



**Ruckus Wireless®
ZoneFlex® 7731 802.11n
Point to Point Wireless Bridge**

Getting Started Guide

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1 About This Getting Started Guide

This *Getting Started Guide* provides information on how to set up the Ruckus Wireless ZoneFlex 7731 802.11n Point to Point Wireless Bridge on your network. Topics covered in this guide include installation, basic configuration, and device mounting.

This guide is intended for use by those responsible for installing and setting up network equipment. Consequently, it assumes a basic working knowledge of local area networking, wireless networking, and wireless devices.

Related Documentation

In addition to this guide, each Ruckus Wireless ZoneFlex 7731 802.11n Point to Point Wireless Bridge documentation set includes the following:

- **User Guide:** Provides detailed information on how to configure the Wireless Bridge. The User Guide is available for download on the Ruckus Wireless Support Web site at: <http://support.ruckuswireless.com/documents>
- **Release Notes:** Provides late-breaking information about the current software release, including new features, enhancements, and known issues. If the information in the Release Notes differs from the information in this guide, follow the instructions in the Release Notes.
- **Online Help:** Accessible from the ZoneFlex 7731 Web interface, the Online Help provides information that helps you configure the device from the Web interface.

2 Unpacking the ZoneFlex Wireless Bridge

1. Open the Wireless Bridge 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](#) below are included in the package. Check each item for damage. If any item is damaged or missing, notify your authorized Ruckus Wireless sales representative.

Package Contents

The standard ZoneFlex 7731 Wireless Bridge package contains two ZoneFlex 7731 units and two sets of accessories (one for each unit). A single unit package contains one ZoneFlex 7731 unit and one set of accessories. Refer to [Table 1](#) for package contents for either the single unit package or dual unit package.

Table 1. *Package contents*

Single Unit	Two Units
<ul style="list-style-type: none">• One ZoneFlex 7731 Point to Point Wireless Bridge• One PoE injector box (excluded in some SKUs)• One Power adapter box (SW DC48V/ 0.42A AC100-240V) for the PoE injector (excluded in some SKUs)• One mounting kit (see "Mounting Kit Contents" for details)• One bag containing bottom Wireless Bridge cover and related accessories (see "Bottom Cover and Accessories" for details)• Service Level Agreement / Limited Warranty Statement• Regulatory Statement• This Getting Started Guide	<ul style="list-style-type: none">• Two ZoneFlex 7731 Point to Point Wireless Bridge units, pre-provisioned as a "Root Bridge" and a "Non-Root Bridge"• Two PoE injector boxes (excluded in some SKUs)• Two power adapter boxes (SW DC48V/ 0.42A AC100-240V) for the PoE injector (excluded in some SKUs)• Two mounting kits (see "Mounting Kit Contents" for details)• Two bags containing bottom Wireless Bridge cover and related accessories (see "Bottom Cover and Accessories" for details)• Service Level Agreement / Limited Warranty Statement• Regulatory Statement• This Getting Started Guide



WARNING: The Ruckus Wireless PoE injector and power adapter (if supplied with your Wireless Bridge) are for indoor use only. Never mount the PoE injector and power adapter outdoors with the Wireless Bridge.

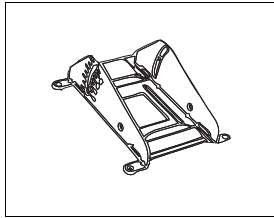
Mounting Kit Contents

Each mounting kit contains:

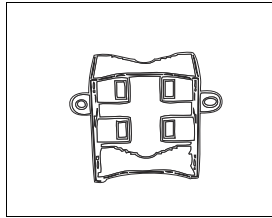
- Dynamic bracket
- Static bracket
- Steel clamps (2 pieces)
- Machine screws (8 pieces)
- Hex bolts (4 pieces)
- Split lock washers (4 pieces)
- Flat washers (4 pieces)
- Split lock washers (4 pieces)
- Machine screws (8 pieces)
- Thumb screws (2 pieces)
- Wall anchors (2 pieces)

Figure 1. Mounting kit contents

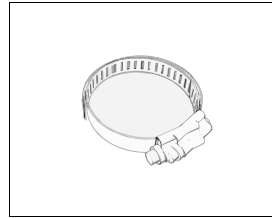
Dynamic bracket



Static bracket



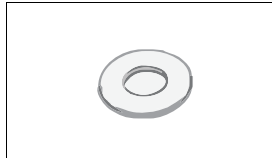
Steel clamp (2 pieces)



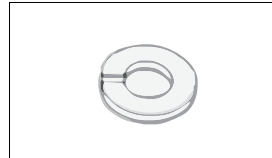
Hex bolt (2 pieces)



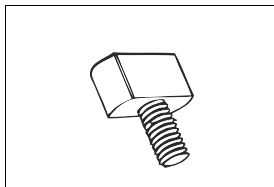
Flat washer (4 pieces)



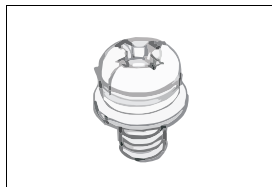
Split lock washer (4 pieces)



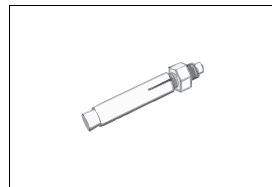
Thumb screw (2 pieces)



Machine screw (8 pieces)



Wall anchor with metal cone and hex nut (2 pieces)

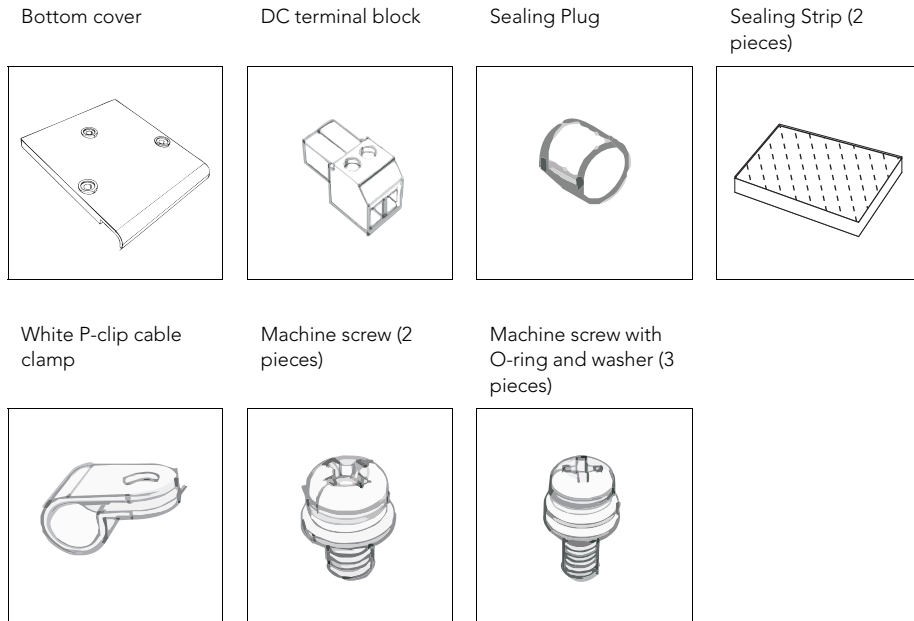


Bottom Cover and Accessories

Each bottom cover accessory bag contains:

- Bottom cover of the Wireless Bridge
- DC terminal block
- 20mm x 30mm sealing strips (2 pieces)
- Sealing plug
- White P-clip cable clamps (2 pieces)
- Machine screws (2 pieces)
- Machine screws with washers (3 pieces)

Figure 2. Bottom cover and accessory package contents



3 Before You Begin

Prepare the Required Hardware and Tools

You must supply the following tools and equipment:

- A notebook or desktop computer running Windows (2000/XP/Vista/7) with one Ethernet card installed
- 6mm flathead screwdriver
- 6mm Phillips screwdriver
- 10mm ratchet wrench
- 3mm Phillips screwdriver (if you will be using DC power)
- Electric drill with 8mm drill bit (if mounting on a flat surface)



NOTE: At the beginning of each procedure, this guide lists the specific tools, accessories, and equipment that you will need to complete the procedure.

Get to Know the Hardware Features

[Figure 3](#) and [Figure 5](#) identify the Wireless Bridge features that are relevant to the installation and mounting instructions that this guide provides. Before you begin the installation process, Ruckus Wireless recommends that you become familiar with these features.

Figure 3. Wireless Bridge LEDs and bottom connectors

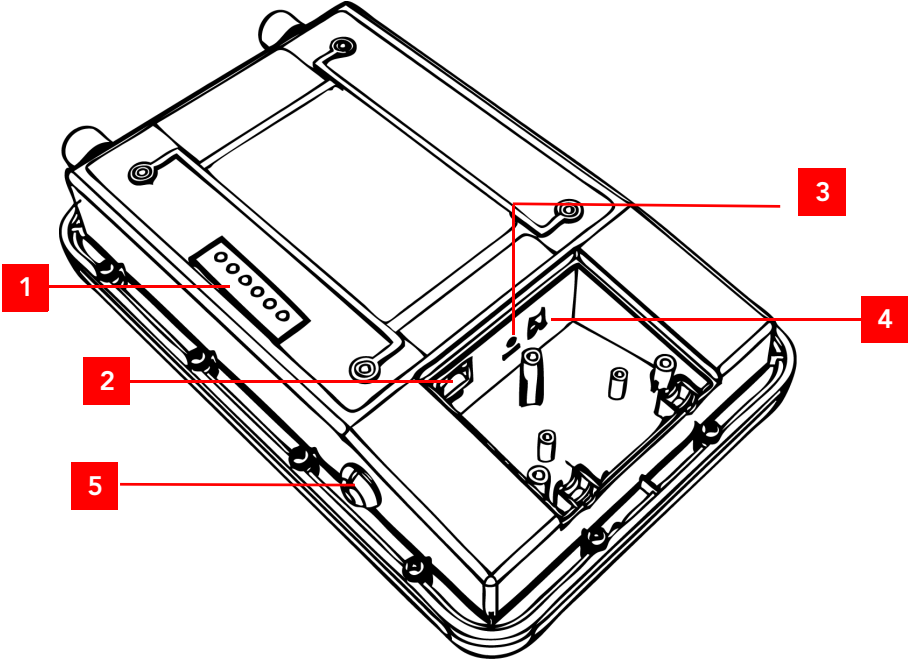


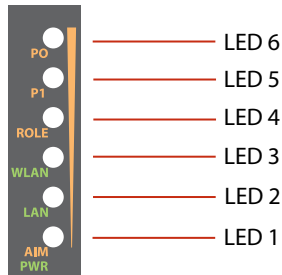
Table 2. LEDs and bottom panel connectors

No	Label	Description
1	LEDs	See "LED Colors and What They Mean" below for more information.
2	RJ45	LAN port that supports Power over Ethernet (PoE) and 10/100/1000 Mbps network connections
3	Reset	Using a pointed object (for example, a pen), press this button to restart the Wireless Bridge or to restore it to factory default settings: <ul style="list-style-type: none">• To restart the Wireless Bridge, press the Reset button once.• To restore the Wireless Bridge to factory default, press the Reset button for six (6) seconds. <p><i>WARNING: Restoring the Wireless Bridge to factory default settings removes all configuration changes that you have made. These include the IP address, password, access control list, and wireless settings. Returning the configuration of these features to their factory default settings may result in network connectivity issues.</i></p>
4	12V DC	In addition to PoE, you can also use direct current or DC (from a battery, for example) to supply power to the Wireless Bridge.
5	Aiming Button	Press this button to set the Wireless Bridge to Aiming Mode. When Aiming Mode is set, the LEDs can be used to determine signal strength. See "Aiming Mode" for more information.

LED Colors and What They Mean

The ZoneFlex 7731 Wireless Bridge includes 6 dual color LEDs. The LEDs function in two modes, normal operation mode and aiming mode.

Figure 4. LED Indicators



- For *Normal Operation Mode* LED states and what they indicate, refer to [Table 3](#).
- For *Aiming Mode* LED states and what they indicate, refer to [Table 4](#).

Normal Operation Mode

In Normal Operation Mode, the WLAN LED indicator is off when disconnected, flashing green while connecting and solid green when a connection has been established.

Table 3. Normal Operation Mode LED indicators

LED	Meaning
LED 1 (AIM/PWR)	Solid Green = Power on Off = Power off
LED 2 (LAN)	Solid Green = Link Up Blinking Green = Activity Off = Link Down
LED 3 (WLAN)	Solid Green = Associated Blinking Green = Not Associated Off = Radio Off
LED 4 (ROLE)	Solid Yellow = This unit is the root bridge Off = This unit is the non-root bridge
LED 5 & 6 (P0 and P1)	Alternating Blinking = Provisioning in process Simultaneous Blinking = Provisioning complete; reboot pending

Aiming Mode

In Aiming Mode, LED 1 indicates that the Wireless Bridge is in Aiming Mode. LED indicators 2 - 6 are used together to indicate signal strength, and should be read from bottom to top (the higher the LEDs go, the stronger the signal).

Table 4. Aiming Mode LED indicators

LED	Meaning
LED 6	Signal strength 5
LED 5	Signal strength 4
LED 4	Signal strength 3
LED 3	Signal strength 2
LED 2	Signal strength 1
LED 1 (AIM/PWR)	Solid Yellow = Aiming Mode (RSSI >= 5) Solid Green = Normal Operation Mode Off = Off

In Aiming Mode, each LED has three states to represent different values. Solid yellow indicates the highest value, flashing yellow indicates medium value and off indicates the lowest value. If all six LEDs are solid yellow, the Wireless Bridge has the strongest signal possible. If some LEDs are flashing yellow or off, reposition the Wireless Bridge to achieve a better signal. For more detailed information on signal strength levels, see [“RSSI values of LED indicators”](#) on [page 57](#).

Push Buttons

The ZoneFlex 7731 includes two push buttons:

- A recessed factory default reset button (located inside the bottom panel)
- A large blue Aiming Mode button that sets the bridge to Aiming Mode (located on the outside of the unit)

To reset the unit to its factory defaults, press and hold the Reset button for six (6) seconds. Press and hold the blue Aiming button for four (4) seconds to initiate aiming between the root and non-root bridge.

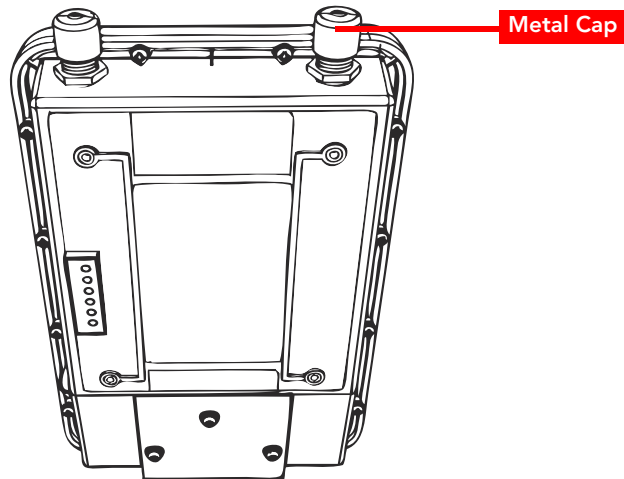


CAUTION: Resetting the ZoneFlex 7731 to its factory defaults will result in loss of all configuration settings, including the pre-provisioning (pairing of the root and non-root bridge) settings that were enabled prior to shipping. If you do need to reset to defaults, you will need to re-provision the pair.

External Antenna Connectors

The ZoneFlex 7731 Wireless Bridge includes one purpose designed internal directional antenna. If you want to extend the range of your wireless network, you can connect an external high gain 5GHz antenna to the two standard N-type external antenna connectors on the top panel of the Wireless Bridge. The antenna must have a gain of less than 23dBi to comply with FCC and CE regulations. For more information, refer to [“Mounting and Connecting the External Antenna \(Optional\)”](#) on [page 56](#).

Figure 5. The antenna connectors are protected by metal caps



4 Pre-Installation Configuration

This section describes the configuration procedures required before you begin mounting the bridges in their permanent locations.

Summary of Pre-Installation Tasks

1. Supply power to both units.
2. Access the units using an administrative computer.
3. Set the country code to your current location.
4. Change other configuration settings (optional).
5. Use the SpeedFlex tool built into the Web interface to test the link between the units.



NOTE: If you purchased the Wireless Bridge in the United States, the country code is fixed to “United States” at the factory and is not user configurable. If not, you must set the country code to your location prior to mounting to ensure compliance with national regulatory requirements.



CAUTION: If changing the Country Code over the air, you will need to configure the remote unit first followed by the local unit, to avoid loss of connectivity.

In addition to setting the country code (required), the following optional configuration settings may be changed at this time:

- Change the device name and SSID
 - Manually assign static IP addresses
 - Enable SNMP or FlexMaster network management
 - Configure security settings
 - Configure management VLAN
-



CAUTION: Changing any settings of either the root or non-root bridge will require that you also change the same settings on the other device.

To customize any of these settings before deploying the bridge pair, you will need to connect an administrative computer directly to each ZoneFlex 7731 using the unit's default IP address, and provide power using either DC power or Power over Ethernet before you can access the unit's Web interface.

The default IP addresses for the root and non-root bridge are as follows:

- **Root Bridge:** 192 . 168 . 2 . 1
 - **Non-Root Bridge:** 192 . 168 . 2 . 254
-



NOTE: In general, you should first make configuration changes to the Root bridge, followed by the Non-Root bridge.

What You Will Need

Before starting with the configuration task, make sure that you have the following requirements ready:

- An administrative computer running Microsoft Windows (2000/XP/Vista/7)
- Mozilla Firefox 2.0 (or later) or Microsoft Internet Explorer 6.0 (or later) installed on the administrative computer
- Two Ethernet cables
- PoE injector (if not supplied with the Wireless Bridge, you can purchase a third party 802.3af-compliant PoE injector or switch)
- 6mm Phillips screwdriver

If you are planning to power the Wireless Bridge using a 12v DC connection, you will also need the following:

- One 3.1mm-3.3mm UL1185 (80°, 300V) single shielded DC cable
- 12v DC, 1A DC power source (for example, a battery)
- 3mm Phillips screwdriver

Access the Web Interface



CAUTION: Do not attempt to access the Web interface of both ZoneFlex 7731 units at the same time by connecting both to the same Layer 2 switch or to the same broadcast domain on a live network. This will cause a network loop, which can disrupt your entire network.

Step 1: Connect the Power and Ethernet Cables

The procedure for connecting cables to the Wireless Bridge depends on the power source that you will be using. You can do one of the following:

- [Use Power Over Ethernet](#)
- [Use DC Power](#)

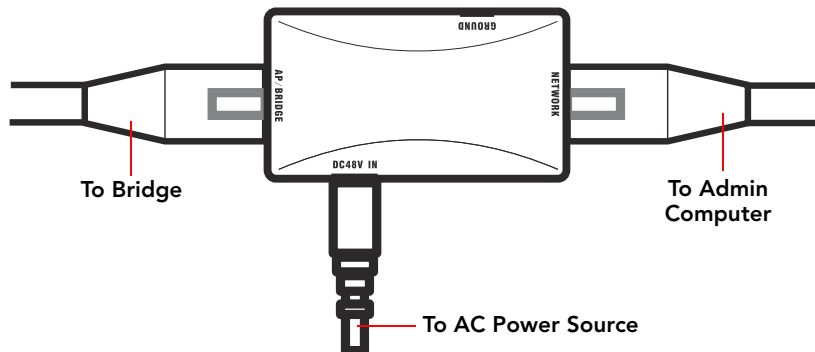


NOTE: You only need to connect one type of power source at this point, even if you are planning to use both PoE and DC power in your final deployment.

Use Power Over Ethernet

1. Take out the PoE injector and the power adapter from the Wireless Bridge package.
2. Obtain two Ethernet cables.
3. Connect one end of one Ethernet cable to the **AP/BRIDGE** port on the PoE injector, and then connect the other end to the **RJ45** port on the ZoneFlex 7731.
4. Connect one end of the other Ethernet cable to the **NETWORK** port on the PoE injector.
5. Connect the power jack to the **DC 48V IN** connector on the PoE injector, and then plug the power adapter into a power source. The single LED on the PoE injector turns green.
6. Check the power LED on the ZoneFlex 7731 to ensure power is being supplied to the bridge.

Figure 6. Connect the Ethernet cables and power adapter to the PoE injector



You have completed connecting the Wireless Bridge to a PoE power source.

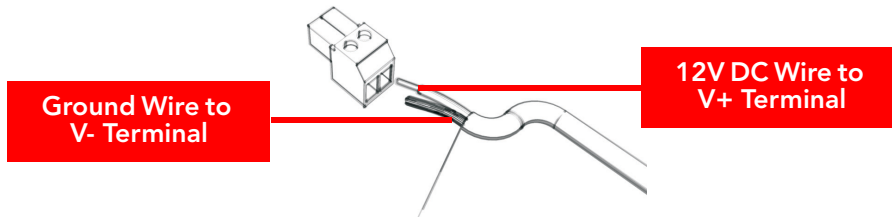
Use DC Power

To use DC to power the Wireless Bridge, you need to connect a DC cable (not supplied with the Wireless Bridge) to the DC terminal block.

1. Take out the DC terminal block from the small plastic bag that contains the bottom cover of the Wireless Bridge.

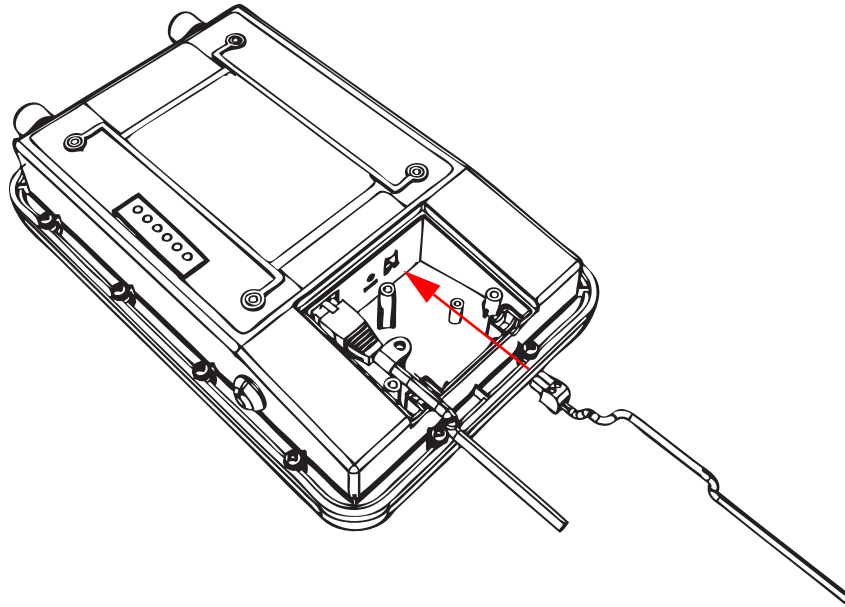
2. Connect the DC cable's ground wire to V- terminal. If you are looking at the terminal block with the wiring terminal screws on top, the V- terminal is on the *left side*.
3. Connect the DC cable's +12v DC wire to the V+ terminal. If you are looking at the terminal block with the wiring terminal screws on top, the V+ terminal is on the *right side*.

Figure 7. Connect the ground wire to the V- terminal and the +12v DC wire to the V+ terminal



4. Using a 3mm Phillips screw, tighten the wiring terminal screws. Screw torque value must be $20.5 \text{ mN-m} \pm 2 \text{ mN-m}$.
5. Connect the DC terminal block to the **12V DC** port on the Wireless Bridge.

Figure 8. Connect the DC terminal block to the 12V DC port



6. Connect the DC cable to a DC power source (for example, a battery).
You have completed connecting the Wireless Bridge to a DC power source.

Step 2: Prepare the Administrative Computer



NOTE: The following procedure is applicable if the administrative computer is running Windows XP or Windows 2000. If you are using a different operating system, refer to the documentation that was shipped with your operating system for information on how to modify the computer's IP address settings.

1. On your Windows XP or Windows 2000 computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
 - On Windows XP, click **Start > Control Panel > Network Connections**.
 - On Windows 2000, click **Start > Settings > Network Connections**.
2. When the Network Connections window appears, right-click the icon for Local Area Connection, and then click **Properties**.



NOTE: Make sure that you configure the Local Area Connection properties, not the Wireless Network Connection properties.

3. When the **Local Area Connection Properties** dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The **Internet Protocol (TCP/IP) Properties** dialog box appears.
4. Write down all of the currently active network settings. You will need this information later when you restore your computer to its current network configuration.
5. Click **Use the following IP address**, and then configure the IP address settings with the values listed in [Table 5](#). For a sample configuration, refer to [Figure 9](#).

Table 5. *Configure your computer's IP address settings*

IP address	192 . 168 . 2 . 22 (or any address in the 192 . 168 . 2 . x network—with the exception of 192 . 168 . 2 . 1 and 192 . 168 . 2 . 254 which will be used by the bridges)
Subnet mask	255 . 255 . 255 . 0
Default gateway	192 . 168 . 2 . 1
Preferred DNS server	192 . 168 . 2 . 1

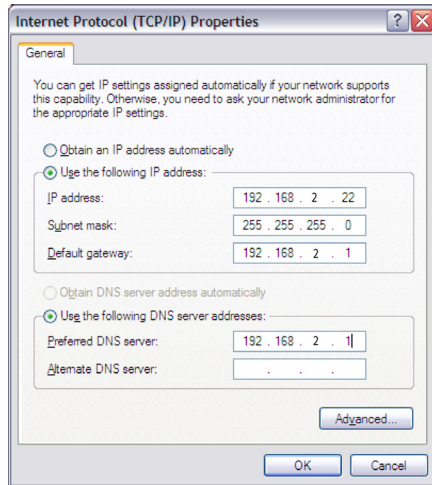
You can leave the **Alternate DNS server** box blank.

6. Click **OK** to save your changes and close the TCP/IP Properties dialog box.
 7. Click **OK** again to close the Local Area Connection Properties dialog box.
- Windows saves the IP address settings that you have configured.

Pre-Installation Configuration

Access the Web Interface

Figure 9. Sample configuration in the Internet Protocol (TCP/IP) Properties dialog box



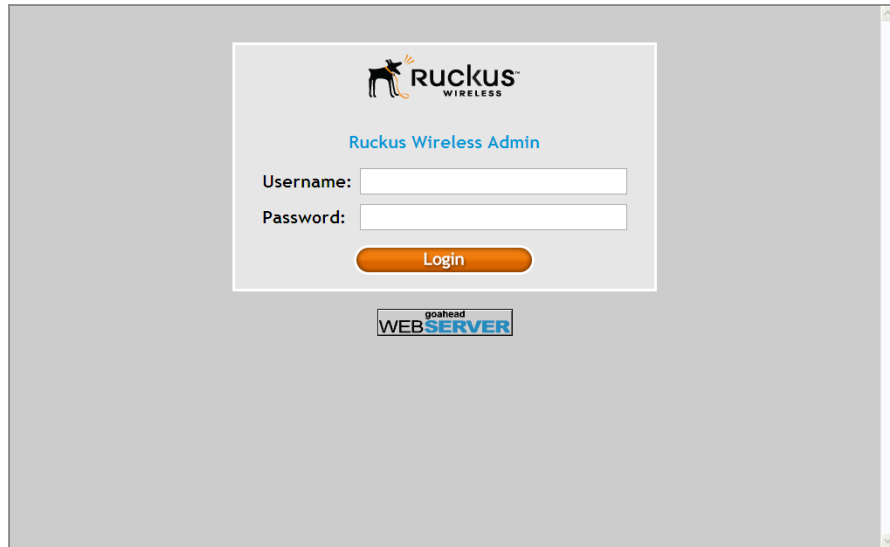
Step 3: Connect the Wireless Bridge to the Admin Computer

If you have not already done so, connect the admin computer to the ZoneFlex 7731 using an Ethernet cable, or two Ethernet cables and a PoE injector if you are using Power over Ethernet (see [“Connect the Ethernet cables and power adapter to the PoE injector”](#) on [page 14](#)).

Step 4: Log In to the Web Interface

1. Open a Web browser window from the admin computer.
2. In the address or location bar, type the following address:
Root Bridge: `http://192.168.2.1`
Non-Root Bridge: `http://192.168.2.254`
3. Press <Enter> on the keyboard to connect to the Wireless Bridge’s Web interface. A security alert message appears.
4. Click **Yes** or **OK** (depending on the browser) to continue. The Wireless Bridge’s login page appears.

Figure 10. The ZoneFlex Wireless Bridge login page



5. In **User name**, type `super`.
6. In **Password**, type `sp-admin`.
7. Click **Login**. The Web interface appears, displaying the **Status > Wireless** page.

Figure 11. Ruckus ZoneFlex 7731 Wireless Bridge **Status :: Wireless** page

Ruckus Wireless 7731 Wireless Bridge LOGOUT

Status :: Wireless Enable Auto-update Need Help?

Configuration

Wireless Mode: 11na -- Operates with 802.11n and 802.11a devices in 5 GHz spectrum only
 Channel: Channel 165 [SmartSelect]
 Channel Width: 40 Mhz
 Country Code: US
 SSID: RKS-001301
 BSSID: 00:13:92:00:13:08
 Wireless Status: ✔ Up
 Broadcast SSID? ❌ Disabled
 Encryption Mode: WPA

Maintenance

Upgrade
 Reboot / Reset
 Support Info

Administration

Management
 Diagnostics
 Log

Wireless Bridge Mode: Root Bridge
 Aiming Action: [Start Aiming](#)
 Site Survey:
 Link Status: Up

Connected Device

IP Address	MAC Address	SSID	Up/Down	Rx RSSI	SpeedFlex	Ack RSSI	Signal Strength
192.168.2.254	00:13:92:00:19:08	RKS-001301	1/0	44	⊘	40	

RUCKUS WIRELESS Ruckus Wireless 7731 Wireless Bridge © Copyright 2007 Ruckus Wireless

- Continue to ["Step 5: Change the Country Code"](#).

Step 5: Change the Country Code

Change the Country Code setting to your location and reboot the bridge for updates to take effect.



CAUTION: If changing the Country Code after the pair has been mounted, you will need to configure the remote unit first followed by the local unit, to avoid loss of connectivity.

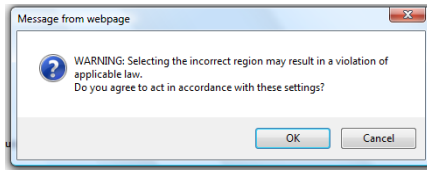


NOTE: If you purchased the Wireless Bridge in the United States, this value is fixed to "United States" at the factory and is not user configurable.

If you purchased the Wireless Bridge outside of the United States, verify that the value is set to your country or region. Selecting the correct country code ensures that the Wireless Bridge uses only the radio channels allowed in your country or region.

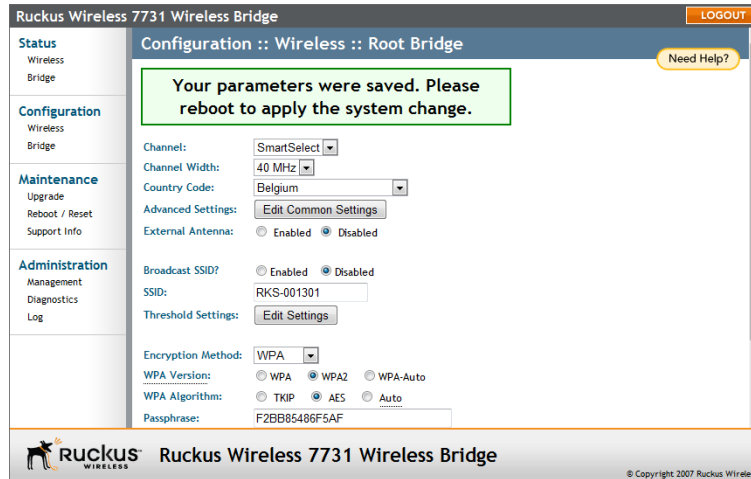
- On the **Configuration > Wireless** page, select your location from the Country Code menu.
- The following warning message appears:

Figure 12. Country code warning message



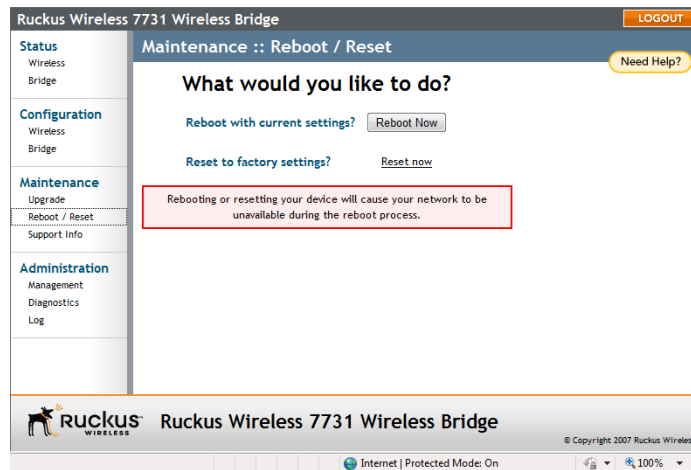
3. Click **OK** to continue.
4. Click **Update Settings** to confirm changes.
5. A message indicating that your parameters were saved and a reboot is required appears.

Figure 13. Your parameters were saved; reboot required



6. Go to **Maintenance > Reboot / Reset**, and click **Reboot Now**.

Figure 14. Reboot the wireless bridge to apply country code change



7. When the reboot is completed, log in again to continue making configuration changes.



CAUTION: Do not change the Channel setting until after the Country Code has been set for both units.

8. You have completed setting the Country Code. Continue to ["Step 6: Change Optional Configuration Settings"](#).

Step 6: Change Optional Configuration Settings

This section describes optional configuration settings that you can change prior to beginning the physical installation. These settings include:

- IP address
- Device name and location
- SSID, encryption method and passphrase
- Management VLAN
- Network management method



NOTE: Ruckus Wireless recommends leaving these settings at their default values until installation of both bridge units is complete. Note that any changes made to the root bridge settings must also be performed on the non-root bridge.

Change the IP Address

By default, the Ruckus Wireless ZoneFlex 7731 Wireless Bridge units come with DHCP enabled and will automatically acquire an IP address from a DHCP server if one is discovered on the network. If no DHCP server is found, the Root bridge and Non-Root bridge have pre-configured IP addresses assigned to prevent conflict. The default IP addresses for the two units are as follows:

Root Bridge: 192.168.2.1

Non-Root Bridge: 192.168.2.254

If you want to change the IP address of either or both of the pair, you can manually assign a static IP address on the **Configuration > Bridge** page in the Web interface.



CAUTION: If you assign static IP addresses, you must ensure that the IP addresses assigned are unique network-wide to prevent conflict.

To assign a static IP address, select the **Static IP** radio button after “Connection Type,” and enter the desired address and subnet mask as shown in [Figure 15](#).

Figure 15. Changing the IP address

The screenshot shows the configuration page for a Ruckus 7731 Wireless Bridge. The left sidebar contains navigation menus for Status, Configuration, Maintenance, and Administration. The main content area is titled 'Configuration :: Bridge' and includes sections for Device Setting, Service Provider Setting, and Ethernet Setting. In the Ethernet Setting section, the 'Connection Type' is set to 'Static IP' (indicated by a radio button). The 'IP Address' field is set to 172.17.16.52 and the 'Mask' field is set to 255.255.254.0. The 'Update Settings' button at the bottom of the form is highlighted with a red box.

Click **Update Settings** to confirm the changes.

You will need to re-enter the new IP address in your browser and login again to continue editing configuration options. The non-root bridge will automatically detect the new IP address of the root bridge and attempt to associate with it.



NOTE: This process may take several minutes. Do not unplug the ZoneFlex 7731 while it is updating its IP address.

Change Device Name, Location, User Name and Password

In addition to the IP address, you can also change the device name, location, login name and password on this page.

1. On the **Configuration > Bridge** page, replace the existing device name (default: "RuckusWB") with your preferred name for the device, as shown in [Figure 16](#).

Figure 16. Changing the device name, location, user name and password

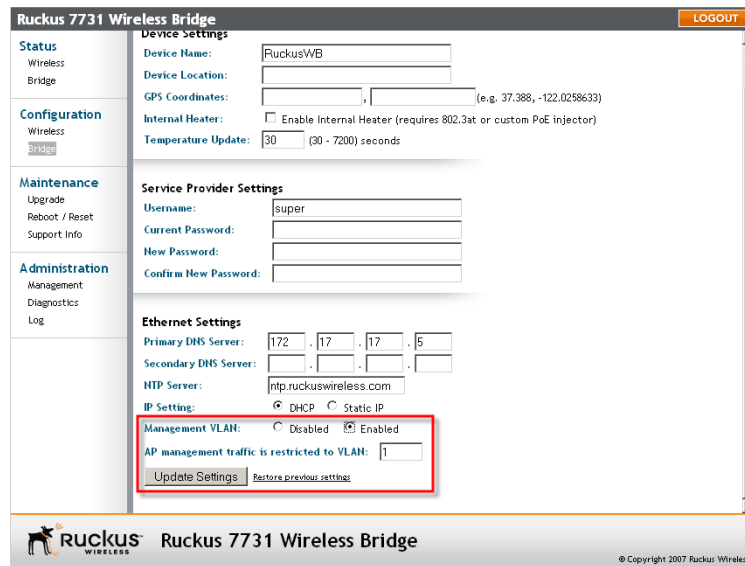
The screenshot shows the 'Configuration :: Bridge' page for a Ruckus 7731 Wireless Bridge. The 'Device Name' field is highlighted with a red box and contains the text 'RuckusWB'. Other fields include 'Device Location', 'GPS Coordinates' (with a hint '(e.g. 37.388, -122.0258633)'), 'Internal Heater' (checkbox), 'Temperature Update' (30 seconds), 'Service Provider Settings' (Username: super, Current Password, New Password, Confirm New Password), and 'Ethernet Settings' (Primary DNS Server: 172.17.17.5, Secondary DNS Server). The page has a sidebar with navigation options: Status, Configuration, Maintenance, and Administration. The footer includes the Ruckus logo and copyright information.

2. Enter a Device Location to easily identify the location of the unit.
3. Enter GPS coordinates for location management via FlexMaster.
4. Change the User Name and Password used to access the Web interface.
5. Click **Update Settings** to confirm changes.

Enable Management VLAN

If you would like to enable wireless bridge traffic to be part of an existing network management VLAN, you can set the Wireless Bridge's management VLAN to match your network via the **Configuration > Bridge** page, as shown in [Figure 17](#).

Figure 17. Enable Management VLAN



Click **Enable** next to **Management VLAN** and enter the VLAN ID in the field below. Click **Update Settings** to confirm changes.

Change SSID and Encryption Method



NOTE: If these changes are made after the units are mounted, make the changes to the remote unit, whether it be Root or Non-Root, first to avoid loss of connection.

At factory default, the Root bridge will have a unique SSID and WPA-PSK passphrase which matches that of the Non-Root bridge. Changing these values will cause the two bridge units to be unable to communicate with one another unless the values match. To change the SSID, encryption method and passphrase, open the **Configuration > Wireless** page. Enter a unique SSID in the SSID field and click **Update Settings**, as shown in [Figure 18](#).

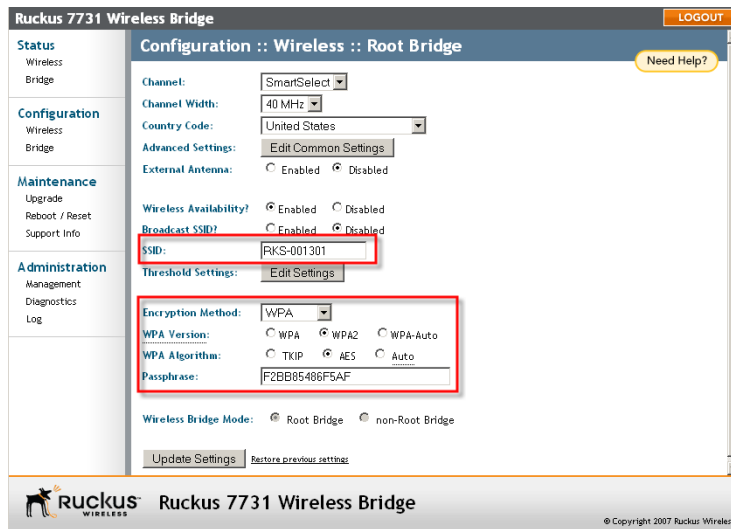


NOTE: Write down all the entries made in this step, as you will need to reenter them later when you configure the non-root bridge.

Pre-Installation Configuration

Access the Web Interface

Figure 18. Change SSID, encryption method and passphrase



The screenshot displays the 'Ruckus 7731 Wireless Bridge' web interface. The main title is 'Configuration :: Wireless :: Root Bridge'. The interface is divided into a left sidebar with navigation tabs (Status, Configuration, Maintenance, Administration) and a main content area. The 'Configuration' tab is active, showing various wireless settings. The 'SSID' field is highlighted with a red box and contains the value 'PKS-001301'. Below it, the 'Encryption Method' is set to 'WPA', and the 'Passphrase' is 'F2BB05486F5AF'. Other visible settings include Channel (SmartSelect), Channel Width (40 MHz), Country Code (United States), and Wireless Availability (Enabled). The bottom of the page features the Ruckus logo and the text 'Ruckus 7731 Wireless Bridge' and '© Copyright 2007 Ruckus Wireless'.

Configure Network Management Settings

The ZoneFlex 7731 Wireless Bridge can be managed remotely using either SNMP or Ruckus Wireless FlexMaster (TR069 protocol) server. To access the network management settings, click on **Administration > Management**.

By default, the network management method is set to **Auto**, meaning that the ZoneFlex 7731 will be managed by FlexMaster server if available, and by SNMP if no FlexMaster server is found on the network.

Figure 19. Administration :: Management page

Ruckus 7731 Wireless Bridge LOGOUT

Administration :: Management Need Help?

Status
Wireless: Bridge

Configuration
Wireless: Bridge

Maintenance
Upgrade
Reboot / Reset
Support Info

Administration
Management
Diagnostics: Log

Network Profile: ruckus

Telnet access? Enabled Disabled

Telnet Port:

SSH access? Enabled Disabled

SSH Port:

HTTP access? Enabled Disabled

HTTP Port:

HTTPS access? Enabled Disabled

HTTPS Port:

Certificate verification PASSED

TR069 / SNMP Management Choice

Auto
 SNMP only
 FlexMaster Only
 None

DHCP Discovery:

FlexMaster Server URL:

Digest-authentication Username:

RUCKUS WIRELESS **Ruckus 7731 Wireless Bridge** © Copyright 2007 Ruckus Wireless

If you want to manage the Wireless Bridge using SNMP even when a FlexMaster server is available, select **SNMP only** under “TR069/SNMP Management Choice,” then enter the Read-Only/Read-Write Community information, along with the SNMP Trap server IP address in the appropriate spaces. Click **Update Settings** to confirm changes.

The **SNMP ACL** option allows you to restrict the number of devices that can access the Wireless Bridge for management purposes. If the SNMP ACL (access control list) is disabled, then any device on the network will be able to access the Wireless Bridge using SNMP commands.

Figure 20. Enable SNMP Access Control List

The screenshot shows the configuration page for a Ruckus Wireless 7731 Wireless Bridge. The left sidebar contains navigation menus for Status, Configuration, Maintenance, and Administration. The main content area is titled "TR069 / SNMP Management Choice" and includes the following settings:

- HTTPS Access? Enabled Disabled
- HTTPS Port: 443
- Certificate Verification: PASSED
- TR069 / SNMP Management Choice:
 - Auto
 - SNMP only**
 - Flexmaster only
 - None
- SNMP Read-Only Community: public
- SNMP Read-Write Community: private
- SNMP Trap Server IP Address: 0 . 0 . 0 . 0
- SNMP ACL: Disabled **Enabled**
- SNMP ACL Server IP Address 1: 0 . 0 . 0 . 0
- SNMP ACL Server IP Address 2: 0 . 0 . 0 . 0
- SNMP ACL Server IP Address 3: 0 . 0 . 0 . 0
- SNMP ACL Server IP Address 4: 0 . 0 . 0 . 0

Buttons for "Update Settings" and "Restore previous settings" are located at the bottom of the configuration area.

To restrict SNMP access to the Wireless Bridge:

1. On the **Administration > Management** page, click on **SNMP Only** under the heading "TR069 / SNMP Management Choice."
2. Select **Enabled** next to the "SNMP ACL" line.
3. Enter the IP addresses of up to 4 SNMP servers.
4. Click **Update Settings** to confirm changes.

For Flexmaster server management, refer to ["\(Optional\) Set the FlexMaster Server Address"](#) on [page 60](#).

Step 7: Change Non-Root Bridge Configuration Settings

Repeat steps 1-6 for the Non-Root bridge for any changes you made to the Root bridge settings. If you did not make any changes, you only need to repeat step 1 to provide power and Ethernet to the non-root bridge, then proceed to [Step 8: Test the Link Between the Bridges](#). Note that setting the Country Code for the Root Bridge requires that the same setting be made for the Non-Root Bridge.

Step 8: Test the Link Between the Bridges


The SpeedFlex utility lets you test the data transfer speeds between the two bridge units. Click the SpeedFlex icon  on the home page (**Status > Wireless**) to begin testing.

Figure 21. Launch the SpeedFlex utility to test the link between bridges

The screenshot shows the Ruckus Wireless 7731 Wireless Bridge web interface. The 'Status :: Wireless' section is active, displaying various configuration parameters. A red box highlights the 'SpeedFlex' button in the 'Connected Device' table.

IP Address	MAC Address	SSID	Up/Down	Rx	RSSI	SpeedFlex	Ack	RSSI	Signal Strength
192.168.2.254	00:13:92:00:19:08	RKS-001301	1/0	44		<input checked="" type="checkbox"/>	40		

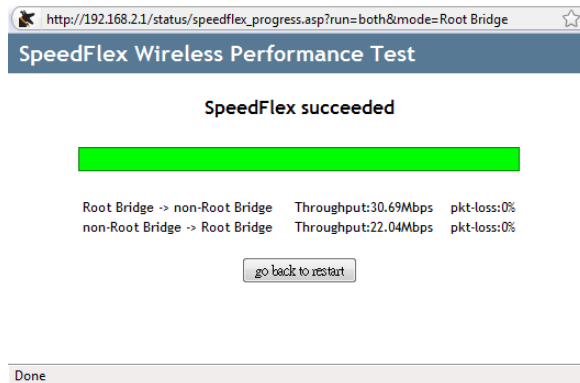
The SpeedFlex utility opens in another window. Press **Start** to begin testing both uplink and downlink performance, or deselect one of the check boxes to test only one direction.

Figure 22. SpeedFlex Wireless Performance Test

The screenshot shows the SpeedFlex Wireless Performance Test web interface. The page title is "SpeedFlex Wireless Performance Test". There are two checked checkboxes: "Root Bridge -> non-Root Bridge" and "non-Root Bridge -> Root Bridge". A "Start" button is visible below the checkboxes.

Performing both tests may take several minutes. When the test is finished, throughput and packet loss results are displayed, as shown in [Figure 23](#).

Figure 23. SpeedFlex Results page



You have finished accessing and testing the link between the ZoneFlex 7731 Wireless Point to Point Bridge pair.

Step 9: Disconnect the Wireless Bridge from the Administrative Computer

1. Disconnect the Wireless Bridge from the power source (either from the PoE injector or DC power source).
2. Verify that the **PWR** LED on the back of the Wireless Bridge is off.
3. Disconnect the Ethernet cable from the administrative computer's Ethernet port.

Step 10: Restore the Administrative Computer's Network Settings

1. On your Windows XP or Windows 2000 computer, open the **Network Connections** (or **Network and Dial-up Connections**) control panel according to how the Start menu is set up:
 - On Windows XP, click **Start > Control Panel > Network Connections**.
 - On Windows 2000, click **Start > Settings > Network Connections**.
2. When the Network Connections window appears, right-click the icon for **Local Area Connection**, and then click **Properties**.
3. When the **Local Area Connection Properties** dialog box appears, select **Internet Protocol (TCP/IP)** from the scrolling list, and then click **Properties**. The **TCP/IP Properties** dialog box appears.
4. Restore the computer's network settings by typing the original IP address settings in the **TCP/IP Properties** dialog box.
5. On the **TCP/IP Properties** dialog box, click **OK** to close it.

6. Click **OK** again to close the **Local Area Connection Properties** dialog box. You are now ready to begin the physical installation.

5 Provisioning and Associating the Wireless Bridge Pair (Optional)

Ruckus Wireless ZoneFlex 7731 Wireless Bridge units come in pre-provisioned pairs, and they will automatically associate with one another as soon as they are powered on. Therefore in most situations, you will not need to provision or associate the Root and Non-Root bridge.

However, if you need to reset either unit to its factory defaults, replace one of the units, or decide to switch which unit acts as the Root and the Non-Root bridge, you can use the following procedure to re-provision (re-assign one unit as the Root and one as the Non-Root bridge), and re-associate the link between the pair.

Auto Provisioning

The auto provisioning process is used to automatically designate one of the ZoneFlex 7731 units as the Root bridge and the other as the Non-Root bridge.



NOTE: The ZoneFlex 7731 Wireless Bridge units are shipped already paired so auto provisioning will not be needed in the field unless it becomes necessary to restore factory default settings.

Conduct the following procedure to automatically provision the root and non-root bridge:

1. Reset both units to their factory defaults, by either:
 - Pressing and holding the **Reset** button in the bottom panel for at least 6 seconds
 - Click **Reset Now** next to "Reset to factory settings?" on the **Maintenance > Reboot/Reset** page in the Web interface
-



CAUTION: Do not reset the units to factory defaults once they are mounted in their permanent locations.

2. Connect two units together directly via an Ethernet cable and provide power to both units (you can power up and then connect OR connect and then power up both units).
3. The **LAN** LED on both units (LED 2) should be solid green, indicating that the units are connected to each other. At this point, if both units have been reset to factory defaults, neither has yet been specified as Root or Non-Root.

Provisioning and Associating the Wireless Bridge Pair (Optional)

Manual Provisioning Using the Web Interface

4. Once both units are powered on and physically connected, LED 5 and 6 (labeled **P0** and **P1**) on both units begin alternately blinking, indicating that provisioning is in process. This process takes about 10 to 20 seconds.
5. Simultaneous rapid blinking of these two LEDs indicates that provisioning is complete.
6. After provisioning is complete, LED 4 (**ROLE**) indicates which unit is the Root and Non-Root unit. The **ROLE** LED is solid yellow for the Root bridge while the Non-Root bridge's **ROLE** LED is OFF.
7. Take note of which unit is the Root bridge and which is the Non-Root bridge.
8. When the auto provisioning process completes, a reboot is triggered by disconnecting the Ethernet cable. During the reboot only the bottom LED, **PWR** is lit. Once the reboot completes you will see activity on the **WLAN** LED, indicating wireless communication between the pair.
9. Because the units were reset to factory defaults before provisioning, you will need to re-set the Country Code to your location on both units (unless purchased in the United States). See "[Step 5: Change the Country Code](#)" on [page 2-20](#).

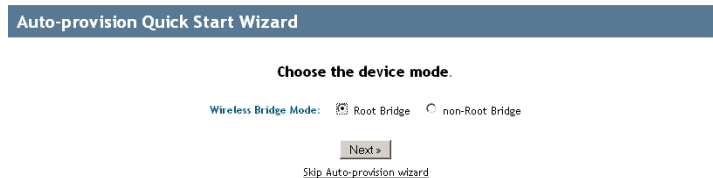
Manual Provisioning Using the Web Interface

The ZoneFlex 7731 Wireless Bridge units can also be manually provisioned using the Web interface.

The procedure for Web based provisioning is as follows:

1. Log in to the Web interface of the unit that you will designate as the Root bridge.
2. If the unit has been reset to factory defaults, the Provisioning Quick Start Wizard will launch automatically immediately after login, as shown in [Figure 24](#).

Figure 24. Provisioning Quick Start Wizard



3. Select **Root Bridge** and click **Next** to continue.
4. Adjust settings on the WLAN configuration page if necessary, and click **Next** to continue.

Figure 25. WLAN Configuration options

The screenshot shows the 'Auto-provision Quick Start Wizard' interface. The title is 'Auto-provision Quick Start Wizard'. Below the title is the heading 'Tell us about your WLAN configuration.' The form contains the following fields and options:

- Channel:** SmartSelect (dropdown)
- Channel Width:** 40 MHz (dropdown)
- Country Code:** United States (dropdown)
- Broadcast SSID:** Enabled Disabled
- SSID:** RKS-001301 (text input)
- Encryption Method:** WPA (dropdown)
- WPA Version:** WPA WPA2 WPA-Auto
- WPA Algorithm:** TKIP AES Auto
- Passphrase:** F2BB85486F5AF (text input)

At the bottom of the form, there are two buttons: '- previous page' and 'Next >'. The 'Next >' button is highlighted.

5. Set the Country Code to your location. Do not change any of the settings under Channel, Channel Width, or Broadcast SSID at this time.
6. Write down the SSID, encryption settings and Passphrase, as you will need to enter these values when you provision the Non-Root bridge.

Figure 26. Reboot after completing the Provisioning Wizard

The screenshot shows the 'Auto-provision Quick Start Wizard' interface. The title is 'Auto-provision Quick Start Wizard'. Below the title is the heading 'Your Setup'. The summary shows the following configuration:

- Wireless Bridge Mode:** Root Bridge
- Channel:** SmartSelect
- Channel Width:** 40 MHz
- Country Code:** US
- Broadcast SSID:** Disabled
- Network name (SSID):** RKS-001301
- Security mode:** WPA
- WPA Version:** wpa2
- WPA Algorithm:** aes
- WPA Passphrase:** F2BB85486F5AF

At the bottom of the summary, there are two buttons: '- previous page' and 'Reboot'. The 'Reboot' button is highlighted.

7. Click **Reboot** to confirm changes and reboot the bridge.

- Repeat steps 2-7 for the non-root bridge, selecting **Non-Root Bridge** on Step 3, and making sure you enter the same values on the **WLAN Configuration** page as those of the root bridge.

You have finished manually provisioning the wireless bridge pair.

Associating

Once the bridge pair has been provisioned, verify that they have associated with one another. If no association between the two bridge units has been established, the following will be displayed:

Figure 27. No association established



The screenshot displays the web interface for a Ruckus Wireless 7731 Wireless Bridge. The page title is "Ruckus Wireless 7731 Wireless Bridge" and includes a "LOGOUT" button in the top right corner. The main content area is titled "Status :: Wireless" and features an "Enable Auto-update" button and a "Need Help?" link. A left-hand navigation menu contains sections for "Status", "Configuration", "Maintenance", and "Administration". The "Status" section is expanded, showing the following details:

- Wireless Mode:** 11na -- Operates with 802.11n and 802.11a devices in 5 GHz spectrum only
- Channel:** Channel 52 [SmartSelect]
- Channel Width:** 40 Mhz
- Country Code:** US
- SSID:** RKS-001301
- BSSID:** 00:13:92:00:13:08
- Wireless Status:** Up (indicated by a green checkmark)
- Broadcast SSID?** Disabled (indicated by a red exclamation mark)
- Encryption Mode:** WPA
- Wireless Bridge Mode:** Root Bridge
- Aiming Action:** Start Aiming
- Link Status:** Down

A red rectangular box highlights the "Connected Device" section, which contains the text: "No stations are currently associated with this WLAN". The footer of the page includes the Ruckus logo, the text "Ruckus Wireless 7731 Wireless Bridge", and a copyright notice: "© Copyright 2007 Ruckus Wireless".

The units will automatically associate with one another after about 1 to 2 minutes. Once the association is complete, the page will refresh and the **Connected Device** information will be displayed, as shown:

Figure 28. Association established

Ruckus Wireless 7731 Wireless Bridge LOGOUT

Status :: Wireless Enable Auto-update Need Help?

Wireless Mode: 11na -- Operates with 802.11n and 802.11a devices in 5 GHz spectrum only
 Channel: Channel 165 [SmartSelect]
 Channel Width: 40 Mhz
 Country Code: US
 SSID: RKS-001301
 BSSID: 00:13:92:00:13:08
 Wireless Status: ✔ Up
 Broadcast SSID? ⚠ Disabled
 Encryption Mode: WPA

Wireless Bridge Mode: Root Bridge
 Aiming Action: Start Aiming
 Site Survey:
 Link Status: Up

IP Address	MAC Address	SSID	Up/Down	Rx RSSI	SpeedFlex	Ack RSSI	Signal Strength
192.168.2.254	00:13:92:00:19:08	RKS-001301	1/0	42	⊙	40	<div style="width: 100%; height: 10px; background: linear-gradient(to right, green, yellow, red);"></div>

RUCKUS WIRELESS Ruckus Wireless 7731 Wireless Bridge © Copyright 2007 Ruckus Wireless

Done

If no association is established after a few minutes, the Web interface provides several tools for diagnosing the problem, which can be found on the **Administration > Diagnostics** page. Tools include Ping, Traceroute, Show ARP Table and Show FDB Table.

Figure 29. Administration :: Diagnostics page

Ruckus Wireless 7731 Wireless Bridge LOGOUT

Administration :: Diagnostics Need Help?

Ping:

Ping results

```
PING 172.17.18.1 (172.17.18.1): 56 data bytes
64 bytes from 172.17.18.1: icmp_seq=0 ttl=255 time=1.0 ms
64 bytes from 172.17.18.1: icmp_seq=1 ttl=255 time=1.0 ms
64 bytes from 172.17.18.1: icmp_seq=2 ttl=255 time=1.1 ms
64 bytes from 172.17.18.1: icmp_seq=3 ttl=255 time=1.0 ms
64 bytes from 172.17.18.1: icmp_seq=4 ttl=255 time=1.1 ms
--- 172.17.18.1 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 1.0/1.0/1.1 ms
```

Traceroute:

Traceroute results

```
1 172.17.18.1 1.018 ms * 1.087 ms
```

RUCKUS WIRELESS Ruckus Wireless 7731 Wireless Bridge © Copyright 2007 Ruckus Wireless

6 Physical Installation

Prepare the Required Hardware and Tools

You must supply the following tools and equipment:

- A notebook or desktop computer running Windows XP/2000/Vista and installed with one Ethernet card
- 6mm flathead screwdriver
- 6mm Phillips screwdriver
- 10mm ratchet wrench
- 3mm Phillips screwdriver (if you will be using DC power)
- Electric drill with 8mm drill bit (if mounting on a flat surface)

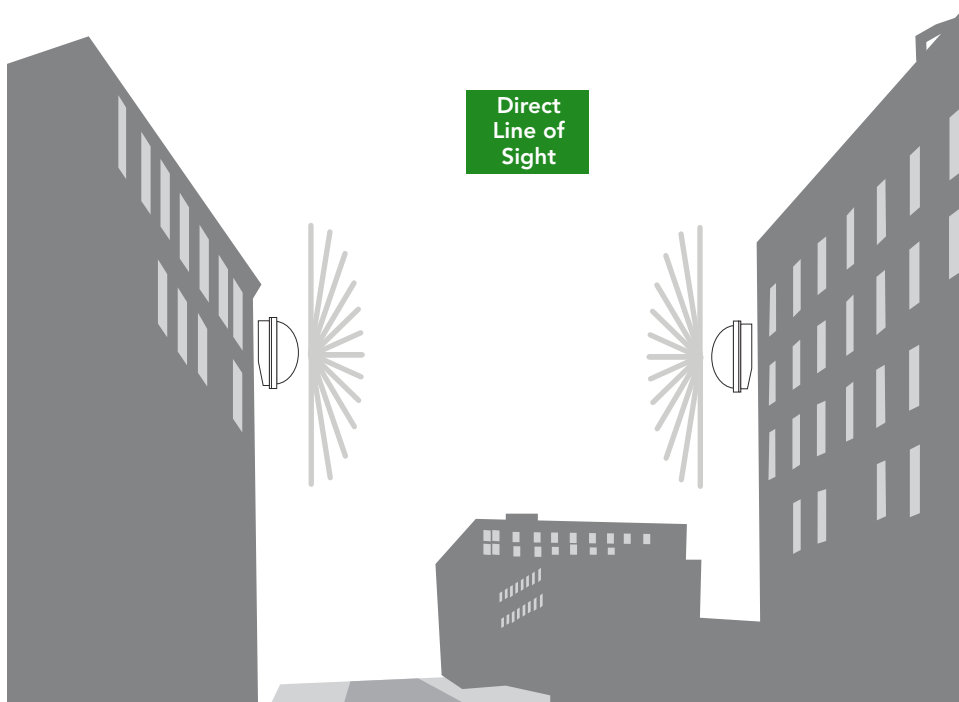
Determine the Optimal Mounting Location and Orientation

The location and orientation that you choose for the Wireless Bridge play a critical role in the performance of your wireless network. In general, Ruckus Wireless recommends installing Wireless Bridges away from obstructions and sources of interference and ensuring that the Wireless Bridges are in direct line of sight of one another.



NOTE: Ruckus Wireless recommends installing the Root bridge on the network side of the bridged link and the Non-Root bridge on the remote side.

Figure 30. Recommended orientation for optimal performance



Become Familiar with the Installation Components

The ZoneFlex 7731 Wireless Bridge is designed for installation in an outdoor environment, such as an exterior wall, or the roof overhang of a building, or a streetlight pole. Refer to [Figure 31](#) for the components involved in a typical installation.

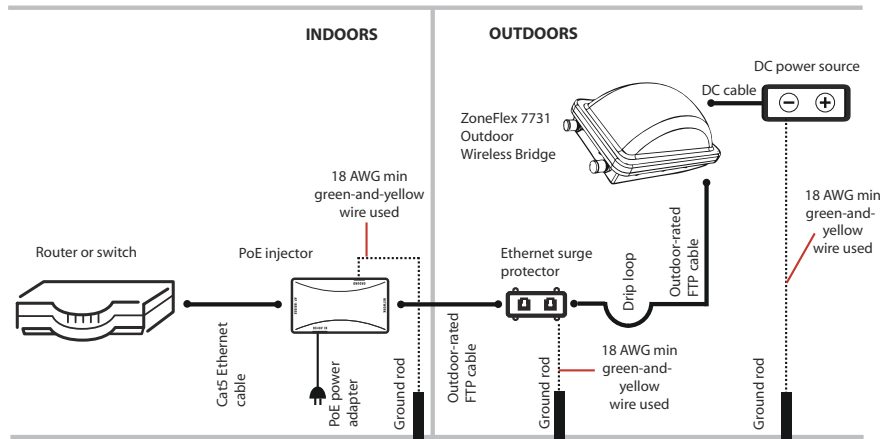
Take note of the components that must be installed indoors and outdoors. The PoE injector and power adapter that are shipped with the Wireless Bridge are for indoor use only.

Ruckus Wireless also strongly recommends that you form a drip loop on any cable that is connected to devices that are installed outdoors (for example, the Wireless Bridge and the Ethernet surge protector).

Physical Installation

Become Familiar with the Installation Components

Figure 31. Typical installation components using both PoE and DC power sources



WARNING: Only trained and qualified personnel should be allowed to install, replace, or service this equipment.



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



CAUTION: Make sure that you form a 3"-5" drip loop in any cable that will be placed outdoors. This will prevent water from running along the cable and entering the Wireless Bridge, the surge protector 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.



WARNING: The Ruckus Wireless PoE injector (if supplied with your Wireless Bridge) is for indoor use only. Never mount the PoE injector outdoors with the Wireless Bridge.

Decide How You Will Supply Power to the Wireless Bridge

The Wireless Bridge supports Power over Ethernet (PoE) and 12 VC DC power and can be connected to both power sources at the same time. If you connect the Wireless Bridge to both PoE and DC power sources at the same time, it will use PoE as the primary power source and DC power as the backup power source.

Deploying the Wireless Bridge

In this step, you will connect the Wireless Bridge to the network from its mounting location.

Step 1: Complete the Power Connections

Ruckus Wireless recommends using both PoE and DC power for backup in a typical outdoor installation. For instructions on completing the power connection that you need to make, refer to the procedures below:

- [Use Power Over Ethernet](#)
- [Use DC Power](#)

Use Power Over Ethernet

1. Take out the PoE injector and the power adapter from the Wireless Bridge package.
2. Obtain three Ethernet cables. Two of these Ethernet cables must be outdoor-rated.
3. Connect one end of the *outdoor-rated* Ethernet cable to the **RJ45** port on the Wireless Bridge, and then connect the other end to the Ethernet surge protector.
4. Connect one end of another Ethernet cable to another port on the Ethernet surge protector, and then connect the other end to the **AP/BRIDGE** port on the PoE injector.



NOTE: Install the Ethernet surge protector between the Wireless Bridge and the PoE injector and use two outdoor-rated Ethernet cables for the connections. See [Figure 31](#) for an example.

5. Connect one end of the other Ethernet cable to the **NETWORK** port on the PoE injector, and then connect the other end to your network.
6. Connect the power jack to the **DC 48V IN** connector on the PoE injector.

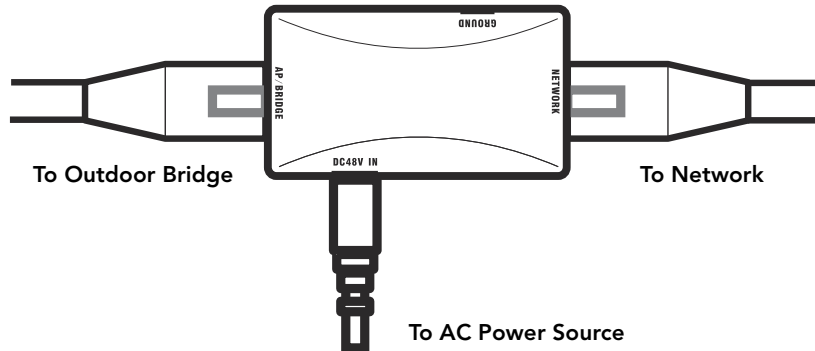


WARNING: Do not apply power to the Wireless Bridge at this point. You should connect the Wireless Bridge to a power source only after you finish connecting all other components in ["Step 3: Connect the Wireless Bridge to the Network"](#) on [page 44](#).

Physical Installation

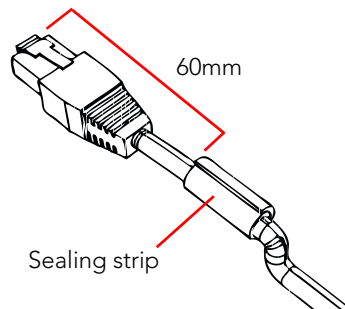
Deploying the Wireless Bridge

Figure 32. Connect the Ethernet cables and power adapter to the PoE injector



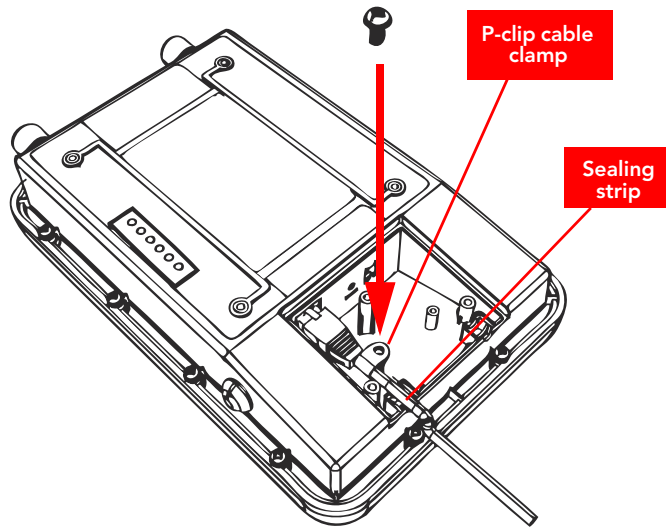
7. Take out one of the 20mm x 30mm sealing strips from the accessories bag.
8. Remove the adhesive backing from the sealing strip.
9. Wrap the sealing strip around the Ethernet cable, about 60mm from the Ethernet connector.

Figure 33. Wrap the sealing strip around the Ethernet cable, 60mm from the Ethernet connector



10. Place the Ethernet cable in the cavity on the enclosure, and then press it into position. Make sure the sealing strip protrudes beyond the entry and exit points.
11. Wrap the white P-clip cable clamp around the Ethernet cable, and then fasten it to the Wireless Bridge chassis using one of the short machine screws supplied.

Figure 34. Install the white P-clip clamp



You have completed setting up the PoE power connection.

Use DC Power

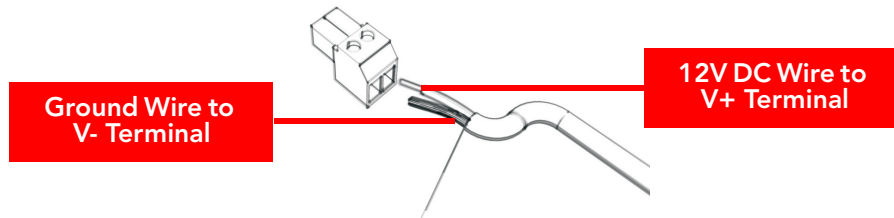
To use DC to power the Wireless Bridge, you need to connect a DC cable (not supplied with the Wireless Bridge) to the DC terminal block.

1. Take out the DC terminal block from the small plastic bag that contains the bottom cover of the Wireless Bridge.
2. Connect the DC cable's ground wire to V- terminal. If you are looking at the terminal block with the wiring terminal screws on top, the V- terminal is on the *left side*.
3. Connect the DC cable's +12V DC wire to the V+ terminal. If you are looking at the terminal block with the wiring terminal screws on top, the V+ terminal is on the *right side*.

Physical Installation

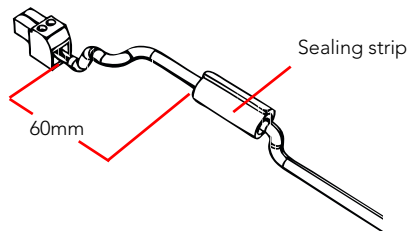
Deploying the Wireless Bridge

Figure 35. Connect the ground wire to the V- terminal and the +12V DC wire to the V+ terminal



4. Using a 3mm Phillips screw, tighten the wiring terminal screws. Screw torque value must be $20.5 \text{ mN}\cdot\text{m} \pm 2 \text{ mN}\cdot\text{m}$.
5. Take out one of the 20mm x 30mm sealing strips from the accessories bag.
6. Remove the adhesive backing from the sealing strip.
7. Wrap the sealing strip around the DC cable, about 60mm from the DC terminal block.

Figure 36. Wrap the sealing strip around the DC cable, 60mm from the DC terminal block

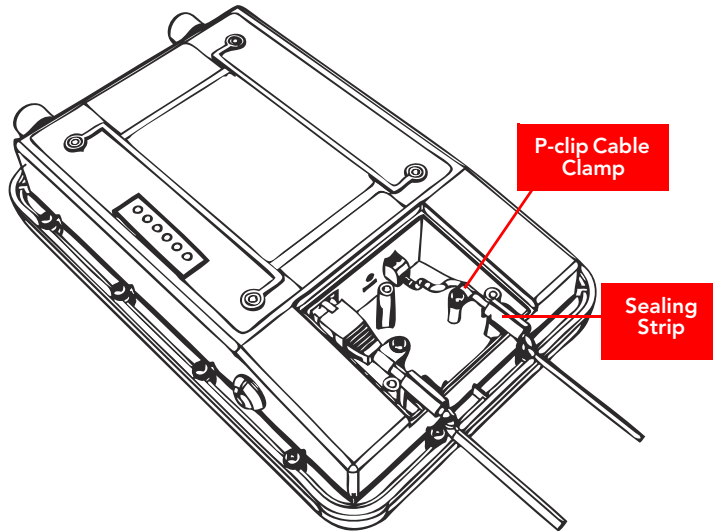


8. Connect the DC terminal block to the **12V DC** port on the Wireless Bridge.
9. Place the DC cable into the right cable groove on the enclosure, and then press it into position. Make sure the sealing strip protrudes beyond the entry and exit points.
10. Wrap the white P-clip cable clamp around the DC cable, and then fasten it to the Wireless Bridge chassis using one of the short machine screws supplied with the Wireless Bridge.



WARNING: Do not apply power to the Wireless Bridge at this point. You should connect the Wireless Bridge to a power source only after you finish connecting all other components in ["Step 3: Connect the Wireless Bridge to the Network"](#) on [page 44](#).

Figure 37. Install the white P-clip cable clamp



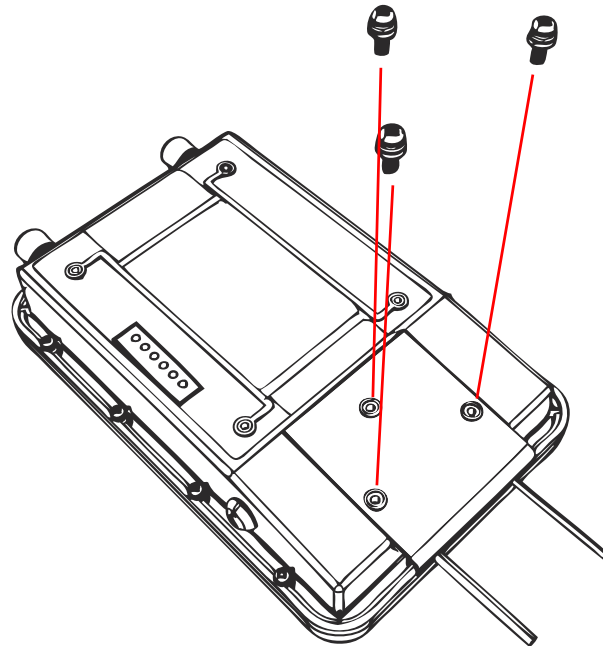
CAUTION: If you are not connecting the DC cable to the DC terminal block, make sure you cover the right cable groove with the supplied sealing plug.

You have completed setting up the DC power connection.

Step 2: Install the Back Panel Cover

1. Make sure that the perimeter rubber gasket on the underside of the bottom cover is in place and is clear of debris.
2. Place the bottom cover of the Wireless Bridge onto the bottom section.
3. Using the three gasketed machine screws that are supplied with the Wireless Bridge, fasten the bottom cover to the chassis. Screw torque value must be 6.9 ± 0.2 kgf-cm (6.2 ± 0.2 lbf-in) to obtain a proper seal.

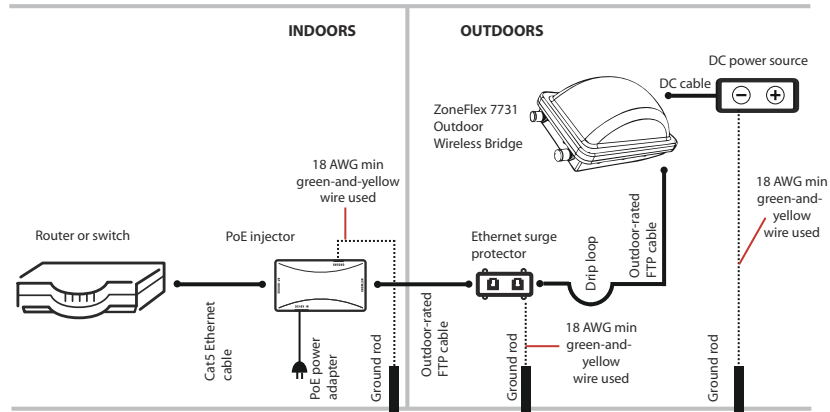
Figure 38. Fasten the bottom cover using three machine screws



Step 3: Connect the Wireless Bridge to the Network

In this step, you will connect the Wireless Bridge from its mounting location to the network. Follow the steps below for a typical installation that uses both PoE and DC power as power sources. [Figure 39](#) shows an example of the connections required for a typical installation that uses both PoE and DC power.

Figure 39. Typical installation components using both PoE and DC power sources



WARNING: Do not apply power to the Wireless Bridge until you finish connecting all other components.

1. Take the *root bridge* to its mounting location.
2. Verify that the Cat5e FTP cable (outdoor-rated) from the Wireless Bridge is long enough to reach the PoE injector that is installed indoors.
3. Create a drip loop in any cable installed outdoors. This will prevent water from running along the cable and entering the Wireless Bridge or the building where the cable terminates.
4. Verify that the **RJ45** port on the Wireless Bridge is connected to the **AP/BRIDGE** port on the PoE injector.
5. Connect the Ethernet cable from the **NETWORK** port on the PoE injector to your network router or switch.
6. Apply power to the Wireless Bridge.
 - If you are using PoE, plug the power adapter in to an AC power source.
 - If you are using DC power, connect the DC cable to a DC power source.
7. Verify that the **PWR** LED on the back of the Wireless Bridge is steady green.
8. Repeat steps 1-7 for the non-root bridge.
9. Continue to ["Attaching the Mounting Brackets"](#).

Attaching the Mounting Brackets

What You Will Need

To complete this procedure, you will need the following items:

- Static bracket
- Dynamic bracket
- Wall anchors
- Flat washers
- Hex nuts
- 10mm ratchet wrench

If you are mounting the Wireless Bridge on a flat surface, you will also need an electric drill with an 8mm drill bit.

If you are mounting the Wireless Bridge on a pipe or pole, you will also need the following:

- A 30mm to 60 mm (1.18 in. to 2.36 in.) pipe or pole
- Steel clamp
- 10mm flathead screwdriver

Step 1: Attach the Static Bracket to the Mounting Surface

The procedure for attaching the bracket to the mounting surface depends on whether you are mounting the Wireless Bridge to a flat surface or a pole.

- [Attaching the Bracket to a Flat Surface](#)
- [Attaching the Bracket to a Pole](#)

Attaching the Bracket to a Flat Surface



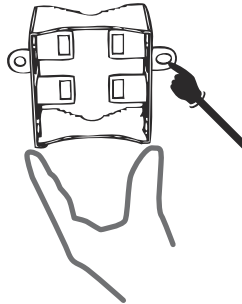
WARNING: Ruckus Wireless strongly recommends that you wear eye protection before drilling holes on the mounting surface.



NOTE: The wall anchors that are supplied with the Wireless Bridge are for mounting on *solid masonry walls* only. If you are mounting the Wireless Bridge on other materials (for example, drywall, wood, or hollow cinder block), you will need the appropriate types of wall anchors. Check your local hardware store for options.

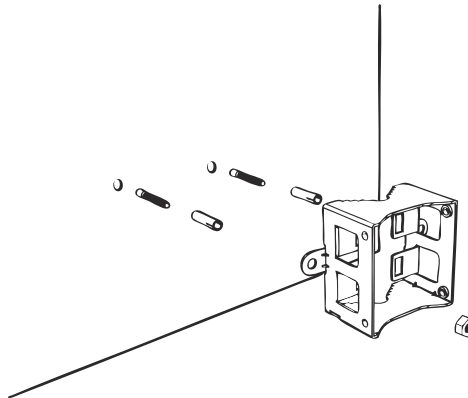
1. Place the static bracket at the exact location on the mounting surface where you want to mount it.
2. Use the static bracket as a template to mark the locations of the mounting holes on the two mounting tabs.

Figure 40. Mark the locations of the mounting holes



3. Remove the static bracket from the mounting surface.
4. Drill an 8mm-diameter hole with a depth of 36mm-38mm into each of the markings that you made on the mounting surface.
5. Insert a wall anchor (with the unthreaded part first) into each of the holes that you drilled.
6. Place a metal cone on each wall anchor, and then place a flat washer on top of the metal cone.

Figure 41. Insert a wall anchor into each hole that you drilled, and then place a metal cone and a flat washer on top

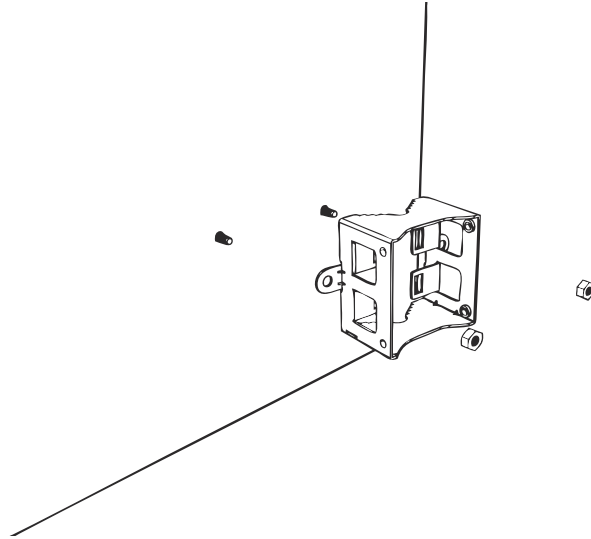


Physical Installation

Attaching the Mounting Brackets

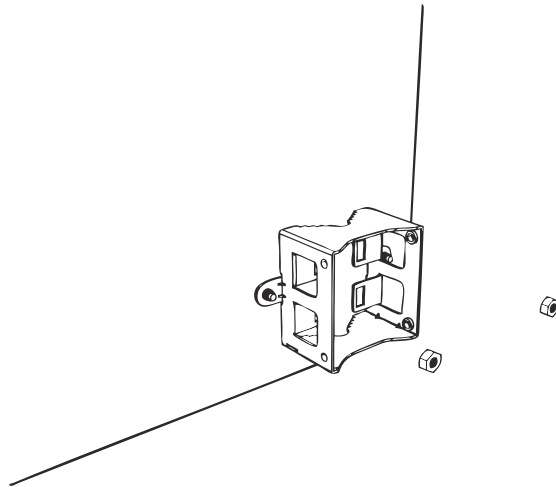
7. Align the two screw holes on the bracket with the wall anchors that you inserted earlier.

Figure 42. Align the screw holes on the bracket with the wall anchors



8. Use two hex nuts to attach the bracket to the mounting surface.

Figure 43. Use two hex nuts to attach the bracket to the surface



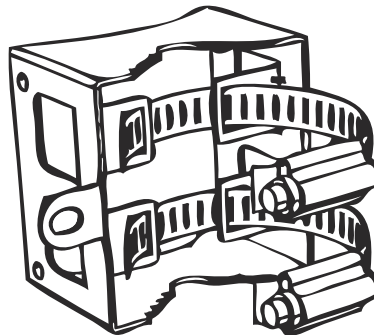
9. Using a 10mm open-end wrench, tighten the nuts to secure the bracket to the mounting surface. Screw torque value must be 4kg-5kg. As you tighten the nuts, the metal cones that are built into the wall anchors will expand and lock the wall anchors into place.
10. Continue to ["Step 2: Attach the Dynamic Bracket to the Wireless Bridge"](#).

Attaching the Bracket to a Pole

The Wireless Bridge can be mounted vertically on a 30mm to 60mm (1.18 in. to 2.36 in.) pole.

1. Insert the open end of the steel clamps into the two tabs on the bracket.

Figure 44. Insert the steel clamps into the two tabs on the bracket

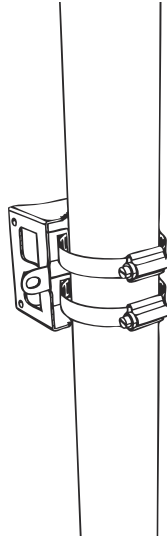


Physical Installation

Attaching the Mounting Brackets

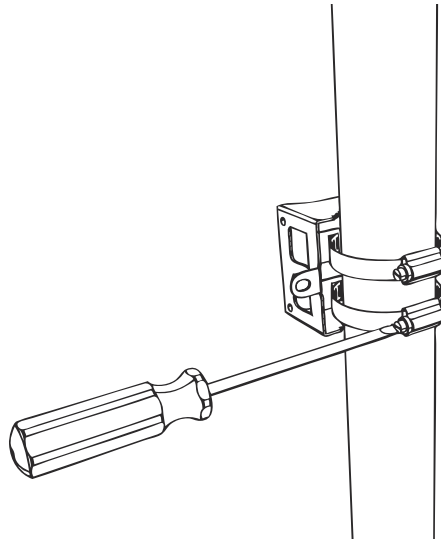
2. Use the clamps to attach the bracket to the pole.

Figure 45. Use the clamps to attach the bracket to the pole



3. Using a 10mm flathead screwdriver, tighten the clamp locks to secure the bracket to the pole. Screw torque value must be $1.1 \text{ N-m} \pm 0.1 \text{ N-m}$.

Figure 46. Tighten the clamp locks to secure the bracket

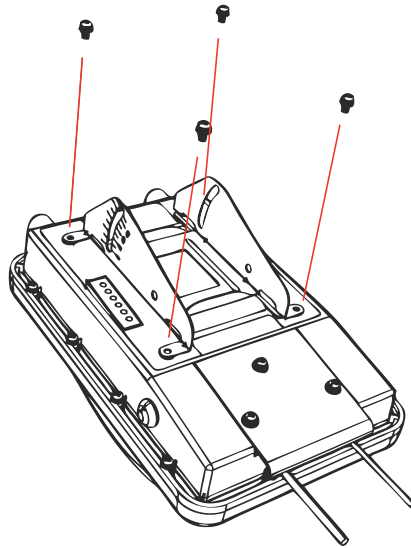


4. Continue to ["Step 2: Attach the Dynamic Bracket to the Wireless Bridge"](#).

Step 2: Attach the Dynamic Bracket to the Wireless Bridge

1. Place the dynamic bracket onto the flat side of the Wireless Bridge so that the four screw holes on the bracket align with the four screw holes on the Wireless Bridge. Make sure that the shorter end of the mounting bracket is on the same side as the antenna connector.
2. Insert four machine screws (supplied with mounting kit) into the screw holes on the bracket.

Figure 47. Insert four machine screws into the screw holes

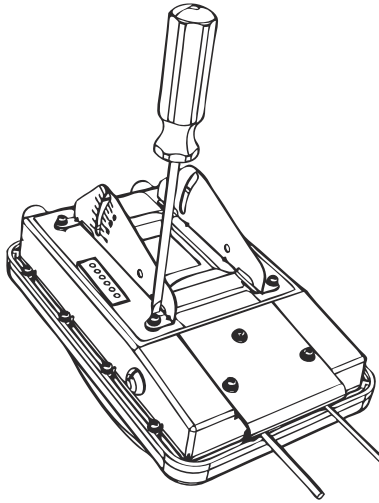


Physical Installation

Mounting the Wireless Bridge

3. Using a 6mm Phillips screwdriver, tighten the four machine screws to fasten the bracket to the Wireless Bridge. Screw torque value must be $0.4 \text{ N-m} \pm 0.1 \text{ N-m}$.

Figure 48. Fasten bracket to the Wireless Bridge



4. Continue to [“Mounting the Wireless Bridge”](#) in the next section.

Mounting the Wireless Bridge

To mount the Wireless Bridge, you will need to join the two mounting brackets that you attached earlier to the device and the mounting surface. For this procedure, you will need the following items:

- Hex bolts
- Thumb screws
- 10mm ratchet wrench



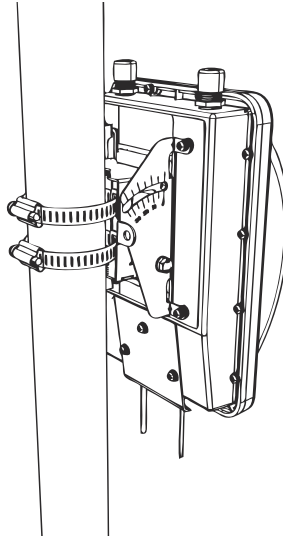
NOTE: Figures in this section show mounting on a vertical pole. Procedures for mounting on a flat surface are similar.

To join the two mounting brackets together:

1. Join the two brackets as shown in [Figure 49](#). Make sure that:

- The dynamic bracket (attached to the Wireless Bridge) encloses the static bracket (attached to the mounting surface).
- *(For mounting on a vertical pole)* The side of the Wireless Bridge with the antenna connectors is at the top, especially if you are planning to install external antennas.

Figure 49. *Joining the two brackets in a vertical pole installation*

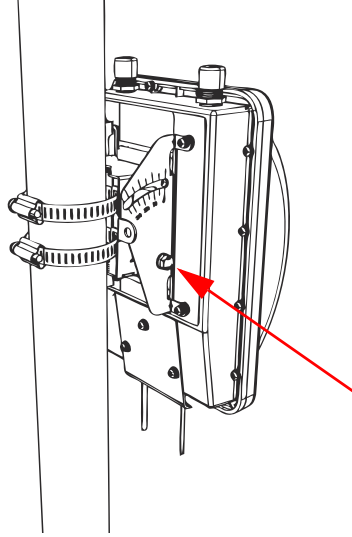


2. Align the mounting holes on the dynamic bracket with the mounting holes on the static bracket.
3. Place a split lock washer, and then a flat washer onto a hex bolt. Then insert the hex bolt into one of the lower mounting holes.

Physical Installation

Mounting the Wireless Bridge

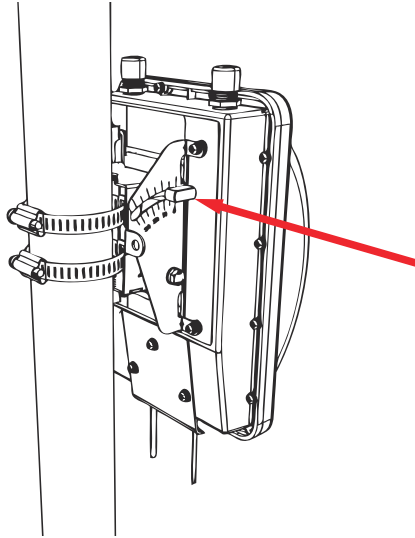
Figure 50. Insert hex bolts into lower mounting holes



NOTE: Make sure the screw-washer assembly is in correct order. The split-lock washer should be in the middle and the flat washer should touch the bracket.

4. Repeat Step 3 for the lower mounting hole on the other side.
5. Finger tighten the hex bolts.
6. Insert the two thumb screws into the upper mounting holes as shown in [Figure 51](#).

Figure 51. Insert thumb screws into the upper mounting holes



7. Finger tighten the thumb screws.
8. Adjust the Wireless Bridge to your desired orientation.



NOTE: If you have not yet determined the optimal orientation for your Wireless Bridge, refer to [“Determine the Optimal Mounting Location and Orientation”](#) on [page 36](#) for orientation guidelines.

9. Using a 10mm ratchet wrench, tighten the hex bolts to fix the Wireless Bridge’s orientation. Screw torque value must be $0.7 \text{ N-m} \pm 0.1 \text{ N-m}$.

You have completed mounting the root bridge. Perform the same procedure for mounting the non-root bridge.

Mounting and Connecting the External Antenna (Optional)

If you want to extend the range of your wireless bridge connection, you can connect an external patch antenna to the standard N-type female connectors on the Wireless Bridge.



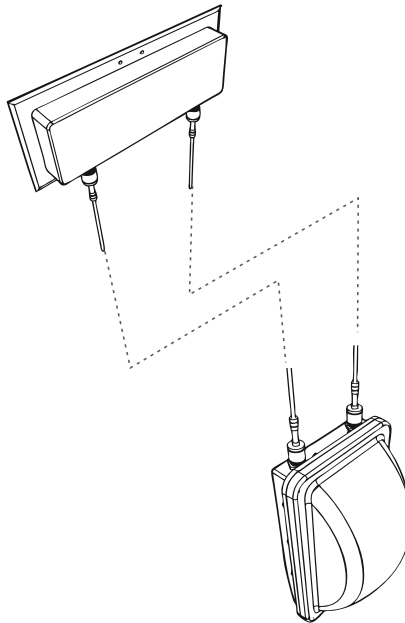
WARNING: Only trained and qualified personnel should be allowed to install, replace, or service this equipment.



WARNING: Before connecting the antenna to the Wireless Bridge, make sure that you disconnect the Wireless Bridge from the power source.

1. Disconnect the Wireless Bridge from the power source.
2. Unscrew the metal caps that protect the antenna connectors. Place the metal caps in a safe place, in case you need them later.
3. Connect the antenna to the standard N-type female antenna connectors.

Figure 52. Connect the external antenna to the standard N-type female connectors on the Wireless Bridge.



4. Ensure that antenna connectors are firmly tightened, and apply weatherproofing tape to the antenna connectors to help prevent water from entering the connectors.
5. Reconnect the Wireless Bridge to the power source.



CAUTION: If you are not connecting external antennas to the Wireless Bridge, make sure that the metal caps remain installed and securely fastened to protect the interface from elements, such as water or dirt.

You have completed connecting the external antenna to the Wireless Bridge.

7 Aiming the Bridge Pair

Once both units are installed in their permanent locations, press the **Aiming Button** on the outside of either unit to begin aiming. Alternatively, you can start the aiming process via the Web browser, by clicking **Start Aiming** on the **Status > Wireless** page.

1. Press the blue button on the side of either bridge and hold it for 4 seconds.
 - The bottom LED turns yellow, indicating that the unit is in Aiming Mode.
 - If the unit is in Aiming mode but there is no association between the two bridge units, all LEDs will cycle yellow until the two ZoneFlex 7731 units have associated.
2. Adjust the azimuth and elevation of the first unit to maximize the Aiming LED indicators. RSSI (received signal strength indication) values are shown in [Table 6](#).

Table 6. RSSI values of LED indicators

LED	Status	RSSI (<=)
LED 6	Solid	35 (Max)
	Flashing	30
LED 5	Solid	28
	Flashing	25
LED 4	Solid	23
	Flashing	20
LED 3	Solid	18
	Flashing	15
LED 2	Solid	13
	Flashing	10
LED 1	Solid	8
	Flashing	5 (Min)

Aiming the Bridge Pair

Mounting and Connecting the External Antenna (Optional)

3. After one unit is at its maximum link level, adjust the second unit to increase the link performance.
4. If the unit's elevation adjustment needs to be reversed, remove the 4 bolts mating the two mounting bracket pieces together. Remove the 4 mounting screws attaching the bracket to the ZoneFlex 7731 enclosure, rotate the bracket 180° and reattach the bracket to the enclosure. Repeat steps 2 through 7. Adjust the ZoneFlex 7731 to your desired orientation.



NOTE: The cable end of the ZoneFlex 7731 should always be pointing down.

5. Once the ZoneFlex 7731 is in the proper orientation, tighten the thumb screws flush to the bracket.
6. Using a 10mm ratchet wrench, tighten the two hex bolts to fix the unit's orientation. The bolt torque value must be 0.6-0.8 Newton meter (Nm).
7. Verify that the ZoneFlex 7731 link performance has not changed.
8. Press the blue Aiming button once again to stop aiming.
9. Repeat steps 1-8 for the other bridge unit.



NOTE: If the unit is mounted in a position that does not allow the user to view the LEDs, the Web UI can be used for Aiming. On the **Status > Wireless** page, pressing the "Start Aiming" link is the same as pressing the blue Aiming button. The Signal Strength is shown on the Web page. More green bars indicate higher signal strength.

10. If using the Web interface for aiming, adjust the orientation of the units to maximize the green bars under "Signal Strength."
11. For more precise aiming, the value under "ACK RSSI" can also be used. A higher ACK RSSI indicates better signal strength. Both the green bars in the Web interface and the LEDs on the outside of the bridge units serve as indicators of ACK RSSI values.



NOTE: For best results, it is important to perform the aiming procedure for both units.

8 Verifying the Connection

Once you have completed the hardware installation and aiming procedure for both Wireless Bridges, verify the connection and signal integrity between the bridge pair using the following procedure:

1. Access the root bridge Web interface by entering its IP address into a Web browser on a computer connected to the same switch that the root bridge is connected to.
2. On the **Status > Wireless** page, check to make sure the non-root bridge is listed under the **Connected Device** section.

Figure 53. Viewing connected device from the Web interface

The screenshot shows the Ruckus Wireless 7731 Web interface. The main content area is titled "Status :: Wireless" and includes an "Enable Auto-update" button. The settings are as follows:

- Wireless Mode: 11na -- Operates with 802.11n and 802.11a devices in 5 GHz spectrum only
- Channel: Channel 165 [SmartSelect]
- Channel Width: 40 Mhz
- Country Code: US
- SSID: RKS-001301
- BSSID: 00:13:92:00:13:08
- Wireless Status: Up (green checkmark)
- Broadcast SSID?: Disabled (red exclamation mark)
- Encryption Mode: WPA
- Wireless Bridge Mode: Root Bridge
- Aiming Action: Start Aiming
- Site Survey: Last Survey, ReScan
- Link Status: Up

Below the settings is a "Connected Device" table:

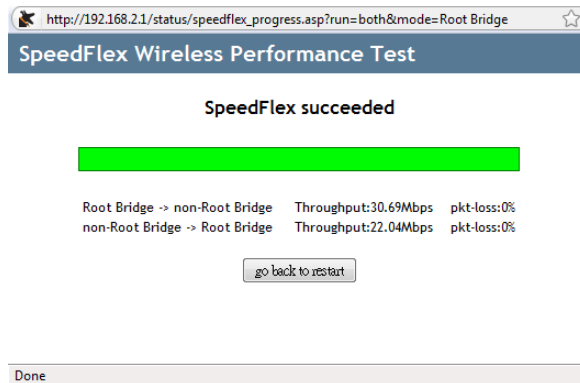
IP Address	MAC Address	SSID	Up/Down	Rx RSSI	SpeedFlex	Ack RSSI	Signal Strength
192.168.2.254	00:13:92:00:19:08	RKS-001301	1/0	44		40	

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.

What to Do Next

Change the Administrative Password

Figure 54. SpeedFlex Performance Test succeeded



9 What to Do Next

The following are some of the post-installation tasks that Ruckus Wireless recommends. Refer to the *ZoneFlex 7731 802.11n Point to Point Bridge User Guide* for more information on configuring and managing the Wireless Bridge.

Change the Administrative Password

Management access to the Web interface of the Wireless Bridge is controlled through administrative user name and password. As soon as you complete the Wireless Bridge setup, make sure you log on to the Wireless Bridge's Web interface and change the default administrative user name and password. This will help prevent unauthorized users from logging in to the Wireless Bridge's Web interface and changing the Wireless Bridge settings to compromise your network.

Using FlexMaster to Manage the Wireless Bridge

If you are planning to use Ruckus Wireless FlexMaster to manage the ZoneFlex 7731, this guide describes the required steps that will enable the Wireless Bridge to report to and communicate with FlexMaster successfully.

(Optional) Set the FlexMaster Server Address

If you have a FlexMaster server installed on the network and you intend to use FlexMaster to manage the Wireless Bridge, you can set the FlexMaster server address at this point. Before starting this procedure, make sure you obtain the correct FlexMaster server URL.



NOTE: In addition to setting the FlexMaster server URL manually on the Wireless Bridge, you can also use DHCP Option 43 or DNS to point the Wireless Bridge to the FlexMaster server. For more information, refer to the *FlexMaster User Guide*.

1. On the menu, click **Administration > Management**.
2. Scroll down the page to the **TR069 / SNMP Management Choice** section.
3. Verify that the **Auto** option is selected.
4. In **FlexMaster Server URL**, type the URL of the FlexMaster server on the network. You can use either `http` or `https` to connect to the URL and include either the host name or IP address of the FlexMaster server in the URL. The following are examples of valid FlexMaster server URLs:

```
http://flexmaster/intune/server
```

```
https://flexmaster/intune/server
```

```
http://192.168.20.1/intune/server
```

```
https://192.168.20.1/intune/server
```

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

You have completed setting the FlexMaster server address on the Wireless Bridge.

Figure 55. Type the FlexMaster server URL

The screenshot shows the configuration page for a Ruckus 7731 Wireless Bridge. The left sidebar contains navigation menus for Status, Configuration, Maintenance, and Administration. The main content area is titled "Ruckus 7731 Wireless Bridge" and includes sections for "HTTPS access?" (Enabled), "Certificate verification" (PASSED), and "TR069 / SNMP Management Choice" (Auto). The "DHCP Discovery:" section is expanded, showing the "FlexMaster Server URL:" field highlighted with a red border, containing the value "https://flexmaster/intune/server". Other fields include "Digest-authentication Username:" (001392-ZF10000088), "Digest-authentication Password:" (ZF10000088-001392), and "Periodic FlexMaster Inform Interval:" (15 minutes). Below this is a "TR069 Status:" section with details on the last attempted and successful contacts, and a "Current Time:" of Wed Aug 26 02:16:51 2009 (UTC). At the bottom of the configuration area are "Update Settings" and "Restore previous settings" buttons.

Read Related Documentation

If you are using FlexMaster to manage the Wireless Bridge, make sure you read the accompanying documentation to learn how to configure and manage the Wireless Bridge from the FlexMaster Web interface.

The latest versions of Ruckus Wireless product documentation are available for download on the Ruckus Wireless Support Web site at:

<http://support.ruckuswireless.com/documents>

Professional Installation Instruction

1. Installation personnel: This product is designed for specific application and needs to be installed by a qualified person who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.
2. Installation location: The product shall be installed at a location where the radiating antenna can be kept 20 cm from nearby person in normal operation condition to meet regulatory RF exposure requirement. Additionally, installation locations with 35km of Terminal Doppler Weather Radar locations shall follow instructions below.
3. External antenna: Use only the antennas which have been approved by Ruckus Wireless. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC limit and is prohibited.
4. Installation procedure: Please refer to user's manual for the detail.
5. Warning: Please carefully select the installation position and make sure that the final output power does not exceed the limit set forth in US Rule CFR 47 part 15 section 6.15.247 & 15.407. The violation of the rule could lead to serious federal penalty.

Terminal Doppler Weather Radar Interference

Any installation of this product within 35km of a Terminal Doppler Weather Radar (TDWR) location must be separated by at least 30MHz (center-to-center) from the TDWR operating frequency. A database of TDWR locations and their center frequencies can be found at the following URL: <http://www.spectrumbridge.com/udia/home.aspx>. The installer is encouraged to register installations in the 5470-5725 frequency band at the same URL, where registration instructions are provided.

Federal Communications Commission Notices

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This equipment shall not be collocated with any other transmitter.

Harmful Interference Notice

This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment or devices
- Connect the equipment to an outlet other than the receiver's
- Consult a dealer or an experienced radio/TV technician for assistance

Changes or modifications to this equipment that have not been approved by Ruckus Wireless may void the user's authority to operate this equipment. For operation within 5.15 – 5.25GHz frequency range, it is restricted to indoor environment.

External Antenna

This device has been designed to operate with a patch antenna, and having a maximum gain of 23 dBi. Other antenna types or having a gain greater than 23 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Industry Canada Statement

This device complies with Industry Canada ICES-003 and RSS210 rules. Operation is subject to the following two conditions:

1. This device may not cause interference and
 2. This device must accept any interference, including interference that may cause undesired operation of the device.
- Cet appareil est conforme aux normes NMB003 et RSS210 d'Industrie Canada. Le fonctionnement est soumis aux conditions suivantes :
1. Ce périphérique ne doit pas causer d'interférences;
 2. Ce périphérique doit accepter toutes les interférences reçues, y compris celles qui risquent d'entraîner un fonctionnement indésirable.

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Caution:

The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel mobile satellite systems. High power radars are allocated as primary users (meaning they have priority) of 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

This device has been designed to operate with an antenna having a maximum gain of 23 dBm. Antenna having a higher gain is strictly prohibited per regulations of Industry Canada. The required antenna impedance is 50 ohms.

Australia Statement

This device complies with the ACMA requirements for a Wi-Fi device namely Radio Communications (Low Impact Potential Devices) Class Licence 2000 Amd. 1:2007 and Radiocommunications (Compliance Labelling – Electromagnetic Radiation) Notice 2003. The equipment complies with the ACMA requirements for radiation exposure for a "general user/non-aware user". This equipment should be installed and operated with a minimum distance of 50 cm between the radiator and your body. This equipment complies with the Australian safety requirements if connected to an approved power supply. The frequency band 5150 – 5350 MHz is restricted to indoor use.

European Union Notices

This product only supplied by Limited Power sources (sub-clause 2.5 of standard EN 60950-1).



Compliance Information for 5-GHz Wireless Products

The following standards were applied during the assessment of the product against the requirements of the Directive 1999/5/EC:

- EN 301 893
- EMC: EN 301 489-1, EN 301 489-17
- Safety: EN 60950, EN 50385

The frequency band 5150 – 5350 MHz is restricted to indoor use.

National Restrictions

This product may be used in all EU countries (and other countries following the EU directive 1999/5/EC) without any limitation except for the countries mentioned below: *Ce produit peut être utilisé dans tous les pays de l'UE (et dans tous les pays ayant transposés la directive 1999/5/CE) sans aucune limitation, excepté pour les pays mentionnés ci-dessous:*

Questo prodotto è utilizzabile in tutte i paesi EU (ed in tutti gli altri paesi che seguono le direttive EU 1999/5/EC) senza nessuna limitazione, eccetto per i paesi menzionati di seguito:

Das Produkt kann in allen EU Staaten ohne Einschränkungen eingesetzt werden (sowie in anderen Staaten die der EU Direktive 1999/5/CE folgen) mit Ausnahme der folgenden aufgeführten Staaten:

Belgium

The Belgian Institute for Postal Services and Telecommunications (BIPT) must be notified of any outdoor wireless link having a range exceeding 300 meters. Please check <http://www.bipt.be> for more details.

Draadloze verbindingen voor buitengebruik en met een reikwijdte van meer dan 300 meter dienen aangemeld te worden bij het Belgisch Instituut voor postdiensten en telecommunicatie (BIPT). Zie <http://www.bipt.be> voor meer gegevens.

Les liaisons sans fil pour une utilisation en extérieur d'une distance supérieure à 300 mètres doivent être notifiées à l'Institut Belge des services Postaux et des Télécommunications (IBPT). Visitez <http://www.ibpt.be> pour de plus amples détails.

Taiwan Statement

This device has been designed to operate with a patch antenna, and having a maximum gain of 23 dBi, such as the ARC-ID5823B88 Other antenna types or having a gain greater than 23 dBi are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Turkey Statement

Operation in the 5,475-5,725 Ghz band is not allowed.

Česky [Czech]	Ruckus Wireless tímto prohlašuje, že tento Radio LAN je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.
Dansk [Danish]	Undertegnede Ruckus Wireless erklærer herved, at følgende udstyr Radio LAN overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch [German]	Hiermit erklärt Ruckus Wireless, dass sich das Gerät Radio LAN in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EG befindet.
Eesti [Estonian]	Käesolevaga kinnitab Ruckus Wireless seadme Radio LAN vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
English	Hereby, Ruckus Wireless declares that this Radio LAN is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Español [Spanish]	Por medio de la presente Ruckus Wireless declara que el Radio LAN cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Ελληνική [Greek]	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Ruckus Wireless ΔΗΛΩΝΕΙ ΟΤΙ Radio LAN ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Français [French]	Par la présente Ruckus Wireless déclare que l'appareil Radio LAN est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Italiano [Italian]	Con la presente Ruckus Wireless dichiara che questo Radio LAN è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Latviski [Latvian]	Ar šo Ruckus Wireless deklarē, ka Radio LAN atbilst Direktīvas 1999/5/EK būtiskajām prasībām un citiem ar to saistītajiem noteikumiem.
Lietuvių [Lithuanian]	Šiuo Ruckus Wireless deklaruoja, kad šis Radio LAN atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Nederlands [Dutch]	Hierbij verklaart Ruckus Wireless dat het toestel Radio LAN in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.
Malti [Maltese]	Hawnhekk, Ruckus Wireless, jiddikjara li dan Radio LAN jikkonforma mal-ftigijiet essenzjali u ma provvedimenti oħrajn rilevanti li hemm fid-Dirrettiva 1999/5/EC.
Magyar [Hungarian]	Alulírott, Ruckus Wireless nyilatkozom, hogy a Radio LAN megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.
Polski [Polish]	Niniejszym Ruckus Wireless oświadcza, że Radio LAN jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português [Portuguese]	Ruckus Wireless declara que este Radio LAN está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Slovensko [Slovenian]	Ruckus Wireless izjavlja, da je ta Radio LAN v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.
Slovensky [Slovak]	Ruckus Wireless týmto vyhlasuje, že Radio LAN spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.
Suomi [Finnish]	Ruckus Wireless vakuuttaa täten että Radio LAN tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska [Swedish]	Härmed intygar Ruckus Wireless att denna Radio LAN står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Íslenska [Icelandic]	Hér með lýsir Ruckus Wireless yfir því að Radio LAN er í samræmi við grunnkröfur og aðrar kröfur, sem gerðar eru í tilskipun 1999/5/EC.
Norsk [Norwegian]	Ruckus Wireless erklærer herved at utstyret Radio LAN er i samsvar med de grunnleggende krav og øvrige relevante krav i direktiv 1999/5/EF.