



**ZebraNet<sup>®</sup>**

# **Wireless User Guide**

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**for the ZebraNet Wireless Print Server,  
ZebraNet Wireless Plus Print Server,  
ZebraNet Internal Wireless Plus Print Server,  
and ZebraNet b/g Print Server**

with printer firmware versions X.15.x and later,  
or with some ZSPx firmware versions



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# About This Document

This section provides you with contact information, document structure and organization, and additional reference documents.

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## Who Should Use This Document

This User Guide is intended for use by someone who needs to configure and use a wireless print server for use with a supported printer.

This version of the User Guide supports the ZebraNet Wireless Print Server, the ZebraNet Wireless Plus Print Server, the ZebraNet Internal Wireless Plus Print Server, and the ZebraNet b/g Print Server with printer firmware versions X.15.x or later. Some features or printers require X.16.x, X.17.x, or later.

The following special versions of firmware or later also are supported. They are referred to in this User Guide as ZSPx firmware.

- ZSP994P
- ZSP999F
- ZSP1027F
- ZSP1056E
- ZSP1082F

For older versions of firmware, refer to the *Wireless Print Server User Guide*, part number 13422L-XXX.

## How This Document Is Organized

The User Guide is set up as follows:

Section	Description
<a href="#">Introduction on page 11</a>	This section provides an overview of the ZebraNet wireless print servers.
<a href="#">Wireless Status and Settings on page 29</a>	This section presents several options for viewing or modifying the wireless status and settings.
<a href="#">Troubleshooting on page 45</a>	This section provides solutions to problems related specifically to the wireless print servers.
<a href="#">WebView Web Pages on page 51</a>	This section provides you with instructions for viewing the current print server settings.

## Contacts

Technical Support via the Internet is available 24 hours per day, 365 days per year.

**Web Site:** [www.zebra.com](http://www.zebra.com)

**E-mail Back Technical Library:**

E-mail address: [emb@zebra.com](mailto:emb@zebra.com)

Subject line: Emaillist

**Self Service Knowledge Base:** [www.zebra.com/knowledgebase](http://www.zebra.com/knowledgebase)

**Online Case Registration:** [www.zebra.com/techrequest](http://www.zebra.com/techrequest)

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**Key:** T: Telephone  
F: Facsimile  
E: E-mail

## Document Conventions

The following conventions are used throughout this document to convey certain information.

**Alternate Color** (online only) Cross-references contain hot links to other sections in this guide. If you are viewing this guide online in .pdf format, you can click the cross-reference ([blue text](#)) to jump directly to its location.

**LCD Display Examples** Text from a printer's Liquid Crystal Display (LCD) appears in **Bubbledot ICG** font.

**Command Line Examples** Command line examples appear in `Courier New` font. For example, type `ZTools` to get to the Post-Install scripts in the `bin` directory.

**Files and Directories** File names and directories appear in `Courier New` font. For example, the `Zebra<version number>.tar` file and the `/root` directory.

### Icons Used



Identifies features that are available in printers with firmware version X60.15.x, X50.15.x, or later.



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**Caution** • Warns you of the potential for electrostatic discharge.

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**Caution** • Warns you of a potential electric shock situation.

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**Caution** • Warns you of a situation where excessive heat could cause a burn.

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**Caution** • Advises you that failure to take or avoid a specific action could result in physical harm to you.

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**Caution** • (No icon) Advises you that failure to take or avoid a specific action could result in physical harm to the hardware.

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**Important** • Advises you of information that is essential to complete a task.



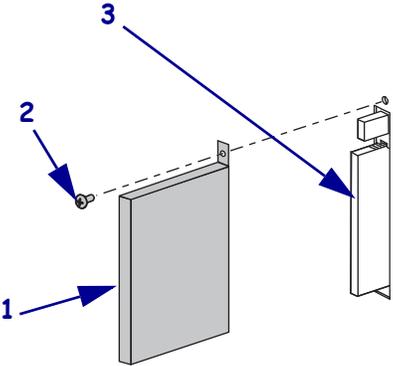
**Note** • Indicates neutral or positive information that emphasizes or supplements important points of the main text.



**Example** • Provides an example, often a scenario, to better clarify a section of text.

**Illustration Callouts** Callouts are used when an illustration contains information that needs to be labeled and described. A table that contains the labels and descriptions follows the graphic. [Figure 1](#) provides an example.

**Figure 1 • Sample Figure with Callouts**



<b>1</b>	Clear plastic RF card cover (not used on all printers)
<b>2</b>	Screw
<b>3</b>	Wireless radio card



**Notes •** \_\_\_\_\_

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# Introduction

This section provides an overview of the ZebraNet wireless print servers.

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## Printer Requirements and Print Server Features

This section defines the requirements for using the different ZebraNet wireless print servers. It also defines features of and limitations to the wireless print servers on different printer models.

### Hardware

**PCMCIA and Compact Flash Memory Cards** PCMCIA memory or Compact Flash memory cards will not work and are not supported on the Wireless Plus Print Server. The Internal Wireless Plus Print Server and the b/g Print Server do not include a slot for these card types.

**Wireless Card Socket Option** The ZebraNet wireless print server options replace the Wireless Card Socket Option (WCSO) in 105SL printers with a serial number of 6400357 or greater. Do not install a wireless option board on a 105SL printer with a serial number that is less than 6400357.

**Wireless Option Board** A special wireless option board must be installed in your printer/print engine. To determine if you have a wireless option board installed, use a printer configuration label (refer to the instructions in the User Guide that came with your printer). To purchase a wireless option, contact your authorized Zebra reseller for more information.

The wireless option boards are identified by the `HARDWARE ID` line on the printer configuration label.

```

+10..... LCD ADJUST
DPSWF*XM..... MODES ENABLED
..... MODES DISABLED
832 8/MM FULL..... RESOLUTION
V50 15 17<-..... FIRMWARE
V23 29882-001_3..... HARDWARE ID
CUSTOMIZED..... CONFIGURATION
3264k.....R: RAM
61440k.....E: ONBOARD FLASH
NONE..... FORMAT CONVERT
FW VERSION..... IDLE DISPLAY
    
```

The part numbers shown on the `HARDWARE ID` line indicate the wireless print servers as shown in [Table 1](#).

**Table 1 • Zebra Part Numbers for ZebraNet Wireless Print Server Boards**

Part Number	Corresponds to the Following
1033557-0xx	b/g Print Server
1033605-001	
29652-0xx	Internal Wireless Plus Print Server
29883-001	
29651-0xx	Wireless Plus Print Server
29882-001	

\* Not supported by this manual. Refer to the *Wireless Print Server User Guide*, part number 13422L-XXX.

**Table 1 • Zebra Part Numbers for ZebraNet Wireless Print Server Boards (Continued)**

Part Number	Corresponds to the Following
29881-009 *	Wireless Print Server
79077	
79078	
79079	
79100	

\* Not supported by this manual. Refer to the *Wireless Print Server User Guide*, part number 13422L-XXX.

## Firmware

After a wireless option board is installed, your printer must be running a supported firmware version to access the features in this manual. With the Wireless Print Server, not all features in this manual may be available to you. [Table 2](#) shows the minimum firmware version required.

You may download the latest firmware appropriate for your printer to access the latest encryption features. Go to <http://www.zebra.com/firmware> for firmware download options.

**Table 2 • Supported Firmware Versions**

Printer	ZebraNet b/g Print Server	ZebraNet Internal Wireless Plus Print Server	ZebraNet Wireless Plus Print Server	ZebraNet Wireless Print Server
105SL	—	X60.16.X	X60.15.X	X60.15.X
HC100	—	V54.16.X	—	—
110PAX4, 170PAX4	X60.17.11Z	X60.16.X	X60.15.X	X60.15.X
R110PAX4	—	R62.16.X R63.16.X	R62.15.X R63.15.X	R62.15.X R63.15.X
R110Xi, R170Xi	—	R60.16.X	R60.15.X	R60.15.X
R110Xi HF	—	R65.16.X	R65.15.X	R65.15.X
R110Xi4	V53.17.11Z	V.53.17.7	V.53.17.7	—
R4Mplus	—	—	—	ZSP994P ZSP999F ZSP1027 ZSP1056E ZSP1082F
RZ400, RZ600	V53.17.11Z	R53.16.X	R53.16.X	R53.16.X
S4M	X53.17.11Z	X53.16.X	V50.15.X X53.15.X	V50.15.X X53.15.X

**Table 2 • Supported Firmware Versions**

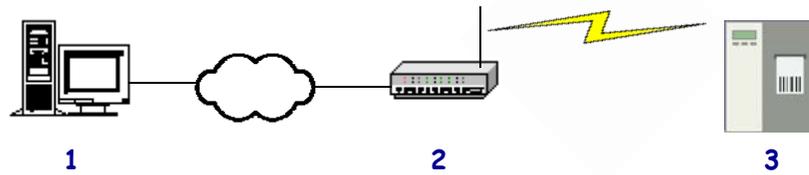
<b>Printer</b>	<b>ZebraNet b/g Print Server</b>	<b>ZebraNet Internal Wireless Plus Print Server</b>	<b>ZebraNet Wireless Plus Print Server</b>	<b>ZebraNet Wireless Print Server</b>
XiIIIPlus	—	X60.16.X	X60.15.X	X60.15.X
Xi4	X53.17.11Z	X53.17.X	X53.17.X	—
Z4Mplus, Z6Mplus	—	—	—	X60.15.X
ZM400, ZM600	X53.17.11Z	X53.16.X	X53.15.X	—

## Connecting to a Wireless Network

The ZebraNet wireless print servers are Ethernet connectivity options for your printer. With one of these wireless print servers, the printer communicates with a wireless Local Area Network (WLAN) through a wireless radio card instead of being connected to a wired Local Area Network (LAN) with physical wires.

Figure 2 shows the network architecture of a typical WLAN setup. Two critical WLAN components for wireless operation are a wireless radio card and an access point. The ZebraNet Internal Wireless Plus Print Server and the b/g Print Server have a built-in wireless radio card.

**Figure 2 • WLAN Setup with a ZebraNet Wireless Print Server**



<b>1</b>	Computer (stand-alone or laptop)
<b>2</b>	Access point
<b>3</b>	Printer configured with a ZebraNet wireless print server and equipped with a supported wireless radio card (if applicable)

### Access Point

A third-party access point forms a bridge between the WLAN and wired LAN. Select an access point that is compatible with the supported wireless radio cards that you will use with your ZebraNet wireless print server. Some access points may not support all ZebraNet wireless print servers.

Multiple access points can be used to extend the coverage of the wireless LAN. The reassociation capabilities of the IEEE 802.11b/g standard enable clients to move throughout the WLAN area and roam between access points. Reassociation can occur as long as the ZebraNet wireless print server is on the same network configurations and ESSID (network name) as the access point to which it is trying to connect.

## Supported Wireless Radio Cards



**Note** • The ZebraNet Internal Wireless Plus Print Server and the ZebraNet b/g Print Server have a built-in wireless radio card. This section applies only to the ZebraNet Wireless Print Server and the ZebraNet Wireless Plus Print Server.

A supported third-party PCMCIA, Compact Flash™, or CardBus wireless radio card is required for the printer to qualify with the WLAN. After the wireless option board is installed in the printer, the wireless radio card inserts into a slot on this board. A wireless radio card is NOT provided with the ZebraNet Wireless Print Server or the ZebraNet Wireless Plus Print Server.



**Note** •

- Some wireless radio cards listed here may not support all ZebraNet wireless print server features.
- See [Table 3 on page 18](#) or check with the card manufacturer to ensure that the card that you wish to use supports the wireless security type used on your WLAN.
- Some wireless radio cards may require specific firmware versions to support certain features. You may be able to download new firmware to your wireless radio card. Check with the card manufacturer for more information.
- Check the operating conditions (such as temperature and humidity) for the wireless radio card that you choose. If the card has more restrictions than the printer, this may limit the conditions under which you can operate the printer with a wireless connection.

The following wireless radio cards are supported at the time of this release:

### Symbol® Technologies

- Spectrum24® Compact Flash wireless radio card LA-4137-1020-WW (the card uses an adapter and must have firmware version F3.91-69 or later)  
For instructions on how to install this card and the adapter, see [Install a Wireless Radio Card or Compact Flash Wireless Radio Card on page 24](#).
- 802.11b Spectrum24 High Rate Direct Sequence PN:LA-4121-1000-US (card must have firmware version V2.90-58 or later)
- 802.11b Spectrum24 High Rate Direct Sequence PN:LA-4121-1020-US (card must have firmware version V2.90-58 or later)
- 802.11b Spectrum24 High Rate Direct Sequence PN:LA-4121-1120-US (card must have firmware version V2.90-58 or later)

**Cisco® Systems**

All Aironet® cards must have card firmware version 5.60.21 or later.

- 802.11g Aironet CB21AG CardBus wireless radio card (for the Wireless Plus Print Server only)
- 802.11b Aironet AIR-PCMC340
- 802.11b Aironet AIR-PCMC341
- 802.11b Aironet AIR-PCMC342
- 802.11b Aironet PCMC350
- 802.11b Aironet PCMC351
- 802.11b Aironet PCMC352

## Supported Security Types

Your WLAN can use any of a number of different types of security and encryption, or it can use none at all. This section shows which security types you can use with the different ZebraNet wireless print servers.



**Note** • Configuring a printer for WPA also allows the printer to be used in WPA2 environments.

### ZebraNet Wireless Plus Print Server

Table 3 lists the security types that are supported by the Wireless Plus Print Server. Support varies by the card manufacturer and the card type. Select a wireless radio card that is supported by your wireless print server and that supports the security type being used on your WLAN.

**Table 3 • Security Types Supported on the Wireless Plus Print Server**

Security Type	Card Manufacturer			
	Cisco		Symbol	
	Cisco CB21	Cisco 350	LA-4121 (PCMCIA)	LA-4137 Compact Flash
Open	Yes	Yes	Yes	Yes
EAP-FAST	Yes	Not Supported	Yes	Yes
EAP-TLS	Yes	Not Supported	Not Supported	Yes
EAP-TTLS	Yes	Not Supported	Not Supported	Yes
Kerberos	Not Supported	Not Supported	Yes	Yes
LEAP	Yes	Yes	Yes	Yes
PEAP	Yes	Not Supported	Yes	Yes
WEP (40 bit and 128 bit)	Yes	Yes	Yes	Yes
WPA - LEAP	Yes	Yes	Yes	Yes
WPA - PSK	Yes	Yes	Yes	Yes
WPA- EAP-FAST	Yes	Yes	Yes	Yes
WPA- EAP-TLS	Yes	Yes	Yes	Yes
WPA- EAP-TTLS	Yes	Yes	Yes	Yes
WPA- PEAP	Yes	Yes	Yes	Yes
WPA2 - LEAP	Yes	Not Supported	Not Supported	Not Supported
WPA2 - PSK*	Yes*	Not Supported	Not Supported	Not Supported
WPA2- EAP-FAST	Yes	Not Supported	Not Supported	Not Supported
WPA2- EAP-TLS	Yes	Not Supported	Not Supported	Not Supported

\* Key rotation for WPA2 PSK is supported in firmware version V60.15.8Z or later, V53.15.8Z or later., V54.16.x or later, and RX.15.8Z or later.

**Table 3 • Security Types Supported on the Wireless Plus Print Server (Continued)**

Security Type	Card Manufacturer			
	Cisco		Symbol	
	Cisco CB21	Cisco 350	LA-4121 (PCMCIA)	LA-4137 Compact Flash
WPA2- EAP-TTLS	Yes	Not Supported	Not Supported	Not Supported
WPA2- PEAP	Yes	Not Supported	Not Supported	Not Supported

\* Key rotation for WPA2 PSK is supported in firmware version V60.15.8Z or later, V53.15.8Z or later., V54.16.x or later, and RX.15.8Z or later.

### ZebraNet Internal Wireless Plus Print Server and b/g Print Server

Table 4 lists the security types that are supported by the Internal Wireless Plus Print Server and the b/g Print Server.

**Table 4 • Security Types Supported on the Internal Wireless Plus Print Server and the b/g Print Server**

Security Type	Supported?
Open	Yes
EAP-FAST	Yes
EAP-TLS	Yes
EAP-TTLS	Yes
Kerberos	Not Supported
LEAP	Yes
PEAP	Yes
WEP (40 bit and 128 bit)	Yes
WPA - LEAP	Yes
WPA - PSK	Yes
WPA- EAP-FAST	Yes
WPA- EAP-TLS	Yes
WPA- EAP-TTLS	Yes
WPA- PEAP	Yes
WPA2 - LEAP	Yes
WPA2 - PSK	Yes
WPA2- EAP-FAST	Yes
WPA2- EAP-TLS	Yes

**Table 4 • Security Types Supported on the Internal Wireless Plus Print Server and the b/g Print Server (Continued)**

Security Type	Supported?
WPA2- EAP-TTLS	Yes
WPA2- PEAP	Yes

### ZebraNet Wireless Print Server

Table 5 lists the security types that are supported by the Wireless Print Server. Support varies by the card manufacturer and the card type. Select a wireless radio card that is supported by your wireless print server and that supports the security type being used on your WLAN. The Wireless Print Server does not support the Cisco CB21 radio card.

**Table 5 • Security Types Supported on the Wireless Print Server**

Security Type	Card Manufacturer		
	Cisco	Symbol	
	Cisco 350	LA-4121 (PCMCIA)	LA-4137 Compact Flash
Open	Yes	Yes	Yes
EAP-FAST	Not Supported	Not Supported	Yes
EAP-TLS	Not Supported	Not Supported	Yes
EAP-TTLS	Not Supported	Yes	Yes
Kerberos	Not Supported	Yes	Yes
LEAP	Yes	Yes	Yes
PEAP	Not Supported	Yes	Yes
WEP (40 bit and 128 bit)	Yes	Yes	Yes
WPA - LEAP	Yes	Yes	Yes
WPA - PSK	Yes	Yes	Yes
WPA- EAP-FAST	Yes	Yes	Yes
WPA- EAP-TLS	Yes	Yes	Yes
WPA- EAP-TTLS	Yes	Yes	Yes
WPA- PEAP	Yes	Yes	Yes

## Determining the Active Print Server

Most printers can have wired and wireless print servers installed at the same time. However, only one of the installed print servers can be active at any given time.

### Viewing IP Addresses and the Active Print Server

The wired and wireless print servers have different IP addresses. The printer's control panel displays the IP address of the active print server (see [View Wireless Status through the Control Panel on page 31](#)). You can view the printer's web pages and send label formats to the printer through the active print server's IP address.

The network configuration label ([Figure 3](#)) displays the IP addresses of all installed print server devices and indicates the active print server with an asterisk (circled in [Figure 3](#)). To print a network configuration label, see [Print Network Configuration Information on page 33](#).

**Figure 3 • Active Print Server on Sample Network Configuration Label**

Network Configuration	
Zebra Technologies PRINTER NAME ZBR2834792	
0.0.0 *.....	OPTION FIRMWARE
Wired.....	PRIMARY NETWORK
NO.....	LOAD FROM EXT?
Internal Wired.....	ACTIVE PRINTSRVR
<b>External Wired</b>	
ALL.....	IP PROTOCOL
000.000.000.000.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
000.000.000.000.....	DEFAULT GATEWAY
000.000.000.000.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
<b>Internal Wired*</b>	
ALL.....	IP PROTOCOL
010.003.004.116.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
010.003.004.001.....	DEFAULT GATEWAY
010.003.001.098.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
00074d2b4168.....	MAC ADDRESS
<b>Wireless</b>	
ALL.....	IP PROTOCOL
000.000.000.000.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
000.000.000.000.....	DEFAULT GATEWAY
000.000.000.000.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
NO.....	CARD INSERTED
0000H.....	CARD MFG ID
0000H.....	CARD PRODUCT ID
000000000000.....	MAC ADDRESS
YES.....	DRIVER INSTALLED
INFRASTRUCTURE.....	OPERATING MODE
125.....	ESSID
100.....	TX POWER
ON.....	1 Mb/s
ON.....	2 Mb/s
ON.....	5.5 Mb/s
ON.....	11 Mb/s
11 Mb/s.....	CURRENT TX RATE
DIVERSITY.....	RECEIVE ANTENNA
DIVERSITY.....	XPI ANTENNA
OPEN.....	WEP TYPE
NONE.....	WLAN SECURITY
1.....	WEP INDEX
020.....	POOR SIGNAL
LONG.....	PREAMBLE
NO.....	ASSOCIATED
ON.....	PULSE ENABLED
15.....	PULSE RATE
OFF.....	INTL MODE
07FFH.....	CHANNEL MASK

asterisk indicating active print server

## Active Device Selection

Your active print server selection is dependent on the model of printer or print engine that you have.

If your printer is a(n)...	Then...
<ul style="list-style-type: none"> <li>S4M</li> </ul>	<p>Only one print server (wired or wireless) can be installed at a time. Thus, the print server installed is the primary print server.</p>
<ul style="list-style-type: none"> <li>105SL</li> <li>XiIIIPlus</li> <li>R110Xi</li> <li>R170Xi</li> <li>Z4Mplus</li> <li>Z6Mplus</li> <li>PAX4</li> <li>R110PAX4</li> </ul>	<p>You may select which installed device is the primary network device. The printer will try to use the primary network device as the active print server before trying the other installed options.</p> <p>These printers and print engines use X60.16.x firmware. The default for the printer is to <u>skip</u> the check for a wired print server during bootup. This makes the wireless print server the primary network device. To change this default and allow the wired print server to be the primary network device when it is connected, use one of the following methods to tell the printer to check for a wired print server at bootup time:</p> <ul style="list-style-type: none"> <li>the WIRED PS CHECK parameter on the control panel</li> <li>the ^NB ZPL command</li> </ul> <p>Table 6 identifies which device becomes the active print server under various conditions.</p>
<ul style="list-style-type: none"> <li>Xi4</li> <li>R110Xi4</li> <li>ZM400</li> <li>ZM60</li> <li>RZ400</li> <li>RZ600</li> </ul>	<p>These printers support the simultaneous installation of an internal, external, and a wireless print server. Even though all three print servers may be installed, only one is connected to the network and is the active print server.</p> <p>Table 7 outlines priorities and identifies which device becomes the active print server when multiple print servers are installed.</p> <p>You may select whether the wired or wireless print server will be the primary connection by using one of the following methods:</p> <ul style="list-style-type: none"> <li>the PRIMARY NETWORK parameter on the control panel</li> <li>the ^NC ZPL command</li> </ul>

**Table 6 • Results of Check for Wired Print Server for  
105SL, X111Plus, Z4Mplus, Z6Mplus, and PAX4 Series Printers**

If the Check for Wired Print Server is set to:	Installed and Connected to a Live Ethernet Network		Then the Active Print Server will be:
	Wired	Wireless*	
<b>Skip</b>	X	X	Wireless
	X		Wired
		X	Wireless
<b>Check</b>	X	X	Wired
	X		Wired
		X	Wireless

\* NOTE: A wireless option board must have an active radio that can properly associate to an access point.

**Table 7 • Active Print Server Matrix for  
Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600 Printers**

If the Primary Network is set to:	Installed and Connected to a Live Ethernet Network			Then the Active Print Server will be:
	Internal	External	Wireless*	
<b>Wired</b>	X	X	X	Internal
		X	X	External
			X	Wireless
<b>Wireless</b>	X	X	X	Wireless
	X	X		Internal
		X		External

\* NOTE: A wireless option board must have an active radio that can properly associate to an access point.

## Install a Wireless Radio Card or Compact Flash Wireless Radio Card



**Note** • The ZebraNet Internal Wireless Plus Print Server and the ZebraNet b/g Print Server have a built-in wireless radio card. This section applies only to the ZebraNet Wireless Print Server and the ZebraNet Wireless Plus Print Server.

Printers that have the wireless option board installed can use any of the wireless radio cards or Compact Flash wireless radio cards listed in [Supported Wireless Radio Cards on page 16](#). This section provides instructions for installing either type of card. Most printers use a clear plastic RF cover over the wireless radio card or compact Flash wireless radio card.

### Wireless Radio Card

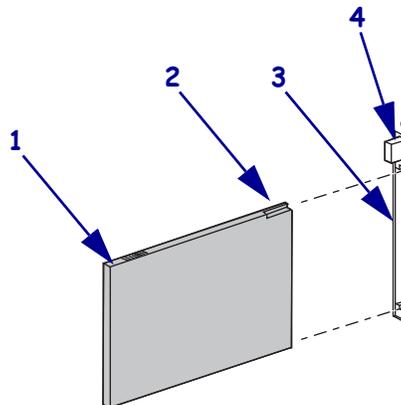
This section applies to PCMCIA or CardBus wireless radio cards.



**Note** • Z4Mplus, R4Mplus, and Z6Mplus printers do not support CardBus wireless radio cards.

#### To install a wireless radio card, complete these steps:

1. Turn off (O) the printer.
2. Remove and discard the metal cover that was shipped in place over the wireless option card slot on the back of the printer.
3. Position the notch on the wireless radio card on the top, leading edge. Insert the wireless radio card into the wireless option card slot on the back of the printer until the card-eject button pops out.

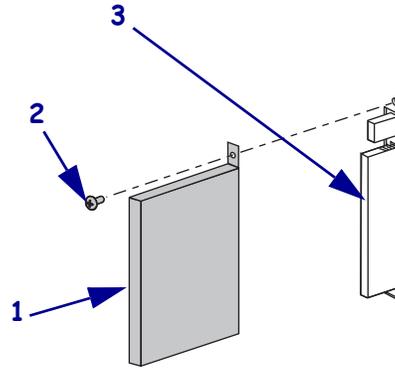


1	Wireless radio card
2	Notch
3	Wireless option card slot on back of printer
4	Card-eject button

4. Place the RF card cover over the wireless radio card, and secure it with a small screw.



**Note** • The S4M, ZM400, ZM600, RZ400, and RZ600 printers do not use the RF card cover.



<b>1</b>	Clear plastic RF card cover (not used on all printers)
<b>2</b>	Screw
<b>3</b>	Wireless radio card

5. Turn on (I) the printer.

The printer restarts and uses the wireless radio card to communicate with your WLAN. Allow several minutes for the printer to connect to the network. For more information about wireless status, refer to [View Wireless Status through the Control Panel on page 31](#) or [Troubleshooting on page 45](#).

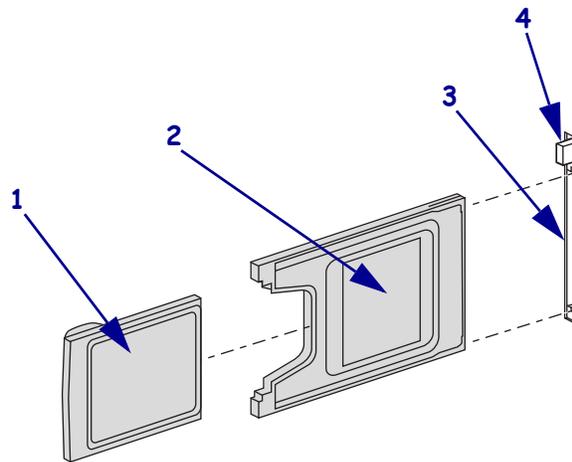
## Compact Flash Wireless Radio Card

This section applies to Compact Flash wireless radio cards, which require an adapter before they can be used in the wireless option card slot.

**To install a Compact Flash wireless radio card and adapter, complete these steps:**

1. If you have not already done so, turn off (O) the printer.
2. Remove and discard the metal cover that was shipped in place over the wireless option slot on the back of the printer.
3. See [Figure 4](#). Position the adapter with the back facing as shown. Insert the adapter into the wireless option card slot on the back of the printer until the card-eject button pops out.
4. See [Figure 4](#). Insert the Compact Flash wireless radio card into the adapter.

**Figure 4 • Installing a Compact Flash Wireless Radio Card**

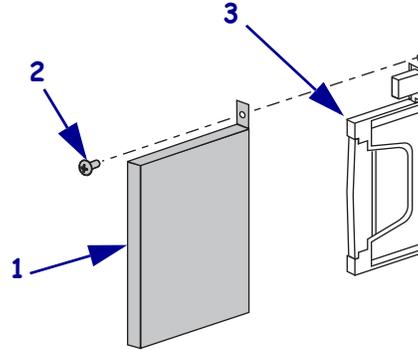


1	Back of Compact Flash wireless radio card
2	Back of adapter
3	Wireless option card slot on back of printer
4	Card-eject button

5. Place the RF card cover over the wireless radio card, and secure it with a small screw.



**Note** • The S4M, ZM400, ZM600, RZ400, and RZ600 printers do not use the RF card cover.



<b>1</b>	Clear plastic RF card cover (not used on all printers)
<b>2</b>	Screw
<b>3</b>	Compact Flash wireless radio card and adapter

6. Turn on (I) the printer.

The printer restarts and uses the wireless radio card to communicate with your WLAN. Allow several minutes for the printer to connect to the network. For more information about wireless status, refer to [View Wireless Status through the Control Panel on page 31](#) or [Troubleshooting on page 45](#).






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# Wireless Status and Settings

This section presents several options for viewing or modifying the wireless status and settings.

You may also use:

- the printer web pages (see [WebView Web Pages on page 51](#))
- the ZPL commands
- the Set/Get/Do commands

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## Configuration



**Important** • A wireless option board must be installed on your printer before you can configure the printer to communicate using a wireless radio card. See [Hardware on page 12](#) to determine if your printer has a wireless board. See [Firmware on page 13](#) for the required firmware version.

You may configure your printer for wireless operation in the following ways:

**Through the Network Setup Wizard.** The Network Setup Wizard is part of the ZebraNet™ Bridge Enterprise utility. The Network Setup Wizard writes a script for you. On the last screen of the wizard, you may choose to send the script directly to your printer, or you may choose to save the script to a file. The saved file has several purposes:

- The file can be sent to the printer through any available connection (serial, parallel, USB, or wired print server).
- The file can be resent to the printer after the network settings have been restored to factory defaults.
- The file can be sent to multiple printers that will use the same network settings.



**Note** • To configure wired and wireless print servers on the same printer, run the program once for each print server, creating a script for the wired print server and another for the wireless print server.

The ZebraNet Bridge Enterprise utility resides on the User CD for your printer and is available through <http://www.zebra.com/software>. ZebraNet Bridge Enterprise version 1.2.5 or later is required to configure the printer correctly for use.

**Through ZPL script that you write.** Use the ^WX command to set the basic parameters for security type. You can send the command through any available connection (serial, parallel, USB, or wired print server).

Refer to the *Programming Guide for ZPL, ZBI, Set-Get-Do, Mirror, and WML* for more information. A copy of the manual is available at <http://www.zebra.com/manuals> or on the User CD that came with your printer.

**Through Set/Get/Do (SGD) commands.** Begin with `wlan.security` to set the wireless security type. Depending on which security type that you select, other SGD commands will be necessary to specify other parameters. You can send the commands through any available connection (serial, parallel, USB, or wired print server).

Refer to the *Programming Guide for ZPL, ZBI, Set-Get-Do, Mirror, and WML* for more information. A copy of the manual is available at <http://www.zebra.com/manuals> or on the User CD that came with your printer.



**Note** • With printers running APL-I, APL-D, or EPL firmware, the only way to configure wireless settings is through SGD commands.

## View Wireless Status through the Control Panel

After the wireless print server is configured, you may view the wireless status on the printer's control panel. Printers with an LCD display text or symbols (see [LCD Link Status and Wireless Signal Indicators](#)). The HC100 printer does not have an LCD, so the wireless status is indicated by the control panel lights (see [HC100 Wireless Status Indicator Lights on page 32](#)).



**Note** • Refer to the User Guide for your printer for specific instructions on how to use the control panel.

### LCD Link Status and Wireless Signal Indicators

This section applies to printers and print engines other than the HC100 printer.

**Link Status Indicator** The wireless link status indicator appears at the bottom left of the LCD, providing a real-time display of the printer's network status ([Table 8](#)).

**Table 8 • Link Status Indicators**

Status Indicator	Meaning
cycling through characters . o O	The wireless radio card is associated with the WLAN.
underscore _	<ul style="list-style-type: none"> <li>The wireless radio card is not associated with the WLAN. Verify that your printer's wireless settings match those of the WLAN.</li> <li>The firmware on the wireless radio card may need to be updated. See <a href="#">Supported Wireless Radio Cards on page 16</a> for the required firmware versions.</li> </ul>
blank	<ul style="list-style-type: none"> <li>The printer is checking for a wired print server.</li> <li>The printer is running a wired print server.</li> <li>The wireless print server board is not installed or not installed correctly.</li> </ul>

**Wireless Signal Indicators** Depending on which printer/print engine you are using, press the following key to access and scroll through the wireless signal indicators on the LCD:

- The right oval for the PAX4, RPAX4, RXi, RXi HF, and the XiIIIPlus printers/print engines
- Plus (+) for the 105SL, RZ400, RZ600, ZM400, ZM600, Xi4, and R110Xi4 printers
- Plus (+) for the R4Mplus, Z4Mplus, and Z6Mplus printers (supported configurations only)
- The up arrow for the S4M printer

[Table 9](#) shows the control panel indicators and messages that are associated with the wireless signal.

**Table 9 • Wireless Signal Indicators**

Wireless Signal Indicator	Description
<b>SIGNAL STRENGTH</b> and <b>SIGNAL QUALITY</b>	<p>When these indicators display percentages, the wireless radio card is communicating with the network. The higher the number is, the better the connection is between the printer and the network.</p> <p>If your printer indicates a signal strength but you cannot communicate with the printer from your computer, move the printer to a different location to try to get a better signal strength or signal quality. This situation could also indicate that the printer is associated with, but not authenticated with, your access point.</p>
<b>NOISE LEVEL</b>	<p>This number indicates any electrical interference with the wireless signal.</p> <p>If your printer cannot communicate with the network and the noise level is high, move the printer to a location that is free of interference.</p>

## HC100 Wireless Status Indicator Lights

Table 10 shows the wireless status indicator lights for the HC100 printer.

**Table 10 • Wireless Status Indicator Lights**

Wireless Status Indicator	Meaning
<p><b>Steady Green</b></p> 	The printer is associated with a wireless network. The signal strength is strong.
<p><b>Flashing Green</b></p> 	The printer is NOT associated with a wireless network. The signal strength is strong.
<p><b>Steady Orange</b></p> 	The printer is associated with a wireless network. The signal strength is weak.
<p><b>Flashing Orange</b></p> 	The printer is NOT associated with a wireless network. The signal strength is weak.

## Print Network Configuration Information

Most printers and print engines print the print server settings on a network configuration label. The HC100 printer prints the print server settings on a printer configuration wristband.

### Network Configuration Label

A network configuration label (Figure 5) lists the settings for the print servers installed in your printer. If a particular type of print server is not installed, the IP information for that print server appears as all zeroes (000.000.000.000). The active print server is indicated by an asterisk (see *Determining the Active Print Server* on page 21 for more information).

Figure 5 • Sample Network Configuration Label

Network Configuration	
Zebra Technologies PRINTER NAME ZBR2834792	
0.0.0 *	OPTION FIRMWARE
Wired.....	PRIMARY NETWORK
NO.....	LOAD FROM EXT?
Internal Wired.....	ACTIVE PRINTSRVR
<b>External Wired</b>	
ALL.....	IP PROTOCOL
000.000.000.000.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
000.000.000.000.....	DEFAULT GATEWAY
000.000.000.000.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
<b>Internal Wired*</b>	
ALL.....	IP PROTOCOL
010.003.004.116.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
010.003.004.001.....	DEFAULT GATEWAY
010.003.001.098.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
00074d2b4168.....	MAC ADDRESS
<b>Wireless</b>	
ALL.....	IP PROTOCOL
000.000.000.000.....	IP ADDRESS
255.255.255.000.....	SUBNET MASK
000.000.000.000.....	DEFAULT GATEWAY
000.000.000.000.....	WINS SERVER IP
YES.....	TIMEOUT CHECKING
300.....	TIMEOUT VALUE
000.....	ARP INTERVAL
9100.....	BASE RAW PORT
NO.....	CARD INSERTED
0000H.....	CARD MFG ID
0000H.....	CARD PRODUCT ID
000000000000.....	MAC ADDRESS
YES.....	DRIVER INSTALLED
INFRASTRUCTURE.....	OPERATING MODE
12S.....	ESSID
100.....	TX POWER
ON.....	1 Mb/s
ON.....	2 Mb/s
ON.....	5.5 Mb/s
ON.....	11 Mb/s
11 Mb/s.....	CURRENT TX RATE
DIVERSITY.....	RECEIVE ANTENNA
DIVERSITY.....	XMIT ANTENNA
OPEN.....	WEP TYPE
NONE.....	WLAN SECURITY
1.....	WEP INDEX
020.....	POWER SIGNAL
LONG.....	PREAMBLE
NO.....	ASSOCIATED
ON.....	PULSE ENABLED
1S.....	PULSE RATE
OFF.....	INTL MODE
07FFH.....	CHANNEL MASK

FIRMWARE IN THIS PRINTER IS COPYRIGHTED

### To print a network configuration label, complete these steps:

1. From the control panel, enter Setup mode. (Refer to the User Guide for your printer for specific instructions on how to use the control panel.)
2. Scroll to **LIST NETWORK** (On an S4M printer, scroll to level 3 parameter **PRINT OUT NETWORK**).
3. Confirm printing.

A network configuration label prints. Your label may look slightly different than this example, depending on which print server and which printer/print engine you are using.

## HC100 Printer Configuration Wristband

An HC100 printer configuration wristband (Figure 6) shows the printer's connectivity settings. The IP ADDRESS and MAC ADDRESS fields will have values only if a wired or wireless print server is active.

**Figure 6 • Sample Printer Configuration Wristband**

PRINTER CONFIGURATION	
+000.....	TEAR OFF
CONNECTED.....	USB COMM.
9600,8,N,2,X,N,^,,	SERIAL COMM.
ZV54.16.0Z<-.....	FIRMWARE
000.000.000.000.....	IP ADDRESS
00000000000	MAC ADDRESS
FIRMWARE IN THIS PRINTER IS COPYRIGHTED	

**To print a printer configuration wristband, complete these steps:**

1. Make sure that the printer is on (I) and ready to print.
2. Press and hold PAUSE/FEED until the green lights turn off on the printer status indicator and the orange lights blink once.
3. Release PAUSE/FEED.  
A printer configuration wristband prints.

## Wireless Network Parameters on the LCD



**Note** • The HC100 printer does not have an LCD. To view or change the wireless parameters, use the printer’s web pages, ZPL commands, or SGD commands.

The control panel parameters are somewhat different for different printers. Refer to the User Guide for your printer for specific instructions on how to modify the control panel parameters. To view wireless and network parameters that are not available as selections through the control panel, print a network configuration label.

The network parameters do not appear until after the printer recognizes the existence of a ZebraNet print server (wired or wireless). All zeroes (000.000.000.000) may display for some parameters until the printer obtains an IP address.

**Wireless Password** Some of the parameters can be password-protected by a wireless password. By default, the wireless print servers run in an “unprotected” mode (password set to **0000**), which means that you do not need to enter a wireless password through the control panel to view or modify wireless settings. To set a wireless password (not the same as the general printer password), use the `^WP` ZPL command or the `wlan.password` SGD command.

### Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600 Printers

Table 11 shows the wireless parameters that may be viewed or modified through the control panel on the Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600 printers.

**Table 11 • Wireless Parameters for Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600 Printers**

Parameter	Function
PRIMARY NETWORK	<p><b>Select the Primary Network Device</b></p> <p>This parameter determines which device should be considered primary in the active device selection. See <a href="#">Active Device Selection on page 22</a> for more information.</p> <p><i>Selections:</i> WIRED, WIRELESS</p> <p><i>Default Value:</i> WIRED</p> <p><i>Corresponding ZPL Command:</i> ^NC</p> <p><i>Corresponding SGD Command:</i> none</p>
LOAD FROM EXT?	<p><b>View if IP Settings Are Loaded from the Printer or Print Server</b></p> <p>This parameter tells whether to use the printer’s or the print server’s LAN/WLAN settings at boot time. The default is to use the printer’s settings.</p> <p><i>Selections:</i> YES, NO</p> <p><i>Default Value:</i> NO</p> <p><i>Corresponding ZPL Command:</i> ^NP</p> <p><i>Corresponding SGD Command:</i> none</p>

1 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

**Table 11 • Wireless Parameters for Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600 Printers (Continued)**

Parameter	Function
ACTIVE PRINTSRUR	<p><b>View the Active Print Server</b></p> <p>This menu item displays which print server is being used. This tells which device's settings such as IP protocol and IP address are being displayed under those menu items.</p> <p><i>Selections:</i></p> <ul style="list-style-type: none"> <li>• WIRELESS indicates that the wireless device is active.</li> <li>• INTERNAL WIRED indicates that the internal 10/100 option board is active.</li> <li>• EXTERNAL WIRED indicates that the external print server is active.</li> <li>• NONE indicates that at least one of the network options is installed but none of them are active. When NONE is shown for this menu item, the device-specific items such as IP protocol and IP address will not display.</li> </ul> <p><i>Default Value:</i> NONE</p> <p><i>Corresponding ZPL Command:</i> none</p> <p><i>Corresponding SGD Command:</i> none</p>
IP PROTOCOL	<p><b>View or Change the IP Resolution Method</b></p> <p>This parameter tells if the user (permanent) or the server (dynamic) selects the IP address. If a dynamic option is chosen, this parameter tells the method(s) by which the print server (wired or wireless) receives the IP address from the server.</p> <p><i>Selections:</i> ALL, BOOTP, DHCP, DHCP AND BOOTP, PERMANENT</p> <p><i>Default Value:</i> All</p> <p><i>Corresponding ZPL Command:</i> ^ND</p> <p><i>Corresponding SGD Command:</i> wlan.ip.protocol</p>
IP ADDRESS	<p><b>View or Change the Printer's IP Address</b></p> <p>This parameter can be modified only when <b>PERMANENT</b> is selected for <b>OBTAIN IP ADDRESS</b>.</p> <p><i>Selections:</i> 0 to 255 for each field</p> <p><i>Default Value:</i> 0.0.0.0 displays while an IP address is being obtained, and then defaults to 192.168.254.254 if no IP address is obtained</p> <p> <b>Note</b> • Leading zeroes are not shown in the address.</p> <p><i>Corresponding ZPL Command:</i> ^ND</p> <p><i>Corresponding SGD Command:</i> wlan.ip.addr</p>

1 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

**Table 11 • Wireless Parameters for Xi4, R110Xi4,  
ZM400, ZM600, RZ400, and RZ600 Printers (Continued)**

Parameter	Function
<b>SUBNET MASK</b>	<p><b>View or Change the Subnet</b> This parameter can be modified only when <b>PERMANENT</b> is selected for <b>IP PROTOCOL</b>.</p> <p><i>Selections:</i> 0 to 255 for each field <i>Default Value:</i> 255.255.255.0</p> <p> <b>Note</b> • Leading zeroes are not shown in the address.</p> <p><i>Corresponding ZPL Command:</i> ^ND <i>Corresponding SGD Command:</i> ip.netmask</p>
<b>DEFAULT GATEWAY</b>	<p><b>View or Change the Gateway</b> This parameter can be modified only when <b>PERMANENT</b> is selected for <b>OBTAIN IP ADDRESS</b>.</p> <p><i>Selections:</i> 0 to 255 for each field <i>Default Value:</i> 0.0.0.0</p> <p> <b>Note</b> • Leading zeroes are not shown in the address.</p> <p><i>Corresponding ZPL Command:</i> ^ND <i>Corresponding SGD Command:</i> ip.gateway</p>
<b>MAC ADDRESS</b>	<p><b>View the Wireless Radio Card's MAC Address</b> Each wireless radio card has a permanent and unique Media Access Control (MAC) address assigned to it. This parameter shows the MAC address for the current wireless radio card.</p> <p><i>Default Value:</i> 000000000000</p> <p><i>Corresponding ZPL Command:</i> none <i>Corresponding SGD Command:</i> card.mac_addr</p>
<b>ESSID</b>	<p><b>View the ESSID Value</b> The Extended Service Set Identification (ESSID) is an identifier for your wireless network. This parameter shows the ESSID for the current wireless configuration.</p> <p><i>Default Value:</i> 125</p> <p><i>Corresponding ZPL Command:</i> none <i>Corresponding SGD Command:</i> wlan.essid</p>

1 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

**Table 11 • Wireless Parameters for Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600 Printers (Continued)**

<b>Parameter</b>	<b>Function</b>
<b>WLAN SECURITY</b>	<p><b>View the WLAN Security Type</b> This parameter displays the current security type.</p> <p><i>Corresponding ZPL Command: ^WX</i> <i>Corresponding SGD Command: wlan.security</i></p>
<b>RESET NETWORK</b>	<p><b>Reset the Wired or Wireless Network</b> Use this parameter to reinitialize the wireless radio card and the print server (wired or wireless) when the wireless print server is running. This parameter also causes any wireless radio card in the printer to reassociate to the wireless network.</p> <p><i>Corresponding ZPL Command: ~WR</i> <i>Corresponding SGD Command: device.reset</i></p>

1 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

## S4M Printers

Table 12 shows the wireless parameters that may be viewed or modified through the S4M control panel.

**Table 12 • Wireless Parameters for S4M Printers**

Parameter	Explanation
<b>Password Level 3 Parameters</b>	
<b>OBTAIN IP ADDRESS</b>	<p><b>Obtain an IP Address</b> Selects the method by which an IP address will be assigned to the printer. If you choose <b>AUTO SELECT</b>, you may specify a value for <b>CHANGE IP PROTOCOL</b>.</p> <p><i>Selections:</i> AUTO SELECT (dynamic), PERMANENT (user-specified) <i>Default Value:</i> AUTO SELECT</p>
<b>CHANGE IP PROTOCOL</b>	<p><b>View or Change the IP Resolution Method</b> Determines the method(s) by which the print server (wired or wireless) receives the IP address from the server.</p> <p>This parameter can be modified only when <b>AUTO SELECT</b> is selected for <b>OBTAIN IP ADDRESS</b>.</p> <p><i>Selections:</i> ALL, GLEANING ONLY, RARP, BOOTP, DHCP, DHCP AND BOOT <i>Default Value:</i> ALL</p> <p><i>Corresponding ZPL Command:</i> ^ND <i>Corresponding SGD Command:</i> wlan.ip.protocol</p>
<b>CHANGE IP ADDRESS</b>	<p><b>View or Change the Printer's IP Address</b> This parameter can be modified only when <b>PERMANENT</b> is selected for <b>OBTAIN IP ADDRESS</b>.</p> <p><i>Selections:</i> 0 to 255 for each field <i>Default Value:</i> 0.0.0.0 displays while an IP address is being obtained, and then defaults to 192.168.254.254 if no IP address is obtained</p> <p> <b>Note</b> • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.</p> <p><i>Corresponding ZPL Command:</i> ^ND <i>Corresponding SGD Command:</i> wlan.ip.addr</p>

1 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

Table 12 • Wireless Parameters for S4M Printers (Continued)

Parameter	Explanation
CHANGE SUBNET	<p><b>View or Change the Subnet</b></p> <p>This parameter can be modified only when <b>PERMANENT</b> is selected for <b>OBTAIN IP ADDRESS</b>.</p> <p><i>Selections:</i> 0 to 255 for each field</p> <p><i>Default Value:</i> 0.0.0.0</p> <p> <b>Note</b> • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.</p> <p><i>Corresponding ZPL Command:</i> ^ND</p> <p><i>Corresponding SGD Command:</i> ip.netmask</p>
CHANGE GATEWAY	<p><b>View or Change the Gateway</b></p> <p>This parameter can be modified only when <b>PERMANENT</b> is selected for <b>OBTAIN IP ADDRESS</b>.</p> <p><i>Selections:</i> 0 to 255 for each field</p> <p><i>Default Value:</i> 0.0.0.0</p> <p> <b>Note</b> • Leading zeroes are not shown in the address. If an IP address contains more digits than can be displayed at one time, use the left or right arrows to scroll through the digits.</p> <p><i>Corresponding ZPL Command:</i> ^ND</p> <p><i>Corresponding SGD Command:</i> ip.gateway</p>
<b>Password Level 4 Parameters</b>	
MAC ADDRESS <sup>1</sup>	<p><b>View the Wireless Radio Card's MAC Address</b></p> <p>Each wireless radio card has a permanent and unique Media Access Control (MAC) address assigned to it. This parameter shows the MAC address for the current wireless radio card.</p> <p><i>Default Value:</i> 000000000000</p> <p><i>Corresponding ZPL Command:</i> none</p> <p><i>Corresponding SGD Command:</i> card.mac_addr</p>
ESSID <sup>1</sup>	<p><b>View the ESSID Value</b></p> <p>The Extended Service Set Identification (ESSID) is an identifier for your wireless network. This parameter shows the ESSID for the current wireless configuration.</p> <p><i>Default Value:</i> 125</p> <p><i>Corresponding ZPL Command:</i> none</p> <p><i>Corresponding SGD Command:</i> wlan.essid</p>
WLAN SECURITY <sup>1</sup>	<p><b>View the WLAN Security Type</b></p> <p>This parameter displays the current security type.</p> <p><i>Corresponding ZPL Command:</i> ^WX</p> <p><i>Corresponding SGD Command:</i> wlan.security</p>

<sup>1</sup> If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

**Table 12 • Wireless Parameters for S4M Printers (Continued)**

Parameter	Explanation
RESET NETWORK <sup>1</sup>	<p><b>Reset the Wired or Wireless Network</b></p> <p>Use this parameter to reinitialize the wireless radio card and the print server (wired or wireless) when the wireless print server is running. This parameter also causes any wireless radio card in the printer to reassociate to the wireless network.</p> <p><i>Corresponding ZPL Command: ~WR</i></p> <p><i>Corresponding SGD Command: device.reset</i></p>

<sup>1</sup> If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

## Other Printer Models

Table 13 shows the wireless parameters that may be viewed or modified through the control panel on the following printers:

- Non-RFID—105SL, PAX4, XiIIIPlus, Z4Mplus, Z6Mplus
- RFID—R110PAX4, R4Mplus, R110Xi, R170Xi, R110Xi HF

Printers with older versions of firmware have a different set of parameters. For those parameters, refer to the *ZebraNet Wireless Print Server User Guide*. You may download firmware V60.15.x, R6x.15.x, or later to access the newer encryption features. Go to <http://www.zebra.com/firmware> for firmware download options.

**Table 13 • Wireless Parameters for Other Printer Models**

Parameter	Function
WIRED PS CHECK?	<p><b>View if the Printer Checks for a Wired Print Server at Bootup</b></p> <p>This parameter tells if the printer searches for a wired print server at bootup.</p> <p><i>Selections:</i> YES, NO</p> <p><i>Default Value:</i> NO</p> <p><i>Corresponding ZPL Command:</i> ^NB</p> <p><i>Corresponding SGD Command:</i> none</p>
LOAD LAN FROM?	<p><b>View if IP Settings Are Loaded from the Printer or Print Server</b></p> <p>This parameter, which serves the same function as the ^NP ZPL command, tells if the printer uses IP settings from the printer or the print server at bootup.</p> <p><i>Selections:</i> PRINTER, PRINTSERVER</p> <p><i>Default Value:</i> PRINTER</p> <p><i>Corresponding ZPL Command:</i> ^NP</p> <p><i>Corresponding SGD Command:</i> none</p>
IP PROTOCOL	<p><b>View or Change the IP Resolution Method</b></p> <p>This parameter tells if the user (permanent) or the server (dynamic) selects the IP address. If a dynamic option is chosen, this parameter tells the method(s) by which the print server (wired or wireless) receives the IP address from the server.</p> <p><i>Selections:</i> ALL, BOOTP, DHCP, DHCP AND BOOTP, PERMANENT</p> <p><i>Default Value:</i> All</p> <p><i>Corresponding ZPL Command:</i> ^WI</p> <p><i>Corresponding SGD Command:</i> wlan.ip.protocol</p>
IP ADDRESS	<p><b>View the Printer's IP Address</b></p> <p><i>Default Value:</i> 0.0.0.0 displays while an IP address is being obtained, and then defaults to 192.168.254.254 if no IP address is obtained</p> <p><i>Corresponding ZPL Command:</i> ^WI</p> <p><i>Corresponding SGD Command:</i> wlan.ip.addr</p>

1 If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

**Table 13 • Wireless Parameters for Other Printer Models (Continued)**

Parameter	Function
<b>SUBNET MASK</b>	<p><b>View the Subnet</b>  <i>Default Value:</i> 255.255.255.0  <i>Corresponding ZPL Command:</i> ^ND  <i>Corresponding SGD Command:</i> ip.netmask</p>
<b>DEFAULT GATEWAY</b>	<p><b>View the Gateway</b>  <i>Default Value:</i> 0.0.0.0  <i>Corresponding ZPL Command:</i> ^WI  <i>Corresponding SGD Command:</i> ip.gateway</p>
<b>MAC ADDRESS<sup>1</sup></b>	<p><b>View the Wireless Radio Card's MAC Address</b>            Each wireless radio card has a permanent and unique Media Access Control (MAC) address assigned to it. This parameter shows the MAC address for the current wireless radio card.  <i>Default Value:</i> 000000000000  <i>Corresponding ZPL Command:</i> none  <i>Corresponding SGD Command:</i> card.mac_addr</p>
<b>ESSID<sup>1</sup></b>	<p><b>View the ESSID Value</b>            The Extended Service Set Identification (ESSID) is an identifier for your wireless network. This parameter shows the ESSID for the current wireless configuration.  <i>Default Value:</i> 125  <i>Corresponding ZPL Command:</i> none  <i>Corresponding SGD Command:</i> wlan.essid</p>
<b>WLAN SECURITY<sup>1</sup></b>	<p><b>View the WLAN Security Type</b>            This parameter displays the current security type.  <i>Corresponding ZPL Command:</i> ^WX  <i>Corresponding SGD Command:</i> wlan.security</p>
<b>RESET NETWORK<sup>1</sup></b>	<p><b>Reset the Wired or Wireless Network</b>            Use this parameter to reinitialize the wireless radio card and the print server (wired or wireless) when the wireless print server is running. This parameter also causes any wireless radio card in the printer to reassociate to the wireless network.  <i>Corresponding ZPL Command:</i> ~WR  <i>Corresponding SGD Command:</i> device.reset</p>

<sup>1</sup> If a wireless password is set, you must enter the wireless password (not the printer password) to access this parameter.

## Restore Network Parameters to Defaults

You may need to restore the network parameters to the factory defaults under the following circumstances:

- If you download a different version of firmware to your printer
- If you need to reset the encryption keys (for instances where a key was entered incorrectly or was forgotten)

After you return the network parameters to the defaults, you must reconfigure your printer to use the wireless print server (see [Configuration on page 30](#)). If you saved the ZPL script generated by the Wireless Setup Wizard, simply send this file to the printer, and then power cycle the printer. If you were using a wireless password, you must set it again (use the ^WP ZPL command or the wlan.password SGD command).

You can set the network parameters back to the factory defaults in two ways:

- The **Restore Default Network Configuration** button on the printer's View and Modify Printer Settings Page (see [Figure 8 on page 55](#)).
- The **DEFAULT NET** option, which appears as an option when you exit Setup mode. Refer to the User Guide for your printer for specific instructions on how to modify the control panel parameters.



**Note** • The **LOAD DEFAULTS** option and the **Restore Default Configuration** button reset all printer parameters other than network settings back to factory defaults. The network settings will not change when these options are selected.



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# Troubleshooting

This section provides solutions to problems related specifically to the wireless print servers.

For print quality or other printer-specific problems, refer to the troubleshooting section in the User Guide for your printer. For problems with the wireless radio card or access point not addressed here, refer to the appropriate third-party documentation.

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Encryption and Authentication Issues . . . . .	48
IP Issues . . . . .	49

## Wireless Error Messages

Table 14 shows error messages that may appear on the control panel.

**Table 14 • Error Messages**

Message	Description
NO CARD INSERTED	The wireless radio card is not inserted at all or is not fully seated.
NOT ASSOCIATED	The wireless radio card is present but cannot log on to the network.
NOT AUTHENTICATED	The wireless radio card is present and associated with the access point, but it has not been authenticated by the authentication server.
RADIO WARNING POOR SIGNAL	<p>The wireless signal strength has dropped below the poor signal threshold value, which is set through the Wireless Setup web page (see <a href="#">Wireless Setup on page 64</a>).</p> <p> <b>Note</b> • The poor signal setting affects when you see the <b>POOR SIGNAL</b> warning, but it does not affect whether your printer will be able to associate with your network at a low signal strength.</p>

## General Issues

**Table 15 • General Issues and Recommended Solutions**

Issue	Possible Cause	Recommended Solution
<b>The printer acknowledges the wireless radio card and indicates a signal strength, but the printer does not appear to connect to the network.</b>	The combination of signal strength and signal quality at the printer may not be good enough to establish a connection to the network.	Move the printer or the access point to another location, or remove any obstructions between the two. A direct line of site between the printer and access point provides the best results. Refer to the third-party documentation for your access point for additional recommendations and limitations.
	The printer is associated with, but not authenticated with, your access point.	<ol style="list-style-type: none"> <li>1. Check your encryption settings.</li> <li>2. Verify that your MAC address is approved for the access point.</li> </ol>
<b>The printer does not acknowledge the wireless radio card.</b>	The card may not be inserted correctly.	Make sure that the wireless radio card is correctly seated in the wireless option card slot.
	Your printer may not be equipped with a ZebraNet wireless print server.	Contact your authorized Zebra representative for information about purchasing a ZebraNet wireless print server.
	The card may not be supported for use with the ZebraNet wireless print servers.	Make sure that you are using a compatible wireless radio card (see <a href="#">Supported Wireless Radio Cards on page 16</a> ).

**Table 15 • General Issues and Recommended Solutions (Continued)**

Issue	Possible Cause	Recommended Solution
<p><b>After a firmware upgrade, the printer will not connect to the network.</b></p>	<p>Network settings need to be updated.</p>	<ol style="list-style-type: none"> <li>1. Through the printer’s control panel, press SETUP/EXIT to enter Setup mode.</li> <li>2. Press SETUP/EXIT again to access the printer’s save and default options.</li> <li>3. Scroll to <b>DEFAULT NET</b>.</li> <li>4. Press SETUP/EXIT. The network settings are returned to factory defaults.</li> <li>5. Reconfigure your printer to use the ZebraNet wireless print server (see <a href="#">Configuration on page 30</a>). If you saved the ZPL script generated by the ZebraNet Bridge Wireless Setup Wizard utility, simply send this file to the printer. If you were using a wireless password, you need to set it again (use the ^WP ZPL command or the wlan.password SGD command).</li> <li>6. Power cycle the printer for the settings to take effect.</li> </ol>
<p><b>My wireless connection is inconsistent. The signal strengths change back and forth between high and low numbers.</b></p>	<p>An access point may be bad. The card appears to be switching affiliations between access points.</p> <p>The wireless radio card is repeatedly associating with two or more access points because of varying signal strengths.</p>	<p>Check the access points on your WLAN, particularly the one closest to the printer.</p> <p>Check the access points on your WLAN to determine what is causing the signal strengths to vary.</p>

## Encryption and Authentication Issues

Table 16 • Encryption and Authentication Issues and Recommended Solutions

Issue	Possible Cause	Recommended Solution
<b>The entry field for WEP keys on the printer's web page does not display all 26 characters.</b>	The field accepts 26 characters, but they may not be able to display all at once because of your browser or system settings.	Use the left and right arrow keys on your keyboard to move the cursor in the WEP key field and reveal characters that may not display.
<b>I set WEP encryption keys using the ^WX ZPL command, and now my wireless print server does not function.</b>	The ZPL script that you sent to the printer may have been incorrect. The printer may be using the wrong encryption key or looking for one that is undefined.	Resend the ^WX command. Make sure that all of the required commas are in place in the command. A missing or extra comma in this command can prevent the printer from joining the wireless network.
<b>I set WEP encryption keys using the ^WE ZPL command, and now my wireless print server does not function.</b>	The ZPL script that you sent to the printer may have been incorrect. The printer may be using the wrong encryption key or looking for one that is undefined.	Use the ^WX command instead of ^WE.
	You enabled WEP and WPA encryption modes at the same time.	Before enabling a new security type, disable any mode used previously. Use the ^WX command instead of ^WE to ensure that only one security type is enabled at a time.
<b>I set WEP encryption keys using the wlan.wep.index Set/Get/Do command, and now my wireless print server does not function.</b>	The command that you sent to the printer may have specified the index number for an encryption key that is undefined.	Resend the wlan.wep.index command with the index number for a defined encryption key.
<b>WPA mode will not work.</b>	The wireless radio card contains an outdated version of firmware.	Flash the latest firmware to the wireless radio card. Contact the card manufacturer for details.
<b>Kerberos mode will not work.</b>	You are using a wireless radio card that does not support Kerberos. Kerberos is available only with Symbol Technologies Spectrum24 wireless radio cards.	Switch to a Symbol Technologies Spectrum24 wireless radio card.
<b>The printer will not connect to the WLAN.</b>	You are using a wireless radio card that does not support the security type being used on your WLAN.	Switch to a wireless radio card that supports your security type. Check <a href="#">Table 3 on page 18</a> for the security types supported by different wireless radio cards.

## IP Issues

**Table 17 • IP Issues and Recommended Solutions**

Issue	Possible Cause	Recommended Solution
<p><b>The printer shows IP address 192.168.254.254, which does not appear to work.</b></p>	<p>IP address 192.168.254.254 is a default address. The printer shows this address after it times out while trying to connect. The printer was likely set to an incorrect static IP address.</p>	<p>Enter a valid static IP address. OR Set IP Protocol to All.</p>
	<p>The DHCP server is not functioning, so a dynamic IP address is not being assigned. The printer timed out and shows the default IP address of 192.168.254.254.</p>	<p>Check the DHCP server.</p>
<p><b>On my control panel, the IP settings are missing or show all zeroes (000.000.000.000).</b></p>	<p>Actual IP settings (IP Resolution, IP Address, Subnet Mask, and Default Gateway) will only appear when the printer is associated to and authenticated with the WLAN. Until the time that the printer recognizes the existence of a ZebraNet print server, these parameters will not show through the control panel. After the print server is recognized, all zeroes will display until the printer obtains an IP address or defaults to address 192.168.254.254.</p>	<ol style="list-style-type: none"> <li>1. Allow more time for the printer to complete its connection and obtain an IP address.</li> <li>2. If the printer does not connect, check that there is an adequate signal between the printer and the access point. If necessary, move the printer or the access point to another location, or remove any obstructions between the two. A direct line of site between the printer and access point provides the best results. Refer to the third-party documentation for your access point for recommendations and limitations.</li> <li>3. Check the IP Protocol setting. If using a static setting, the value entered might not be valid.</li> </ol>
<p><b>The IP address for my wired print server does not bring up the printer home page.</b></p>	<p>If both a wired and wireless print server are installed on a printer at the same time and the wireless printer is the primary/active print server, the printer web pages can be accessed only through the wireless print server's IP address.</p>	<p>In your browser window, type in the IP address of the wireless print server.</p>






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# WebView Web Pages

This section provides details about the ZebraLink WebView web pages for a printer that is running a ZebraNet wireless print server.



**Note** • The web pages are available only on printers operating in ZPL mode. Printers operating in EPL, APL-I, or APL-D mode do not have web pages.

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## Web Page Overview

ZebraLink WebView is a browser-based application that provides real-time configuration, control, and monitoring capabilities for your printer. The web pages display real-time information about the printer, including printer status, error conditions, and all printing parameters.

You can use the printer's web pages to view and modify many of the same parameters that appear on the printer's control panel. Through the printer's web pages, you can also enter additional WEP encryption keys and change other parameters that are not accessible through the control panel.

## Home Page

The printer's home page is the first web page that opens. This page includes a menu of hyperlinks that allow you to make modifications to the printer, print server, and network settings. Other changeable settings through the home page include:

- Network Status, Error, and Warning reports
- Directories of objects stored in Flash memory and RAM devices
- Objects, stored fonts, images, programs, and ZPL II formats

To access the printer's home page, you need the printer's IP address. When the printer is connected to your WLAN, you can find the IP address using the printer's control panel.



**Note** • Refer to the User Guide for your printer for specific instructions on how to use the control panel.

### To access your printer's home page, complete these steps:

1. From the control panel, enter Setup mode.
2. Scroll through the parameters until you reach **IP ADDRESS**.
3. Note the IP Address (do not include any leading zeroes):  
\_\_\_\_\_
4. Open a web browser window.

- In the address box, type the IP address for the printer (do not include www or any leading zeroes), and then press Enter.

The printer's home page displays.



For more information about the options listed on the printer home page, see the following sections:

- [View Printer Configuration](#) on page 54
- [View and Modify Printer Settings](#) on page 55
- [Directory Listing](#) on page 65
- [Alert Setup](#) on page 69
- [Printer Controls](#) on page 72
- [Print Server Settings](#) on page 74

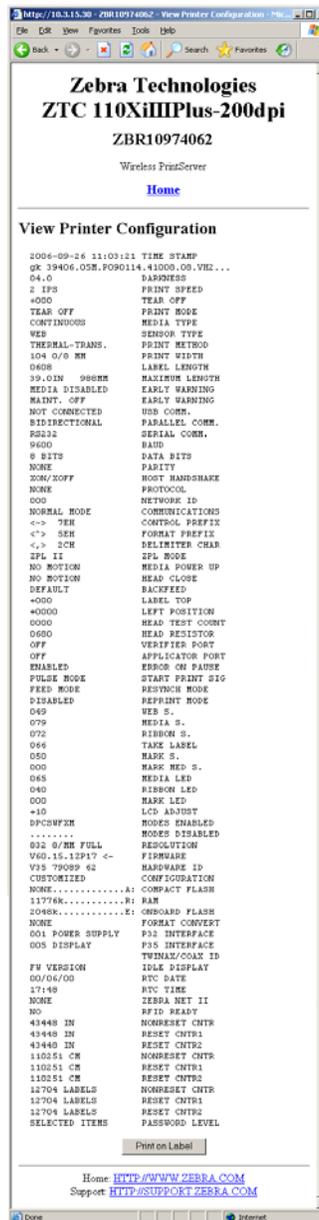
## View Printer Configuration

The View Printer Configuration menu option provides accurate, up-to-the-minute information on the printer's current state. An administrator can conveniently find information on the Virtual Configuration Label and also check on the status of printer ports.

To view the printer configuration through WebView, complete these steps:

1. From the printer home page, click **View Printer Configuration**.  
WebView displays the configuration settings (Figure 7).

Figure 7 • View Printer Configuration



2. To receive updated printer information from this view, refresh the browser page.

## View and Modify Printer Settings

This section provides you with steps for accessing and modifying printer settings with a ZebraLink-enabled printer. It also provides illustrations of the various pages you can access.

### To access the View and Modify Printer Settings, complete these steps:

1. From the printer home page, click **View and Modify Printer Settings**.

The printer prompts you for a password.

2. Enter the password for your printer. The default password is **1234**.

3. Click **Submit Changes**.

The following statement displays:

**Access Granted. This IP Address now has admin access to the restricted printer pages. Please Click here to proceed**

4. Click on the statement.

The View and Modify Printer Settings page displays (Figure 8). Table 18 on page 56 shows the screens that appear when you click on the menu selections on this page and describes some of the crucial items.

Figure 8 • View and Modify Printer Settings Page

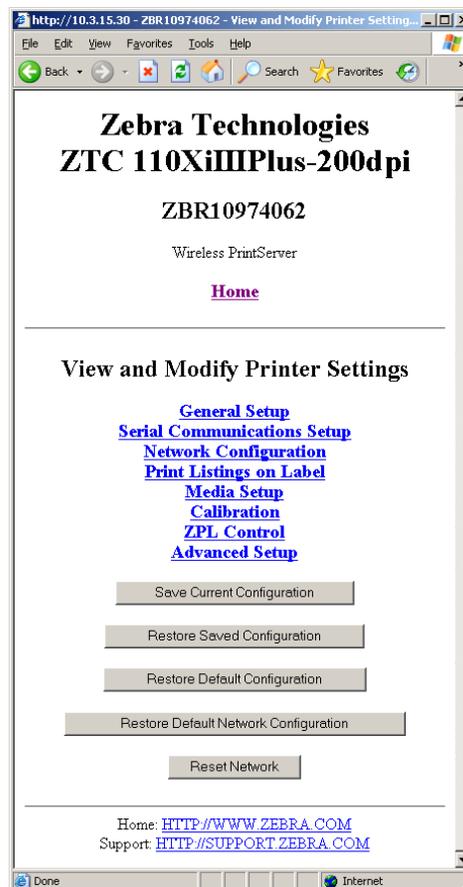


Table 18 • Subscreens: View and Modify Printer Settings Screen

General Setup

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**  
ZBR10974062  
Wireless PrintServer  
[Home](#)

---

**General Setup**

**Printer Name**  
ZBR10974062

**Printer Description**

**LANGUAGE**  
ENGLISH

**DARKNESS**  
Range 0.0 to 30.0  
4.0

**PRINT MODE**  
TEAR OFF

**TEAR OFF**  
Range -120 to 120  
0

**PRINT SPEED**  
2 IPS

**LABEL TOP**  
Range -120 to 120  
0

**LCD ADJUST**  
Range 0 to 19  
10

**EARLY WARNING**  
MEDIA DISABLED

**EARLY WARNING**  
MAINT. OFF

Submit Changes  
Reset Changes

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

Serial Communications Setup

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**  
ZBR10974062  
Wireless PrintServer  
[Home](#)

---

**Serial Communications Setup**

**BAUD**  
9600

**DATA BITS**  
8 BITS

**PARITY**  
NONE

**HOST HANDSHAKE**  
XON/XOFF

**PROTOCOL**  
NONE

**SERIAL COMM.**  
RS232

**NETWORK ID**  
Range 0 to 999  
0

Submit Changes  
Reset Changes

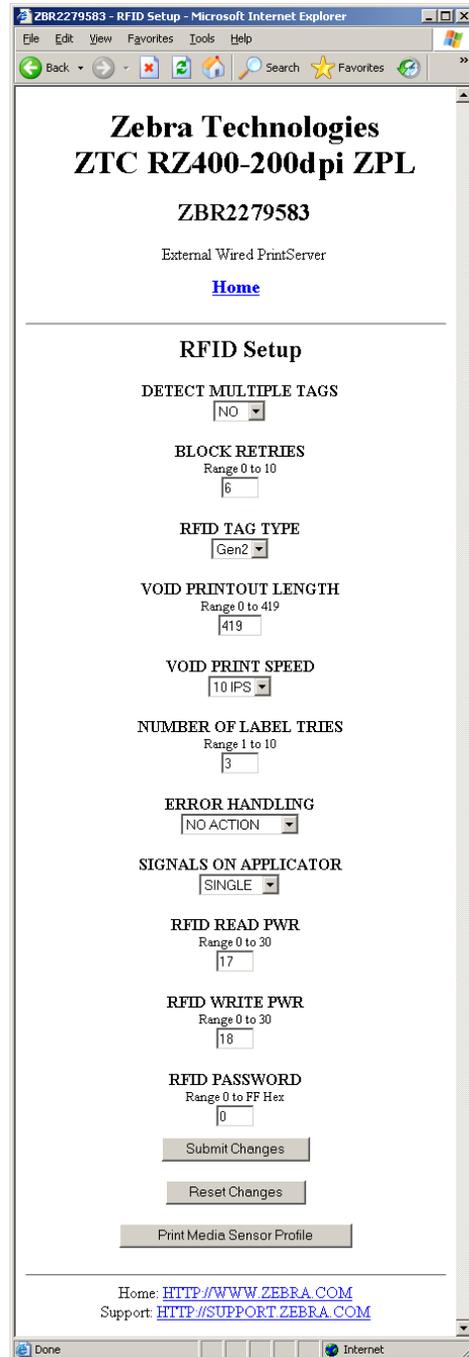
Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

Table 18 • Subscreens: View and Modify Printer Settings Screen (Continued)

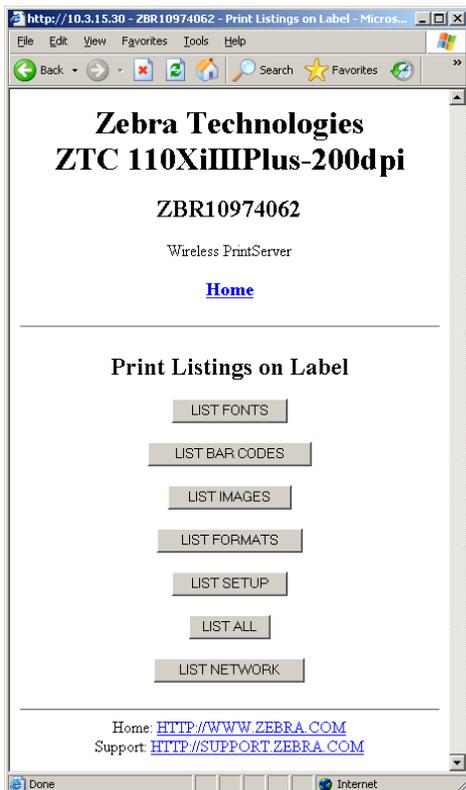
**Network Configuration Menu**  
(see Table 19 on page 61 for subscreens)



**RFID Setup (RFID Printers/Print Engines only)**



**Print Listings on Label**



**Table 18 • Subscreens: View and Modify Printer Settings Screen (Continued)**

**Media Setup**

The screenshot shows a browser window with the URL <http://10.3.15.30> and the page title "Media Setup - Microsoft Internet...". The page content includes the Zebra Technologies logo, model name "ZTC 110XiIIIPlus-200dpi", and device ID "ZBR10974062". A "Home" link is present. The "Media Setup" section contains the following settings:

- MEDIA TYPE:** CONTINUOUS
- SENSOR TYPE:** WEB
- PRINT METHOD:** THERMAL-TRANS.
- PRINT WIDTH:** 832 (Range 2 to 832)
- MAXIMUM LENGTH:** 7917 (Range 406 to 7917)

Buttons for "Submit Changes" and "Reset Changes" are located below the settings. At the bottom, there are links for "Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)" and "Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)".

**Calibration**

The screenshot shows a browser window with the URL <http://10.3.15.30> and the page title "Calibration - Microsoft Internet...". The page content includes the Zebra Technologies logo, model name "ZTC 110XiIIIPlus-200dpi", and device ID "ZBR10974062". A "Home" link is present. The "Calibration" section contains the following settings:

- MEDIA POWER UP:** NO MOTION
- HEAD CLOSE:** NO MOTION
- Web Sensor:** 49 (Range 0 to 100)
- Media Sensor:** 79 (Range 0 to 100)
- Ribbon Sensor:** 72 (Range 0 to 100)
- Mark Sensor:** 50 (Range 0 to 100)
- Mark Media Sensor:** 0 (Range 0 to 100)
- Media LED Brightness:** 65 (Range 0 to 255)
- Ribbon LED Brightness:** 40 (Range 0 to 255)
- Mark LED Brightness:** 0 (Range 0 to 255)

Buttons for "Submit Changes", "Reset Changes", and "Print Media Sensor Profile" are located below the settings. At the bottom, there are links for "Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)" and "Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)".

Table 18 • Subscreens: View and Modify Printer Settings Screen (Continued)

**ZPL Control**

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**

ZBR10974062

Wireless PrintServer

[Home](#)

---

**ZPL Control**

**CONTROL PREFIX**  
Range 0 to FF Hex

**FORMAT PREFIX**  
Range 0 to FF Hex

**DELIMITER CHAR**  
Range 0 to FF Hex

**ZPL MODE**

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

**Advanced Setup**

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**

ZBR10974062

Wireless PrintServer

[Home](#)

---

**Advanced Setup**

**BACKFEED**

**LEFT POSITION**  
Range -9999 to 9999

**FORMAT CONVERT**

**HEAD TEST COUNT**  
Range 0 to 9999

**HEAD RESISTOR**  
Range 680 to 920

**FORMAT MEMORY**

**APPLICATOR**

**ERROR ON PAUSE**

**START PRINT SIG**

**RESYNCH MODE**

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

## Network Configuration Screens

This section shows the screens that appear when you click on the menu items on the Network Configuration menu.

### To access the Network Communications menu, complete these steps:

1. From the printer home page, click **View and Modify Printer Settings**.

The printer prompts you for a password.

2. Enter the password for your printer. The default password is **1234**.

3. Click **Submit Changes**.

The following statement appears:

**Access Granted. This IP Address now has admin access to the restricted printer pages. Please Click here to proceed**

4. Click on the statement.

The View and Modify Printer Settings page displays (see [Figure 8 on page 55](#)).

5. Click **Network Configuration**.

The Network Configuration Menu displays. [Table 19](#) shows the screens that appear when you click on the menu selections on this page and describes some of the items that may need clarification.

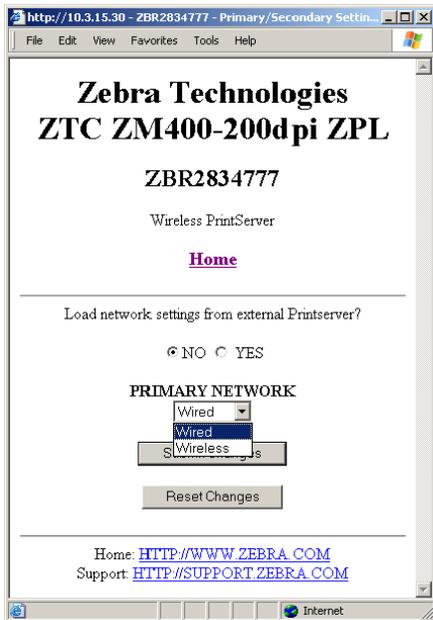


Table 19 • Subscreens: Network Communications Setup

**Primary/Secondary Settings**  
**X60.15.x**



**Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600**



**SNMP**

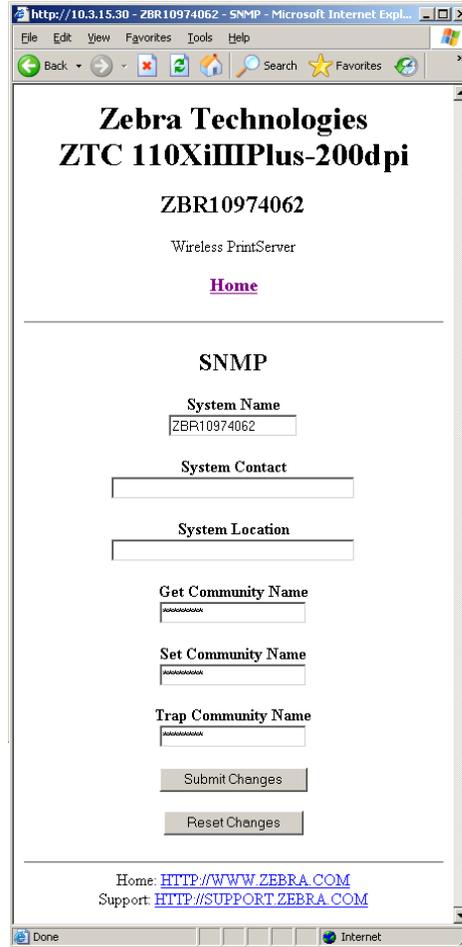


Table 19 • Subscreens: Network Communications Setup (Continued)

SMTP

**Zebra Technologies**  
**ZTC 140XiIIIPlus-200dpi**  
ZBR11304858  
Wireless PrintServer  
[Home](#)

---

**SMTP**

SMTP Server Address

Print Server Domain

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

TCP/IP

X60.15.x and ZSPx

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**  
ZBR10974062  
Wireless PrintServer  
[Home](#)

---

**TCP/IP Settings**

Setting	Wired	Wireless
IP ADDRESS	<input type="text" value="000.000.000.000"/>	<input type="text" value="010.003.015.030"/>
IP PROTOCOL	<input type="text" value="ALL"/>	<input type="text" value="DHCP"/>
SUBNET MASK	<input type="text" value="000.000.000.000"/>	<input type="text" value="000.000.000.000"/>
DEFAULT GATEWAY	<input type="text" value="000.000.000.000"/>	<input type="text" value="000.000.000.000"/>
WINS SERVER IP	<input type="text" value="000.000.000.000"/>	<input type="text" value="000.000.000.000"/>
TIMEOUT CHECKING	<input type="text" value="YES"/>	<input type="text" value="YES"/>
TIMEOUT VALUE	<input type="text" value="300"/>	<input type="text" value="300"/>
ARP INTERVAL	<input type="text" value="0"/>	<input type="text" value="0"/>
BASE RAW PORT	<input type="text" value="9100"/>	<input type="text" value="9100"/>

CLIENT ID ENABLED

CLIENT ID TYPE

CLIENT ID PREFIX

CLIENT ID SUFFIX

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

Table 19 • Subscreens: Network Communications Setup (Continued)

TCP/IP

Xi4, R110Xi4, ZM400, ZM600, RZ400, and RZ600

The screenshot shows a web browser window with the address bar displaying 'http://10.3.15.30 - ZBR2834777 - TCP/IP Settings - Microsoft Internet Explorer'. The page content includes the printer model 'ZBR2834777', the title 'Wireless PrintServer', and a 'Home' link. The main section is 'TCP/IP Settings', which is organized into three columns: 'External Wired', 'Wireless', and 'Internal Wired'. Each column has a 'Setting' label on the left and corresponding input fields or dropdown menus. The 'External Wired' column has a default IP of 000.000.000.000. The 'Wireless' column has a default IP of 010.003.015.030. The 'Internal Wired' column has a default IP of 000.000.000.000. Other settings like 'TIMEOUT CHECKING' are set to 'YES', 'BASE RAW PORT' is 9100, and 'CLIENT ID ENABLED' is 'OFF'. At the bottom, there are 'Submit Changes' and 'Reset Changes' buttons.

Setting	External Wired	Wireless	Internal Wired
IP ADDRESS	000.000.000.000	010.003.015.030	000.000.000.000
IP PROTOCOL	ALL	ALL	ALL
SUBNET MASK	255.255.255.000	255.255.255.000	255.255.255.000
DEFAULT GATEWAY	000.000.000.000	010.003.015.001	000.000.000.000
WINS SERVER IP	010.003.001.098	010.003.001.098	010.003.001.098
TIMEOUT CHECKING	YES	YES	YES
TIMEOUT VALUE	300	300	300
ARP INTERVAL	0	0	0
BASE RAW PORT	9100	9100	9100
CLIENT ID ENABLED	OFF	OFF	OFF
CLIENT ID TYPE	MAC ADDRESS	MAC ADDRESS	MAC ADDRESS
CLIENT ID PREFIX			
CLIENT ID SUFFIX	000000000000	000b5f68f39b	8e4051d08e40

**Table 19 • Subscreens: Network Communications Setup (Continued)**

**Wireless Setup**

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**  
ZBR10974062  
Wireless PrintServer  
[Home](#)

---

**Wireless Setup**

CARD INSERTED  
 YES

SIGNAL STRENGTH  
98

SIGNAL QUALITY  
87

NOISE LEVEL  
0

CARD MFG ID  
351

CARD PRODUCT ID  
10

CARD FIRMWARE  
5.60.21

MAC ADDRESS  
00:0e:84:c4:18:76

ESSID  
125

OPERATING MODE  
INFRASTRUCTURE

TX POWER  
100

TX RATE  
 1 Mb/s
  2 Mb/s
  5.5 Mb/s
  11 Mb/s

POOR SIGNAL  
Range 0 to 99  
20

PREAMBLE  
LONG

ADHOC AUTO MODE  
OFF

ADHOC CHANNEL  
Range 1 to 16  
1

CHANNEL MASK  
Range 1 to FFFF Hex  
7FF

ROAM INTERVAL  
20

ROAM SIGNAL  
50

PULSE ENABLED  
ON

PULSE RATE  
Range 2 to 300  
15

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

**Wireless Encryption Setup**

**Zebra Technologies**  
**ZTC 110XiIIIPlus-200dpi**  
ZBR10974062  
Wireless PrintServer  
[Home](#)

---

**Wireless Encryption Setup**

WLAN SECURITY  
WEP 128-BIT

WEP INDEX  
1

ENCRYPTION KEY STORAGE  
HEX

WEP TYPE  
OPEN

ENCRYPTION KEY 1  
XXXXXXXXXX

ENCRYPTION KEY 2  
XXXXXXXXXX

ENCRYPTION KEY 3  
XXXXXXXXXX

ENCRYPTION KEY 4  
XXXXXXXXXX

WLAN SECURITY USERNAME  
wpa\_leap\_user

WLAN SECURITY PASSWORD  
XXXXXXXXXX

WPA PSK  
XXXXXXXXXX

Home: [HTTP://WWW.ZEBRA.COM](http://www.zebra.com)  
Support: [HTTP://SUPPORT.ZEBRA.COM](http://support.zebra.com)

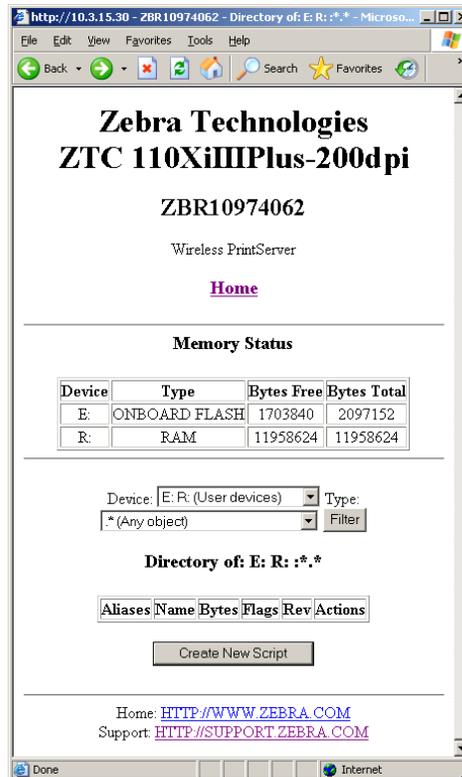
## Directory Listing

The directory page lists all file system devices (A :, E :, R :, Z :). The size, name, and location for each stored object are displayed.

**To create a new item on the Directory Listing screen, complete these steps:**

1. On the printer home page, click **Directory Listing**.

The Directory Listing screen displays.



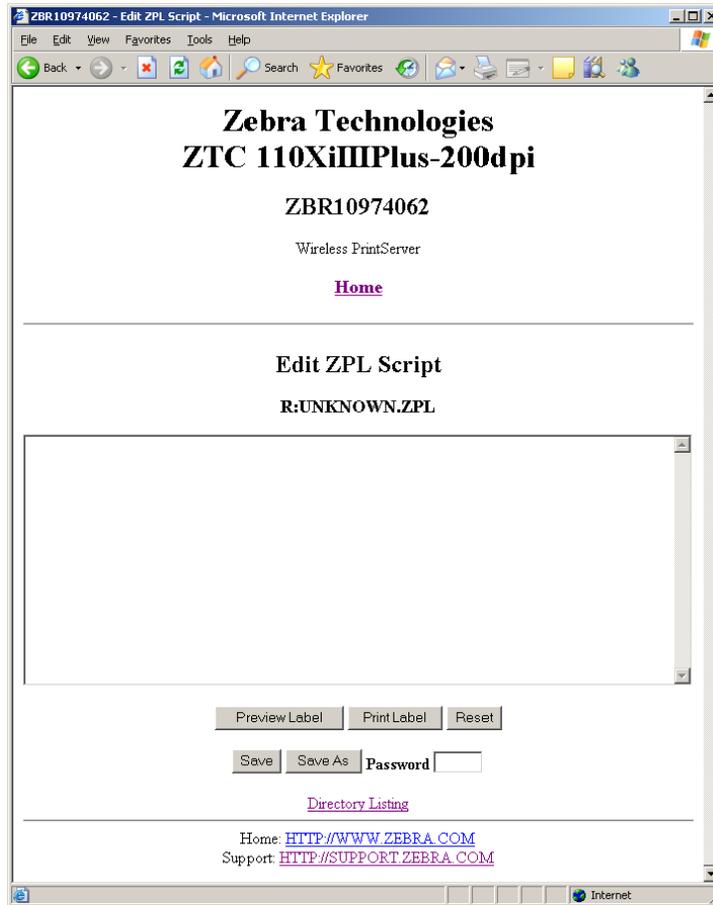
- From the Directory Listing screen, click **Create New Script**.  
The Create New Script screen displays.



- Select a device type from the drop-down menu to indicate a memory location that is appropriate to your needs.
  - E: (ONBOARD FLASH)**—non-volatile memory, which is persistent across a power cycle.
  - R: (RAM)**—volatile memory, which is not persistent across a power cycle.
  - Z: (PRINTER INTERNAL MEMORY)**—non-volatile memory where the printer’s internal bar codes and fonts are stored. You can print a list of the bar codes and fonts through the printer’s control panel. Refer to the User Guide for your printer for instructions on listing the fonts and bar codes.
- Type a name for the file in the Name field.

5. Click **Edit**.

The Edit ZPL Script screen displays.



6. Enter the ZPL code in the text field.

7. Click one of the available buttons:

Button	Function/Operation
<b>Preview Label</b>	Displays a graphic representation of the label that results from the ZPL code.
<b>Print Label</b>	Sends the ZPL code to the printer.
<b>Reset</b>	Clears the text field.
<b>Save</b>	<p>a. Enter the printer password in the password field.</p> <p>b. Click <b>Save</b>.</p> <p>If the correct password was entered, saves the label to the ZPL file name entered on the Create New Script screen.</p>
<b>Save As</b>	<p>a. Enter the printer password in the password field.</p> <p>b. Click <b>Save As</b>.</p> <p>The Save ZPL Script screen displays.</p>  <p>c. Enter a file name in the Name field.</p> <p>d. Click <b>Save</b>.</p> <p>If the correct password was entered on the Edit ZPL Script screen, the file is saved.</p>

## Alert Setup

For the printer to interact with ZebraNet Alert, SNMP settings must be established in these areas:

- the printer, via the WebView interface
- the Alert Printer Management Utility for logging SNMP traps

The ZebraLink messaging system provides for more than SNMP notification. Alerts can be routed to various destinations:

- TCP
- UDP
- e-mail
- serial port
- parallel port destinations

### To view Alert Setup, complete these steps:

1. From the printer home page, click **Alert Setup**.

The Alert Messaging System screen displays.



## Establishing E-Mail Alert Messaging

ZebraNet Alert allows printer errors to be sent directly to any valid e-mail address. You can set up multiple e-mail addresses for routing different error messages or split notifications between e-mail and other network management tools.

To begin receiving e-mail notification of errors, complete these steps:

1. From the Alert Messaging System screen, click **Add Alert Message**.

The Add Alert Message screen displays.



The screenshot shows a web browser window titled "ZBR3881022 - Add Alert Message - Microsoft In...". The page content includes the Zebra Technologies logo and printer model "ZTC Z4MPlus-200dpi". Below the printer name is the model number "ZBR3881022" and the device type "Wireless PrintServer". A "Home" link is present. The main section is titled "Add Alert Message" and contains the following form fields:

- Condition: PAPER OUT (dropdown menu)
- Destination: SERIAL (dropdown menu)
- SET: YES (dropdown menu)
- CLR: YES (dropdown menu)
- Address: (text input field)
- Port: (text input field)

Below the form is an "Add Alert Message" button and a "Password" field. At the bottom of the page, there are links for "Home: HTTP://WWW.ZEBRA.COM" and "Support: HTTP://SUPPORT.ZEBRA.COM".

2. From the drop-down menu, specify the condition to send over e-mail, such as **HEAD ELEMENT BAD** or **PAPER OUT**.
3. Select a destination from the drop-down menu.
4. Enter a valid e-mail address to which the messages will be sent. (The Port field can be ignored for e-mail setup.)
5. Enter the printer password.
6. Click **Add Alert Message**.
7. On the add alert message confirmation page, click **Home** to return to the printer's home page.

8. From the printer's home page, click **View and Modify Printer Settings**. (You may be prompted for the printer's password if it was not entered recently.)

The View and Modify Printer Settings screen displays.

9. Click **Network Configuration**.

The Network Configuration Menu displays.

10. Click **SMTP**.

The SMTP Setup screen displays.



11. Specify your SMTP server address and Print Server domain.

12. Click **Submit Changes**.

The printer displays the following:

**Changes were successfully saved (temporarily).**

13. Click **View and Modify Printer Settings**.

The View and Modify Printer Settings page for your printer returns (see [Figure 8 on page 55](#)).

14. Click **Save Current Configuration**.

The printer displays the following:

**Current configuration saved.**

## Printer Controls

This page offers control over basic printer functions.

### To view Printer Controls, complete these steps:

1. From the printer home page, click **Printer Controls**.

The printer prompts you for a password.

2. Enter the password for your printer. The default password is **1234**.

3. Click **Submit Changes**.

The printer displays the following:

**Access Granted. This IP Address now has admin access to the restricted printer pages. Please Click here to proceed**

4. Click on the statement.

This Printer Controls screen displays.



5. Click one of the available buttons:

Button	Function
<b>Pause</b>	Toggles the pause option on the printer.
<b>Feed</b>	Causes printer to feed one label.
<b>Cancel One Format</b>	Cancels the currently printing format.
<b>Cancel All Formats</b>	Cancels all formats.
<b>Reset Printer</b>	Causes the printer to perform its standard reset without cycling power. <ul style="list-style-type: none"> <li>a. Click <b>Reset Printer</b>.                              The printer prompts  <b>Are you sure you want to reset the printer?</b></li> <li>b. Click <b>Reset</b>.                              The printer resets itself.</li> </ul>

## Print Server Settings

This section provides you with instructions for viewing the current print server settings.

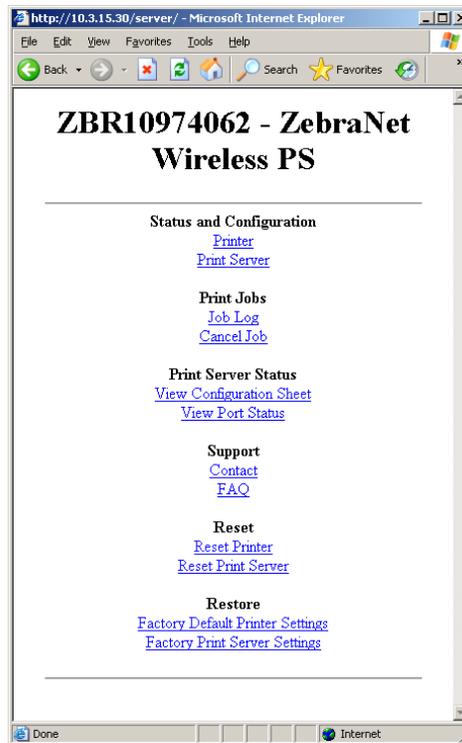
To apply changes made in this section, use the default user ID and password:

- User ID: **admin**
- Password: **1234**

### To view the print server menu, complete these steps:

1. From the printer home page, click **Print Server Settings**.

The Print Server screen opens. The Network Configuration Menu displays. [Table 20](#) shows the screens that appear when you click on the menu selections on this page.

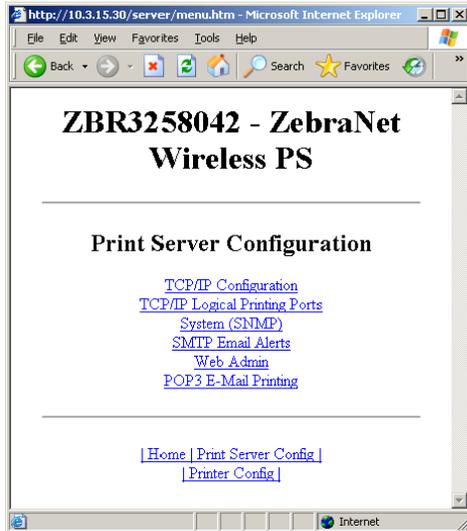


**Table 20 • Subscreens: Print Server Settings**

**Printer**

Returns to printer home page.

**Print Server**



The Print Server Configuration screen allows you to configure the following print server categories. Click the links that follow to go to the screen descriptions.

- [TCP/IP Configuration](#)
- [TCP/IP Logical Printing Ports](#)
- [System \(SNMP\)](#)
- [SMTP Email Alerts](#)
- [Web Admin](#)
- [POP3 E-Mail Printing](#)

Table 20 • Subscreens: Print Server Settings (Continued)

**Print Server:  
TCP/IP Configuration**

**ZBR10974062 - ZebraNet  
Wireless PS**

---

**TCP/IP Configuration**

IP Address:

IP Address Resolution:

Dynamic Protocols:

- RARP
- BootP
- DHCP
- Gleaning
- Default Address

Subnet Mask:

Default Gateway:

WINS Server IP Address:

Connection Timeout Checking:

Timeout Value (secs):

ARP Broadcast Interval (mins):

Base Raw Port Number:

[| Home | Print Server Config |](#)  
[| Printer Config |](#)

**Print Server:  
TCP/IP Logical Printing Ports**

**ZBR10974062 - ZebraNet  
Wireless PS**

---

**Logical Printer Port Configuration**

**Logical Port 1 Configuration**

Logical Port Name(FTP, LP):

TCP Logical Port Number(Raw):

Pre String:

Post String:

Delete Bytes:

**Logical Port 2 Configuration**

Logical Port Name(FTP, LP):

TCP Logical Port Number(Raw):

Pre String:

Post String:

Delete Bytes:

**Logical Port 3 Configuration**

Logical Port Name(FTP, LP):

TCP Logical Port Number(Raw):

Pre String:

Post String:

Delete Bytes:

**Logical Port 4 Configuration**

Logical Port Name(FTP, LP):

TCP Logical Port Number(Raw):

Pre String:

Post String:

Delete Bytes:

[| Home | Print Server Config |](#)  
[| Printer Config |](#)

Table 20 • Subscreens: Print Server Settings (Continued)

**Print Server:  
System (SNMP)**

**ZBR10974062 - ZebraNet Wireless PS**

**System Information Configuration**

System Name:

System Contact:

System Location:

Get Community Name:

Confirm Get Community Name:

Set Community Name:

Confirm Set Community Name:

Trap Community Name:

Confirm Trap Community Name:

[Home](#) | [Print Server Config](#) | [Printer Config](#)

**Print Server:  
SMTP Email Alerts**

**ZBR10974062 - ZebraNet Wireless PS**

**SMTP Email Alert Configuration**

SMTP Server Address:

Print Server Domain (optional):

[Home](#) | [Print Server Config](#) | [Printer Config](#)

**Print Server:  
Web Admin**

**ZBR10974062 - ZebraNet Wireless PS**

**Web Admin Configuration**

Admin Name:

Admin Password:

Confirm Admin Password:

HTTP Port:

FAQ URL:

Custom Link Title:

Custom Link URL:

[Home](#) | [Print Server Config](#) | [Printer Config](#)

**Print Server:  
POP3 E-Mail Printing**

**ZBR10974062 - ZebraNet Wireless PS**

**POP3 Printing Configuration**

POP3 Server Address:

POP3 User Name:

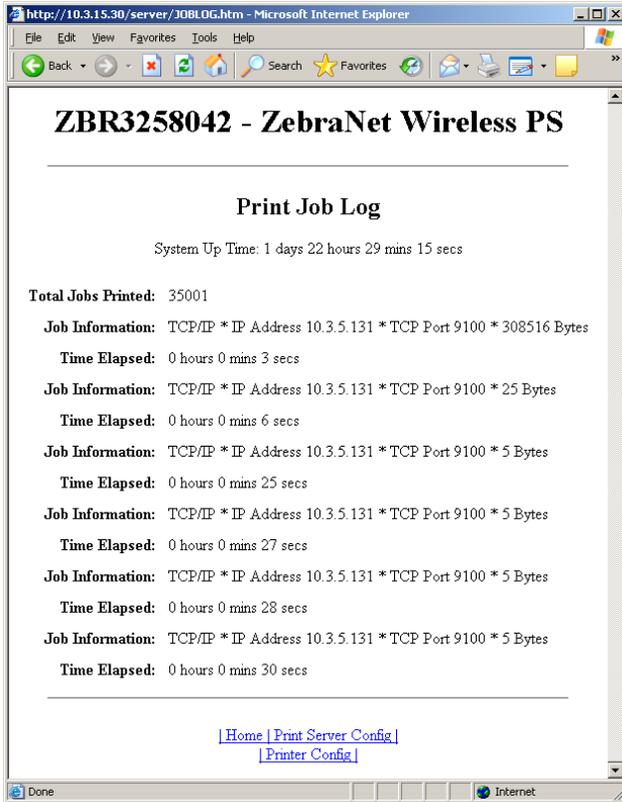
POP3 User Password:

POP3 Polling Interval (seconds):

[Home](#) | [Print Server Config](#) | [Printer Config](#)

**Table 20 • Subscreens: Print Server Settings (Continued)**

**Job Log**



**Cancel Job**

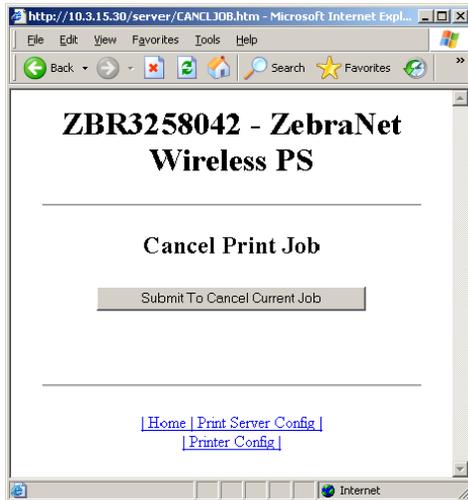
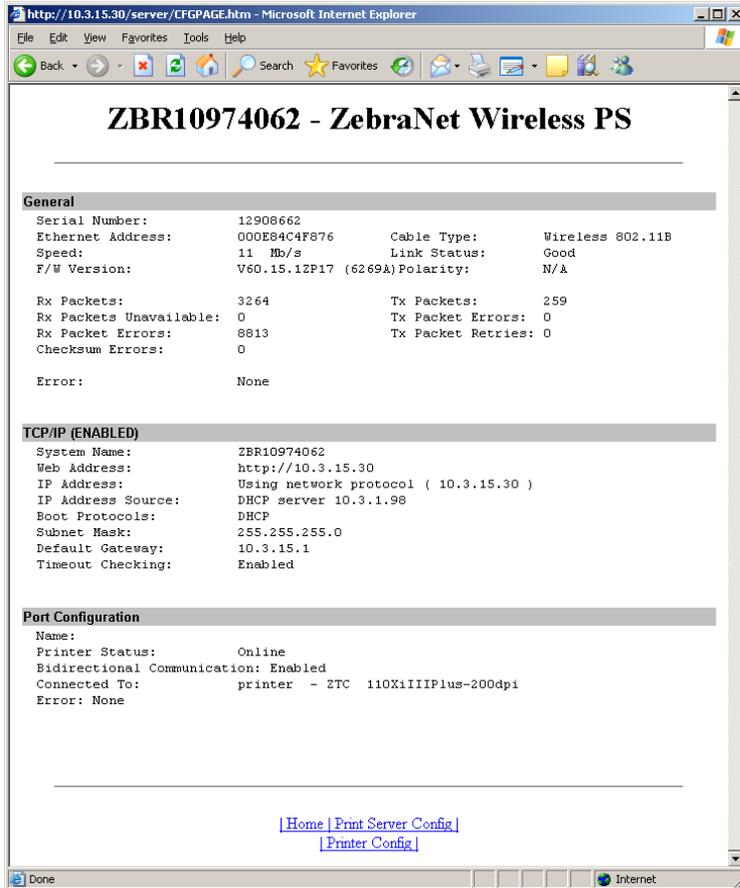
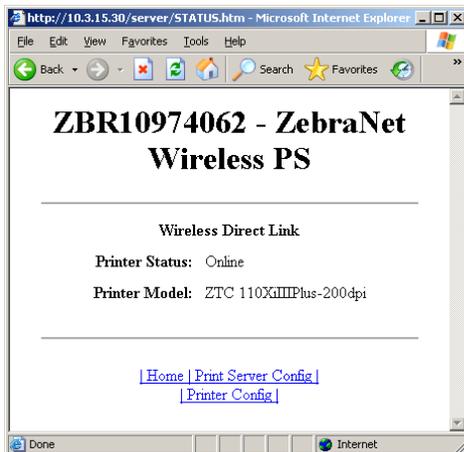


Table 20 • Subscreens: Print Server Settings (Continued)

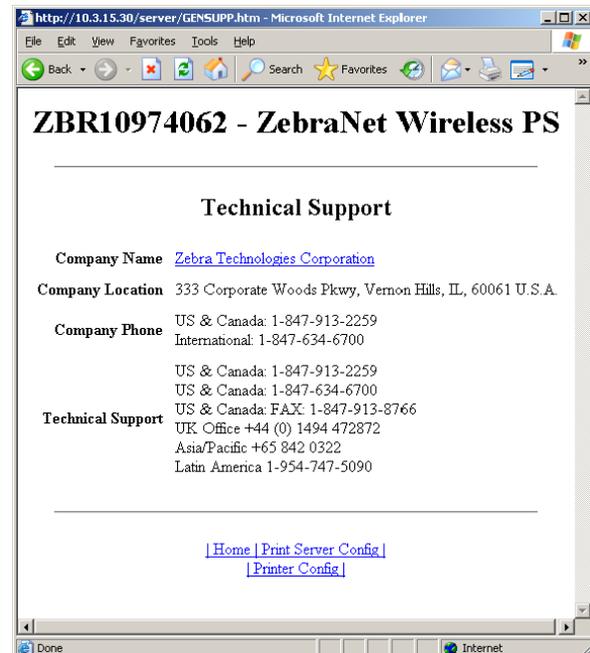
View Configuration Sheet



View Port Status



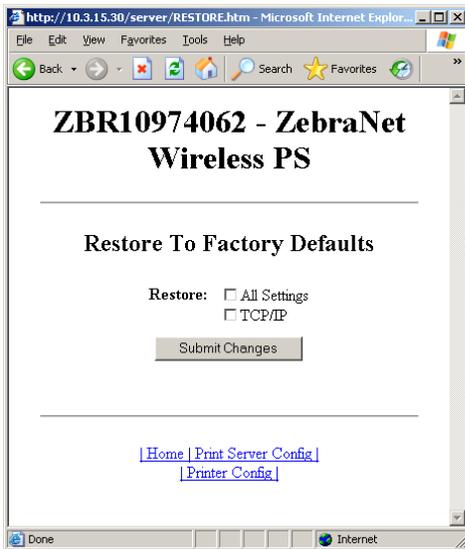
Contact



**Table 20 • Subscreens: Print Server Settings (Continued)**

<p><b>FAQ</b> Goes to <a href="http://support.zebra.com">http://support.zebra.com</a>.</p>	<p><b>Reset Printer</b> Goes to the Printer Controls page. See <i>Printer Controls</i> on page 72.</p>
<p><b>Reset Print Server</b></p> 	<p><b>(Restore) Factory Default Printer Settings</b> Returns to the View and Modify Printer Settings page. See <i>View and Modify Printer Settings</i> on page 55.</p>

**(Restore) Factory Print Server Settings**



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# Glossary



**alphanumeric** Indicating letters, numerals, and characters such as punctuation marks.

**backfeed** When the printer pulls the media and ribbon (if used) backward into the printer so that the beginning of the label to be printed is properly positioned behind the printhead. Backfeed occurs when operating the printer in Tear-Off and Applicator modes.

**bar code** A code by which alphanumeric characters can be represented by a series of adjacent stripes of different widths. Many different code schemes exist, such as the universal product code (UPC) or Code 39.

**black mark** A registration mark found on the underside of the print media that acts as a start-of-label indication for the printer. (See *non-continuous media*.)

**calibration (of a printer)** A process in which the printer determines some basic information needed to print accurately with a particular media and ribbon combination. To do this, the printer feeds some media and ribbon (if used) through the printer and senses whether to use the direct thermal or thermal transfer print method, and (if using non-continuous media) the length of individual labels or tags.

**configuration** The printer configuration is a group of operating parameters specific to the printer application. Some parameters are user selectable, while others are dependent on the installed options and mode of operation. Parameters may be switch selectable, control panel programmable, or downloaded as ZPL II commands. A configuration label listing all the current printer parameters may be printed for reference.

**diagnostics** Information about which printer functions are not working that is used for troubleshooting printer problems.

**direct thermal** A printing method in which the printhead presses directly against the media. Heating the printhead elements causes a discoloration of the heat-sensitive coating on the media. By selectively heating the printhead elements as the media moves past, an image is printed onto the media. No ribbon is used with this printing method. Contrast this with *thermal transfer*.

**dynamic RAM** The memory devices used to store the label formats in electronic form while they are being printed. The amount of DRAM memory available in the printer determines the maximum size and number of label formats that can be printed. This is volatile memory that loses the stored information when power is turned off.

**Extensible Authentication Protocol over Flexible Authentication via Secure Tunneling (EAP-FAST)** Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) is a publicly accessible IEEE 802.1X EAP type developed by Cisco Systems. It is available as an IETF informational draft. Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) is a publicly accessible IEEE 802.1X EAP type developed by Cisco Systems. It is available as an IETF informational draft. Cisco developed EAP-FAST to support customers who cannot enforce a strong password policy and wish to deploy an 802.1X EAP type that does not require digital certificates, supports a variety of user and password database types, supports password expiration and change, and is flexible, easy to deploy, and easy to manage. For example, a customer using Cisco LEAP who cannot enforce a strong password policy and does not want to use certificates can migrate to EAP-FAST for protection from dictionary attacks.

**Extensible Authentication Protocol over Transport Layer Security (EAP-TLS)** Second generation Wi-Fi security. Current Wi-Fi security standards (802.1x) define the use of the TLS protocol encapsulated within the Extensible Authentication Protocol (EAP) as one of the strongest security mechanisms for Wi-Fi. Using EAP-TLS provides well-regarded, standards-based security between an access point and a Wi-Fi client. This is a Microsoft standard.

- A form of 802.1X (EAP) authentication
- Uses client and server certificates for mutual authentication (PKI)
- TLS 1.0 (Transport Layer Security) is based on Secure Socket Layer (SSL) 3.0

**Extensible Authentication Protocol over Tunneled Transport Layer Security (EAP-TTLS)** EAP-TTLS is an extension of EAP-TLS which provides for certificate-based, mutual authentication of the client and network. Unlike EAP-TLS, however, EAP-TTLS requires only server-side certificates, eliminating the need to configure certificates for each WLAN client. In addition, it supports legacy password protocols, so you can deploy it against your existing authentication system (such as tokens or Active Directories.) It securely tunnels client authentication within TLS records, ensuring that the user remains anonymous to eavesdroppers on the wireless link and the entire network to the RADIUS server.

**firmware** This is the term used to specify the printer's operating program. This program is downloaded to the printer from a host computer and stored in FLASH memory. Each time the printer power is turned on, this operating program starts. This program controls when to feed the media forward or backward and when to print a dot on the label stock.

**FLASH memory** FLASH memory is non-volatile and maintains the stored information intact when power is off. This memory area is used to store the printer's operating program. In addition, this memory can be used to store optional printer fonts, graphic formats, and complete label formats.

**Font** A complete set of alphanumeric characters in one style of type. Examples include CG Times™, CG Triumvirate Bold Condensed™.

**ips (inches-per-second)** The speed at which the label or tag is printed. Zebra printers can print from 1 ips to 12 ips.

**Kerberos** Network authentication protocol that uses the concept of a time-limited “ticket” for access to network resources. Kerberos uses key distribution and client/server authentication.

**light emitting diode (LED)** Indicators of specific printer status conditions. Each LED is either off, on, or blinking depending on the feature being monitored.

### **Lightweight Extensible Authentication Protocol**

**(LEAP or Lightweight EAP)** A non-standard Wireless Security protocol from Cisco. LEAP uses mutual authentication, meaning that both the user and the access point must be authenticated before access to the LAN is allowed. Mutual authentication can help protect wireless networks from rogue access points, man-in-the-middle attacks, sniffing attacks, and active attacks. Based on 802.1X EAP protocol.

**liquid crystal display (LCD)** The LCD is a back-lit display that provides the user with either operating status during normal operation or option menus when configuring the printer to a specific application.

**media** Material onto which data is printed by the printer. Types of media include: tag stock, die-cut labels, continuous labels (with and without media liner), non-continuous media, fanfold media, and roll media.

**media sensor** This sensor is located behind the printhead to detect the presence of media and, for non-continuous media, the position of the web, hole, or notch used to indicate the start of each label.

**non-continuous media** Media that contains an indication of where one label/printed format ends and the next one begins. Examples are die-cut labels, notched tag-stock, and stock with black mark registration marks.

**non-volatile memory** Electronic memory that retains data even when the power to the printer is turned off.

**Protected Extensible Authentication Protocol (PEAP)** A draft standard for a common approach to wireless-network user authentication.

- A form of 802.1X authentication
- Currently an IETF draft (still subject to change)
- Performs mutual client/server authentication using transport layer security (TLS), but only requires a server certificate
- With no client certificate, configuration is easier than EAP-TLS

**peel-off** A mode of operation in which the printer peels a printed label away from the backing and allows the user to remove it before another label is printed. Printing pauses until the label is removed.

**print speed** The speed at which printing occurs. For thermal transfer printers, this speed is expressed in terms of ips (inches per second).

**printhead wear** The degradation of the surface of the printhead and/or the print elements over time. Heat and abrasion can cause printhead wear. Therefore, to maximize the life of the printhead, use the lowest print darkness setting (sometimes called burn temperature or head temperature) and the lowest printhead pressure necessary to produce good print quality. In the thermal transfer printing method, use ribbon that is as wide or wider than the media to protect the printhead from the rough media surface.

**registration** Alignment of printing with respect to the top (vertical) or sides (horizontal) of a label or tag.

**symbology** The term generally used when referring to a bar code.

**tear-off** A mode of operation in which the user tears the label or tag stock away from the remaining media by hand.

**thermal transfer** A printing method in which the printhead presses an ink or resin coated ribbon against the media. Heating the printhead elements causes the ink or resin to transfer onto the media. By selectively heating the printhead elements as the media and ribbon move past, an image is printed onto the media. Contrast this with *direct thermal*.

**Wi-Fi Protected Access (WPA)** WPA is a security protocol for wireless local area networks (WLANs) that includes encryption and user authentication.

**Wireless Encryption Protocol (WEP)** WEP is a security protocol for wireless local area networks (WLANs) that secures data transmissions using 64-bit or 128-bit encryption.

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