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RUCKUS Q950 LTE Access Point Quick Setup Guide

Introduction

This Quick Setup Guide provides step-by-step instructions on how to set up your RUCKUS Q950 LTE Access Point (AP) Part Number: P01-Q950-US02. After completing the steps described in this guide, you will be able to place the Q950 at your site and provide LTE wireless network access to users.

FIGURE 1 Q950 AP

Before You Begin

Before deploying the RUCKUS Q950, verify that all items listed in Package Contents are included in the package. If any item is damaged or missing, notify your authorized RUCKUS sales representative. Also, make sure that you have the all the hardware and tools mentioned in the Required Hardware and Tools on page 1.

You can check for the latest information and release documentation at

http://support.ruckuswireless.com/documents

Software License and Limited Warranty are available at

http://support.ruckuswireless.com/warranty

Required Hardware and Tools

- 13-mm (0.5-in.) flat-blade screwdriver or equivalent
- No. 2 Phillips screwdriver
- Small flat-blade screwdriver
- Torque wrench or torque screwdriver with sockets
- Long-nose pliers

- Electrical wire-stripping and terminal crimping pliers
- Pipe, pole, or a sturdy flat surface
- Electric drill with drill bits and customer-supplied wall anchors, flat washers, and hex nuts for flat-surface mount
- Ruler

Package Contents

A complete Q950 field-installation package includes all of the following items:

- One RUCKUS Q950 LTE Access Point
- One wall/pole mount bracket
- Two push-in grommets
- Pole-mount bracket kit
  - Four M4 x 10-mm screws with flat locking washers
  - Five .250 flat washers
  - Five .250 split-lock washers
  - Four 1.5-in. to 2.5-in. pipe clamps
  - Five .250-28 x .50-in. hex head bolts
- Three M25 cable glands
- A safety cable kit and quick setup guide
- Two zipcord cable glands
- One ground wire with lug (1-m length)
- One cable gland extender adapter
- One cable gland extender gasket
- RUCKUS End User License Agreement/Lifetime Warranty Statement
- Regulatory Statement
- This Quick Setup Guide

Connecting the Power Supply Unit to the AP

Provide -48 VDC power to the AP or use the AP power supply unit (902-Q950-PWR1).

You can connect the AP to the power supply unit (902-Q950-PWR1).

1. Install the black grommets either on both sides or on opposite sides of the AP bracket.

   NOTE: The DC wire must always go through the side with the double holes. The AC wire can go through either side.

2. Insert the input and output cables through the holes with the grommet, as shown in the following figure.

**FIGURE 2** Connecting the Power Supply Unit

1. Grommets

3. Mount the power supply unit on the rear side of the AP bracket and fasten the power supply to the bracket with the M4 screws and torque to 2.259 N.m (20 in-lbs).

4. Mount AP bracket to the AP.

   a. Place the rear side of the AP on the front side of the AP mounting bracket so that the four larger screw holes on the bracket align with the four screw holes on the AP.

   b. Use four 0.250-28 x 0.5-inch hex bolts with split lock and flat washer sets to mount the AP bracket to the AP. Tighten the bolts to 3.0 N.m (27 in-lbs).

   CAUTION! Make sure that the screws are no longer than 0.5 inch. If a screw is longer than 0.5 inch, it can damage the AP chassis.

FIGURE 3 Attaching the AP to the Mounting Bracket
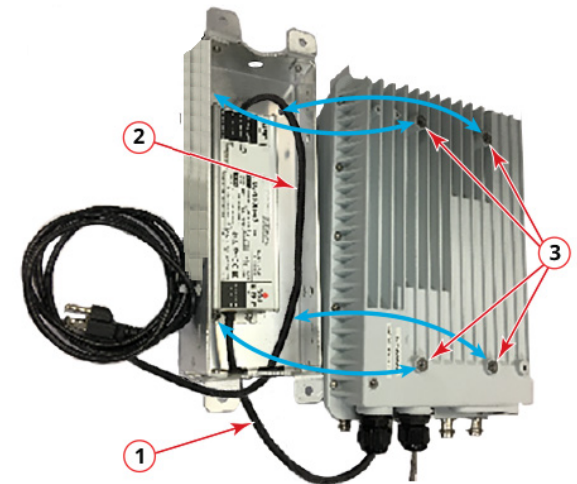
1. DC Power	3. Screws
2. AC Power	

5. Connect the DC wire to the AP with cable gland.

   NOTE: Cable gland use is mandatory, and the DC wires must first be inserted into the cable gland before making the connection to the unit. Otherwise, you will need to disconnect again to install the cable gland.

Refer to Assembling the Cable Gland on page 2.

FIGURE 4 Connecting DC Power to the AP

Assembling the Cable Gland

1. Use a wide flat-blade screwdriver to remove the required blanking cap from the AP.

2. Using a wire stripper, cut and strip the DC source wires.

3. Feed the end of the cable through the cable gland dome, grommet, clamping ring assembly, and cable gland base, as shown in the following figure.

FIGURE 5 Cable Gland Assembly

1. Cable gland base
2. Clamping ring assembly
3. Grommet
4. Cable gland dome

4. Insert the +/- wires into the correct positions as labeled on the housing silkscreen.

5. Tighten the terminal block screws to secure the wires.

6. Tighten the cable gland base into the AP chassis to 7 N.m or 62 in-lbs.

7. Wrap the clamping ring assembly and grommet in the cable gland base. Make sure that the clamping ring assembly fully encloses the grommet.

8. Seat the clamping ring assembly and grommet in the cable gland base.

9. Tighten the cable gland dome to 0.79 N.m (7 in-lbs).

> **CAUTION!** RUCKUS strongly recommends that you form a drip loop on any cable that is connected to devices that are installed outdoors, to prevent water from running along the cable and entering electrical components.

Determining Data Port Usage

You can daisy chain up to three Q950 APs at a single installation point. You can use Table 1 to determine SPF trans-receiver and AP ports usage.

> **NOTE:** When the AP is not daisy-chained, either the RJ45 or the SFP port may be used for ethernet connection.
>
> When two APs are daisy-chained, you can use the RJ45 port on the second AP instead of the SFP port. When three APs are daisy-chained, use following figure.

FIGURE 6 Daisy-chaining APs
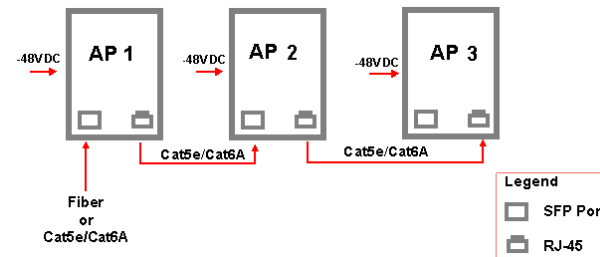
Connecting the SFP Optic Module

If the fiber is a single fiber, you use the cable gland as is. If the fiber is a zipcord, you must replace the single hole insert in the cable gland with the zipcord insert.

> **WARNING!** The zipcord fiber cable is extremely fragile and must be handled with care.

> **NOTE:** Do not insert the cable gland base, grommet, and dome into the extender until the extender has been tightened. Step 5 must be performed before Step 6; otherwise, the fiber cable will twist.

Before you begin to connect, inset the transceiver.

1. Place the cable gland base to the cable gland extender and tighten the cable gland base to 7 N.m (62 in-lbs).

2. Fix the cable gland extender gasket to the cable gland extender.

3. The single fiber is a fiber cable with one diameter. A zipcord is a fiber cable with two diameters joined together but can be easily separated by pulling them apart. Depending on the fiber cable, use appropriate grommet for single hole or dual hole (zipcord).

4. Feed the zipcord fiber cable through the gland dome, zipcord cable gland grommet, clamping ring, cable gland base, cable gland extender, and cable gland gasket.

5. Connect the fiber cable to the SFP transceiver in the AP.

6. Tighten the cable gland extender adapter to 7 N.m (62 in-lbs).

7. Insert the zipcord cable gland grommet into the clamping ring with the fiber cable in the two holes.

8. Insert the clamping ring into the cable gland base.

9. Tighten the cable gland dome to 0.79 N.m (7 in-lbs).

Connecting and Sealing the RJ-45 Cable

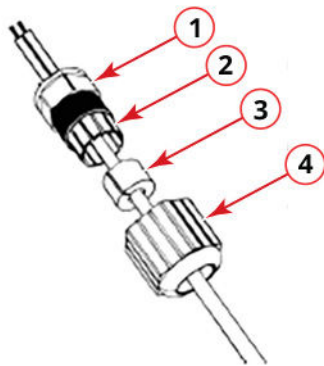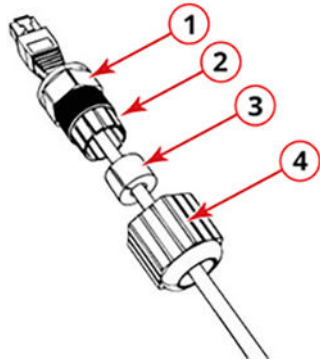**FIGURE 7** Ports and LEDs

1. SFP Port
2. LEDs
3. RJ-45 Port
4. DC Port

1. Feed the end of the cable through the cable gland dome, grommet, clamping ring assembly, and cable gland base, as shown in the following figure.

FIGURE 8 RJ-45 Cable and Cable Gland Assembly

1. Cable gland base
2. Clamping ring assembly
3. Grommet
4. Cable gland dome

2. Connect the cable to the Ethernet port in the Q950.
3. Tighten the cable gland base into the Q950 chassis to 7 N.m or 62 in-lbs.
4. Wrap the clamping ring assembly around the grommet. Make sure that the clamping ring assembly fully encloses the grommet.
5. Seat the clamping ring assembly and grommet in the cable gland base.
6. Tighten the cable gland dome to 0.79 N.m (7 in-lbs).

Connecting Antenna to the AP

When using the RUCKUS Q950 antenna (Part number: 902-Q950-ANT1), connect the antenna per the instructions in the Antenna QSG. For third-party antenna, ensure that cold shrink is inserted on antenna cables before connecting them to the AP antenna port. Refer to Deploying Cold Shrink on page 4.

Mounting the GPS Antenna

The Q950 AP requires an external GPS signal. The AP does not provide power to the GPS antenna. If an active GPS antenna is used, an appropriate bias-T must be used to power the antenna, and the DC block must be placed to prevent any DC power reaching the GPS port of the AP.

> **CAUTION!** While using a third-party GPS antenna, ensure that the minimum signal level at the AP input port is -145 dBm.

When using the RUCKUS Q950 antenna (Part number: 902-Q950-ANT1), connect the antenna's GPS port to the AP Q950's GPS port according to the instruction in the Q950-ANT1 QSG.

When using a third-party antenna or a RUCKUS GPS antenna (Part number: 902-Q950-GPS1), complete the following instructions.

1. Using the M4 x 8-mm screws that came with the GPS kit, mount the GPS antenna bracket to the rear side of the AP, as shown in the following figure.

FIGURE 9 Mounting the GPS Antenna
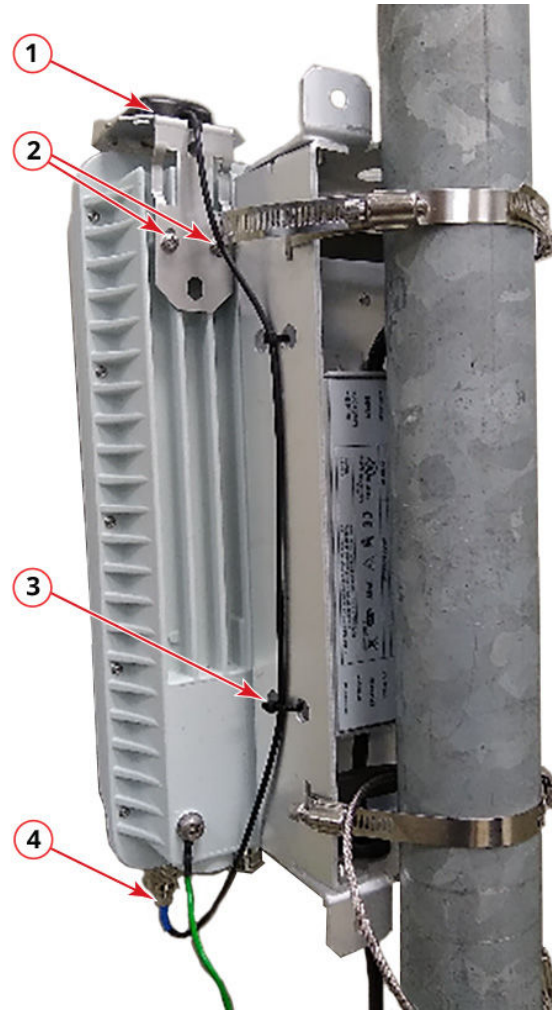
1. GPS antenna
2. Screws
3. Tie wrap
4. Antenna cable connector

2. Tighten to screws to 2.259 N.m. (20 in-lbs).
3. Connect the GPS antenna cable to the GPS port on the Q950 AP.
4. Use the cold shrink kit to seal the antenna cable connector.

   Refer to the RUCKUS GPS Antenna QSG on port usage.
5. Secure the GPS antenna cable to the side of the AP mounting bracket with tie wraps.

Mount AP to the Pole using Pole Mounting

1. Insert the open end of one pipe clamp into the upper two slots on the mounting bracket.
2. Take the other pipe clamp and insert it into the lower two slots on the mounting bracket.

> **NOTE:** The pipe clamps can be daisy-chained together to accommodate larger poles.

3. Use the clamps to attach the mounting bracket to the pole. Tighten the clamps to 3 N.m (27 in-lbs.) or per manufacturer's specifications.

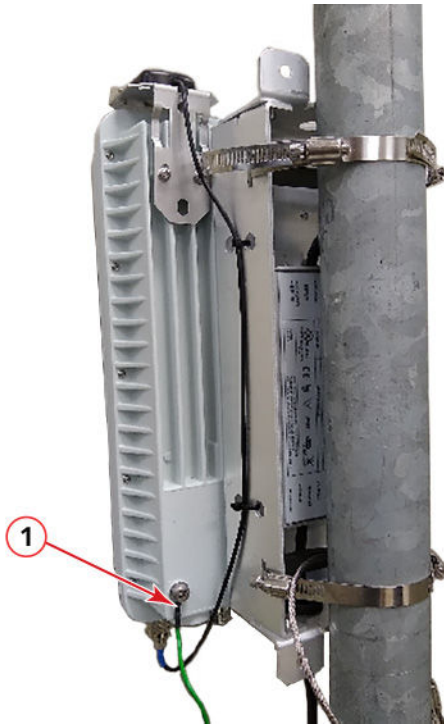**FIGURE 10** Attaching APs to the Pole

Earth Grounding the AP

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

> **NOTE:** The color coding of ground wires varies by region. Before completing this step, check your local wiring standards for guidance.

Using the factory-supplied ground wire and ground screw and washer set, connect a good earth ground to the AP chassis ground point. Tighten the screw to 3.0 N.m. (27 in-lbs).
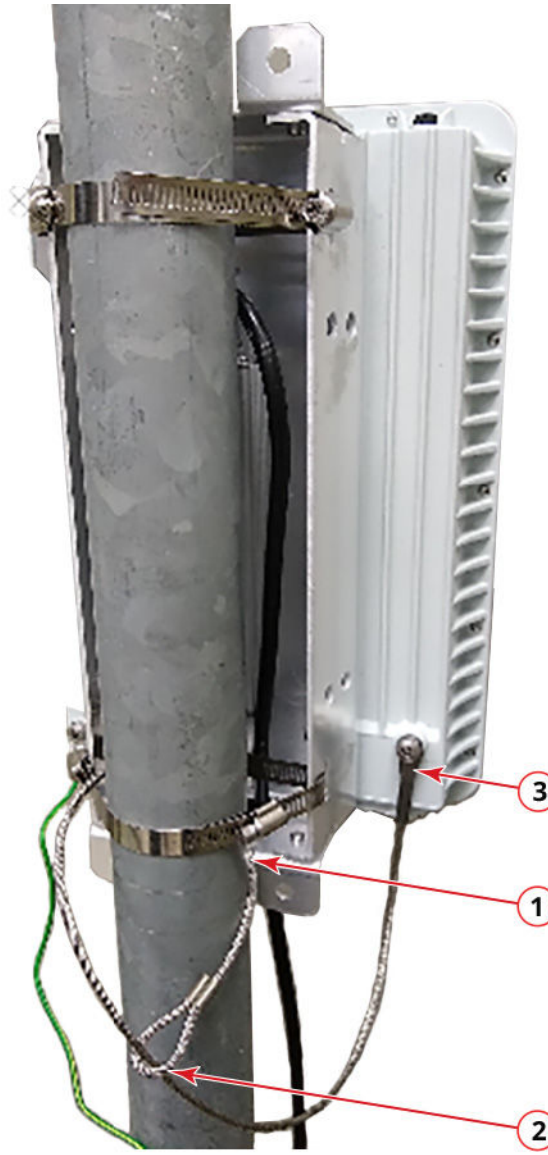
> **CAUTION!** The Q950 AP includes one 12-mm stainless steel M6x1 earth ground screw with split lock and flat washers. Make sure that any replacement screw is no longer than 12 mm. If a screw is longer than 12 mm, it can damage the AP chassis.

FIGURE 11 Connecting a Good Earth Ground to the AP

1. Earth ground screw

Installing the Security Cable

1. Thread the security cable through the mounting bracket and through the eye on the cable itself.
2. Attach the safety cable to the AP and tighten the screw to 3.0 N.m. (27 in-lbs).

FIGURE 12 Attaching the Security Cable

1. Mounting bracket
2. Eye on the cable
3. Safety cable attached to the AP

Deploying Cold Shrink

Use the cold shrink kit to seal connectors.

> **NOTE:** Cold shrink is not part of the package contents. You can order the Cold Shrink Kit from CommScope (Part Number: PS-CWRN).

> **NOTE:** N-Type connectors shown are representative examples.

> **NOTE:** Weather sealing with cold shrink or tape on both ends of the cable is recommended.

1. Ensure the AP is disconnected from the power source to avoid electrocution or equipment damage.
2. Clean all traces of dust, grease, and oil from your hands.
3. Clean off any traces of dust, grease, and oil from the N-Type bulkhead connector external threads.
4. Make sure that the connectors are dry before continuing.
5. Preconditioning: Hold the shrink sleeve at a comfortable angle and pull the plastic tab until the front end of the plastic is removed and is even with the shrink sleeve, as shown in the following figures.

FIGURE 13 Pulling the Plastic Tab

FIGURE 14 Evening the Plastic Tab with the Shrink Sleeve

6. Preconditioning: Slide the shrink sleeve over the RF cable connector assembly making sure the plastic tab is oriented away from the RF cable.

FIGURE 15 Sliding the Shrink Sleeve Over the RF Cable Connector

7. Reconnect the RF connecter to the AP or antenna if necessary.

8. Slide the shrink sleeve forward over the connector assembly and ensure the cold shrink is flush against the connector cabinet.

FIGURE 16 Deploying the Cold Shrink Over the Connector and the Cable

9. Hold the cold shrink in place over the connector to keep the sleeve from slipping and begin pulling the plastic tab away until the cold shrink is fully deployed over the connector and the cable, as shown in the following figure.

FIGURE 17 Fully Deployed Cold Shrink

Checking the LEDs

The behavior of the LEDs verifies the installation of the AP.

Once connected, the AP powers on and automatically connects to RUCKUS Cloud over the Internet to configure itself. You will see some initial LED activity, and after 5 to 10 minutes, all the LEDs should light solid green or solid amber (LTE LED).

If any LED is off or flashing, refer to the following table to help you troubleshoot the issue.

LED	Troubleshooting Action
PWR	Check power and Ethernet connections.
EMS	Check the Internet connection and network/firewall settings.
EPC	Check the Internet connection and network/firewall settings.
SYNC	Ensure at least one AP in the network is near an unobstructed window for a good GPS signal.
LTE	For additional guidance, use the RUCKUS Cloud or contact Customer Support.

For More Information

For more information, refer to the appropriate RUCKUS Cloud documentation or visit

http://support.ruckuswireless.com