

ENTERPRISE & MOBILITY

Deploying Brocade Mobility Products with the Brocade FastIron CX Series

Step-by-step guide to take you from unpacking Brocade Mobility controllers and access points to configuring devices and setting up wireless connectivity.

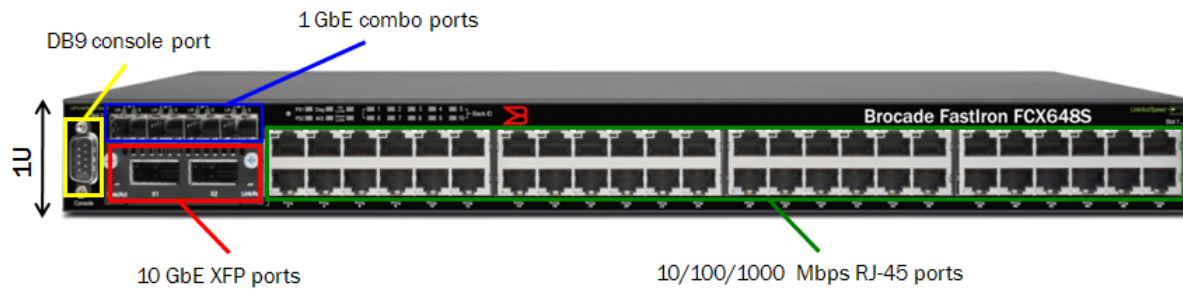
BROCADE

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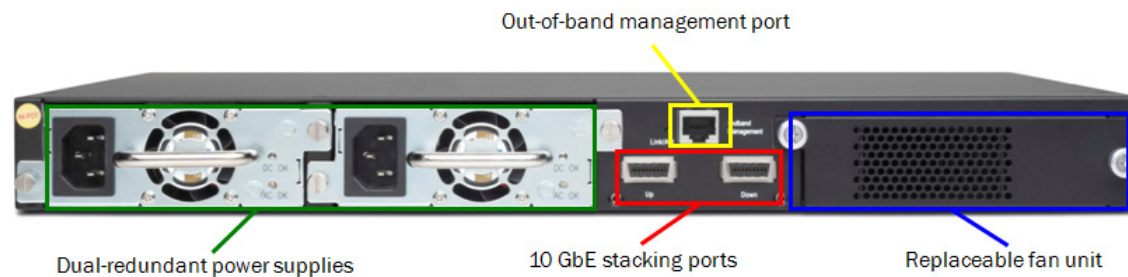
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BROCADE PRODUCTS OVERVIEW

Brocade FastIron CX Series: FCX624S-HPOE



- Compact 1U form factor
- 24 or 48 10/100/1000 Mbps RJ-45 ports, with or without PoE/PoE+
- Four GbE SFP combo ports
- Two optional 10 GbE XFP ports
- DB9 console port for management
- LEDs for port status, stack member ID, and more



- 16 dedicated GbE stacking ports
- Optional second hot-swappable, redundant power supply
- Replaceable fan unit providing side-to-rear airflow
- 10/100/1000 out-of-band management port

RFS4000 Controller

- Small to mid-size enterprises
- 6 Access Points (APs) per switch
- 6 Adaptive Access Points (AAPs) per switch
- 72 APs per cluster
- 72 AAPs per cluster
- Expansion slot for 3G wireless backhaul
- 500 – 5000 users

RFS6000 Controller

- Mid to large enterprises
- 48 Access Points (APs) per switch
- 256 Adaptive Access Points (AAPs) per switch
- 576 APs per cluster
- 3072 AAPs per cluster
- Expansion slots for 3G/4G wireless backhaul and voice
- 2000 – 20,000 users

RFS7000 Controller

- Large enterprises and data centers
- 256 Access Points (APs) per switch
- 1,024 AAPs per switch
- 3,072 APs per cluster
- 12,280,072 AAPs per cluster
- 8000 – 96,000 users

For all controllers, clustering provides:

- Seamless Layer 2/3 mobility between RF switches
- Smart license sharing
- Dynamic AP load balancing
- AP steering
- High Availability (HA) during RF switch/network failure (manual or automatic reversion)
- Increased aggregate throughput/scaling

Centralized configuration is performed via a cluster Command-Line Interface (CLI) and Web interface

State information exchange is provided for:

- AP and MU distribution
- Identify unauthorized APs
- Smart RF
- Integrated DHCP

Brocade Mobility 650 AP

- Thin (dependent) access point
- One or two radio options
- Internal or external antenna support
- Deployed with a centralized wireless controller
- IDS/IPS security policies



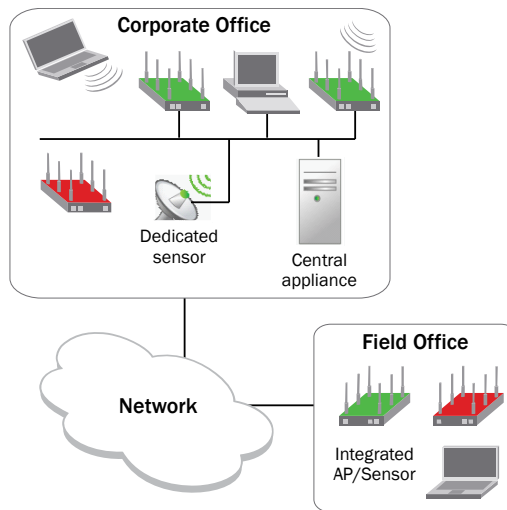
Brocade Mobility 7131 AP

- Full-feature indoor access point
- Dual-band 802.11a/b/g/n radios
- Standalone or distributed with a centralized wireless controller
- Wireless mesh support
- WIPS sensor mode



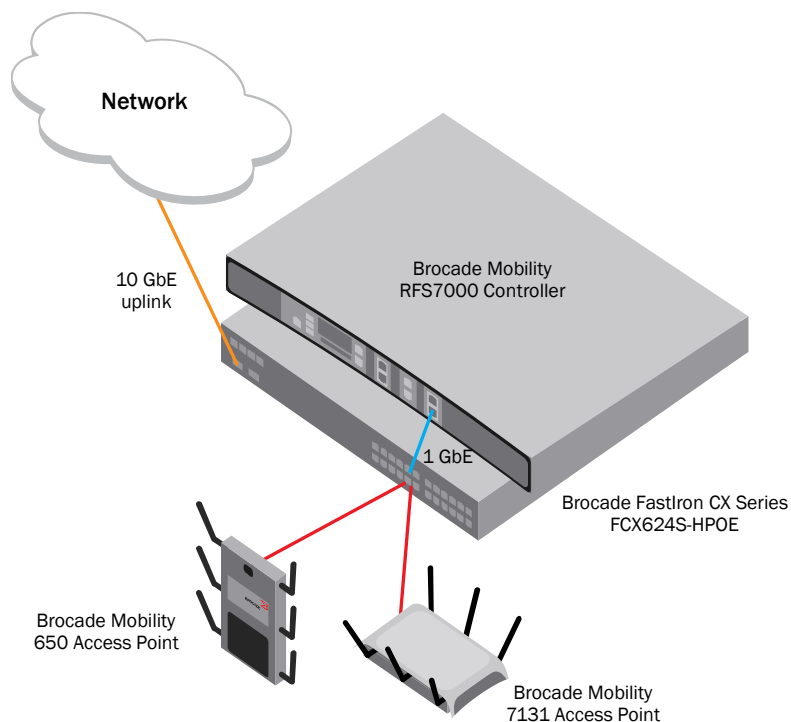
Motorola AirDefense

- Centralized, hardened appliance
- Protection for WLAN infrastructure and devices
- Secure Layer 3 connections between sensors and appliance
- Minimal WAN bandwidth needed by sensors: less than 3 Kbps
- Two types of sensors
 - Dedicated sensors are separate devices; use one for every 3 to 5 APs
 - Integrated sensors are built into Brocade Mobility access points
- All sensors provide 24x7 protection for gap-free security



NOTE: In the illustration, red is used to flag a rogue AP.

DESIGN EXAMPLE



SERVER REQUIREMENTS

Hardware:

- Windows Server 2003, 2008, or XP
- Intel Dual CPU Core2 duo 2.4GHz or equivalent
- 4 GB memory
- 40 GB disk space

System Services:

- DHCP Server
- Domain Name Server (DNS)
- Microsoft Explorer
- Mozilla Firefox
- Console Port
- Ethernet connectivity

WHAT'S IN THE BOX

Brocade FCX 624S-HPOE

- Brocade FastIron CX device
- 115V AC power cable (for AC sourced devices)
- Rack-mount brackets
- Warranty card
- A straight-through EIA or TIA DB-9 serial cable (F/F).

Brocade RFS4000 Controller

- Mobility RFS7000 Controller with rack brackets installed
- Console cable
- *Brocade RFS4000 Controller Installation Guide*
- China RoHS compliance document

Brocade RFS6000 Controller

- Mobility RFS6000 Controller with rack brackets installed
- Console cable
- *Brocade RFS6000 Controller Installation Guide*
- China RoHS compliance document

Brocade RFS7000 Controller

- Mobility RFS7000 Controller with rack brackets installed
- Console cable
- *Brocade RFS7000 Controller Installation Guide*
- China RoHS compliance document

Brocade 650 AP

- Brocade Mobility 650 AP
- 2 x wall-mount screws
- 2 x wall anchors
- Light pipe (external antennae only)
- *Brocade Mobility 650 Access Point Installation Guide*

Brocade 7131 AP

- Mobility 7131 model access point (accessories depend on SKU ordered)
- Wall mount screw and anchor kit
- Accessories Bag (4 x rubber feet, LED light pipe, badge with label for above-the-ceiling installation)
- China RoHS compliance addendum
- *Brocade Mobility 7131 Access Point Installation Guide*

CONFIGURING WINDOWS SERVICES

Step 1: Set up DNS

1. Go to the Windows **Configure Your Server** wizard.
2. Enable **DNS Server**.
3. Create the **domain**.
4. Add **RFS7000** to the forward lookup table.

Step 2: Set up DHCP

1. Go to the Windows **Configure Your Server** wizard.
2. Enable **DHCP Server**.
3. Create reservations for **RFS7000** and **APs**.

Step 3: Configure IE for RFS7000 and AP Web servers

1. Open an IE browser window.
2. Go to **Tools > Internet Options > Advanced**.
3. Deselect **Use HTTP 1.1**.

CONFIGURING THE BROCADE FCX 624S-HPOE SWITCH

Step 1: Provide power to the switch

Step 2: Connect to the console port interface

1. Connect a PC or terminal to the serial port of the system using a straight-through cable. The serial port has a male DB-9 connector. **NOTE:** You need to run a terminal emulation program on the PC.
2. Launch the terminal emulation program and set the following session parameters:
 - Baud: 9600 bps
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: None

NOTE: The EIA or TIA 232 serial communication port serves as a connection point for management by a PC or SNMP workstation. Brocade devices come with a standard male DB-9 connector

Step 3: Basic switch configuration

1. Enter Privileged Mode:

```
FCX _SW>  
FCX _SW#
```

2. Enter configuration mode:

```
FCX _SW#conf t  
FCX _SW(config)#
```

3. Configure the basics.
 - a. Hostname:
`CX_SW(config)#hostname RSL_RACK_1_SW`
 - b. Banner:
`RSL_RACK_1_SW(config)#banner Wireless Lab`
4. Set the management VLAN IP address for Telnet.
 - a. Set VLAN 1:
`RSL_RACK_1_SW(config)#vlan 1`
`RSL_RACK_1_SW(config-vlan-1)#`
 - b. Enable management VLAN:
`RSL_RACK_1_SW(config-vlan-1)#management-vlan`
 - c. Enable telnet on management VLAN1:
`RSL_RACK_1_SW(config)#telnet server enable vlan 1`
 - d. Set the Telnet password:
`RSL_RACK_1_SW(config)#enable telnet password password`
5. Set the default gateway:
`RSL_RACK_1_SW(config)#vlan 1`
`RSL_RACK_1_SW(config-vlan-1)#default-gateway 10.1.1.1 1`

Step 4: Configure VLANs

1. Create a wireless VLAN:
`RSL_RACK_1_SW(config)#vlan 20`
`RSL_RACK_1_SW(config-vlan-20)#`
2. Tag wireless VLAN ports:
`RSL_RACK_1_SW(config-vlan-20)#tagged ethernet 1/1/20`

Step 5: Configure Interfaces for POE

1. Enter the interface connected to the AP:

```
RSL_RACK_1_SW(config)#int eth 1/1/20
RSL_RACK_1_SW(config-if-e1000-1/1/20)#
```

2. Provide a port name description for what is connected:

```
RSL_RACK_1_SW(config-if-e1000-1/1/20)#port-name Connected to BR-AP7131
```

3. Enable the port POE:

```
RSL_RACK_1_SW(config-if-e1000-1/1/20)#inline power
```

CONFIGURING THE BROCADE RFS7000 CONTROLLER**Step 1: Provide power to the controller****Step 2: Set up the controller console port**

To add the Brocade Mobility RFS7000 Controller to the network and prepare it for initial configuration:

1. Using the console cable provided, connect the Mobility RFS7000 Controller serial port to an RS-232 (DB-9) serial port on a separate computer (the "configuration computer").
2. On the configuration computer, configure a terminal emulation application (such as HyperTerminal):
 - 19200bps transfer rate
 - 8 data bits
 - No parity
 - 1 stop bit
 - No flow control
 - No hardware compression

Step 3: Set the IP address for the controller

1. Connect to the RFS7000 console port.

2. Initial login:

```
- login: cli
- User Access Verification
- Username: admin
- Password: admin123
- Brocade WLAN Controller
- BR-RFS7000>
```

3. Enter Privileged Mode

```
BR-RFS7000>enable
BR-RFS7000#
```

4. Enter Configuration Mode:

```
BR-RFS7000#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BR-RFS7000(config)#
```

5. Change the host name:

```
BR-RFS7000(config)#hostname RSL_BR-RFS7000
RSL_BR-RFS7000(config)#
```

6. Add the management IP address to VLAN 1:

```
RSL_BR-RFS7000(config)#int vlan 1
RSL_BR-RFS7000(config-if)#management
```

- For DHCP (default): RSL_BR-RFS7000(config-if)#ip address dhcp
- For Static IP: ip address 10.1.1.2/24

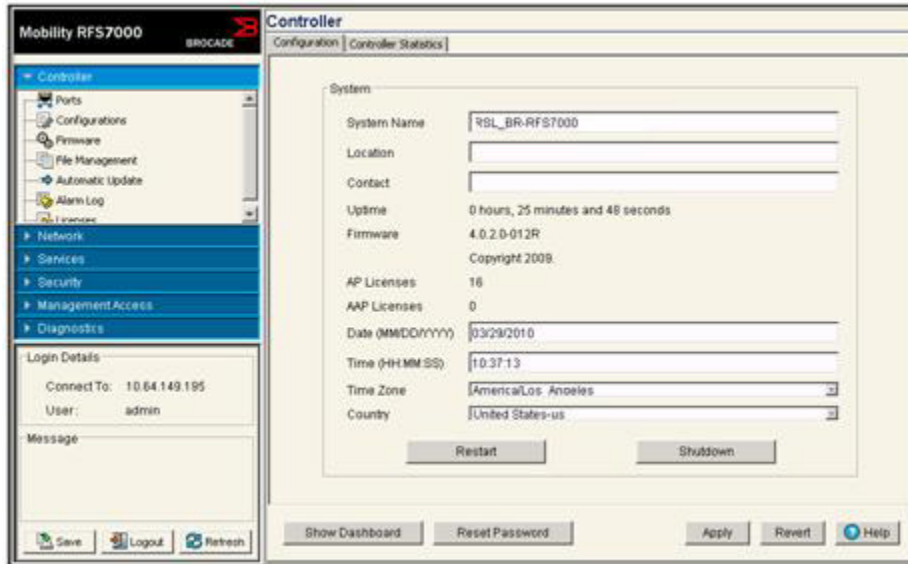
Step 4: Basic controller configuration

1. Connect to the RFS7000 with HTTP.

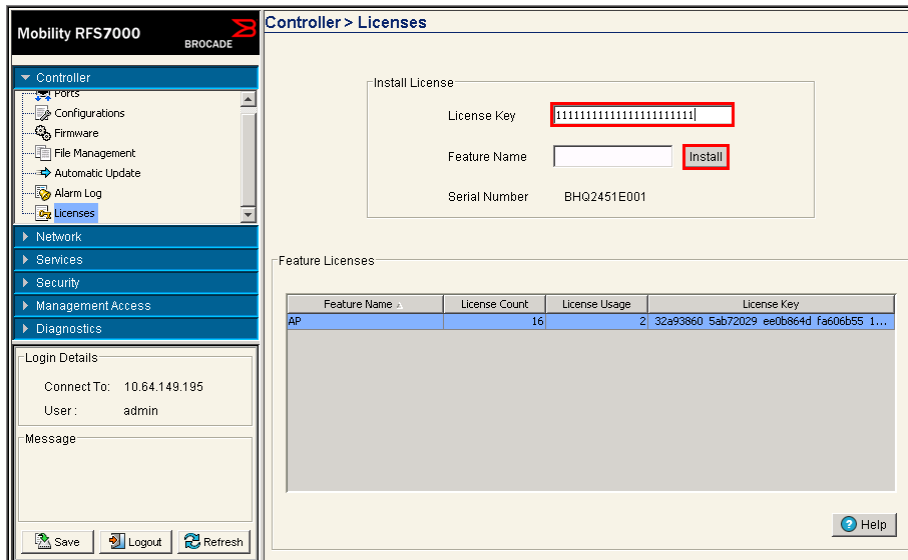
- Open IE Explorer (HTTP 1.1 disabled) with the IP address learned from DHCP or set it statically (<http://10.1.1.2/>).
- Enter a user name (admin) and password (admin123).



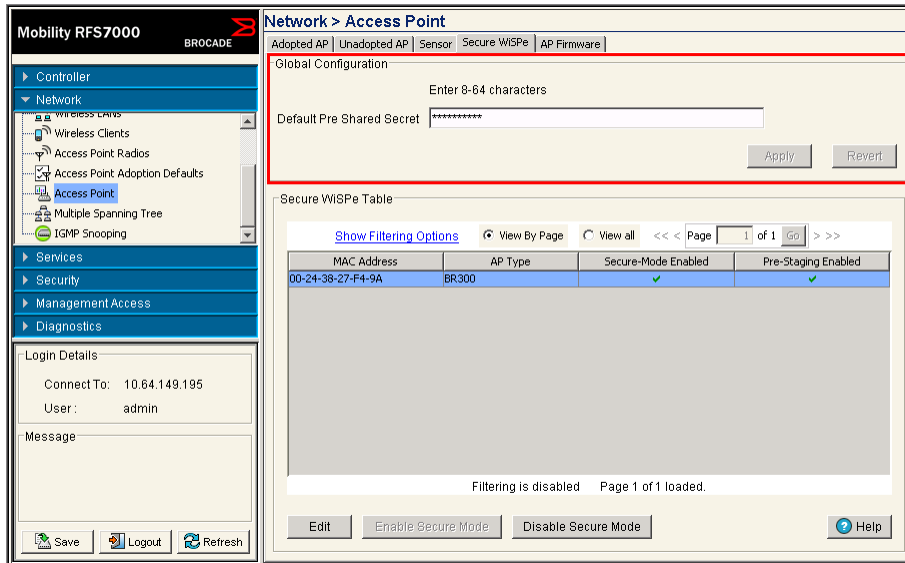
2. Set the controller information (location/contact/time).



3. Obtain an AP license key for AP adoption. You will need both the RFS7000 serial # and transaction key:
 - a. Log in to the Brocade License Portal.
 - b. Select **License Management > License Generation with Transaction Key**.
 - c. Enter the required information, Serial Number as Unique ID, and Transaction Key. Click **Add** and click the End User Agreement radio button.
 - d. Click **Generate**.
4. Add the license to the RFS7000.



5. Set the PSK for advanced AP adoption:
 - e. Go to the **Network > Access Point > Secure WiSPe** tab.
 - f. Enter a default pre-shared secret.



This completes the basic configuration for AP adoption.

CONFIGURING ACCESS POINTS

Brocade 650 AP

Step 1: Find the 650 AP MAC address

Step 2: Provide power to the 650 AP

Step 3: Adopt the 650 AP in the RFS7000

1. The Brocade 650 AP will be automatically detected by the RFS7000. Go to **Network > Access Point** and click the **Unadopted AP** tab.
2. Referencing the correct MAC address, select the 650 AP to adopt and click **Adopt**. Once the AP has been adopted it can be found in the Adopted Tab.

The screenshot shows the Brocade Mobility RFS7000 web interface. The left sidebar contains a navigation tree with 'Network' expanded to 'Access Point'. The main content area shows the 'Unadopted AP' tab with a table of detected APs. The table has the following data:

MAC Address	Model	AP Type	Serial	HW Version	IP Address	Bootload	Protocol Version	Fw Version	Radio Indices
00-24-38-28-0F-20	BR7131	BR7131	B3D2451E005	A	10.64...	3.2.2...	WISP...	3.2.2...	100
00-24-38-27-F4-9A	BR650-INT-US	BR650	00243827F49A	A0	N.A	01.00...	WISP...	01.00...	1,3

Below the table, it says 'Filtering is disabled Page 1 of 1 loaded.' At the bottom, there are buttons for 'Export', 'Convert to sensor', 'Location LED', and 'Help'. A status bar at the bottom indicates 'Number of adopted APs: 2'.

Brocade 7131 AP

Step 1: Provide power to the access point

Step 2: Connect to the console using these console terminal settings

- 19200 bps transfer rate
- 8 data bits
- No parity
- 1 stop bit
- No flow control
- No hardware compression

Step 3: Set the IP address

1. Connect to the AP console port.
2. Initial login procedure:
 - login: admin
 - Password: admin123
 - admin>
3. Enter the network submenu:


```
admin>network
admin(network)>
```

4. Enter the LAN submenu:

```
admin(network)>lan
admin(network.lan)>
```

5. Enable LAN1:

```
admin(network.lan)>set lan 1 enable
admin(network.lan)>
```

6. Set the access point as a DHCP client:

```
admin(network.lan)>set ip-mode 1 client
```

If you are using a DHCP client, go to Step 4.

7. Set a static IP address:

a. Set interface IP mode to static & assign IP address

```
admin(network.lan)>set ip-mode 1 static
admin(network.lan)>set ipadr 1 10.1.1.3
```

b. Set Default Gateway IP address

```
admin(network.lan)>set dgw 1 10.1.1.254
```

c. Set Domain Name

```
admin(network.lan)>set domain 1 SEHD.com
```


d. Set Domain Name Server

```
admin(network.lan)>set dns 1 1 10.1.1.100
```

Step 4: Configuring controller pairing (DHCP not used)

1. Connect to the RFS7000 with HTTP:

- Open IE Explorer (with HTTP 1.1 disabled) with the IP address learned from DHCP or set statically (http://10.1.1.3/).
- Enter the user name (admin) and password (admin123).



BROCADE

Mobility 7131

Username:

Password:

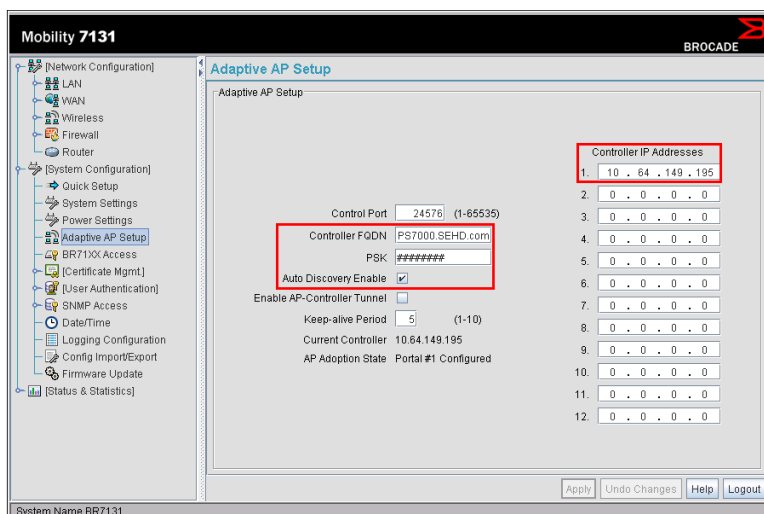
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2. Click **Adaptive AP Setup**:

- a. Using DNS, enter the FQDN of the controller.
- b. Enter the controller IP addresses.
- c. Click the **Auto Discovery Enable** checkbox.

NOTE: When the Auto Discovery Enable checkbox is selected, the access point begins the controller discovery (adoption) process using DHCP first, then a user-provided domain name, and finally using a static IP addresses. This setting is disabled by default. When disabled, the AP functions as a standalone access point without trying to discover (adopt) a controller. Consequently, the access point will not be able to obtain an AAP configuration.

- d. Enter the PSK for the controller.



Step 5: Adopt 7131 AP in the RFS7000

- 1. Go to **Network > Access Point** and click the **Unadopted AP** tab.
- 2. Referencing the correct MAC address, select the correct AP to adopt and click **Adopt**. Once the AP has been adopted, it can be found in the Adopted tab.

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