Altitude™ 4700 Series Access Point Installation Guide

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1 Introduction

As a standalone access point, an Altitude™ 4700 Series Access Point provides small and medium-sized businesses with a consolidated wired and wireless networking infrastructure, all in a single device. The integrated router, gateway, firewall, DHCP and *Power-over-Ethernet* (PoE) simplify and reduce the costs associated with networking by eliminating the need to purchase and manage multiple pieces of equipment.

The access point is also designed to meet the needs of large, distributed enterprises by converging the functionality of a thick access point and thin access port into a single device. This mode enables the deployment of a fully featured intelligent access point that can be centrally configured and managed using an Extreme Networks® Wireless Controller in either corporate headquarters or a *network operations center* (NOC). In the event the connection between the access point and the wireless controller is lost, a *Remote Site Survivability* (RSS) feature ensures the delivery of uninterrupted wireless services at the local or remote site. All traffic between the adaptive access points and the wireless controller is secured though an IPSec tunnel. Additionally, compatibility with Extreme Networks Wireless Management Suite (WMS) allows you to centrally plan, deploy, monitor and secure large deployments.

If new to the Altitude 4700 Series Access Points or access point technology in general, refer to the *Altitude 4700 Series Access Point Product Reference Guide* to familiarize yourself with access point technology and the feature set exclusive to the Altitude 4700 family. The guide is available, at http://www.extremenetworks.com/go/documentation.

Document Conventions

The following graphical alerts are used in this document to indicate notable situations:

NOTE

Tips, hints, or special requirements that you should take note of.

CAUTION

Care is required. Disregarding a caution can result in data loss or equipment malfunction.

WARNING!

Indicates a condition or procedure that could result in personal injury or equipment damage.

Warnings

- Read all installation instructions and site survey reports, and verify correct equipment installation before connecting the access point to its power source.
- Remove jewelry and watches before installing this equipment.
- Verify that the unit is grounded before connecting it to the power source.
- Verify that any device connected to this unit is properly wired and grounded.
- Connect all power cords to a properly wired and grounded electrical circuit.
- Verify that the electrical circuits have appropriate overload protection.
- Attach only approved power cords to the device.
- Verify that the power connector and socket are accessible at all times during the operation of the equipment.
- Do not work with power circuits in dimly lit spaces.
- Do not install this equipment or work with its power circuits during thunderstorms or other weather conditions that could cause a power surge.
- Verify there is adequate ventilation around the device, and that ambient temperatures meet equipment operation specifications.

Site Preparation

- Consult your site survey and network analysis reports to determine specific equipment placement, power drops, and so on.
- Assign installation responsibility to the appropriate personnel.

- Identify and document where all installed components are located.
- Provide a sufficient number of power drops for your equipment.
- Ensure adequate, dust-free ventilation to all installed equipment.
- Identify and prepare Ethernet and console port connections.
- Verify that cable lengths are within the maximum allowable distances for optimal signal transmission.

2 Hardware Installation

An Altitude 4700 Series Access Point installation includes mounting the access point, connecting the access point to the network, connecting antennas and applying power. Installation procedures vary for different environments.

Altitude 4700 Series Access Points have the following port designations:

- GE1/POE - LAN port (port-auto MDIX)
- GE2 - WAN Port (port-auto MDIX)

Precautions

Before installing an Altitude 4700 Series Access Point, verify the following:

- Do not install in wet or dusty areas without additional protection. Contact an Extreme Networks representative for more information.
- Verify the environment has a continuous temperature range between -20° C to 50° C.

Package Contents

Check package contents for the correct model Altitude 4700 Series Access Point and applicable Altitude 4700 Series Access Point accessories. Each available configuration (at a minimum), contains:

- Altitude 4700 Series Access Point (accessories dependent on SKU ordered)
- *Altitude 4700 Series Access Point Installation Guide* (this guide)
- Wall mount screw and anchor kit
- Accessories Bag (4 rubber feet and a LED light pipe and badge with label for above the ceiling installations)

The available Altitude 4700 Series Access Point SKUs are shown in the following table:

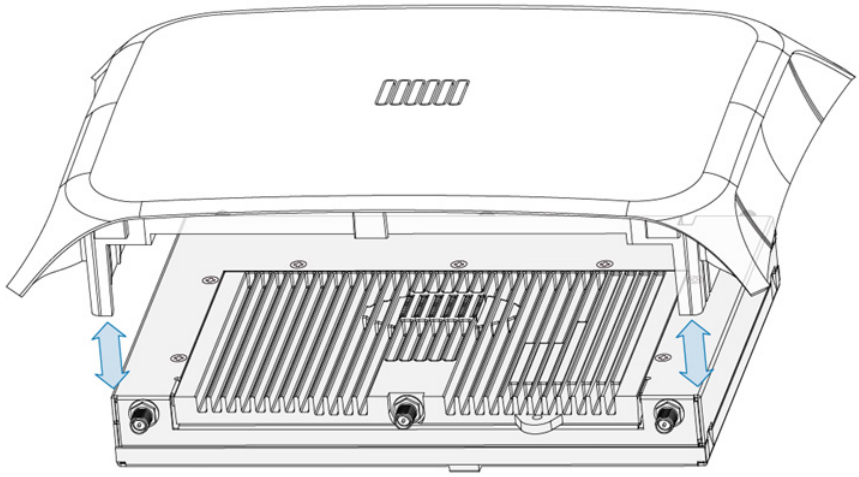
SKU	Part Number	Description
4710-US	15751	Altitude 4710 dual radio 11abgn access point with external antennas. Comes with an express card slot. For U.S. regulatory domain.
4710-ROW	15752	Altitude 4710 dual radio 11abgn access point with external antennas. Comes with express card slot. For Rest of the World regulatory domain.
4750-US	15753	Altitude 4750 tri radio 11abgn access point with external antennas. For U.S. regulatory domain.
4750-ROW	15754	Altitude 4750 tri radio 11abgn access point with external antennas. For Rest of the World regulatory domain.

NOTE

AP4710 model access points include an express card slot on the side of the unit. The express card is used for 3G card support for the access point's WAN backhaul feature. Verizon 770, Merlin XU870, Option GT Ultra, Sierra (Telstra) and AirCard 880E 3G cards are supported.

NOTE

A separate facade antenna cover (6-element MIMO antenna) can be separately ordered for use with the Altitude 4700 Series Access Point. The facade antenna (part number 15755) disconnects from the access point as illustrated on the following page. When attached, LEDs continue to illuminate through the cover.



Contact Extreme Networks support to report missing or improperly functioning items.

Access Point Power Options

The access point has the following power options:

- External power supply
- Power over Ethernet (PoE) from switch
- Power over Ethernet (PoE) from power injector
- An external power supply and PoE simultaneously

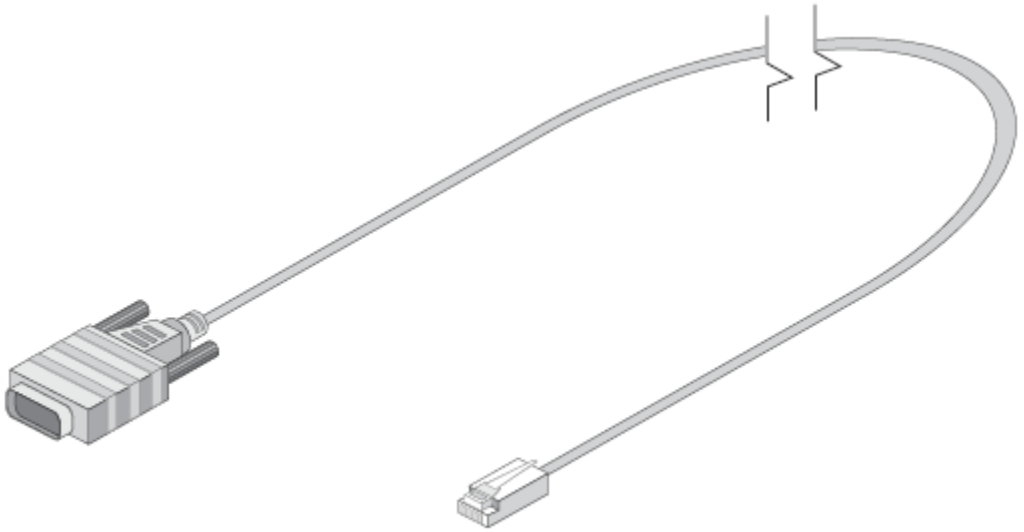
The access point can be powered using either a specific 48 volt power supply or a specific POE Injector. The 48 volt power supply (part number 5014000247R) connects directly into the access point's power connector since the access point would not be reliant on POE supplied power.

The Power Injector (part number APPSBIAS1P3AFR) is a high-power POE Injector delivering up to 30 watts while merging power and Ethernet into one cable. The access point can only use the Power Injector when connecting to the access point's GE1/POE port. The APPSBIAS1P3AFR model Power Injector is a separately ordered component.

If the access point is provided both POE power over the GE1/POE port and 5014000247R supplied AC power concurrently, the access point will source power from the 5014000247R supply only. Disconnecting AC power from the 5014000247R supply will cause the access point to reboot before sourcing power from the POE injector.

Console Cable

A console cable (pictured below) can be used to connect the Altitude 4700 Series Access Point console port to an RS-232 (DB-9) serial port on a separate computer.

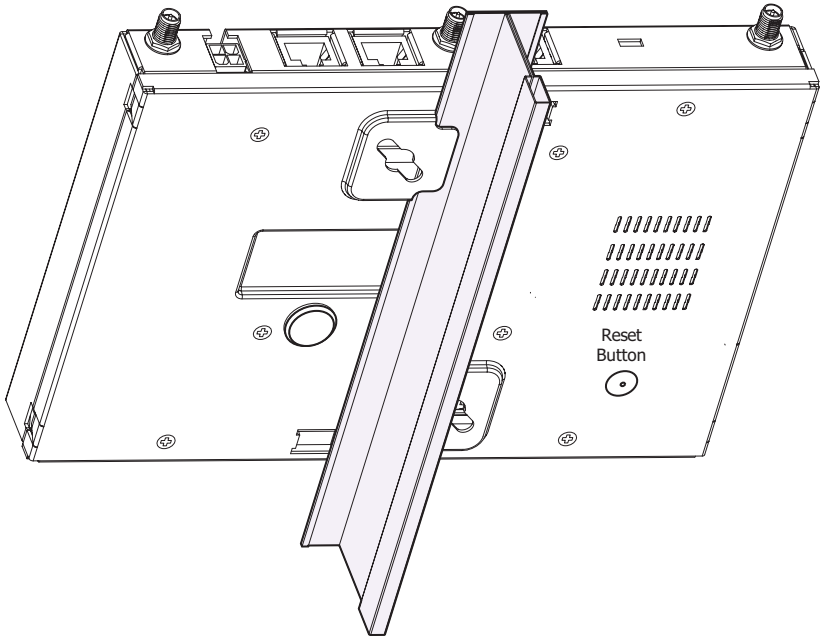


The pinout for the console cable (RJ-45 to DB9) is shown in the following table.

RJ-45	1	2	3	4,5	6	7	8
DB9	8	6	2	5	3	4	7

Reset Button

The following Illustration shows the position of the reset button on the Altitude 4700 Series Access Point (the access point is shown with a T-Bar installed). The reset button reverts the access point back to its factory default configuration.



Access Point Placement

For optimal performance, install the access point away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators and other industrial equipment. Signal loss can occur when metal, concrete, walls or floors block transmission. Install the access point in an open area or add access points as needed to improve coverage.

Antenna coverage is analogous to lighting. Users might find an area lit from far away to be not bright enough. An area lit sharply might minimize coverage and create *dark areas.* Uniform antenna placement in an area (like even placement of a light bulb) provides even, efficient coverage.

Place the access point using the following guidelines:

- Install the access point at an ideal height of 10 feet from the ground.
- Orient the access point antennas vertically for best reception.
- Point the access point antennas downward if attaching to the ceiling.

To maximize the access point's radio coverage area, Extreme Networks recommends conducting a site survey to define and document radio interference obstacles before installing the access point.

Antenna Options

Extreme Networks supports various certified antennas for Altitude 4700 Series Access Points. These antennas are for either single frequency band (2.4 GHz or 5 GHz) operation or dual frequency band (2.4 GHz and 5 GHz) operation.

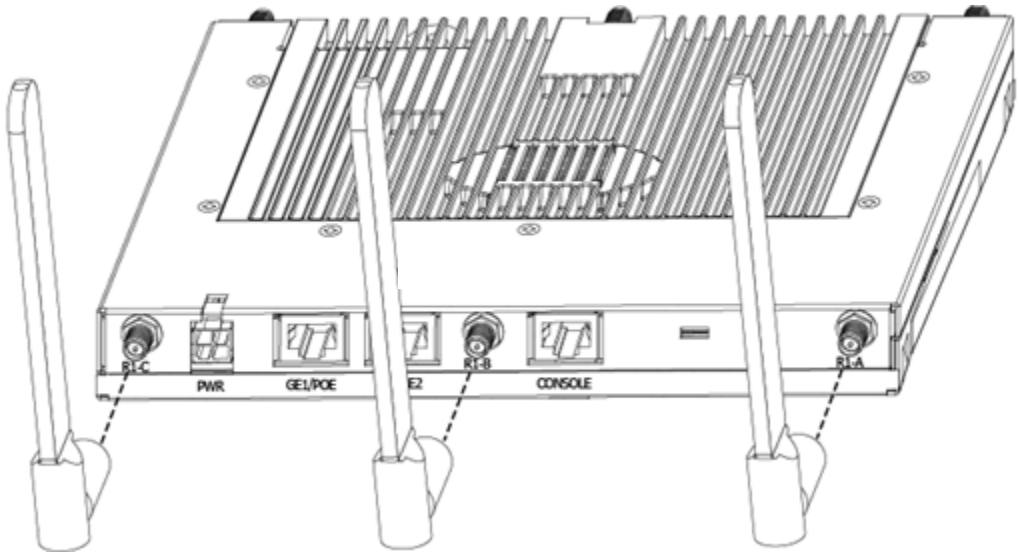
Select an antenna model best suited to the intended operational environment of your access point. An Altitude 4700 Series Access Point can be purchased with either two or three radios. If a three radio access point is purchased, the access point ships with a single antenna, factory connected, to the access point chassis (next to the existing R1-A connector). This antenna is in addition to the other six antennas available to the access point's other two radios. The single antenna supporting the Altitude 4700 Series Access Point's third radio supports sensor mode only and can not function as a WLAN radio.

NOTE

For an overview of access point antennas, connectors and associated components supported by the Altitude 4700 Series Access Point family, refer to the Altitude 35xx/46xx/47xx Series AP Antenna Selection Guide available at: http://www.extremenetworks.com/go/documentation.

NOTE

Tri radio model AP4700 access points have a dedicated sensor antenna. The sensor antenna is not removable, has no part number and cannot be separately ordered.



There are two 802.11an/802.11bgn dualband radios in an Altitude 4700 Access Point for WLAN operation: labeled as R1 and R2. Radio R1 is set as an 802.11bgn radio (2.4 GHz) and radio R2 as 802.11an radio (5 GHz). The frequency band of these radios cannot be changed for WLAN operation. However, radio R1, radio R2, or both can be configured to a Rogue AP detector or a WIPS sensor. When the radio (R1 or R2) is in the Rogue AP detector mode or the WIPS sensor mode, it can cover both 2.4 GHz and 5 GHz band.

If the radio is configured to perform dual-band scanning, then an appropriate dual-band dipole antenna should be used for optimum coverage.

Each radio requires three antennas to achieve optimum MIMO performance for WLAN operation: R1-A/R1-B/R1-C for radio R1, and R2-A/R2-B/R2-C for radio R2. The third radio in Altitude 4750 is used only as a WIPS sensor and cannot be converted for WLAN operation.

Mounting the Access Point

An Altitude 4700 Series Access Point can attach to a wall, mount under a suspended T-Bar or above a ceiling (plenum or attic) following the same installation instructions. Choose one of the following mounting options based on the physical environment of

the coverage area. Do not mount the access point in a location that has not been approved in a site survey.

Wall Mounting

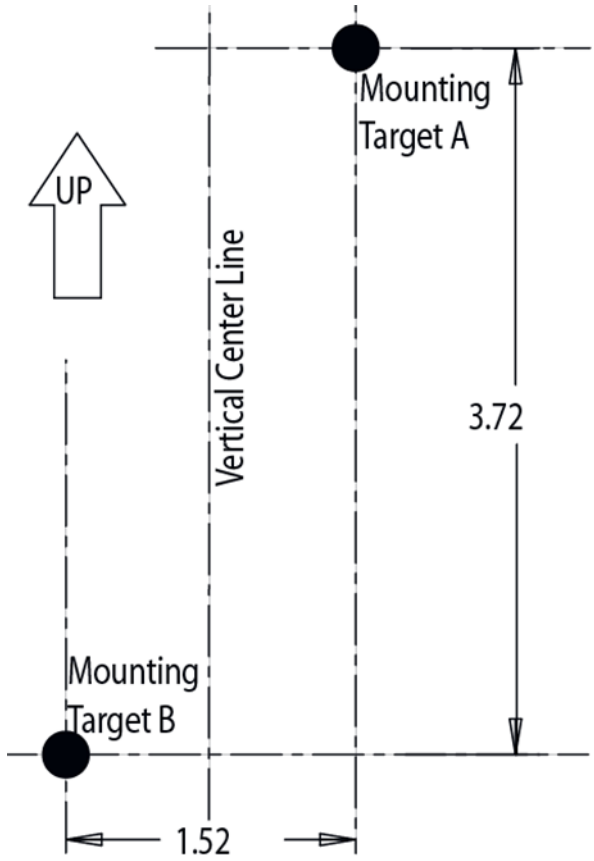
Wall mounting requires hanging the access point along its width (or length) using the pair of slots on the bottom of the unit and the access point mounting template (on the next page) for the screws.

CAUTION

An access point should be wall mounted to concrete or plaster-wall-board (dry wall) only. Do not wall mount the access point to combustible surfaces.

The hardware and tools (customer provided) required to install the access point on a wall consists of:

- Two Phillips pan head self-tapping screws
  (ANSI Standard) #6-18 X 0.875in. Type A or AB Self-Tapping screw, or
  (ANSI Standard Metric) M3.5 X 0.6 X 20mm Type D Self-Tapping screw
- Two wall anchors
- Wall mount template (included on the next page)
- Security cable (optional third part provided accessory)


Mounting
Target A
UP
Vertical Center Line
3.72
Mounting
Target B
1.52

To mount the access point on a wall using the provided template:

1 Photocopy the template (on the previous page) to a blank piece of paper. Do not reduce or enlarge the scale of the template.

CAUTION

If printing the mounting template (on the previous page) from an electronic PDF, dimensionally confirm the template by measuring each value for accuracy.

2 Tape the template to the wall mounting surface.

- If the installation requires the antenna be positioned vertically, the centerline reference (of the template) needs to be positioned vertically. The cabling shall exit the access point in a vertical direction.
- If the installation requires the antenna be positioned horizontally, the vertical centerline (of the template) needs to be positioned horizontally. The cabling shall exit the access point in a horizontal direction.

3 At mounting targets A and B, mark the mounting surface through the template at the target center.

4 Discard the mounting template.

5 At each point, drill a hole in the wall, insert an anchor, screw into the anchor the wall mounting screw and stop when there is 1mm between the screw head and the wall.

If pre-drilling a hole, the recommended hole size is 2.8mm (0.11in.) if the screws are going directly into the wall and 6mm (0.23in.) if wall anchors are being used.

6 If required, install and attach a security cable to the access point lock port.

7 Attach the antennas to their correct connectors.

8 For information on available antennas, see "Antenna Options" on page 14.

9 Place the large center opening of each of the mount slots over the screw heads.

10 Slide the access point down along the mounting surface to hang the mount slots on the screw heads.

CAUTION

Ensure you are placing the antennas on the correct connectors to ensure the successful operation of the access point.

NOTE

It is recommended the access point be mounted with the RJ45 cable connector oriented upwards or downwards to ensure proper operation.

11 Cable the access point using either the Power Injector solution or the power supply.

For Power Injector installations:

a Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the Power Injector Data In connector**.**

b Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the Power Injector Data & Power Out connector and the access point's GE1/POE port.

c Ensure the cable length from the Ethernet source to the Power Injector and access point does not exceed 100 meters (333 ft). The Power Injector has no On/Off power switch. The Power Injector receives power as soon as AC power is applied.

For standard 48 volt power adapter (5014000247R) and line cord installations:

a Connect RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the access point's GE1/POE port.

b Verify the power adapter is correctly rated according the country of operation.

c Connect the power supply line cord to the power adapter.

d Attach the power adapter cable into the power connector on the access point.

e Plug the power adapter into an outlet.

For PoE-enabled switch or controller installations:

a Connect an RJ-45 CAT5e (or CAT6) Ethernet cable between a PoE-enabled port and the access point's GE1/POE port.

b Ensure the cable length from the PoE-enabled port to the access point does not exceed 100 meters (333 ft).

c Verify power is enabled on the PoE-enabled port.

CAUTION

Do not actually apply power to the AP until the cabling portion of the installation is complete.

12 Verify the behavior of the access point LEDs. For more information, see "LED Indicators" on page 26.

13 The access point is ready to configure. For information on basic access point device configuration, see "Basic 4700 Series Configuration" on page 31.

Suspended Ceiling T-Bar Installations

A suspended ceiling mount requires holding the access point up against the T-bar of a suspended ceiling grid and twisting the access point chassis onto the T-bar.

The mounting tools (customer provided) and hardware required to install the access point on a ceiling T-bar consists of:

- Safety wire (recommended and customer supplied)
- Security cable (optional and customer supplied)

To install the access point on a ceiling T-bar:

1 Extreme Networks recommends you loop a safety wire — with a diameter of at least 1.01 mm. (.04 in.), but no more than 0.158 mm (.0625 in.) — through the tie post (above the access point's console connector) and secure the loop.

2 If desired, install and attach a security cable to the access point lock port.

3 Attach the antennas to their correct connectors.

4 For information on the antennas available to the access point, see "Antenna Options" on page 14.

CAUTION

Ensure you are placing the antennas on the correct connectors to ensure the successful operation of the access point.

5 Cable the access point using either the Power Injector solution or the power supply.

For Power Injector installations:

a Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the Power Injector Data In connector.

b Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the Power Injector Data & Power Out connector and the access point's GE1/POE port.

c Ensure the cable length from the Ethernet source to the Power Injector and access point does not exceed 100 meters (333 ft). The Power Injector has no On/Off

power switch. The Power Injector receives power as soon as AC power is applied.

For standard 48 volt power adapter (5014000247R) and line cord installations:

a Connect RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the access point's GE1/POE port.

b Verify the power adapter is correctly rated according the country of operation.

c Connect the power supply line cord to the power adapter.

d Attach the power adapter cable into the power connector on the access point.

e Plug the power adapter into an outlet.

For PoE-enabled switch or controller installations:

a Connect an RJ-45 CAT5e (or CAT6) Ethernet cable between a PoE-enabled port and the access point's GE1/POE port.

b Ensure the cable length from the PoE-enabled port to the access point does not exceed 100 meters (333 ft).

c Verify power is enabled on the PoE-enabled port.

CAUTION

Do not actually apply power to the AP until the cabling portion of the installation is complete.

6 Verify the behavior of the access point LEDs. For more information, see "LED Indicators" on page 26.

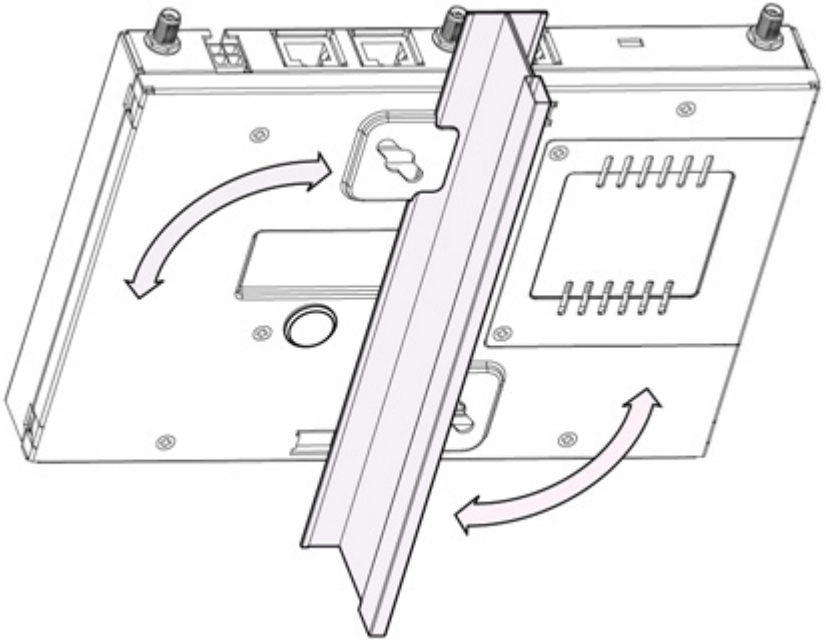
7 Align the bottom of the ceiling T-bar with the back of the access point.

8 Orient the access point chassis by its length and the length of the ceiling T-bar.

9 Rotate the access point chassis 45 degrees clockwise.

10 Push the back of the access point chassis on to the bottom of the ceiling T-bar.

11 Rotate the access point chassis 45 degrees counter-clockwise. The clips click as they fasten to the T-bar.



12 The access point is ready to configure. For information on basic access point device configuration, see "Basic 4700 Series Configuration" on page 31.

NOTE

If the access point is utilizing remote management antennas, a wire cover can be used to provide a clean finished look to the installation. Contact Extreme Networks for more information.

Above the Ceiling (Plenum) Installations

An above the ceiling installation requires placing the access point above a suspended ceiling and installing the provided light pipe under the ceiling tile for viewing the rear panel status LEDs of the unit. An above the ceiling installation enables installations compliant with drop ceilings, suspended ceilings and industry standard tiles from .625 to .75 inches thick.

NOTE

Both the Altitude 4710 Access Point and the Altitude 4750 Access Point are Plenum rated to UL2043 and NEC1999 to support above the ceiling installations. To ensure UL compliance and proper access point operation within the Air Handling Plenum, the access point must be installed with the bottom surface of the unit in contact with the un-finished surface of the ceiling tile. This will facilitate the positioning of the light pipe (described in the following pages) through the ceiling tile.

CAUTION

Extreme Networks does not recommend mounting the access point directly to any suspended ceiling tile with a thickness less than 12.7mm (0.5in.) or a suspended ceiling tile with an unsupported span greater than 660mm (26in.). Extreme Networks strongly recommends fitting the access point with a safety wire suitable for supporting the weight of the device. The safety wire should be a standard ceiling suspension cable or equivalent steel wire between 1.59mm (.062in.) and 2.5mm (.10in.) in diameter.

The mounting hardware required to install the access point above a ceiling consists of:

- Light pipe
- Badge for light pipe
- Decal for badge
- Safety wire (strongly recommended)
- Security cable (optional)

To install the access point above a ceiling:

NOTE

Remove the access point's facade and antennas before installing in an above the ceiling orientation. The access point is not certified for an above the ceiling installation with its accessories installed.

1. If possible, remove the adjacent ceiling tile from its frame and place it aside.
2. If required, install a safety wire, between 1.5mm (.06in.) and 2.5mm (.10in.) in diameter, in the ceiling space.
3. If required, install and attach a security cable to the access point's lock port.

4 Mark a point on the finished side of the tile where the light pipe is to be located.

5 Create a light pipe path hole in the target position on the ceiling tile.

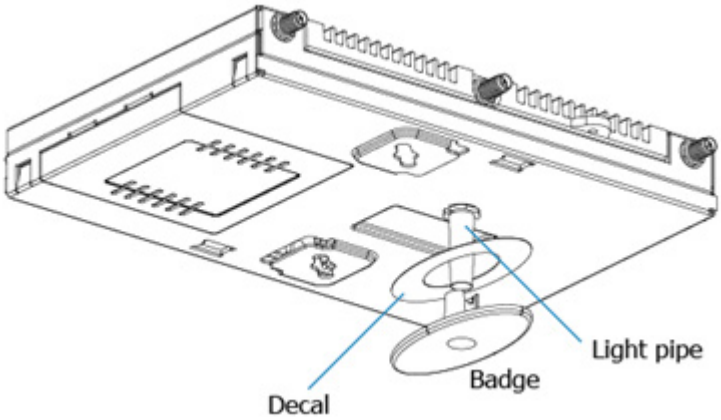
6 Use a drill to make a hole in the tile the approximate size of the access point LED light pipe.

CAUTION

Extreme Networks recommends care be taken not to damage the finished surface of the ceiling tile when creating the light pipe hole and installing the light pipe.

7 Remove the light pipe's rubber stopper (from the access point) before installing the light pipe.

8 Connect the light pipe to the bottom of the access point. Align the tabs and rotate approximately 90 degrees. Do not over tighten.



9 Fit the light pipe into hole in the tile from its unfinished side.

10 Place the decal on the back of the badge and slide the badge onto the light pipe from the finished side of the tile.

11 Attach the antennas to their correct connectors.

For information on the antennas available to the access point, see "Antenna Options" on page 14.

CAUTION

Ensure you are placing the antennas on the correct connectors to ensure the successful operation of the access point.

12 Extreme Networks recommends attaching safety wire to the access point safety wire tie point or security cable (if used) to the access point's lock port.

13 Align the ceiling tile into its former ceiling space.

14 Cable the access point using either the Power Injector solution or the power supply.

For Power Injector installations:

a Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the Power Injector Data In connector.

b Connect a RJ-45 CAT5e (or CAT6) Ethernet cable between the Power Injector Data & Power Out connector and the access point's GE1/POE port.

c Ensure the cable length from the Ethernet source to the Power Injector and access point does not exceed 100 meters (333 ft). The Power Injector has no On/Off power switch. The Power Injector receives power as soon as AC power is applied.

For standard 48 volt power adapter (5014000247R) and line cord installations:

a Connect RJ-45 CAT5e (or CAT6) Ethernet cable between the network data supply (host) and the access point's GE1/POE port.

b Verify the power adapter is correctly rated according the country of operation.

c Connect the power supply line cord to the power adapter.

d Attach the power adapter cable into the power connector on the access point.

e Plug the power adapter into an outlet.

For PoE-enabled controller installations:

a Connect an RJ-45 CAT5e (or CAT6) Ethernet cable between a PoE-enabled controller port and the access point's GE1/POE port.

b Ensure the cable length from the controller port to the access point does not exceed 100 meters (333 ft).

c Verify power is enabled on the controller port.

CAUTION

Do not actually connect to the power source until the cabling portion of the installation is complete.

15 Verify the behavior of the access point LED light pipe. For more information, see "LED Indicators" on page 26.

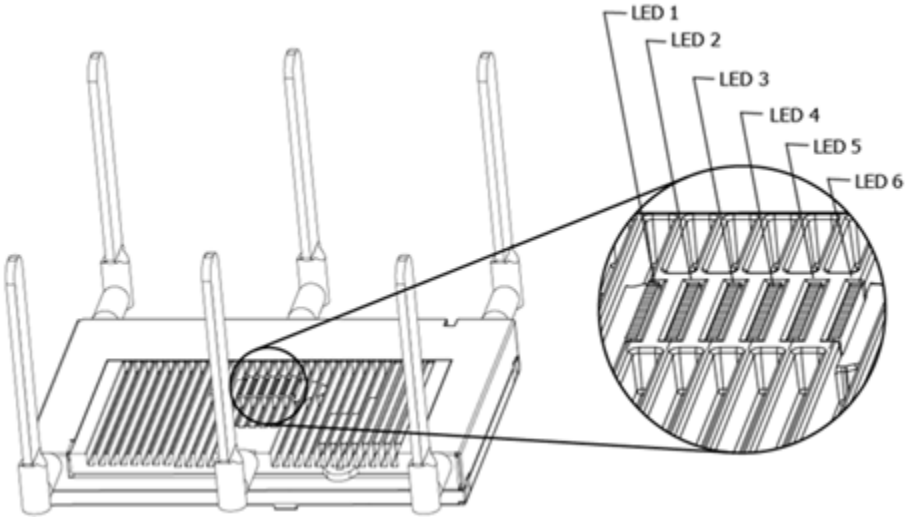
16 Place the ceiling tile back in its frame and verify it is secure.

17 The access point is ready to configure. For information on basic access point device configuration, see "Basic 4700 Series Configuration" on page 31.

LED Indicators

Altitude 4700 Series Access Points have six LEDs on the top of the access point housing, and one optional LED light pipe at the bottom of the unit. Five LEDs illuminate (on top of the housing) for dual radio models and six illuminate for three radio models.

The access point utilizes two (different colored) lights below each LED. Only one light displays within an LED at any given time. Every light within each LED is exercised during startup to allow the user to see if an LED is non-functional. The LEDs turn on and off while rotating around in a circle. The pattern is from left to right, then right to left.



NOTE

The LED blink rate is proportional to activity. The busiest traffic corresponds to the fastest blink, while the slowest traffic corresponds to slowest blink.

NOTE

Depending on how the 5 GHz and 2.4 GHz radios are configured, the LEDs will blink at different intervals between amber and yellow (5 GHz radio) and emerald and yellow (2.4 GHz radio).

The LEDs on the top housing of the access point are clearly visible in wall and below ceiling installations. The top housing LEDs have the following display and functionality:

Three Radio Altitude 4700 Series Access Point LEDs

A three radio Altitude 4700 Series Access Point has the following unique LED behavior:

LED 1	LED 2 (LAN)	LED 3 (WAN)	LED 4 - 5 GHz	LED 5 - 2.4 GHz	LED 6
Blinking **Red** indicates booting. Solid **Red** defines the diagnostic mode. **White** defines normal operation.	**Green** defines normal GE1 operation.	**Green** defines normal GE2 operation.	Blinking **Amber** indicates 802.11a activity. A 5 second **Amber** and **Yellow** blink rate defines 802.11an activity. A 2 second **Amber** and **Yellow** blink rate defines 802.11an (40 MHz) activity. When functioning as a sensor, LED alternates between **Amber** and **Yellow**. The blink interval is 0.5 seconds. It's 1 second when no Server is connected.	Blinking **Emerald** indicates 802.11bg activity. A 5 second **Emerald** and **Yellow** blink rate defines 802.11bgn activity. A 2 second **Emerald** and **Yellow** blink rate defines 802.11bgn (40 MHz) activity. When functioning as a sensor, LED alternates between **Emerald** and **Yellow**. The blink interval is 0.5 seconds. It's 1 second when no Server is connected.	Blinking **Emerald** indicates the radio is defined as a sensor, but is disabled. Alternates between **Emerald** and **Amber** when the radio is defined as a sensor with no Server connected. The blink interval is 1 second. Alternates between **Emerald** and **Amber** when the radio is defined as a sensor and a Server is connected. The blink interval is 0.5 seconds.

Dual Radio Altitude 4700 Series Access Point (2.4/5 Ghz) LEDs

A dual radio (2.4/5 Ghz) model access point has the following unique LED behavior:

LED 1	LED 2 (LAN)	LED 3 (WAN)	LED 4 - 5 GHz	LED 5 - 2.4 GHz	LED 6
Blinking **Red** indicates booting. Solid **Red** defines the diagnostic mode. **White** defines normal operation.	**Green** defines normal GE1 operation.	**Green** defines normal GE2 operation.	Blinking **Amber** indicates 802.11a activity. A 5 second **Amber** and **Yellow** blink rate defines 802.11an activity. A 2 second **Amber** and **Yellow** blink rate defines 802.11an (40 MHz) activity. When functioning as a sensor, LED alternates between **Amber** and **Yellow**. The blink interval is 0.5 seconds. It's 1 second when no Server is connected.	Blinking **Emerald** indicates 802.11bg activity. A 5 second **Emerald** and **Yellow** blink rate defines 802.11bgn activity. A 2 second **Emerald** and **Yellow** blink rate defines 802.11bgn (40 MHz) activity. When functioning as a sensor, LED alternates between **Emerald** and **Yellow**. The blink interval is 0.5 seconds. It's 1 second when no Server is connected.	Not Used

Rear LED

The LED on the rear (bottom) of the Altitude 4700 Series Access Points is optionally viewed using a single (customer installed) extended light pipe, adjusted as required to suit above the ceiling installations. The LED light pipe has the following color display and functionality

LED 7
Blinking **Red** (160 msec) indicates a failure condition.
Solid **Red** defines the diagnostic mode.
White defines normal operation.

3 Basic 4700 Series Configuration

To access the access point via the GE1/POE port, the GE1/POE port default setting is DHCP client. To access the access point via the GE2/WAN port, the default WAN IP address is 10.1.1.1. For optimal viewing of the Web UI, the screen resolution should be set to 1024 x 768 pixels or greater.

NOTE

For advanced configuration options beyond the scope of this guide, refer to the Altitude 4700 Series Access Point Product Reference Guide. The guide is available on the Extreme Networks Web site, at http://www.extremenetworks.com/go/documentation***.***

NOTE

For optimum compatibility, use Oracle's JRE 1.5 or higher, and be sure to disable Microsoft's Java Virtual Machine if installed.

NOTE

The computer being used should be configured to use the same IP address and subnet mask as the access point.

1 Connect to the access point using either the access point's WAN (GE2) or LAN (GE1/POE) port.

If initially connecting using the access point's WAN port:

NOTE

The AP4700 GE2 port will not be enabled unless a POE power source is used that supplies 802.3at power to the access point's GE1/POE port. Make sure an APPSBIAS1P3AFR model Power Injector is used to ensure 30 WATTS of power is available to enable the WAN port. If a legacy 802.3af power supply is utilized, the GE2 port will not be operational.

a Ensure the access point has power.

b Start a browser and enter the access point's static IP address (10.1.1.1).

If initially connecting to the access point through the LAN port:

a The LAN (or GE1/POE) port default is set to DHCP. Ensure the access point's GE1/POE port can obtain its IP address from a DHCP server. The access point should receive its IP address automatically.

b To view the IP address, connect one end of a null modem serial cable to the access point and the other end to the serial port of a computer running HyperTerminal or similar emulation program.

c Configure the following settings:

- Baud Rate - 19200
- Data Bits - 8
- Stop Bits - 1
- No Parity
- No Flow Control

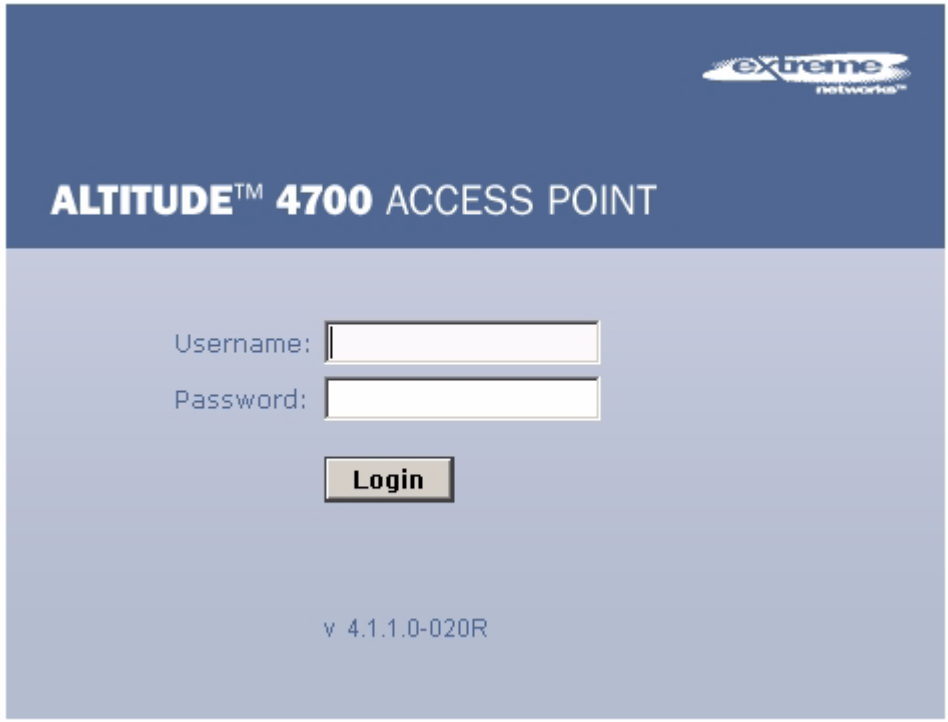
d Press <*ESC*> or <*Enter*> to access the access point CLI.

e Log into the CLI using *admin* as the default User ID and *admin123* as the default password. As this is the first time you are logging into the access point, you are prompted to enter a new password and set the county code.

f At the CLI prompt (admin>), type "*summary*". The access point's LAN IP address will display.

g Using a Web browser, use the access point's IP address to access the access point.

The login screen displays.



2 Log in using *admin* as the default User ID and *admin123* as the default password.

3 Change the password.

Type the current password and a new admin password in fields provided, and click *Apply*. Once the admin password has been updated, a warning message displays stating the access point could be operating illegally unless set to operate in the correct country. Proceed to "Configuring "Basic" Device Settings" on page 35 to validate the country setting.

NOTE

Though the access point can have its basic settings defined using a number of different screens, Extreme Networks recommends using the Quick Setup screen to define a minimum required configuration from one location.

Resetting the Access Point's Password

The access point has a means of restoring its password to its default value. Doing so also reverts the access point's security, radio and power management configuration to their default settings. Only an installation professional should reset the access point's password and promptly define a new restrictive password.

To contact Extreme Networks Support in the event of a password reset requirement, go to https://esupport.extremenetworks.com.

CAUTION

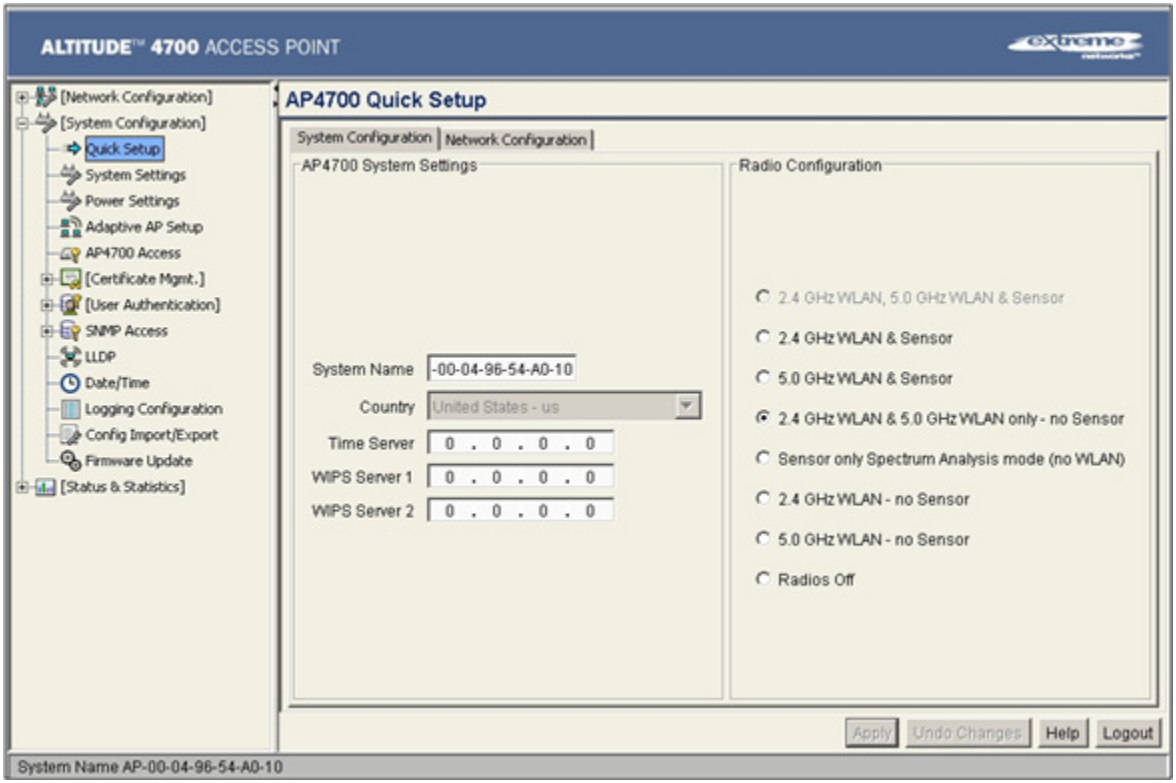
Only a qualified installation professional should set or restore the access point's radio and power management configuration in the event of a password reset.

Configuring "Basic" Device Settings

Configure a set of minimum required device settings within the *Quick Setup* screen. The values (LAN, WAN etc.) can often be defined in other locations within the menu tree. When you change the settings in the Quick Setup screen, the values also change within the screen where these parameters also exist. Additionally, if the values are updated in these other screens, the values initially set within the Quick Setup screen will be updated.

To define a basic access point configuration:

1. Select *System Configuration -> Quick Setup* from the menu tree, if the Quick Setup screen is not already displayed.
2. Select the *System Configuration* tab to define the access point's system, WIPS server and radio configuration.



3 Refer to the *AP-4700 System Settings* field to define the following parameters:

a Assign a *System Name* to define a title for this access point. The System Name is useful if multiple devices are being administered.

b Select the *Country* for the access point's country of operation. The access point prompts for the correct country code on the first login. A warning message also displays stating an incorrect country setting may result in illegal radio operation. Selecting the correct country is central to legally operating the access point. Each country has its own regulatory restrictions concerning electromagnetic emissions and the maximum RF signal strength that can be transmitted. To ensure compliance with national and local laws, set the country accurately. CLI and MIB users cannot configure their access point until a two character country code (for example, United States - us) is set. The US version only has "US" on the country Selection list.

c Optionally enter the IP address of the server used to provide system time to the access point within the Time Server field. Once the IP address is entered, the access point's *Network Time Protocol* (NTP) functionality is engaged automatically.

d Define a primary and alternate WIPS server IP Address for WIPS Server 1 and 2. These are the addresses of the primary and secondary WIPS console server. WIPS support requires an Extreme Networks AirDefense WIPS Server on the network. WIPS functionality is not provided by the access point alone. The access point works in conjunction with the dedicated WIPS server(s).

NOTE

Refer to the Altitude 4700 Series Access Point Installation Guide to optionally set a system location and admin email address for the access point or to change other default settings.

4 Refer to the new *Radio Configuration* field to define how WLAN and WIPS are supported by the access point's radio(s). Remember, the options available depend on the dual or three radio model SKU deployed.

NOTE

If using a three radio model Altitude 4750 Access Point, the radio three configuration option could be rendered unavailable if Rogue AP detection is enabled, or if the power source cannot provide adequate power for the third radio.

The Quick Setup screen on the previous page displays the Radio Configuration field with all 8 radio button options available. This is only the case with three radio access point SKUs. A dual radio model access point would display 7 of the eight possible configuration options. Refer to the following table for the options available to dual and three radio models.

Radio Button	Dual Radio SKU	Three Radio SKU
2.4 GHz WLAN, 5.0 GHz WLAN & Sensor	Not Available	Radio 1 WLAN, Radio 2 WLAN, Radio 3 WIPS
2.4 GHz WLAN, & Sensor	Radio1 WLAN, Radio 2 WIPS	Radio 1 WLAN, Radio 2 WIPS, Radio 3 WIPS
5.0 GHz WLAN & Sensor	Radio 1 WIPS, Radio 2 WLAN	Radio 1 WIPS, Radio 2 WLAN, Radio 3 WIPS
2.4 GHz WLAN & 5.0 GHz WLAN only - no Sensor	Radio 1 WLAN, Radio 2 WLAN	Radio 1 WLAN, Radio 2 WLAN, Radio 3 Disabled
Sensor only Spectrum Analysis mode (no WLAN)	Radio 1 WIPS, Radio 2 WIPS	Radio 1 WIPS, Radio 2 WIPS, Radio 3 Disabled
2.4 GHz WLAN - no Sensor	Radio1 WLAN, Radio 2 Disabled	Radio 1 WLAN, Radio 2 Disabled, Radio 3 Disabled
5.0 GHz WLAN - no Sensor	Radio1 Disabled, Radio 2 WLAN	Radio 1 Disabled, Radio 2 WLAN, Radio 3 Disabled
Radios Off	Radios 1 and 2 Disabled	Radios 1, 2 and 3 Disabled

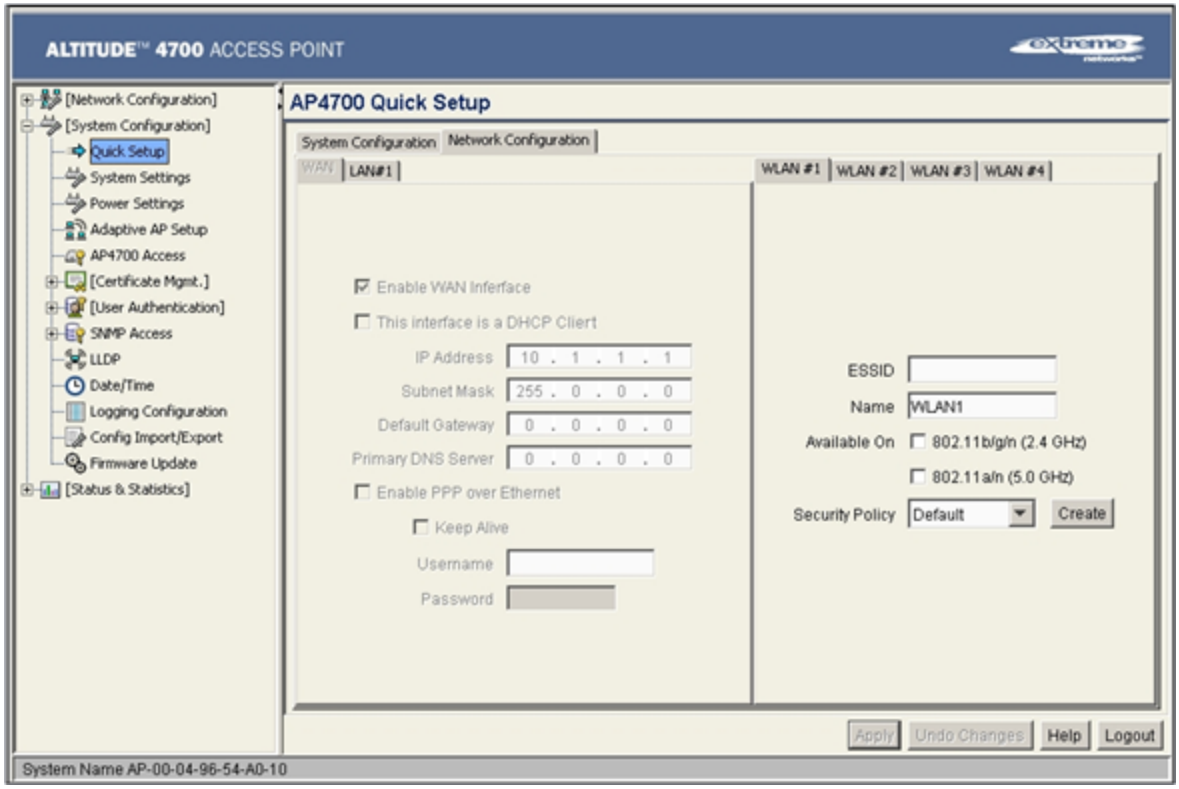
CAUTION

Only a qualified installation professional should set the access point's radio and power management configuration.

5 Select the Quick Setup screen's *Network Configuration* tab to define a minimum set of WAN or LAN configuration values. The WAN tab displays by default.

NOTE

The AP4700 GE2 port will not be enabled unless a POE power source is used that supplies 802.3at power to the access point's GE1/POE port. Make sure an APPSBIAS1P3AFR model Power Injector is used to ensure 30 WATTS of power is available to enable the WAN port. If a legacy 802.3af power supply is utilized, the GE2 port will not be operational.



a Select the *Enable WAN Interface* checkbox to enable the WAN port. Disable this option to effectively isolate the access point's WAN connection. No connections to a larger network or the Internet will be possible. MUs cannot communicate beyond the configured subnets.

b Select the *This Interface is a DHCP Client* checkbox to enable DHCP for the access point WAN connection. This is useful, if the connected network uses DHCP.

NOTE

Extreme Networks recommends the WAN and LAN ports should not both be configured as DHCP clients.

c If the DHCP client option is not enabled, specify an *IP address* and *subnet mask* for the access point's WAN connection. An IP address uses a series of four numbers expressed in dot notation, for example, 190.188.12.1.

d If the DHCP client option is not enabled, specify a *Default Gateway* address for the access point's WAN connection. The ISP or a network administrator provides this address.

e If the DHCP client option is not enabled, specify the address of a *Primary DNS Server*. The ISP or a network administrator provides this address.

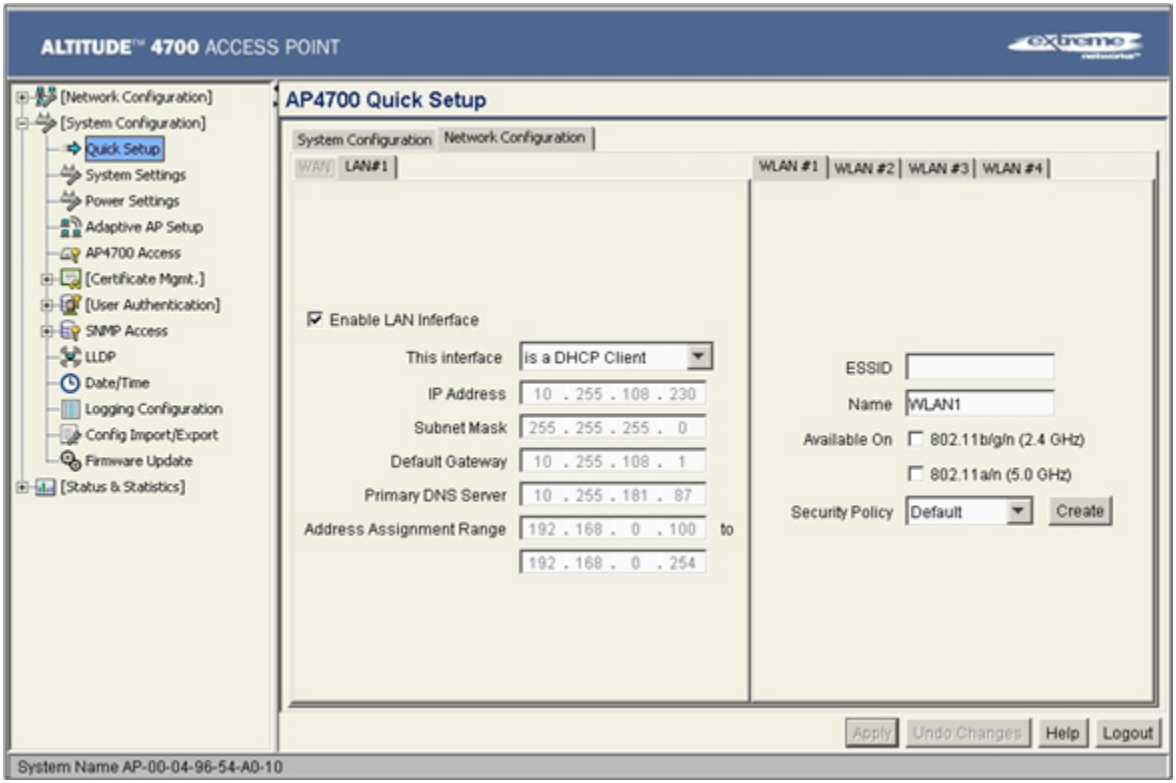
f Optionally, use the *Enable PPP over Ethernet* checkbox to enable *Point-to-Point Protocol over Ethernet (PPPoE)* for a high-speed connection that supports this protocol. Most DSL providers are currently using or deploying this protocol. PPPoE is a data-link protocol for dialup connections. PPPoE will allow the access point to use a broadband modem (DSL, cable modem, etc.) for access to high-speed data networks.

g Select the *Keep Alive* checkbox to enable occasional communications over the WAN port even when client communications to the WAN are idle. Some ISPs terminate inactive connections, while others do not. In either case, enabling Keep-Alive maintains the WAN connection, even when there is no traffic. If the ISP drops the connection after the idle time, the access point automatically reestablishes the connection to the ISP.

h Specify a *Username* entered when connecting to the ISP. When the Internet session begins, the ISP authenticates the username.

i Specify a *Password* entered when connecting to the ISP. When the Internet session starts, the ISP authenticates the password.

6 Click the *LAN#1* tab to set a minimum set of parameters to use the access point LAN interface.



a Select the *Enable LAN Interface* checkbox to forward data traffic over the access point LAN connection. The LAN connection is enabled by default.

b Use the *This Interface* drop-down menu to specify how network address information is defined over the LAN connection. Select *DHCP Client* to configure the AP to obtain its network information from a DHCP server.

c Select *DHCP Server* to configure the access point to provide DHCP services over the LAN connection.

NOTE

Extreme Networks recommends that the WAN and LAN ports should not be configured as DHCP clients at the same time.

d If the DHCP client option is not enabled, enter the *IP Address* of the access point.

e If using the static or DHCP Server option, enter a *Default Gateway* to define the numerical IP address of a router the access point uses on the Ethernet as its default gateway

NOTE

A Default Gateway cannot be configured on both the Access Point's LAN and WAN ports. Ensure the gateway is defined on only one of the two port options.

f If using a static or DHCP Server, enter the *Primary DNS Server* numerical IP address.

g If using DHCP Server, use the *Address Assignment Range* parameter to specify a range of IP address reserved for mapping clients to IP addresses. If a manually (static) mapped IP address is within the IP address range specified, that IP address could still be assigned to another client. To avoid this, ensure all statically mapped IP addresses are outside of the IP address range assigned to the DHCP server.

NOTE

For additional access point port configuration options, as well as radio, WLAN and Quality of Service (QoS) options, refer to the Altitude 4700 Series Access Point Product Reference Guide available at http://www.extremenetworks.com/go/documentation***.***

7 Select the *WLAN #1* tab (WLANs 1 - 4 are available within the Quick Setup screen) to define its ESSID security scheme for basic operation.

NOTE

A maximum of 16 WLANs are configurable within the access point Wireless Configuration screen. The limitation of 16 WLANs exists regardless of the number of radios supported.

a Enter the *Extended Services Set Identification (ESSID)* and name associated with the WLAN.

b Use the *Available On* checkboxes to define whether the target WLAN is operating over the 802.11a/n or 802.11b/g/n radio. Ensure the radio selected has been enabled (see step 8).

8 Once the WLAN's radio designations have been made, the radio must be configured in respect to intended 2.4 or 5 GHz radio traffic and the antennas used. Refer to *Network Configuration -> Wireless -> Radio Configuration -> Radio1 (or Radio2)*, and configure the Radio Settings field (at a minimum). If you know the radio's

Properties, Performance and Beacon Settings, those fields can also be defined at this time.

Define the Channel Settings, Power Level and 802.11 mode in respect to the 2.4 or 5 GHz 802.11b/g/n or 802.11a/n radio traffic and anticipated gain of the antennas.

CAUTION

Only a qualified wireless network administrator should set the access point radio configuration. Refer to the Altitude 4700 Series Access Point Product Reference Guide available at http://www.extremenetworks.com/go/documentation ***for an understanding of the configurable values involved and their implications.***

NOTE

Even an access point configured with minimal values must protect its data against theft and corruption. A security policy should be configured for WLAN1 as part of the basic configuration outlined in this guide. A security policy can be configured for the WLAN from within the Quick Setup screen. Policies can be defined over time and saved to be used as needed as the access point's security requirements change. Extreme Networks recommends you familiarize yourself with the security options available on the access point before defining a security policy.

9 Click *Apply* to save any changes to the Quick Setup screen. Navigating away from the screen without clicking Apply results in all changes to the screens being lost, unless you use the *Un-applied Changes* pop-up window to overwrite the current settings.

10 Click *Undo Changes* (if necessary) to undo any changes made. Undo Changes reverts the settings displayed on the Quick Setup screen to the last saved configuration.

Configuring Basic Security

For testing basic connectivity, there is no reason to configure a server supported authentication scheme. WEP 128 is described in this guide as a basic security scheme sufficient to protect the access point's initial transmissions. For details on configuring more sophisticated authentication and encryption options available to the access point, refer to the Altitude 4700 Series Access Point Product Reference Guide available at http://www.extremenetworks.com/go/documentation.

To configure WEP 128:

1 From the Quick Setup screen, click the *Create* button to the right of the Security Policy item.

The *New Security Policy* screen displays with the *Manually Pre-shared key/No authentication* and *No Encryption* options selected. Naming and saving such a policy (as is) would provide no security and might only make sense in a guest network wherein no sensitive data is either transmitted or received. Consequently, at a minimum, a basic security scheme (in this case WEP 128) is recommended.

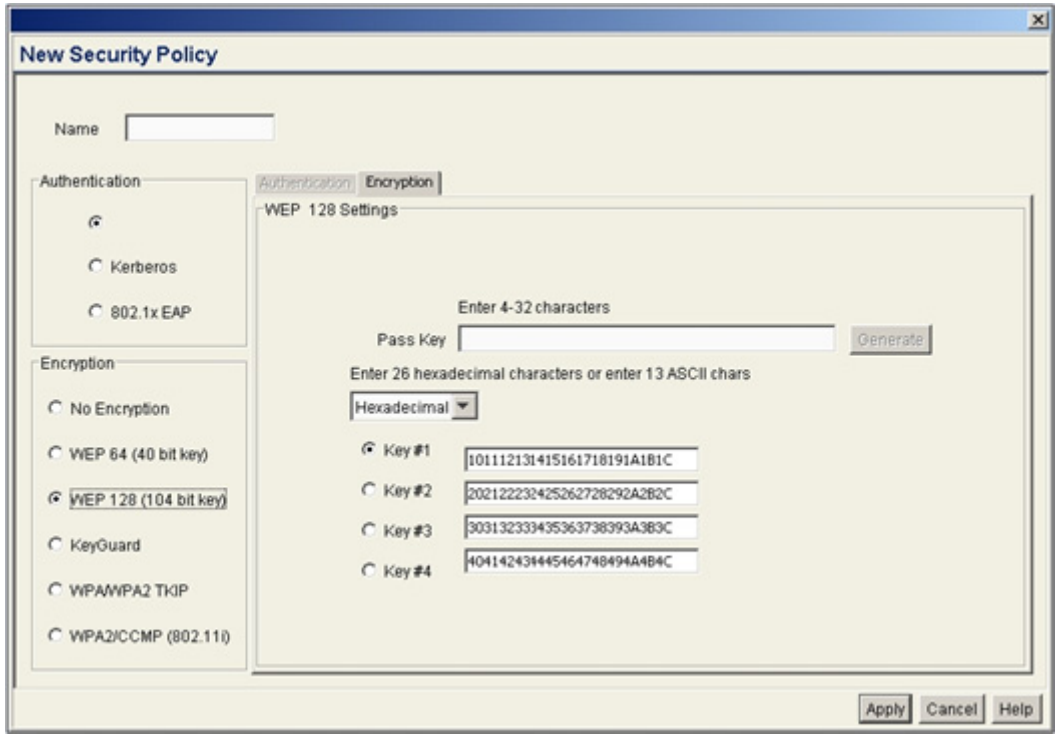
NOTE

For information on configuring the other (more sophisticated) encryption and authentication options available to the access point, refer to the Altitude 4700 Series Access Point Product Reference Guide available at http://www.extremenetworks.com/go/documentation***.***

2 Ensure the *Name* of the security policy entered suits the intended configuration or function of the policy.

Multiple WLANs can share the same security policy, so be careful not to name security policies after specific WLANs or risk defining a WLAN to single policy. Extreme Networks recommends naming the policy after the attributes of the authentication or encryption type selected.

3 Select the *WEP 128 (104 bit key)* checkbox.The *WEP 128 Setting* field displays within the New Security Policy screen.



4 Configure the *WEP 128 Setting* field as required to define the Pass Key used to generate the WEP keys.

Pass Key Specify a 4 to 32 character pass key and click the *Generate* button. The access point, other proprietary routers and Motorola Solutions MUs use the same algorithm to convert an ASCII string to the same hexadecimal number. Non-Motorola Solutions clients and devices need to enter WEP keys manually as hexadecimal numbers. The access point and its target client(s) must use the same pass key to interoperate.

Keys #1-4 Use the *Key #1-4* fields to specify key numbers. For WEP 64 (40-bit key), the keys are 10 hexadecimal characters in length. For WEP 128 (104-bit key), the keys are 26 hexadecimal characters in length. Select one of these keys for activation by clicking its radio button. The access point and its target client(s) must use the same key to interoperate.

5 Click the *Apply* button to save the security policy and return to the *AP-4700 Quick Setup* screen.

At this point, you can either restrict specific MU access to the access point (using the ACL) or test the access point for MU interoperability.

Excluding MUs from Association

Optionally, use the access point *Access Control List ACL* to specify which MUs can or cannot gain access to an access point managed WLAN. By default, all mobile units can gain access. For specific information on configuring (restricting) MU access, refer to the Altitude 4700 Series Access Point Product Reference Guide available at http://www.extremenetworks.com/go/documentation.

Testing Mobile Unit Connectivity

Verify the access point's link with an MU by sending *Wireless Network Management Protocol* (WNMP) ping packets to the associated MU. Use the *Echo Test* screen to specify a target MU and configure the parameters of the ping test. The WNMP ping test only works with Motorola Solutions MUs. Only use a Motorola Solutions MU to test connectivity using WNMP.

To ping a specific MU to assess its connection with an access point:

NOTE

Before testing for connectivity, the target MU needs to be set to the same ESSID as the access point. Since WEP 128 has been configured for the access point, the MU also needs to be configured for WEP 128 and use the same WEP keys. Ensure the MU is associated with the access point before testing for connectivity.

1 Select *Status and Statistics - > MU Stats* from the menu tree.

2 Select the *Echo Test* button from within the *MU Stats Summary* screen.

3 Define the following ping test parameters:

Station Address	The station address is the IP address of the target MU. Refer to the *MU Stats Summary* screen for associated MU IP address information.
Number of ping	Specify the number of ping packets to transmit to the target MU. The default is 100.
Packet Length	Specify the length of each data packet transmitted to the target MU during the ping test. The default is 100 bytes.

4 Click the *Ping* button to begin transmitting ping packets to the MU address specified.

Refer to the *Number of Responses* value to assess the number of responses from the target MU versus the number of pings transmitted by the access point. Use the ratio of packets sent versus packets received to assess the link quality between MU and the access point.

Click the *Ok* button to exit the Echo Test screen and return to the MU Stats Summary screen.

With basic access point and associated MU connectivity verified, the access point is now ready to operate as defined within this guide or have its more advanced features configured.

Where to Go From Here?

Once basic connectivity has been verified, the access point can be fully configured to meet the needs of the network and the users it supports. The sections referenced below are located within the Altitude 4700 Series Access Point Product Reference Guide available at http://www.extremenetworks.com/go/documentation.

- See Chapter 4 for more information on how to define System Settings (beyond the scope of the Quick Setup screen), configure access point device access, set SNMP values, log system events, set the access point system time and import device firmware and configuration files.
- See Chapter 5 for information on configuring the access point LAN and WAN ports, define up to 16 individual WLANs and their QoS policies and configure access point router settings.

- See Chapter 6 for detailed information on configuring specific encryption (WEP, KeyGuard, WPA/TKIP and WPA2/CCMP) and authentication (Kerberos and 802.1x EAP) security schemes.
- See Chapter 7 for information on accessing statistics helpful in monitoring the connection between the access point and its connected devices.
- See Chapter 8 for information on using the access point *Command Line Interface (CLI)*, as accessed through the serial port or Telnet.

4 Specifications

Altitude 4700 Series Access Point Physical Characteristics

An Altitude 4710 Access Point has the following physical characteristics:

Dimensions	5.50 in. Depth x 7.88 in. Width x 1.10 in. Height 14 cm Depth x 20.32 cm Width x 2.79 cm Height
Housing	Metal, plenum-rated housing (UL2043)
Weight	2.22 lbs
Operating Temperature	-4°F to 122°F/-20°C to 50°C
Storage Temperature	-40°F to 158°F/-40°C to 70°C
Humidity	5 to 95% RH non-condensing
Electrostatic Discharge	15kV air, 8kV contact

An Altitude 4750 Access Point has the following physical characteristics:

Dimensions	5.50 in. Depth x 7.88 in. Width x 1.38 in. Height 14 cm Depth x 20.32 cm Width x 3.5 cm Height
Housing	Metal, plenum-rated housing (UL2043)
Weight	2.7 lbs
Operating Temperature	-4°F to 122°F/-20°C to 50°C
Storage Temperature	-40°F to 158°F/-40°C to 70°C
Humidity	5 to 95% RH non-condensing
Electrostatic Discharge	15kV air, 8kV contact

Altitude 4700 Series Access Point Electrical Characteristics

An Altitude 4700 Series Access Point has the following electrical characteristics:

Operating Voltage	48VDC (compatible with POE .3af/.3at Draft)
Operating Current	Not to exceed 750mA @ 48VDC
Power	48VDC, 0.75A

Altitude 4700 Series Access Point Radio Characteristics

An Altitude 4700 Series Access Point has the following radio characteristics:

Operating Channels	All channels from 4920 MHz to 5825 MHz except channel 52 -64
	Channels 1-13 (EU), Channels 1-11 (US/Canada)
	Channel 14 (2484 MHz) Japan only
	Actual operating frequencies depend on regulatory
Data Rates Supported	802.11g: 1,2,5.5,11,6,9,12,18,24,36,48, and 54Mbps
	802.11a: 6,9,12,18,24,36,48, and 54Mbps
	802.11n: MCS 0-15 up to 300Mbps
Wireless Medium	*Direct Sequence Spread Spectrum* (DSSS),
	Orthogonal Frequency Division Multiplexing (OFDM)
	Spatial multiplexing (MIMO)
Network Standards	802.11a, 802.11b, 802.11g, 802.3, 802.11n (Draft 2.0)
Maximum Available Transmit Power	Maximum available conducted transmit power per chain: 2.4Ghz: + 23dBm
	Maximum available conducted transmit power all chains: 2.4GHz: + 27.7dBm
	Maximum available conducted transmit power per chain: 5.2Ghz: + 20 dBm
	Maximum available conducted transmit power all chains: 5.2GHz: + 24.7dBm

Transmit Power Adjustment	1dB increments
Antenna Configuration	2x3 or 3x3

5 Regulatory Compliance

These devices (Altitude 4700 Series Access Points) are approved under the Motorola brand.

The Extreme Networks Altitude 4700 Series Access Points are manufactured by Motorola and are exactly the same as the Motorola model AP-7131 Series Access Point except for brand name and product label. See the following link for Extreme Networks Declaration of Similarity (DoS) and Declaration of Conformity (DoC): http://www.extremenetworks.com/go/rfcertification.htm.

Local language translations are available at the following website: http://support.symbol.com under AP-7131.

Any changes or modifications to Extreme Networks equipment, not expressly approved by Extreme Networks, could void the user's authority to operate the equipment.

Extreme Networks access points must be professionally installed and configured so that the Radio Frequency Output Power will not exceed the maximum allowable limit for the country of operation.

WARNING!

Antennas: Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications, or attachments could cause damage and may violate regulations. Use of an unapproved antenna is illegal under FCC regulations subjecting the end user to fines and equipment seizure. See the Altitude 35xx/46xx/47xx AP Antenna Selection Guide available from http://www.extremenetworks.com/go/documentation ***for details.***

Country Approvals

Regulatory markings are applied to the device signifying the radio (s) are approved for use in the following countries: United States, Canada, Australia, Japan and Europe.

Please refer to the *Declaration of Conformity* (DoC) for details of other country markings. A Declaration of Conformity may be obtained from http://www.extremenetworks.com/go/rfcertification.htm..

NOTE

For 2.4GHz or 5GHz Products: Europe includes, Austria, Belgium, Bulgaria, Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

WARNING!

Operation of the device without regulatory approval is illegal.

Health and Safety Recommendations

Warnings for the use of Wireless Devices

Please observe *all* warning notices with regard to the usage of wireless devices.

Potentially Hazardous Atmospheres

You are reminded of the need to observe restrictions on the use of radio devices in fuel depots, chemical plants etc. and areas where the air contains chemicals or particles (such as grain, dust, or metal powders).

Safety in Hospitals

Wireless devices transmit radio frequency energy and may affect medical electrical equipment. When installed adjacent to other equipment, it is advised to verify that the adjacent equipment is not adversely affected.

RF Exposure Guidelines

Safety Information

The device complies with Internationally recognized standards covering human exposure to electromagnetic fields from radio devices.

Reducing RF Exposure—Use Properly

Only operate the device in accordance with the instructions supplied.

Remote and Standalone Antenna Configurations

To comply with FCC RF exposure requirements, antennas that are mounted externally at remote locations or operating near users at standalone desktop of similar configurations must operate with a minimum separation distance of 20 cm from all persons.

Power Supply

Use only an Extreme Networks approved power supply output rated at 48Vdc and minimum 0.75A. The power supply shall be Listed to UL/CSA 60950-1; and certified to IEC60950-1 and EN60950-1 with SELV outputs.

Use only an Extreme Networks approved power supply. Use of alternative power supply will invalidate any approval given to this device and may be dangerous.

Wireless Devices - Countries

Country Selection

Select only the country in which you are using the device. Any other selection will make the operation of this device illegal.

Operation in the US

The use on UNII (Unlicensed National Information Infrastructure) Band 1 5150-5250 MHz is restricted to indoor use only, any other use will make the operation of this device illegal.

The available channels for 802.11 b/g operation in the US are Channels 1 to 11. The range of channels is limited by firmware.

Radio Frequency Interference Requirements—FCC

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 installation. 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 or more 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.

Radio Transmitters (Part 15)

This device 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.

Radio Frequency Interference Requirements – Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Devices using the 5.470 – 5.725 GHz band shall not be capable of transmitting in the band 5.60-5.65 GHz in Canada, make sure that Canada is the country selected during setup to ensure compliance.

Radio Transmitters

This device complies with RSS 210 of Industry & Science Canada. 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.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication.

This device has been designed to operate with the antennas listed in this guide, and having a maximum gain of 13.9 dBi (2.4 GHz) and 13 dBi (5 GHz) for radios one and two. Antennas not included in this list, or having a gain greater than 13.9 dBi (2.4 GHz) and 13 dBi (5 GHz) for radios one and two, are prohibited for use with this device. This device has been designed to operate with the antennas listed in this guide, and having a maximum gain of 3.03 dBi (2.4 GHz) and 4.06 dBi (5 GHz) for radio three. Antennas not included in this list, or having a gain greater than 3.03 dBi (2.4 GHz) and 4.06 dBi (5 GHz) for radio three, are strictly prohibited for use with this device. The required antenna impedance is 50 ohms.

Label Marking: The Term "IC:" before the radio certification signifies that Industry Canada technical specifications were met.

CE Marking and European Economic Area (EEA)

The use of 2.4GHz RLANs, for use through the EEA, have the following restrictions:

- Maximum radiated transmit power of 100 mW EIRP in the frequency range 2.400 - 2.4835 GHz.
- France outside usage, the equipment is restricted to 2.400-2.45 GHz frequency range.
- Italy requires a user license for outside usage.

Statement of Compliance

Extreme Networks hereby, declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.A Declaration of Conformity may be obtained from http://www.extremenetworks.com/go/rfcertification.htm.

Japan (VCCI) - Voluntary Control Council for Interference

Class B ITE

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをして下さい。

This is a Class B product based on the standard of the Voluntary Control Council for Interference from Information Technology Equipment (VCCI). If this is used near a radio or television receiver in a domestic environment, it may cause radio interference. Install and use the equipment according to the instruction manual.

Korea Warning Statement for Class B

기 종 별	사 용 자 안 내 문
B 급 기기 (가정용 방송통신기기)	이 기기는 가정용 (B 급) 으로 전자파적합등록을 한 기기로서 주로 가정에서 사용하는 것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .
Class B (Broadcasting Communication Device for Home Use)	This device obtained EMC registration mainly for home use (Class B) and may be used in all areas.

Other Countries

Autstralia

Use of 5GHz RLAN's in Australia is restricted in the following band 5.50 – 5.65GHz.

Brazil

Regulatory declarations for Altitude 4700 Series Access Points - BRAZIL

Note: The certification mark applied to the Altitude 4700 Series Access Points is for Restrict Radiation Equipment. This equipment operates on a secondary basis and does not have the right for protection against harmful interference from other users including same equipment types. Also this equipment must not cause interference to systems operating on primary basis.

For more information consult the website *www.anatel.gov.br*

Declarações Regulamentares para Altitude 4700 Series Access Points - Brasil

Nota: A marca de certificação se aplica ao Transceptor, modelo Altitude 4700 Series Access Points. Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário. Para maiores informações sobre ANATEL consulte o site: *www.anatel.gov.br*

Chile

Este equipo cumple con la Resolución No 403 de 2008, de la Subsecretaria de telecomunicaciones, relativa a radiaciones electromagnéticas.

This device complies with the Resolution 403 of 2008, of the Undersecretary of telecommunications, relating to electromagnetic radiation.

Mexico

Restrict Frequency Range to: 2.450 – 2.4835 GHz.

Taiwan

NOTICE!

According to: Administrative Regulations on Low Power Radio Waves Radiated Devices

Article 12

Without permission granted by the DGT, any company, enterprise, or user is not allowed to change frequency, enhance transmitting power or alter original characteristic as well as performance to a approved low power radio-frequency devices.

Article 14

The low power radio-frequency devices shall not influence aircraft security and interfere legal communications; if found, the user shall cease operating immediately until no interference is achieved. The said legal communications means radio communications is operated in compliance with the Telecommunications Act. The low power radio-frequency devices must be susceptible with the interference from legal communications or ISM radio wave radiated devices.

臺灣

低功率電波輻射性電機管理辦法

第十二條
經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信規定作業之無線電通信。
低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

限制頻率範圍是：2.400 - 2.4835 GHz。　最大發射功率：27dBm
5.250 - 5.350 GHz。　最大發射功率：17dBm
5.725 - 5.850 GHz。　最大發射功率：24dBm

2.4GHz：11個通道
5GHz：　8個通道

Wireless device operates in the frequency band of 5.25-5.35 GHz, limited for Indoor use only.

在 5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用

Korea

For a radio equipment using 2400~2483.5MHz or 5725~5825MHz, the following two expression should be displayed;

1 This radio equipment 전파혼신 가능성이 있음
2 This radio equipment cannot provide a service relevant to the human life safety.

당해 무선설비 는전파혼 신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다 .

South Korea

S. Korea regulatory certification requires that only STP (Shielded Twisted Pair) Ethernet cabling (customer supplied) be installed for operation on 1000 MHz Ethernets.

한국 규정에 만족하기 위하여, 1000MHz 이더넷 통신에 쉴드(STP : Shielded Twist Pair) 이더넷 케이블을 별도 구매하여 사용하여야 합니다.

6 Waste Electrical and Electronic Equipment (WEEE)

English: For EU Customers: All products at the end of their life must be returned to Extreme Networks for recycling. For information on how to return product, please go to: http://www.extremenetworks.com/go/eu-weee.

Čeština: Pro zákazníky z EU: Všechny produkty je nutné po skončení jejich životnosti vrátit společnosti Symbol k recyklaci. Informace o způsobu vrácení produktu najdete na webové stránce: http://www.extremenetworks.com/go/eu-weee .

Dansk: Til kunder i EU: Alle produkter skal returneres til Extreme Networks til recirkulering, når de er udtjent. Læs oplysningerne om returnering af produkter på: http://www.extremenetworks.com/go/eu-weee.

Deutsch: Für Kunden innerhalb der EU: Alle Produkte müssen am Ende ihrer Lebensdauer zum Recycling an Extreme Networks zurückgesandt werden. Informationen zur Rücksendung von Produkten finden Sie unter http://www.extremenetworks.com/go/eu-weee.

Eesti: EL klientidele: kõik tooted tuleb nende eluea lõppedes tagastada taaskasutamise eesmärgil Extreme Networks'ile. Lisainformatsiooni saamiseks toote tagastamise kohta külastage palun aadressi: http://www.extremenetworks.com/go/eu-weee.

Español: Para clientes en la Unión Europea: todos los productos deberán entregarse a Extreme Networks al final de su ciclo de vida para que sean reciclados. Si desea más información sobre cómo devolver un producto, visite: http://www.extremenetworks.com/go/eu-weee.

Ελληνικά: Για πελάτες στην Ε.Ε.: Όλα τα προϊόντα, στο τέλος της διάρκειας ζωής τους, πρέπει να επιστρέφονται στην Symbol για ανακύκλωση. Για περισσότερες πληροφορίες σχετικά με την επιστροφή ενός προϊόντος, επισκεφθείτε τη διεύθυνση http://www.extremenetworks.com/go/eu-weee .

Français : Clients de l'Union Européenne : Tous les produits en fin de cycle de vie doivent être retournés à Extreme Networks pour recyclage. Pour de plus amples informations sur le retour de produits, consultez : http://www.extremenetworks.com/go/eu-weee.

Italiano: per i clienti dell'UE: tutti i prodotti che sono giunti al termine del rispettivo ciclo di vita devono essere restituiti a Extreme Networks al fine di consentirne il riciclaggio. Per informazioni sulle modalità di restituzione, visitare il seguente sito Web: http://www.extremenetworks.com/go/eu-weee.

Latviešu: ES klientiem: visi produkti pēc to kalpošanas mūža beigām ir jānogādā atpakaļ Symbol otrreizējai pārstrādei. Lai iegūtu informāciju par produktu nogādāšanu Symbol, lūdzu, skatiet: http://www.extremenetworks.com/go/eu-weee .

Lietuvių: ES vartotojams: visi gaminiai, pasibaigus jų eksploatacijos laikui, turi būti grąžinti utilizuoti į kompaniją „Symbol". Daugiau informacijos, kaip grąžinti gaminį, rasite: http://www.extremenetworks.com/go/eu-weee

Magyar: Az EU-ban vásárlóknak: Minden tönkrement terméket a Extreme Networks vállalathoz kell eljuttatni újrahasznosítás céljából. A termék visszajuttatásának módjával kapcsolatos tudnivalókért látogasson el a http://www.extremenetworks.com/go/eu-weee weboldalra

Malti: Għal klijenti fl-UE: il-prodotti kollha li jkunu waslu fl-aħħar tal-ħajja ta' l-użu tagħhom, iridu jiġu rritornati għand Symbol għar-riċiklaġġ. Għal aktar tagħrif dwar kif għandek tirritorna l-prodott, jekk jogħġbok żur: http://www.extremenetworks.com/go/eu-weee

Nederlands: Voor klanten in de EU: alle producten dienen aan het einde van hun levensduur naar Extreme Networks te worden teruggezonden voor recycling. Raadpleeg http://www.extremenetworks.com/go/eu-weee voor meer informatie over het terugzenden van producten.

Polski: Klienci z obszaru Unii Europejskiej: Produkty wycofane z eksploatacji należy zwrócić do firmy Symbol w celu ich utylizacji. Informacje na temat zwrotu produktów znajdują się na stronie internetowej http://www.extremenetworks.com/go/eu-weee

Português: Para clientes da UE: todos os produtos no fim de vida devem ser devolvidos à Extreme Networks para reciclagem. Para obter informações sobre como devolver o produto, visite: http://www.extremenetworks.com/go/eu-weee.

Slovenski: Za kupce v EU: vsi izdelki se morajo po poteku življenjske dobe vrniti podjetju Extreme Networks za reciklažo. Za informacije o vraèilu izdelka obišèite: http://www.extremenetworks.com/go/eu-weee.

Slovenščina: Pre zákazníkov z krajín EU: Všetky výrobky musia byť po uplynutí doby ich životnosti vrátené spoločnosti Symbol na recykláciu. Bližšie informácie o vrátení výrobkov nájdete na: http://www.extremenetworks.com/go/eu-weee

Suomi: Asiakkaat Euroopan unionin alueella: Kaikki tuotteet on palautettava kierrätettäväksi Extreme Networks-yhtiöön, kun tuotetta ei enää käytetä. Lisätietoja tuotteen palauttamisesta on osoitteessa http://www.extremenetworks.com/go/eu-weee.

7 Customer Support

NOTE

Services can be purchased from Extreme Networks or through one of its channel partners. If you are an end-user who has purchased service through an Extreme Networks channel partner, please contact your partner first for support.

Extreme Networks Technical Assistance Centers (TAC) provide 24x7x365 worldwide coverage. These centers are the focal point of contact for post-sales technical and network-related questions or issues. TAC will create a Service Request (SR) number and manage all aspects of the SR until it is resolved. For a complete guide to customer support, see the *Technical Assistance Center User Guide* at:

http://www.extremenetworks.com/go/TACUserGuide

The Extreme Networks eSupport website provides the latest information on Extreme Networks products, including the latest Release Notes, troubleshooting, downloadable updates or patches as appropriate, and other useful information and resources. Directions for contacting the Extreme Networks Technical Assistance Centers are also available from the eSupport website at:

https://esupport.extremenetworks.com

Registration

If you have not already registered with Extreme Networks using a registration card supplied with your product, you can register on the Extreme Networks website at: http://www.extremenetworks.com/go/productregistration.

Documentation

Check for the latest versions of documentation on the Extreme Networks documentation website at:

http://www.extremenetworks.com/go/documentation