Ruckus Wireless™ ZoneFlex™ P300 Wireless Bridge

User Guide

Part Number 800-70956-001 Rev B
Published November 2015

www.ruckuswireless.com

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Contents

About This Guide

This guide describes how to install, configure, and manage the Ruckus Wireless™ ZoneFlex™ P300 802.11ac, 5GHz, point-to-point and point-to-point, outdoor Wireless Bridge. This guide is written for those responsible for installing and managing network equipment. Consequently, it assumes that the reader has basic working knowledge of local area networking, wireless networking, and wireless devices. The ZoneFlex P300 802.11ac Wireless Bridge is referred to in the rest of this document as the **ZoneFlex P300**, **bridge**, **root bridge**, or **non-root bridge**.

NOTE This guide assumes that the ZoneFlex P300 has already been configured and installed as described in the *ZoneFlex P300 Getting Started Guide* and *ZoneFlex P300 Wireless Bridge Mounting Guide*.

NOTE If the information in the release notes differs from the information in this guide, follow the instructions in the release notes.

Most user guides and release notes are available in Adobe Acrobat Reader Portable Document Format (PDF) or HTML on the Ruckus Wireless Support Web site at

https://support.ruckuswireless.com/documents

Terms Used in This Guide

Ruckus Wireless recommends that you become familiar with the following terms:

- *bridge:* ZoneFlex P300 wireless bridge.
- *Wireless bridge:* the wireless link between a root bridge and a non-root bridge.
- *Manager:* Ruckus Wireless FlexMaster AP and bridge manager.
- *Non-root bridge:* the ZoneFlex P300 connected to an associated root bridge over the wireless link.
- *Root bridge:* the ZoneFlex P300 connected to the wired Ethernet backhaul.

Safety Warnings

WARNING! Only trained and qualified personnel should be allowed to install, replace, or service this equipment. The professional installer is responsible for the proper installation and configuration of this ZoneFlex P300. The ZoneFlex P300 installation must comply with local regulatory requirements, especially with those regulating operation near military and/or weather radar systems.

WARNING! Installation of this equipment must comply with local and national electrical codes.

WARNING! Do not operate your wireless device near unshielded blasting caps or in an explosive environment unless the device has been modified to be especially qualified for such use.

WARNING! In order to comply with FCC radio frequency (RF) exposure limits, antennas should be located at a minimum of 7.9 inches (20 cm) or more from the body of all persons.

WARNING! Ruckus Wireless strongly recommends that you wear eye protection before mounting the ZoneFlex P300.

CAUTION! Make sure that you form a 80mm - 130mm (3”-5”) drip loop in any cable that is attached to the ZoneFlex P300 or the building. This will prevent water from running along the cable and entering the ZoneFlex P300 or the building where the cable terminates.

CAUTION! Be sure that grounding is available and that it meets local and national electrical codes. For additional lightning protection, use lightning rods and lightning arrestors.

NOTE Allowable external antenna types and antenna gains may be limited by local regulatory requirements.

Related Documentation

In addition to this *User Guide*, the ZoneFlex P300 documentation set includes the following:

- *Getting Started Guide* and *Mounting Guide* documents: Provide essential configuring and installing information to help you get the ZoneFlex P300 up and running within minutes.
- *Online Help:* Provides instructions for performing tasks using the ZoneFlex P300's Web interface. Online help is accessible from within the Web interface.
- *Release Notes* document: Provides information about the current software release, including new features, enhancements, and known issues.

NOTE For information on Ruckus Wireless access points supported by FlexMaster (FM) managers, refer to their respective Release Notes and associated user documents.

Documentation Feedback

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docs@ruckuswireless.com

When contacting us, please include the following information:

- Document title
- Document part number (on the cover page)
- Page number (if appropriate)

For example:

- ZoneFlex P300 Wireless Bridge User Guide
- Part number: 800-70956-001 Revision B
- Page 11

Please note that we can only respond to comments and questions about Ruckus Wireless product documentation at this email address. Questions related to technical support or sales should be directed in the first instance to your network supplier.

Document Conventions

Table 1 and Table 2 list the text and notice conventions that are used throughout this guide.

Table 1. Text conventions

Convention	Description	Example
monospace	Represents information as it appears on screen	**[Device name]>**
monospace bold	Represents information that you enter	**[Device name]> set ipaddr 10.0.0.12**
default font bold	Keyboard keys, software buttons, and field names	On the **Start** menu, click **All Programs.**
italics	Screen or page names	Click **Advanced Settings**. The *Advanced Settings* page appears.

Table 2. Notice conventions

Notice Type	Description
NOTE	Information that describes important features or instructions.
CAUTION!	Information that alerts you to potential loss of data or potential damage to an application, system, or device.
WARNING!	Information that alerts you to potential personal injury.

Introducing the ZoneFlex P300

1

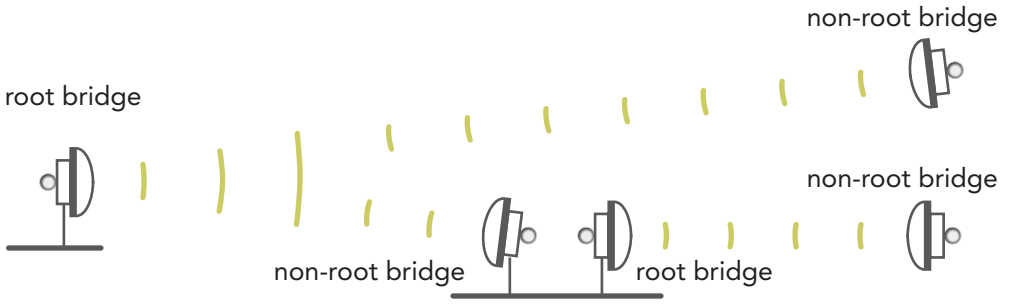
In this chapter:

ZoneFlex P300 Overview

The ZoneFlex P300 is an 802.11ac smart Wi-Fi backhaul system that delivers fast and reliable connectivity across long distances. The ZoneFlex P300 features simple installation, automatic pairing and intuitive aiming and configuration procedures so that you can bridge two or more networks together quickly and efficiently.

The ZoneFlex P300 can be deployed as a root bridge connected to the Ethernet backhaul, or can be deployed as a non-root bridge connected to the root bridge via the wireless link. The ZoneFlex P300 can be equipped with customer-purchased external 5GHz antennas to increase the root bridge-to-non-root bridge connectivity range, or to increase the number of non-root bridges that a root bridge can communicate with.

Figure 1. ZoneFlex P300s deployed as root bridge and non-root bridge



NOTE When deployed in the root bridge--non-root bridge -to- root bridge--non-root bridge configuration, the two wireless links must use different SSIDs.

NOTE When two ZoneFlex P300s are mounted closely together (for instance, on the same pole), make sure that the active antennas are mounted at least one meter (39.3 inches) apart. When there is more separation, it is less likely that either ZoneFlex P300 will experience avoidable RF interference. If possible, the units should be on different channels, but this separation should be maintained even when the ZoneFlex P300s are using different channels.

Your ZoneFlex P300 can be deployed in standalone mode with or without a FlexMaster (FM) manager.

NOTE For more information on the Ruckus Wireless system, including FlexMaster and other Ruckus Wireless technologies, visit www.ruckuswireless.com

Unpacking the ZoneFlex P300

1 Open the ZoneFlex P300 package, and then carefully remove the contents.
2 Return all packing materials to the shipping box, and put the box away in a dry location.
3 Verify that all items listed in Package Contents are included in the package.
4 Check each item for damage. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.

Package Contents

NOTE Appendix A: Customer-Orderable Parts includes pictures and descriptions of other factory-orderable and customer-supplied parts.

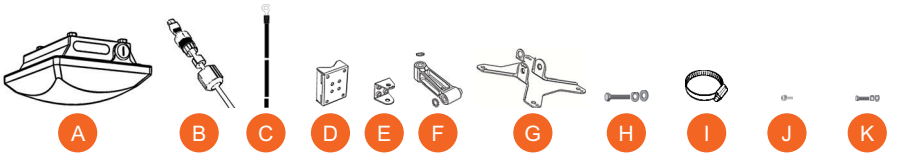
Before configuring or deploying your ZoneFlex P300, verify that all items listed below are included in the package. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.

- One or two ZoneFlex P300 kits, depending on ordered part:
  - 901-P300-xx01, ZoneFlex P300, 802.11ac 5GHz point-to-point wireless bridge, includes one ZoneFlex P300 kit
  - 901-P300-xx02, ZoneFlex P300, 802.11ac 5GHz point-to-point wireless bridge, pre-provisioned pair, includes two ZoneFlex P300 kits
  - where 'xx' is a country-specific code.
- Each ZoneFlex P300 kit contains:
  - One ZoneFlex P300, which includes a 12mm stainless steel M6x1 Phillips earth ground screw with split lock and flat washers (A in Figure 2)
  - One M25 data cable gland (B in Figure 2)
  - One green/yellow earth ground wire with ring terminal (C in Figure 2)
  - One wall- or pole-mounting bracket (D in Figure 2)
  - One U-joint bracket (E in Figure 2)

- One linkage bracket with two serrated external-tooth lock washers (F in Figure 2)
- One ZoneFlex P300 bracket (G in Figure 2)
- Two sets 50mm stainless steel M8x1.25 hex bolt with split lock and flat washers (H in Figure 2)
- Four SAE32-sized stainless steel clamps, 38.1mm to 63.5mm (1.5" to 2.5") inner diameter (I in Figure 2)
- Four sets stainless steel 8mm M4x0.7 pan head Phillips screws with split lock and flat washers (J in Figure 2)
- Eight sets stainless steel 0.5-inch x 0.250-28 hex bolts with split lock and flat washers (K in Figure 2)
- Service Level Agreement/Limited Warranty Statement
- Regulatory Statement
- Declaration of Conformity, if required
- *ZoneFlex P300 Wireless Bridge Quick Setup Guide*
- *ZoneFlex P300 Wireless Bridge Mounting Guide*
- *N-Type Connector Sealing Instructions*

NOTE This kit includes extra mounting hardware. You may use the extras wherever required.

Figure 2. ZoneFlex P300 field-installation kit contents



Getting to Know the Hardware Features

This section identifies the physical features of the ZoneFlex P300. Figure 3 shows the significant features and Table 3 describes these features.

Figure 3. ZoneFlex P300 hardware features

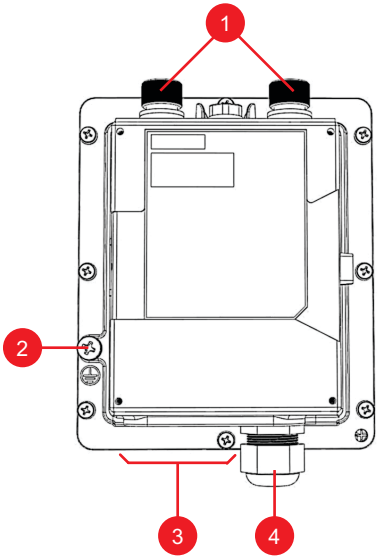


Table 3. ZoneFlex P300 hardware feature descriptions

No.	Feature	Description
1	5 GHz external antenna ports	5GHz 50-ohm N-type connectors. Can be used with customer-purchased external antennas for operator-defined coverage areas and point-to-point deployments.
2	Earth ground point	Use the factory-supplied ground wire and ground screw/washer set, connect a good earth ground to this ZoneFlex P300 chassis ground point.
3	LEDs	Refer to LEDs and What They Mean.

Table 3. ZoneFlex P300 hardware feature descriptions (Continued)

No.	Feature	Description
4	M25 cable gland, Aiming button, and Reset button	The ZoneFlex P300 uses one Ethernet cable for data and Power over Ethernet (PoE). Plug the Ethernet cable into the RJ-45 connector under the cable gland. • Use the cable gland to attach and seal the cable to the ZoneFlex P300 chassis. • Loosen and move the cable gland to the side to expose the Aiming and Reset buttons. (Refer to Ethernet Connector, Aiming Button and Reset Button.)

Continue with the following:

- LEDs and What They Mean
- Ethernet Connector, Aiming Button and Reset Button
- LEDs and What They Mean

LEDs and What They Mean

The ZoneFlex P300 has five LEDs visible on the outside of the chassis (Figure 4). The LEDs have different operating modes, and which can be manually turned on and off by the operator. Refer to Table 4 for a description of these LEDs and their operating modes.

Figure 4. ZoneFlex P300 LEDs

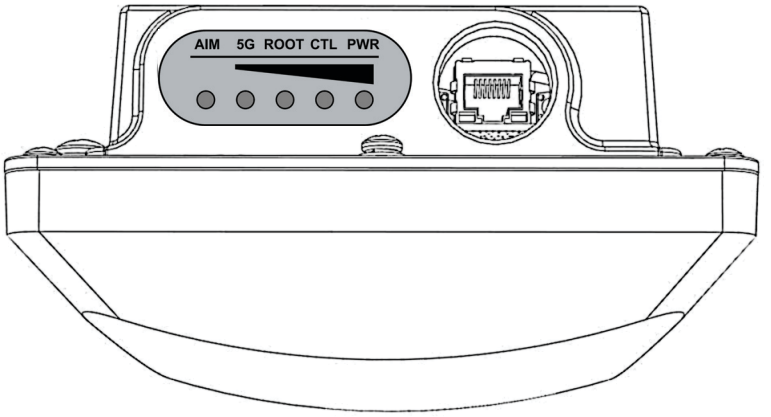


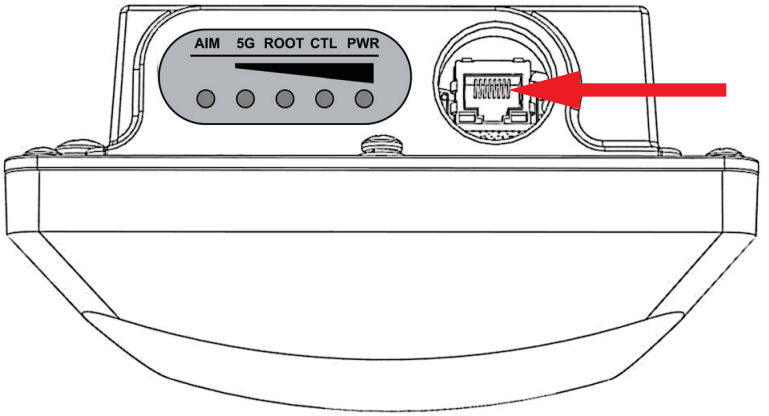
Table 4. ZoneFlex P300 LED descriptions

LED	Normal Mode	Aiming Mode (all green)
PWR	• Red = booting • Green = normal operation	Aiming Strength 4 • Solid: Min + 36 RSSI (RSSI >= 42) • Blinking: Min + 32 RSSI (42> RSSI >= 36)
CTL	• Off = standalone operation • Other modes = to be determined	Aiming Strength 3 • Solid: Min + 24 RSSI (36 > RSSI >= 30) • Blinking: Min + 18 RSSI (30 > RSSI >= 24)
ROOT	• Off = non-root bridge • Solid green = root bridge	Aiming Strength 2 • Solid: Min + 12 RSSI (24 > RSSI >= 18) • Blinking: Min + 6 RSSI (18 > RSSI >= 12)
5G	• Off = radio down • Solid green = radio up & link up • Flashing green = radio up but no link	Aiming Strength 1 • Solid: RSSI >= Configured Minimum (12 > RSSI >= 6) • Blinking: RSSI < Configured minimum (Default: 6 which is configurable)
AIM	• Green = aiming mode • Off = normal mode	• Green = aiming mode (**Note**) • Off = normal operation mode
Note: The P300 remains in aiming mode for 15 minutes after aiming is started.		

Ethernet Connector, Aiming Button and Reset Button

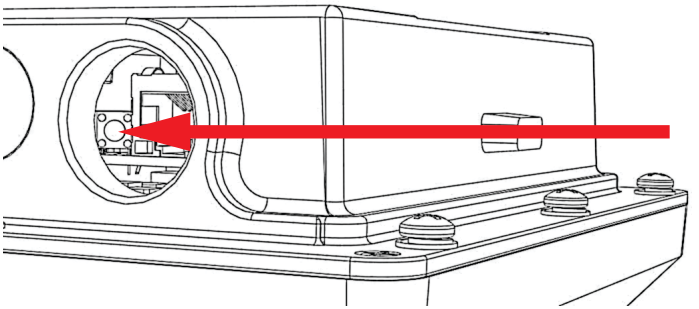
The ZoneFlex P300 cable gland is used to attach and seal the data and PoE Ethernet cable to the ZoneFlex P300 chassis. Plug the Ethernet cable into the RJ-45 connector under the cable gland (Figure 5). Loosen and move the cable gland aside to expose the Aiming (Figure 6) and Reset (Figure 7) buttons.

Figure 5. ZoneFlex P300 Ethernet connector



Pressing and holding the Aiming button (Figure 6) for four or more seconds puts the ZoneFlex P300 into aiming mode; the P300 remains in aiming mode for 15 minutes after aiming is started. All the LEDs turn green and enter the aiming mode described in Table 4. Table 4 lists the signal strengths associated with each of the LEDs.

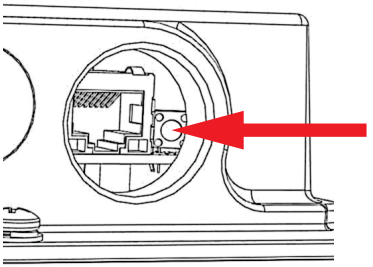
Figure 6. ZoneFlex P300 Aiming button



To reboot the ZoneFlex P300, press the Reset button (Figure 7). To reset the ZoneFlex P300 to factory defaults, press and hold the Reset button for six or more seconds; the ZoneFlex P300 resets its configuration to the factory default and reboots.

CAUTION! Resetting the ZoneFlex P300 to its factory defaults causes the ZoneFlex P300 to lose all configuration settings, including the provisioning, or pairing, of the root bridge and non-root bridge pairs. If you do need to reset a ZoneFlex P300 to factory defaults, you will need to re-provision the ZoneFlex P300. In factory default state, the role of all ZoneFlex P300 units is root bridge. Therefore, running the factory default procedure on any ZoneFlex P300 results in that unit be coming unreachable on the non-root bridge default IP address (192.168.2.254).

Figure 7. ZoneFlex P300 Reset button



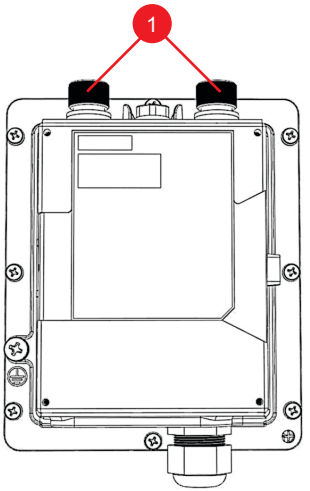
External Antenna Connectors

The ZoneFlex P300 Wireless Bridge includes one internal directional antenna. If you want to extend the range of your wireless network or widen the root bridge coverage to more than one non-root bridge, you can connect an external 5GHz antenna to the two standard N-type external antenna connectors on the top panel of the ZoneFlex P300. The antenna must have a gain of less than 23dBi to comply with FCC and CE regulations. For more information, refer to your local regulations.

The ZoneFlex P300 is shipped from the factory with two metal caps protecting the external antenna connectors (1 in Figure 8). If you are not connecting external antennas to the ZoneFlex P300, then make sure that the metal caps remain installed and securely fastened to protect the connectors from elements, such as water and dirt.

NOTE When two ZoneFlex P300s are mounted closely together (for instance, on the same pole), make sure that the active antennas are mounted at least one meter (39.3 inches) apart. When there is more separation, it is less likely that either ZoneFlex P300 will experience avoidable RF interference. If possible, the units should be on different channels, but this separation should be maintained even when the ZoneFlex P300s are using different channels.

Figure 8. ZoneFlex P300 external antenna connectors



Installing the Access Point

This guide assumes that the ZoneFlex P300s have already been installed and have already been initially configured as described in the *ZoneFlex P300 Wireless Bridge Quick Setup Guide* and *ZoneFlex P300 Wireless Bridge Mounting Guide*. The following sections contain additional information, if required:

- Aiming Point-to-Point ZoneFlex P300s
- Aiming Point-to-Multipoint ZoneFlex P300s
- Verifying Association Between the ZoneFlex P300s
- Setting the Distance Between Root Bridge and Non-Root Bridges
- Verifying the Connection

Aiming Point-to-Point ZoneFlex P300s

The ZoneFlex P300 wireless bridge throughput depends on an accurate alignment of the two communicating ZoneFlex P300s, because the highest throughput is generally achieved with the strongest signal. The ZoneFlex P300 is equipped with an internal aiming function that is based on the received signal strength indicator (RSSI) power measurement. Table 4 lists the signal strengths associated with each of the LEDs.

NOTE For point-to-multipoint installations, refer to Aiming Point-to-Multipoint ZoneFlex P300s.

NOTE When two ZoneFlex P300s are mounted closely together (for instance, on the same pole), make sure that the active antennas are mounted at least one meter (39.3 inches) apart. When there is more separation, it is less likely that either ZoneFlex P300 will experience avoidable RF interference. If possible, the units should be on different channels, but this separation should be maintained even when the ZoneFlex P300s are using different channels.

As described in the *ZoneFlex P300 Wireless Bridge Mounting Guide*, the ZoneFlex P300 has two buttons inside the PoE IN port.

1 Press and hold the Aiming button (closer to the LEDs) to put the ZoneFlex P300 into aiming mode and then point the ZoneFlex P300 antenna toward the far-end ZoneFlex P300 antenna. (The P300 remains in aiming mode for 15 minutes after aiming is started.)

2 Use the 5G through PWR LEDs to determine the signal strength:
   - When all four 5G through PWR LEDs are solid green, the ZoneFlex P300 is receiving the strongest signal possible.
   - When some LEDs are flashing green or off, reposition the ZoneFlex P300 antenna to achieve a better signal.
   - When the highest number of LEDs are solid green, tighten the antenna or ZoneFlex P300 mount to align the antenna with the strongest signal.

3 Repeat this procedure for the far-end ZoneFlex P300.

Continue with Verifying Association Between the ZoneFlex P300s.

Aiming Point-to-Multipoint ZoneFlex P300s

In a point-to-multipoint installation, the procedure is slightly different.

NOTE For point-to-point installations, refer to Aiming Point-to-Point ZoneFlex P300s.

NOTE When two ZoneFlex P300s are mounted closely together (for instance, on the same pole), make sure that the active antennas are mounted at least one meter (39.3 inches) apart. When there is more separation, it is less likely that either ZoneFlex P300 will experience avoidable RF interference. If possible, the units should be on different channels, but this separation should be maintained even when the ZoneFlex P300s are using different channels.

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1 Choose the “optimal pair” (one root bridge and one non-root bridge) for your network. The “optimal pair” can be determined by placement location, throughput requirements, or other factors.

   For example, if you are installing three non-root bridges spaced away from each other, you would likely want to choose the one closest to the middle of the root bridge coverage area. This can help provide an optimal balance of performance for all three non-root bridges.

2 Complete the aiming procedure for the selected “optimal pair” first, as described in Aiming Point-to-Point ZoneFlex P300s.

3 Repeat the aiming procedure for each additional non-root bridge, while leaving the root bridge antenna fixed.

Continue with Verifying Association Between the ZoneFlex P300s.

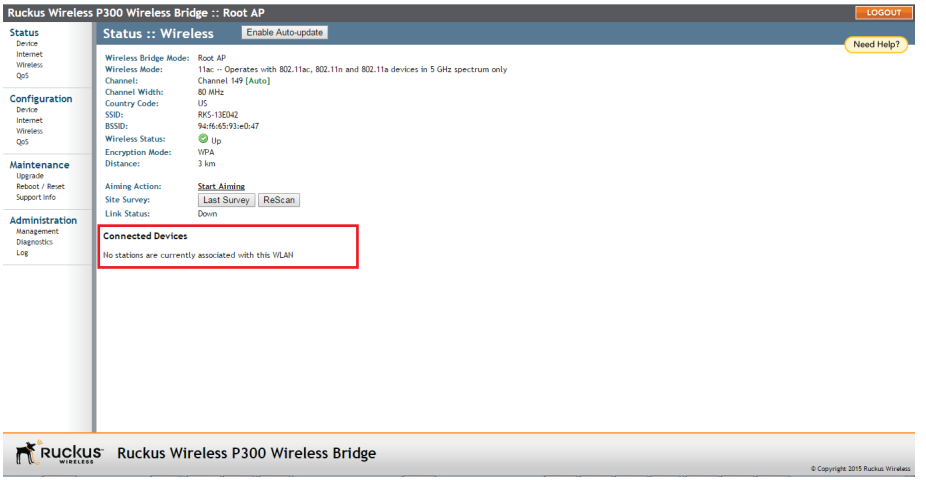
Verifying Association Between the ZoneFlex P300s

Once the initial configuration and installation procedures have been completed, verify that your ZoneFlex P300s have associated with one another.

1 If not already done, log into the root bridge Web interface as described in Logging Into the ZoneFlex P300 Web Interface.

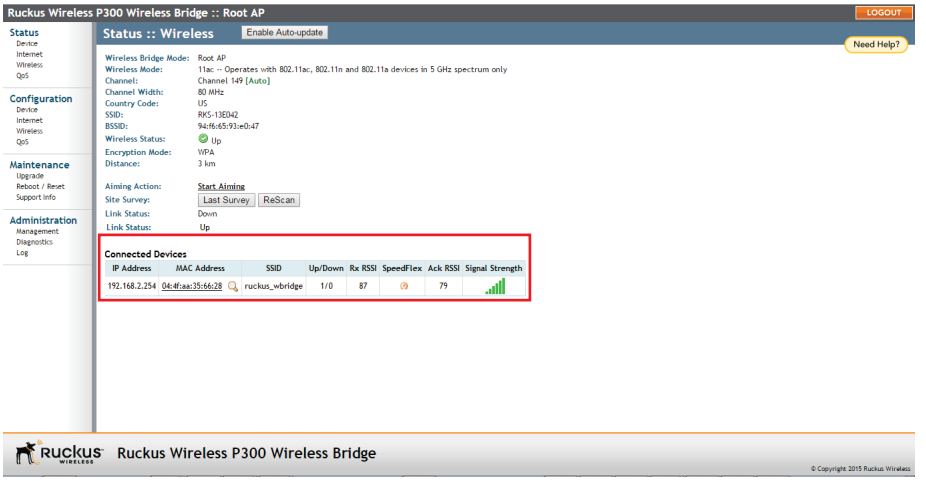
2 Navigate to **Status > Wireless**. The Web interface displays the *Status > Wireless* page. If no association has been established, then the ZoneFlex P300 displays:

Figure 9. No association established



3 The ZoneFlex P300s automatically associate with one another, usually within one to two minutes. Once the association is complete, the *Status > Wireless* page refreshes and displays the *Connected Devices* information as shown:

Figure 10. Association established



4 If no association is established after a few minutes, make sure that the *SSID* and *Passphrase* are set to the same values, and that *Channel* is set to **SmartSelect** (or to the same channel, if set manually) as described in Configuring Wireless Settings.

   If all of these settings are correct and the ZoneFlex P300s still fail to associate, then the Web interface provides several tools for diagnosing the problem, which can be found by navigating to **Administration > Diagnostics.** Tools include *Ping, Traceroute, Show ARP Table* and *Show FDB Table* as described in Running Diagnostics.

After the ZoneFlex P300s are associated with each other, continue with Setting the Distance Between Root Bridge and Non-Root Bridges.

Setting the Distance Between Root Bridge and Non-Root Bridges

1 If not already done, log into the root bridge Web interface as described in Logging Into the ZoneFlex P300 Web Interface.

2 Navigate to **Configuration > Wireless**. The Web interface displays the *Configuration > Radio 5G* page.

3 On the *Configuration > Radio 5G* page, click **Edit Advanced Settings** next to *Advanced Settings.* The Web interface displays the *Configuration > Radio 5G > Advanced* page.

4 In the *Configuration* > *Radio 5G* > *Advanced* page, select the approximate distance between the root bridge and non-root bridges from the *Distance* drop-down menu. (Default=3km.)

5 Click **Update Settings** to confirm your changes.

After you have set the distance between the root bridge and non-root bridges, continue with Verifying the Connection.

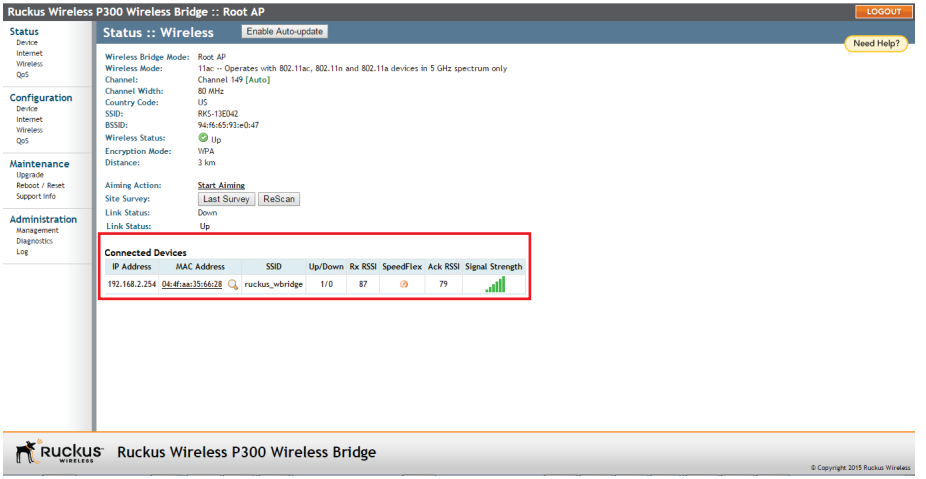
Verifying the Connection

Once you have completed the hardware installation and aiming procedure for all ZoneFlex P300s, verify the connection and signal integrity between a root bridge and non-root bridge pair using the following procedure:

1 If not already done, log into the root bridge Web interface as described in Logging Into the ZoneFlex P300 Web Interface.

2 Navigate to **Status > Wireless**. On the *Status* > *Wireless* page, make sure that the non-root bridge is listed in the *Connected Devices* section.

Figure 11. Viewing connected devices from the Web interface

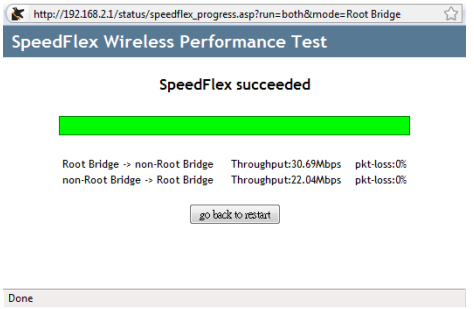


3 On the *Status* > *Wireless* page, click the SpeedFlex icon to launch the SpeedFlex Wireless Performance Test.

4 Click **Start** to begin testing.

5 Once the test is completed, the following result page is displayed.

Figure 12. SpeedFlex Performance Test succeeded



Refer to Configuring the ZoneFlex P300 to fine-tune the ZoneFlex P300 configuration, or refer to Managing the ZoneFlex P300 to monitor and operate the ZoneFlex P300.

Navigating the Web Interface

2

In this chapter:

Before You Begin: Preconfiguring the ZoneFlex P300

NOTE ZoneFlex P300s are shipped from the factory with ZoneFlex P300 100.x base image firmware, which supports standalone and FlexMaster (FM) manager operation. The ZoneFlex P300 100.1.0.9 base image does not support Ruckus Wireless controller operation.

NOTE DO NOT connect the ZoneFlex P300 to your live network at this point. If you connect it to a live network with an active DHCP server, the ZoneFlex P300 can acquire a new IP address from the DHCP and you may be unable to access it via the default IP address (192.168.2.1).

Logging Into the ZoneFlex P300 Web Interface

This section describes the steps you need to complete to set up the ZoneFlex P300 in standalone mode or to be managed by a Ruckus Wireless FlexMaster manager, if you have one installed on the network.

1 Collect the required materials: before starting with the configuration task, make sure that you have the following requirements ready:

- An administrative computer (notebook computer) with an Ethernet port and a wireless card installed.
- A Web browser such as Chrome 39 or later, Firefox 33 or later, or Internet Explorer 10 or later installed on the administrative computer.
- One Cat5e unshielded twisted pair (UTP) Ethernet cable.

You can manage your ZoneFlex P300 with the integrated Web interface. However, if your Ruckus Wireless network is managed by a Ruckus Wireless controller, then you can manage ZoneFlex P300s using the controller rather than individually logging into each ZoneFlex P300's Web interface.

NOTE The following procedure assumes that you know the static IP address of the ZoneFlex P300, or you have some means of determining the dynamic IP address of the ZoneFlex P300. The PC you use for ZoneFlex P300 administration should be on the management VLAN, if VLANs are used in your network.
Refer to the *ZoneFlex P300 Wireless Bridge Quick Setup Guide* for instructions on how to connect an administrative computer to the ZoneFlex P300.

2 On the PC, open a Web browser window.

3 In the address or location bar, type the IP address of the ZoneFlex P300. Default IP address for standalone ZoneFlex P300s:

192.168.2.1 (or **192.168.2.254** for non-root bridges)

4 Press <Enter> to connect to the Web interface.

5 If a Windows security alert dialog box appears, then click **Yes** or **OK** or **Proceed anyway** (depending on the browser) to continue. The Ruckus Wireless Admin login page appears.

6 In *Username*, type **super**.

7 In *Password*, type **sp-admin**.

8 Click **Login**.

The ZoneFlex P300 Web interface appears.

Navigating the Web Interface

You can manage the ZoneFlex P300 through a Web browser-based interface using any networked computer. Table 5 lists the Web interface features that are identified in Figure 13.

Figure 13. Elements of the ZoneFlex P300 Web Interface

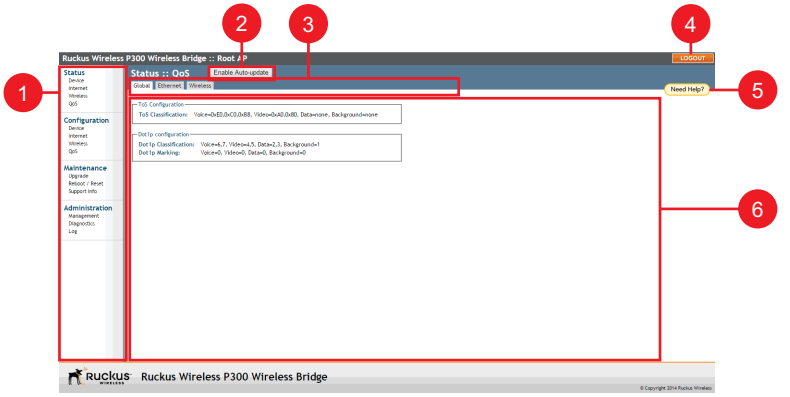


Table 5. ZoneFlex P300 Web interface elements

No.	Element	Description
1	Menu	Under each category (Status, Configuration, etc.) are options that, when clicked, open the related workspace in the area to the right.
2	Enable Auto-update button	Enable or disable automatic refresh of this interface page. For example, on the *Status* > *Wireless* page, you can enable auto-update during Aiming, so that you do not need to manually refresh the page as you adjust the orientation of the ZoneFlex P300.
3	Tabs	Contains additional options for the page.
4	LOGOUT button	Click this button to log out of the ZoneFlex P300.
5	Help button	Click this button to open a help window with information related specifically to the options currently displayed in the workspace.
6	Workspace	This large area displays features, options and indicators relevant to your menu bar choices.

Configuring the ZoneFlex P300

3

NOTE If the ZoneFlex P300 has been configured with Ruckus Wireless controller-compatible firmware, then the ZoneFlex P300 controller-compatible firmware is already installed and configured; you have completed the ZoneFlex P300 installation. When you plan to manage your Ruckus Wireless network using a Ruckus Wireless controller, refer to the associated controller user documents, available from the Ruckus Wireless website at

http://support.ruckuswireless.com/documents

If the ZoneFlex P300 is to be run in a standalone configuration or is to be managed by a FlexMaster manager, then continue with this section.

This chapter provides instructions for configuring ZoneFlex P300s in a standalone configuration or when the ZoneFlex P300 is to be managed by a FlexMaster manager.

System configuration settings are divided into wireless configuration settings, bridge configuration settings and QoS settings. The *Configuration* > *Wireless* page allows you to set parameters that affect the wireless link between the root bridge and non-root bridges. Note that any configuration changes on this page made for one unit must also be made for the other units.

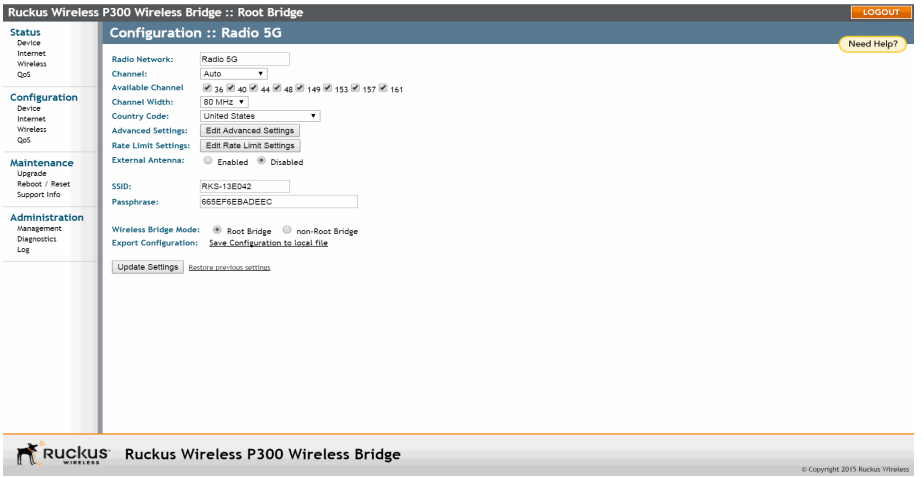
The *Configuration* > *Bridge* page allows you to set parameters specific to the unit you are currently accessing, such as device name, location, login name and password.

In this chapter:

Configuring Wireless Settings

1 Go to **Configuration** > **Wireless**. The *Configuration* > *Radio 5G* page (Figure 14) appears.

Figure 14. Typical Configuration > Radio 5G page



2 Make changes to the wireless settings listed in the table below.

Table 6. Wireless settings

Setting	Description
Radio Network	Allows you to change the name of the 5GHz radios (default: *Radio 5G*).
Channel	This option lets you select the channel used by the network. You can choose **Auto**, or choose a specific channel. If you choose *Auto,* then the ZoneFlex P300 automatically selects the best channel (encountering the least interference) to transmit the signal.
Available Channel	This option lets you limit the channels used by the ZoneFlex P300. Check the boxes for the allowed channels, and uncheck the boxes for the disallowed channels.

Table 6. Wireless settings (Continued)

Channel Width	The option to choose 40 MHz channel width theoretically provides double the data capacity of a 20 MHz channel. However, more channel width means fewer channels available, and more interference with other wireless signals. The option to choose 80 MHz channel width theoretically provides four times the data capacity of a 20 MHz channel. However, more channel width means fewer channels available, and more interference with other wireless signals.
Country Code	This option (if enabled) lets you select your country or region code. **CAUTION:** *Selecting the incorrect country or region may result in violation of applicable laws. If you purchased the ZoneFlex P300 in the United States of America, you do not need to set the country code manually. Ruckus Wireless devices that are sold in the USA are preconfigured with the correct country code and this setting is not configurable.*
Advanced Settings	Refer to Editing Advanced Settings.
Rate Limit Settings	Refer to Rate Limiting.
External Antenna	ZoneFlex P300s provide two external antenna ports, in case you want to attach external antenna(s) to extend the range or coverage area of your wireless network. To enable the ZoneFlex P300 to use the external antenna(s), select the **Enabled** option in this section. This option is disabled by default.
Cable Loss	(Only if *External Antenna* is **Enabled**.) Enter the external antenna cable loss. Default = 5dB.
External Antenna Gain	(Only if *External Antenna* is **Enabled**.) Set the external antenna gain as required to comply with local and regional regulations. Default = 5dBi.
SSID	This is the publicly-broadcast name of your wireless network. SSIDs can contain up to 32 alphanumeric characters and are case-sensitive. The maximum SSID length can only contain between 2 and 32 characters, including characters from ! (char 33) to ~ (char 126). Default = ruckus_wbridge.
Passphrase	Enter a new passphrase between 8 and 32 characters long, using any combination of printable characters (letters, numbers, hyphens and underscores).

Table 6. Wireless settings (Continued)

Wireless Bridge Mode	Used to manually designate the unit as the root bridge or non-root bridge. By default, the ZoneFlex P300 is configured to automatically obtain an IP address from a DHCP server on the network. If the ZoneFlex P300 does not detect a DHCP server, it automatically assigns itself a static IP address to make it easier for you to preconfigure and deploy it on your network. The default IP addresses for the root bridge and non-root bridge (if no DHCP server is available) are as follows: • root bridge: 192.168.2.1 • non-root bridge: 192.168.2.254 Also refer to Reversing Root Bridge and Non-Root Bridge Roles.
Export Configuration	Only available from the root bridge Web interface. Use this link to save a root bridge configuration file to an admin computer. This configuration file can then be used to easily configure non-root bridges with matching settings.

3 Click **Update Settings** to have the ZoneFlex P300 save your changes.

Editing Advanced Settings

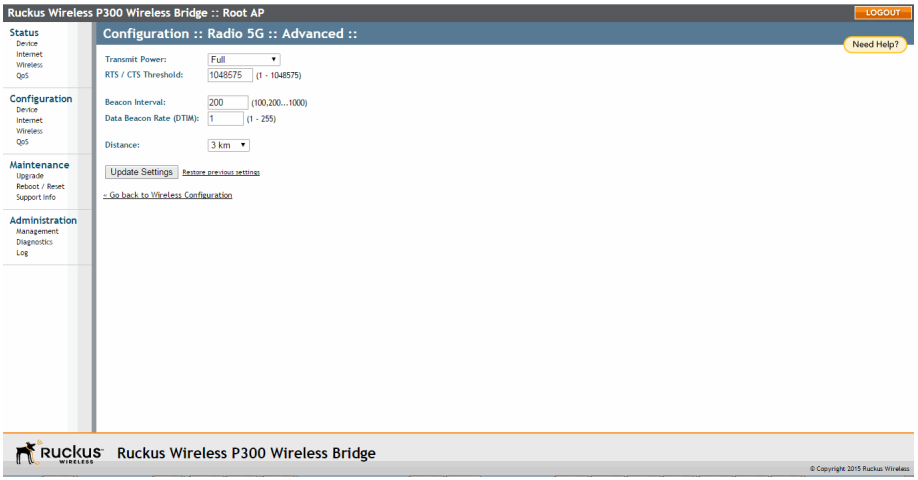
Advanced wireless settings should only be changed by an experienced administrator. Incorrect settings can severely impact wireless performance. It is recommended that the default settings be retained for best performance.

NOTE To fully benefit from the ZoneFlex P300's capabilities, it is advisable not to change these values unless absolutely necessary.

1 Go to **Configuration** > **Wireless**. The *Configuration* > *Radio 5G* page appears.

2 On the *Configuration* > *Radio 5G* page, click **Edit Advanced Settings**. The *Configuration* > *Radio 5G* > *Advanced* page (Figure 15) appears.

Figure 15. The Configuration > Radio 5G > Advanced page



3 Configure the advanced settings listed in Table 7 as required.

Table 7. Advanced wireless common settings

Option	Description
Transmit Power	The default setting is **Full**. Select the level of transmit power from the drop-down menu. This option sets the maximum transmit power level relative to the predefined power (this value differs according to the current country code).

Table 7. Advanced wireless common settings (Continued)

RTS/CTS Threshold	This option determines at what packet length the RTS/CTS function is triggered. A lower threshold may be necessary in an environment with excessive signal noise or hidden nodes, but may result in some performance degradation. (The default value is 1048575.)
Beacon Interval	The value indicates the frequency interval of the beacon in milliseconds. A beacon is a broadcast packet sent by the ZoneFlex P300 to synchronize the wireless network. (The default value is 200.)
Data Beacon Rate (DTIM)	The value indicates the interval of the delivery traffic indication message (DTIM). This is a countdown field that the device uses to inform its clients of the next window for listening to broadcast or multicast messages. (The default value is 1.)
Distance	Manually setting a distance can help operators configure RTS/CTS thresholds and other wireless settings. Select the approximate distance (within 1 km) between root bridge and non-root bridges. **NOTE:** Set the root bridge to the distance of the farthest away non-root bridge (in kilometers). Set non-root bridges to the actual distance to the root bridge.

4 Click **Update Settings** to have the ZoneFlex P300 save and apply the changes.

Rate Limiting

Rate Limiting allows you to cap per-client data transfer rates.

1 Go to **Configuration** > **Wireless**. The *Configuration* > *Radio 5G* page appears.

2 Click **Edit Rate Limit Settings** next to *Rate Limit Settings*. The *Rate Limit List* page appears.

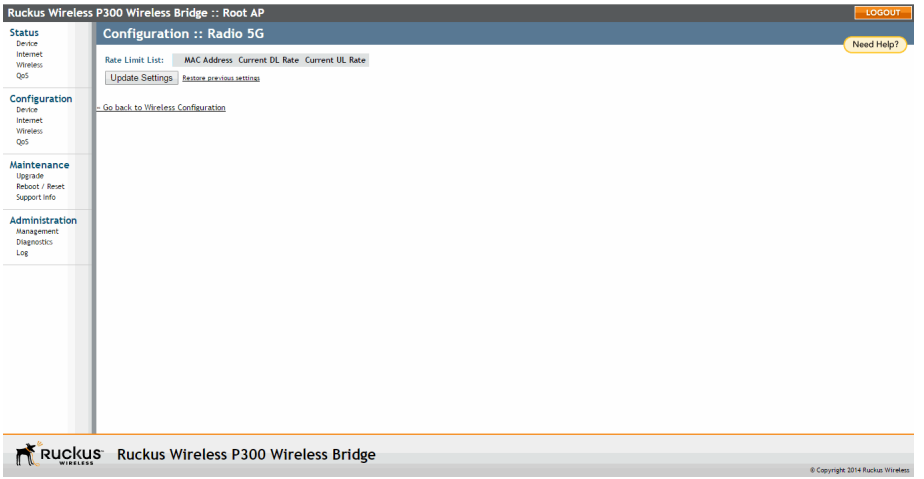
3 Set the maximum *Downlink* and *Uplink* rate per station.

The table below your selections updates to show the maximum transfer rate per station for each traffic type.

4 Click **Update Settings** to have the ZoneFlex P300 save your changes.

You have completed configuring the rate limiting options. To reopen the previous page, click the **Go back to Wireless Configuration** link.

Figure 16. Limit per-station traffic rates



Configuring Device Settings

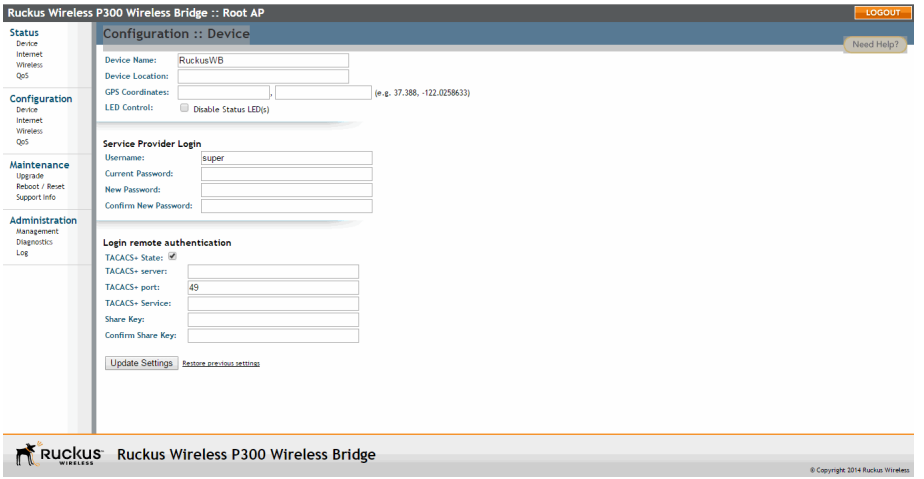
This section describes how to view and configure physical, network and management settings specific to this ZoneFlex P300. Topics discussed include:

- Configuring the ZoneFlex P300 Name, Location, GPS Coordinates, and LED Appearance
- Changing the Administrator Username and Password
- Configuring TACACS+ Remote Login Information

Configuring the ZoneFlex P300 Name, Location, GPS Coordinates, and LED Appearance

1 Navigate to **Configuration** > **Device**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Device* page (Figure 17).

Figure 17. The Configuration > Device page



2 In *Device Name,* type a new name for the device or leave as is to accept the default device name (`RuckusWB`). The device name identifies this ZoneFlex P300 among other devices on the network.

3 Configure the following optional settings as desired:

- Enter an alphanumeric *Device Location* to keep track of the physical location of the ZoneFlex P300, if required.
- In *GPS Coordinates,* enter the GPS coordinates, if required.

- Under *LED Control*, check the *Disable Status LED(s)* box to turn off the status LEDs. This can be useful when the ZoneFlex P300 is installed in a public location, to avoid drawing attention to the ZoneFlex P300.

4 Click **Update Settings** to have the ZoneFlex P300 save and apply your changes.

Changing the Administrator Username and Password

1 Navigate to **Configuration** > **Device**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Device* page (Figure 17).

2 Under *Service Provider Login,* change the ZoneFlex P300 Web GUI login information as required:

- *Username:* Type the name that you want to use for logging into the Web interface. The default user name is `super`.
- *Current Password:* When you are changing the password, enter the existing password here.
- *New Password:* When you are changing the password, enter the new password. The password must consist of six to 32 alphanumeric characters.
- *Confirm New Password:* Retype the new password to confirm.

3 Click **Update Settings** to have the ZoneFlex P300 save and apply your changes.

Configuring TACACS+ Remote Login Information

1 Navigate to **Configuration** > **Device**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Device* page (Figure 17).

2 Under *Login remote authentication,* click the **TACACS+ State** box to enable the TACACS+ server interface, if required.

NOTE Terminal Access Controller Access-Control System Plus (TACACS+) is an AAA protocol used to authenticate administrator login to this device. Users can be authenticated/authorized to monitor, operate or configure this device. Default is disabled.
Administrators can be assigned any of the following three administration privilege levels:

- *Super Admin* (Perform all configuration and management tasks)
- *Operator Admin* (Change settings affecting single ZoneFlex P300s only)
- *Monitoring Admin* (Monitoring and viewing operation status only)

If the TACACS+ server state is enabled, then configure the TACACS+ server parameters:

- *TACACS+ server*: IPv4 or IPv6 server address.
- *TACACS+ port*: 49 is the default, but it can be set to any available TCP port.
- *TACACS+ Service*: Login name.
- *Share Key*: TACACS+ Password.
- *Confirm Share Key*: retype the TACACS+ Password.

3 Click **Update Settings** to have the ZoneFlex P300 save and apply your changes.

Configuring Internet Settings

Internet settings define how the ZoneFlex P300 connects to your local area network and to the Internet. This section describes how to view and configure the ZoneFlex P300's Internet settings. Topics discussed include:

VLAN Overview

The ZoneFlex P300 is like a network switch, in that it supports Wi-Fi connections. As such, like many advanced switches, ZoneFlex P300s conform to the IEEE 802.1Q standard -- the standard that defines virtual LANs. In an 802.1Q switch, the concept of VLANs is always present. If a packet arrives without an 802.1Q header, it is assigned to the *native VLAN* or *untag VLAN.*

The single ZoneFlex P300 wireless interface is assigned to assigned a single VLAN, and is configured to pass all VLAN traffic as a Trunk Port.

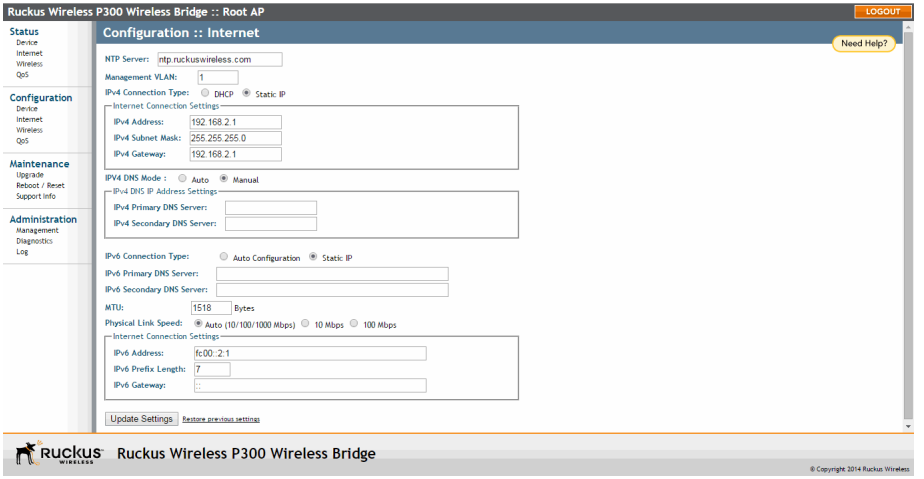
The ZoneFlex P300 Ethernet port is also configured to pass all VLAN traffic as a Trunk Port.

Configuring an NTP Server

A network time protocol (NTP) server should be configured to ensure that the ZoneFlex P300 maintains the correct time. The default Ruckus Wireless NTP Server (*ntp.ruckuswireless.com*) can be used if you do not have an NTP server on your network.

1 Navigate to **Configuration** > **Internet**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Internet* page (Figure 18).

Figure 18. The Configuration > Internet page



2 Enter the host name in the *NTP Server* text box at the top of the page.

3 Click **Update Settings** to have the ZoneFlex P300 save and apply your change.

Configuring the Management VLAN

NOTE Changing the Management VLAN causes you to be immediately disconnected from the Web interface if the computer you are using is not on the same VLAN. Do not change the Management VLAN unless your admin PC is on the same VLAN, or you are disconnected and unable to connect again without factory resetting the ZoneFlex P300.

1 Navigate to **Configuration** > **Internet**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Internet* page (Figure 18).

2 Enter the VLAN ID in the *Management VLAN* text box.

3 Click **Update Settings** to have the ZoneFlex P300 save and apply your change.

Obtaining and Assigning an IP Address

By default, the ZoneFlex P300 is configured to automatically obtain an IPv4 address from a DHCP server on the network. If the ZoneFlex P300 does not detect a DHCP server, it automatically assigns itself the static IP address `192.168.2.1` for a root bridge, or `192.168.2.254` for a non-root bridge to make it easier for you to configure and deploy it on your network.

For IPv6, the Auto Configuration setting serves the same purpose as DHCP. The default static IPv6 address is `fc00::2:1` for a root bridge and `fc00::2:254` for a non-root bridge.

There are three methods of assigning IP addresses to the ZoneFlex P300:

- DHCP/Auto Configuration
- Configuring a Static IP

DHCP/Auto Configuration

When you leave the ZoneFlex P300 at its default configuration, it automatically attempts to obtain an IPv4 address from a DHCP server on the network.

In an IPv6 network environment, the ZoneFlex P300 attempts to obtain an IPv6 address from an IPv6 Auto Configuration server.

Refer to the following:

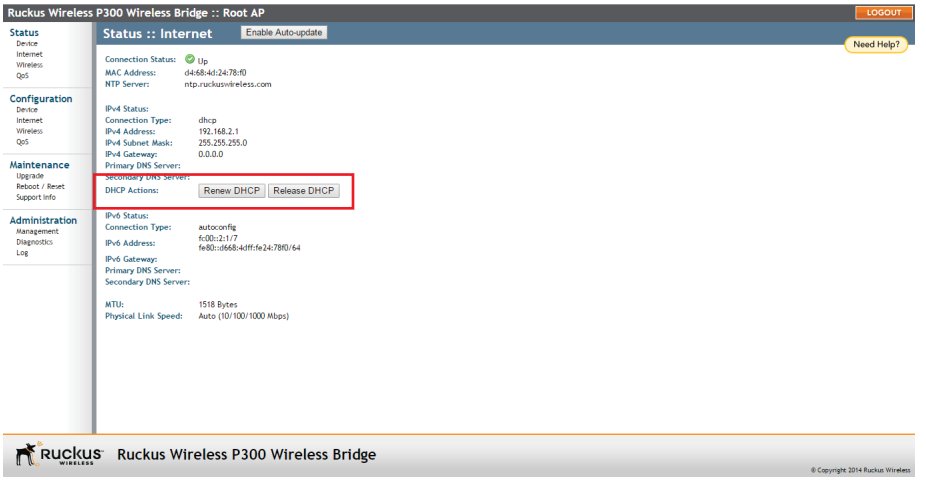
- Renewing and Releasing DHCP
- Configuring IPv4 DHCP with Auto or Manual DNS Configuration
- Configuring IPv6 Auto Configuration

Renewing and Releasing DHCP

This task should be performed only if you have access to the DHCP server or have some way to determine what IP address has been assigned to the ZoneFlex P300. It serves as a troubleshooting technique when IP addresses to one or more networked devices prove to be unusable or in conflict with others, or when the ZoneFlex P300 loses its DHCP-assigned IP address for some reason.

1 Navigate to **Status** > **Internet**. The ZoneFlex P300 Web GUI displays the *Status* > *Internet* page (Figure 19).

Figure 19. Renew or release DHCP



2 If the current *Connection Type* is **dhcp**, then you are able to see the currently-assigned IP address and subnet mask listed below.

- To force the ZoneFlex P300 to release its DHCP-assigned IP address, click **Release DHCP**. This disconnects the user from Web interface as the system reverts to its default IP address. Log into the device using the default IP address (**`192.168.2.1`** for a root bridge or **`192.168.2.254`** for a non-root bridge) and click **Renew DHCP** to request a new lease from the DHCP server.
- Click **Renew DHCP** to request a new IP address lease from the DHCP server. **Note:** *The IP address may or may not change depending on the lease time offered to this device.*

Configuring IPv4 DHCP with Auto or Manual DNS Configuration

If you leave the ZoneFlex P300 at its default configuration, it attempts to obtain an IPv4 address from a DHCP server on the network.

1 Navigate to **Configuration** > **Internet**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Internet* page (Figure 18).

2 In *IPv4 Connection Type*, select **DHCP**.

3 In *IPv4 DNS Mode*, select **Auto** or **Manual**.

- When you select *Auto*, the ZoneFlex P300 automatically searches for an IPv4 DNS server.
- When you select *Manual*, also make the following entries:

- *IPv4 Primary DNS Server:* The IP address of the primary Domain Name System (DNS) server.
- *IPv4 Secondary DNS Server:* The IP address of the secondary DNS server.

4 Click **Update Settings** to have the ZoneFlex P300 save your changes

Configuring IPv6 Auto Configuration

In an IPv6 network environment, the ZoneFlex P300 attempts to obtain an IPv6 address from an IPv6 Auto Configuration server.

1 Navigate to **Configuration** > **Internet**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Internet* page (Figure 18).

2 In *IPv6 Connection Type*, select **Auto Configuration.**

3 In *IPv6 Primary DNS Server*, enter the IP address of the primary IPv6 DNS server.

4 In *IPv6 Secondary DNS Server*, enter the IP address of the secondary IPv6 DNS server.

5 Click **Update Settings** to have the ZoneFlex P300 save your changes

Configuring a Static IP

There are at least two instances when you need to configure a static IP address for the ZoneFlex P300:

- If the current IP address that the ZoneFlex P300 is using consistently conflicts with that of another device on the network.
- If you want to switch from DHCP to static IP addressing to manage and maintain the ZoneFlex P300.

Unless you are able to determine the IP address assigned by the DHCP/Auto Configuration server to the ZoneFlex P300, it may prove helpful for anyone needing administrative access to assign a static IP address.

You can configure static addresses for IPv4, IPv6 or both. The ZoneFlex P300 maintains both sets of IP address settings if both are configured.

1 Navigate to **Configuration** > **Internet**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Internet* page (Figure 18).

2 In *IPv4 Connection Type* and/or *IPv6 Connection Type*, select **Static IP**.

3 When the *Internet Connection Settings* options appear, you can make changes to the following settings:

- (IPv6 only) *IPv6 Primary DNS Server:* The IP address of the primary IPv6 DNS server.
- (IPv6 only) *IPv6 Secondary DNS Server:* The IP address of the secondary IPv6 DNS server.
- *IPv4/IPv6 Address:* Enter the static IP address that you want to assign to the ZoneFlex P300 in either IPv4 (dot-decimal) or IPv6 (colon-separated) format.
- *IPv4 Subnet Mask* or *IPv6 Prefix Length:* Enter the subnet mask or prefix length for the network.
- *IPv4/IPv6 Gateway:* Enter the gateway IP address of the Internet interface.

4 (IPv4 only) In *IPv4 DNS Mode*, select **Auto** or **Manual**.

- When you select *Auto*, the ZoneFlex P300 automatically searches for an IPv4 DNS server.
- When you select *Manual*, also make the following entries:
  - *IPv4 Primary DNS Server:* The IP address of the primary DNS server.
  - *IPv4 Secondary DNS Server:* The IP address of the secondary DNS server.

5 Click **Update Settings** to have the ZoneFlex P300 save your changes.

Configuring the MTU Size

You can adjust the maximum transmission unit (MTU) as follows:

1 Navigate to **Configuration** > **Internet**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Internet* page (Figure 18).

2 In the *MTU* text box, enter the largest protocol data unit that the ZoneFlex P300 can transmit and receive (default = 1518).

NOTE The MTU must be set to the same value on both ends of each link.

---

3 Click **Update Settings** to have the ZoneFlex P300 save your changes.

Configuring QoS

QoS configuration allows you to classify and prioritize traffic according to either ToS or Dot1p classifications. This section is for advanced network configuration. In general, the default values should be retained for optimal traffic prioritizing.

CAUTION! Do not customize these options unless you are an experienced network administrator or are under the guidance of an IT/support professional. These settings should only be changed in rare circumstances, in situations where the default settings need to be changed to match those of a non-standard network configuration.

NOTE When Dot1p classification and ToS classification are both enabled, Dot1p classification takes precedence. Therefore, if you want to use ToS classification, Dot1p classification should be disabled.

Define the quality of service (QoS) traffic shaping as follows:

- Configuring Global QoS
- Configuring Ethernet QoS
- Configuring Wireless QoS

Configuring Global QoS

1 Navigate to **Configuration** > **QoS**.

2 Click the **Global** tab. The ZoneFlex P300 Web GUI displays the *Configuration* > *QoS* > *Global* page (Figure 20).

Figure 20. Configuration > QoS > Global page

NOTE ToS Classification: Type of Service values are entries in a field in the IP header of an incoming or outgoing packet used to classify IP packets into different WMM priority queues. WMM priority queues consist of four traffic types called Access Categories. The four Access Categories are as follows:

- Voice: voice traffic gets the highest priority
- Video: video traffic is given a higher priority than data or background traffic
- Data: low priority traffic
- Background: traffic that is less sensitive to latency and delays

3 Set the *TOS Classification* by entering hex values into the following text boxes. The hex values are used to classify packets into the four WMM queues using ToS values.
   - Voice -- Default = 0xE0,0xC0,0xB8
   - Video -- Default = 0xA0,0x80
   - Data -- Default = none
   - Background -- Default = none

NOTE The Dot1p value is a field in the VLAN header that indicates the priority of a VLAN-tagged packet. Dot1p classification is similar to ToS classification--when a packet enters the ZoneFlex P300 from an interface, it is classified and prioritized

according to its Dot1p value. However, while ToS values apply to any IP packet that enters the device, Dot1p values apply only to traffic belonging to the specified VLANs.

For example, if *Dot1p Classification* is Enabled in the *Ethernet* tab and the value in *Dot1p Classification VLAN IDs* is set to 10, this means that Dot1p Classification will be performed on any ingress VLAN-tagged packets from the wireless interface whose VLAN ID is 10, and it will not be performed on any other packet whose VLAN ID is not 10.

The values used to prioritize traffic are intuitive: they range from 0 to 7, with 0 being the lowest priority and 7 being highest priority.

---

4 Set the *Dot1p Classification* by entering numeric (0-7) values into the following text boxes. The numeric values are used to classify VLAN-tagged packets into priority queues based on the VLAN ID. In Dot1p Classification VLAN IDs, enter the VLANs for which you want to enable Dot1p classification. You can enter any combination of individual VLAN IDs separated by commas, or enter a range (for example, 1-4094).
   - Voice -- Default = 6,7
   - Video -- Default = 4,5
   - Data -- Default = 2,3
   - Background -- Default = 1

NOTE Dot1p Marking is the reverse operation of Dot1p Classification. Marking involves setting the value of certain bits in the packet header to indicate the packet priority.

   Also set the *Dot1p Marking* by entering numeric (0-7) values into the following text boxes. The numeric values are used to classify VLAN-tagged packets based on priority queue values. For example, if the Dot1p marking value is 10, then the ZoneFlex P300 only performs Dot1p marking on packets whose VLAN ID is 10.
   - Voice -- Default = 0
   - Video -- Default = 0
   - Data -- Default = 0
   - Background -- Default = 0

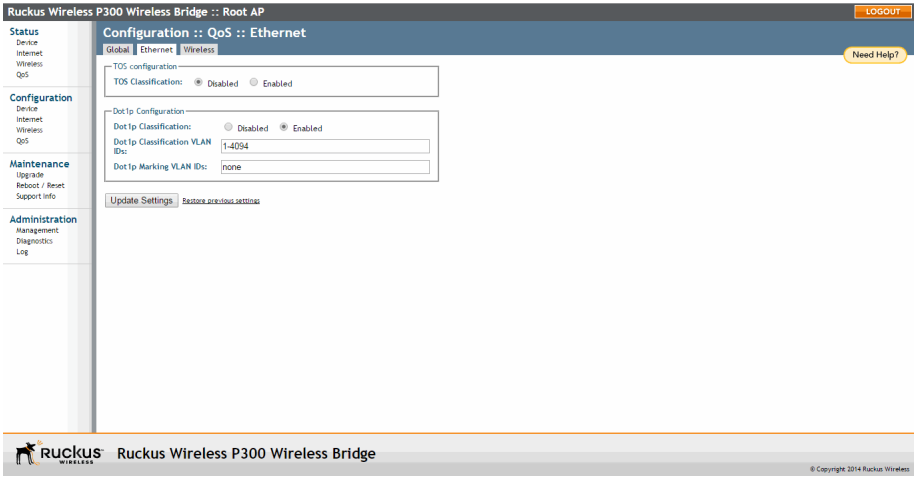
5 Click **Update Settings** to have the ZoneFlex P300 save your changes.

Configuring Ethernet QoS

1 Navigate to **Configuration** > **QoS**.

2 Click the **Ethernet** tab. The ZoneFlex P300 Web GUI displays the *Configuration* > *QoS* > *Ethernet* page (Figure 21).

Figure 21. Configuration > QoS > Ethernet page



3 Set the Ethernet QoS using the following entries:

- *TOS Classification* -- **Enabled** or **Disabled** on the Ethernet port. Default =
- *Dot1p Classification* -- **Enabled** or **Disabled** on the Ethernet port. Default =
- *Dot1p Classification VLAN IDs* -- you can enter any combination of individual VLAN IDs separated by commas, or enter a range (for example, 1-4094) on the Ethernet port. Default = 1-4094.
- *Dot1p Marking VLAN IDs* -- entering numeric (0-7) values into this text box. The numeric value is used to classify VLAN-tagged packets based on priority queue values on the Ethernet port. Default = none.

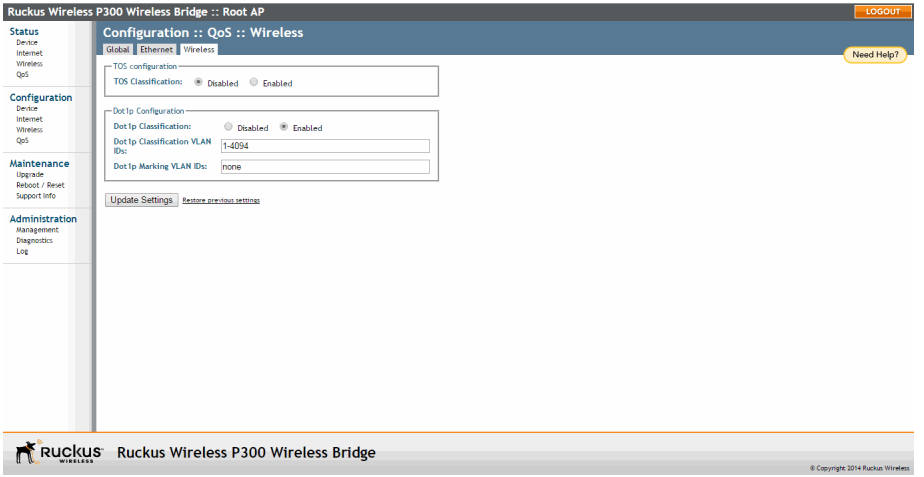
4 Click **Update Settings** to have the ZoneFlex P300 save your changes.

Configuring Wireless QoS

1 Navigate to **Configuration** > **QoS**.

2 Click the **Global** tab. The ZoneFlex P300 Web GUI displays the *Configuration* > *QoS* > *Wireless* page (Figure 22).

Figure 22. Configuration > QoS > Wireless page



3 Set the *TOS Classification* using the following entries:

- *TOS Classification* -- **Enabled** or **Disabled** on the wireless link. Default =
- *Dot1p Classification* -- **Enabled** or **Disabled** on the wireless link. Default =
- *Dot1p Classification VLAN IDs* -- you can enter any combination of individual VLAN IDs separated by commas, or enter a range (for example, 1-4094) on the wireless link. Default = 1-4094.
- *Dot1p Marking VLAN IDs* -- entering numeric (0-7) values into this text box. The numeric value is used to classify VLAN-tagged packets based on priority queue values on the wireless link. Default = none.

4 Click **Update Settings** to have the ZoneFlex P300 save your changes.

Reversing Root Bridge and Non-Root Bridge Roles

You can manually change the role of a non-root bridge to a root bridge, and vice versa. This procedure requires that you directly log into both units using an admin computer, as changing the role of either ZoneFlex P300 disrupts the wireless link.

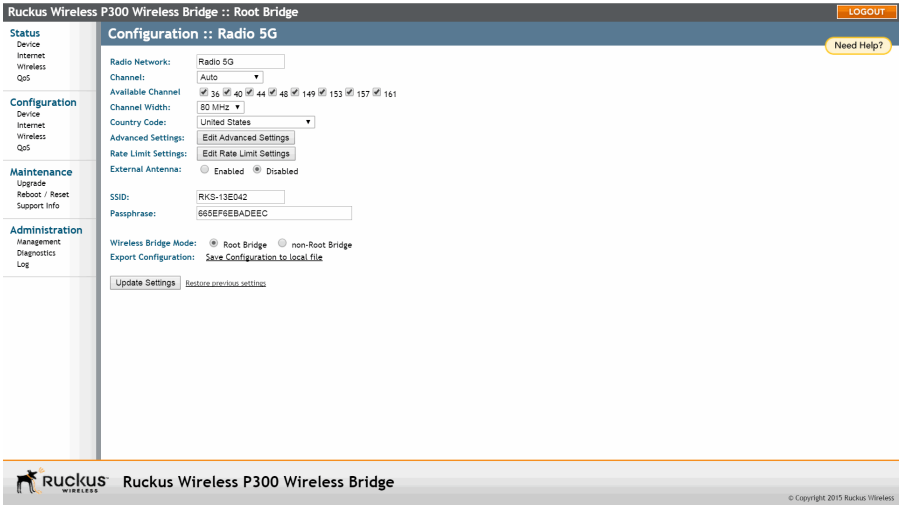
NOTE When you are changing the role over the air, you need to configure the remote ZoneFlex P300s first followed by the local ZoneFlex P300 to avoid loss of connectivity.

---

1 Configure the admin computer, connect it to the ZoneFlex P300, and log into the ZoneFlex P300 Web GUI as described in Logging Into the ZoneFlex P300 Web Interface.

2 Navigate to **Configuration** > **Wireless**. The ZoneFlex P300 Web GUI displays the *Configuration* > *Radio 5G* page (Figure 23).

Figure 23. Changing the role from root bridge to non-root bridge



3 In the *Wireless Bridge Mode* parameter, select **Root Bridge** or **non-Root Bridge**.

4 A warning message appears, indicating that a reboot is required. Click **OK**.

5 Click *Update Settings*. The ZoneFlex P300 puts the setting changes into effect immediately, and begins a reboot.

6 Once the reboot is complete, the role is reversed.

7 Repeat this procedure for each device whose role you want to change.

Managing the ZoneFlex P300

4

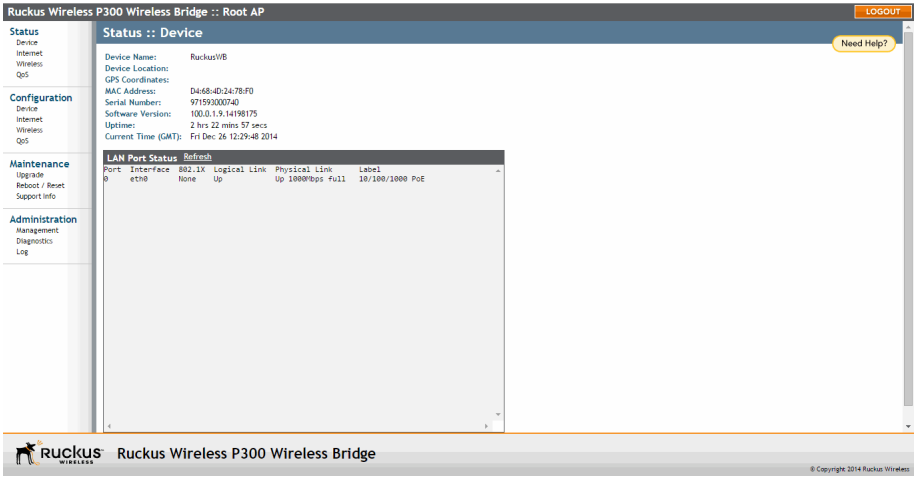
In this chapter:

This chapter provides instructions for managing standalone ZoneFlex P300s using the ZoneFlex P300 Web interface. For information on managing your network using a Ruckus Wireless controller or FlexMaster (FM) manager, refer to the relevant User Guide, available from the Ruckus Wireless Support website.

Viewing Current Device Status

The *Status* > *Device* page displays a general overview of the ZoneFlex P300's current status, including device name, MAC address, serial number, current software (image) version, and so on.

Figure 24. The Status > Device page



Viewing Current Internet Status

The *Status* > *Internet* page displays information on the ZoneFlex P300's network settings; that is, the settings that allow the ZoneFlex P300 to communicate with your local network and the Internet. Information includes IP address, gateway, DNS server, NTP server and connection type (method of obtaining an IP address -- DHCP or static IP), and so on.

The *Status* > *Internet* page also allows you to perform renew and release DHCP actions, as described in Renewing and Releasing DHCP.

Figure 25. The Status > Internet page

Viewing Current Wireless Status

If you want to view the current ZoneFlex P300 wireless settings and status, go to the **Status** > **Wireless** page. Table 8 lists the descriptions of each wireless setting.

Figure 26. The Status > Wireless page

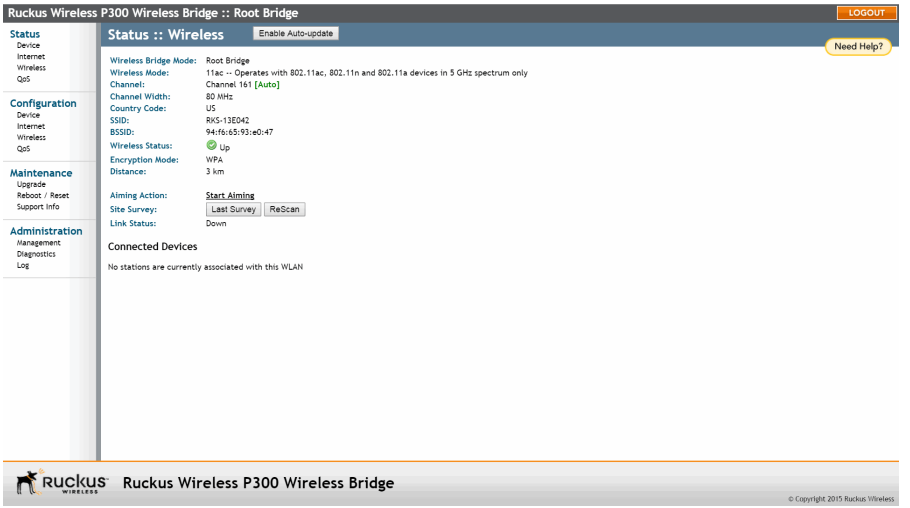


Table 8. Common Wireless settings

Setting	Description
Wireless Bridge Mode	Shows the wireless mode that the ZoneFlex P300 is currently using. Possible values include: • *Root Bridge* • *non-Root Bridge*
Wireless Mode	Lists the supported 802.11 devices and the spectrum used.
Channel	Shows the wireless channel that the ZoneFlex P300 is currently using. If you set the wireless channel to *SmartSelect,* this field shows the value *Channel # [Auto].*
Channel Width	Displays whether the channel width is set to *20MHz*, *40MHz* or *80MHz.*

Table 8. Common Wireless settings (Continued)

Country Code	Shows the country code that the ZoneFlex P300 has been set to use. **CAUTION:** *Verify that the ZoneFlex P300 is using the correct country code to make sure it uses only the allowed radio channels in your region. Selecting the incorrect country code may result in violation of applicable laws.*
SSID	Assigned service set identifier.
BSSID	Factory-defined basic service set identifier/MAC address.
Wireless Status	Whether the wireless network is Enabled and Up or Down.
Broadcast SSID?	Whether SSID broadcast is Enabled or Disabled.
Encryption Mode	Always WPA.
Distance	Operator-entered distance between root bridge and non-root bridge (in km).
Aiming Action	Current Aiming status. (**Note:** The P300 remains in aiming mode for 15 minutes after aiming is started.)
Site Survey	Click to view the results of the most-recent interference survey, or to rescan for current interference.
Link Status	Whether the root bridge-to-non-root bridge link is Up or Down.
Connected Devices	List all devices connected to this ZoneFlex P300.

If you want to make changes to any of these settings, then refer to Configuring Wireless Settings for more information.

Viewing Current QoS Status

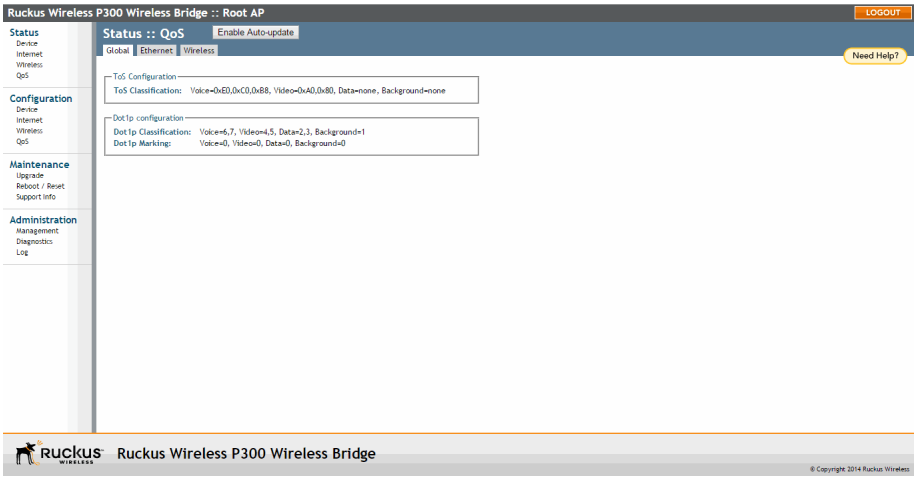
View the quality of service (QoS) status as follows:

- Viewing Global QoS
- Viewing Ethernet QoS
- Viewing Wireless QoS

Viewing Global QoS

Figure 27 shows the *Status* > *QOS* > *Global* page. Refer to Configuring Global QoS for a description of the information on this page.

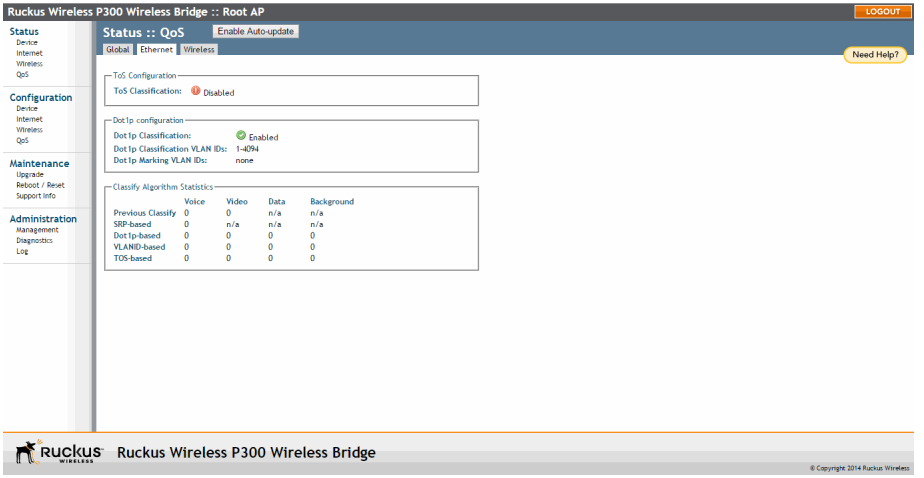
Figure 27. The Status > QOS > Global page



Viewing Ethernet QoS

Figure 28 shows the *Status* > *QOS* > *Ethernet* page. Refer to Configuring Ethernet QoS for a description of the information on this page.

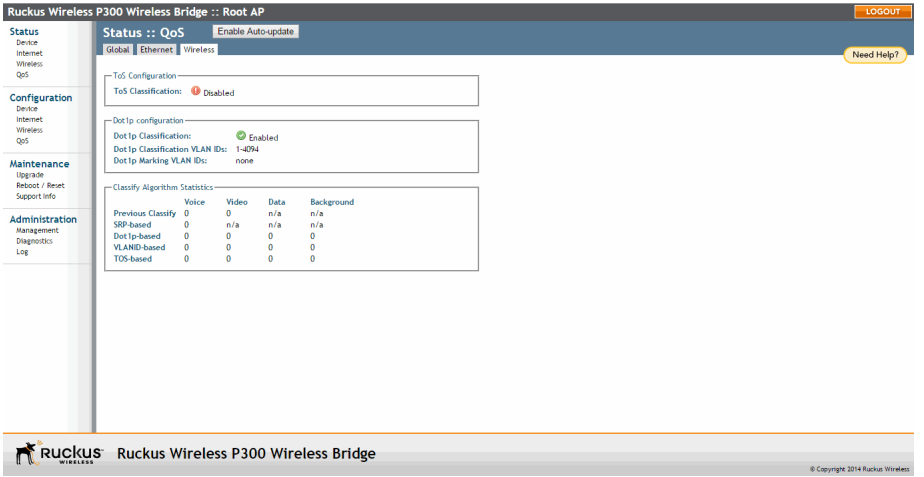
Figure 28. The Status > QOS > Ethernet page



Viewing Wireless QoS

Figure 29 shows the *Status* > *QOS* > *Wireless* page. Refer to Configuring Wireless QoS for a description of the information on this page.

Figure 29. The Status > QOS > Wireless page



Manually Upgrading the Firmware

You can use the Web interface to check for software updates/upgrades for the firmware image built into the ZoneFlex P300. You can then apply these updates to the device in one of two ways: (1) manually updating on an as-needed basis, as described in this section, or (2) automating a regularly scheduled update, as described in Scheduling Automatic Firmware Upgrades.

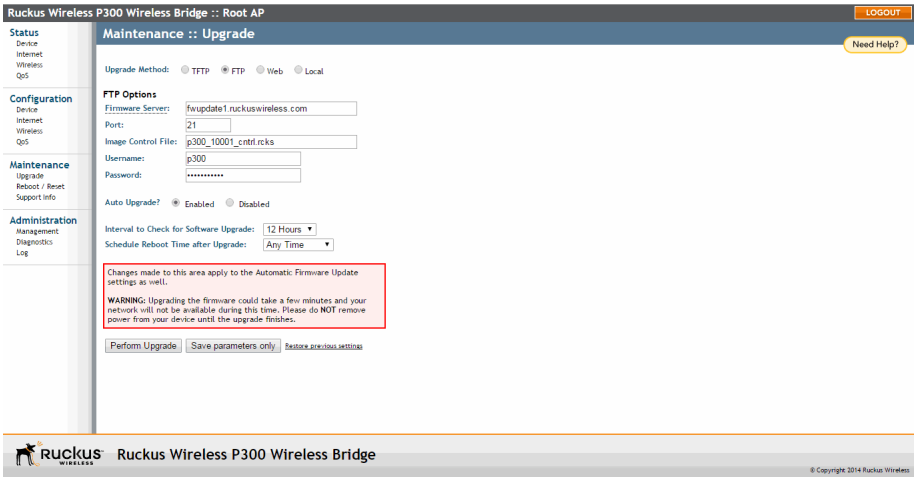
Before starting, decide which option you want to take:

- Automate a regularly scheduled update.
- Run a one-time manual update right now.

By default, the automatic upgrade option is disabled.

1 To upgrade the firmware image, go to **Maintenance** > **Upgrade**. The ZoneFlex P300 Web GUI displays the *Maintenance* > *Upgrade* page (Figure 30).

Figure 30. The Maintenance > Upgrade page



2 When the *Maintenance* > *Upgrade* page appears, decide which upgrade method to use. Each of the upgrade options listed on the *Upgrade* page are discussed in the following sections.

- Upgrading Manually using FTP or TFTP
- Upgrading Manually using the Web
- Upgrading Manually using a Local File

Upgrading Manually using FTP or TFTP

1 In the *Upgrade Method* options, click **FTP** (default) or **TFTP**.

2 Click the host name field, and then type the URL of the server. Or click the IP address field, and then type the IP address of the server. Remember to start the URL with **`ftp://`**.

CAUTION! Do not change any of the *Image Control File, Username* or *Password* entries.

---

3 Click **Perform Upgrade**. A status bar appears during the upgrade process.

4 After the upgrade is completed, you must manually reboot the ZoneFlex P300.

Upgrading Manually using the Web

1 In the *Upgrade Method* options, click **Web**.

2 If instructed to choose a different URL than the default value, type the URL of the download Web site in **Url.** Remember to start the URL with **`http://`**.

3 Click **Perform Upgrade**. A status bar appears during the upgrade process.

4 After the upgrade is completed, you must manually reboot the ZoneFlex P300.

Upgrading Manually using a Local File

If you have already saved an image file on your local computer, you can upgrade directly using the Web interface.

1 In the *Upgrade Method*, select **Local**.

2 Click **Choose File** and locate the file on your local computer.

3 Select the file and click **Open**.

4 Click **Perform Upgrade**. Status messages appear during the upgrade and reboot process.

Scheduling Automatic Firmware Upgrades

You can use the Web interface to check for software upgrades for the firmware operating the ZoneFlex P300. You can then apply these updates to the device in one of two ways: (1) automating a regularly scheduled update, as described in this section, or (2) manually l updating on an as-needed basis, as described in Manually Upgrading the Firmware.

1 To upgrade the firmware image, go to **Maintenance** > **Upgrade**. The ZoneFlex P300 Web GUI displays the *Maintenance* > *Upgrade* page (Figure 30).

2 In the *Auto Upgrade?* options, click the **Enabled** button

3 Enter the appropriate information in the *Host name* or *IP address* field.

CAUTION! Do not change any of the *Image Control File, Username* or *Password* entries.

---

4 Verify that the *Auto Upgrade?* option is set to **Enabled**.

5 Toggle the *Interval to Check for Software Upgrade* drop-down list to select your preferred interval.

6 Choose whether to reboot immediately after upgrading, or schedule the reboot for a specific time of day using the *Schedule Reboot Time After Upgrade* list. Choosing **Any Time** (the default value) results in the ZoneFlex P300 performing a reboot immediately after the automatic upgrade is successful.

7 You have two options at this point:

- Click **Perform Upgrade**, which starts the process and the clock. The next upgrade occurs at the selected interval.
- Click **Save parameters only**. The clock starts right away, and the actual upgrade occurs at the first effective interval.

After you click one of these two options, a status bar appears during the upgrade process.

When the upgrade is complete, the ZoneFlex P300 automatically reboots at the time you specified in Step 6.

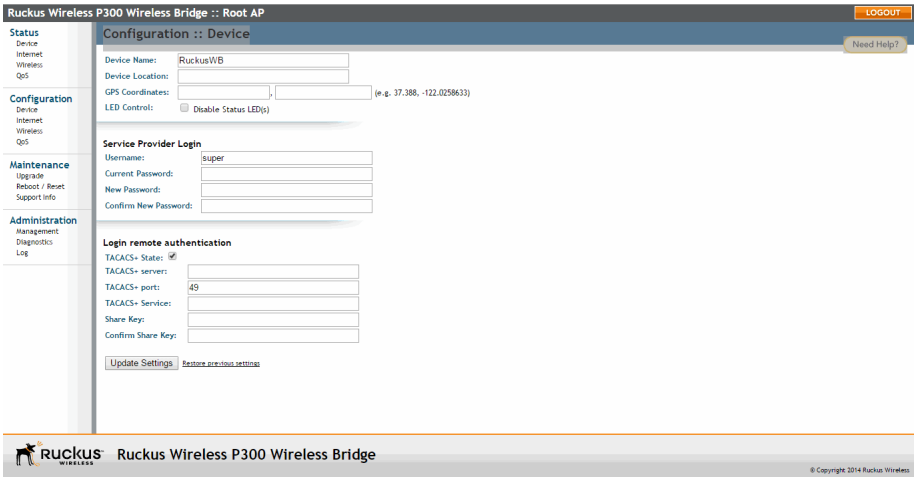
Changing the Administrative Login Settings

The default user name is `super` and the default password is `sp-admin`. To prevent unauthorized users from logging into the Web interface using these default administrator login settings, Ruckus Wireless recommends that you change the default Web interface password immediately after your first login.

1 Log into the Web interface.

2 Go to **Configuration** > **Device**.

Figure 31. The Configuration > Device page



3 Under *Service Provider Login,* change the default administrator login settings:

- In *Username,* type a new user name that you will use to log in to the Web interface. The default user name is `super`.
- When you are changing a password, type the existing password in *Current Password.*
- In *New Password,* type a new password to replace the existing password**.** The password must consist of six to 32 alphanumeric characters only.
- In *Confirm New Password,* retype the new password.

4 Click **Update Settings**. The message *Your parameters were saved* appears.

You have completed changing the default login settings. The next time you log in to the Web interface, make sure you use these updated login settings.

Enabling Other Management Access Options

In addition to managing the bridge via a Web browser using HTTPS, several other management access options are available on the bridge. These options include management access using HTTP, Telnet and SSH.

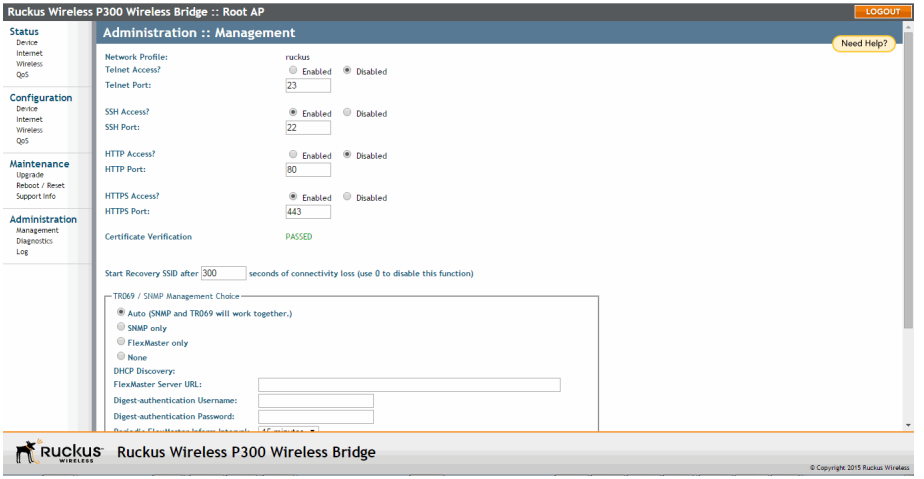
You can also view and set up the connection to a Ruckus Wireless FlexMaster manager under the **TR-069/SNMP Management Choice** options. If your Ruckus Wireless device is to be managed by FlexMaster, then the FlexMaster information (server URL and contact interval) is preconfigured before you receive your Ruckus Wireless device.

NOTE If you are configuring the bridge to be managed by FlexMaster, then remember to point it to the FlexMaster server after you configure the management access options. For more information, refer to Viewing FlexMaster Management Status.

---

1 Go to **Administration** > **Management**.

Figure 32. The Administration > Management page



2 Review the access options listed in Table 9, and then make changes as needed.

Table 9. Management Access Options

Option	Description
Telnet Access	By default, this option is disabled (inactive).

Table 9. Management Access Options (Continued)

Option	Description
Telnet Port	This field lists the default Telnet port of 23 — only if Telnet is active. You can manually change this port number, if required.
SSH Access	By default, this option is enabled (active).
SSH Port	This field lists the default SSH port of 22—only if SSH is active. You can manually change this port number if required.
HTTP Access	This option is disabled by default.
HTTP Port	This field lists the default HTTP port of 80, if HTTP has been activated. You can manually change this port number if required.
HTTPS Access	By default this option is enabled. This connection mode requires a security certificate, a copy of which has been pre-installed in the device.
HTTPS Port	This field lists the default HTTPS port of 443—only if HTTPS has been activated. You can manually change this port number if required.
Certificate Verification	This notes whether the security certificate linked to the HTTPS settings has been verified (*PASSED*) or not.
Start Recovery SSID after ___ seconds of connectivity loss	When connectivity is lost for this period of time, the recovery process is invoked. Default is 300 seconds. Enter 0 to disable this function.
Continue service WLANs when in recovery mode	When the recovery process is invoked, the WLAN service is continued (Enabled) or halted (Disabled).

3 If you want to use TR-069 or SNMP to manage the bridge, then configure the settings listed in Table 10.

Table 10. TR-069 and SNMP Management Options

Option	Description
Auto	(Default) Enables the Ruckus Wireless device to be managed by either SNMP servers, Ruckus Wireless controllers, or Ruckus Wireless FlexMaster. (Refer to Release Notes for details.)
SNMP only	Only allow SNMP management.

Table 10. TR-069 and SNMP Management Options (Continued)

Option	Description
FlexMaster only	Only allow FlexMaster management.
FlexMaster Server URL	URL of the FlexMaster server.
Digest-Authentication Username and Digest-Authentication Password	This information is automatically generated by the bridge and used for authentication with FlexMaster. Change this value *only* if you want the bridge to connect to another access control server (ACS).
Periodic FlexMaster Inform Interval	Interval at which the device should attempt to contact FlexMaster. (Default = 15 minutes.)

4 Click **Update Settings** to have the ZoneFlex P300 save your changes. A confirmation message appears at the top of the page.

You have completed configuring the management access options.

NOTE Remember to open any relevant firewall ports between the bridge and the bridge image upgrade/management server. For example, if FlexMaster server is used, open TCP ports 80 and 443 for HTTP/HTTPS communications, and TCP port 8082 for bridge wake-up commands. (Refer to Release Notes for details.)

Viewing FlexMaster Management Status

If you configure the bridge to be managed by FlexMaster, you can view the *TR-069 Status* section by scrolling to the bottom of the **Administration** > **Management** page.

Figure 33. TR-069 status information

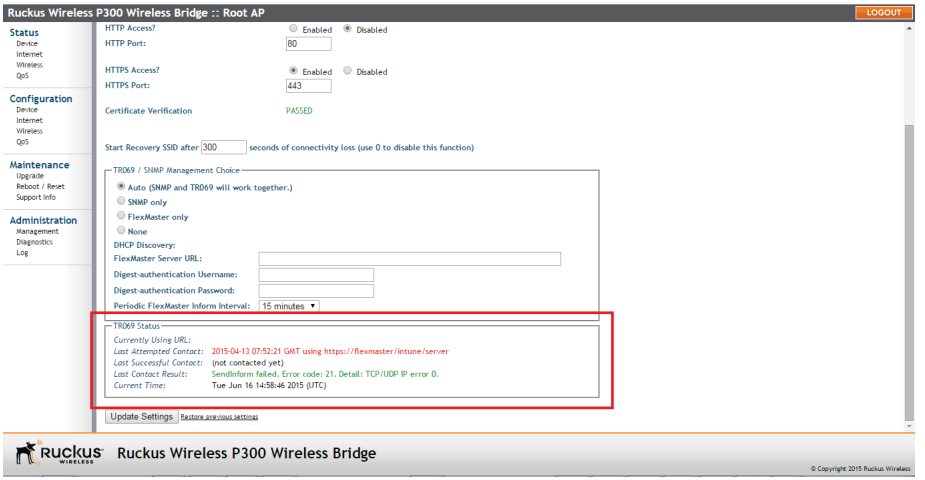


Table 11 lists the TR-069 status information that the bridge provides.

Table 11. TR-069 status information

Status Information	Description
Currently Using URL	Shows the FlexMaster server IP address or URL with which the bridge is currently registered.
Last Attempted Contact	Shows the date and time of the bridge's last attempt to contact FlexMaster. Date and time are specified in GMT (or UTC), which are accurate if a Network Time Protocol (NTP) server is configured.
Last Successful Contact	Shows the date and time of the bridge's last successful contact with FlexMaster.
Last Contact Result	Shows the result of the last attempt to contact FlexMaster (success or failure, and failure error code if applicable).

Table 11. TR-069 status information (Continued)

Status Information	Description
Current Time	Shows the current date and time as known to the bridge. This timestamp is accurate if an NTP server is configured on the bridge. If there is no NTP server configured, this timestamp is useful as a reference for comparison of the timestamps for *Last attempted contact* and *Last successful contact.*

Pointing the Bridge to FlexMaster

Your Ruckus Wireless device is required to "call home" to register with your FlexMaster; FlexMaster does not initiate initial contact. To register successfully with FlexMaster, your Ruckus Wireless device must know the FlexMaster server's URL. You need TCP ports 80 and 443 open between bridges and FlexMaster when traversing Layer 3/firewall boundaries.

1 Go to **Administration > Management**.

2 Under *TR-069/SNMP Management Choice,* click **Auto**.

3 In *FlexMaster Server URL,* type the URL of the FlexMaster server.

4 Toggle the *Periodic FlexMaster Inform Interval* drop-down list to select how frequently the device checks the FlexMaster server for any pending configuration changes available for that Ruckus Wireless unit. On the FlexMaster side, this field is referred to as the *Periodic Inform Interval.*

5 Click **Update Settings** to save your changes.

After the bridge registers with FlexMaster, this **Administration > Management** page shows the communication status between the bridge and FlexMaster.

Working with Event Logs and Syslog Servers

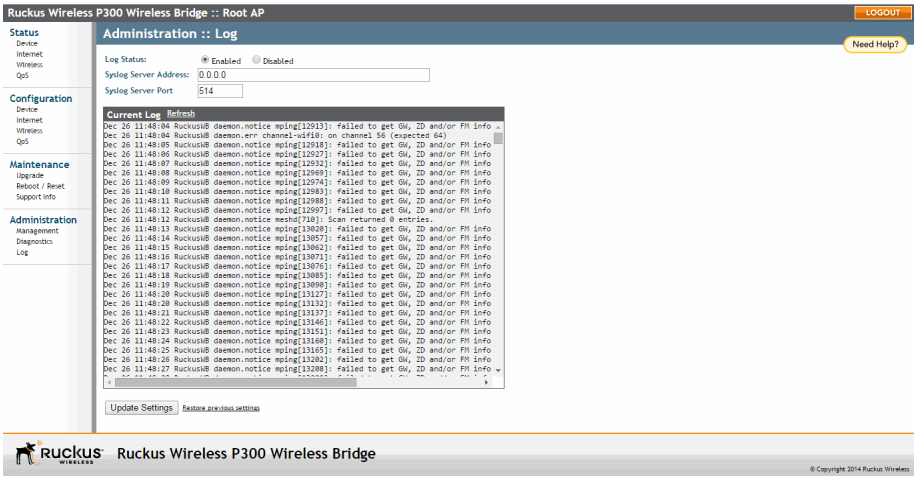
Both the *Maintenance* > *Support Info* and *Administration* > *Log* pages can be used to view the ZoneFlex P300's current log file text. You can use the former to send the log to Ruckus Wireless support or save it to a local file, and use the latter to configure automatic delivery of log files to a syslog server.

Enabling Logging and Sending Event Logs to a Syslog Server

If you have a syslog server on the network, you can configure the ZoneFlex P300 to send the device logs to the server. Enable logging (if disabled) and configure the ZoneFlex P300 to send logs to the syslog server.

1 Go to **Administration** > **Log**. The *Administration* > *Log* page appears.

Figure 34. The Administration > Log page



2 In *Log Status,* click **Enabled**.

3 After enabling logging, configure the following options:

- *Syslog Server Address:* To enable the ZoneFlex P300 to send messages to a syslog server as they appear, enter the IP address of the syslog server.
- *Syslog Server Port:* By default, the syslog port number is 514. If the syslog server is using a different port, enter that port number in this field.

4 Click **Update Settings** to have the ZoneFlex P300 save and apply your changes.

Sending a Copy of the Log File to Ruckus Wireless Support

The Support Info log consists of the configuration and run-time status of the ZoneFlex P300 and can be useful for troubleshooting. You have three options for sending a copy of the current log file to Ruckus Wireless Support:

- Save a copy to your local PC, then attach it to an e-mail message and send it to support.
- Set up a connection to an FTP site.
- Set up a connection to a TFTP site.

1 Go to **Maintenance** > **Support Info**. The *Maintenance* > *Support Info* page appears.

2 To upload a copy of the support info file to an FTP or TFTP server, click the *Transfer Method* **TFTP** or **FTP** option.

3 In *Server Address,* enter the FTP or TFTP server IP address.

4 In *Filename,* enter a name for the file that you are saving.

NOTE Remember to add a .TXT file extension to the file name, especially if you are using Internet Explorer as your Web Admin "host."

---

5 If you selected the **FTP** option, then also enter a *Username* and *Password.*

6 Click **Upload Now**.

Saving a Copy of the Log File to Your Computer

You can save a copy of the current log to your own computer, if needed.

1 Go to **Maintenance** > **Support Info**. The *Maintenance* > *Support Info* workspace appears.

2 Click the *Transfer Method* **Save to Local Computer** option. Up to two links appear next to **Download** (*supportinfo.txt* and/or *tr069info.txt*).

3 Click the **supportinfo.txt** link. A new window (or tab) opens with the content of the log file displayed.

4 Choose **Save As** or **Save Page As** from your browser's *File* menu.

5 When the "Save as>." dialog box appears, find a convenient location on your local computer to save the file, and change the file extension from *.html* to *.txt*.

6 Click **Save** to save the log file to your computer.

Saving a Copy of a Support File to Your Computer

You can save a copy of the support file(s) to your own computer, if needed. The *cmsupportinfo.txt* file includes support information for an ZoneFlex P300 with integral cable modem (such as 7781CM), and the *tr069info.txt* file includes support information for an ZoneFlex P300 being managed by FlexMaster.

1 Go to **Maintenance** > **Support Info**. The *Maintenance > Support Info* workspace appears.

2 Click the *Transfer Method* **Save to Local Computer** option. Up to two links appear next to **Download** (*supportinfo.txt* and/or *tr069info.txt*).

3 Click the **cmsupportinfo.txt** or **tr069info.txt** link. A new window (or tab) opens with the content of the support file displayed.

4 Choose **Save As** or **Save Page As** from your browser's *File* menu.

5 When the "Save as>." dialog box appears, find a convenient location on your local computer to save the file, and change the file extension from *.html* to *.txt*.

6 Click **Save** to save the support file to your computer.

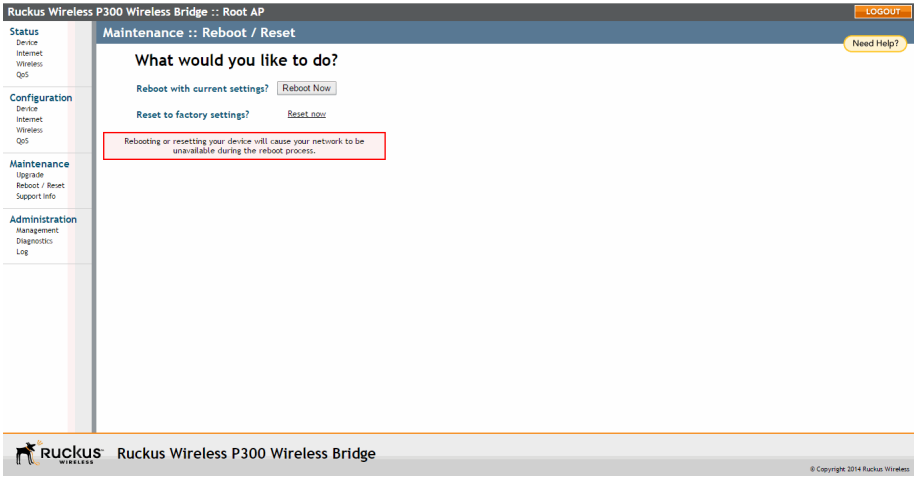
Rebooting the ZoneFlex P300

You can use the Web interface to prompt the ZoneFlex P300 to reboot, which restarts the ZoneFlex P300 without changing any of the current settings. Please note that rebooting the ZoneFlex P300 disrupts network communications in any currently active WLANs.

1 Go to **Maintenance** > **Reboot/Reset**. The *Maintenance* > *Reboot/Reset* page appears.

2 To reboot the ZoneFlex P300, click *Reboot P300 with current settings*/**Reboot Now**. After a brief pause, you are logged out of the ZoneFlex P300.

Figure 35. The Maintenance > Reboot/Reset page



After approximately one minute, you should be able to log back into the ZoneFlex P300, which verifies that the reboot was successful. You can also check the LEDs on the ZoneFlex P300 to verify the status of the device.

Resetting the ZoneFlex P300 to Factory Defaults

WARNING! DO NOT reset the ZoneFlex P300 to factory defaults unless you are directed to do so by Ruckus Wireless support staff or by a network administrator. Do this only if you are able to immediately reconnect the restored ZoneFlex P300 to your computer, to reconfigure it for Wi-Fi network use — as detailed in Logging Into the ZoneFlex P300 Web Interface.

You can use the Web User interface to restore an inoperative ZoneFlex P300 to its factory default settings, which completely erases the configuration currently active in the device. Note that this disrupts all wireless network communications through this device.

1. Go to **Maintenance** > **Reboot/Reset**. The *Maintenance* > *Reboot/Reset* page appears (Figure 35).
2. Click **Reset now** (next to *Reset to factory settings*).
3. When the confirmation warning appears, read the message and click **OK** if you are certain that you want to restore the ZoneFlex P300 to factory defaults.

After a brief pause, you are automatically logged out of the ZoneFlex P300. You must now disconnect the ZoneFlex P300 from the switch (and the network) and reconnect it to your computer. At this time, you can restore the network settings, then replace it in your site for full network use.

Running Diagnostics

Four network connection diagnostic tools have been built into the ZoneFlex P300 to help you check network connections from the Web interface:

- *ping*
- *traceroute*
- *show ARP table*
- *show FDB table*

1 Go to **Administration > Diagnostics**. The *Administration > Diagnostics* page appears.

2 For *ping* and *traceroute,* type the network address of a site you wish to connect to. Then click **Run test**. The results appear in the text field below each option (see Figure 36).

3 For *show ARP table* and *show FDB table*, click **Show.** The results appear in the text field below each option (see Figure 37).

Figure 36. Using ping or traceroute

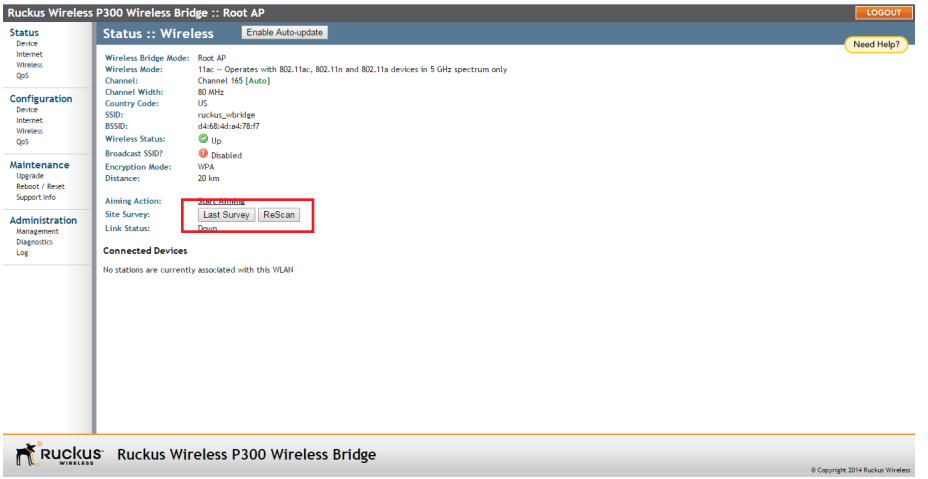
Figure 37. Showing ARP and FDB tables

Scanning for Interference

The ZoneFlex P300 includes a Site Survey tool that allows you to scan for other wireless networks nearby which may impact the ZoneFlex P300 link performance.

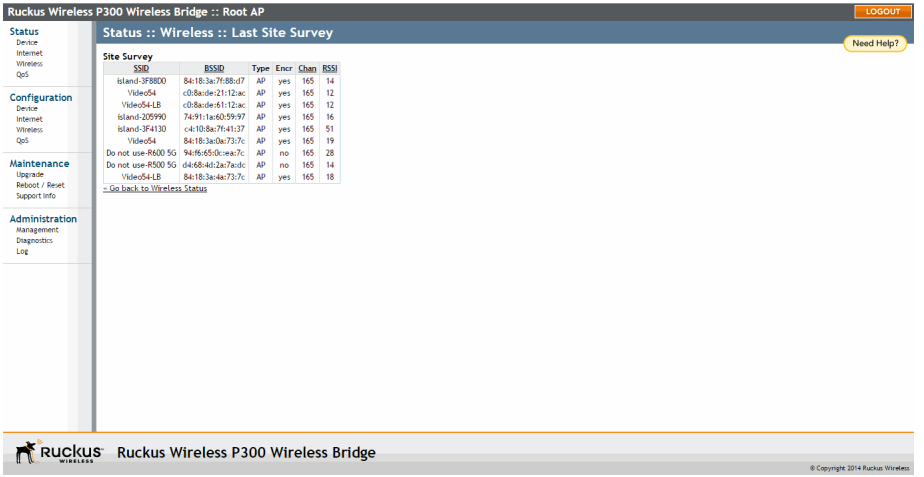
1 go to the **Status** > **Wireless** page. The *Status* > *Wireless* page appears.

Figure 38. The Status > Wireless page



2 On the *Status* > *Wireless* page, click *Site Survey:* **Last Survey** or **ReScan**. The ZoneFlex P300 Web interface displays a list of nearby wireless devices.

Figure 39. Site Survey



3 If a large number of nearby devices is detected using the same channel as the ZoneFlex P300, you may want to move the wireless bridge traffic to another channel; refer to Moving Traffic to Another Channel.

Moving Traffic to Another Channel

1 Navigate to **Configuration > Wireless**, and choose a less-crowded channel from the *Channel* pull-down menu.

NOTE The SmartSelect feature (**Auto** selection) always attempts to use the best channel available. If you manually select a channel, then SmartSelect will be unable to automatically switch channels to adjust to changes in the environment.

---

2 Click **Update Settings** to have the ZoneFlex P300 save your changes.

3 Run the SpeedFlex utility to test link performance as described in Verifying the Connection.

Where to Find More Information

If you have questions that this User Guide does not address, visit the Ruckus Wireless Support Portal at http://support.ruckuswireless.com. The Support Portal hosts the latest versions of user documentation. You can also find answers to frequently asked questions (FAQs) for each Ruckus Wireless product type.

Appendix A: Customer-Orderable Parts

Table 12. Ruckus Wireless customer-orderable parts

Part		Ruckus Wireless P/N	Factory Kit or Customer Ordered	Notes
Ruckus Wireless PoE injector (optional)		902-0162-XXYY, where XXYY is the country code	Optionally customer-ordered	--

Table 13. Ruckus Wireless customer-orderable 5GHz antennas

Part		Ruckus Wireless P/N	Notes
5GHz 12.5dBi 2x2 Dual-Polarized Sector Outdoor Antenna		911-1212-DP01	120-degree beamwidth
5GHz 21dBi Point-to-Point 2x2 Dual-Polarized Directional Outdoor Antenna		911-2101-DP01	10-degree beamwidth

Table 13. Ruckus Wireless customer-orderable 5GHz antennas (Continued)

Part		Ruckus Wireless P/N	Notes
5GHz 24dBi Point-to-Point 2x2 Dual-Polarized Directional Outdoor Antenna		911-2401-DP01	7- to 9-degree beamwidth

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