Getting Started

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Prerequisites for Setting Up and Accessing Cisco Mobility Express

- You must not have other Cisco wireless controllers, neither appliance nor virtual, in the same network, during setup or during daily operation of a Cisco Mobility Express network.

  The Cisco Mobility Express controller cannot interoperate or co-exist with other wireless controllers in the same network. Ensure that there no wireless controllers, other than the Cisco Mobility Express controller, in the network.

- Decide on the first access point (AP) to be set up. The first AP to be set up should be one that supports the Cisco Mobility Express wireless controller functionality. This is to ensure that this AP can act as the primary AP, and the other APs can then connect to it. This will ensure that the pre-defined *CiscoAirProvision* Service Set Identifier (SSID) is advertised only by the primary AP and not by other APs.

- Ensure that the AP is properly installed as per its *Hardware Installation Guide*.

- Ensure that a DHCP server is present and accessible in the network. The Mobility Express controller uses an external DHCP server for IP address management of the access points and the wireless clients.

- The initial setup of the Cisco Mobility Express controller can be done only through the controller configuration wizard and over Wi-Fi.

  You require a Wi-Fi-enabled laptop to connect to the pre-defined *CiscoAirProvision* SSID advertised by the primary AP. You cannot access this SSID through a wired network.

- Your laptop should have a compatible browser. For a list of browsers compatible with the Cisco Mobility Express wireless controller web interface and the initial configuration wizard, see Supported Browsers.
- If your network is using universal regulatory domain access points, then you will need prime the access point to the right regulatory domain, before the APs start serving clients. See the *Cisco Aironet Universal AP Priming and Cisco AirProvision User Guide*, at this URL: http://www.cisco.com/c/en/us/td/docs/wireless/access_point/ux-ap/guide/uxap-mobapp-g.html.

After these prerequisites are met, proceed to Configuring the Switch Port, on page 2.

Note A CLI-based Initial Configuration Wizard is also available, but recommended only for advanced users. See Using the CLI Initial Configuration Wizard.

Configuring the Switch Port

Connect the access points to the switch and power them up. Ensure the following while configuring the switch port:

- All access points, including the primary AP, in a Mobility Express network should be in the same L2 broadcast domain. Management traffic must not be tagged.
- The switch port to which the primary AP is connected can be a trunk port or an access port and must be configured to trunk Native VLAN for management traffic. Data traffic must be trunked with appropriate VLANs for local switching as well.

  The following is a sample switch port configuration.

```
Interface GigabitEthernet1/0/37
description » Connected to Master AP «
switchport trunk native vlan 122
switchport trunk allowed vlan 10,20,122
switchport mode trunk
```

After the switch port configuration is done, proceed to Starting the Initial Configuration Wizard, on page 2.

Starting the Initial Configuration Wizard

Step 1 Boot the AP that has controller capability. This AP should either be a 1850 or a 1830 series AP.

It will be a few minutes before the *CiscoAirProvision* SSID starts broadcasting after initially powering up the AP. Once the *CiscoAirProvision* SSID starts broadcasting, the AP's status LED start cycling through green, red, and amber.

Step 2 Connect the Wi-Fi-enabled laptop to the *CiscoAirProvision* SSID advertised by the AP, using Wi-Fi. The password is **password**.

The laptop gets an IP address from the subnet 192.168.1.0/24.

Step 3 Using a supported browser, go to *http://192.168.1.1*, which is redirected to the initial configuration wizard.

The initial configuration wizard's admin account window is displayed in your browser.

What to do next

If the initial configuration wizard's admin account window is displayed, then proceed to Using the Initial Configuration Wizard , on page 3, else proceed to Checking if an AP has CAPWAP Lightweight AP Software or Cisco Mobility Express Software, on page 15.

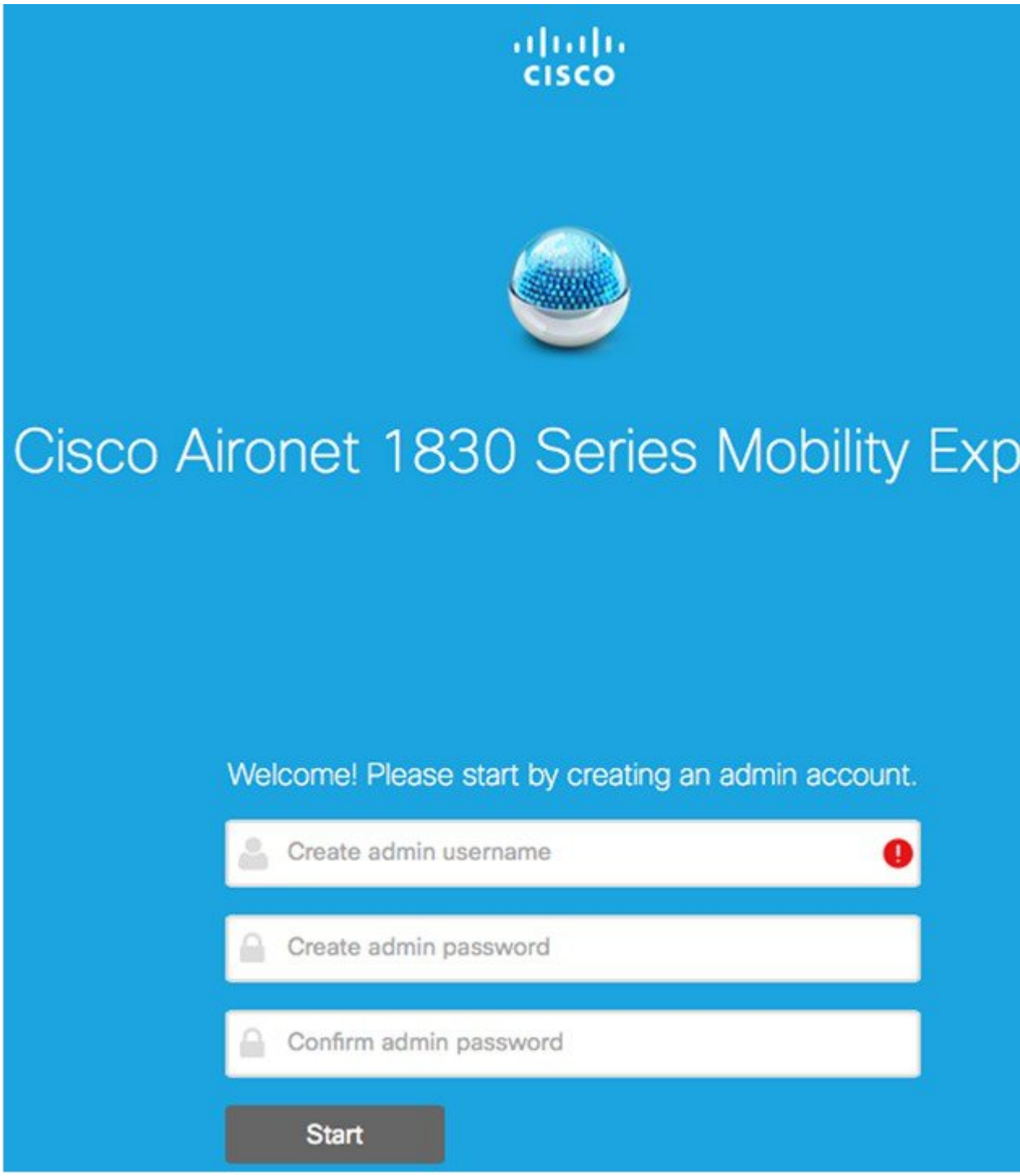
Using the Initial Configuration Wizard

The initial configuration wizard helps you configure certain basic parameters on your Cisco Mobility Express wireless LAN controller, and thereby gets your Cisco Mobility Express network running.

Use the following sections as a reference for the data that you enter in the initial configuration wizard.

Initial Configuration Wizard Opening window

Figure 1: Cisco Mobility Express Initial Configuration Wizard Opening Window



The banner on this window shows the name of the AP model on which the Cisco Mobility Express wireless controller is being configured, for example, Cisco Aironet 1830 Series Mobility Express.

Create an admin account on the controller by specifying the following parameters and then click**Start**:

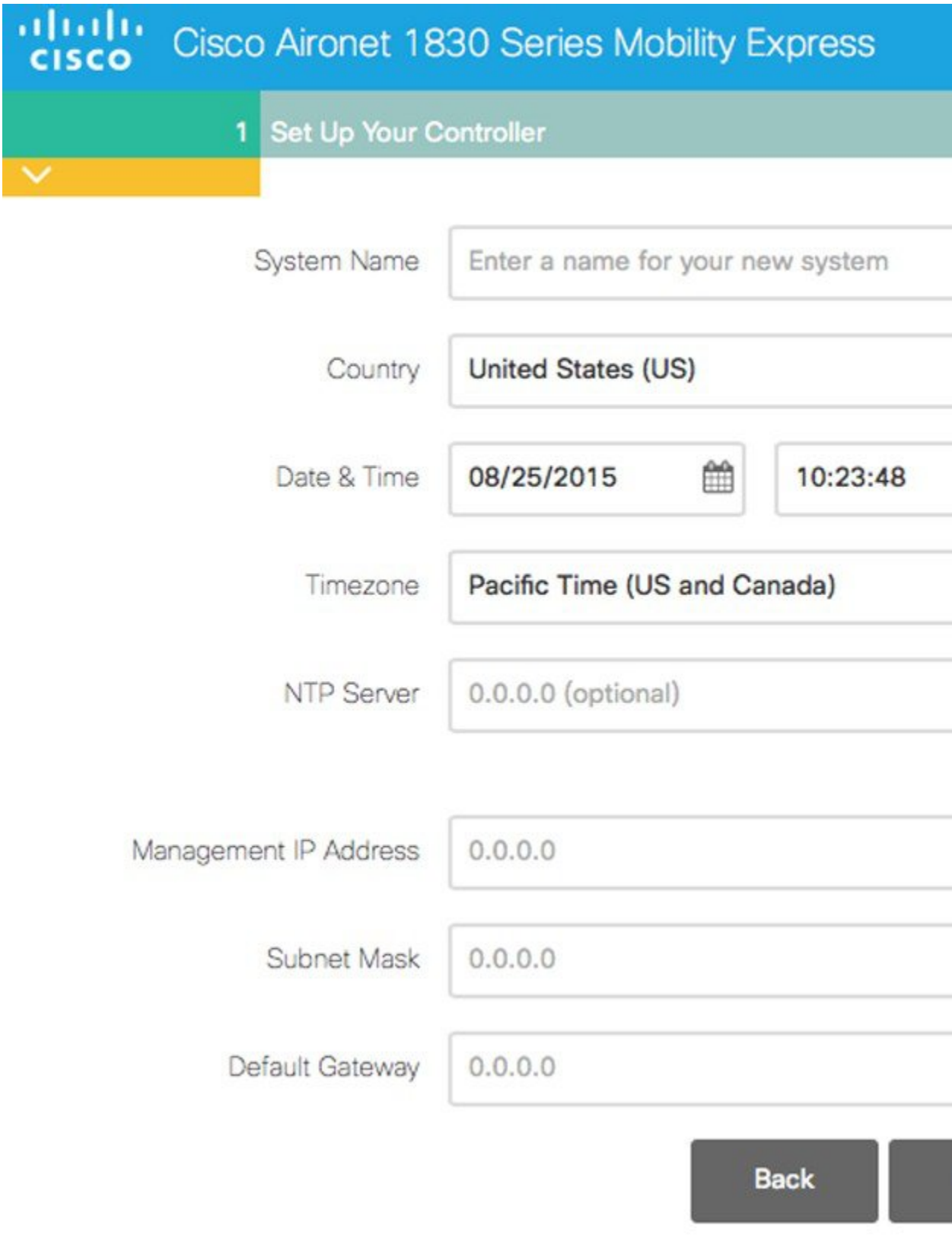
- Enter an administrative username. You can enter up to 24 ASCII characters.
- Enter a password. You can enter up to 24 ASCII characters.

  When specifying a password, ensure the following:

  - The password must contain characters from at least three of the following classes, lowercase letters, uppercase letters, digits, and special characters.
  - No character in the password can be repeated more than three times consecutively.
  - The new password must not be the same as the associated username or the username reversed.
  - The password must not be cisco, ocsic, or any variant obtained by changing the capitalization of the letters in the word Cisco. In addition, you cannot substitute 1, I, or ! for i, 0 for o, or $ for s.

Step 1—Set Up Your Controller

Figure 2: Setting Up Your Controller


Cisco Aironet 1830 Series Mobility Express
1 Set Up Your Controller
System Name
Enter a name for your new system
Country
United States (US)
Date & Time
08/25/2015
10:23:48
Timezone
Pacific Time (US and Canada)
NTP Server
0.0.0.0 (optional)
Management IP Address
0.0.0.0
Subnet Mask
0.0.0.0
Default Gateway
0.0.0.0
Back

Specify the following basic parameters for setting up your controller:

- **System Name**—Enter the name that you want to assign to this controller.
- **Country**—Enter the country where this Cisco Mobility Express network is located.
- **Date and Time**—Specify the date. By default, your device's system time is applied here. You can manually edit the time, if required.
- **Timezone**—Select your time zone.
- **NTP Server**—To have the date and time set automatically using an Network Time Protocol (NTP) server, you can enter the IPv4 address or the FQDN name of the NTP server here.

  By default three NTP servers are automatically created. The default FQDN names of the NTP servers are:

  - 0.ciscome.pool.ntp.org, with NTP Index value 1.
  - 1.ciscome.pool.ntp.org, with NTP Index value 2.
  - 2.ciscome.pool.ntp.org, with NTP Index value 3.

  The IPv4 address or the FQDN name, which you specify here, will be applied to the server with NTP Index 1, thereby overwriting its default FQDN, *0.ciscome.pool.ntp.org* . For editing NTP server details, go to **Management > Time**.
- **Management IP Address**—Enter the IP address for managing the controller.
- **Subnet Mask**—Enter the subnet mask for the controller.
- **Default Gateway**—Enter the default gateway for the controller.

Step 2—Create Your Wireless Networks

You set up the following two networks here:

- **Employee Network**—A Wi-Fi network for employees and regular day-to-day users of the network. This is not meant for guests.
- **Guest Network**—A Wi-Fi network for guest users.

In the **Employee Network** section, specify the following parameters:

- **Network Name**—Specify the SSID for your Employee network.
- **Security**—You can choose either **WPA2 Personal** that uses pre-shared key (PSK) authentication or **WPA2 Enterprise** (also called 802.1x), which requires a RADIUS server for authentication.
- **Pass Phrase**—If you have chosen WPA2 Personal security, specify the PSK here.
- **Authentication Server IP Address**—If you have chosen WPA2 Enterprise security, enter the IP address of the RADIUS server.
- **Shared Secret**—Enter the password for the RADIUS server.
- **VLAN**—Choose **Management VLAN** (VLAN 0) or create a **New VLAN** (with a VLAN ID ranging from 1 to 4094).
- **VLAN ID**—Specify the VLAN ID for the new VLAN here.

- **DHCP Server Address**—This is optional.

Figure 3: Employee Network with WPA2 Enterprise Security Chosen

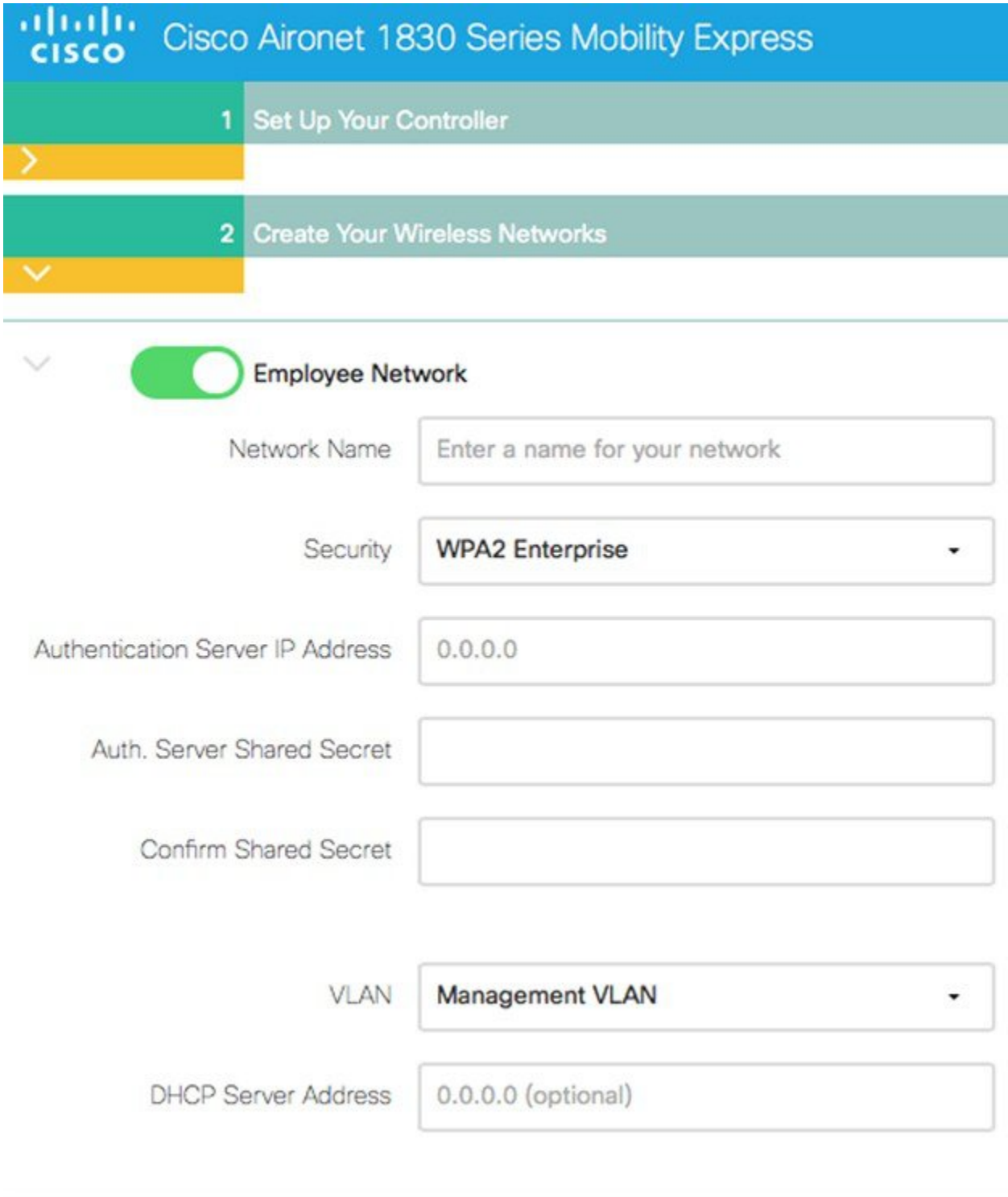
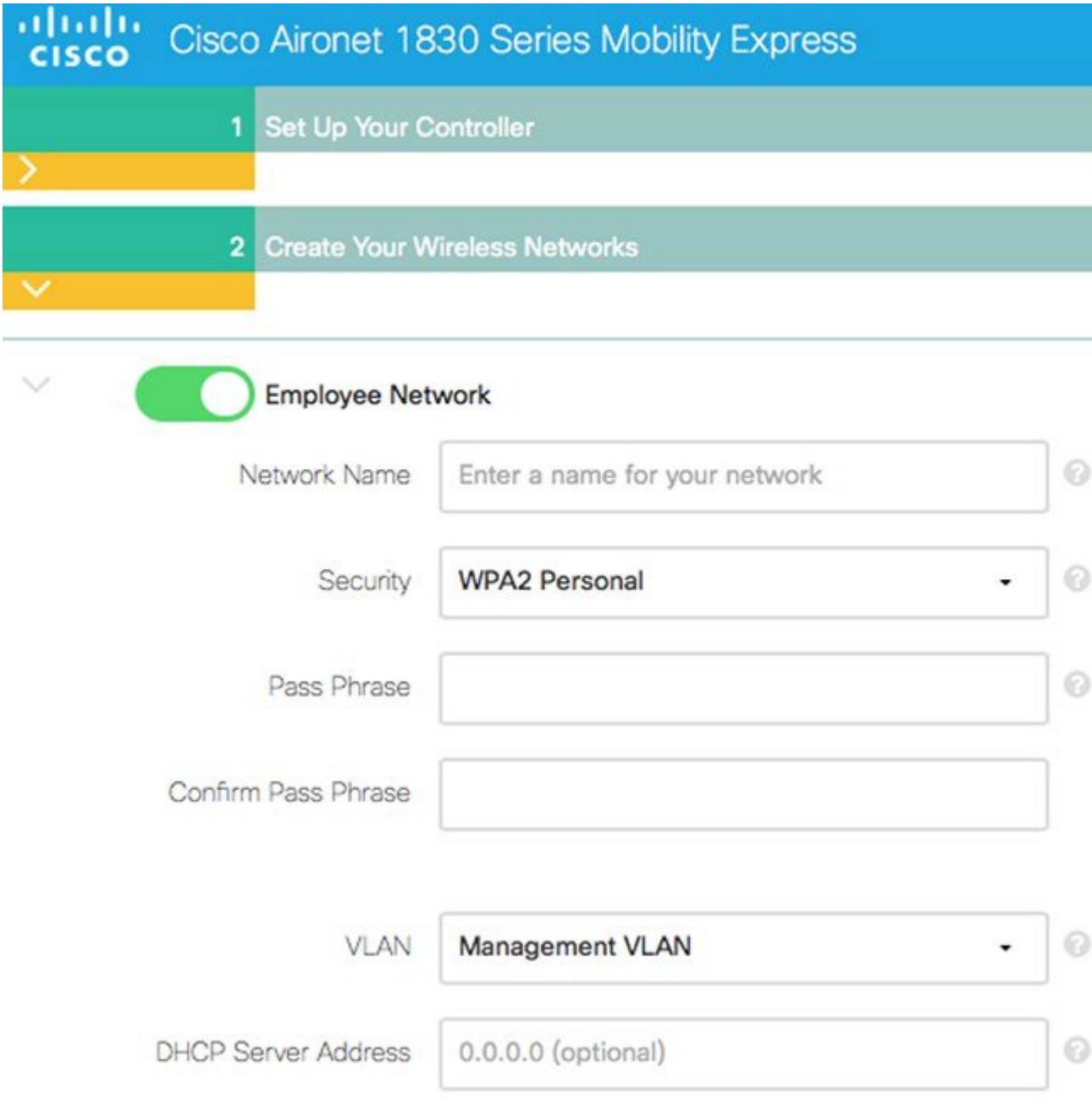


Figure 4: Employee Network with WPA2 Personal Security Chosen



In the **Guest Network** section, specify the following parameters:

- **Network Name**—Specify the SSID for your Guest network.
- **Security**—Choose **Web Consent**, which requires no authentication or **WPA2 Personal**, which uses PSK authentication.

- **Pass Phrase**—If you have chosen WPA2 Personal security, specify the PSK here.
- **VLAN**—Choose **Employee VLAN** to have the same VLAN as that defined for the Employee Network or create a **New VLAN** (with a VLAN ID ranging from 1 to 4094).
- **VLAN ID**—Specify the VLAN ID for the new VLAN.
- **DHCP Server Address**—This is optional.

Figure 5: Guest Network with Web Consent Security Chosen

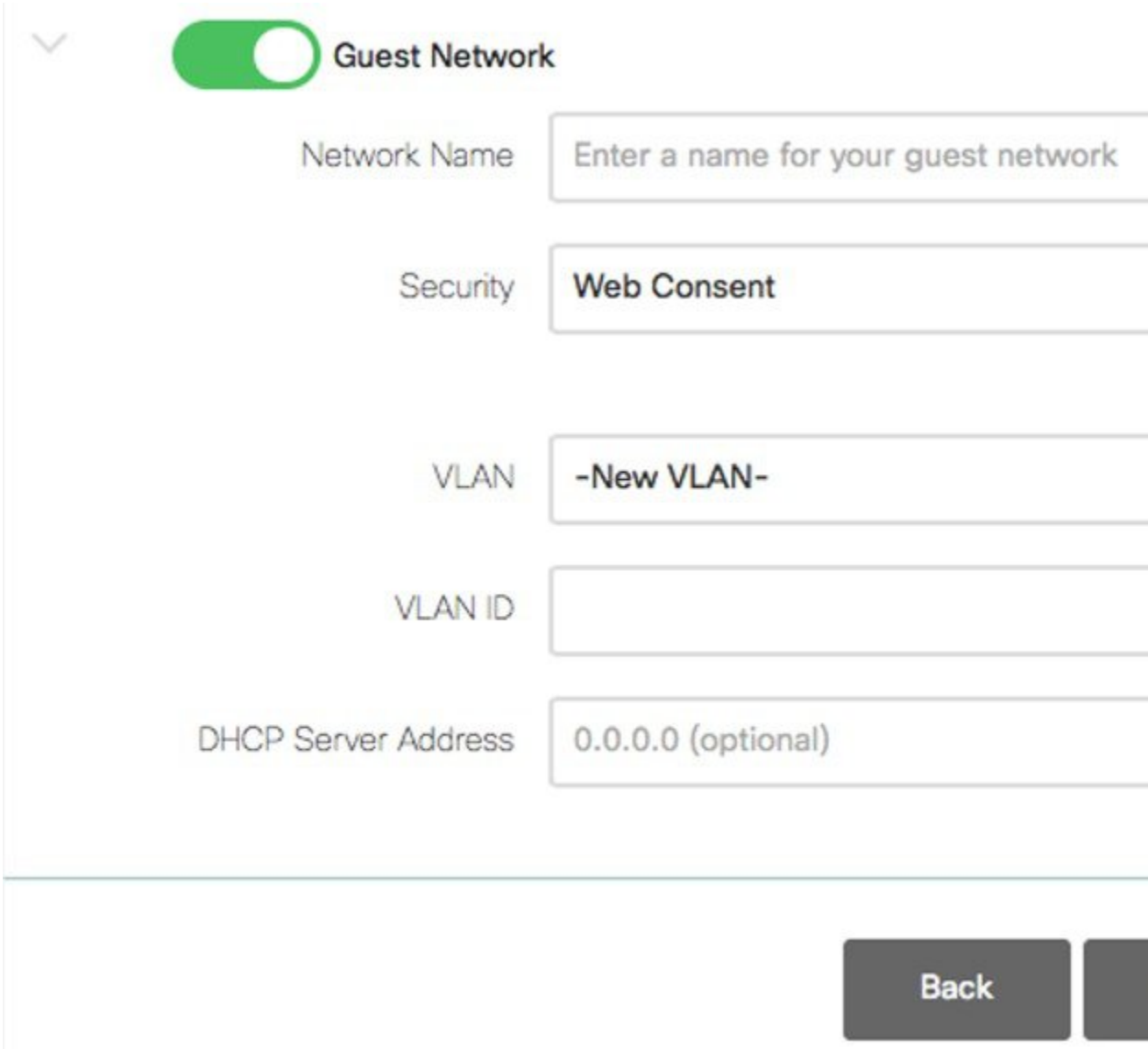
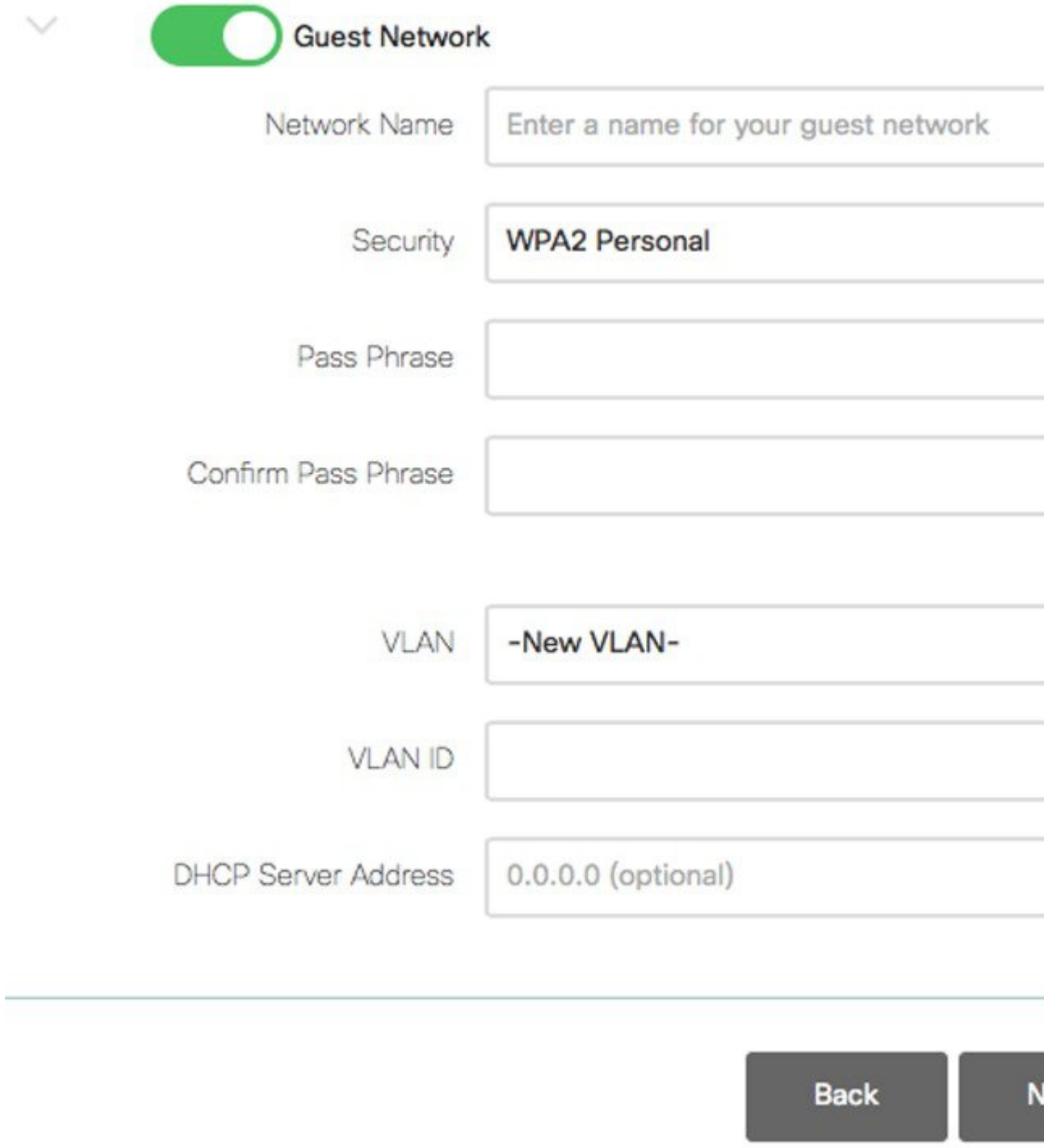


Figure 6: Guest Network with WPA2 Personal Security Chosen

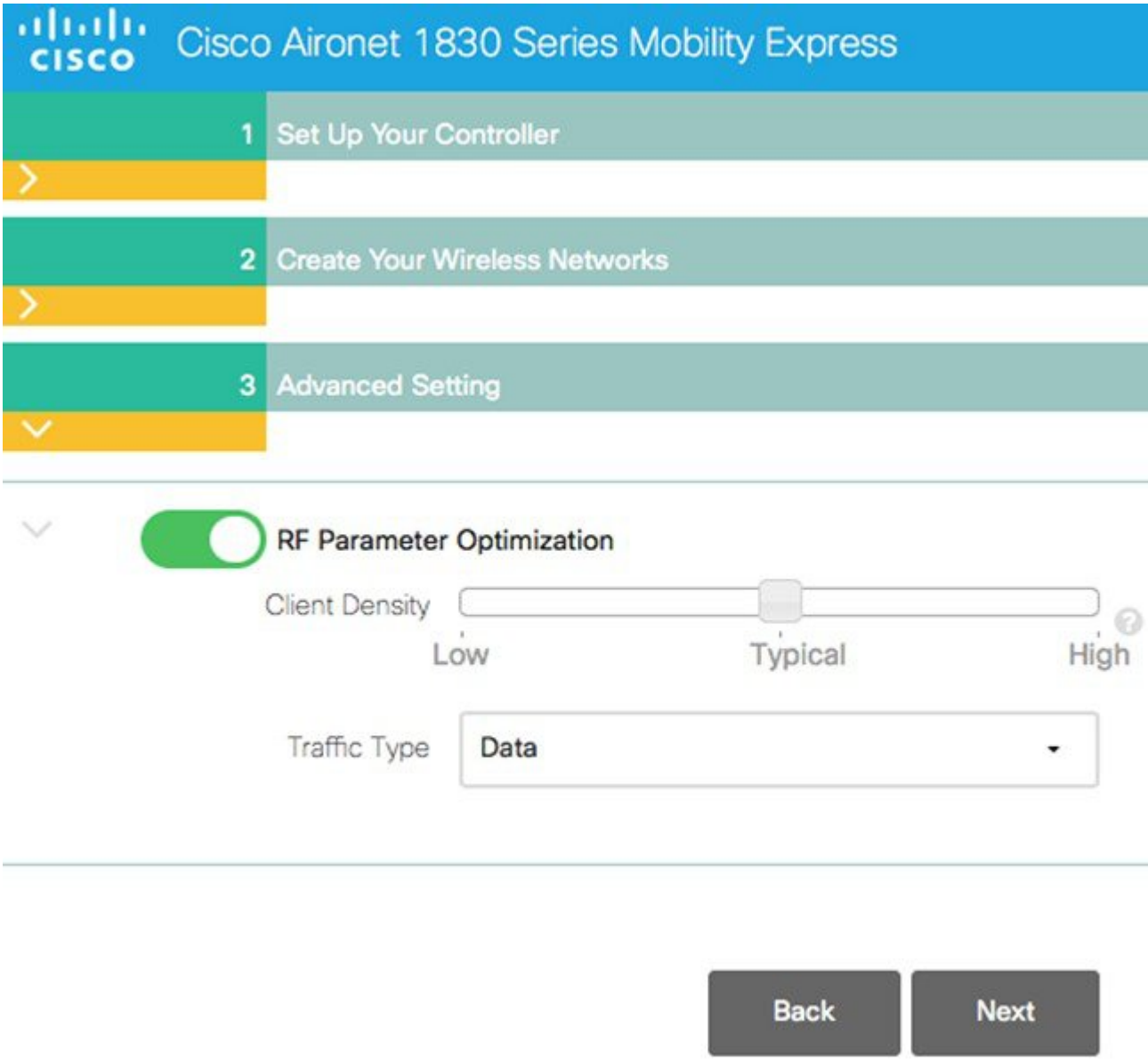


Step 3—Advanced Settings

Optimize the network's radio frequency signal coverage and quality by indicating the expected client density and traffic type in your network. To know the values that are set when low, typical, or high client density type is selected, see RF Parameter Optimization Settings.

Note If you do not enable RF Parameter Optimization during the initial configuration wizard, then client density is set to **Typical** (the default value), and RF traffic type is set to **Data** (the default value).

Figure 7: RF Parameter Optimization



Once you apply these configuration settings, the access point reboots and the controller restarts. You can now proceed to Logging in to Cisco Mobility Express , on page 18.

Checking if an AP has CAPWAP Lightweight AP Software or Cisco Mobility Express Software

Both the Cisco 1850 Series and 1830 Series APs can be ordered with a factory-shipped CAPWAP lightweight AP software or a Cisco Mobility Express controller software. However, you can convert a CAPWAP AP to Cisco Mobility Express software, and vice-versa, on site. To determine if your AP has a Cisco Mobility Express image or CAPWAP Lightweight AP image, follow these steps:

Step 1 Connect to the console port of the AP.

Step 2 Log in to the AP using the username **Cisco** and password **Cisco**. Both are case-sensitive.

This is the default factory-shipped username and password on all Cisco Aironet APs.

Step 3 Enter the **sh version** command on the AP console.

Step 4 Check the command output for the **AP Image Type** and **AP Configuration** fields. There are three possible scenarios, as shown in the following table:

What to do next

Fields and Their Values in the Output	What to do Next
AP Image Type: `MOBILITY EXPRESS IMAGE` AP Configuration: `MOBILITY EXPRESS CAPABLE`	No conversion is required. Reboot the AP and proceed to Starting the Initial Configuration Wizard, on page 2.
AP Image Type: `MOBILITY EXPRESS IMAGE` AP Configuration: `NOT MOBILITY EXPRESS CAPABLE`	This means that the AP has the Cisco Mobility Express software, but is running as a CAPWAP lightweight AP. This AP is currently not configured to run as Mobility Express controller, does not take part in the primary AP election process either, and hence does not broadcast the the *CiscoAirProvision* SSID. This AP can, however, function as a subordinate AP in a Mobility Express network. To enable the Mobility Express controller functionality of this AP, run the command **ap-type mobility-express tftp** on the AP console. The AP will reboot, come back online, and take part in the primary AP election process. If and when it is elected as primary, it will broadcast the *CiscoAirProvision* SSID.

Fields and Their Values in the Output	What to do Next
The **AP Image Type** and **AP Configuration** fields are not present in the output	This means that the AP has a CAPWAP lightweight AP software and not Cisco Mobility Express software. Proceed to Converting from CAPWAP Lightweight AP to Cisco Mobility Express Software, on page 16.

Converting from CAPWAP Lightweight AP to Cisco Mobility Express Software

Follow this procedure to convert the AP software to Cisco Mobility Express configuration-capable software.

note

Tip If you face issues with converting the AP software to a Cisco Mobility Express software, upgrade the AP CAPWAP software to the latest AP software version ap3g3-k9w8-tar.153-3.JD.tar. Now, you can convert the CAPWAP software to the Cisco Mobility Express software *AIR-AP2800-K9-ME-8-3-102-0.tar*.

This issue occurs in Mobility Express-capable APs shipped with default images or a version of the images prior to Cisco Wireless Release 8.3. This is due to insufficient space in the AP's memory or because the AP has been started in U-boot mode where the image is not found in flash.

Note The following procedure shows a conversion from the 8.1.122.0 Lightweight AP release on an 1850 series AP, and hence uses the corresponding software file. Ensure that you use the appropriate software file depending on the release you are converting from and the AP model.

Before you begin

- Your AP is either a Cisco 1850 Series or a 1830 Series AP with Lightweight AP software Release 15.3.3-JBB5, for Cisco Wireless Controller Software Release 8.1.122.0, or a newer software.
- A TFTP server and a DHCP server should be configured and accessible.
- Ensure that there are no Cisco WLCs, physical or virtual, in the network while you are performing this upgrade. The AP must not interface with any other wireless controller while you are performing this upgrade.
- Ensure that you remove the priming configuration in the AP by using the **capwap ap erase all** command.

Step 1 Download the *AIR-AP1850-K9-8.1.122.0.tar* software file from Cisco.com to the TFTP server.

On the Download Software page, for a given release, this .TAR file is labeled, *'Software to be used for conversion from Lightweight Access Points only'*.

Step 2 Connect to the console port of the AP.

Step 3 Log in to the AP using the username **Cisco** and password **Cisco**. Both are case-sensitive.

This is the default factory-shipped username and password on all Cisco Aironet APs.

Step 4 To convert the AP from CAPWAP lightweight AP software to Cisco Mobility Express software, use the **ap-type mobility-express tftp://***<tftp server ip-address>/<filename of TAR file with path from root on the TFTP server>* command.

The software file is downloaded to the AP, and is written to the AP's flash memory. The AP reboots with a Mobility Express-capable configuration and starts broadcasting the *CiscoAirProvison* SSID.

What to do next

Proceed to Starting the Initial Configuration Wizard, on page 2.

For an alternative to the above conversion process, using the .ZIP file, see Alternative Method for CAPWAP to Mobility Express Conversion.

To convert an AP from Mobility Express type to CAPWAP type, see Converting an AP from Mobility Express to CAPWAP Type.

Preparing APs to Associate with the Primary AP

Follow this procedure to enable a new AP to associate itself with the Cisco Mobility Express wireless controller on the primary AP, and thereby enabling it to join the Cisco Mobility Express network.

Before you begin

- A primary AP with Cisco Mobility Express wireless controller should be up and running.
- If the AP that has to be prepared to associate with the primary AP is a universal regulatory domain AP, then it should be primed using the Cisco AirProvision mobile application. For more information, see the *Cisco Aironet Universal AP Priming and Cisco AirProvision User Guide* at:

  http://www.cisco.com/c/en/us/td/docs/wireless/access_point/ux-ap/guide/uxap-mobapp-g.html

Step 1 Download the latest Cisco Mobility Express bundle from Cisco.com to the TFTP server. This pack is either in .zip format (for Windows) or .tar format (Linux or Mac OSX) and contains the software images for all the supported APs.

Step 2 Unzip the software pack to a folder on the TFTP server.

Step 3 Provide the path to the folder in the **Management > Software Update > File Path** field.

Step 4 Perform a software update. .

What to do next

Managing Associated Access Points

Logging in to Cisco Mobility Express

Step 1 Open a browser and enter **https://<ip address>** in your browser's address bar to access the Cisco Mobility Express **Wireless LAN Controller** login page. This IP address is the one you have specified for managing the Cisco Mobility Wireless Express controller.

The Cisco Mobility Express controller uses a self-signed certificate for HTTPs. Therefore, all browsers will display a warning and ask you whether you wish to proceed with an exception or not when the certificate is presented to the browser. Accept the warning in order to access the Mobility Express **Wireless LAN Controller** login page.

Figure 8: Cisco Mobility Express Wireless LAN Controller Web Interface Login

Step 2 Click **Login**.

Step 3 Enter admin user credentials to log in.

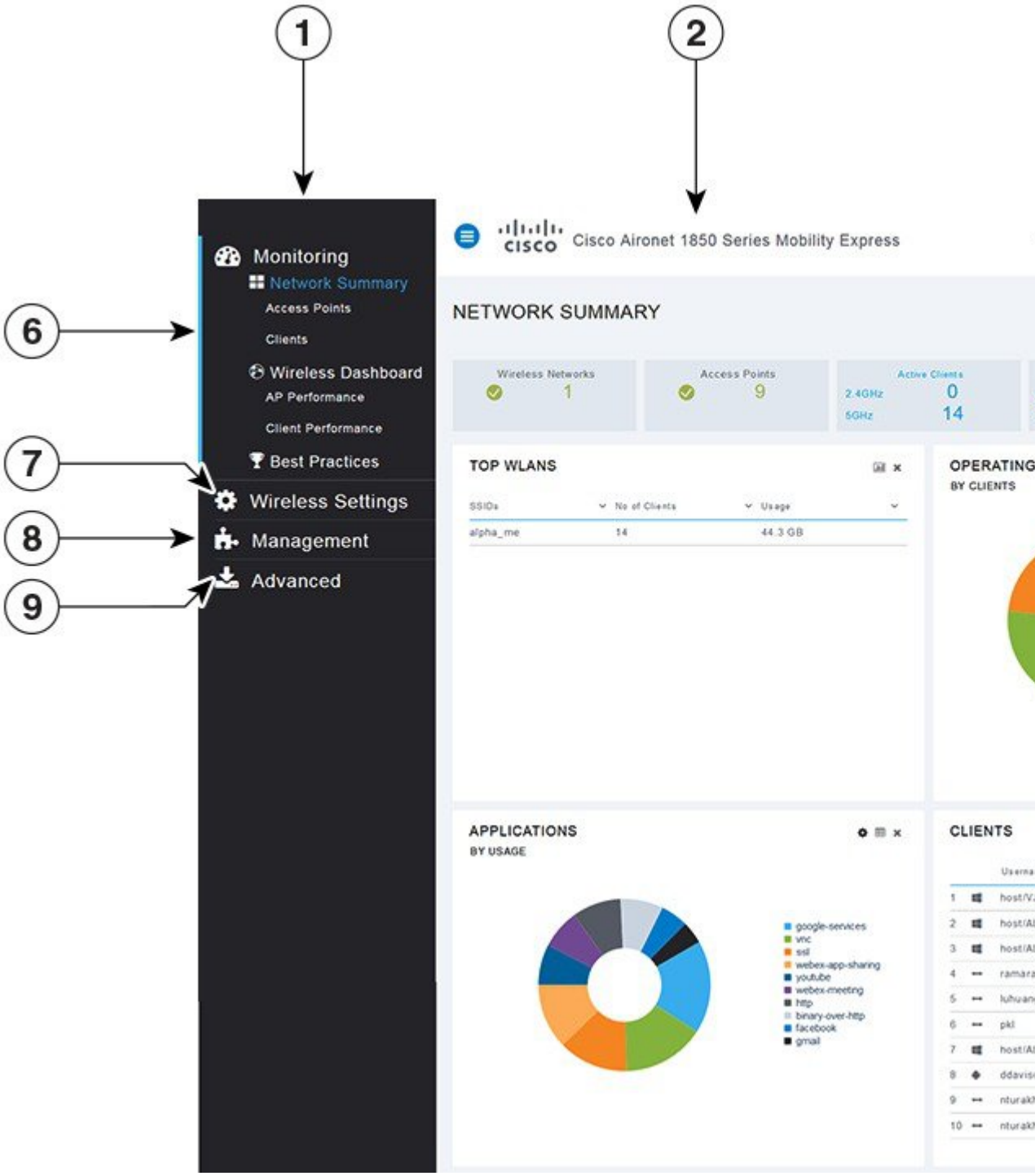
What to do next

After you log in, the default landing page is the **Network Summary** window. For more information, see About the Cisco Mobility Express Monitoring Service.

Understanding the Mobility Express Controller Web Interface

The following figure illustrates the opening page and the general layout of the Mobility Express controller web interface.

Figure 9: Mobility Express Controller Web Interface



No.	Web Interface Section or Feature
1	The side pane of the web interface. This is main navigational pane using which you can navigate to the various sub-sections in the web interface.
2	The title of the web interface. It indicates the AP model of the primary AP (on which the integrated controller functionality is currently operating)
3	Search for an AP or client using its MAC address.
4	Click to save the current controller configuration to the NVRAM. For more information, see Saving Controller Configuration.
5	Click to view the current system information or to log off the controller web interface.
6	The Mobility Express Network Monitoring section. For more information, see About the Cisco Mobility Express Monitoring Service.
7	The Wireless Settings section, where you can administer associated APs, manage WLANs, WLAN user accounts, and guest user accounts. For more information, see Specifying Wireless Settings.
8	The Management section, where you can set management access parameters, manage admin accounts, network time, and perform software updates. For more information, see Managing the Network.
9	The Advanced section, where you can set SNMP settings, sys log settings, and perform a reset to factory default. For more information, see Using Advanced Settings and Operations.