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ETHERNET USER GUIDE

DTC1000-DTC4000-DTC4500

The revision number for this document will be updated to reflect changes, corrections, updates and enhancements to this document.

Revision Control Number	**Date**	**Document Title**
Revision 1.0	February 2010	DTC1000, DTC4000, DTC4500 Ethernet User Guide

Trademarks and Disclaimers

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Safety Messages (review carefully)

Symbol	Critical Instructions for Safety purposes
Danger: 	**Failure to follow these installation guidelines can result in death or serious injury.** Information that raises potential safety issues is indicated by a warning symbol (as shown to the left). • **To prevent personal injury**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent personal injury**, always remove the power cord prior to performing repair procedures, unless otherwise specified. • **To prevent personal injury**, make sure only qualified personnel perform these procedures.
Caution: 	**This device is electrostatically sensitive. It may be damaged if exposed to static electricity discharges.** Information that raises potential electrostatic safety issues is indicated by a warning symbol (as shown to the left). • **To prevent equipment or media damage**, refer to the following safety messages before performing an operation preceded by this symbol. • **To prevent equipment or media damage**, observe all established Electrostatic Discharge (ESD) procedures while handling cables in or near the Circuit Board and Printhead Assemblies. **To prevent equipment or media damage**, always wear an appropriate personal grounding device (e.g., a high quality wrist strap grounded to avoid potential damage). • **To prevent equipment or media damage**, always remove the Ribbon and Cards from the Printer before making any repairs, unless otherwise specified. • **To prevent equipment or media damage**, take jewelry off of fingers and hands, as well as thoroughly clean hands to remove oil and debris before working on the Printer.

Ethernet Option

Introduction

The Ethernet option includes the Ethernet port and the internal Printer Server.

- **Printer Management:** The Printer Driver provides bi-directional status information so you can monitor and manage the Printer just as you would any other networked Printer.
- **Compatibility:** The Ethernet option provides compatibility with TCP/IP and 802.3 Ethernet protocols with an IEEE 802.3 10/100Base-T Ethernet female RJ45 connector.
- **Application:** With the Ethernet Option properly installed and configured, these printers are able to print in the same manner as a printer directly connected to the PC via a USB interface.

Technical Specification - Ethernet Option

Here are the system requirements for Ethernet.

 **Caution:** For safety purposes, Ethernet is not intended for a direct connection outside of the building.

Function	Requirement
Network	An IEEE 802.3 10/100 Base-T Ethernet network is required.
Printer	A Printer with the Ethernet option installed is required.
Printer Configuration	Since TCP/IP is used for the network communication, the Printer must be configured with an IP address and a subnet mask (before it can be seen on the network). An additional network setting for the Default Gateway can also be configured, which allows communication across the subnets.
Host Computer	A PC running Windows 2000, Windows XP or Windows Server 2003, connected to the network is required.
Host Printer Driver	The host PC must have installed the correct Printer Driver with Ethernet support. (**Note:** This Driver must be configured for printing to the IP address of the Printer.)

Functional Specification - Ethernet Option

The Ethernet option includes these features.

Feature	Description
Simultaneous Printing	Provides the ability to simultaneously print from multiple PCs to the network printer.
Printer Feedback	Provides status information from the network Printer to the PC.
Web Pages	Provides easy Printer configuration with any web browser.
Log Messages	Provides logging of usage and error events via e-mail, UDP or TCP/IP.
Password Security	Provides security with passwords and configurable User permission levels.
Telnet	Provides a Telnet command line interpreter for Printer configuration.
SNMP	Provides an SNMP agent that supports MIB-II.
Upgrades	Provides support for Firmware upgrades over the network.
Troubleshooting	Provides a Ping client for network troubleshooting.
IP Tracer	Provides a utility (IP Tracer) used to find Printers with Ethernet connection on a local network. (**Note:** This utility is included on the CD-ROM and online at www.hidglobal.com.)

Network Services - Overview

The Ethernet option provides the services described in this section. (**Note:** Other additional services include a Ping client, address assignment and Printer discovery functions.)

Reviewing the Print Server

The Print Server provides printing services in the same manner as a printer connected directly to a USB interface except that the Printer is connected through the local area network to the client PC. The Print Server must be properly configured in order to provide this printing capability.

- The Print Server is capable of queuing up to eight (8) client PCs while printing. Communications between each PC and the Ethernet-enabled Printer are implemented over a bi-directional TCP/IP interface.
- All clients are able to send print jobs to the Printer and monitor Printer jobs and errors with the standard Windows printing system using the Printer Driver installed on their local PC.

In this way, the User knows whether or not a print job has been successful. Also, the User knows what problems have been encountered while processing the print job. Printing using Ethernet works in a manner similar to the USB-connected PC/printer.

Reviewing the Web Page Server

An HTTP service serves web pages that provide an interface through which to configure and monitor the Printer. (**Note:** Users may also monitor all print jobs that have been sent to the Printer from any client PC.)

Reviewing the Network Management Interface

The Ethernet-enabled Printer operates as an SNMP agent to allow central administrators to monitor and configure the network interface and the Printer. (**Note:** A standard host MIB-II is implemented to maximize the utility of the Printer on the network.)

Network Management Interface

The SNMP interface is described below.

Interface	Description
SNMP	• The Ethernet interface is a fully-manageable SNMP agent that supports MIB-II. • The Ethernet interface is MIB II compliant, allowing SNMP managers to monitor protocol, network and routing statistics.

Reviewing the Telnet Server

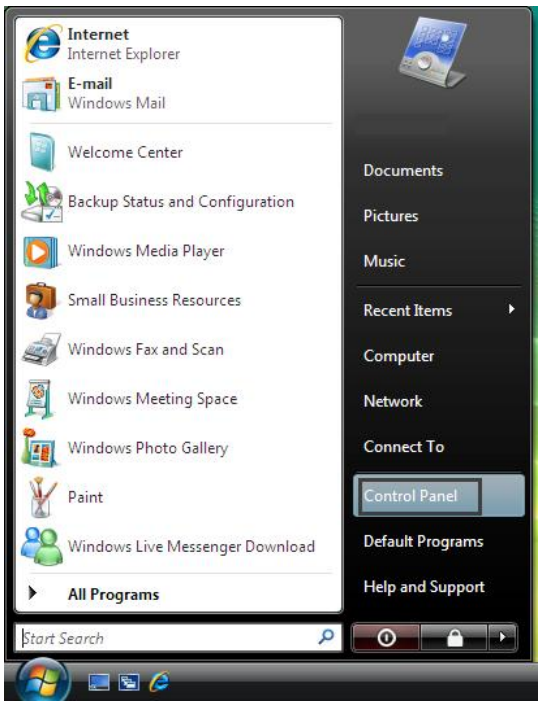
The Ethernet interface has a command line interpreter. (**Note:** The User can connect to the Printer using a Telnet session on their PC, issue commands to the Printer and receive response from the Printer.)

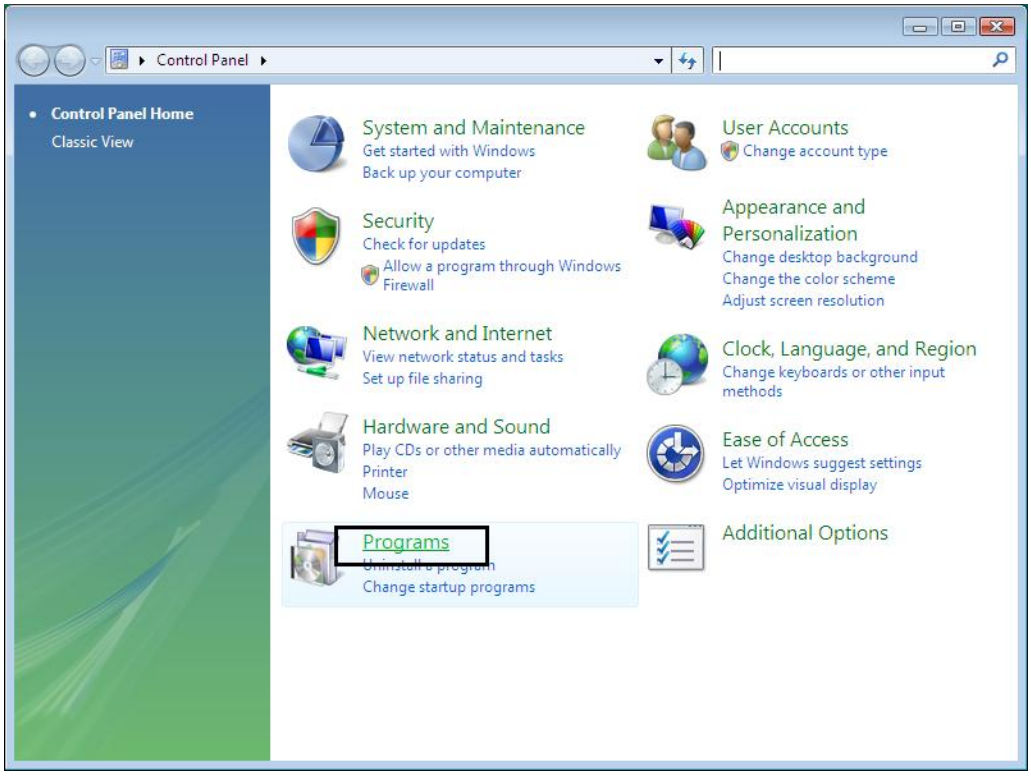
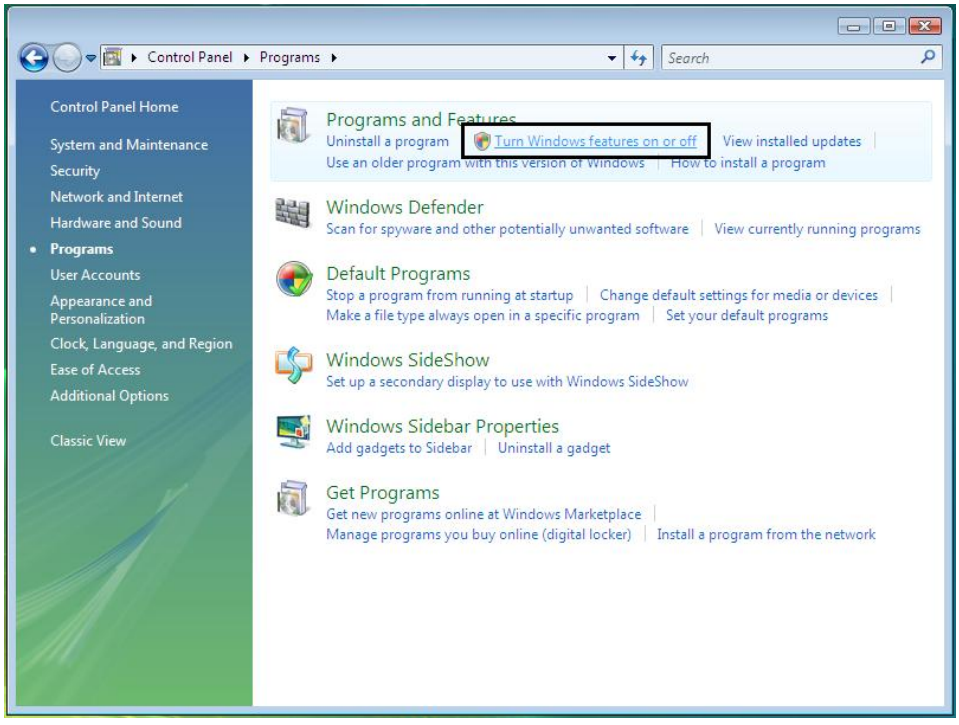
The Telnet commands are primarily used for network administration, and they will not be used by most Users. (**Note:** These commands will query the state of the Printer and configure various settings for the Printer. These include network settings, logging setting, User names and User passwords.)

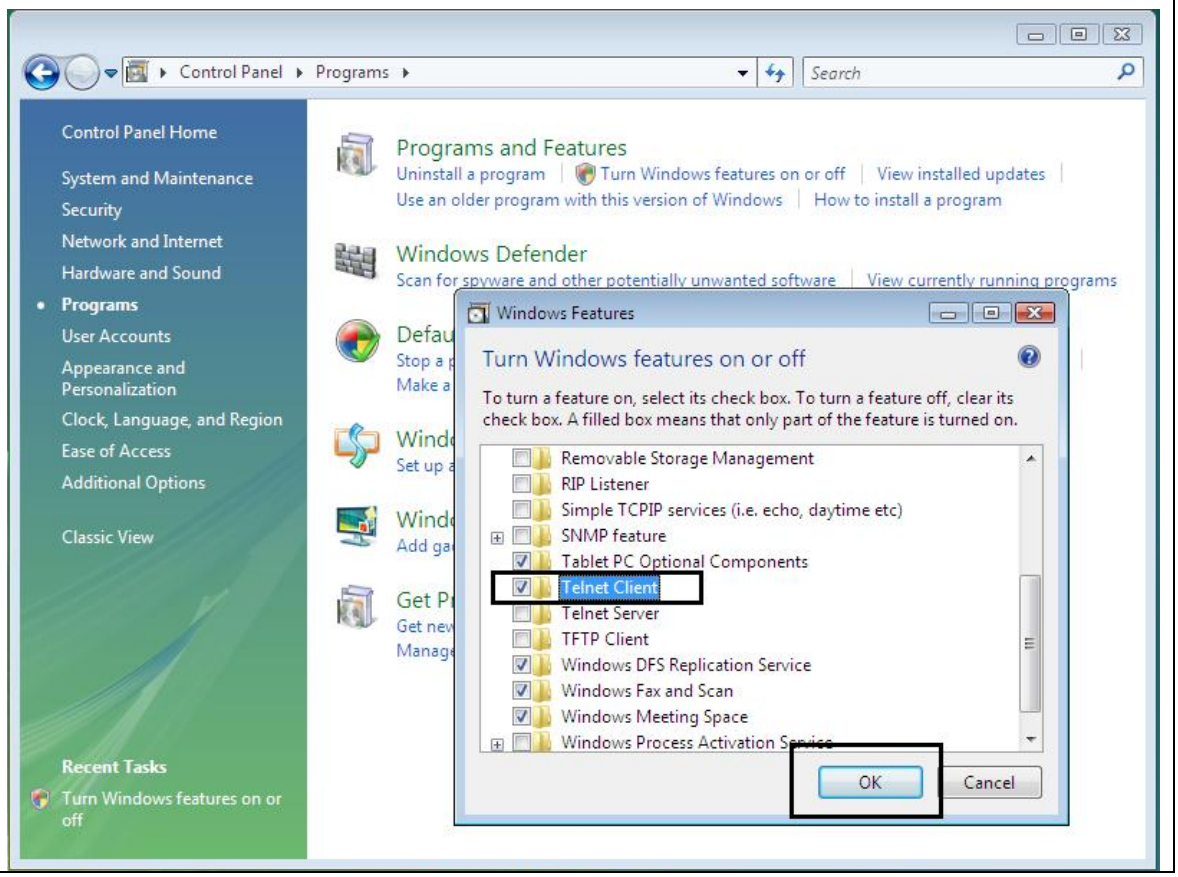
Installing the Telnet Client for Windows operating systems.

Windows Vista 32 bit SP2 used as the example below.

Similar procedure can be followed for operating systems other than Windows Vista that do not have the Telnet Client installed.

Step	Description
1	Open the operating systems Control Panel. 

2	Click on the Programs option within the Control Panel. 
3	Click the option for “Turn Windows Features on or off.” If prompted, click on Continue 

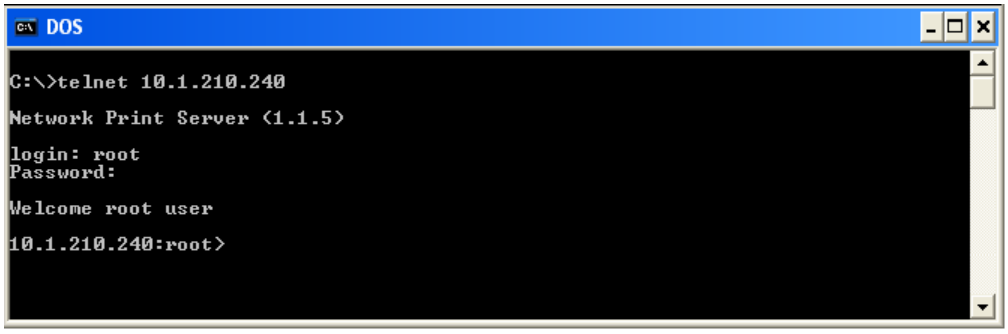
4	Scroll down the list and check the box for “Telnet Client” Click on the OK button. After a few minutes the Telnet Client will be installed. 

Telnet Command Line Interface

Initiating a Telnet Session

This procedure shows how to initiate a Telnet session from a PC in order to access the Telnet services provided by the Printer. Follow these instructions to issue Telnet commands.

Step	Description
1	Identify the IP address of your Printer. (**Note:** See the **Accessing the IP address of your Printer** procedure below.)
2	Initiate a Telnet session from a DOS window on your PC. At the DOS prompt, enter telnet [IP Address] **Example:** C:\>telnet 192.168.11.12 • All Telnet responses from the Printer will then be displayed in the Telnet session on the PC. • All commands entered will be sent to the Telnet client in the Printer.
3	Enter help or ? to get an on-window list of supported Telnet commands.



Accessing the IP address of your Printer

The additional LCD menus for Ethernet-enabled Printers are provided to view the IP address of the Printer. Follow these procedures to access the IP Address of your Printer model.

NOTE: If your model does not have a display, then press and hold the PAUSE button for 4+ seconds to print a settings card. The printer must be ready and idle for the card to print.

Step	Procedure
1	Apply power to the Printer.
2	Ensure that the Printer is connected to your network.
3	Wait up to one (1) minute to allow the Printer to configure the IP address.
4	Scroll through the informational messages on the LCD by selecting the **INFO** button (the button on the right of the front panel).
5	View the IP address displayed as a dotted quad number. **Example:** 168.192.1.1

Reviewing the Telnet Command Table

The following table describes available Telnet commands. (**Note:** You can enter partial full-word commands: the Printer will respond with additional help. For example, you can enter list, and the Printer will respond with all subcommands to the list command.)

Telnet Command		Command Purpose	Command Format
?		Display help for Telnet commands.	?
help			
reset		Reset the Ethernet interface for the Printer/Encoder.	reset
ping		Send a ping command to another IP address as a test of the Ethernet interface.	ping <IPADDR>
list	all	Display all information about this Printer.	list all
	diff	Display all differences between current and stored network settings.	list diff
	uptime	Display how long since the interface was last reset.	list uptime
	sysinfo	Display information about the Printer (i.e., model, label, contact, location, Firmware version and date, and serial number).	list sysinfo

Telnet Command				Command Purpose	Command Format
	media			Display information about the installed media in the Printer.	list media
	net			Display information about the current network settings of the Ethernet interface.	list net
	stored	net		Display information about the stored network settings of the Ethernet interface.	list stored net
	default	net		Display information about the default network settings of the Ethernet interface.	list default net
	user			Display information about the defined User names and their type (root or guest privileges).	list user
	lpq			Display information about print jobs and their settings.	list lpq
	printer			Display information about the Printer (i.e., model number, Firmware version and serial number).	list printer
	printer	sm		Display information about the secure mark settings of the Printer.	list printer sm
set	sysinfo	contact		Set the contact string.	set sysinfo contact [<STRING>]
		location		Set the location string.	set sysinfo location [<STRING>]
		label		Set the label string.	set sysinfo label [<STRING>]
		from		Set all strings from default or current settings.	set sysinfo from default|current
	logpath	name		Change the name of a system log path	set logpath <LOG_NAME> name <NEW_NAME>
		type		Change the type of a system log path. This starts or stops logging on start of jobs or on	set logpath <LOG_NAME> type [[-]job] [[-]pfault]

Telnet Command			Command Purpose	Command Format
			faults.	
		dest	Change the destination of a system log path. This may be set to none, e-mail, udp or tcp.	set logpath <LOG_NAME> dest none|email|udp|tcp
		email	Change the e-mail address for e-mail notification for a system log path. It must specify a valid e-mail address.	set logpath <LOG_NAME> email <EMAIL>
		udp	Specify the IP address of the UDP system logging program.	set logpath <LOG_NAME> udp <IPADDRESS>
		from	Restore system log path settings from the default or current settings.	set syslog from default|stored
set	user	add	Add a new User definition. Up to four (4) Users may be defined.	set user add <NAME>
		del	Delete a User definition.	set user del <NAME>
		passwd	Define a new password for a User.	set user passwd <NAME> [<PASSWORD>]
		type	Specify a User as root or guest. Only root Users have administrative rights to change network interface settings.	set user type <NAME> root|guest
		from	Restore User setting from default or stored settings.	set user from default|stored
store	net	addr	Store a new IP	store net addr <ADDRESS>

Telnet Command			Command Purpose	Command Format
			address.	
		mask	Store a new address mask.	store net mask <MASK>
		gateway	Store a new default gateway.	store net gateway <ADDRESS>
		dns	Store a new DNS server address.	store net dns <ADDRESS>
		domain	Store a new DNS domain suffix.	store net domain <STRING>
		opts	Enable or disable automatic address assignment using DHCP. Static (non-automatic) addresses will come from the stored or default settings, depending on the other settings.	To enable automatic address assignment: store net opts dhcp To disable automatic address assignment: store net opts -dhcp
		from	Restore the network settings from either the default settings or the current settings.	store net from default|current
	ifc	mode	Specify the Ethernet interface mode as: automatic, full or half duplex; 10 or 100 mHz.	store ifc mode auto|10half|10full|100half|100full
		from	Set the Ethernet mode settings from the default or current settings.	store ifc from default|current
save			Save all current settings as the stored settings in the permanent memory.	save
load			Take the settings from the stored memory and make them the current settings.	load

Telnet Command	Command Purpose	Command Format
lpstat	Display information about the Printer status. This includes the status and device response. See the Printer web page description.	lpstat
cancel	Cancel a specific print job from the print queue.	cancel 10
quit	Stop the current Telnet session.	quit

Ethernet Web Pages – Standard Procedures

Reviewing Web page security

You can use the web pages from your Ethernet-connected Printer to view several attributes about the Printer. Users must have administrative rights, and they must enter the correct password to alter settings of the Printer.

Logging In

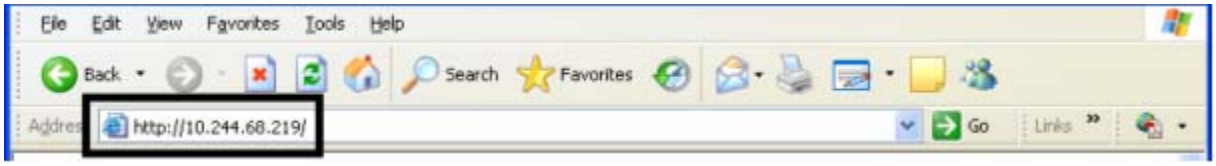
When a User attempts to change any setting, they are asked for a User name and password. (**Note:** The Guest Users can only view settings.)

Step	Procedure
1	Enter the correct User name: • The default administrative User name is **root**. • The default non-administrative User name is **guest**. • Non-administrative Users can only view settings.
2	Enter the correct password: • The default password is an empty string. If the password has not been changed, leave the field blank. • See **Password** page procedure for changing passwords.
3	Press **Enter** or click on the **OK** button.
4	If the name and password is not accepted, another login prompt will appear on screen. Repeat this procedure with the correct User name and password.

Accessing the Home page

Step	Procedure
1	Open a window for your network browser application on your local PC.
2	Find the IP address of the Printer. (**Note:** See Accessing the IP address of your Printer as needed to get this from the LCD of the Printer.)
3	Enter the IP address of the Printer you want to access into the address bar of the browser. (**Note:** The IP address will change for your printer installation.)
4	Press **Enter** or click on **GO**.
5	View the Home page. The Home Page displays general information about the Printer. See the next page.

Display – See Procedural Steps 2 and 3 (above)



Reviewing the Home Page

This section displays the DTC1000, DTC4000, and DTC4500 Home Page. The window title bar will vary according to the serial number assigned to your Printer.

Reviewing the Home Page Categories and Fields (table)

You can view these categories and fields in the following table.

Category	Field	Purpose
Fixed for Printer		
	Serial Number (Printer)	Displays the unique fixed serial number of the Printer.
	Hardware Address On the network page	Displays the unique fixed hardware address (MAC) of the Printer, which is the unique Ethernet device identifier.

Set by User (May be configured via Telnet or from the Administration web page.)	Hostname	Indicates the label that the User assigns to the Printer. This label is reported to the DHCP server as the Host Name (that may be used by the DNS server to resolve the IP address of the Printer). If left blank, the Printer will use a unique label based on the MAC address of the Printer.
	Location	Indicates the location string that the User assigns to the Printer.
	Contact	Indicates the contact person string that the User assigns to the Printer.
Set by Firmware		
	Firmware Version (Printer)	Displays the current Firmware version of the Printer.

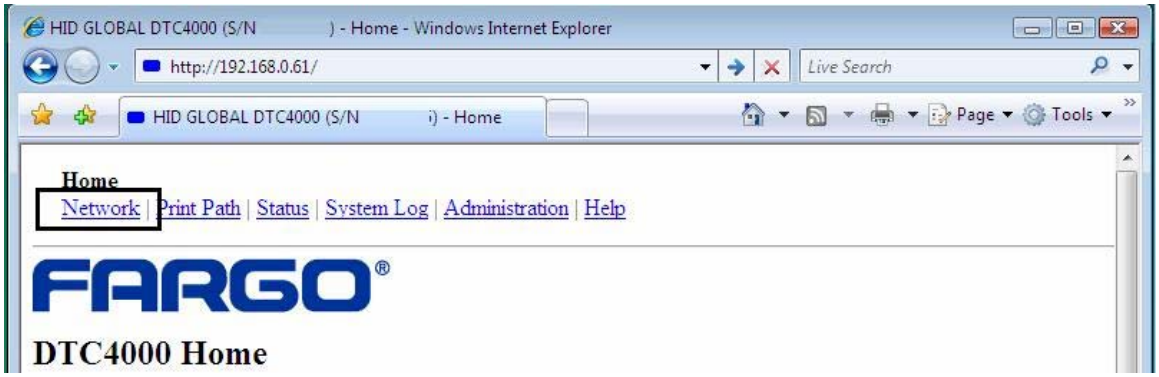
Configuring the Network Settings

The procedures needed to configure the network settings are presented in this section.

Accessing the Network Settings page

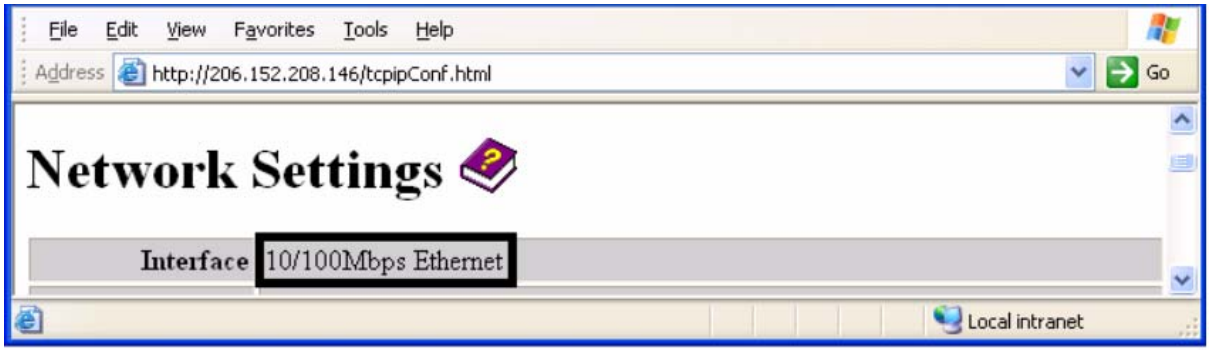
The Network page displays the current network settings and allows the User to change the settings.

Step	Procedure
1	Select the **Network** link from any web page of the Printer.



Reviewing the Interface

The Interface display indicates the network speed supported by the Printer.



Reviewing the Current Settings

The Current Settings page section displays the current active network settings for the Printer.

- These are also labeled as Dynamic if they were provided by DHCP or Static if they came from the Stored Settings.

- The current settings will be Dynamic only if **Obtain an IP address automatically** was selected when the Printer was restarted last.

Switching to the automatic IP address mode

Step	Procedure
1	Select the **Network** link from any web page of the Printer.
2	Select the **Obtain an IP address automatically** radio button to enable the DHCP/BOOTP, which automatically assigns the network settings. Even with this button selected, the User can enter Stored Settings, and the Stored Settings will remain in memory. See below. (**Note:** This is the default method.)
3	Click on the **Submit** button to save this setting.
4	Log in as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)
5	Reboot the Printer for this change to take effect.

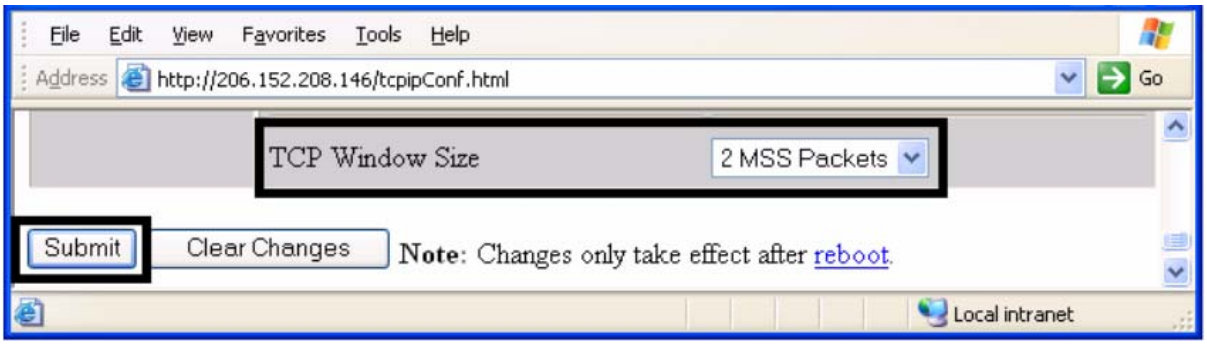
Changing to the static IP address mode

Step	Procedure
1	Select the **Network** link from any web page of the Printer.
2	Select the **Use the following IP address** radio button, which prepares the Printer to use network settings that the User has manually set. These manual settings will then be used the next time the Printer is rebooted.
3	Enter the network settings which are required for Ethernet communications from within the same subnet. With only these entries the User will be unable to print from a subnet other than the subnet on which the Printer is connected. These required settings are the following: • IP Address • Subnet Mask

4	Enter the optional network settings for Ethernet communications across a router from other subnets. The option setting is Default Gateway.
5	Enter the optional network settings for DNS. These are the following: • DNS Server Address • DNS Domain Suffix
6	Select the **Submit** button to save these changes to stored settings in the memory of the Printer. (**Note:** These settings will not be lost if the power is removed from the Printer.)
7	Log in as a root User if you are so prompted. (**Note:** Any change of setting will only be accepted after you have successfully logged in.)
8	Reboot the Printer for this change to take effect

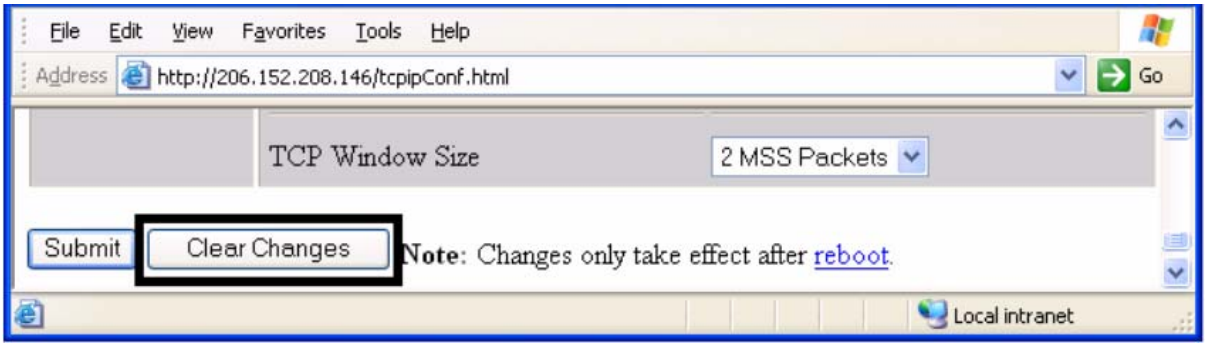
Entering the TCP Window Size

Step	Procedure
1	Select the **Network** link from any web page of the Printer.
2	Select the TCP window size from the drop-down menu, as shown below. • This entry provides for entry of the TCP Window Size. It adjusts how much data can be sent to the Printer at any one time. • It is recommended that the default value of 2 MSS Packets be used to ensure good compatibility with all client applications.
3	Click on the **Submit** button to save this setting.
4	Login as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)
5	Reboot the Printer to effect this change.



Using the Clear Changes button

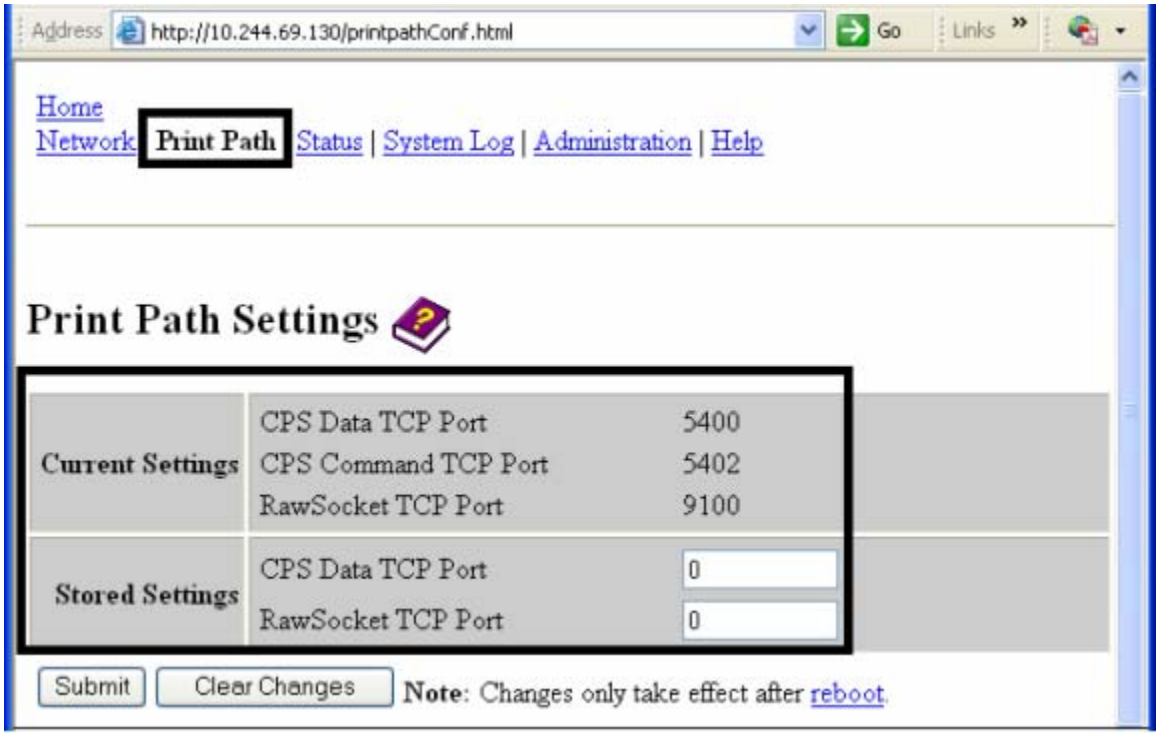
Step	Procedure
1	Click on the **Clear Changes** button to delete the information in the textboxes in the Stored Settings area. See the lower left corner of this display.



Using the Print Path page

The purpose of the Print Path page is to allow the User to view or change the TCP port numbers used to communicate to the printer. If these settings are left to the default entry of 0 then the default ports of 9100, 5400 and 5402 will be used for the **RawSocket TCP Port**, the **CPS Data TCP Port** and the **CPS Command TCP Port** respectively. The **CPS Command TCP Port** is dependent on the setting of the **CPS Data TCP Port** and always two units higher.

Step	Procedure
1	Select the **Print Path** link.
2	View the active configuration of the printer in the Current Settings area on this page.
3	New port numbers may be entered into the Stored Settings area in the text boxes provided on this page.



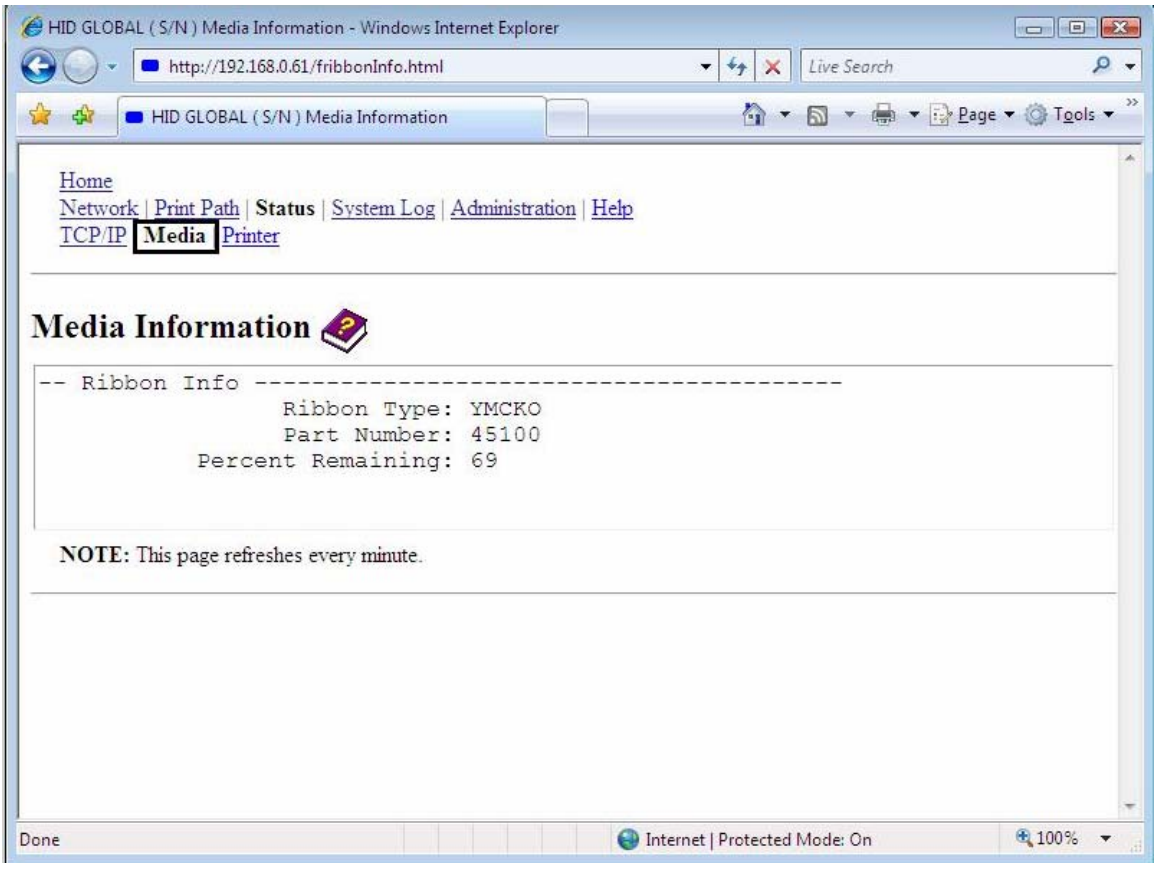
Step	Procedure
4	Select the **Submit** button to save these changes to stored settings in the memory of the Printer. (**Note:** These settings will not be lost if the power

	is removed from the Printer.)
5	Select the **Clear Changes** button to delete these changes from this page.

Using the Media Information page

The Media page displays Ribbon information about the Ribbon (currently installed in the Printer).

Step	Procedure
1	Select the **Status** link from any web page of the Printer.
2	Select the **Media** page link.
3	View currently-installed Ribbon information pertaining to the following: • Part Number • Percent Remaining • Ribbon Type

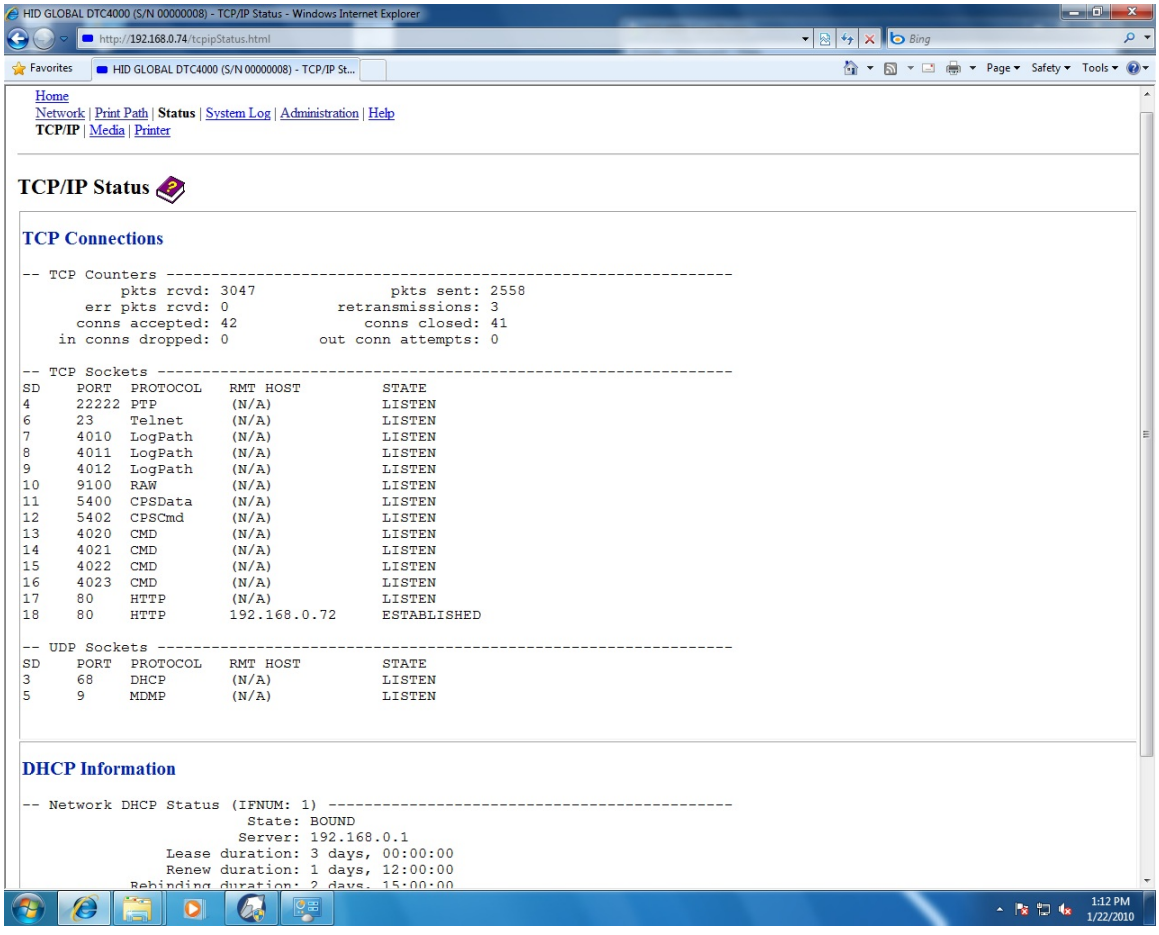


Using the TCP/IP page

The TCP/IP page displays the TCP/IP Status of each Printer connection, which are not configurable. See the next two pages for displays.

Step	Procedure
1	Select the **Status** link from any web page of the Printer.
2	Select the **TCP/IP** page link.
3	View information on all current network connections in the **TCP connections** area.
4	Review information on the network DHCP status in the **DHCP Information** area.

Using the TCP/IP Status Web Page



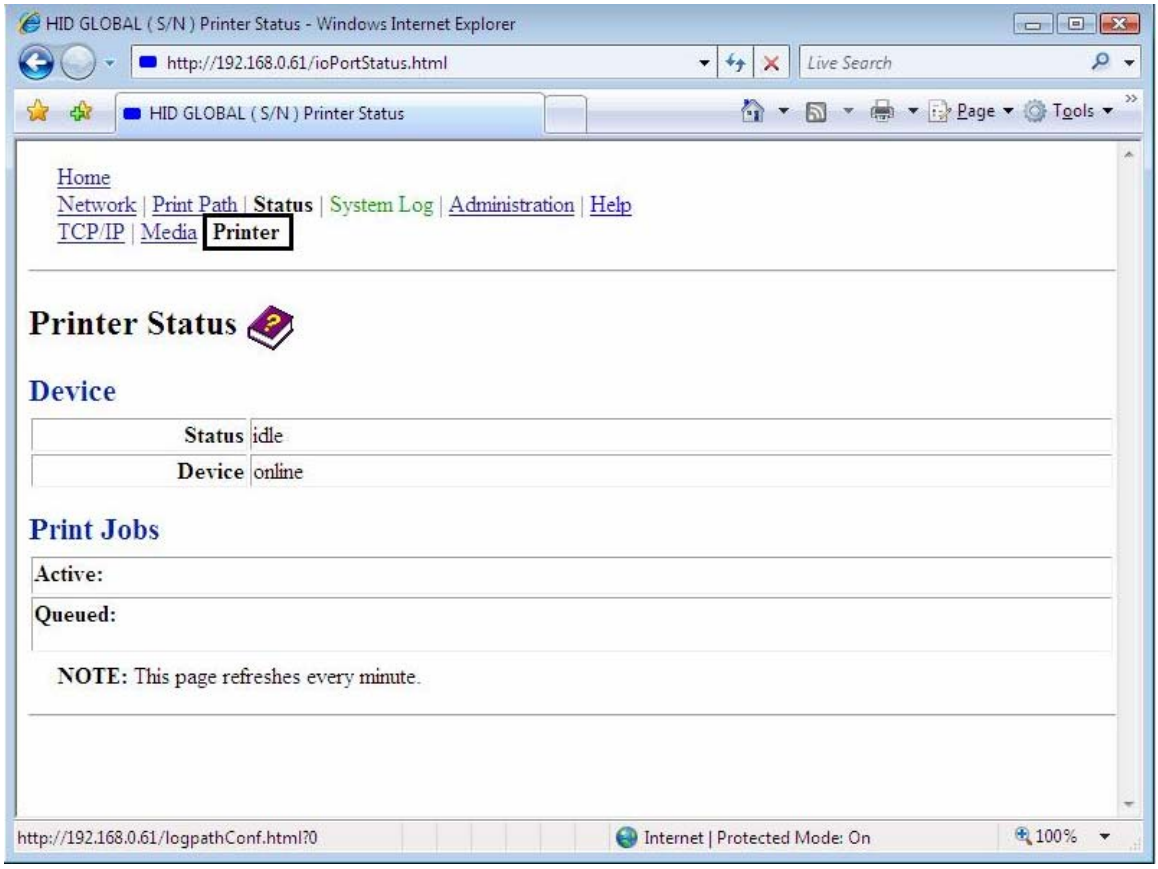
Using the Printer page

You can use the Printer page to review current information about the Printer device settings and print jobs. Device settings include the following:

- The **status** which displays information about the current print job.
- The **device** which displays information about the Printer.

The fields are described below. See the next page to view the entire Printer page.

Field	Status	Description
status	Idle	Indicates that no print job is active.
	printing	Indicates that the job is being sent to the Printer.
	printing – waiting	Indicates that the communication is being slowed by print operations.
	printing – blocked	Indicates that the communication has been stopped by some condition.
	canceled	Indicates that the current job was canceled and is being deleted.
device	online	Indicates it is ready to print.
	offline	Indicates that the Cover is open or the Printer is not ready to print.
	printer – error	Indicates that an error is detected.
	Busy	Indicates that printing is in progress.
Print Jobs		This is a display of the current print jobs that have been sent to the Printer. (**Note:** The current job that is being received by the interface is displayed as the active job.) Cancel a specific print job by selecting the appropriate **Cancel** button, which appears when a print job is queued.



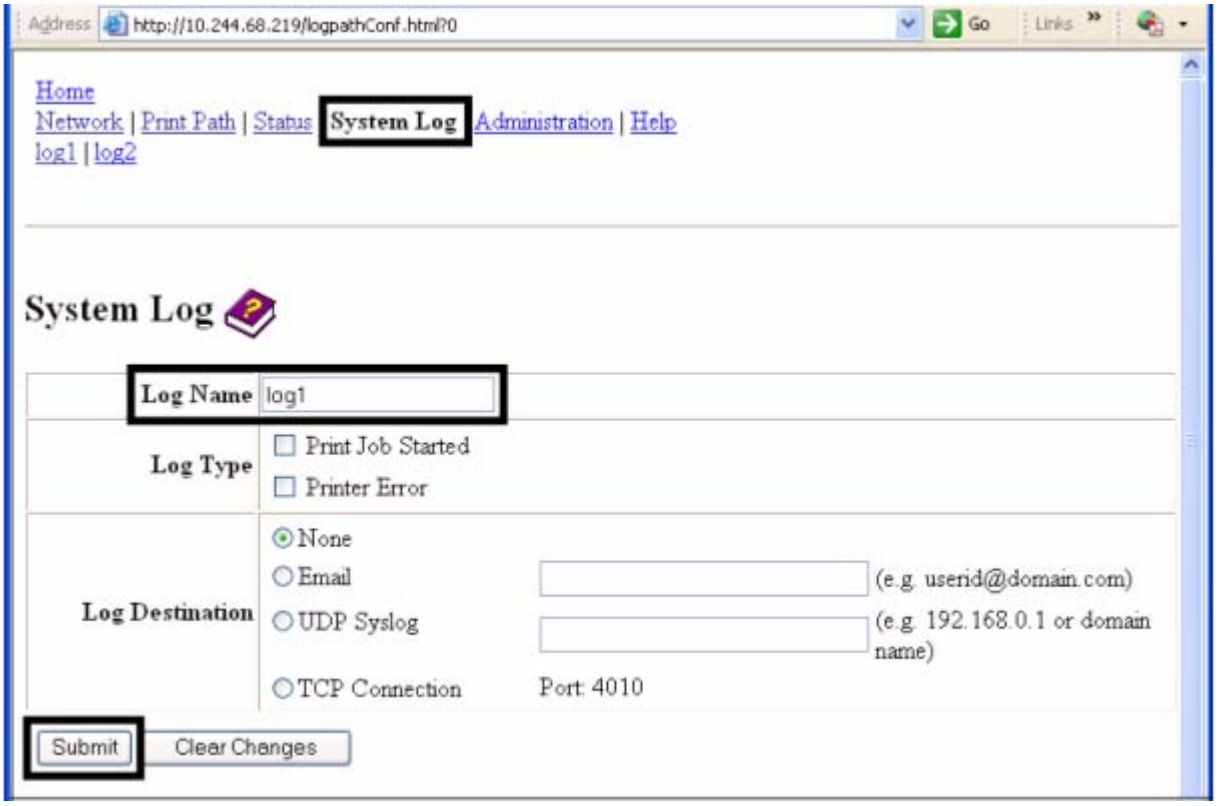
Using the System Log page

The System Log page displays the current system log settings and allows the User to change the settings. (**Note:** These settings configure how system logging occurs. There are two logs.)

Changing the Log Name

By default the names are log1 and log2. However, you can rename them from this page. (**Note:** This also updates the link to the corresponding web page.)

Step	Procedure
1	Select the **System Log** link.

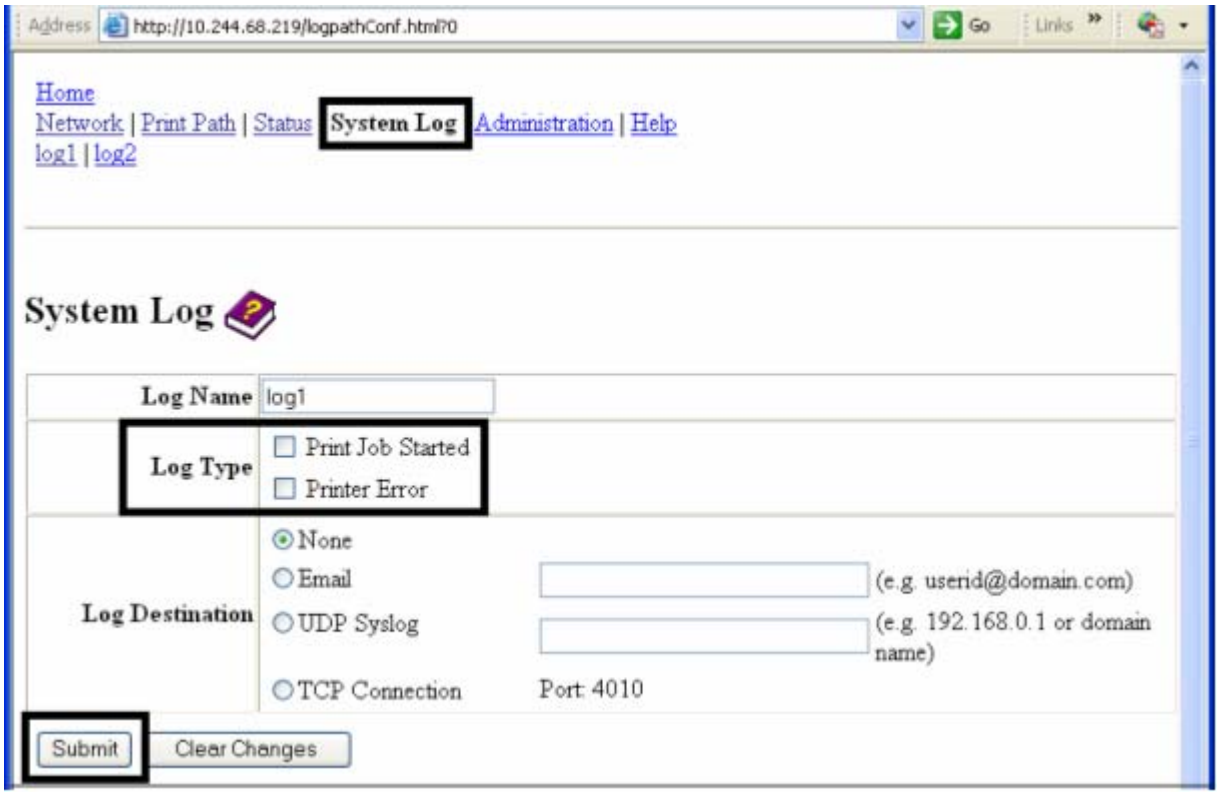


Step	Procedure
2	Select the link for the log name you want to view or configure (the default choices are **log1** or **log2**). See the previous page.
3	Enter a new log name in the textbox.
4	Click on the **Submit** button to save this change.
5	Log in as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)

Selecting the Log Type

Step	Procedure
1	Select the **System Log** link. See the next page.
2	Select the link for the log name you want to view or configure (the default choices are **log1** or **log2**).
3	Select the **Print Job Started** checkbox to generate the log entries for each Print Job Started.

4	Select the **Printer Error** checkbox to generate the log entries for each Printer Error.
5	Select the **Submit** button.
6	Login as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)

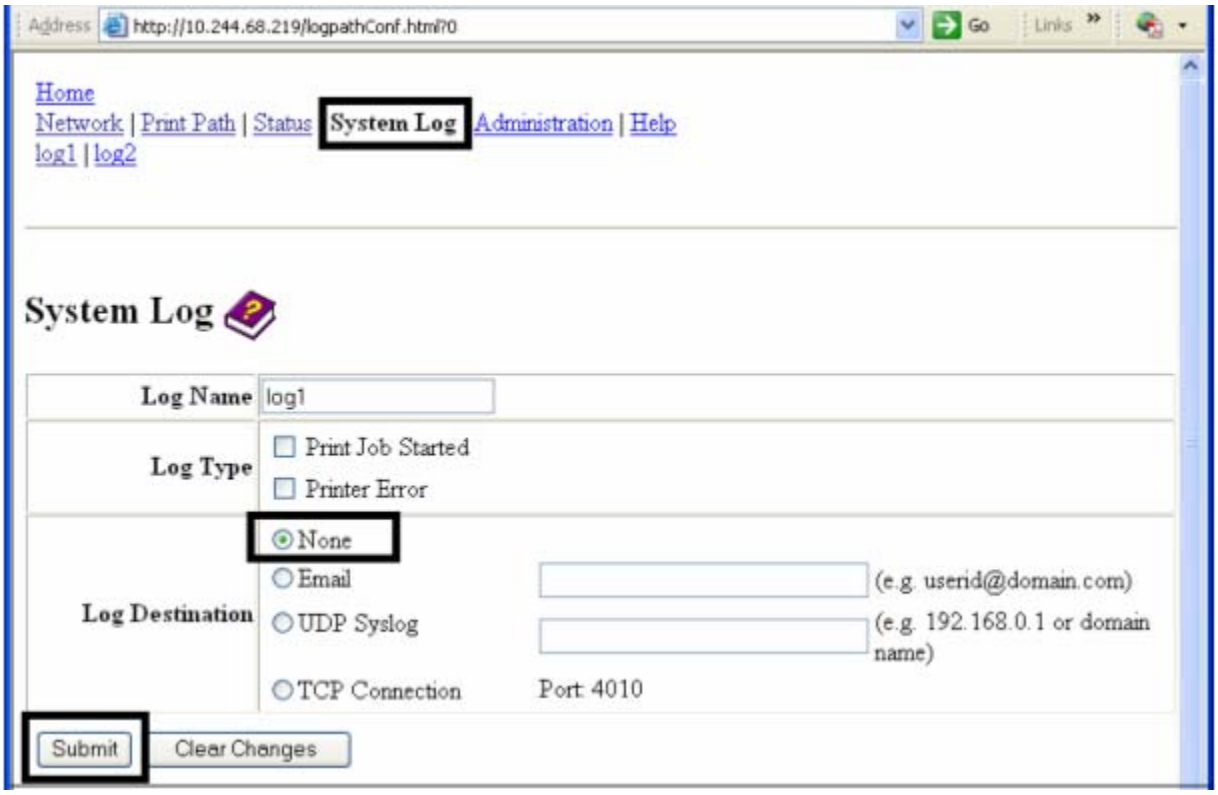


Selecting the Log Destination

Specify one destination for the log.

Step	Procedure (No event logging)
1	Select the **System Log** link.
2	Select the link for the log name you want to view or configure (the default choices are **log1** or **log2**).
3	Select the **None** radio button when no log is required. (**Note:** This is the default.)
4	Select **Submit**.

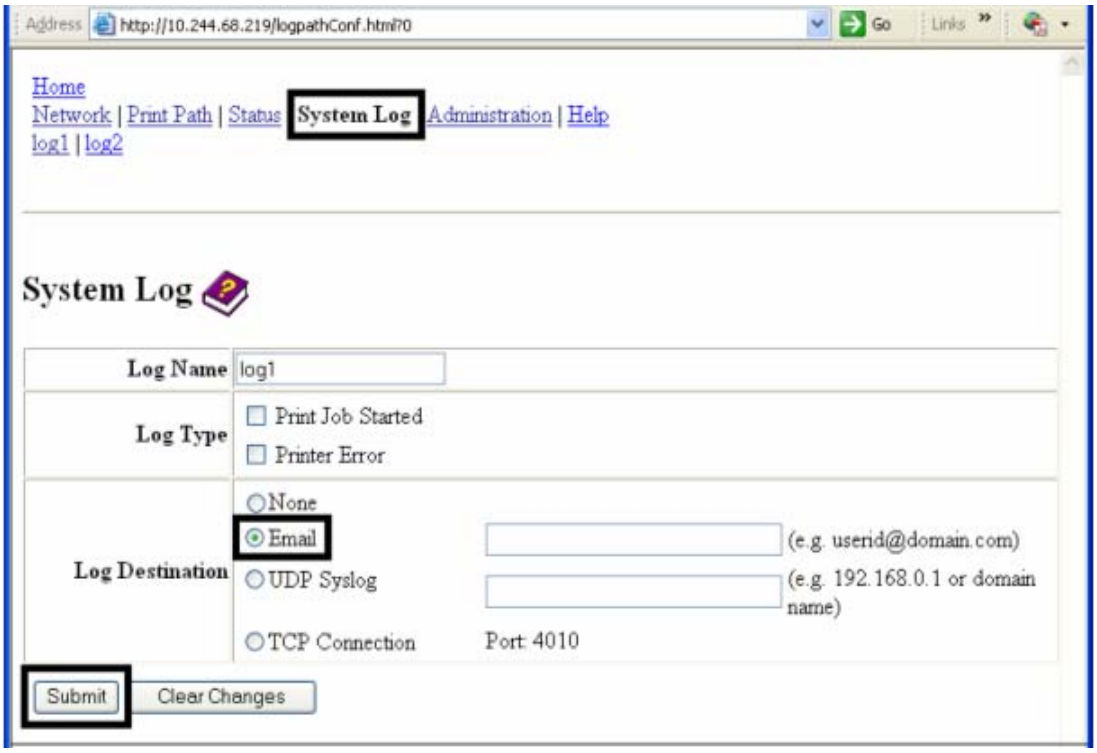
5	Login as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)



Setting up Email Event logging

Follow this procedure to enable logging using email notification:

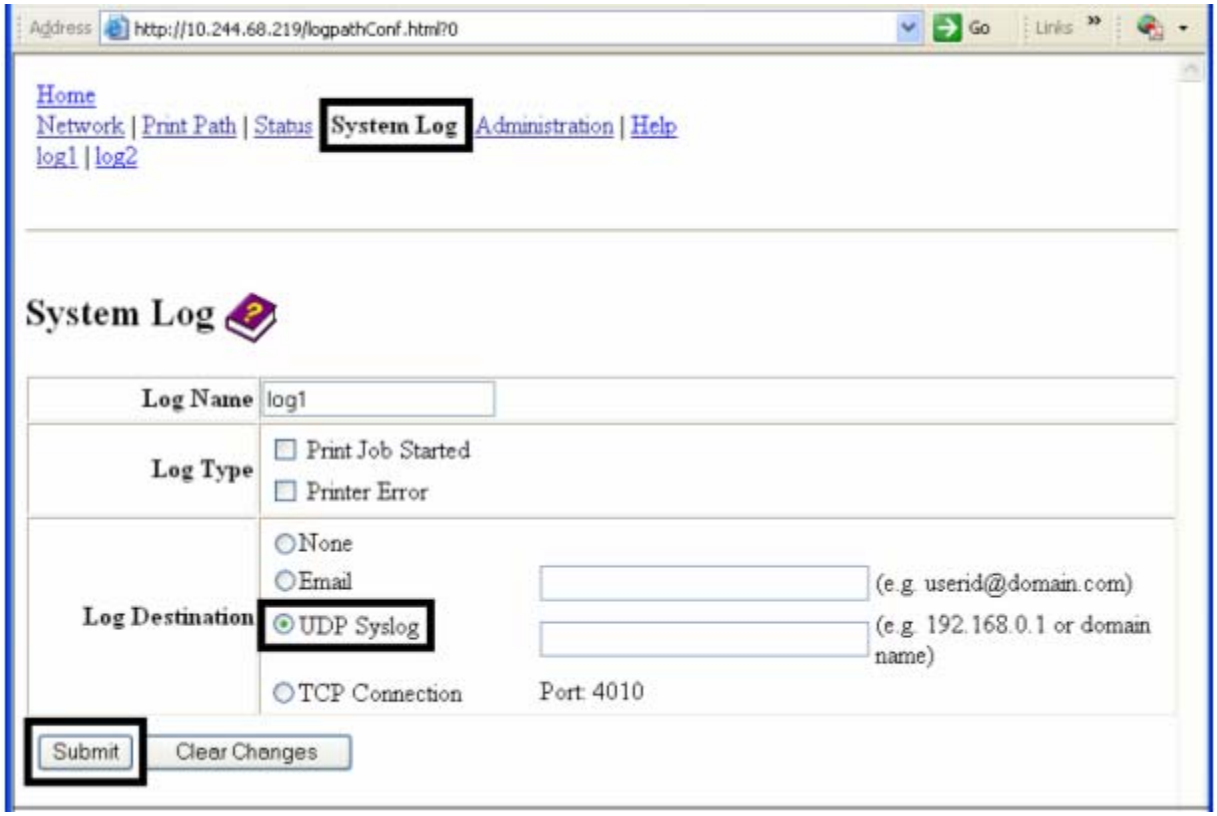
Step	Procedure (Specify email logging)
1	Select the **System Log** link.
2	Select the link for the log name you want to view or configure (the default choices are **log1** or **log2**).
3	Select the **Email** radio button to choose email log notification.
4	Enter a valid e-mail address in the associated textbox.
5	Select **Submit**.
6	Log in as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)



Specifying UDP Event logging

Follow this procedure to enable logging to a UDP Syslog program.

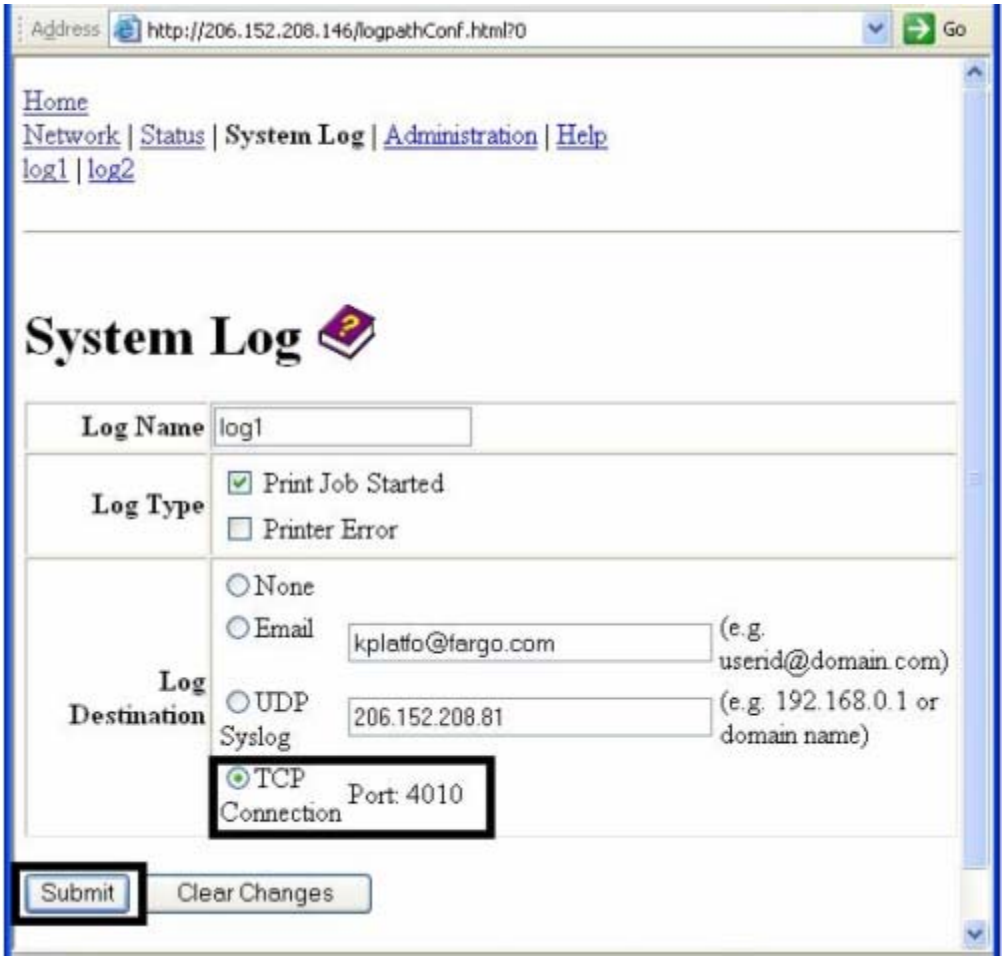
Step	Procedure
1	Select the **System Log** link. • The messages will be sent via UPD packets to the Syslog port (514) of the specified host. • It is up to the host program to listen to these messages for processing. • A syslog host program is necessary to use this method, such as, Kiwi Syslog Daemon or WinSysLog.
2	Select the link for the log name you want to view or configure (the default choices are **log1** or **log2**).
3	Select the **UDP Syslog** radio button.
4	Enter a valid IP address or domain name.
5	Select **Submit**.
6	Log in as a root User if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)



Specifying TCP Event logging

Follow this procedure to send logging messages to a pre-existing IP connection made on the TCP port.

Step	Procedure
1	Select the **System Log** link.
2	Select the link for the log name you want to view or configure (the default choices are **log1** or **log2**).



Step	Procedure
3	Select the **TCP Connection** radio button. See previous page.
4	Select **Submit**.
5	Log in as a root User if you are so prompted. Any change of a setting will only be accepted after you have successfully logged in.

6	Use a host program such as Telnet to receive these TCP logging messages (**Note:** Other programs such as HyperTerminal are also used to monitor TCP connections). See below. • **Telnet Client:** You can use a Telnet client connected to the TCP port (log1 = 4010, log2 = 4011) rather than the default Telnet port (23). • **Telnet Session:** If there is a Printer at IP address 192.37.23.155 (and you have configured log1 for TCP logging), then you could initiate a Telnet session from a DOS window of a PC by entering Telnet 192.37.23.155 4010. • **Log Messages:** All system log messages would then be displayed in that Telnet session window. (**Note:** This is a one way connection for logging only. Any input to the Printer on this connection is ignored.)

Using the Administration pages

The purpose of the Administration pages is to allow the User to upgrade, reboot, modify passwords and enter User-specified system information strings.

Using the System Information page

The System Information page displays the current system information and allows the User to change the system information (which appears on the Home page).

Step	Procedure
1	Select the **Administration** link.
2	Select the link for the **System** web page.
3	To change an attribute, type the new entry in one of these boxes: • **HOSTNAME** textbox • **Location** textbox • **Contact** textbox
4	Select the **Submit** button.
5	Log in as a root User if you are so prompted. Any change of a setting will only be accepted after you have successfully logged in.

Changing the Root Password

The Passwords page allows the User to change the passwords needed to log in as a User. Changes to all settings require a login. (**Note:** However, these changes are only protected by password after the password has been set. Users can only be added or removed using Telnet commands.)

Step	Procedure
1	Select the **Administration** link.
2	Select the **Passwords** link to get to the Password web page.
3	Enter the current password in the **Root Password Old** textbox or leave it blank if no password has been previously set.
4	Enter the new password in the **Root Password New** textbox or leave it blank if you want to remove the old password.
5	Re-enter the new password in the **Root Password Confirm** textbox or

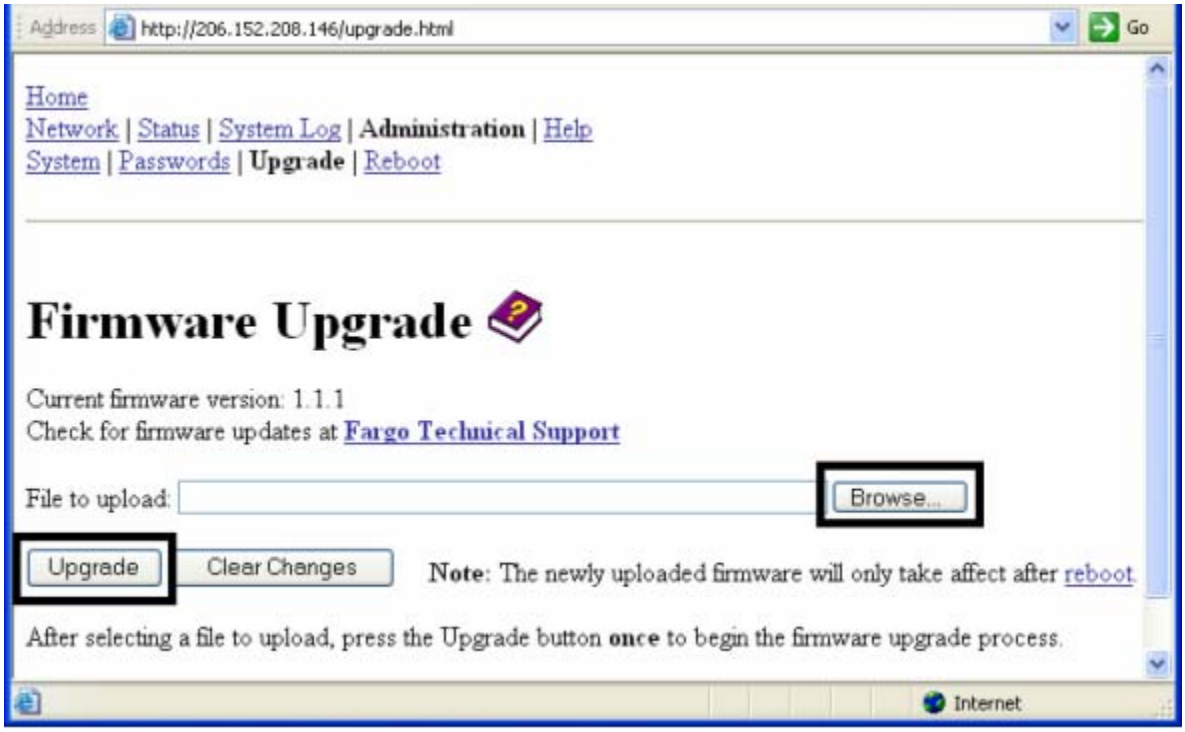
	leave it blank if you want to remove the old password.
6	Select the **Submit** button.
7	Log in as a root User (using the password) if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)

Upgrading the Print Server

This procedure provides a means to upgrade the Firmware in Printer.

An alternative method for firmware upgrade. Upgrading the Printer Firmware using the Workbench Printer Utility

Step	Procedure
1	Select the **Administration** link.
2	Log in as a root User (using the password) if you are so prompted. (**Note:** Any change of setting will only be accepted after you have successfully logged in.)
3	Select the **Upgrade** link.
4	Select the **Browse** button.
5	Navigate to and select the appropriate file to upload.



Step	Procedure
6	Select the **Upgrade** button to start the Firmware upload.
7	Printer Reboots automatically.

Using the Reboot pages

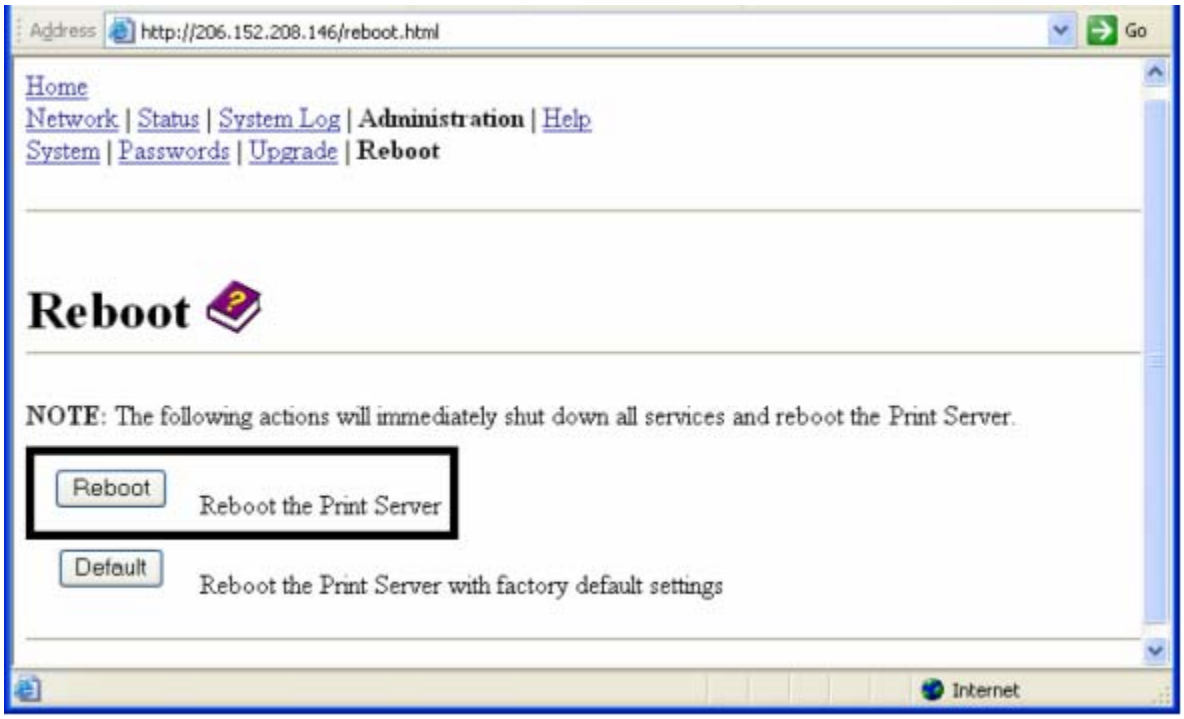
Rebooting the Printer restarts only the Ethernet Print Server.

Rebooting the Ethernet Server

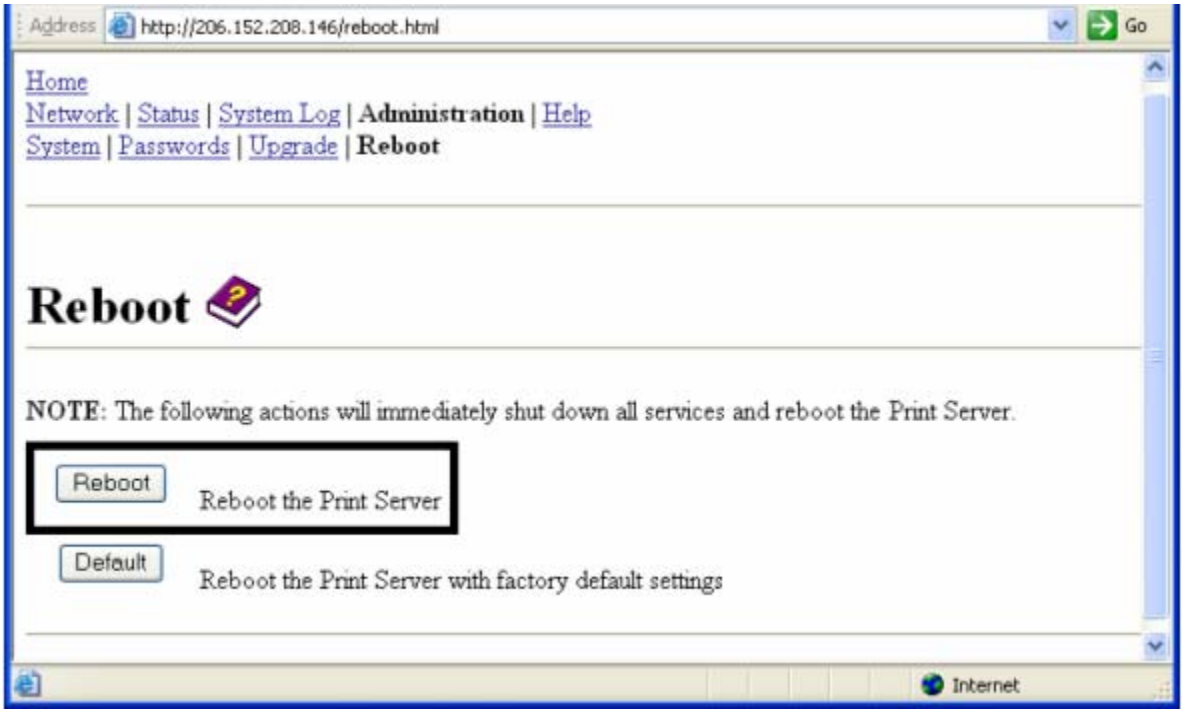
The Reboot page allows the User to restart the Ethernet Print Server.

Step	Procedure
1	Select the **Administration** link.
2	Log in as a root User (using the password) if you are so prompted. (**Note:** Any change of setting will only be accepted after you have successfully logged in.)
3	Select the **Reboot** link.

4	Select the **Reboot** button.



Step	Procedure
5	Wait for the Printer to reboot and display the home page.

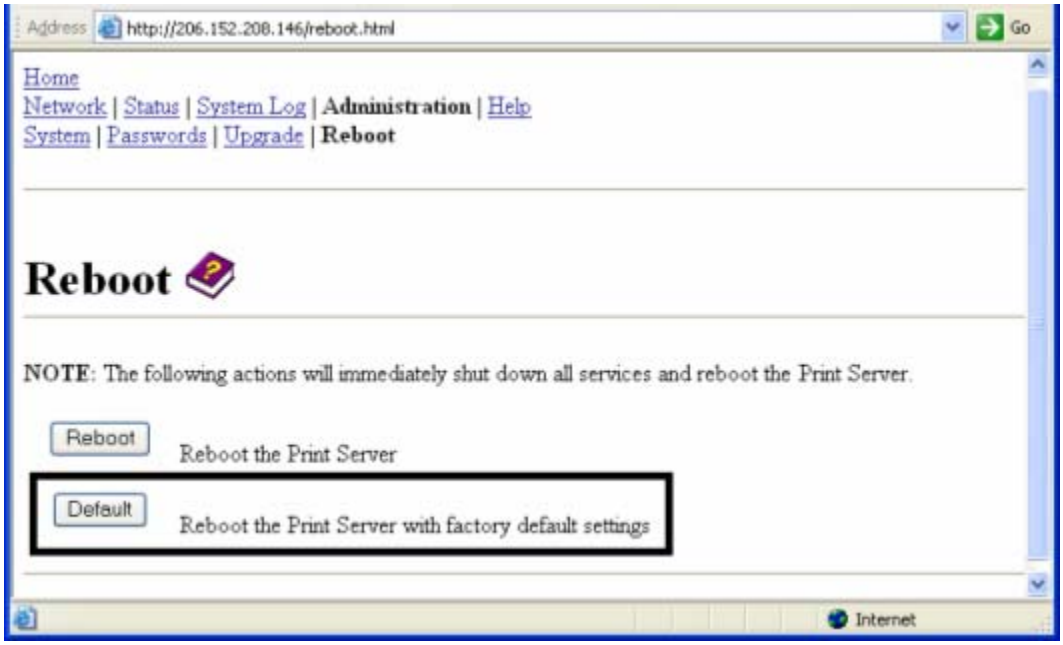


Resetting to Default Settings

The Reboot page also allows the User to reboot the Ethernet Print Server into a default settings mode. (**Note:** This simply restarts the Printer in a different state with the settings in memory temporarily ignored.)

When the **Default** button is selected, the stored settings in the Printer's memory are not changed.

Step	Procedure
1	Select the **Administration** link.
2	Log in as a root User (using the password) if you are so prompted. (**Note:** Any change of a setting will only be accepted after you have successfully logged in.)
3	Select the **Reboot** link.
4	Select the **Default** button.
5	Wait for the Printer to reboot and display the home page.



Using the Help page

The Help page displays the **Help** information.

Step	Procedure
1	Open this web page at the appropriate location by clicking on the Help book icon at the top of each page. See below.
2	Review the web interface for the Ethernet-enabled Printer.

Reviewing LED Tables

The LED can be found on the back of Printers.

Reviewing the LED Table

LED	Printer position	Flash Rate	Indicates
STAT LED	Upper	On once per second (i.e., more **OFF** than **ON**)	The Normal Mode, IP address is configured.

		On twice per second	The IP address is not configured.
		Off once per second (i.e., more **ON** than **OFF**)	The Download mode is for updating the Ethernet interface.
		Off twice per second	There is a system error.
NET LED	Lower	On	The Network link is present.
		Off	The Network link is not present.
		Blinking, off 1/3 second	The Network link is present and transmitting. It flashes off for one-third (1/3) second each time a packet is transmitted.

Upgrading the Printer Firmware using the Workbench Printer Utility

An alternative method of firmware upgrade. See:.Upgrading the Print Server

The Printer Firmware upgrades are done with the same procedure as the USB-connected Printer. The PC doing the upgrade must have a Driver installed for the Printer to be upgraded.

Requirements

- Internet Access
- Printer is powered up and connected to PC

Upgrade the Printer Firmware

Step	Procedure
1	Open the Workbench Printer Utility by using the **Diagnostics** button from the Card Option Printing Preference page. The Workbench is also available from the Folder in the Windows Program folder.
2	From the Application Icon. Select Upgrade Firmware.
3	Find the Firmware via Check for Firmware Updates at www.hidglobal.com • Save the file to a folder. • Use the **Browse** button to find the .frm file.

	Select the file. Click **Open**.
4	Click on Upgrade to start the upgrade process.
5	This message will appear while Firmware is updating.
6	The Printer will reboot after this process is completed.

Ethernet Printer Troubleshooting Procedures

If you are having trouble connecting to your Ethernet Printer or printing to it, you should go through each of the following procedures.

Step	Procedure
1	Follow the **Verifying the Printer Connection** procedure. See below.
2	Follow the **Verifying the Printer IP address** procedure. See below.
3	Follow the **Verifying that your PC can access the Printer using the ping command** procedure. See below.
4	Verify that you are choosing the correct Printer Driver. (**Note:** The Driver must match the model of the Printer.)
5	Verify that the port configuration of the PC Printer Driver is set to communicate to the Printer over the correct IP address.
6	Follow the **Printing a test page** procedure.

Verifying the Printer Connection

Step	Procedure
1	Ensure that your Printer has a valid network connection.
3	Verify that the Printer has both LEDs blinking on and off with network activity.
3	If the LEDs do not indicate connection, verify the network connection with another device.
4	If the connection is OK, then something may be wrong with the Ethernet option installation.

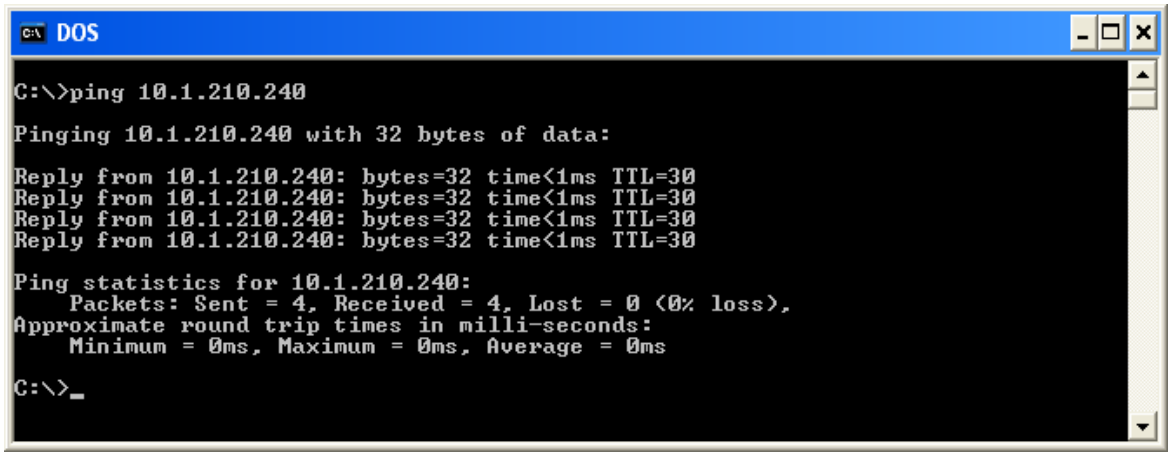
Verifying the Printer IP address

Step	Procedure
1	Check the LCD for a valid IP address (0.0.0.0 in not valid). • If the IP address is valid, go to step 4 (below). • If the IP address is not valid, go to step 2 (below).
2	If your network is using DHCP, then: • Use IP Tracer to verify that the Printer has not been configured to use a static address. (**Note:** This guideline applies unless you have a known, unused static IP address assigned to this Printer.)
3	If you are using a static IP address, then: • Verify that there is no other device using the same address by removing your Printer and ping to the desired address. If any device responds, then you must find a different available IP address.
4	If the Printer reports an IP address, then: • Verify that it matches subnet of the network where it is connected. If your Printer has DHCP disabled, then: • The static IP address may have been previously set for a different subnet.

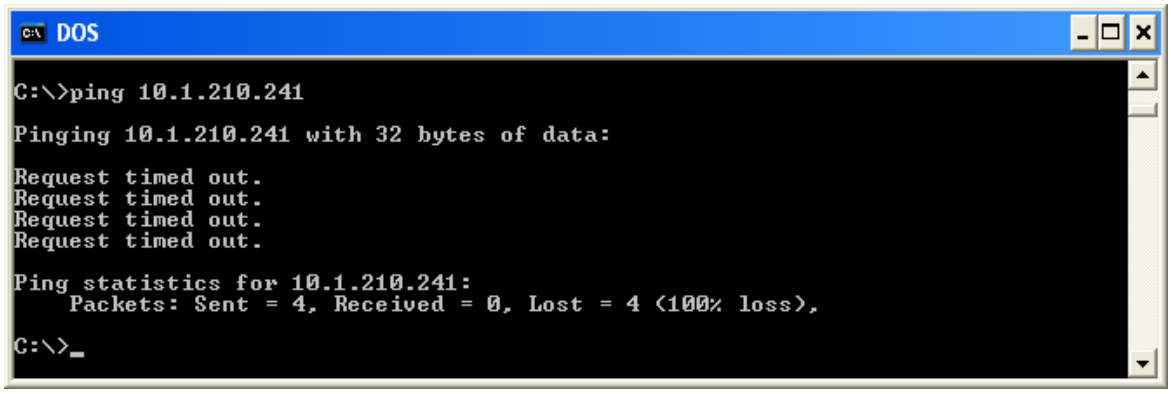
Verifying that your PC can access the Printer using the ping command

Step	Procedure
1	Follow these instructions to issue a ping command to the Printer: At a DOS prompt, enter **ping [IP Address]** **Example:** C:\>ping 210.1.10.240 • If the ping response is successful, move on to the next troubleshooting procedure. See Display A below. • If the ping response is not successful, continue to step 2 of this procedure. See Display B below.

Display A - Example of sending a ping to the Printer with a successful response



Display B - Example of ping timeout to an invalid IP address



Step	Procedure

2	Verify that the PC and the Printer are connected to the same network.
3	You may be on different subnets of your network and some of the network settings for the Printer are not correct. See your network administrator about this. (**Note:** The subnet mask must be the same as other devices on the network, and that the unique IP address is part of the network specified by the subnet mask.)

Printing a test page

Step	Procedure
1	Try printing a test page from the Printer Driver properties window. a. Open the Printer Driver properties window. b. Select Start -> Settings -> Printers and Faxes -> [your Printer Driver name (i.e., DTC1000, DTC4000, and DTC4500 Card Printer)] -> Properties. c. Ensure that the printing preferences are set correctly for the Ribbon installed in your Printer. d. Then select the **Print Test page** button. See the next section.
2	If you cannot print a test page, then consider the following: • There may be an error at the Printer. • There may be a job in the Windows print queue which has stalled. • The Printer may be paused or set to operate offline in the Windows print queue.

Reviewing Frequently-asked Questions

Question	Answer
How do I know if my Printer has the Ethernet option installed?	If your Printer has the RJ45 connector installed on the back of the Printer, then it has this Ethernet option installed.
Can my non-Ethernet-enabled Printer be upgraded to have an Ethernet interface?	No.
What PC operating systems work with my Ethernet Printer?	The Windows XP (x86) / Windows Server 2003 (x86) / Windows Vista (x86 and x64) / Windows Server 2008 (x86) operating systems work with your Ethernet Printer.
How do I connect my Printer to my network?	You can connect from the RJ45 network connection on the back of your Printer to an available connection on your network (not directly to your PC). You can use a good CAT-5 or better cable to make this connection.
How can I find the MAC address of my Ethernet Printer?	If you know the IP address of your Printer, you can access this through the Network web page of the Print Server. **OR** If you do not know the IP address or the Printer does not work with a usable IP address, then the MAC Address can be found using the IP Tracer. (**Note:** This can be installed and used to locate all the Fargo-compatible Printers on your network.) Or The MAC address is accessible by printing a printer settings test card.
How can I find the IP address of my Ethernet Printer?	You can find it in the LCD of the Printer if the Ethernet option is functioning properly.

Question	Answer
How do I upgrade the Printer Firmware in my Ethernet-enabled Printer?	This is done in the same manner as a USB connected Printer, or from the Upgrade web page of the Print Server. The PC doing the upgrade must have a Driver installed for the Printer to be upgraded. Follow this procedure. 1. Run the Diagnostic Utility from the start menu: Go to the Start -> Programs ->Fargo -> Fargo Workbench Printer Utility->Fargo Workbench. 2. Select the Printer to upgrade from the drop-down box. 3. Select Upgrade Firmware from the Application icon. 4. If you need to download the update file from the Internet, select the **Technical Support Website link**. 5. Choose the update file with the **Browse** button. 6. Select the **OK** button.
Can I print from my PC to multiple Ethernet Printers?	Yes. Follow this procedure: 1. You can install multiple Printer instances by using the Add Printer wizard. 2. Run the Add Printer Wizard by choosing Add Printer from the Printers Control Panel. 3. Select Add a Local Printer 4. Create a new port and select **DTC1000, DTC4000, or DTC4500 TCP/IP Card Printer Port**. Click **Next**. 5. Enter the IP address of the Printer. Click **Next**. 6. Enter a name for the port. Click **Next**. 7. Select for the Manufacturer and select the DTC1000, DTC4000 or the DTC4500 for the Printer. Click **Next**. 8. Enter a name for the Printer instance. Click **Next**. 9. Keep existing driver. 10. Continue with the wizard instructions. 11. Click **Finish** to close the wizard.
Can multiple PC's print to my Ethernet Printer?	Yes. Each PC must have the Printer Driver software for the specific Ethernet-enabled Printer and connect to the intended Printer, using the correct IP address.

Question	Answer
Can I print from my PC to an Ethernet Printer on a different network segment?	Yes. If you know the IP address of the Printer on any segment of your network, you will be able to print to it.
Can I use IP Tracer to locate Printers on a different network segment?	No. The IP Tracer can only locate Printers located in the same network segment (as the PC running IP Tracer).
How do I upgrade the Printer Firmware in my Ethernet-enabled Printer?	This is done in the same manner as a USB connected Printer, or from the Upgrade web page of the Print Server. The PC doing the upgrade must have a Driver installed for the Printer to be upgraded. Follow this procedure. 1. Run the Diagnostic Utility from the start menu: Go to the Start -> Programs ->Fargo -> Fargo Workbench Printer Utility->Fargo Workbench. 2. Select the Printer to upgrade from the drop-down box. 3. Select Upgrade Firmware from the Application icon. 4. If you need to download the update file from the Internet, select the **Technical Support Website link**. 5. Choose the update file with the **Browse** button. 6. Select the **OK** button.
What is the default User name and password for the Printer?	The default passwords are blank (i.e., an empty string). • The default Users are as follows: **root** as the administrative User and **guest** as a non-administrative User. • The Printer supports four (4) Users.
What if I lose the password for my Printer or it is not accepted?	Procedure for units with a display: 1.) Press the button for information on the display. 2.) Press the down arrow button until “Network” is highlighted. 3.) Press the button for Enter. 4.) Press the down arrow button until “Rst Password” is highlighted. 5.) Press the button for Enter. 6.) Press the button for OK (check mark).

Question	Answer
What if I lose the password for my DTC1000 Printer or it is not accepted?	The DTC1000 printer does not have a display, so a PRN file will be generated by the Technical Support group and sent to you in order to reset the print server “root” user password. Please conatct Technical Support for instructions on how to unlock the printer at http://www.fargosupport.com/contact.asp Fill out and submit the form request. The printer serial number must be included Phone: 1-866-607-7339 #6
What should I do if the IP address of my Printer is being changed by my network?	Follow this procedure: 1. Contact your network administrator. Ask that your current IP address be reserved or ask that they provide a specific IP address that you can use to configure the Ethernet interface. **OR** 2. Choose an IP address that you know will not be used by any other PC, server or network device. Use those settings to configure your Printer with static network settings. (**Caution:** Do not do this unless you know that these settings will always be available.)
How can I verify/change what IP address my installed Printer Driver is expecting to find my Printer?	Follow this procedure. 1. Open the Printer Driver properties window. 2. Select Start -> Settings -> Printers and Faxes -> [your Printer Driver] -> Properties. 3. From the Ports tab, select **Configure Port**. (**Note:** The Host name will indicate IP address of the connected Printer. If this does not match your Printer’s IP address, you can change it from this window.) 4. Enter the correct IP address. 5. Select **OK**. 6. Select **Apply**. 7. Select **Close**.

Question	Answer
How do I configure my Printer's IP settings?	▪ There is now a new way to choose a specific IP address for the printer and to set the printer to use a static IP from the printer itself. ▪ From the network menu there is a "Set IP" and a "Set Subnet" menu option. ▪ Select "Set IP" from the printer to manually enter the static IP you want to use. The left button decrements the currently highlighted value, and the right button indexes the cursor to the next digit to the right: ▪ Once the index goes all the way to the right of the entire IP address- a save screen will appear to save the address. ▪ The left key will cancel the changes and the right key will save the address. If you save the IP address and the printer had been in DHCP (Dynamic address mode) then the printer will be changed to disable DHCP and use this static address. ▪ The "Set Subnet" is the exact same sequence to set and save a subnet mask.

How do I print the setting card if there is no display available?	If your model does not have a display, then press and hold the PAUSE button for 4+ seconds to print a settings card. The printer must be ready and idle for the card to print.
How do I choose a static IP address for my Ethernet Printer?	You can use the web pages if you know the current IP address. **OR** You can use IP Tracer which allows you to find Fargo-compatible Printers and specify their addresses. (**Note:** You can save static addresses. However, they are not used until you reconfigure the Printer to use those static addresses and reboot the Printer.)
How do I set the Printer to work with a static IP address?	You can use the web pages if you know the current IP address. • Select the **Use the following IP address** button on the Network web page. **OR** • Use IP Tracer, which allows you to find compatible Printers and specify their addresses.
What do the LEDs by the Ethernet connection on the back of the Printer indicate?	The LEDs indicates network activity.
How do I print a test page from Windows to verify the Ethernet configuration of the Printer and Printer Driver?	Follow this procedure. 1. Open the Printer Driver properties window. 2. Select Start -> Settings -> Printers and Faxes -> [your Printer Driver name (i.e., DTC1000, DTC4000, DTC4500 Card Printer)] -> Properties. 3. Ensure that the printing preferences are set correctly for the Ribbon installed in your Printer. Then select the **Print Test page** button.

Glossary of Terms

Term	Purpose
MAC (Media Access Control)	The unique numeric value address associated with a network device that gives the device a unique identity. This address is assigned by the device manufacturer to ensure its uniqueness.
TCP (Transmission Control Protocol)	The Network protocol that allows reliable network communications between devices.
IP (Internet Protocol)	The Network protocol that identifies devices and messages by addresses so that communications can occur between devices on different local networks.
TCP/IP	Network communications using TCP and IP protocols.
ICMP (Internet Control Message Protocol)	The Basic message protocol for the internet.
DHCP (Dynamic Host Configuration Protocol)	The protocol used by a network to automatically assign network settings to connected devices so that they will work together.
DNS (Domain Name System)	Defines the Network protocol that allows devices to find IP addresses from a network name server.
DNS Server Address	This is the address of the server that provides the translation from a descriptive name to an IP address.
DNS Domain Suffix	This is the suffix to be added to the domain name make a complete name.
SNMP (Simple Network Management Protocol)	This is protocol for the network management services. This protocol provides a means for network compliant devices, called agents, to store data about themselves in Management Information Bases (MIBs) and return this data to the SNMP requesters.

Term	Purpose
MIB (Management Information Base)	A formal description of the way an agent can be accessed using SNMP and the functions that can be managed.
Network Settings	The basic network parameters needed to configure the network interface. (**Note:** These include the IP Address, the Subnet Mask, the Default Gateway, the DNS Server Address and the DNS Domain Suffix.)
IP addresses	Specifies the current IP addresses that are 32-bit values that are normally expresses in dotted-quad format. (**Note:** This address must not be the same as another device on the same local network.)
Subnet mask	Specifies a 32-bit value that routers use to send a message to the correct subnet.
Default gateway	Specifies the address of the router (in a network using subnets) that forwards traffic to a destination outside of the subnet of the transmitting device.
Telnet	This is a common terminal emulation program that allows a User to send commands to a TCP/IP connected device and receive the responses.
UDP (User Datagram Protocol)	Defines a protocol for sending and receiving messages on a network.
Syslog	The standard method for logging system events.
Root User	A User with administrative rights to change any Printer settings.
Guest User	A User without rights to change Printer settings.
Ping	A common utility or command that sends a message to network devices asking for a return message. (**Note:** This is used to diagnose if the device is on the network or to troubleshoot the connection.)