

# WK-1x

WK-1, WK-1-B, WK-1-O, WK-1-C

802.11ac Dual Band Access Point

User Guide Version 1.2



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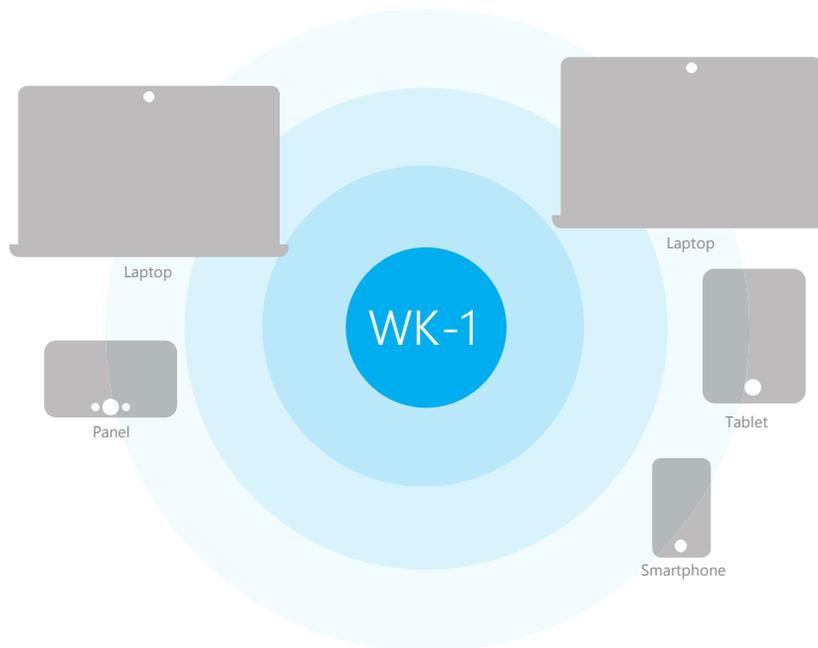
# Introduction

Thank you for purchasing the Pagedge WK-1x 802.11ac Dual Band Access Point.

As the central component of your wireless network, the WK-1 provides you with high-speed, high-range wireless AC networking. The WK-1x broadcasts on both the 2.4 GHz and 5 GHz band so that select devices can choose their preferred source of wireless internet, improving the overall stability, reliability and performance of the wireless network.

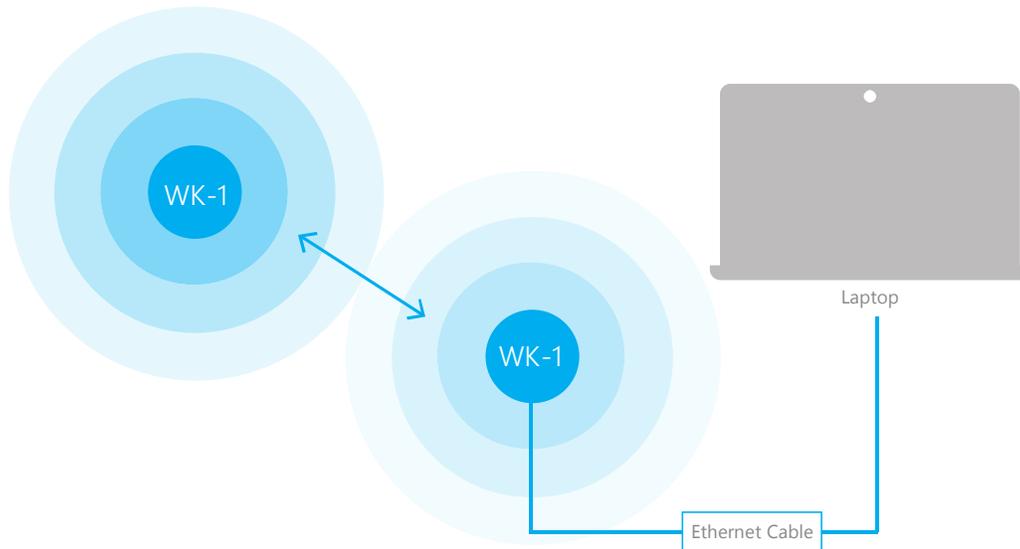
Each band (either 2.4 GHz or 5 GHz) of the WK-1x can operate in three modes:

- **Access Point Mode:** This is the typical configuration for most Wi-Fi networks, as shown below.



- **WDS Bridge Mode:** This mode is used to send wireless internet to a hardwired device when you cannot use an Ethernet cable directly. Let's say you have a desktop computer in an isolated portion of an old home and can't run a cable through the whole house to get internet to that specific computer.

- When you put the WK-1x in bridge mode, it can receive a wireless signal from an access point in root access point mode and send it to a client device through an Ethernet connection.



- **WDS Repeater** – The repeater also receives wireless signal from another access point. However, unlike a bridge access point, a repeater access point sends out Wi-Fi so that client devices can connect to it wirelessly.



The functionality of the WK-1x changes depending on its operating mode. This manual offers both general and mode-specific content.

# System Requirements

The minimum system requirements for the WK-1x are:

- PC or MAC book compatible with an Ethernet interface
- Operating system that supports an HTTP web browser

## Hardware Installation

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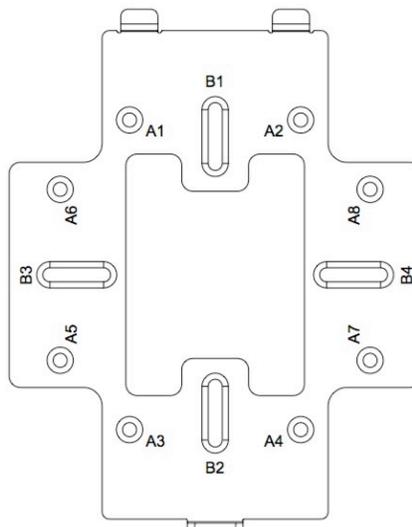
Note: the product is designed for specific application and must be professionally installed by a qualified person who has RF and related knowledge.

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## WK-1/WK-1-B Mounting Options

### Using the Provided Wall Mount

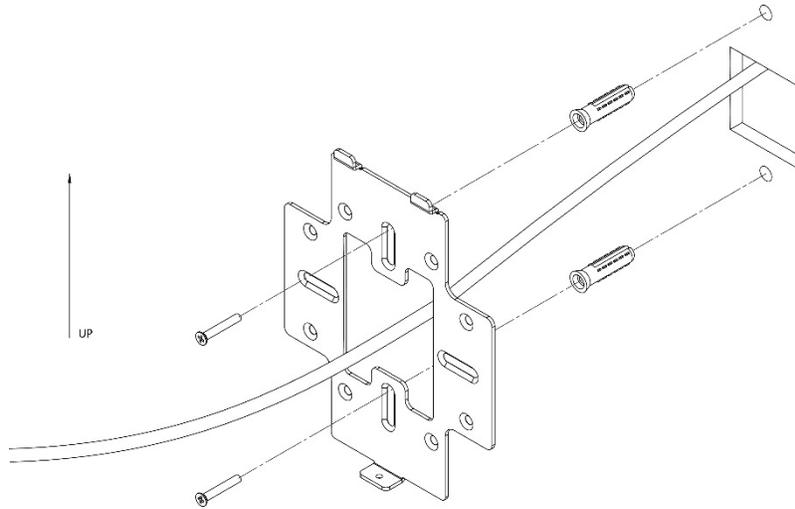
If planning on mounting the WK-1x



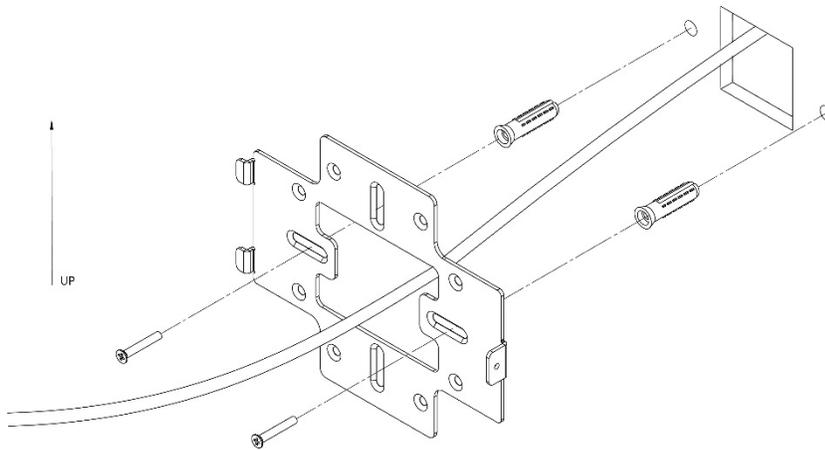
A: DOUBLE-GANG ELECTRICAL BOX, WALL

B: WALL, SINGLE-GANG ELECTRICAL BOX, EUROPEAN OUTLET BOX US 4" ROUND JUNCTION BOX, US 3.5" ROUND JUNCTION BOX

**Vertical mount:** Secure the wall bracket to the wall anchors using the included hardware.

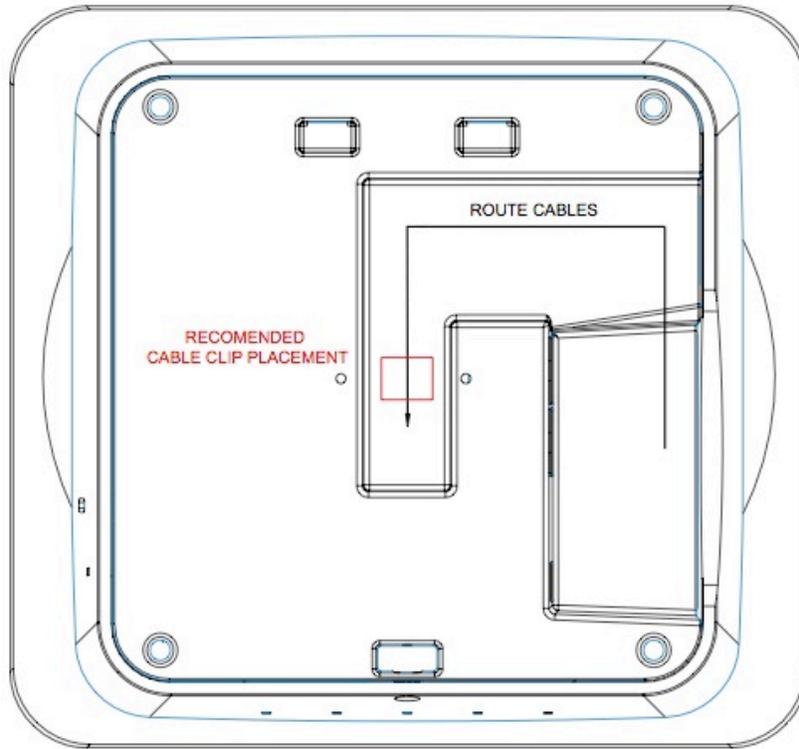


**Horizontal mount:** Line up the slots and secure the wall bracket to the wall anchors using the included hardware.

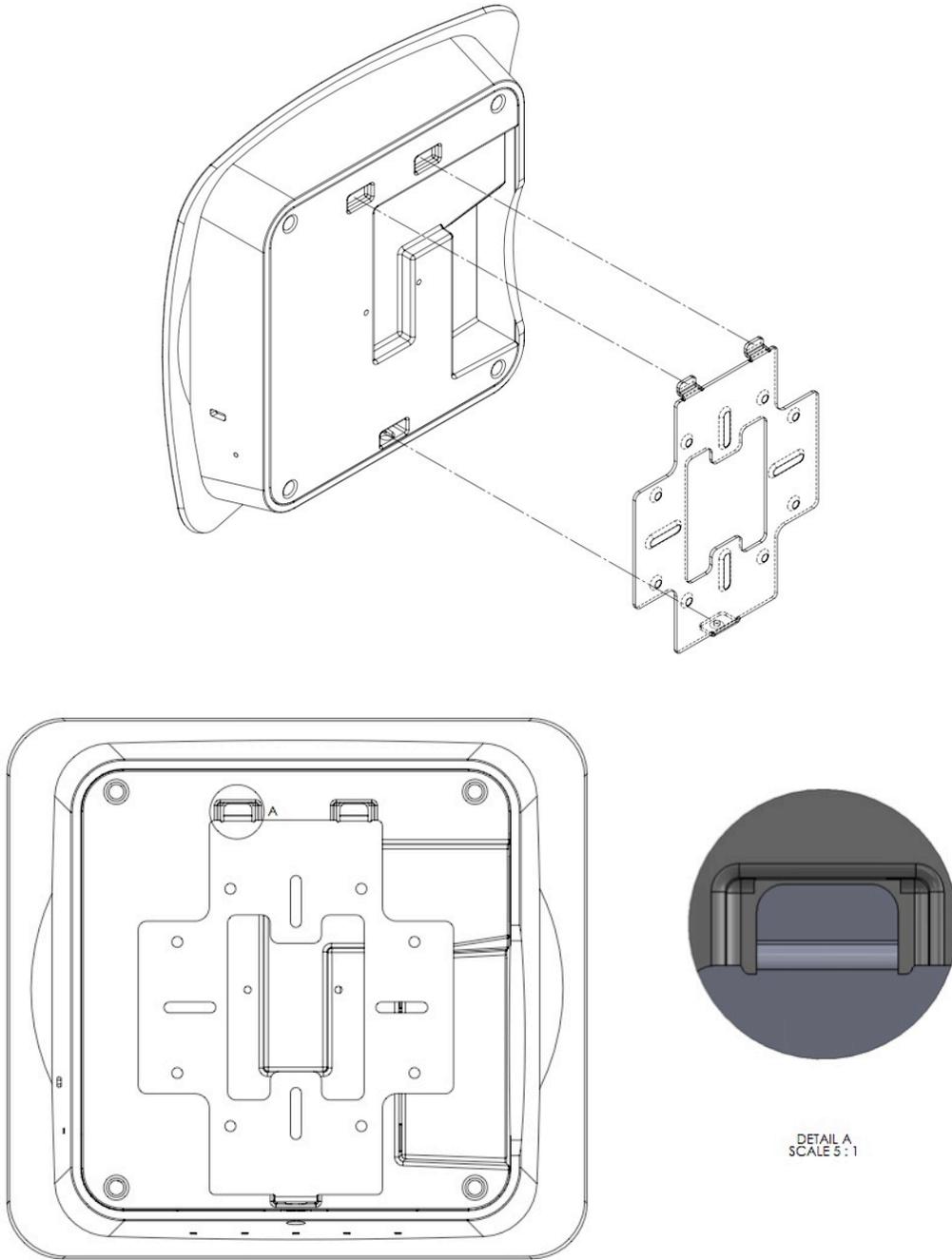


Line the two tabs on the top of the Wall Bracket with the two pockets on the back of the access point.

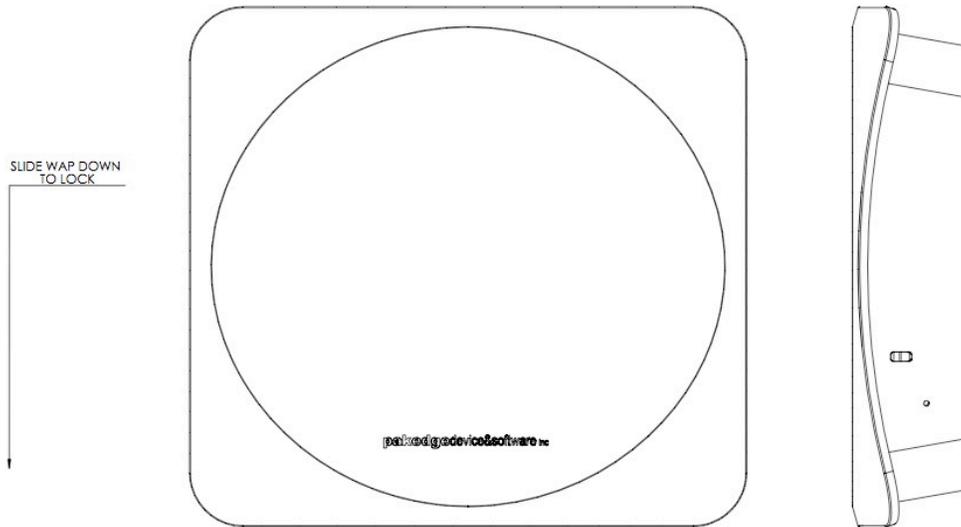
Attach the recommended plastic cable clip. Route cables along the channel on the back of the WAP and secure them to the plastic clip by pressing the cable to the clip.



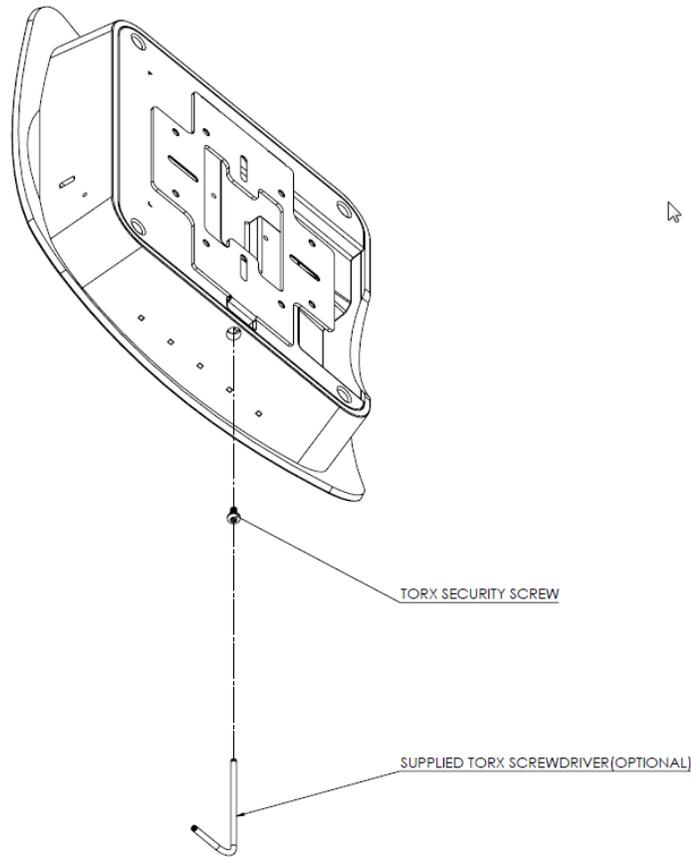
Place the access point firmly against the wall bracket, ensuring the cables are tucked in the channel on the back of the access point and/or behind the wall bracket.



Slide the WAP downward until the top two tabs on the wall bracket lock into place.



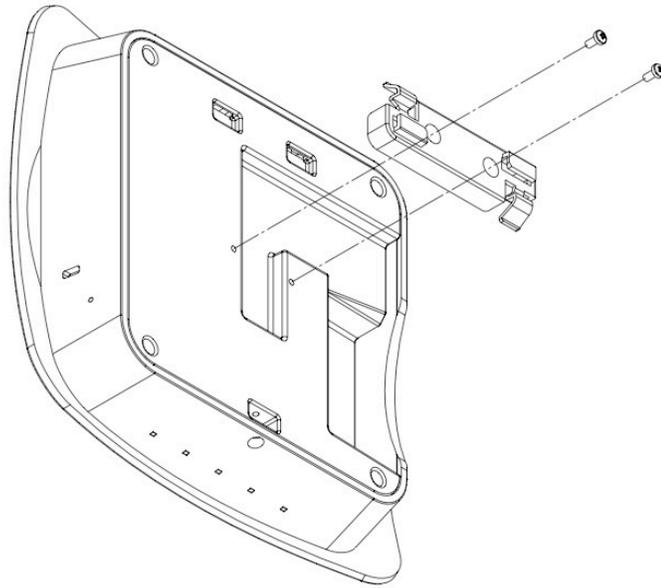
Secure the WAP to the bottom tab of the wall bracket with the included security screw.



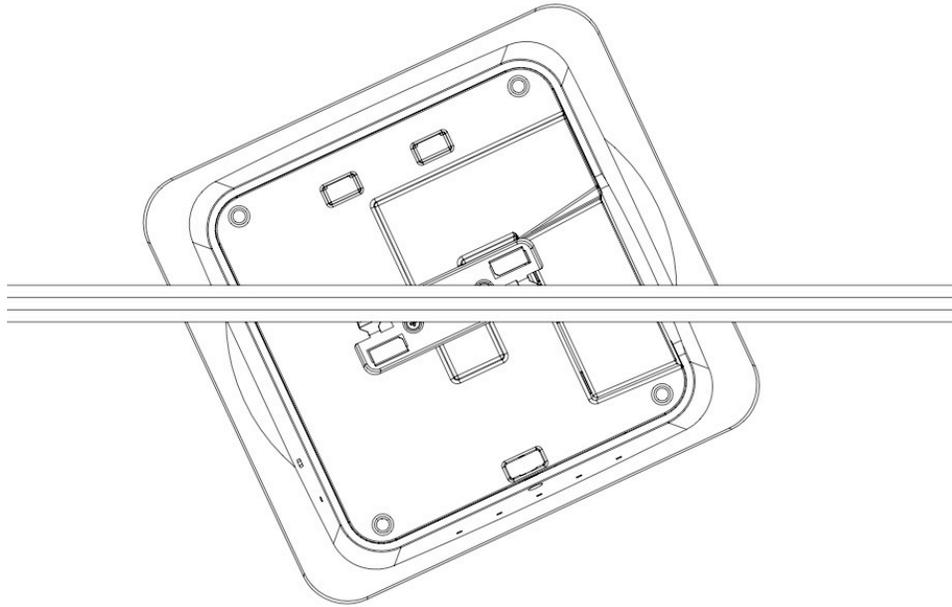
TORX SECURITY SCREW INSTALLATION

# Using Provided T-bar Bracket

1. Place the T-bar bracket into the slots on the back of the WAP. Line up the two holes on the T-Bar Bracket with the two mounting points on the back of the WAP. Using the supplied hardware, mount the T-bar bracket to the WAP.



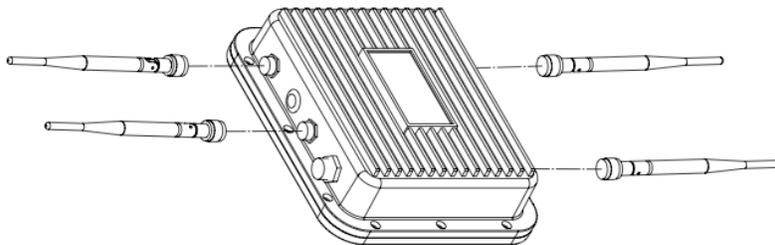
2. Rotate the WAP counter-clockwise until the T-bar bracket is secured to the T-bar.



## WK-1-O Installation

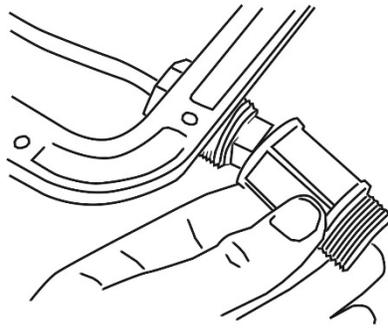
1. Place the unit in an appropriate place using the mounting kit.
2. Run an Ethernet cable to the device and plug one end into the WK-1-O access point.
3. Plug the other end of the Ethernet cable into a PoE+ injector or PoE+ Switch.
4. The LED lights will begin to light up and indicate that WAP is connected.
5. Once the WAP fully boots up, you may log into the WAP and configure the settings.

## Antennas

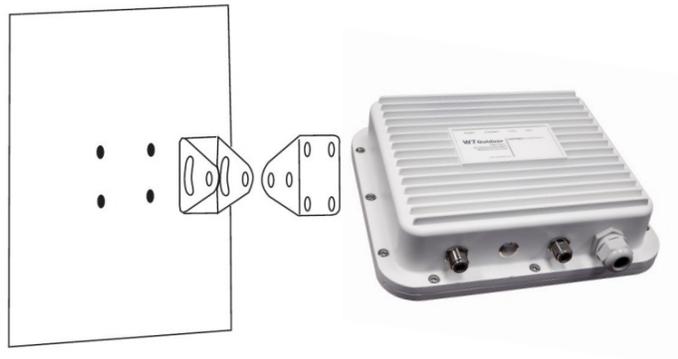


# Weather Proof RJ-45

Be sure to run the Ethernet cable through the plastic element, and seal it tightly to insure weather-proofing.



## Wall Mounting

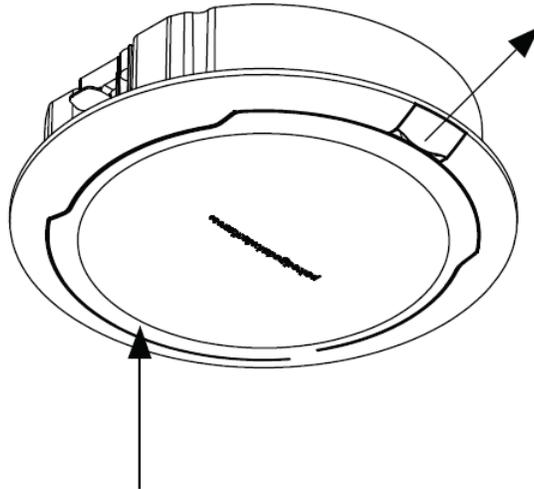


## Pipe Mounting

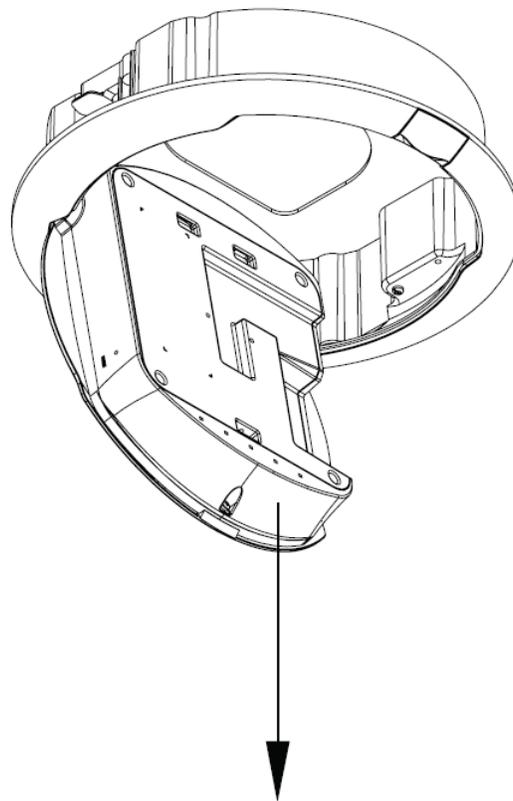


# WK-1-C Mounting

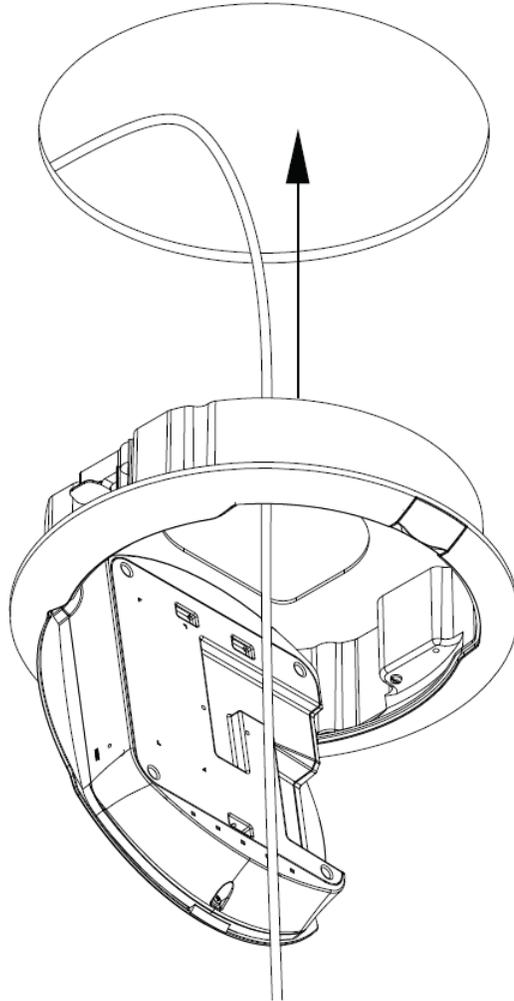
1. Open release latch, push on back of WK-1-C to swing WAP down from ceiling/wall bracket.



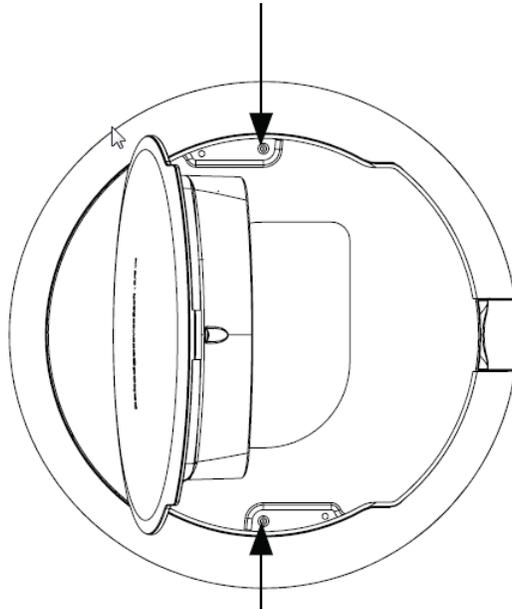
2. Swing WAP down



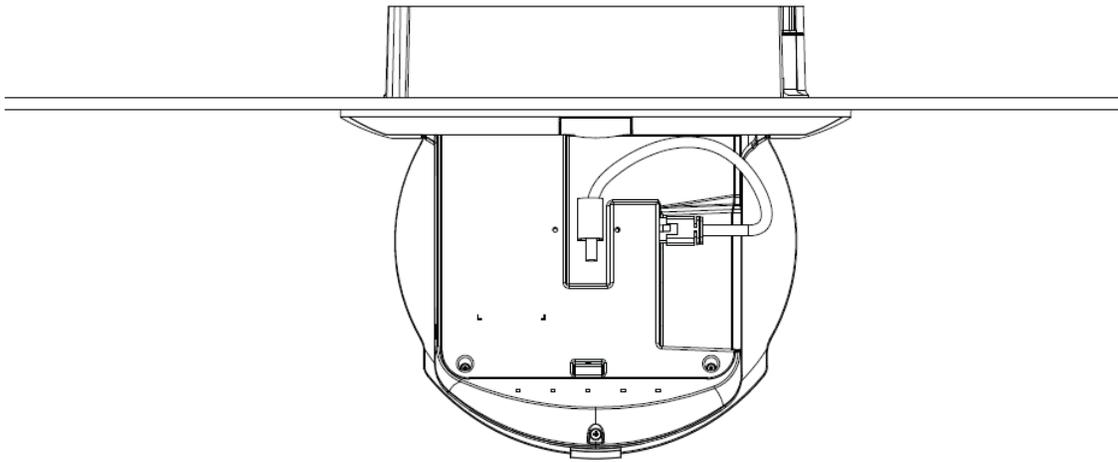
3. Using the supplied template, cut a 9.125 inch diameter circle at the desired mounting location for your WK-1-C. Route the in-wall Ethernet cable through the opening on the back of WK-1-C housing. Insert the WK-1-C into the ceiling/wall.



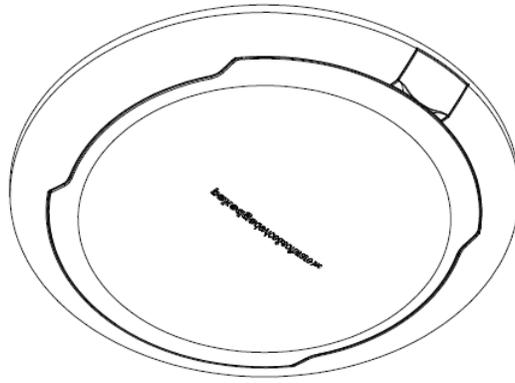
4. Without exerting too much pressure, use a Phillips screwdriver to screw in the mounting-ears as shown using a clockwise rotation. Keep screwing until the screws are difficult to rotate. Do not over-tighten the mounting-ears, as that will strip them and render them non-functional.



5. Plug an Ethernet cable into the WK-1-C. Route the Ethernet cable as shown, use optional cable clip if necessary.



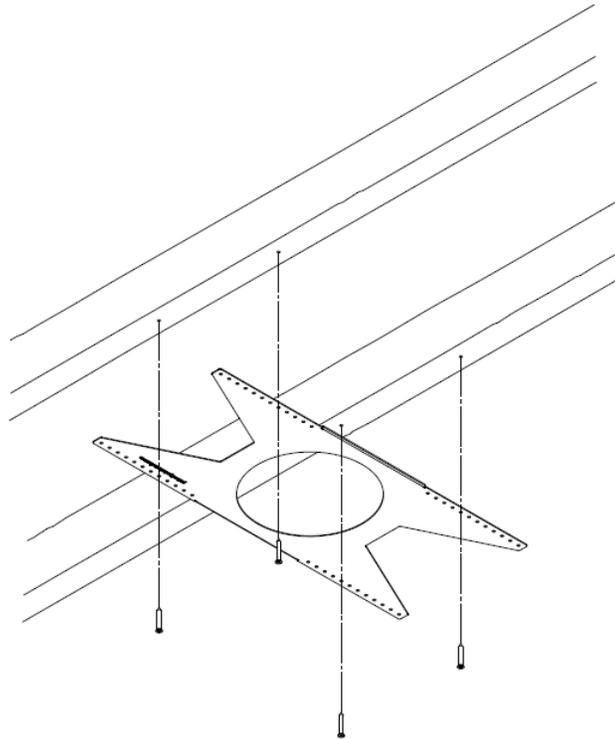
5. Swing the WK-1-C back into its housing.



**WK-1-C installation with optional pre-construction bracket**

**The pre-construction bracket is sold separately.**

1. Place the pre-construction bracket against the bottom of the ceiling studs at the desired mounting location.
2. Mark locations for mounting screws. Drill 1/16" pilot holes at marked locations. Secure pre-construction bracket to ceiling studs using the provided hardware.
3. Install the sheet rock over the pre-construction bracket. Make note of where the cutout on the pre-construction bracket is when installing the drywall.
4. Cut opening in sheet rock using the cutout on the pre-construction bracket as a guide.



**Note:** Pakedge logo should be facing outwards.

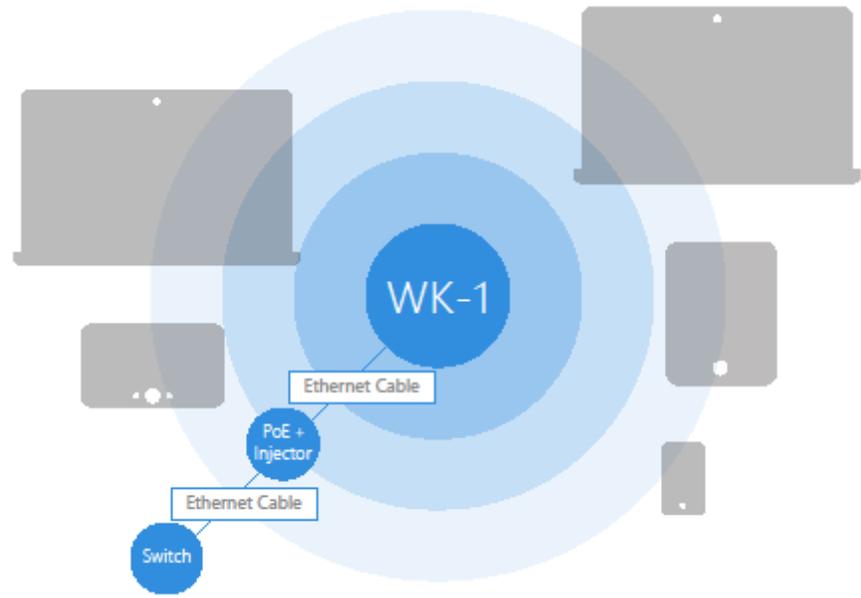
The diagrams below show using a PoE+ injector or a PoE+ switch to power the WK-1x.

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Note: the product must be powered by 802.3at - compliant Power over Ethernet (PoE+) injector or switch

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Power via PoE+ Injector



Power via PoE+ Switch



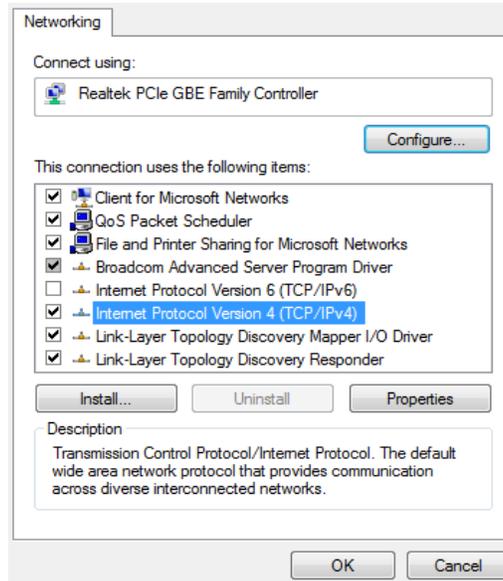
Power using the included power adapter



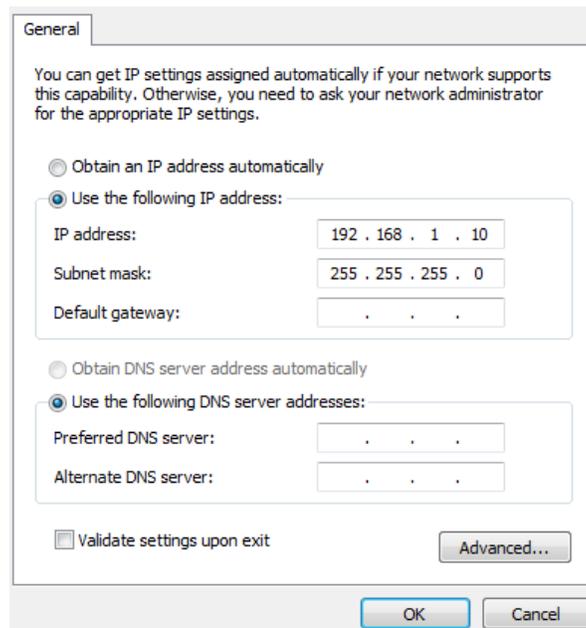
The WK-1x can be configured in several modes: Access Point, WDS Root Access Point, WDS Repeater or WDS Bridge. When shipped from the factory, the WK-1x is set to Access Point mode. The default IP address of the WK-1x is **192.168.1.250**, the username is **pakedge**, and the password is **pakedgea**.

In order to log into the WK-1x, you must first configure the TCP/IP settings of your PC/Notebook. Follow these steps:

1. Under **Control Panel**, double-click **Network Connections** and double-click the connection of your Network Interface Card (NIC). The Local Area Connection Properties dialog appears:



2. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**. The Internet Protocol (TCP/IP) dialog appears where you can configure the TCP/IP settings of your PC.

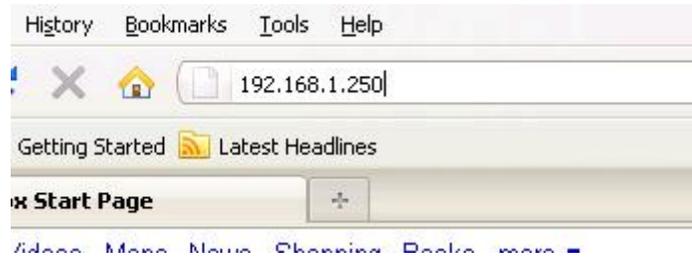


3. Select **Use the following IP Address** and type the IP address and subnet mask, as in the example below. (Be sure the IP address and subnet mask are on the same subnet as the WK-1x.)

WK-1x IP address:	192.168.1.250
PC IP address:	192.168.1.10
PC subnet mask:	255.255.255.0

## WK-1x Start Up

To configure the WK-1x through a web browser, type the IP address of the WK-1x (default **192.168.1.250**) and press **Enter**.



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**NOTE:** Make sure the WK-1x and your computer are configured on the same subnet. To configure the IP address of your computer, follow the steps in the previous section.

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The WK-1x login dialog appears.



In the username box, type **pakedge**. In the password box, type **pakedgea** and click **Login**.

The WK-1x main menu appears (see figure below). The main menu displays the current status of WK-1x and general information such as the IP address, subnet mask, and MAC addresses. The 2.4 GHz and 5 GHz sections display the device operating mode, wireless mode, channel bandwidth and channel settings. The WK-1x supports multiple SSIDs along with details and security settings for each SSID.





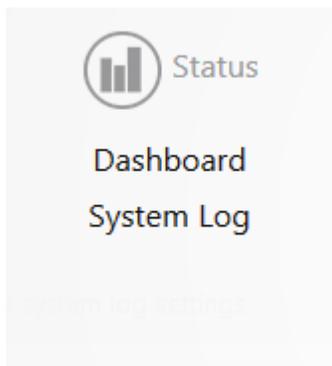
## Menu Options



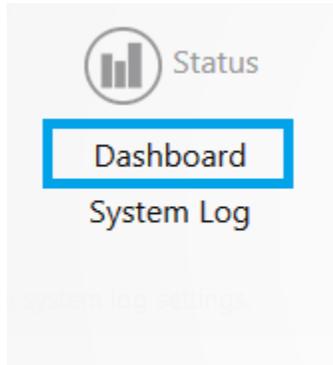
The navigation bar on the top of the window comes with 4 options:

- **Status:** Shows the dashboard and logs of the WK-1x access point. The dashboard is the default page that comes up when you log into the WK-1x GUI.
- **Network:** User can make changes to the network settings, such as the LAN, wireless settings, and transmit power settings.
- **Management:** View diagnostics, enable SNMP, and control your LEDs.
- **Maintenance:** Modify your personal account settings and update your firmware.

## Status



# Dashboard



The Dashboard is the default landing page of the access point. You can also access this page by hovering over the **Status** icon and clicking **Dashboard**. This page displays the MAC and IP addresses, operation mode, WLAN information, SSIDs and connected clients.

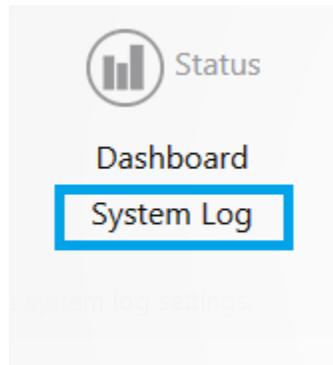
The screenshot shows the WK-1 Dashboard with the following sections:

- Header:** WK-1, Status, Network, Management, Maintenance, Logout.
- Welcome:** Thu 06/16/2015, Welcome to your WK-1 (WK-1TDF15AN0100).
- Wireless LAN Information:**
  - LAN MAC: 90A7C10B028E
  - Wireless LAN - 2.4GHz MAC: 90A7C10B028C
  - Wireless LAN - 5GHz MAC: 90A7C10B028D
  - IP address: 192.168.1.250
  - Subnet Mask: 255.255.255.0
  - Gateway: 192.168.1.99
- Wireless LAN Information (2.4GHz):**
  - Operation Mode: Access Point
  - Wireless Mode: 802.11 G/N-Mixed
  - Channel Bandwidth: 20/40 MHz
  - Channel: 11
- Wireless LAN Information (5GHz):**
  - Operation Mode: Access Point
  - Wireless Mode: 802.11 A/N/AC-Mixed
  - Channel Bandwidth: 80 MHz
  - Channel: 36
- SSID List:**

SSID	Profile	Security	VID	802.1Q	SSID	Profile	Security	VID	802.1Q
hbwkq2.4	Pakeedge Default	None	1	●	hbwkq5.0	Pakeedge Default	None	1	●
- Statistics:**

Interface	MAC	Rx(Byte/s)	Tx(Byte/s)
hbwkq2.4	92A7C10B01D8	0B	0B
hbwkq5.0	92A7C10B01D9	0B	0B
LAN1	90A7C10B01DA	137MB	60MB
LAN2	90A7C10B01DB	0B	0B

# System Log



The System Log page has an activity log that can be used by Pakedge Technical Support for troubleshooting purposes.

A screenshot of the 'System Log' configuration page. The title is 'System Log' and the subtitle is 'This page allows you to configure system log settings.' The form contains three input fields: 'System log buffer size' with the value '10240' and a note 'Buffer size is in KB'; 'External system log server' with the value '0.0.0.0'; and 'External system log server port' with the value '514'. There are two buttons: 'Download' and 'Apply'.

- **System log buffer size:** Maximum value of the buffer is 10240 KB (10MB), which is also the default setting.
- **External system log server:** An external server may be set up to receive log activity. Enter the IP address of the external server.
- **External system log port:** A port number for the external server may be entered here.
- **Download:** Download the encrypted log.

# Network



# LAN



Hover over the **Network** icon and click **LAN**. This page displays the LAN settings for the WK-1x. To configure the IP address of your WK-1x, you can configure the WK-1x with a static IP address or obtain an IP address automatically by using a DHCP client.

LAN

IP Network Setting: Static address

IP Address: 192.168.1.250

Subnet Mask: 255.255.255.0

Gateway: 192.168.1.99

Use custom DNS servers: 192.168.1.99

Management VLAN

Enable:

VLAN ID: 2-4095

Apply

## LAN

- **IP Network Setting:** Static addresses require an **IP Address**, **Subnet Mask**, and **Default Gateway**. Static address is the recommended setting. However, you may select DHCP client if your network has a router.

## Management VLAN

**Warning:** Do not enable this feature unless you need to tag the default VLAN on the access point. If configured incorrectly, the access point will become inaccessible and will need to be reset to factory default. VLAN tagging can only be set on a managed switch capable of using VLANs.

- **VLAN ID for Management:** To turn on VLAN Management, check Enable under Management VLAN.
- In the **VLAN ID** text box, enter the number of the VLAN you want to access the administrative functions of the WK-1x through. For example, if VLAN3 is used for management, type in 3.
- Click **Apply** to save your changes.

# Wireless



## Radio

Hover over **Network** and click on **Wireless**, you will be directed to the Radio configuration page under the **Radio** tab.

The "Wireless" configuration page. At the top, there are four tabs: "Radio" (selected), "Security Profiles", "Configuration", and "Guest Network". The main content area is divided into two columns for "2.4GHz" and "5GHz".  
Common settings:  
- Country Code: **US** (locked)  
- Band Steering:   
2.4GHz settings:  
- Operation Mode: Access Point  
- Wireless Mode: G/N-Mixed  
- Channel Mode: HT 20 MHz  
- Channel: Auto  
- AP Detection: Scan  
5GHz settings:  
- Operation Mode: WDS Root Access Point  
- Wireless Mode: A/N/AC-Mixed  
- Channel Mode: VHT 80 MHz  
- Channel: 36  
- AP Detection: Scan  
An "Apply" button is located at the bottom center.

- **Country Code:** Selecting your country is required for proper functionality of this device and may be required by law. After selecting your country and clicking Apply, the Country Code feature will become locked. To regain access to Country Code, the access point must be reset to factory default.

- **Band Steering:** Band steering steers 5 GHz clients to that frequency. By enabling this function, the 2.4 GHz SSID and settings will be copied to the 5 GHz band.
- **Operation Mode:** Both the 2.4 and the 5 GHz band have the following operating modes: Access Point, WDS Root Access Point, WDS Repeater and WDS Bridge.
  - **Access Point:** Standard mode of operation. Allows a wireless connection to the LAN.
  - **WDS Root Access Point:** The access point with this mode set will be the “root” device that access points configured with WDS Repeater and WDS Bridge will connect to.
  - **WDS Repeater:** This mode allows the access point to connect to a WDS Root Access Point. This setting will take the SSID broadcasted by the WDS Root Access Point and rebroadcast it to end user devices.
  - **WDS Bridge:** This mode allows the access point to connect to a WDS Root Access Point. This mode takes in the SSID broadcasted by the WDS Root Access Point and turns it into Ethernet connectivity for client devices.
- **Wireless Mode:** Choose the setting that corresponds to the type of wireless clients connected to your network: B-Only, G-Only, B/G-Mixed, N/G-Mixed or B/G/N-Mixed (on the 2.4GHz) or A-Only, N-Only, N/A-Mixed, AC-Only, AC/N-Mixed or A/AC/N-Mixed (on the 5GHz). If you aren't sure which type(s) of clients will access the wireless networks, it's recommended to choose B/G/N-Mixed on the 2.4GHz and A/AC/N-Mixed on the 5GHz for best performance.

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**NOTE:** When set to a mixed mode, ALL devices connected to the wireless will use the mode that is compatible for ALL devices. Example – If you have the 2.4GHz Wireless set to B/G/N Mixed and all connected devices use G, the speeds will slow accordingly.

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- **Channel Mode:** By default, the **Channel Mode** is set to HT 20MHz (when using 2.4GHz) and HT 80 MHz (when using 5GHz). Selecting HT 40 MHz channel mode on 2.4 GHz will allow for greater speeds, but at the risk of also increasing interference.
  - **Example:** When using the 20 MHz channel width on the 2.4 GHz band, channel 6 would bleed into channels 4, 5, 7 and 8, giving you three non-overlapping channels (1, 6 and 11). When using 40MHz channel width on the 2.4GHz radio, channel 6 would bleed into channels 2, 3, 4, 5, 7, 8, 9, and 10.
- **Channel** – Using the default setting (**Auto**), the WK-1x automatically selects the channel with best performance for the wireless network. To select a channel manually, click the drop-down list and select a channel. The channel options available depend on the Country Code selected.

- **AP Detection** – Click **Scan** to perform an automatic site survey. A new window will open and display the site survey utility. The WX-1x will scan the frequency for devices currently broadcasting their SSID, and then will display them in the table.

AP Detection

100%	<b>FIOS-9T6IP</b> Channel:153	BSSID: C8:A7:0A:9E:90:1C	Encryption:WPA2 - PSK
100%	<b>Pakedge5-1</b> Channel:44	BSSID: 90:A7:C1:08:02:91	Encryption:open
100%	<b>PakedgeGuest2.4</b> Channel:40	BSSID: B2:A7:C1:08:02:95	Encryption:WPA2 - PSK
100%	<b>PakedgeManagment2.4</b> Channel:40	BSSID: 90:A7:C1:08:02:95	Encryption:WPA2 - PSK
100%	<b>PakedgeNetwork2.4</b> Channel:40	BSSID: A2:A7:C1:08:02:95	Encryption:WPA2 - PSK
100%	<b>PakedgeVOIP2.4</b> Channel:40	BSSID: 92:A7:C1:08:02:95	Encryption:mixed WPA/WPA2 - PSK
100%	<b>Support Lab 5GHz</b> Channel:36	BSSID: 90:A7:C1:08:02:A1	Encryption:WPA2 - PSK
100%	<b>TAS</b> Channel:149	BSSID: 02:18:5A:59:22:30	Encryption:mixed WPA/WPA2 - PSK
100%	<b>TAS_ALFs</b> Channel:149	BSSID: 02:18:5A:59:22:32	Encryption:WPA2 - PSK
100%	<b>TAS_Guest</b> Channel:149	BSSID: 02:18:5A:59:22:31	Encryption:WPA2 - PSK
100%	<b>Training WK</b> Channel:36	BSSID: 90:A7:C1:08:05:F1	Encryption:WPA2 - PSK
100%	<b>WK-Rack1</b> Channel:44	BSSID: 90:A7:C1:08:0D:4D	Encryption:WPA2 - PSK

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## Security Profiles

Under the **Security Profiles** tab, you will be able to configure security profiles that can be used when creating SSIDs under the configuration tab.

Wireless

Radio **Security Profiles** Configuration Guest Network

Profile Name	Encryption	Password	Manage
Pakedge Default	No Encryption		In Use
Test 1	WPA2 PSK	••••••••	Delete
Test 2	WPA2 PSK	••••••••	Delete
Test 3	WPA PSK	••••••••	Delete

Add Wireless Security Profile

Apply

- **Profile Name:** Create a name for the security profile.
- **Encryption:** Select an encryption type for your security profile. The four available options are, No Encryption, WPA PSK, WPA2 PSK, and WPA/WPA2 PSK.
  - **No Encryption:** This will leave your profile without security (not recommended).
  - **WPA PSK:** Password must be at least 8 characters long. This is a legacy encryption protocol (not recommended).
  - **WPA2 PSK:** Password must be at least 8 characters long. AES-only encryption (recommended).
  - **WPA/WPA2 PSK:** Password must be at least 8 characters long. This feature is also known as Mixed Mode and uses TKIP encryption.

---

**NOTE:** Passwords may only contain numbers and letters. Special characters are not allowed. Examples of special characters: (!@#\$%&^&\*).

---

## Configuration

To configure SSIDs for both the 2.4 GHz and 5 GHz bands, go to the **Configuration** tab. The WK-1x can set up to 8 SSIDs per band for a total of 16 SSIDs.

The screenshot displays the 'Wireless' configuration page with the following details:

- 2.4 GHz Section:**
  - On Off:
  - Wireless Name (SSID): Pakedge2.4-1
  - Security Profile: Pakedge Default
  - Hide SSID:
  - Client Isolation:
  - Pakedge Zone (VLAN): 1
  - Manage: [Manage]
  - Action: Add 2.4GHz Wireless Profile
  - Status: 1 / 8 Used
- 5 GHz Section:**
  - On Off:
  - Wireless Name (SSID): Pakedge5-1
  - Security Profile: Pakedge Default
  - Hide SSID:
  - Client Isolation:
  - Pakedge Zone (VLAN): 1
  - Manage: [Manage]
  - Action: Add 5GHz Wireless Profile
  - Status: 1 / 8 Used
- Global Action:** Apply

- **On Off:** The SSID may be turned on or turned off using this checkbox.
- **Wireless Name (SSID):** The SSID is the name associated with the Wi-Fi network. An SSID cannot exceed 32 characters.
- **Security Profile:** The profiles created under the Security Profiles tab may be applied to the SSID here.
- **Hide SSID:** Enabling this feature will keep the SSID name from being broadcast. The SSID will still be available for client access, provided the SSID is turned on. This is not a security feature.
- **Client Isolation:** This feature is also referred to as “station separation”. This feature prevents clients on the same SSID from being able to access other clients on the network.
- **Pakedge Zone (VLAN):** This option defines the VLAN that on which the SSID will reside. To change the VLAN, select the grey circle with the number 1 inside it. A selection ring will appear with the available VLAN options.
- **Manage:** This column displays the management settings that were configured under Management VLAN. Management VLAN is located on the LAN page under Network.

# Guest Network Settings

The Guest Network feature is designed for networks that do not have a guest VLAN. The Guest Network acts as its own network and only has access to the internet. Each access point's guest network is independent from the guest networks of other access points.

To enable the Guest Network, select On/Off. By default, the guest network name is Pagedge-Guest and the IP scheme is set to 192.168.200.X. You have the option to change the default settings, if desired. You can change the SSID, IP address, subnet, starting IP address and ending IP address. Once changes are complete, click **Apply** to save them.

## Wireless

Radio
Security Profiles
Configuration
Guest Network

### SSID

Radio	On/Off	Wireless Name (SSID)	Security Profile
2.4GHz	<input type="checkbox"/>	PagedgeGuest2.4	Pagedge Default <span style="float: right;">No Encryption</span>
5GHz	<input type="checkbox"/>	PagedgeGuest5	Pagedge Default <span style="float: right;">No Encryption</span>

### Manual IP Settings

IP Address

Subnet Mask

### Automatic DHCP Server Settings

Starting IP Address

Ending IP Address

DNS Server IP

Apply

## SSID

- **Radio:** There is a guest network available on both the 2.4 GHz and 5 GHz band.
- **On/Off:** This option turns the Guest Network on and off.
- **Wireless Name (SSID):** The SSID of the Guest Network can be entered in this textbox.

- **Security Profile:** Select a security profile that has already been defined under the Security Profiles tab.

### Manual IP Settings

Manual IP Settings

IP Address	<input type="text" value="192.168.200.1"/>
Subnet Mask	<input type="text" value="255.255.255.0"/> ▼

- **IP Address:** Enter in the IP address the access point will be used on.
- **Subnet Mask:** Select the class of the guest network. 255.255.255.0 is the standard setting and is selected by default.

### Manual IP Settings

Automatic DHCP Server Settings

Starting IP Address	<input type="text" value="192.168.200.100"/>
Ending IP Address	<input type="text" value="192.168.200.250"/>
DNS Server IP	<input type="text" value="8.8.8.8"/>

- **Starting IP Address:** This is the beginning of the DHCP range used on the guest network. If you have multiple access points, you can give them the same DHCP range because the guest network of each access point will be independent of one another.
- **Ending IP Address:** This is the last IP address available on the DHCP range.
- **DNS Server IP:** The DNS Server IP can be set to an external DNS or to the router's IP address if the router provides a DNS server.

# Advanced



On the **Advanced** page, you can configure:

- **Transmit Power:** The power depends on the distance of the devices in your wireless network. From the drop-down list, select the desired power. You can use this feature to limit the coverage area of the wireless network.
  - **Maximum:** This setting will broadcast at the maximum allowed mW for the channel selected if Obey Regulatory Power is checked. If Obey Regulatory Power is not checked, then the maximum 30 dBm (1000 mW) will be broadcast.
  - **Automatic:** This setting will adjust the power of the access point based on the distance to the furthest client device. The access point will lower its power if the furthest client is 10 feet away and will raise the power if the furthest client is 100 feet away.
  - **1 dBm (1 mW) – 30 dBm (1000 mW):** These are static power settings. The access point will broadcast at the selected power level.
- **Obey Regulatory Power:** This feature will enable government mandated power levels per channel based on the access point's Country Code.
- **RTS/CTS Threshold:** Enter the packet size threshold for RTS/CTS (Request to Send/Clear to Send) to occur. The primary reason for implementing this function is to minimize the collision between hidden stations, which occurs when access points and wireless users are spread out in a location and there is a high occurrence of retransmissions on the wireless LAN. Default setting is 2347.
- **Beacon Interval:** Adjusting Beacon Interval will allow clients to sleep longer. Clients have to wake up for every beacon, so this setting tells your client how many milliseconds it can sleep for (e.g., if BP = 100 your stations are allowed to sleep for up to 100 ms).

Advanced

2.4 GHz

Transmit Power

Obey Regulatory Power

RTS/CTS Threshold (0-2347)

Beacon interval

5 GHz

Transmit Power

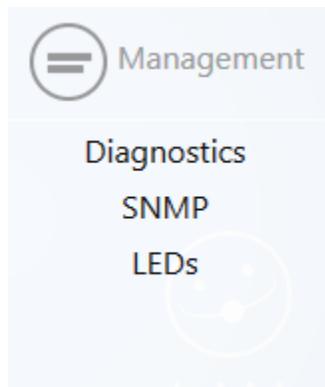
Obey Regulatory Power

RTS/CTS Threshold (0-2347)

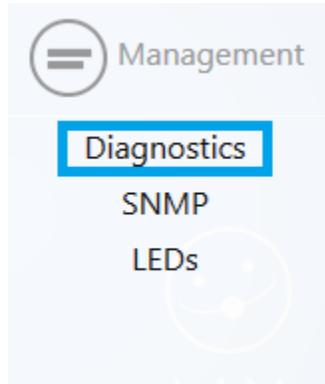
Beacon interval

Apply

# Management

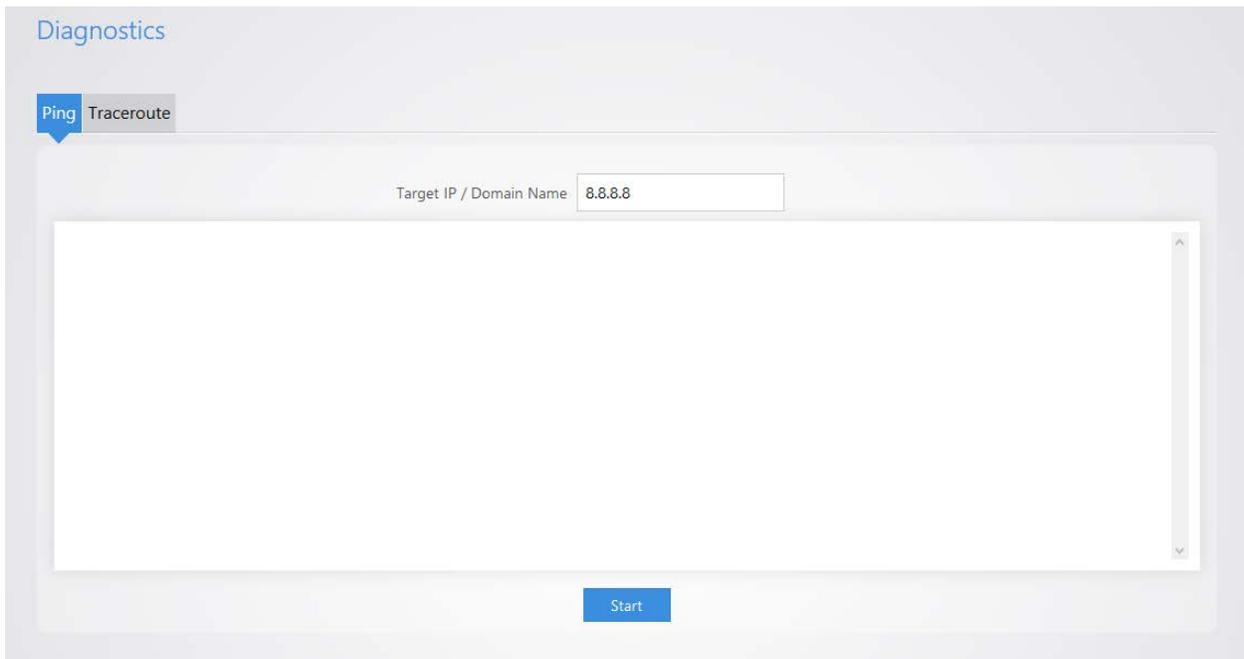


# Diagnostics



## Ping

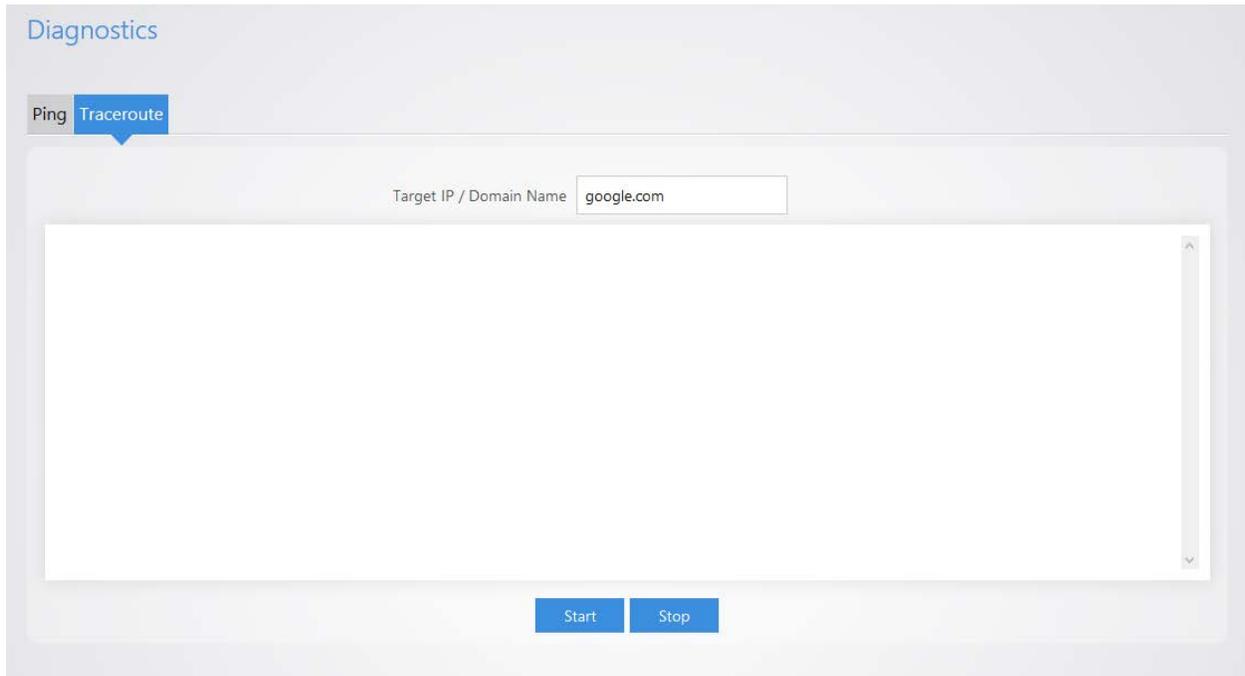
Hover over **Management** and click on **Diagnostics**. You will be directed to the ping test under the **Ping** tab:



- Ping –
  - **Target IP / Domain Name:** Enter the IP Address of a location to ping. 8.8.8.8 is a Google DNS server.
  - Click **Start** to start the test.

# Traceroute

Click on the **Traceroute** tab.



A Traceroute test can help you identify obstacles you may have in the network. The Traceroute text maps the path for packets moving between the WK-1x and the target location. To run a Traceroute test, enter an IP Address or Domain Name into the **Target IP / Domain Name** textbox and click **Start** to begin the test. If the test fails to complete or takes too long, click **Stop**.

# SNMP

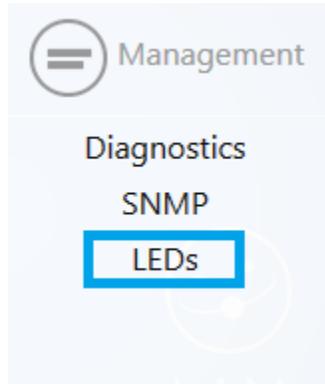


Hover over **Management** and click on SNMP.

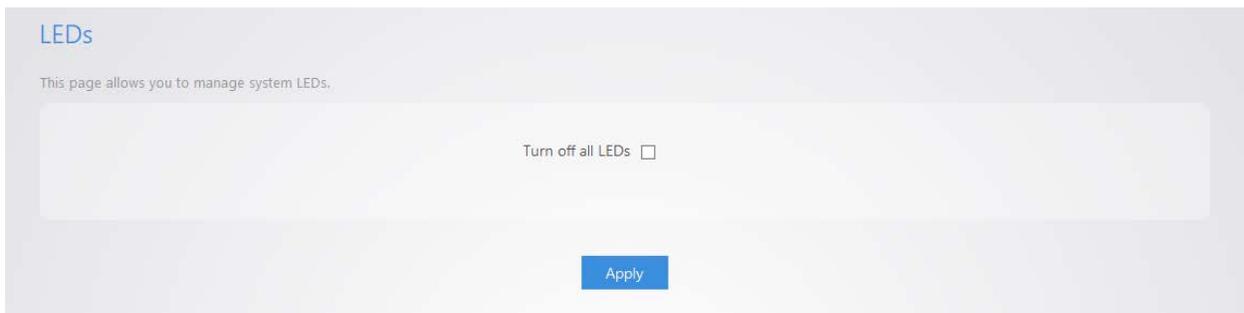
A screenshot of the SNMP configuration page. The page title is 'SNMP'. Below the title, there is a brief description: 'SNMP is a standard TCP/IP protocol for network management.' The main content area contains three input fields: 'Location' with the value 'MyLocation', 'Contact' with the value 'MyContact', and 'Description' with the value 'Pakedge WK-1 WAP'. Below these fields is a blue 'Apply' button.

- **Location:** Enter the physical location of the WK-1x as a reference.
- **Contact:** Enter the contact information of the installer or network administrator for the SNMP manager.
- **Description:** Enter in a description of the device. The default description is Pakedge WK-1 WAP.

# LEDs

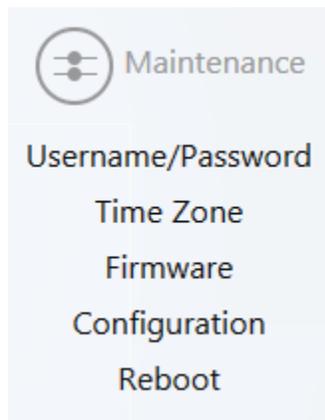


Hover over **Management** and click on LEDs.

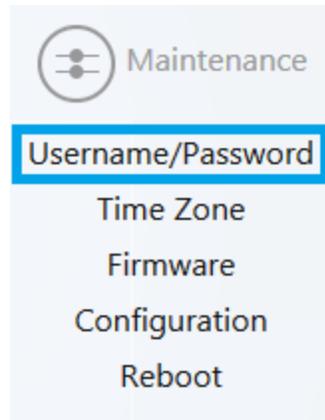


- **Turn off all LEDs:** Check to turn LEDs off.

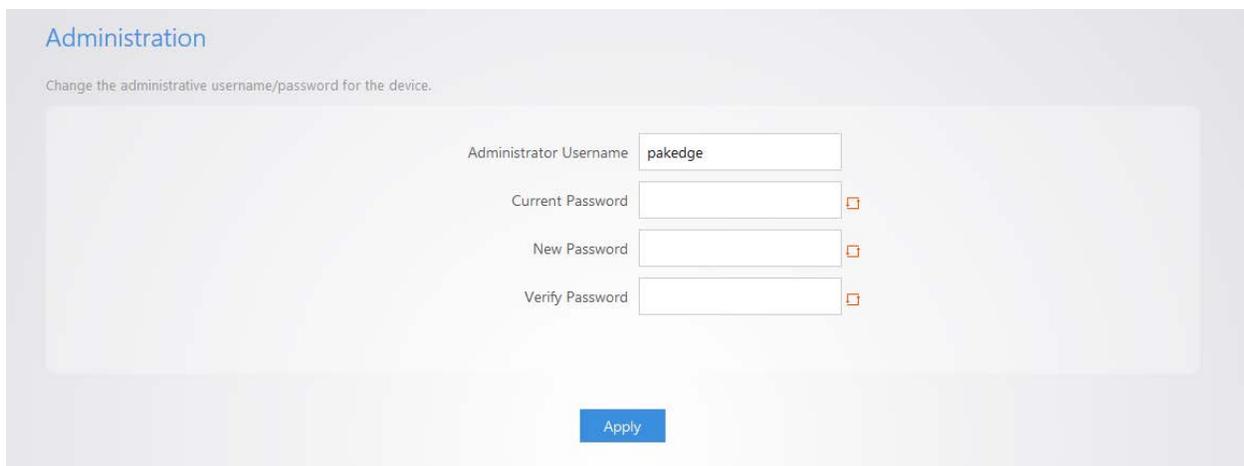
# Maintenance



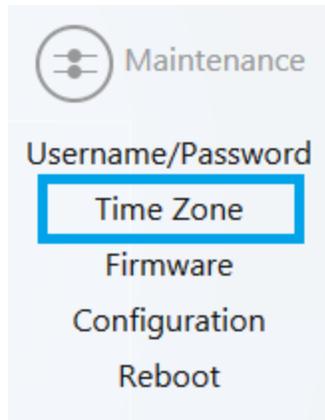
# Username/Password



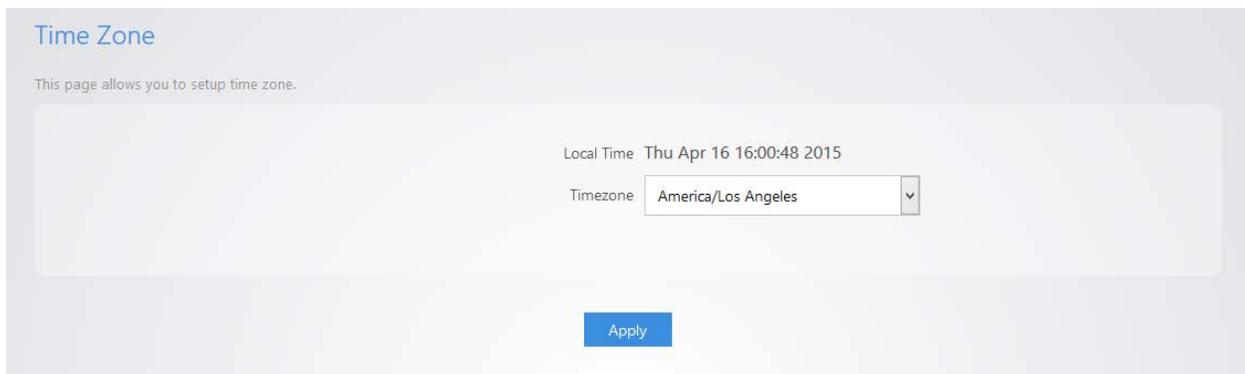
Hover over **Maintenance** and click on **Username/Password**. You can change the username and password for the device here.

A screenshot of the 'Administration' page. The page title is 'Administration' in blue. Below the title is the instruction: 'Change the administrative username/password for the device.' The form contains four input fields: 'Administrator Username' with the value 'pakedge', 'Current Password', 'New Password', and 'Verify Password'. Each password field has a small red square icon to its right. At the bottom of the form is a blue 'Apply' button.

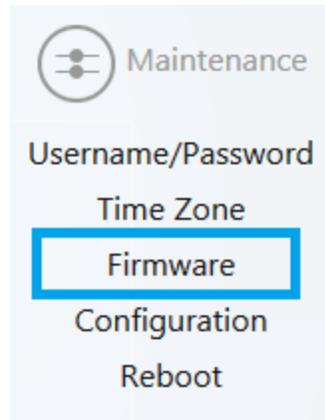
# Time Zone



Hover over **Maintenance** and click on **Time Zone**. This page allows you to set up the timezone.

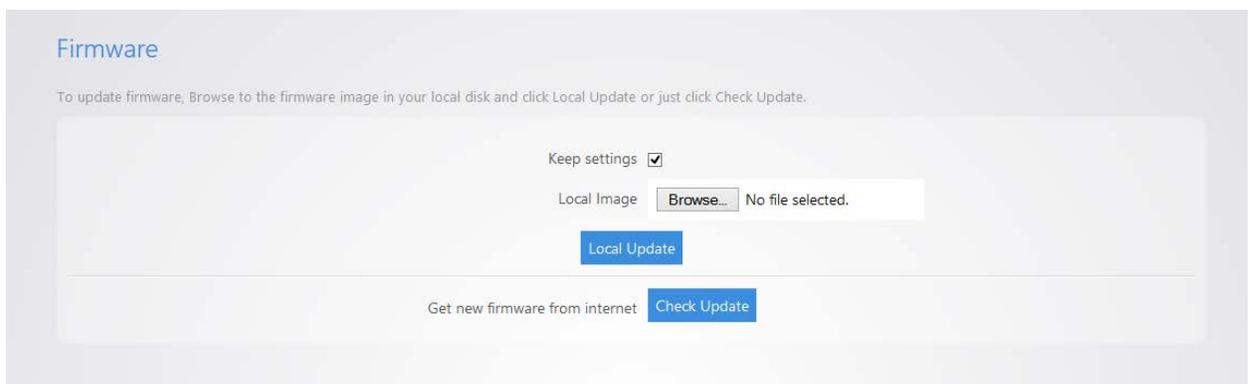


# Firmware

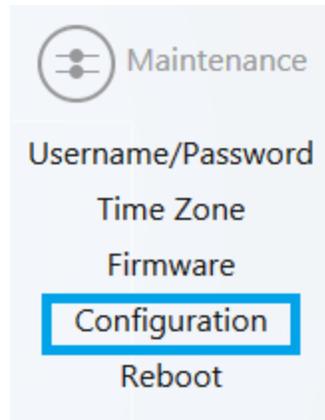


Allows you to update the firmware for the unit.

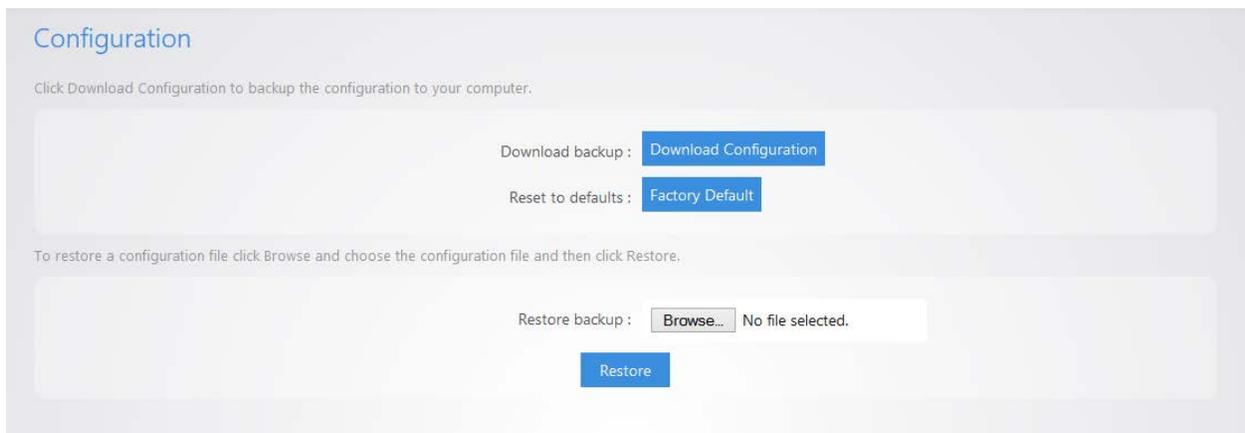
- **Keep Settings:** Selecting this will preserve your current configurations after the firmware update.
- **Local Image:** Click Choose File to select the firmware file.
- **Local Update:** Updates the firmware with the file you selected.
- **Check Update:** This feature will only work if the WK-1x is connected to the internet.



# Configuration



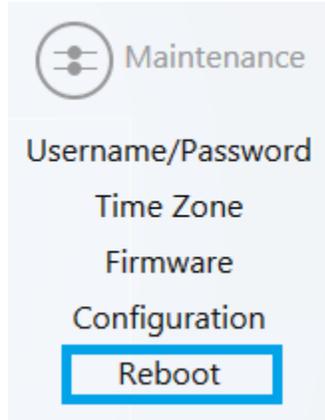
Hover over **Maintenance** and click on **Configuration**:



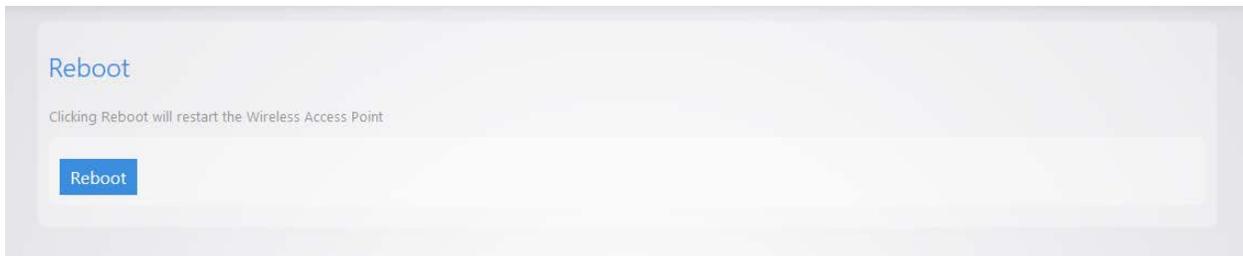
- **Download backup:** Click Download Configuration to save and export the current settings of the WK-1x.
- **Reset to defaults:** Click Factory Default to reset the the WK-1x back to its factory default settings.
- **Restore backup** – Load a configuration file using the Browse button to restore the WK-1x to a previous configuration.

# Reboot

Hover over **Maintenance** and click on Reboot.



Clicking the Reboot Button allows you to reboot the device.



# Appendix A – Specs

## HARDWARE SPECIFICATIONS

- 1 x 10/100/1000 Gigabit Ethernet RJ-45 port with IEEE 802.3at Power over Ethernet (PoE+) support
- 1 x 10/100/1000 Gigabit Ethernet RJ-45 port
- Configurable LED Indicators for Power, Ethernet, 2.4GHz Wireless and 5GHz Wireless
- Power over Ethernet (PoE+) IEEE802.3at compliant
- Power Supply: 100 to 240 VDC  $\pm$  10%, 50/60 Hz (depends on different countries)
- DC input: 12V/1.5A

## RF INFORMATION

- Frequency Band:
  - 802.11 B/G/N on 2.4 to 2.462GHz, which can be programed based on country regulations.
  - 802.11 A/N/AC on 5 to 5.805GHz, which can be programed based on country regulations.
- Operating Channels:
  - 2.4 GHz - 11 for North America, 13 for Europe, 14 for Japan

- 5 GHz – 24 channels depending on country

Maximum Transmit Power (per chain) +/- 2 dBm		
	2.4GHz	5GHz
11 b (1Mbps)	24	-
11 b (11Mbps)	24	-
11 g (6Mbps)	24	-
11 g (54Mbps)	22	-
11 a (6Mbps)	-	24
11 a (54Mbps)	-	22
HT20(MSC 0/8)	24/23	24/23
HT20(MSC 7/15)	22	20
HT40(MSC 0/8)	23	23/20
HT40(MSC 7/15)	22	20/19
VHT40 256QAM @ 3/4 Code Rate	-	18
VHT40 256QAM @ 5/6 Code Rate	-	18
VHT80 256QAM @ 3/4 Code Rate	-	18
VHT80 256QAM @ 5/6 Code Rate	-	17

- Transmit Power (Typical):
- Receiver Sensitivity (Typical)

Receive sensitivity (per chain) +/- 2 dBm		
	2.4GHz	5GHz
11 g (6Mbps)	-91	-
11 g (54Mbps)	-74	-
11 a (6Mbps)	-	-90
11 a (54Mbps)	-	-72
HT20(MSC 0/8)	-91	-90
HT20(MSC 7/15)	-70	-70
HT40(MSC 0/8)	-87	-86
HT40(MSC 7/15)	-67	-67
VHT40 256QAM @ 3/4 Code Rate	-	-65
VHT40 256QAM @ 5/6 Code Rate	-	-63
VHT40 256QAM @ 3/4 Code Rate	-	-62
VHT40 256QAM @ 5/6 Code Rate	-	-60
VHT80 256QAM @ 3/4 Code Rate	-	-59
VHT80 256QAM @ 5/6 Code Rate	-	-57

## OPERATIONS

- Operation Modes:
  - 2.4/5 GHz have independent operation modes
  - Access Point/ WDS Bridge/WDS AP/Repeater
- Up to 16 SSIDs
- Supports 802.1q VLANs
- Spanning Tree Supports 802.1d Spanning Tree Protocol
- IP Auto-configuration – DHCP client
- Transmission rate options:
  - 2.4 GHZ – B-ONLY, G-ONLY, B/G-MIXED, N-ONLY, G/N-MIXED, B/G/N-MIXED
  - 5 GHZ – A-ONLY, N-ONLY, A/N MIXED, AC-ONLY, N/AC-MIXED, A/N/AC-MIXED

## MANAGEMENT AND SECURITY

- User can adjust power by dBm
- Web-based configuration (HTTP)
- Upgrade firmware via web browser/internet
- Auto-channel selects the least congested channel
- Backup and restoration settings available through web interface
- QoS WMM
- WPA-PSK/WPA2-PSK/ WPA/WPA2 Mixed using TKIP or AES
- SSID broadcast can be enabled or disabled
- WLAN L2 Isolation (AP mode only)
- List of connected wireless clients available

## ENVIRONMENT

- Temperature Range: 0 to 45° C (32° to 113° F)
- Storage: -20 to 60° C (-4° to 140° F)
- Humidity (non-condensing):
  - Operating: 90% or less
  - Storage: 90% of less

## MECHANICAL

Enclosure: 8.02 inches X 7.47 inches

- Depth: 1.63 inches
- Base 6.38 inches X 6.23 inches

# Appendix B – Accessory List

## WK-1, WK-1-B

- Quick Start Guide
- AC100-240V, 50-60Hz DC12V 1.5A power adapter
- CAT5e cable
- Mounting bracket
- T-bar mount
- Screws

## WK-1-O

- Quick Start Guide
- CAT5e cable
- External outdoor antennas
- Waterproof RJ45 plastic protector
- Mounting bracket

## WK-1-C

- Quick Start Guide
- CAT5e cable

# Appendix C – Technical Support

Please visit our website for up-to-date support information:

Website: [www.pakedge.com](http://www.pakedge.com)

Email: [support@pakedge.com](mailto:support@pakedge.com)

### CONTACT INFORMATION:

#### **Northern California Office**

Pakedge Device & Software  
3847 Breakwater Avenue  
Hayward, CA 94545-3606

#### **Southern California Office:**

Pakedge Device & Software  
17011 Beach Blvd. Suite 600  
Huntington Beach, CA 92647-5946

# Appendix D – Limited Warranty

## **Model WK-1x**

Congratulations on your purchase of a Pakedge Device & Software wireless product! Pakedge designs and manufactures the finest home networking products. With proper installation, setup, and care, you should enjoy many years of unparalleled performance. Please read this consumer protection plan carefully and retain it with your other important documents.

This is a LIMITED WARRANTY as defined by the U.S. Consumer Product Warranty and Federal Trade Commission Improvement Act.

## **What Is Covered Under the Terms of This Warranty**

**SERVICE LABOR:** Pakedge will pay for service labor by an approved Pakedge service center when needed as a result of manufacturing defect for a period of one (3) year from the effective date of delivery to the end user.

**PARTS:** Pakedge will provide new or rebuilt replacement parts for parts that fail due to defects in materials or workmanship for a period of one (1) year from the effective date of delivery to the end user. Such replacement parts are then subsequently warranted for the remaining portion (if any) of the original warranty period.

### **What Is Not Covered Under the Terms of This Warranty**

This warranty only covers failure due to defects in materials and workmanship that occur during normal use and does not cover normal maintenance. This warranty does not cover any appearance item; any damage to living structure; failure resulting from accident (for example: flood, electrical shorts, insulation); misuse, abuse, neglect, mishandling, misapplication, faulty or improper installation or setup adjustments; improper maintenance, alteration, improper use of any input signal and/or power, damage due to lightning or power line surges, spikes and brownouts; damage that occurs during shipping or transit; or damage that is attributed to acts of God.

The foregoing limited warranty is Pakedge' s sole warranty and is applicable only to Products sold as new by Authorized Dealers. The remedies provided herein are in lieu of a) any and all other remedies and warranties, whether expressed, implied or statutory, including but not limited to, any implied warranty of merchantability, fitness for a particular purpose or non-infringement, and b) any and all obligations and liabilities of Pakedge for damages including but not limited to incidental, consequential or special damages, or any financial loss, lost profits or expense, or loss of network connection arising out of or in connection with the purchase, use or performance of the Product, even if Pakedge has been advised of the possibility of such damages.

**CAUTION: DAMAGE RESULTING DIRECTLY OR INDIRECTLY FROM IMPROPER INSTALLATION OR SETUP IS SPECIFICALLY EXCLUDED FROM COVERAGE UNDER THIS WARRANTY. IT IS IMPERATIVE THAT INSTALLTION AND SETUP WORK BE PERFORMED ONLY BY AN AUTHORIZED PAKEDGE DEALER TO PROTECT YOUR RIGHTS UNDER THIS WARRANTY. THIS WILL ALSO ENSURE THAT YOU ENJOY THE FINE PERFORMANCE YOUR PAKEDGE PRODUCT IS CAPABLE OF PROVIDING.**

### **Rights, Limits, and Exclusions**

Pakedge limits its obligation under any implied warranties under state laws to a period not to exceed the warranty period. There are no express warranties. Pakedge also excludes any obligation on its part for incidental or consequential damages related to the failure of this product to function properly. Some states do not allow limitations on how long an implied warranty lasts, and some states do not allow the exclusion or limitation of incidental or consequential damages. In this case, the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

**Effective Warranty Date**

This warranty begins on the effective date of delivery to the end user. For your convenience, keep the original bill of sale as evidence of the purchase date from your authorized dealer.

**Important- Warranty Registration**

Please register your product at [www.pakedge.com](http://www.pakedge.com). It is imperative that Pakedge knows how to reach you promptly if we should discover a safety problem or product update for which you must be notified. In addition, you may be eligible for discounts on future upgrades as new networking standards come about.

**To Obtain Service, Contact Your Pakedge Dealer.**

Repairs made under the terms of the Limited Warranty covering your Pakedge product will be performed by an Authorized Pakedge Service Center. These arrangements must be made through the selling Pakedge Dealer. If this is not possible, contact Pakedge directly for further instructions. Prior to returning a defective Product directly to Pakedge, you must obtain a Return Material Authorization number and shipping instructions. Return shipping costs will be the responsibility of the owner.

For additional information about this warranty, visit our website at [www.pakedge.com](http://www.pakedge.com).

## FCC Declaration of Conformity

Pakedge Device & Software, 3847 Breakwater Avenue, Hayward, CA 94545, declares under sole responsibility that the WK-1x complies with 47 CFR Parts 2 and 15 of the FCC Rules as a Class B digital device. This device complies with Part 15 of FCC Rules. Operation of the device is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.

## FCC Compliance Class B Digital Device

This equipment has been tested and found to comply with the limits 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 environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with 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 can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

## Wireless LAN and Your Health

The WK-1x, like other radio devices, emits radio frequency electromagnetic energy, but operates within the guidelines found in radio frequency safety standards and recommendations.

## FCC Certification

The WK-1x contains a radio transmitter. Accordingly, it has been certified as compliant with 47 CFR Part 15 of the FCC Rules for intentional radiators. Products that contain a radio transmitter are labeled with FCC ID and the FCC logo.

## Restrictions on Use of Wireless Devices

In some situations or environments, the use of wireless devices may be restricted by the proprietor of the building or responsible representatives of the organization. For example, these situations may include:

- Using wireless equipment on board an airplane.
- Using wireless equipment in any environment where the risk of interference to other devices or services is perceived or identified as harmful.
- The availability of some specific channels and / or operational frequency bands are country dependent and are firmware programmed at factory to match the intended destination. The firmware setting is not accessible by the end user.

If you are uncertain of the applicable policy for the use of wireless equipment in a specific organization or environment (such as airports), you are encouraged to ask for authorization to use the device prior to turning on the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of the devices included with this product, or the substitution or attachment of connecting cables and equipment other than specified by the manufacturer. Correction of interference caused by such unauthorized modification, substitution, or attachment is the responsibility of the user. The manufacturer and its authorized resellers or distributors are not liable for any damage or violation of government regulations that may arise from failing to comply with these guidelines.

## Caution: Exposure to Radio Frequency Radiation.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. THE UNIT MUST NOT BE EXPOSED TO DRIPPING OR SPLASHING WATER. CAUTION: DO NOT OPEN THE UNIT. DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE

INSTALLATION AND TROUBLESHOOTING INSTRUCTIONS. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL. CAUTION: THIS DEVICE MUST BE INSTALLED AND USED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AS DESCRIBED IN THE USER DOCUMENTATION THAT COMES WITH THE PRODUCT. WARNING: POSTPONE INSTALLATION UNTIL THERE IS NO RISK OF THUNDERSTORM OR LIGHTNING ACTIVITY IN THE AREA. CAUTION: ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE GRANTEE OF THIS DEVICE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

**Safety Precautions:**

- When using this device, always follow basic safety precautions, to reduce the risk of fire, electric shock, and injury to persons, including the following:
- Read all of the instructions (listed here and/or in the user manual) before you operate this equipment.
- Comply with all warning and caution statements in the instructions.
- Retain the instructions for future reference.
- Observe all warning and caution symbols that are affixed to this equipment.
- Comply with all instructions that accompany this equipment.
- Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.
- Installation of this product must be in accordance with national wiring codes and conform to local regulations.
- Avoid using this product during an electrical storm. There may be a risk of electric shock from lightning. For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug the power supply, and disconnect the CAT5e to the WK-1x at the PoE+. This will prevent damage to the product due to lightning and power surges.
- Give particular attention to all safety precautions.
- Operate this product only from the type of power source indicated on the product's marking label. If you are not sure of the type of power supplied to your home, consult your dealer or local power company.
- It is recommended that the customer install an AC surge protector in the AC outlet to which this device is connected. This is to avoid damage to the equipment from lightning strikes and other electrical surges.
- Unplug the power cord before connecting the WK-1 to the PoE+ injector. The WK-1x cannot use both simultaneously as this will break the device.

- Wipe the unit with a clean, dry cloth. Never use cleaning fluid or similar chemicals. Do not spray cleaners directly on the unit or use forced air to remove dust.
- Keep the device away from excessive heat and humidity and keep the device free from vibration and dust.
- Do not directly cover the device, or block the airflow to the device with insulation or any other objects.

**“Hereby, Pakedge Device and Software Inc, declares that this wireless access point is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.”**



pakedgedevice&software inc

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