the security on your PC in order to configure the print server. If you are using an access point with security enabled and it does not allow non-secure clients to communicate with other non-secure clients, temporarily change the wireless mode of your computer to Ad-Hoc (802.11) mode.

Note: If no computers on your network can be set to Ad-Hoc mode, temporarily disable security on your access point. When you are done configuring the print server, you can re-enable security on your computer and change the wireless mode back if necessary. You can also use a wired connection to configure the print server.

♦ If you are using TCP/IP, note your computer's IP address. The print server needs to be on the same IP segment as the other nodes on your network in order to communicate.

♦ You should have a good signal between your computer and the access point.

Installing the Software

The following operating systems are supported:
Microsoft® Windows® NT® 4, 2000, and XP.

Follow these steps to install the Monarch® NetManager software and configure the print server. You can also download the utility from our Web site.

1. Insert the CD-ROM (included with your printer) into your PC.

2. Click on the Software folder, click Network Utilities, NetManager folder, then click on Setup.exe.

3. Follow the on-screen instructions for installing the utility. When NetManager starts for the first time, you will see the NetManager Welcome screen.
   You are prompted to enter a View name. Then you can either select the protocol and filter settings, or "Automatically create a view with default settings."

4. Click Finish to begin searching for print servers. NetManager gets the information from the print server(s) and lists the server name, IP address, and hardware (Ethernet) address. It might take a minute or two for the printer server to show up, especially if you have a large wireless network. The default name of the print server is PXRxxxxxx, where xxxxxx is the last 6 digits of the Ethernet address (for example, PXR08B2C7).

Note: If you do not see the print server in the list, hold down the test button on the back of the print server for more than 5 seconds to reset it to factory defaults and try the search again. If you still do not see it, see Chapter 5, "Troubleshooting."

5. When you see the print server you need to configure in the list, highlight it and click the Configuration tool.

Note: If the wireless signal is less than 50% on the Wireless Status screen, printing performance could be affected. To improve the signal strength, try moving the print server closer to the computer or access point and away from other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4 gigahertz cordless phones.

6. Configure your print server to the settings you need. Many of the fields are automatically configured to match the network being used, so you may not need to change the Wireless Mode, RF Channel, SSID, and Data Rate settings unless you need to change the print server to a different wireless network.

♦ If your network uses WEP encryption or other advanced security, you need to enable the security and enter the appropriate key(s). Contact your system administrator to determine what information you need.

♦ If you are using TCP/IP and you do not have a DHCP server (see note below), you need to manually assign a valid IP address, subnet mask, and gateway and then set the boot method to static.

7. When you are done configuring, click OK. You are prompted to save changes and reset the print server. Click OK. The print server resets with your new configuration. This may take several minutes.

Note: If you are using DHCP on your network, the print server may have acquired valid IP settings at this point and no further configuration is necessary. This might work well if your DHCP server allows the print server to keep this address permanently, but in most cases, you should use a static address outside the range reserved for DHCP (Refer to your DHCP server documentation for details). This is because when you configure your printer port, it goes to a static IP address.

MANAGEMENT METHODS

There are a variety of ways to configure and monitor the print server. These methods are: Web browser, NetMgr, MonarchNet Console, HP JetAdmin, HP Web JetAdmin, or Telnet. For Telnet/console mode information, see Chapter 6, "Telnet Console Commands."

MonarchNet Console

This is a command-line oriented console that contains features not available through NetManager or a Web browser. The default password is `access`.

The console can be accessed via:

♦ Telnet
♦ Web browser

Note: Enter the IP address in the browser. When prompted to enter password, type `access`. On the network configuration main menu, select Console. The screen allows you to enter console commands. See Chapter 6, "Telnet Console Commands," for more information.

HP JetAdmin Utility

This HP Windows-based utility (works transparently with JetAdmin) can be downloaded from the HP Web site (**www.hp.com**).

Note: The print server does not appear in the list of configured servers unless TCP/IP or IPX is running on the computer.

HP Web JetAdmin Utility

This HP utility for Windows NT Advanced Server and Windows 2000 can be downloaded from the HP Web site (**www.hp.com**). Once it is installed, a web browser on any computer that has access to the Windows NT/2000 server may be used to access the print server.

Microsoft® Windows® Network Configuration

The print server includes the easy-to-use NetManager software for printing from Windows computers over an 802.11b/g wireless link. This software creates a network port on the Windows system, which acts like a normal parallel port. As a result, it works transparently with any standard Windows printer driver and application program. Because this software uses the industry-standard TCP/IP protocol, it can be used with IP routers and other IP-based equipment.

Additional Windows Configuration Methods

The print server is also compatible with other methods of printing from Windows. These include the Standard TCP/IP port option in Windows 2000/XP, and the lpr port option in Windows NT that are built into the operating system.

UNIX Network Configuration

The print server appears to the network as a UNIX host computer with a unique IP address running the line printer daemon (LPD) protocol. As a result, any host computer that supports the Berkeley remote-lpr command can spool jobs to the print server without the need for any special software on the host computer.

Note: Before configuring a UNIX print queue, the print server must have a valid IP address.

Berkeley UNIX Host Configuration

Berkeley UNIX host computers include Linux, Digital Equipment Corporation Digital UNIX, OSF/1, and ULTRIX; Compaq Tru64 UNIX; SunOS (not Solaris), SCO UNIX; and many others. Sun Solaris, HP/UX, IBM AIX users should skip to the appropriate sections later in this manual.

♦ Do not use the Linux X-Windows graphical user interface printer configuration utility, because it does not work with Paxar print servers. Instead, Linux users should follow the configuration steps listed in this section.

♦ SCO UNIX users should use the rlpconf command to create a printer and automatically configure the /etc/printcap file (you will still need to edit the /etc/hosts file). Enter the print server's service name (MONxxxxxx_P1) as the name of the printer (refer to the print server self-test for the exact name of this service), and enter the name of the print server that you assigned in the /etc/hosts file as the remote host name; note that because this name must be unique for each printer, we recommend using the MONxxxxxx_P1 service instead of the normal BINARY_P1 service.

1. Edit the /etc/hosts file: (or equivalent local host table). For example:

```
192.189.207.33    monprinter
```

2. Edit the printcap file: An example of a typical entry in the printcap file is:

```
MonarchPrinter:\
:lp=:\
:rm=MON:\
:rp=BINARY_P1:\
:sd=/usr/spool/lpd/MonarchPrinter:
```

   "MonarchPrinter" is the queuename.

   "MON" matches the name in the hosts file.

   "BINARY_P1" is the print server's service name.

Note: Use TEXT_P1 instead of BINARY_P1 for text files."sd" is the spool directory.

3. Create the spool directory: The lpd spool directory is usually located in the /usr/spool directory. To create a new spool directory, use the mkdir command; for example:

```
mkdir /usr/spool/lpd/MonarchPrinter
```

4. Print using the standard lpr command:

```
lpr -PMonarchPrinter  filename
```

5. For AT&T based UNIX systems, such as SCO, use the standard lp command:

```
lp -dMonarchPrinter  filename
```

Sun Solaris Configuration

To use a print server with Sun Solaris, first use the Host Manager in the Admintool utility to add the print server IP address and name to the /etc/hosts file.

1. Click None - Use /etc files on host

2. Click **Apply**.

3. Click Edit and then Add Host.

4. Enter the print server name as the Host Name (this name is anything you want, but should not have an "_" character in it).

5. Enter the **IP address** and **Ethernet address** of the print server (the Ethernet address has the format aa:bb:cc:dd:ee:ff)

6. Click **Add** and then close the Host Manager windows.

7. Use the Printer Manager in the Admintool utility under Open Windows as follows:
   Select **Edit**
   Select **Add**
   Select **Add Access to Remote Printer**
   At the PrinterName prompt, type any name for the print queue
   At the Printer Server prompt, type:

```
name\!servicename
```

   (for example, MonarchPrinter\!BINARY_P1), where:

   name matches the print server name as entered in the host's table.

   servicename is the print service name. For binary graphics files use the service BINARY_P1; for text files use the service TEXT_P1.

8. Set the Print Server OS to BSD (this is the default setting).

9. Select **Add**.

10. To print, use the standard lp command; for example:

```
lp –dMonarchPrinter   filename
```

Notes:

♦ We recommend using the /etc/hosts file for the printer name rather than NIS or other name services.

♦ Due to a bug in the Sun lpd implementation on Solaris 2.4 and earlier releases, may cause problems printing very long print jobs. The workaround is to configure the print server as an HP JetDirect card using the HP JetAdmin for UNIX software.

♦ Solaris print queues can also be configured from the UNIX shell using the lpadmin command.

HP/UX Configuration

To configure a print server using HP/UX 10.x, use the same program and these steps:

1. When you get a list of options, select **Printers and Plotters**.

2. Select **LP Spooler**.

3. Select **Printers and Plotters**.

4. Select **Actions** and then **Add Remote Printer/Plotter**.

5. Enter any name as the Printer Name (this is the name of the print queue).

6. Enter the IP address of the print server as the Remote System Name.

7. Enter the print server service name (BINARY_P1 for binary files or TEXT_P1 for text files) as the Remote Printer Name.

8. Check the box next to Remote Printer is on BSD System.

9. You may accept the default values for the remaining items.

10. Click **OK** to configure the printer.

11. You should now be able to print using the lp -d command with the printer name.

Notes:

♦ The configuration for HP Distributed Print Services and for earlier versions of HP/UX is slightly different.

♦ The print server can also be configured as a JetDirect card using HP/UX. To do this, you will need the HP UNIX Host Printing Software (part of HP's JetAdmin for UNIX).

IBM AIX Configuration

To configure a print server on IBM AIX 4.x, use the SMIT program as follows:

1. Enter smit and select **Devices**.

2. Select **Printer/plotter.**

3. Select **Manage remote printer subsystem**.

4. Select **Client services**.

5. Select **Remote printer queues**.

6. Select **Add a remote queue**. Enter the following remote queue settings:

♦ Name of queue to add (user selectable) Activate the queue (Yes).

♦ Destination host (print server's IP address; or if you have configured the /etc/hosts file, use the name of the print server that you specified in that file).

♦ Name of queue on remote printer BINARY_P1 for binary files or TEXT_P1 for text files).

♦ Name of device to add (user selectable; for example lp0).

7. You should now be able to print using the normal lp -d command.

Notes:

♦ The configuration for earlier versions of AIX is slightly different.

♦ The print server can also be configured as a JetDirect card using AIX. To do this, refer to your AIX documentation.

Web Browser

This utility allows the user to configure the print server with a standard web browser like Microsoft® Internet Explorer or Mozilla Firefox®. No additional software is needed on the system. It can be used on any system that supports web browser capabilities.

Simply type the IP address into your Web browser address bar to connect. The default password is `access`.

Note: Both the print server and the PC must be configured with an IP address and your browser must be configured to work across a LAN in order to use a Web browser. See Chapter 4, "Using the Web Interface" for more information.

Configuration on Other Systems

The print server can be used with any computer system that supports the LPR/LPD protocol or HP JetDirect (port 9100 is the default; however, it can be reconfigured). Refer to the system's documentation to configure LPR/LPD or JetDirect print queues.

USING THE WEB INTERFACE 4

You can configure and manage the printer and print server using your Web Browser: Microsoft® Internet Explorer, version 6.0, or greater or Netscape® Communicator, version 4.7 or greater or Mozilla Firefox®.

Notes:
- ♦ The screen pictures shown in this manual may not exactly match the software, since the technology is changing so rapidly.
- ♦ The recommended screen area resolution for your PC is 1024 x 768 pixels.
- ♦ Before you begin, you need to know your printer's IP address. The printer should be turned on and ready to receive data.
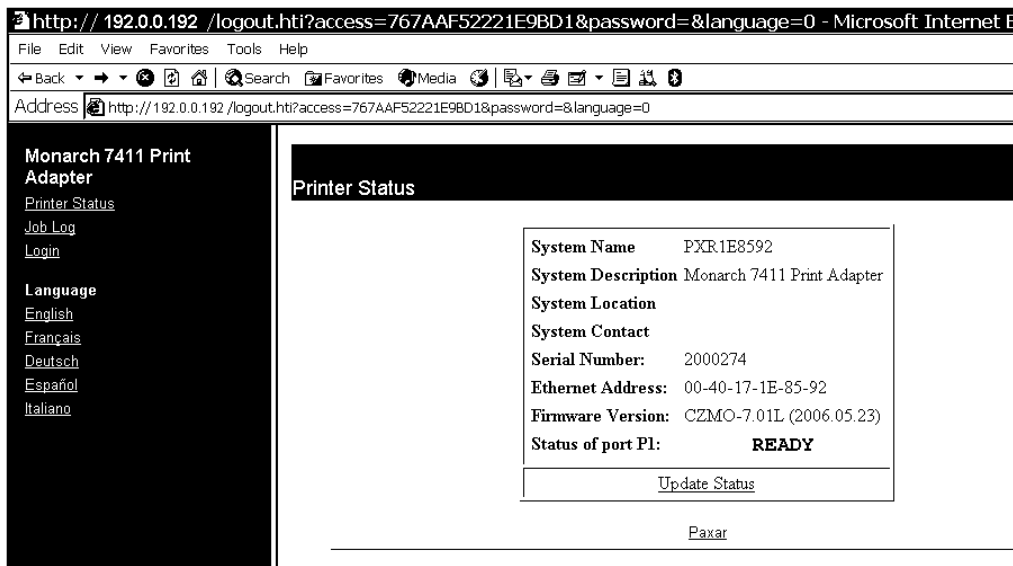
It may take a minute or more before a wireless connection is associated between the print server and the access point. When the printer is connected to an access point, you see

> Print Mode
> Ready

The printer is connected and ready to receive data.

Logging In

1. Start your Web browser.

2. Type in your printer's IP address and press **Enter**. For example, 192.0.0.192.

3. From the side menu, click **Login**.

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4. Type `access` for the password. To change the password, see "Setting the Network Card Access Password," for more information. The password is case-sensitive and saved in the printer's flash memory.

5. Click **Submit**.

The Printer Status page appears with information about your printer, including printer name, Ethernet address, firmware version and more. Click the Paxar link if you need to contact us.

Configuring the Printer

You can configure the printer using your Web browser. Only configure the settings required for your network/printer.

1. From the side menu, click **Server Settings**.

This screen allows you to change the name, location, and other information for your server. It also allows you to set SNMP parameters for the server, reset the server and restore server default settings.

2. Enter your information and click **Submit**.

3. Click the reset link at the bottom of the screen. The Reset Server screen appears.

4. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
You must re-enter your access password to make any further changes to the printer settings.

Configuring the Print Port Settings

This screen allows you to view available ports, change port settings, cancel print jobs, and view the job log for each available port. Only configure the settings required for your network/printer.

1. From the side menu, click **Printer Port**. The available ports are listed.

2. Click the name of the port you want to modify. The Print Port Settings screen appears.

3. Enter the new attributes and click **Submit**.

4. Click the reset link at the bottom of the screen. The Reset Server screen appears.

5. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
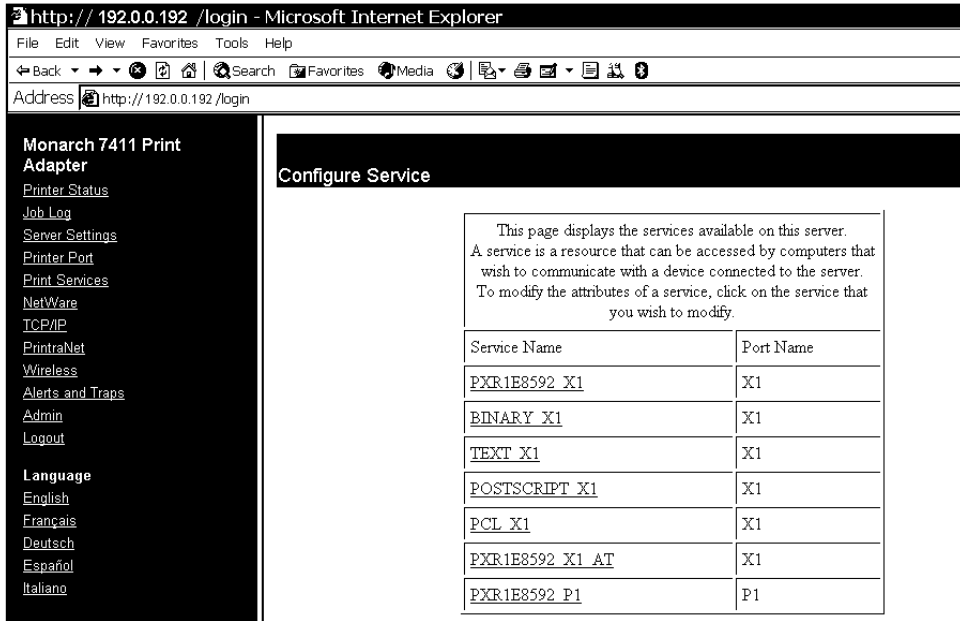
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You must re-enter your access password to make any further changes to the printer settings.

Configuring Print Services

Only configure the settings required for your network/printer.

1. From the side menu, click **Print Services**. The Configure Service screen appears.

2. Click the name of the service you want to modify from the available services listed.

Each configure service screen allows you to specify ports, determine network protocols, set filters and more.

3. Enter the new attributes and click **Submit**.

4. Click the reset link at the bottom of the screen. The Reset Server screen appears.

5. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.

You must re-enter your access password to make any further changes to the printer settings.

Setting NetWare Parameters

You can modify the NetWare parameters from your Web browser. To update NetWare settings, use Telnet console commands. See Chapter 6, "Telnet Console Commands" for more information.

1. From the side menu, click **NetWare**.

2. Click the name of the enable service to modify the NetWare parameters for that service. See "Configuring Print Services" for more information.

You can also change the network frame type (packet format), NetWare password, or disable NetWare.

3. When you are finished, click **Submit**.

4. Click the reset link at the bottom of the screen. The Reset Server screen appears.

5. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.

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You must re-enter your access password to make any further changes to the printer settings.

Changing TCP/IP Settings

Only configure the settings required for your network/printer.

1. From the side menu, click **TCP/IP**.

2. Click the name of the enabled service to modify the TCP/IP parameters for that service. See "Configuring Print Services" for more information.

3. You can change protocols, assign an IP address, subnet mask, gateway and more.

Note: If you disable the IP protocol, you will not be able to configure the printer from your Web browser.

4. When you are finished, click **Submit**.

5. Click the reset link at the bottom of the screen. The Reset Server screen appears.

6. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.

Using the Web Interface **4-7**

You must re-enter your access password to make any further changes to the printer settings.

Configuring PrintraNet

Only configure the settings required for your network/printer.

1. From the side menu, click **PrintraNet**.

2. Enter the IP address of the POP3 or SNMP server on your network where internet print jobs are located.

You may also specify a mailbox name and password. For no password required, enter a single space in the field provided.

3. Click **Submit**.

4. Click the reset link at the bottom of the screen. The Reset Server screen appears.

5. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.

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You must re-enter your access password to make any further changes to the printer settings.

Changing Wireless Settings

This screen allows you to set your wireless parameters. You can change modes, specify your SSID, modify your channel (Ad-Hoc mode only), network speed, access point density, and more. You can also configure network security. See "Configuring Network Security" for more information. Only configure the settings required for your network/printer.

1. From the side menu, click **Wireless**.

2. Select your information and click **Submit**.

3. Click the reset link at the bottom of the screen. The Reset Server screen appears.

4. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.

You must re-enter your access password to make any further changes to the printer settings.

Configuring Alerts and Traps

Alerts and SNMP are supported with the release of version 3.0 or greater printer firmware. The printer also contains the minimum set required to be compliant with MIB version 2.0 (RFC 3805).

Email Alerts

To set up an email alert when the printer goes offline, has a paper jam, or other error:

1. From the side menu, click **Alerts and Traps**.
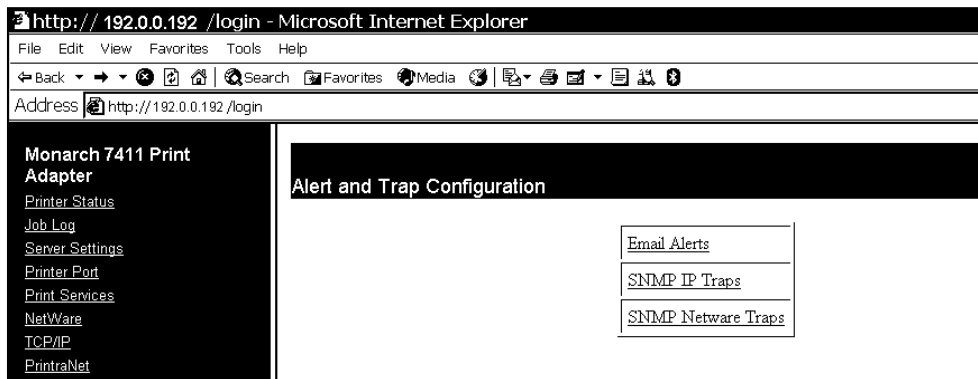
2. Click **Email Alerts** to setup the mail server and select users to receive messages about the printer's status.

3. Enter your SMTP server, email address, and the errors you want to receive notification for. You can enter up to eight email addresses.

4. Click **Submit**.

5. Click the reset link at the bottom of the screen. The Reset Server screen appears.

6. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
You must re-enter your access password to make any further changes to the printer settings.

Receiving An Alert

When the printer goes offline, has a paper jam, or any other error that you selected notification for, a similar email appears in the specified User's inbox:

!	□	▽	θ	From	Subject	Received	▲
				M9855@paxar.com	Alert #4: ERROR #754 Check Ribbon.	Wed 9/29/...	
				M9855@paxar.com	Alert #1: Going Off-Line	Wed 9/29/...	

The text of the email follows:

```
MonarchNet2 Printer Alert!!!
Prn IP:192.0.0.192
Prn Name:PXR8A97CA
Going Off-Line

Please DO NOT REPLY to this message.
```

Perform the appropriate action to correct the problem. Make sure the printer's display says "Print Mode Ready" after the problem is corrected.

SNMP IP Traps

1. From the Alerts and Traps screen, click **SNMP IP Traps**.

2. Enter a community name, IP address, and the errors you want to receive notification for. You can enter up to eight IP addresses.

3. Click **Submit**.

4. Click the reset link at the bottom of the screen. The Reset Server screen appears.

5. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
You must re-enter your access password to make any further changes to the printer settings.

SNMP Netware Traps

1. From the Alerts and Traps screen, click **SNMP Netware Traps**.

2. Enter a community name, IPX address, IPX Node address, and the errors you want to receive notification for. You can enter up to four IPX addresses.

3. Click **Submit**.

4. Click the reset link at the bottom of the screen. The Reset Server screen appears.

5. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
You must re-enter your access password to make any further changes to the printer settings.

Changing the Passwords

1. You can change the network access password, network update password, configure network security, IP access, or protocol, print a test page, access the console, or update firmware from the Web Admin Configuration screen.

2. From the side menu, click Admin. The Web Admin Configuration screen appears.

3. Select which password to change:

♦ Network Card Access

♦ Network Card Update
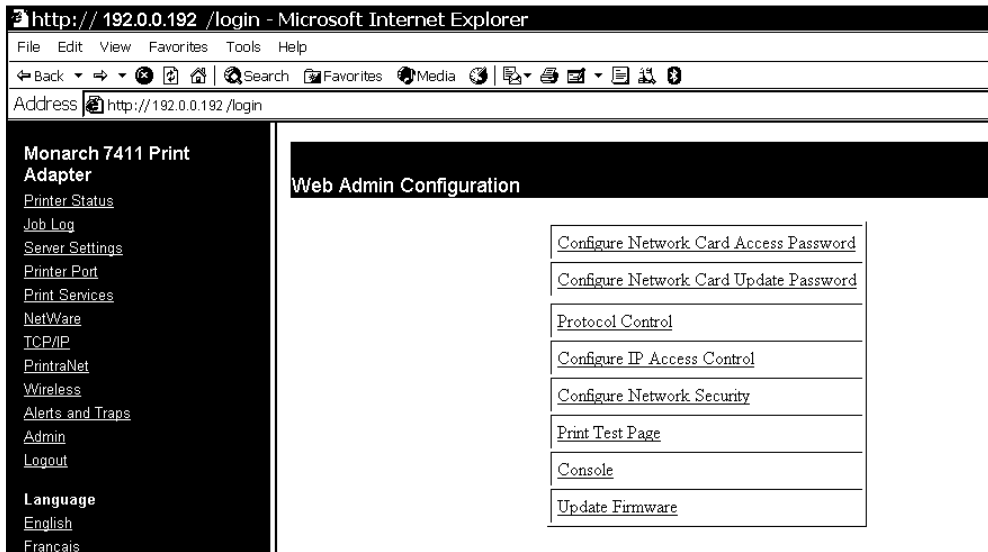
Setting the Network Card Access Password

When set, the network card access password allows you to view the Web interface and the remote console. The default is **access**. **The password is case-sensitive** and stored in the printer's flash memory.

Make a note of the password if you change it.
Changing the password also restricts access to
Telnet sessions.

1. From the side menu, click Admin. The Web Admin Configuration screen appears.

2. Click Configure Network Card Access Password.
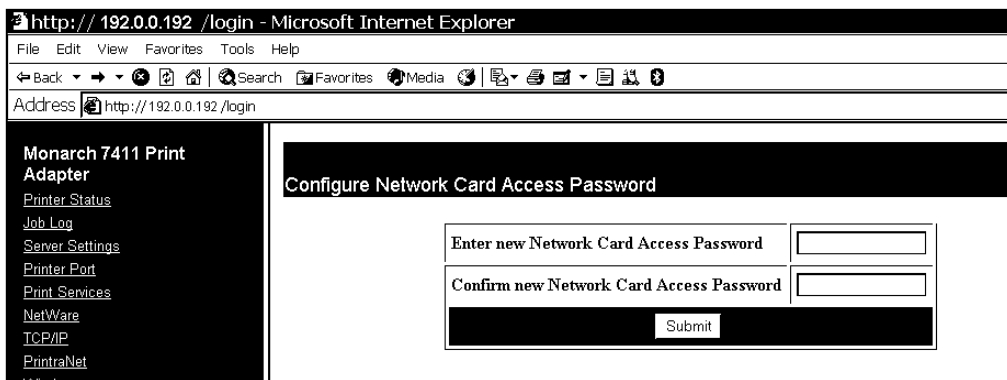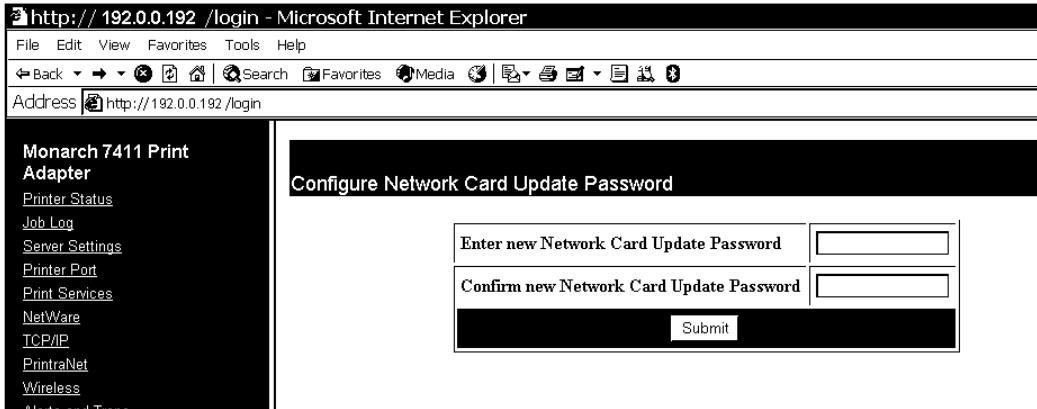
3. Enter a new network access password.

4. Retype the new password to confirm it.

5. Click **Submit.**

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Setting the Network Card Update Password

When set, the network card update password allows you to change variables in the Web interface and the remote console.

1. From the side menu, click **Admin**. The Web Admin Configuration screen appears.

2. Click Configure Network Card Update Password.

3. Enter a new network update password.

4. Retype the new password to confirm it.

5. Click **Submit**.

Configuring Network Protocols

1. Only configure the settings required for your network/printer. To enable or disable protocols:

2. From the side menu, click Admin. The Web Admin Configuration screen appears.

3. Click Protocol Control.

4. Check or uncheck the network and IP protocols to enable or disable the necessary protocols.
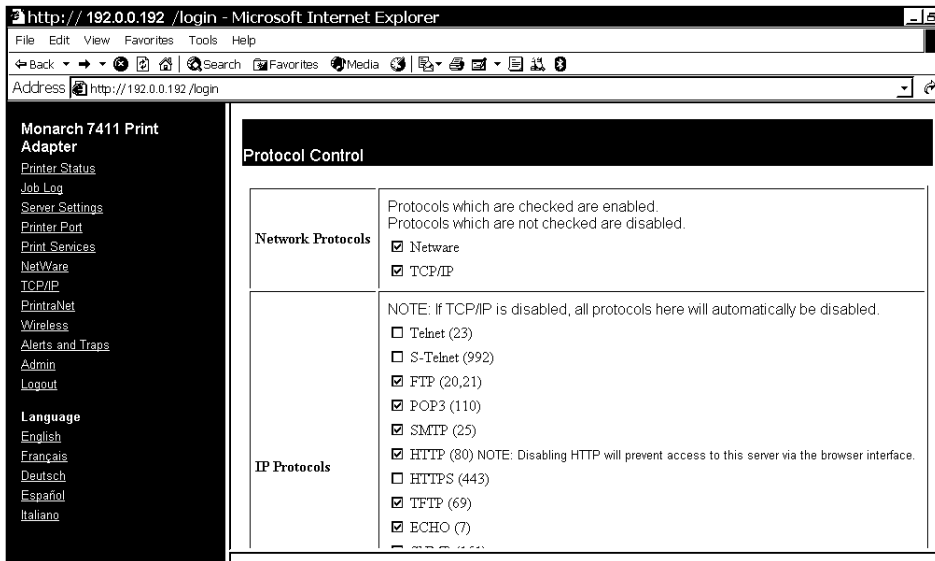
Note: If you disable the TCP/IP protocol, all IP protocols are disabled automatically.

5. Click **Submit**.

6. Click the reset link at the bottom of the screen. The Reset Server screen appears.

7. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
    You must re-enter your access password to make any further changes to the printer settings.

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Controlling IP Access

1. You can limit which remote hosts are able to access the printer by setting up an IP address range.

2. From the side menu, click Admin. The Web Admin Configuration screen appears.

3. Click Configure IP Access Control.
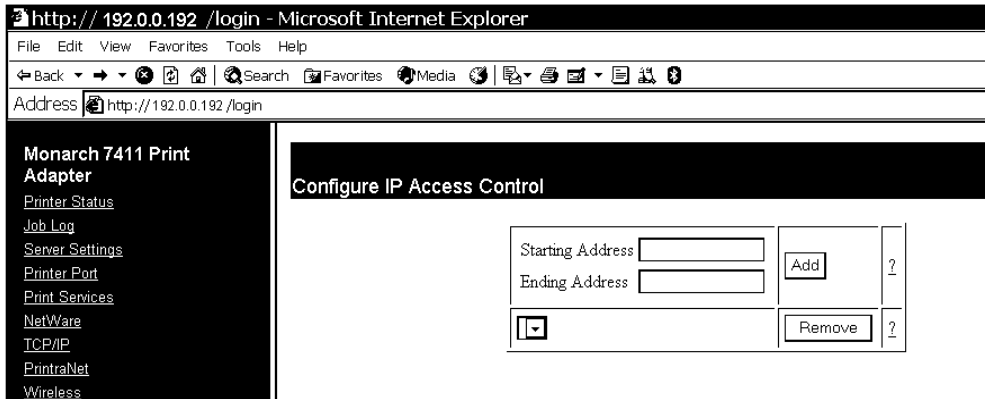
To Add Hosts:

1. Enter a range of remote IP addresses that are allowed access to the printer. Any requests from hosts outside this range will be rejected.

2. Click **Add**.

3. Click the reset link at the bottom of the screen. The Reset Server screen appears.

4. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
You must re-enter your access password to make any further changes to the printer settings.

5. The range of accepted IP addresses is listed in the drop-down menu.

To Remove Hosts

1. Select a range from the drop-down menu.

2. Click **Remove**.

3. Click the reset link at the bottom of the screen. The Reset Server screen appears.

4. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
   You must re-enter your access password to make any further changes to the printer settings.

Configuring Network Security

This screen allows you to enable or disable network security, assign WEP keys, set up a User ID and password, select an authentication protocol, and more. See "Basic Security Configurations" for more information.

1. From the side menu, click **Admin**. The Web Admin Configuration screen appears.

2. Click Configure Network Security.

3. Assign the necessary security settings for your network.

4. Click **Submit**.

5. Click the reset link at the bottom of the screen. The Reset Server screen appears.

6. Click **Submit** and wait five seconds for the printer to reset. Even though you submitted your changes on the previous screen, they do not take effect until you reset the printer.
You must re-enter your access password to make any further changes to the printer settings.

Printing a Test Page

1. You can use the Web interface to send a test page to the printer.

2. From the side menu, click **Admin**. The Web Admin Configuration screen appears.

3. Click **Print Test Page**.

Using the Console

The Custom Commands menu allows you to enter Telnet console commands.

1. From the side menu, click **Admin**. The Web Admin Configuration screen appears.
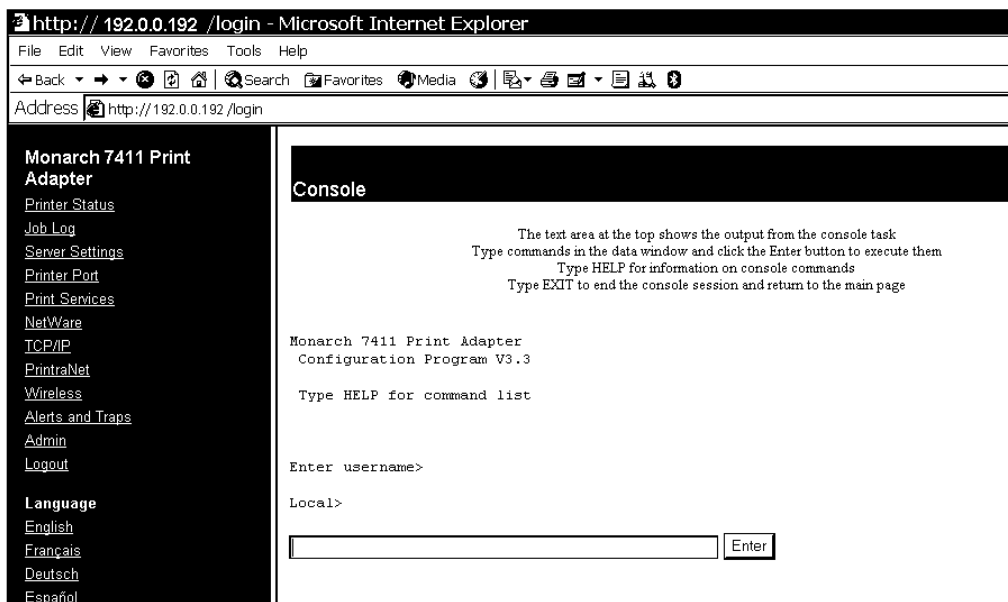
2. Click **Console**.

3. Enter a Telnet console command. See Chapter 6, "Telnet Console Commands," for more information.

4. Click **Enter**. The results from a Telnet command appear.

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Updating Firmware

You can update the **printer's** firmware. Make sure the Resident (Boot Loader) is version 2.3 or greater.

1. From the side menu, click **Admin**. The Web Admin Configuration screen appears.

2. Click Update Firmware.

```
http:// 192.0.0.192 /login - Microsoft Internet Explorer
File   Edit   View   Favorites   Tools   Help
← Back ▼ → ▼ ⊗ ⊡ ⋒ | ⊗ Search ⊡ Favorites ⊗ Media ⊗ | ⧉▼ ⊜ ⊠ ▼ ⊟ ⊞ ⊠
Address ⊕ http:// 192.0.0.192 /login
```

Monarch 7411 Print Adapter
Printer Status
Job Log
Server Settings
Printer Port
Print Services
NetWare
TCP/IP
PrintraNet
Wireless
Alerts and Traps
Admin
Logout

Language
English
Français
Deutsch

Update Firmware

Load new firmware from a TFTP server

| **Firmware file name** | NICApp/rock701e.bin | ? |
| **TFTP Server IP address** | 10.2.160.200 | ? |

Submit

Type in location or browse for new firmware file for this unit
NOTE: The firmware load may take several minutes. Please be patient.

Firmware file name |_____| Browse...

Submit

3. The printer should be connected and ready to receive data.

4. Type the TFTP Server IP address.

5. Type the relative pathname (relative to your TFTP server). Refer to your TFTP Server's documentation for more information about setting up and using the TFTP server.

Note: Depending on your TFTP server, you may only need the filename, not the entire path.

6. Click **Submit** to load the firmware. If you lose power while updating the firmware, call Service.

Basic Security Configurations

There are two main decisions to be made when choosing wireless security: encryption method and authentication protocol. The encryption method determines the algorithm used to encrypt the message. The authentication type specifies how users are identified and verified on a network. Is the device seeking connection what (and who) it claims to be?

Select an Encryption Method from the following table:

Encryption Method			
Type	Algorithm	Size (bits)	Description
WEP	RC4	64/128	This is the 64 or 128 bit WEP Key that must match other nodes' encryption keys in order to communicate. The user can only define 10 hex characters (40 bits) for 64 bit WEP or 26 characters (104 bits) for 128 bit WEP.
WPA	RC4	64/128	Improves on WEP by using TKIP* (Temporal Key Integrity Protocol), which dynamically changes the encryption key and MIC (Message Integrity Code), which replaces CRC.
WPA2	AES	128	Improves on WPA by replacing RC4 with AES (Advanced Encryption Standard) for encryption. The user can only define 26 characters (104 bits) for 128 bit WPA2.

* Dynamic WEP cannot be selected directly, so select 128 for the encryption mode and select an authentication mode from one of the following: LEAP, PEAP, EAP-FAST, TLS, or TTLS.

Authentication Protocol					
Type		**RADIUS Server Protocol**	**User ID & Password**	**Certificate**	**Private Key Info File**
Enterprise	LEAP	PAP or MSCHAPv2	Required	No	N/A
	PEAP*			Optional*	N/A
	TLS				Required*
	TTLS				N/A
	EAP-FAST			PAC*	N/A
Personal	PSK	N/A			

*PEAP   This is only for server-side certificates.

*Optional   Leaving the Certificate Root Key and the Certificate CN (common) names blank, no validation of the host certificate is performed. The values are set to "null" and all host certificates are accepted.

*Required   The Print Server comes with a default Private Key Information File. You can either download that file from the print server and add it to the TLS authentication server, or overwrite a new one on the print server.

*PAC   EAP-FAST does not use certificates to authenticate, but a PAC (Protected Access Credential), which is managed dynamically by the server. The PAC is distributed one at a time to the client manually or automatically.

See the following table of acceptable combinations:

Authentication	Encryption	
	WEP	**WPA, WPA (TKIP), WPA2**
Open	Static	No
Shared		
PSK	Dynamic	Yes
LEAP		
PEAP		
EAP-FAST		
TLS*		
TTLS		

*   Load the local key before enabling TLS.

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TROUBLESHOOTING

<div style="float:right">**5**</div>

Verify that the printer is operating properly:

1. Is the printer online and does it have supplies?

2. If the printer is working correctly, test the connection between the printer and the print server by pushing the test button on the back of the printer for less than five seconds.

3. If the test page does not print, try resetting the print server to factory defaults by holding the test button for more than five seconds.

General Troubleshooting Information

Use the following information if your print server is not operating properly.

1. Verify that the printer is turned on.

2. If you are switching between wired and wireless mode on different subnets, turn off the printer and then turn it back on to reinitialize the print server.

3. Verify that the print server is functioning.
When the printer is turned on, the print server runs through a set of power-up diagnostics for a few seconds.

If the print server is operating properly, all three LEDs blink momentarily, then indicate the following activity:

LED Indicators		Status
Orange	solid	printer is on
	blinking	error
	off	printer is off
Yellow	solid	Ethernet link (wired 10baseT)
	blinking	network activity
	off	no Ethernet connection
Green	solid	Ethernet link (wired 100baseTX)
	blinking	network activity
	off	no Ethernet connection
Yellow & Green	solid	wireless link
	blinking	network activity
	off	no wireless connection

4. Print a test label. See Chapter 1, "Getting Started" for more information. Press the print server test button for about a second and a label should print.

   Use 6-inch long supply. If you are using supply that is shorter than 6 inches long, temporarily change your supply type to "continuous" to print the entire test label. After printing the test label, change your supply type to your previous setting.

   If a label does not print, check the printer's display to see if it shows a receiving status. If so, press **Escape** to exit receiving mode. Once you see "Online Ready" on the display, print a test label again. If this does not print or the printer does not display "Online Ready," the unit is locked up. Turn off the printer, wait fifteen seconds and then turn it back on.

   If the printer displays "Online Ready," but is not printing, verify that the parallel port settings did not change. The Parallel Port setting should be "Internal" and the Mode setting should be "IEEE1284". (From the Main Menu, select Setup, Port Settings, Parallel Comm., Port and Mode.)

5. On the test label, verify your IP and WiFi settings. If using an Ethernet cable, the "Wired/Wireless:" value should be "WIRED". If using RF, the setting should be "WIRELESS".

    Check the "Actual SSID" and the "WiFi Sig Qual". Is the actual SSID correct? Is the signal quality greater than zero? If the signal quality is 0, you lost connection with the access point. If it is very low, you may be experiencing interference or are very close to being out of range or an access point. A value of 100 is the best you can have for signal quality. You can probably operate at a minimum of 60, but the number of retries is likely to increase.

6. Telnet to the printer.

Note: If the print server has been reset, you may need to re-enable Telnet.

    Once you have verified connectivity, Telnet to the printer. This gives you access to console operation of the printer. Press Enter (on your host) to get the "#" prompt and enter "access" as the password. Press Enter to by-pass the user name. Once here, you have verified operation to the print server.

7. Ping the printer.
    If you can ping the printer, it is at least "seen" on the network. If you cannot ping the printer, then ping every device in the path to the printer - access points, routers, etc. If you can ping every device but the printer, the printer needs to be turned off and back on. If some device in the path to the printer cannot be pinged, that device needs attention.

    ```
    ping <ip address>  (i.e.  ping 192.0.0.192)
    ```

8. Verify connection to the data port by starting a Telnet session to the printer using port 9100 (i.e. Telnet aa.bb.cc.dd 9100). If this fails, some other device has the session in use. Either terminate the other connection or turn off the printer and then turn it back on.

If the connection succeeds, press `ctrl-E` on your keyboard. This sends an ENQ request. The printer responds with three characters. Depending upon the Telnet being used, you may not see the first character, as it is a hex 05 value. The other two characters are ASCII characters.

You see

`A@`

which means the printer is online and waiting. Alternatively, you can type

`{J,2}`

The printer responds with `{J,0,0,"",""}`.

Note: The **J** must be capital.

If you do not get any response, the printer may have an open session to some other connection. Either terminate the other connection or turn off the printer and turn it back on.

9. Perform a factory reset on the print server.

If the printer is not initializing correctly (verified by printing a test label from print server), perform a factory reset. Press the print server button while turned on and hold for about 10 seconds. The unit reinitializes with the factory-set defaults and then reboots. Verify with a test label to see if the unit is now correctly set.

If the print server is pre-configured by us for the customer, the default values should represent the customer's defaults.

Troubleshooting Wireless Configuration Problems

1. Your computer's wireless adapter and/or access point should be configured to match your print server.

2. The print server should be in range of the printer (90 meters or 300 feet) and your PC and away from metal objects and other devices with radio signals (Bluetooth®, 2.4 GHz cordless phones, and microwaves).

3. If you are connecting through an access point, use infrastructure mode. If you are connecting to the print server without an access point, use Ad-Hoc (802.11) mode.

4. If you are using WEP (Wired Equivalent Privacy) or other advanced security on your wireless network, temporarily disable the security on your PC in order to configure the print server. If you are using an access point with security enabled and it does not allow non-secure clients to communicate with other non-secure clients, temporarily change the wireless mode of your computer to Ad-Hoc (802.11) mode.

Note: If no computers on your network can be set to Ad-Hoc mode, temporarily disable the security on your access point. When you are done configuring the print server, you can re-enable the security on your computer and change the wireless mode back if necessary. You can also use a wired connection to configure the print server.

5. If you need to use encryption or password protect your wireless network, and your wireless adapter or access point normally uses a password or passphrase instead of WEP, it should allow you to enter 0x followed by a ten digit (for 40-bit or 64-bit WEP) or twenty-six digit (for 128-bit WEP) key in hexadecimal format (0-9 or A-F).

6. If you are experiencing slow performance or are having intermittent problems connecting, change the RF channel of your wireless network (Ad-Hoc mode only). This can be done in the NetManager Wireless Configuration screen. Change it to at least 3 channels lower or higher than any other wireless networks within range.

Troubleshooting Network Configuration

♦ If you are using TCP/IP, your computer and the print server should be on the same IP segment or can reach each other with a PING command from the host. The IP address you assign to the print server must be on the same logical network as your host computers.

♦ If your print server is set to Auto or DHCP for obtaining an IP address, the print server's IP address can change. Either configure your DHCP server to give the print server a permanent lease or configure the print server to be on a static address that does not conflict with any other address.

Technical Support

If these solutions do not work, or you have a problem or error not listed, call Service at the number listed on the back of this manual.

TELNET CONSOLE COMMANDS 6

Use this chapter to configure the print server using Telnet. You must have a basic understanding of Telnet commands. For initial setup, do not use Telnet. Use Auto-discover mode. Once you have the IP address, you can use Telnet or a Web browser.

You can use Telnet if you do not have access to the Monarch® NetManager software.

Note: The default port is Port 23.

To reset the unit back to factory defaults, press and hold the black button on the print server card for about ten seconds. The LEDs temporarily turn off and then back on, indicating the unit is resetting.

To access Telnet console mode:

1. Start Telnet.

2. Press Enter (on your host) until you see the "#" prompt.

3. Type `access` as the password and press **Enter**. (**access** is the default password.)

4. Press **Enter** to by-pass the user name. You do not need to enter a username.

Note: The Telnet session times out after 10 minutes of inactivity.

5. To view the current wireless settings, type `sh en` (show wireless settings) or `sh nw` (show network settings) and press **Enter**:

```
WiFi Mode = INFRASTRUCTURE
WiFi SSID: ABC1234
Speed = 54
International Roaming: Flexible
Dynamic Frequency Selection: Unsupported
Regulatory Domain = USI
WiFi FW Ver = 2.13.10.0 LMAC, 2.12.18.0 UMAC
AP density = LOW
Authentication type= OPEN SYSTEM
Encryption is Disabled
Local certificate loaded
AP MAC Address = 00 A0 F8 51 B4 FC
Signal Quality = Excellent (100%)
Connected to SSID ENG4121 on channel 11
```

6. To show the current IP settings, type `sh ip` (show TCP/IP settings) and press **Enter**.

```
IP is enabled
IP address    192.0.0.192 Boot tries    3
Subnet mask   255.255.0.0 Boot method   AUTO
IP Gateway    192.0.0.192 Max window    10240
 (via DHCP   192.0.0.192)
LPD banner    disabled    Timeout       0 min
LPD retries are disabled Keepalive     1 min
Service   Port            TCP port
PXR1E8580_X1 X1           9100
```

7. To change the SSID, type `set en ssid testsystem` and press **Enter**.

8. To set the IP address, type `set ip ad 192.0.0.192` and press **Enter**.

9. To set the subnet mask, type `set ip sub 255.255.0.0` and press **Enter**.

10. Type `INIT` and press **Enter** to save the settings and initialize the unit.

11. Type `EXIT` to exit Telnet.

See the following section for a list of the most frequently used commands.

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Help Commands

For help at any time, type "Help" and a list of available commands appears.
The Help command builds on itself, because for each command you type,
more details appear for each option.

Syntax: `Help set`

```
DEFAULT   Set parameters to factory defaults
EN Network Parameters
LOAd   Firmware update parameters
PAssword <password>        Set console password
PORt <name>   .            Parameter for port <name>
PROtect <password>         Set update password
SERVEr                     Server and LAT parameters
SERVIce   <name>           Service Parameters
SNMP                       SNMP Variables
Syslog                     Syslog Parameters
DNS          DNS Parameters
STRing n "..."             BOT/EOT string
IP                         LPD/TCP Parameters
POP3                       POP3 Parameters
SMTP   SMTP Parameters
NETWare                    Netware Parameters
POWERON  <delay-sec>       Power on delay
```

Displays a list of the available help commands for "Set."

Note: For any command that uses SET, you can also use SHOW to view
the current setting.

Syntax: `Help set ip`

```
IP LPD/TCP Parameters
ADdress  aa.bb.cc.dd      IP node address
ARP    [EN/DI]            IP set via ARP
BAnner [EN/DI]            LPD banner printing
CHKSUM [EN/DI]            IP receive checksum
BOot      n               Number of DHCP/BOOTP tries
ENable/DISable            Enable or Disable IP Processing
FTIme  [EN/DI]            Fast timeout
FTP    [EN/DI]            FTP protocol
HTTP   [EN/DI]            HTTP protocol
KEepalive n               Keepalive interval (min)
LPD    [EN/DI]            LPD protocol
MEthod <type>             Set method of getting IP address
PIng   aa.bb.cc.dd        Test connection to IP host
PRObe  [EN/DI]            TCP connection probes
RANge [EN/DI/ALL] aa.bb.cc.dd {MAx ee.ff.gg.hh}
RARp flags nn             1=no subnet, 2=no router, 3=neither
REtry  [EN/DI]            LPD retry continuation
ROuter aa.bb.cc.dd        Default router address
SUbnet aa.bb.cc.dd        Subnet mask
TCP    [EN/DI]            Raw TCP (9100) protocol
TELnet [EN/DI]            TELNET protocol
TFTP   [EN/DI]            TFTP protocol
TImeout n                 Inactivity timeout (minutes)
TRAP n [ADDR/PORT/TRIG]   TRAP configuration
WIndow  nn                LPD/TCP maximum window size
```

Displays a list of the available help commands for "Set IP."

General Commands

From the list of commands, the brackets - [] indicate to pick one of the options listed, the items inside curly braces - {} are optional and do not need to be specified.

CHange

Changes configuration items.

CLear FATal

Deletes fatal error log.

CLear POrt portname JOB

Clears current entry in the print server's internal queue for the specified portname (P1 for the first parallel port).

CLear PROTect

Sets the update password to "null."

CLear SERVEr STRing n

Removes BOT/EOT string.

DEfine

Defines configuration items.

DElete

Removes configuration item.

EXIT

Exits console mode.

HELP

Displays the list of available commands.

INIT

Saves settings and initializes unit.

PUrge

Removes configuration item.

SAVE

Saves configuration settings.

SET DEFAULT

Sets print server to factory defaults.

SET LOAD [EN/DI]

Enables or disables firmware reload after exit.

SET LOAD HOst <name>

Sets node name of boot host (NetWare firmware load).

SET LOAD IP aa.bb.cc.dd

Sets IP address of load host (TCP/IP firmware load).

SET LOAD SOftware <filename>

Sets print server's firmware filename to load.

SET PAssword

Sets console password. The user is prompted for old password, new password, and to verify new password. The default password is `access`.

Note: The password is case-sensitive.

SET PROTect <password>

Sets the update password.

SET SERVEr DEscription

Sets mode description to string displayed with SHOW SERVER command.

SET SERVEr NAme <name>

Sets server node name.

SET SERVIce <servicename> <protocol> [EN/DI]

Enables or disables specified protocol on specified service.

SET SERVIce <servicename> NAme <newname>

Changes service name.

SET SERVIce <servicename> REceive [EN/DI]

Sets receive only mode on specified service.

SET SERVIce <servicename> TCP nn

Sets TCP port number of service.

SHow FATal

Shows the fatal error log.

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SHow LOAd

Shows the print server's firmware update parameters.

SHow PORt <name> STA

Shows the current port status.

SHow SERVEr

Shows the server parameters.

SHow SERVEr COunters

Shows the server statistics.

SHow SERVEr QUeue

Shows the print server internal queue.

SHow TEstpage

Prints a test page.

SHow VErsion

Shows the server firmware version.

UNPROTect

Allows the user to enter the update password (if one has been defined). Once the update password is entered correctly, SET commands can be used to modify the configuration until the console session is closed with EXIT.

ZEro

Zeros statistical counts.

802.11b/g Wireless Commands

In the following commands, **EN** and **NW** (network settings) are interchangeable.

CLear EN SSid

Clears the SSID, so the server connects to any access point.

SET EN

Sets 802.11b/g Wireless Settings.

SET EN APDEN [LOW/MED/HI]

Sets 802.11b/g access point density.

SET EN AUTHtype [OPEN/SHARED/TTLS/LEAP/PEAP/WPA-PSK]

Sets the authentication type. See Chapter 4, "Using the Web Interface" for more information.

SET EN CERTCN <name>

Sets the EAP common name. If no value is set (null), all host certificates are accepted.

SET EN CERTCN2 <name>

Sets the second EAP common name. If no value is set (null), all host certificates are accepted.

SET EN CERTEXP <value>

Sets the EAP certificate exponent value.

SET EN CERTKEY <keyvalue>

Sets the EAP root key value.

SET EN CHannel nn

Sets 802.11b/g wireless channel.

**SET EN ENC [DIsable/64/128/WPA/WPA2/WPA2-WPA/
            Dynamic WEP]**

Sets the encryption mode. See Chapter 4, "Using the Web Interface" for more information.

SET EN ID <userID>

Sets the authentication user ID. It may include the realm, separated with the at ("@") character.

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SET EN INAP [PAP/MSCHAP_V2]

Sets the EAP inner authentication protocol.

SET EN IROAM [DISable/STRICT/FLEXible]

Controls whether the radio frequencies are set based on the radio configuration or from its access point. Disabled uses the radio defaults. When in Ad-Hoc mode, you must set the region of operation. See "**SET EN REGDOMain**". Flexible uses access point settings if present; otherwise the radio defaults are used. When in Ad-Hoc mode, you must set the region of operation. See "**SET EN REGDOMain**". Strict the access point regulatory frequency information. When using an access point, there is no need to set the region of operation.

SET EN PW <password>

Sets the password for 802.11b/g EAP authentication.

SET EN KEY# <1/2/3/4>

Sets which WEP key number to use (default is 1).

SET EN KEYVAL <WEPkey>

Sets WEP key value. Must be hexadecimal.

SET EN MODE [IN/AD]

Sets 802.11b/g wireless mode to infrastructure or Ad-Hoc mode.

SET EN RAdio [802.11b/802.11b-g]

Sets the radio type.

SET EN REALM <realm>

Sets the realm portion of the 802.11b/g EAP authentication ID.

SET EN REGDOMain <countrycode>

Sets the region of operation for the print server using the following table. The list of supported countries varies based on the radio type (802.11b or 802.11b/g).

Country Code	Description	Country Code	Description
AL	ALBANIA	LV	LATVIA
DZ	ALGERIA	LB	LEBANON
AR	ARGENTINA	LI	LIECHTENSTEIN
AM	ARMENIA	LT	LITHUANIA
AT	AUSTRIA	LU	LUXEMBOURG
AU	AUSTRALIA	MO	MACAO
AZ	AZERBAIJAN	MK	MACEDONIA
BH	BAHRAIN	MY	MALAYSIA
BY	BELARUS	MT	MALTA
BE	BELGIUM	MX	MEXICO
BZ	BELIZE	MC	MONACO
BO	BOLIVIA	MA	MOROCCO
BA	BOSNIA AND HERZEGOVINA	NA	NAMIBIA
BR	BRAZIL	NL	NETHERLANDS
BN	BRUNEI DARUSSALAM	NZ	NEW ZEALAND
BG	BULGARIA	NO	NORWAY
CA	CANADA	OM	OMAN
CL	CHILE	PK	PAKISTAN
CN	CHINA	PS	PALESTINIAN TERRITORY
CO	COLUMBIA	PA	PANAMA
CR	COSTA RICA	PE	PERU
HR	CROATIA	PH	PHILIPPINES
CY	CYPRUS	PL	POLAND
CZ	CZECH REPUBLIC	PT	PORTUGAL

Country Code	Description	Country Code	Description
DK	DENMARK	PR	PUERTO RICO
DO	DOMINICAN REPUBLIC	QA	QATAR
EC	ECUADOR	RO	ROMANIA
EG	EGYPT	RU	RUSSIAN FEDERATION
SV	EL SALVADOR	SA	SAUDI ARABIA
EE	ESTONIA	SG	SINGAPORE
FI	FINLAND	SK	SLOVAKIA
FR	FRANCE	SI	SLOVENIA
GE	GEORGIA	ZA	SOUTH AFRICA
DE	GERMANY	ES	SPAIN
GR	GREECE	LK	SRI LANKA
GT	GUATEMALA	SE	SWEDEN
HN	HONDURAS	CH	SWITZERLAND
HK	HONG KONG	SY	SYRIAN ARAB REPUBLIC
HU	HUNGARY	TW	TAIWAN
IS	ICELAND	TH	THAILAND
IN	INDIA	TT	TRINIDAD AND TOBAGO
ID	INDONESIA	TN	TUNISIA
IR	IRAN, ISLAMIC REPUBLIC OF	TR	TURKEY
IE	IRELAND	UA	UKRAINE
IL	ISRAEL	AE	UNITED ARAB EMIRATES
IT	ITALY	GB	UNITED KINGDOM
JP	JAPAN	US	UNITED STATES
JO	JORDAN	UY	URUGUAY
KZ	KAZAKHSTAN	UZ	UZBEKISTAN
KE	KENYA	VE	VENEZUELA
KP	KOREA, PEOPLE'S REPUBLIC	VN	VIETNAM
KR	KOREA, REPUBLIC	YE	YEMEN
KW	KUWAIT	ZW	ZIMBABWE

`SET EN SPeed <1/2/5.5/6/9/11/12/18/24/48/54>`

Sets 802.11b/g wireless speed in megabits per second (Mpbs).

`SET EN SSID "<ssid>"`

Sets 802.11b/g wireless SSID. Use quotes if there is a space in SSID. This is case sensitive.

`SH EN STATS`

Shows the network I/O statistics.

`SET EN WEP [DI/64/128]`

Sets wired equivalent privacy encryption level to disabled, 64-bit, or 128-bit.

`SET EN WIRED [AUTO/10BASE/100BASE]`

Sets the Ethernet speed.

`SET EN WPAGROUP [ENABLE/DISABLE]`

Selects whether to use the WPA group key mode. When enabled, group keys are used for data link encryption.

`SET EN WPAPSK <WPAkey>`

Sets the WPA pre-shared key or pass-phrase. Use 64 hex characters for the PSK or 8-63 characters for the pass-phrase. This is only valid when authentication mode is WPA-PSK.

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TCP/IP Commands

SET IP [EN/DI]

Selects whether to use IP-based protocols.

SET IP ACcess [EN/DI/ALL] aa.bb.cc.dd
                [Mask ee.ff.gg.hh]

Allows or prevents specified IP address from accessing print server.

SET IP ADdress

Sets IP address of print server.

SET IP ARP [EN/DI]

Selects whether to use an IP address with an ARP packet.

SET IP BANNER [EN/DI]

Sets printing of LPD job banners.

SET IP BOot n

Sets number of retries (n) for DHCP, BOOTP, RARP

SET IP CHKSum [EN/DI]

Enables or disables IP receive checksum.

SET IP FTime [EN/DI]

Enables or disables fast timeout.

SET IP FTP [EN/DI]

Selects whether to use the FTP protocol.

SET IP HTTP [EN/DI]

Selects whether to use the HTTP protocol.

SET IP KEepalive n

Sets keep alive interval (n) in minutes.

SET IP LPD [EN/DI]

Selects whether to use the LPD protocol.

SET IP MEthod [AUTO/BOOTP/RARP/DHCP/STATIC]

Sets method of getting IP address.

SET IP PING aa.bb.cc.dd

Sends IP ping packets to test the host connection.

SET IP PRObe [EN/DI]

Enables or disables the TCP connection probe.

SET IP RArp nn

0 Both
1 no subnet
2 no router
3 neither
Default (0) - IP address is set with subnet mask and router that is the same address as host.

SET IP RANGE [EN/DI/ALL]

Sets the valid range of IP addresses.

SET IP REtry [EN/DI]

Enables or disables LPD retry continuation

SET IP ROuter aa.bb.cc.dd

Sets default Router/Gateway address (or access point).

SET IP SUBnet aa.bb.cc.dd

Sets default subnet mask.

SET SERVIce <servicename> IP [EN/DI]

Enables or disables TCP/IP jobs on specified service.

SET SERVIce <servicename> TCP nn

Sets TCP port number (>1023 on service).

SET IP TCP [EN/DI]

Selects whether to use the raw TCP (port 9100) protocol.

SET IP TELNET [EN/DI]

Selects whether to use the Telnet protocol.

SET IP TFTP [EN/DI]

Selects whether to use the TFTP protocol.

SET IP TImeout n

Sets timeout (n) in minutes.

SET IP WIndow nn

Sets the LPD/TCP maximum window size

SNMP Commands

CLear SNMP CONtact <string>

Removes SNMP SysContact.

CLear SNMP LOCation <string>

Removes SNMP SysLocation.

SET SNMP GETCOMM <string>

Gets SNMP community.

SET SNMP SETCOMM1 <string> or SET SNMP SETCOMM2 <string>

Set SNMP community 1 or community 2 name.

Note: An incoming set request can use either name for comm1 or comm2.

SET SNMP CONtact <string>

Set SNMP SysContact.

SET SNMP LOCation <string>

Sets SNMP SysLocation.

SET SNMP JETADmin [EN|DIS]

Selects whether to use the JetAdmin protocol.

6-16 Ethernet Operating Instructions

SPECIFICATIONS

Link Layer: 802.3 or optional 802.11b/g

Protocols: TCP/IP
Passthru
BOOTP
DHCP
RARP
LPD/LPR
Telnet
RSH or REMSH (remote shell)
FTP
SNMP
NetWare
HP Jet Admin

802.3 Specifications

Communication Rate: 10 Mbps or 100 Mbps

Optional 802.11b/g Specifications

Frequency: 2.4 GHz range, direct sequence

Communication Rate: 1, 2, 5.5, 11, 12, 18, 24, 36, 48, 54 Mbps

Channels   1 to 11

Mode: Ad-Hoc or infrastructure

Encryption: WEP 64 or WEP 128
WPA or WPA2

Authentication: EAP-FAST
LEAP
PEAP
TLS
TTLS
PSK

Options

Wireless 802.11b/g communications are available. However, check with International Sales for an approved list of countries or regions where these devices can be used.

GLOSSARY

Absolute Pathname   The full path of a file, including the computer system and any directories or subdirectories. For example, **c:\program files\monarch software\mpcl toolbox\9855.phu**

Access Point   An interface between a wireless network and a wired network. Access points can be used with Ethernet or other communications to enable roaming throughout a facility.

Ad-Hoc Network/Mode   A wireless network composed of devices that contain a network interface card and no access point.
Ad-Hoc mode is also called peer-to-peer (point-to-point) communications or BSS network. As long as the devices are in range and are on the same channel and SSID, they connect and communicate. Use this mode if a wireless infrastructure does not exist or where services are not required.

Authentication Method   Identifies users on a network, based on a username and password. There are two types: open and shared. Authentication protocols include LEAP, PEAP, TLS, TTLS, EAP-FAST, and PSK.

Auto Method   One of the available boot methods. Auto tries DHCP, BOOTP, and RARP, then sets to the last IP address used if the IP address is not automatically set using any of the previous methods.

BOOTP or Bootstrap Protocol   One of the available boot methods. It is a protocol used by devices that know their MAC address, but do not know their IP address. The device broadcasts its hardware address and the BOOTP server responds with the IP address for it. The network administrator must enter the MAC address in the BOOTP Config file to obtain the IP address from the server.

Boot Method   The wireless print server uses this method to obtain an IP address. Can be set to Auto, DHCP, BOOTP, RARP, or Static.

Boot Tries   The number of times the device tries to get an IP address from the server when using the BOOTP and DHCP methods.

BSS or Basic Service Set   A set of 802.11b/g devices operating as a fully connected wireless network.

BSSID   See *MAC Address*.

Channel or RF Channel	You can select which channel your network devices use to communicate. All devices must be on the same channel to communicate in Ad-Hoc mode. Other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones may operate/interfere if they are on the same channel as your network.
DHCP or Dynamic Host Configuration Protocol	One of the available boot methods. It is a protocol that issues IP addresses automatically within a specified range to devices (such as printers) when they are first turned on. The device keeps the IP address for a defined period of time set by your System Administrator; however, a device could have a different IP address every time it connects to the network.
EAP (Extensible Authentication Protocol)	Defines how to pass authentication information between the device and authentication server. The authentication is handled by the EAP type: FAST, TLS, TTLS, etc.
FAST (Flexible Authentication via Secure Tunneling)	Cisco Systems® developed this authentication protocol. It does not use certificates to authenticate, but a PAC (Protected Access Credential), which is managed dynamically by the server. The PAC is distributed one at a time to the client manually or automatically.
Gateway	Allows connections (communications) between different subnets on a network.
Infrastructure Mode	Requires an access point to communicate with other devices on the network. In infrastructure mode, wireless devices can communicate with each other or with a wired network.
IP Address	An Internet Protocol identifier for a device on a network. It consists of four 3-digit numeric fields, separated by periods. Each number can be zero to 255. An IP address has two components, the network address and the host address. Most company networks have ranges for their IP addresses.
LAN or Local Area Network	A computer network that connects personal computers, workstations, servers, and printers. This allows each user on the network the ability to share devices, such as printers, and communicate with each other via email, etc. LANs can be connected to each other by telephone lines or radio waves. See *WLAN*.
LEAP (Lightweight Extensible Authentication Protocol)	Cisco Systems® introduced this authentication protocol and provides mutual authentication with unique WEP keys for each user. New keys are issued based on a time limit. Changing the WEP key time limits provides additional security.

LPD/LPR	A printer protocol that uses TCP/IP to establish connections between printers on a network. Also known as Line Printer Daemon/Line Printer Remote.
MAC Address or Media Access Control	A hardware address (6-byte) that uniquely identifies each node of a network. The MAC address is set during manufacturing and does not change. Also, two Network Interface Cards (NIC) **will not** have the same value.
MSCHAPv2 (Challenge Handshake Authentication Protocol)	The Microsoft® version of CHAP. It is a three-way handshake protocol that is more secure than PAP. It provides mutual authentication between devices.
NIC or Network Interface Card	An adapter (board or card) that can be inserted into a device, so the device can be connected to a network. The NIC converts data from the device into the form transmitted or received from the network
Node	A processing location on a network. The location can be a workstation, computer, or printer. Each Node has a unique MAC address.
Open Authentication	This allows any device to authenticate and then attempt to communicate with the access point. Any wireless device can authenticate with the access point, but if WEP is used, the device can communicate only if its WEP keys match the access point's. There is no challenge that occurs, you either have the correct key or not when you communicate with the access point. By eliminating the challenge process, it actually makes this more secure than shared key authentication.
PAP (Password Authentication Protocol)	A simple authentication protocol used with PPP (Point-to-Point Protocol). It is a plain text password system, which is not very secure.
Pathname	The location of a particular file or directory that includes the full path to the needed filename or directory. This is a combination of path and filename.
PEAP (Protected Extensible Authentication Protocol)	Authenticates clients into a network using only server-side certificates, which makes implementing and administering a wireless LAN easier.
Ping	A way to determine if a device is accessible. It sends a packet to the specified address and waits for a reply.
Protocol	This is the way two devices transmit data between each other, including error checking, data compression, and how messages start and end.

Glossary **G-3**

PSK **(Pre-Shared Key)**	Authentication mode of WPA used in SOHO environments. The key value (or pass-phrase) is used for network authentication only (not data encryption). It does not use a RADIUS server like the other modes, but uses a shared key to provide the initial authentication with the access point or host.
RADIUS (Remote Authentication Dial-In Server)	This is an authentication server, such as the Cisco® ACS, Microsoft® IAS, etc.
RARP or Reverse Address Resolution Protocol	One of the available boot methods. The device sends an RARP request and the RARP server responds with an IP address. The device knows its MAC address and the server responds with the IP address for it.
Relative Pathname	The file or directory location on the user's system relative to the user's current location on the system (what directory the user is currently in). For example, **mpcl toolbox\9855.phu**
Router	Any device that forwards data along networks. Routers are located at gateways.
Shared Authentication	The access point sends an unencrypted challenge text string to any device attempting to communicate with it. The device requesting authentication encrypts the challenge text and sends it back to the access point. If the challenge text is encrypted correctly, the access point allows the requesting device to authenticate. Both the unencrypted challenge and the encrypted challenge can be monitored; however, this leaves the access point open to attack. Because of this weakness, shared key authentication can be less secure than open authentication.
Signal Strength	A percentage (1 to 100) of the connection between the device and access point. If the signal strength is 0, there is no connection with the access point; 30 or less indicates you may be experiencing interference or close to being out of access point range, and below 50, printing performance could be affected. To improve the signal strength, try moving the printer closer to the access point and away from other radio devices such as Bluetooth® wireless devices, microwave ovens, or 2.4-GHz cordless phones.
Speed or Transmit Rate	Sets the maximum rate of communication between the devices on the network. It is also called transmit rate. The speeds are in megabits per second (Mbps) and include: 1, 2, 5.5, 11, 12, 18, 24, 36, 48, and 54.

SSID or Service Set Identifier	A unique identifier that must match for all nodes on a subnetwork to communicate with each other. It consists of up to 32 characters (any printable character, including spaces). If using the space character, it must be enclosed in quotation marks. It is case-sensitive.
Static Method	One of the available boot methods. Use static if your network uses fixed configuration. The IP address remains the same every time the device connects to the network.
Subnet	A portion of a network that shares a common address component. On TCP/IP networks, subnets are all devices with the same prefix. For example, all devices that start with 192.192.192 are part of the same subnet. Dividing a network into subnets is useful for both security and performance reasons.
Subnet Mask	A mask is used to determine what subnet an IP address belongs to. Companies often have ranges of IP addresses that can be described by one or more masks. For example, a mask of 255.255.255.0 allows variation in the last position only, because the first three positions are fixed.
Telnet	A Terminal Emulation program for TCP/IP networks that runs on your computer and connects your PC to a server on the network. You enter commands through the Telnet program and they run as if you were entering them directly on the server console.
TCP/IP	A way that two devices can transmit data between each other. TCP/IP (Transmission Control Protocol/ Internet Protocol) is generally the standard for transmitting data over a network.
TKIP (Temporal Key Integrity Protocol)	Changes the encryption keys regularly and has time limits before new keys are created. Changing the key periodically provides additional security.
TLS (Transport Layer Security)	A cryptographic protocol that uses client-side and server-side certificates to authenticate users on the Web. It can dynamically create user-based and session-based keys.
TTLS (Tunneled Transport Layer Security)	Provides certificate-based, server-side, mutual authentication of the client and network through an encrypted channel (or tunnel). It can dynamically create user-based and session-based keys.
Transmit Rate	See *Speed*.

WEP or Wired Equivalent Privacy	A security protocol for wireless local area networks. WEP was designed to provide the same level of security as that of a wired network, which is inherently more secure than a wireless network because wired networks are easily protected against unauthorized access. Wireless networks use radio waves to communicate and can be vulnerable to unauthorized users.
	WEP provides security by encrypting data over radio waves so that it is protected as it is transmitted. However, it has been found that WEP is not as secure as once believed.
	Note: If one part of a wireless network has WEP enabled, they all must have it enabled with the same key or they cannot communicate.
128 Bit / 64 Bit WEP Key	This is the 64 or 128 bit WEP key that must match other Nodes' encryption keys in order to communicate: 10 hex characters for 64 bit (40 user-specified characters), or 26 hex characters for 128 bit (104 user-specified characters). You must use the same key values for devices to communicate with each other.
WLAN or Wireless Local Area Network	A LAN that uses high-frequency radio waves to communicate between nodes, rather than telephone wires, etc.
WPA (Wi-Fi Protected Access)	A network security protocol that uses improved authentication and temporal keys. It was created to address the weaknesses of WEP encryption.
WPA2 (or IEEE 802.11i)	A network security protocol with stronger encryption than WPA. It was created to address the weaknesses of WEP encryption.

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