Cisco Mobility Express

October 2015

Introducing Cisco Mobility Express

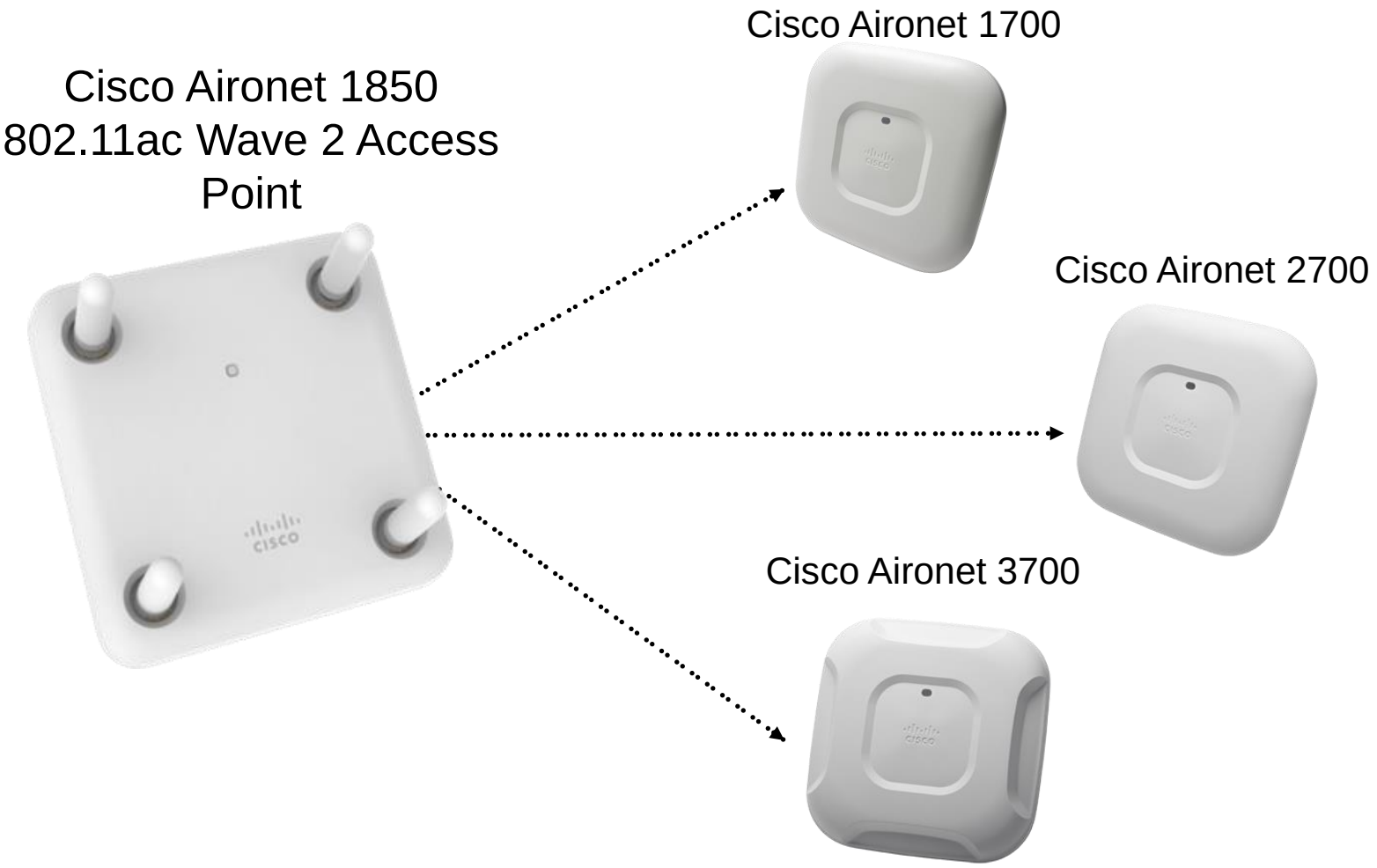
- Embeds a virtual WLAN controller function into your access point
- Uses 802.11ac Wave 2 technology: Fastest Wi-Fi available
- Manages multiple Aironet Access Point models
- Enables simple and fast IT: You're up and running in ten minutes
- Supports Cisco's industry-leading WLAN features with no price premium

On-Premises

NEW: Mobility Express

Simple deployment

Cisco Mobility Express Solution



The Cisco 1850 Access Point provides virtual controller function that serves the other Access Points

Mobility Express: Use Cases and Details

- Sites with 500 clients or less where IT has limited span of control or reach
- Autonomous Mode implementations looking to refresh 802.11abgn to 802.11ac wave 2
- Companies or Sites looking to implement overlay / segmented Guest Access
- Companies or organization that need to quickly setup temporary Wi-Fi for events

Key Features	*Details*
Clients	500
Access Points	25
RF Management	Yes
Advanced Security	Yes
Cisco Best Practices	Yes
Fast Secure Roaming	Yes
Rogue AP Detection	Yes
Application Visibility	Yes
Guest Network / Firewall	Yes
Device profiling	Yes
Mobile app	Yes
High Availability	Yes
Local Radius Server	Yes
Interoperability	PI 3.0.1 CMX 10.2 (CMX Presence) ISE 1.4 (802.1x authentication)

Connecting 1800 AP for Mobility Express

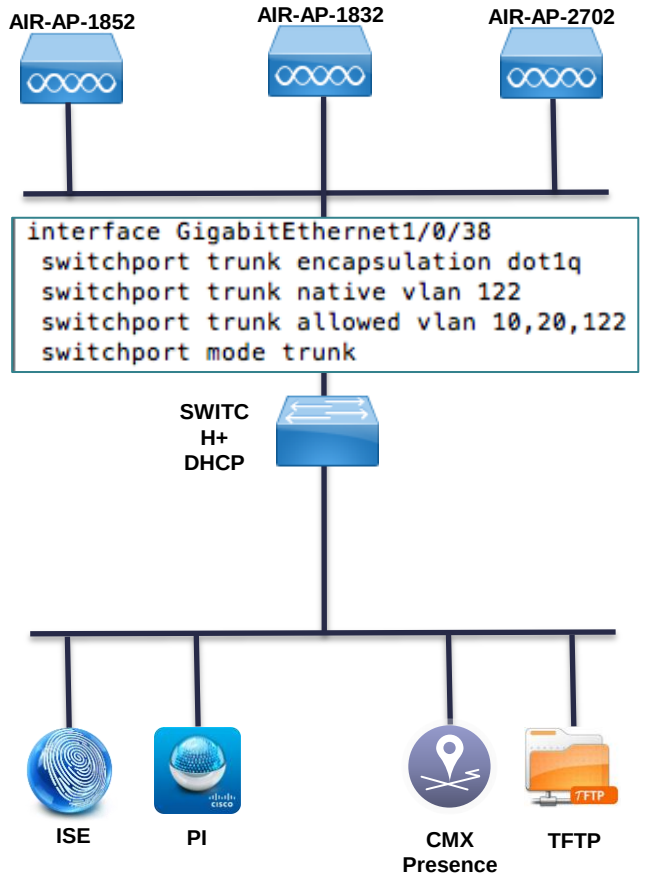
- Switch port is configured as trunk
- Management traffic is untagged and is on native VLAN. Client Traffic is on trunked VLAN
- Management interface on controller is UNTAGGED

```
(Cisco Controller) >show interface summary

 Number of Interfaces..... 2

Interface Name                   Port Vlan Id  IP Address       Type
-------------------------------- ---- -------- ---------------- -------
management                       1    untagged 172.20.229.45    Static
virtual                          N/A  N/A      192.0.2.1        Static
```

Typical Mobility Express Deployment



AIR-AP18XX – Is it CAPWAP or Mobility Express?

- AIR-AP-1852I-B-K9 – Ships with CAPWAP image
- AIR-AP1852I-B-K9**C** – Ships with Mobility Express image which is built on top of CAPWAP
- For Mobility Express, <sh version> on AP should display-
  - ❑ AP Image Type - MOBILITY EXPRESS IMAGE
  - ❑ AP Configuration - MOBILITY EXPRESS CAPABLE

Output of <sh version> on AP

```
AP Image version (active)  : 8.1.10.159
AP Image version (backup)  : 0.0.0.0
```

```
AP Running Image      : 8.1.123.15
Primary Boot Image    : 8.1.123.15
Backup Boot Image     : 8.1.122.0
AP Image type     : MOBILITY EXPRESS IMAGE
AP Configuration : MOBILITY EXPRESS CAPABLE
```

Mobility Express (Day0) – Boot Up process

Boot

- Connect 1800 AP to POE+ switch
- Starts boot loader
- Loads the image

Obtain IP Address

- AP obtains IP address from DHCP
- AP attempts to look for a WLC to join
- If AP can not find a WLC, it assumes that there is no WLC

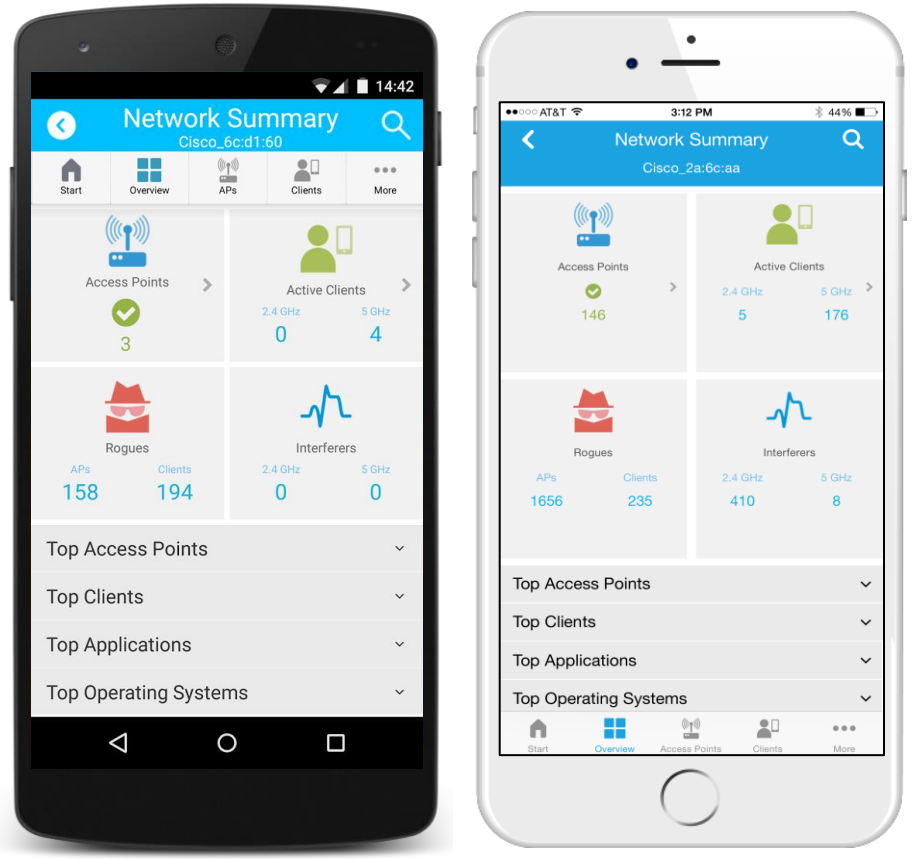
Start Controller Function

- Starts the controller function
- Internal AP joins the controller
- *CiscoAirProvision* SSID is broadcast at *2.4 GHz* with security type as PSK

‘Cisco Wireless’ App

Provision | **Monitor** | **Troubleshoot**

- Provisioning & Monitoring supported on software release 8.1 MR3
- Monitoring supported on software release 8.1MR2



GET IT ON Google play

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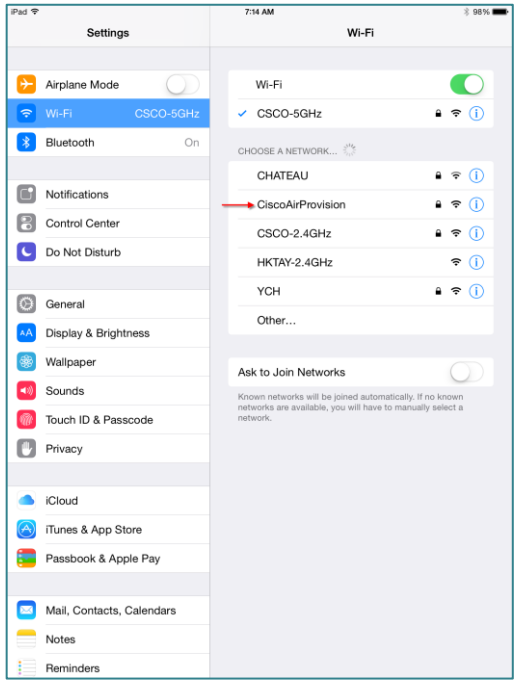
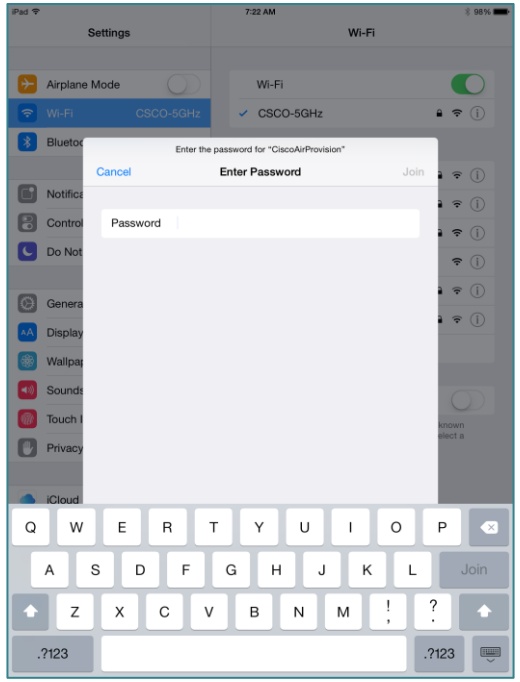
Over-the-Air WLAN Express Setup

Connecting to *CiscoAirProvision* and starting setup wizard

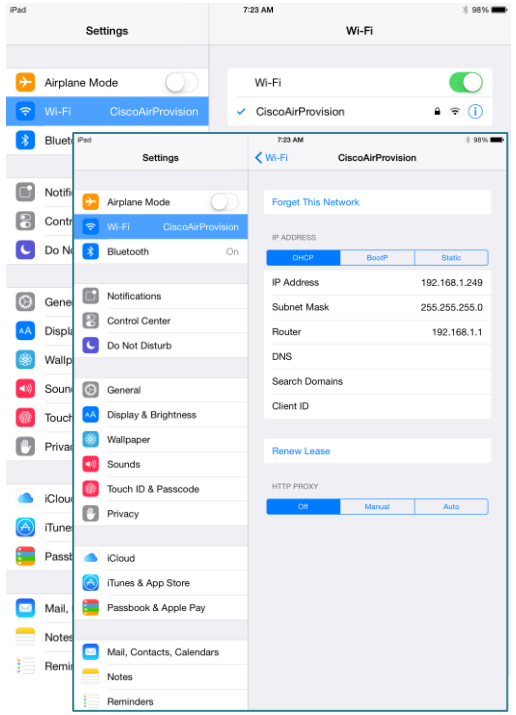
Connect to *CiscoAirProvision* SSID



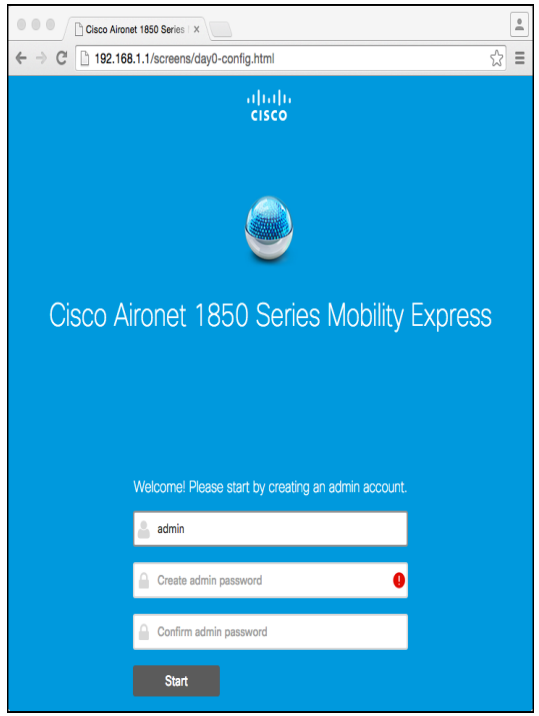
Enter Password as *password*



Connected to *CiscoAirProvision*; IP Address assigned



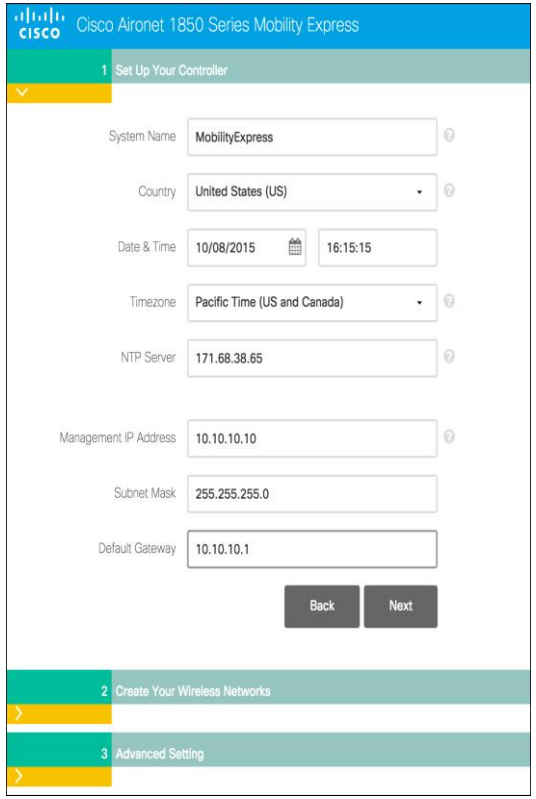
Launch setup wizard at http://192.168.1.1 & create admin account



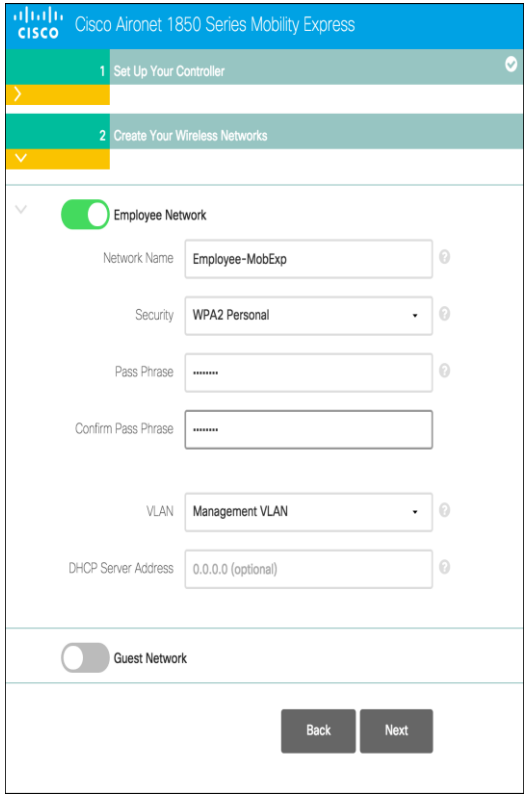
Over-the-Air WLAN Express Setup

3 Steps < 10 Minutes

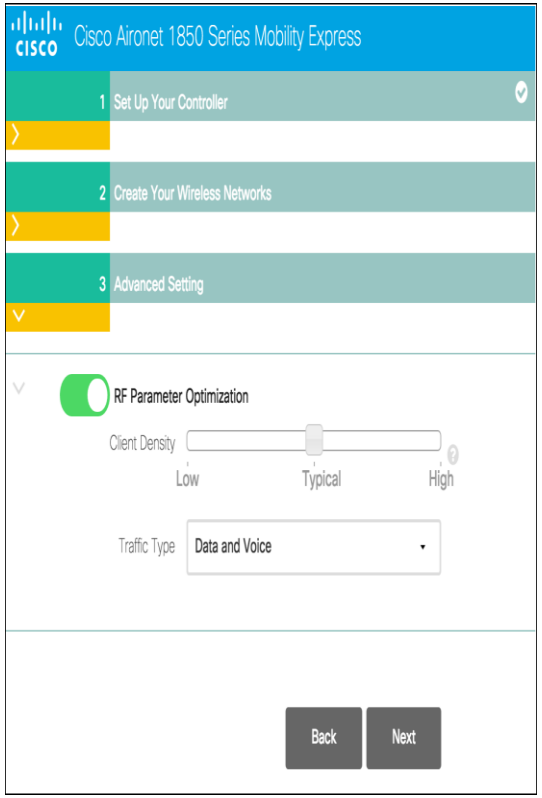
1. Setup Your Controller



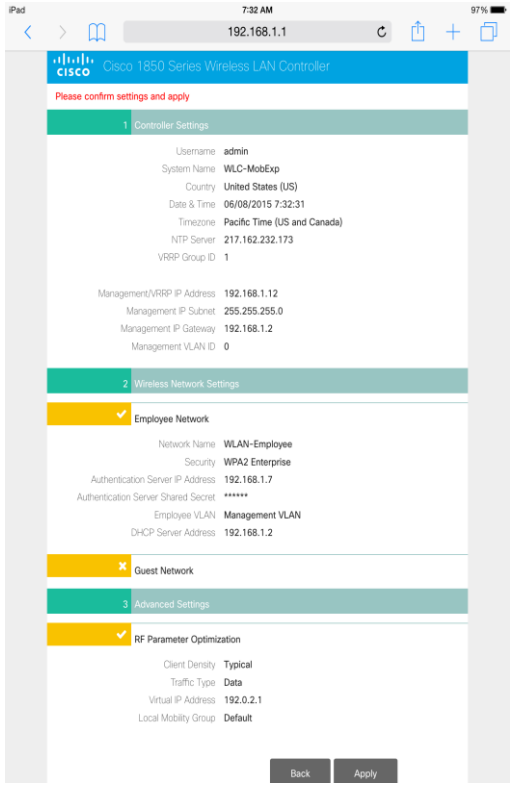
2. Setup Wireless Networks



3. Enable RF Parameter Optimization



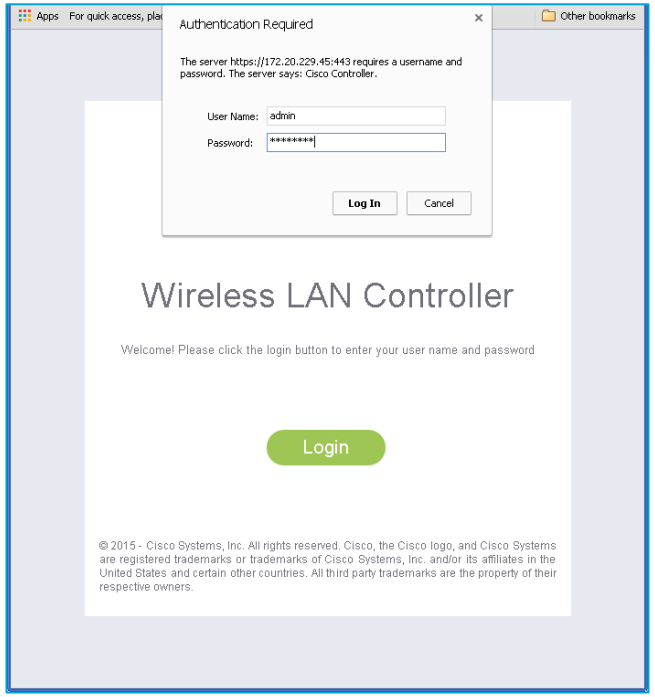
Confirm Settings and reboot the controller



Logging into Mobility Express

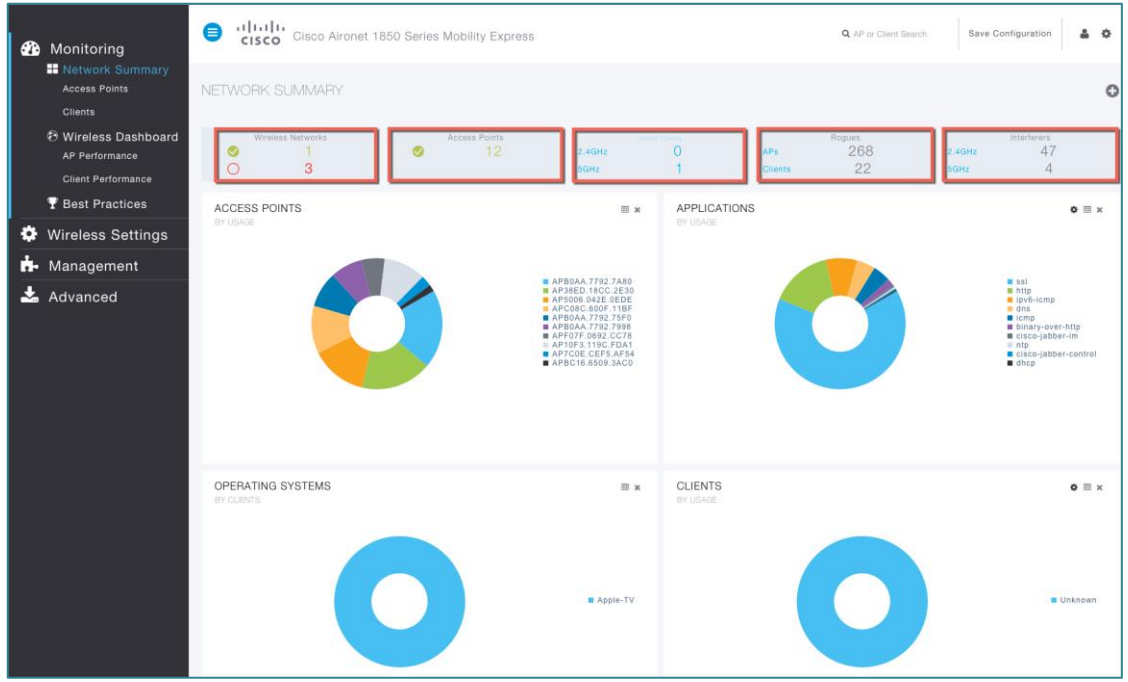
Access Mobility Express using the controller's management IP address-
Example: https://<controller_mgmt_ip_addr>

Enter admin account username and password configured during the WLAN Express setup>



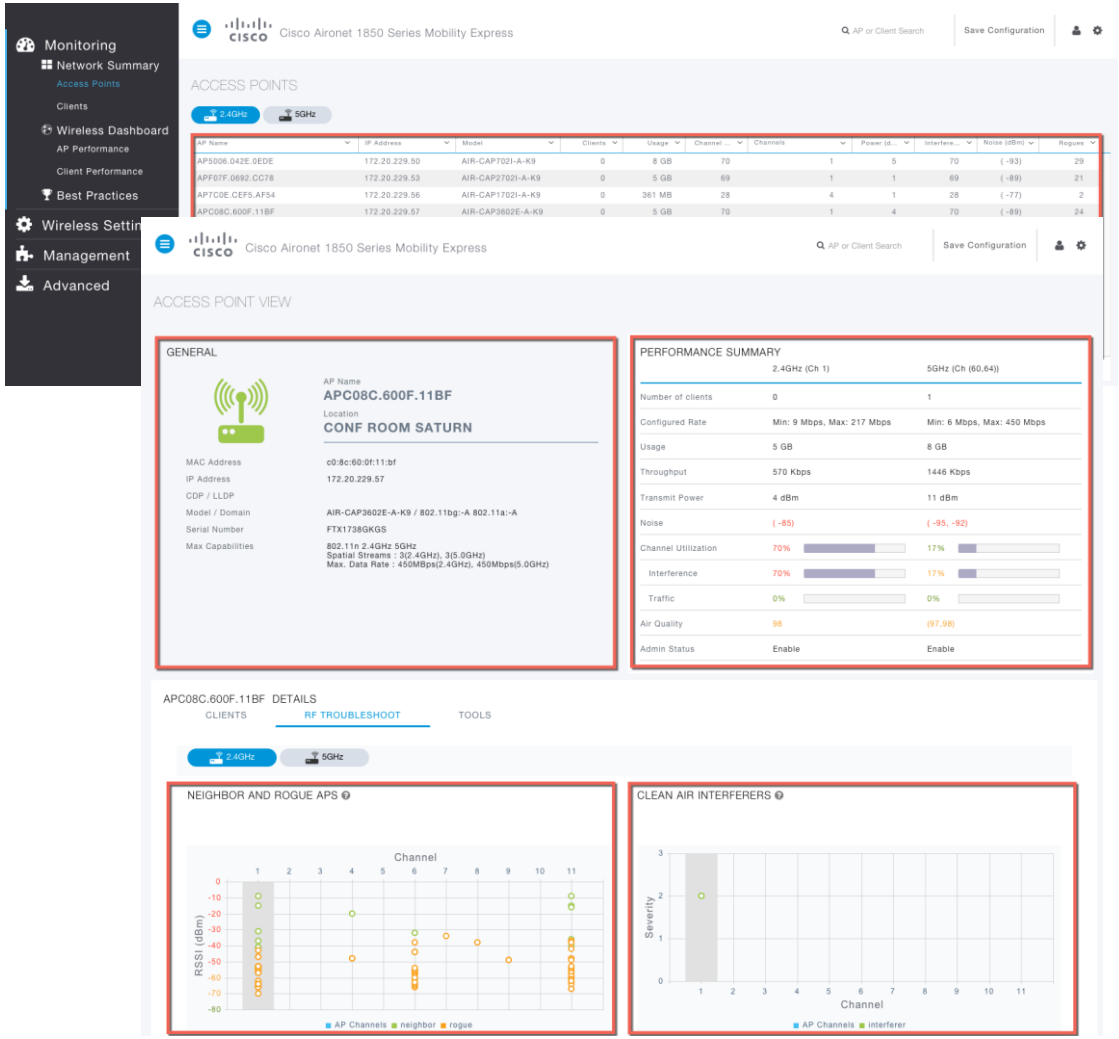
Network Summary

- Displays high level view of Wireless Network
- Network Summary shows count of Wireless Networks, Access Points, Clients, Rogues and Interferers in 2.4 and 5.0 GHz band
- Graphical and Tabular representation of APs, OS, Clients, Application Visibility and Top WLANs
- Add/Delete Widgets



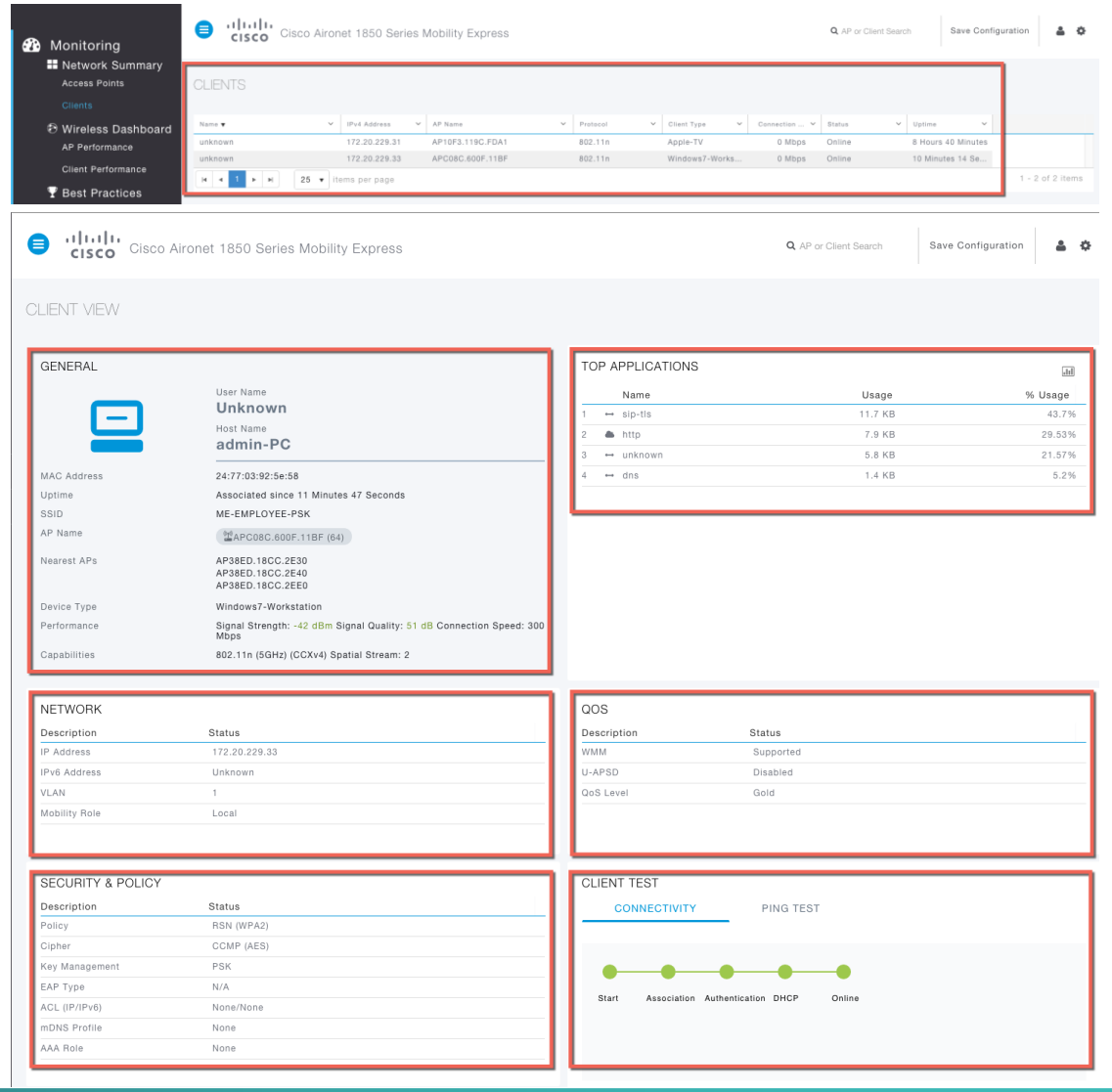
Monitoring – Access Points

- Displays list of Access Points in the network; Inventory, Uptime, Usage etc.
- Detailed Access Point view displays details AP information, Radio Performance summary, list of connected clients, etc.



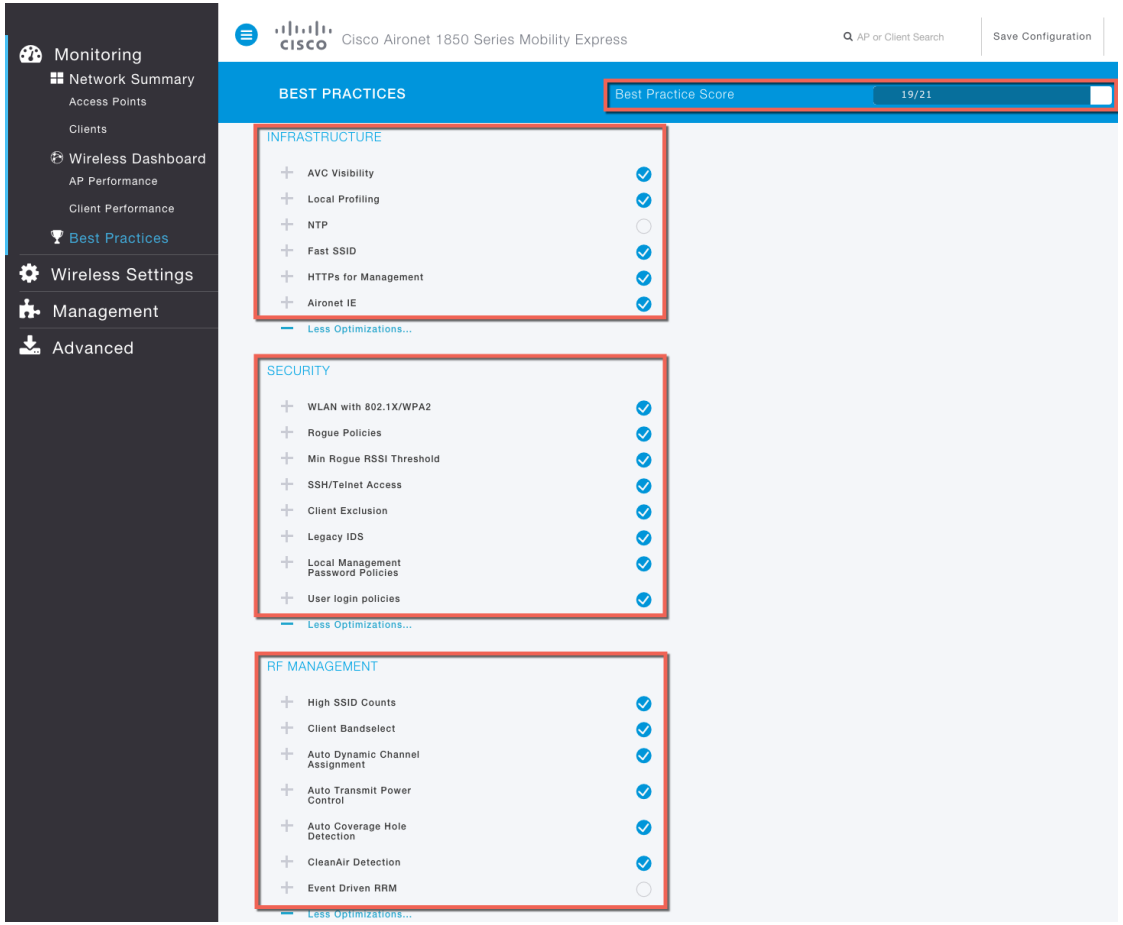
Monitoring – Clients

- Displays list of Clients in the network; client type, client connection speed, Uptime etc.
- Detail Client view displays Signal Quality, Device Type, Application Visibility, QoS, Security, Policy assignment etc.



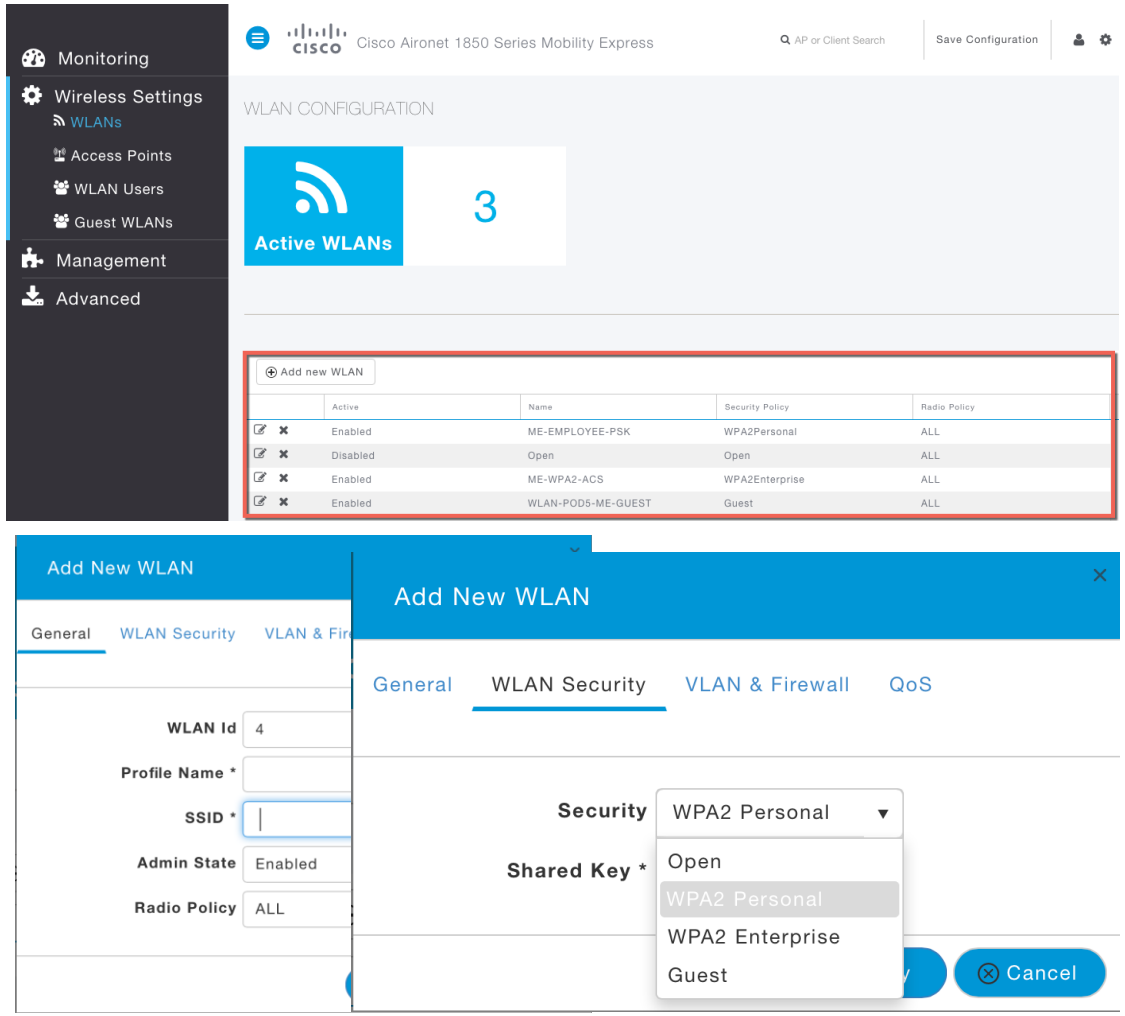
Best Practices

- Best Practices are enabled by default at Day 0
- Best Practices relevant to Mobility Express deployments are displayed
- For few Best Practices (Ex. NTP), Manual Configuration will link to relevant page



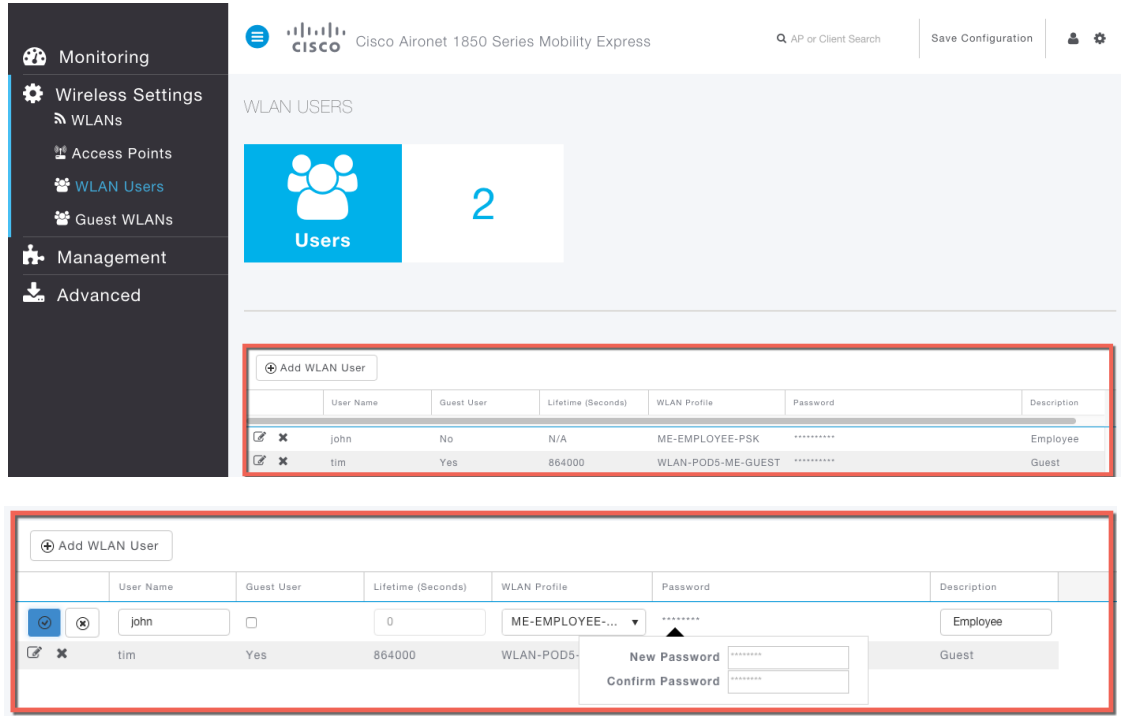
Wireless Setting – WLAN

- Max WLAN count supported is 16
- Security Type – Open, WPA2 - PSK, WPA2 Enterprise, Guest
- WLAN to VLAN Mapping, ACL Rules
- Application Visibility is enabled for each WLAN



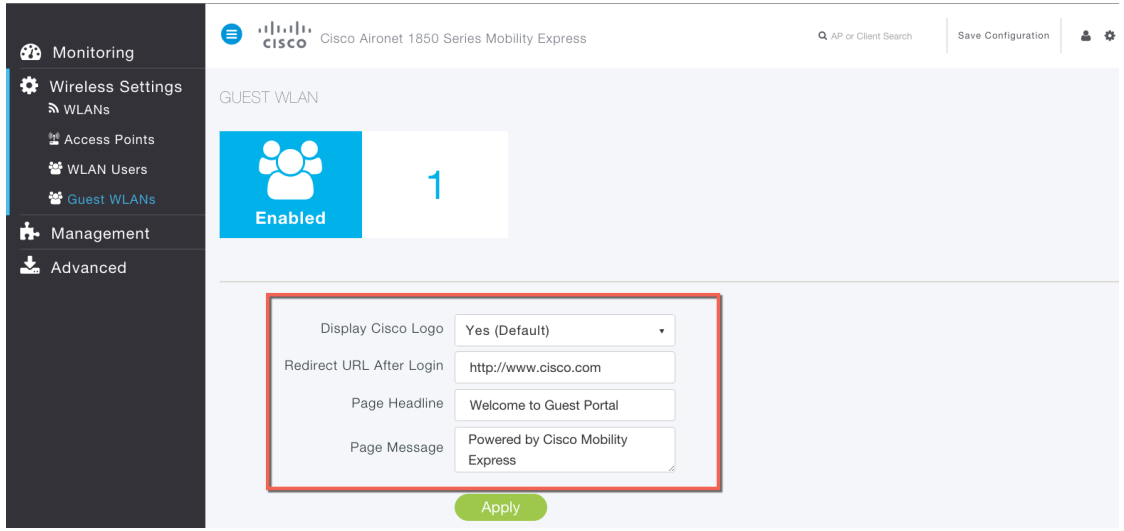
Wireless Setting – WLAN Users

- Add, Modify, Delete WLAN users for 802.1x local authentication
- Add, Modify, Delete Guest Users



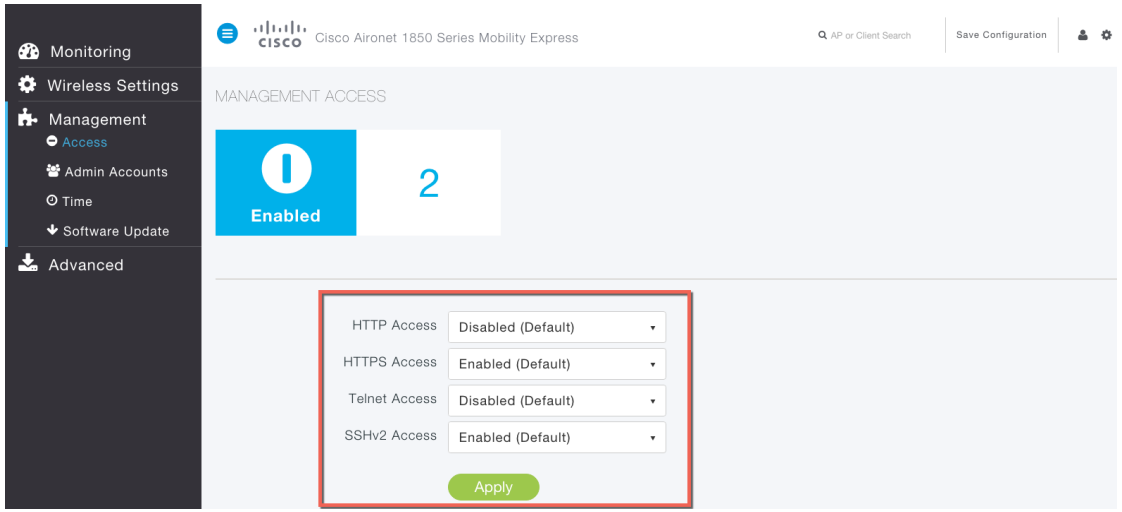
Wireless Setting – Guest WLAN

- Local Web Auth. with local guest users
  Guest Access is for 24 Hours, not configurable
- No LWA with ISE
- No Lobby Ambassador
  No customized Web Auth. page



Management – Access

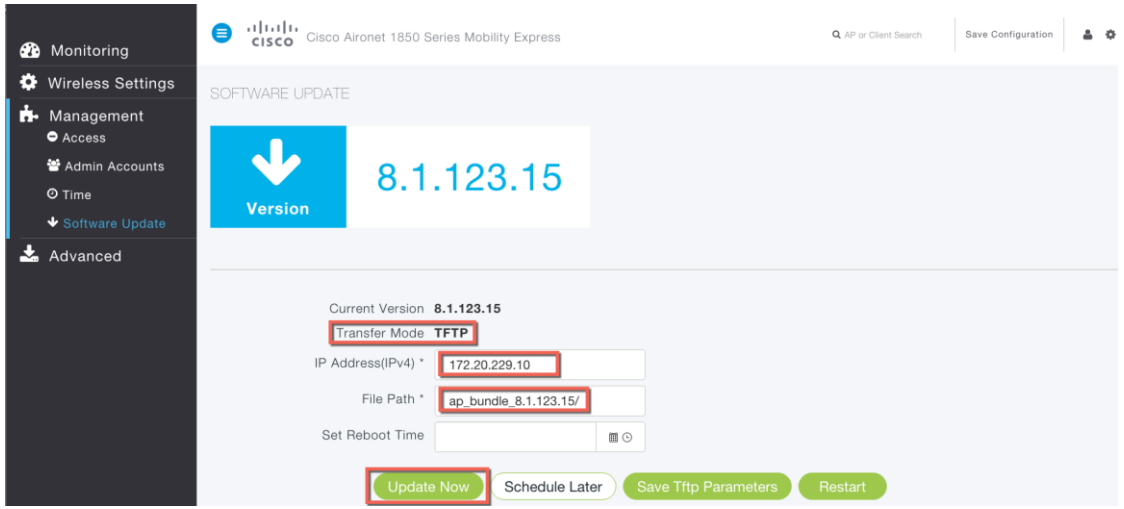
- Supported via HTTP, HTTPS, Telnet, SSHv2
- HTTPS, SSHv2 enabled by default

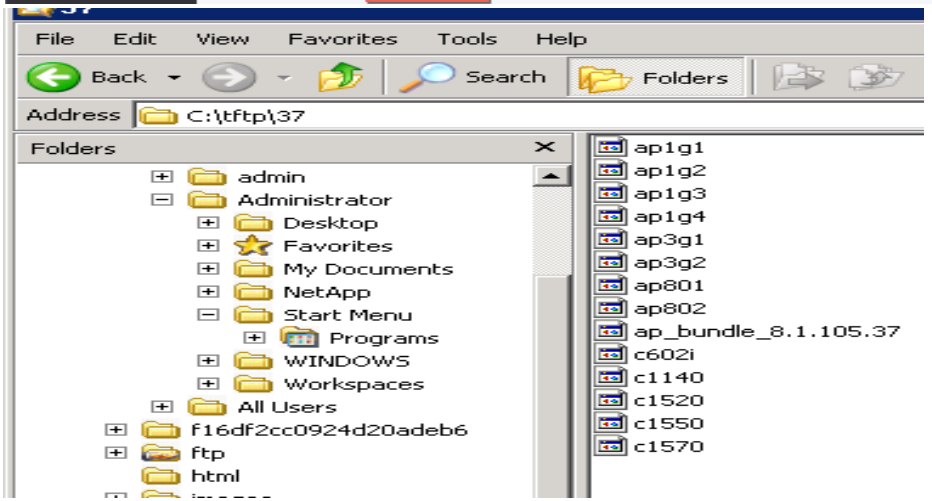


Software Update

Management – Software Update

- Software Update supported via TFTP.
  TFTP parameters must be configured on Web UI.
- Mobility Express controller does not store AP images. AP images are stored on TFTP server.
- Controller maintains mapping of APs to AP images. Maximum of five concurrent software downloads on Access Points
- ‘Update Now’ initiates pre-download image on all APs from TFTP server. Manual Reboot is required.
- ‘Schedule Later’ initiates pre-download image on all APs from TFTP server. Reboot happens as per ‘Set Reboot Time’
- Software download is non service impacting



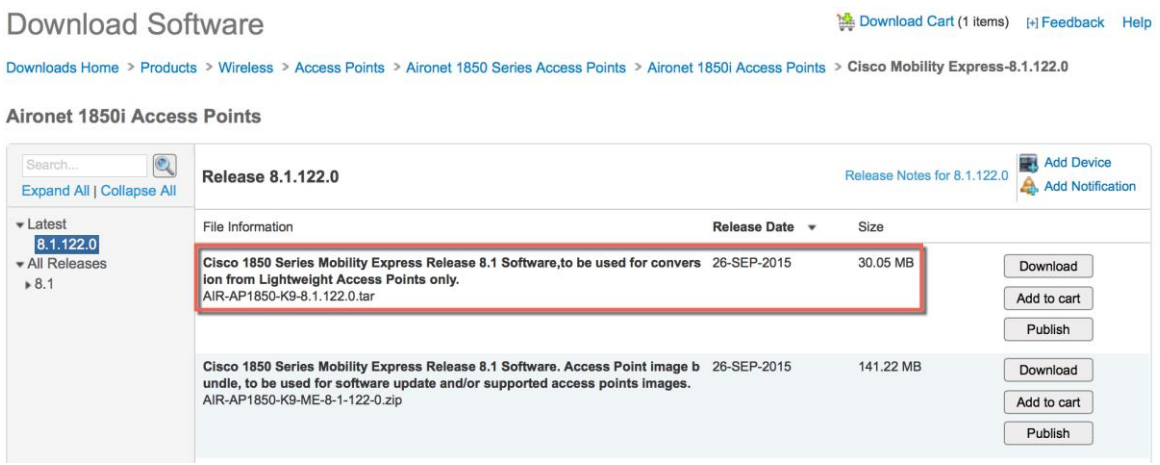


Conversion

1. CAPWAP to Mobility Express
2. Mobility Express to CAPWAP

Conversion

- Supported on 1800 series access points from 8.1.122.0 version
- Download Mobility Express capable *AIR-AP1850-K9-<version>.tar* file from CCO on TFTP server
- CAPWAP to Mobility Express CLI
  AP#ap-type mobility-express tftp://<TFTP server IP address>/<mobility express capable AP tar image>
- Mobility Express to CAPWAP
  AP#ap-type capwap



Conversion – CAPWAP to Mobility Express

Output of <sh version> on AP

CASE 1 : CAPWAP image

```
AP Image version (active)  : 8.1.10.159
AP Image version (backup)  : 0.0.0.0
```

Conversion is needed

#ap-type mobility-express tftp://<TFTP IP Address/<image>

CASE 2 : ME image = YES, ME Capable = NO

```
AP Running Image      : 8.1.123.15
Primary Boot Image    : 8.1.123.15
Backup Boot Image     : 8.1.10.159
AP Image type     : MOBILITY EXPRESS IMAGE
AP Configuration : NOT MOBILITY EXPRESS CAPABLE
```

Conversion is needed

#ap-type mobility-express tftp://<TFTP IP Address/<image>

#ap-type mobility-express tftp [same image version]

CASE 3 : ME image = YES, ME Capable = YES

```
AP Running Image      : 8.1.123.15
Primary Boot Image    : 8.1.123.15
Backup Boot Image     : 8.1.122.0
AP Image type     : MOBILITY EXPRESS IMAGE
AP Configuration : MOBILITY EXPRESS CAPABLE
```

Conversion is NOT needed

Conversion – Mobility Express to CAPWAP

Output of <sh version> on AP

CASE 1 : ME image = YES, ME Capable = YES

```
AP Running Image      : 8.1.123.15
Primary Boot Image    : 8.1.123.15
Backup Boot Image     : 8.1.122.0
AP Image type     : MOBILITY EXPRESS IMAGE
AP Configuration : MOBILITY EXPRESS CAPABLE
```

Conversion is needed

#ap-type capwap

CASE 2 : ME image = YES, ME Capable = NO

```
AP Running Image      : 8.1.123.15
Primary Boot Image    : 8.1.123.15
Backup Boot Image     : 8.1.10.159
AP Image type     : MOBILITY EXPRESS IMAGE
AP Configuration : NOT MOBILITY EXPRESS CAPABLE
```

Conversion is NOT needed

CASE 3 : CAPWAP image

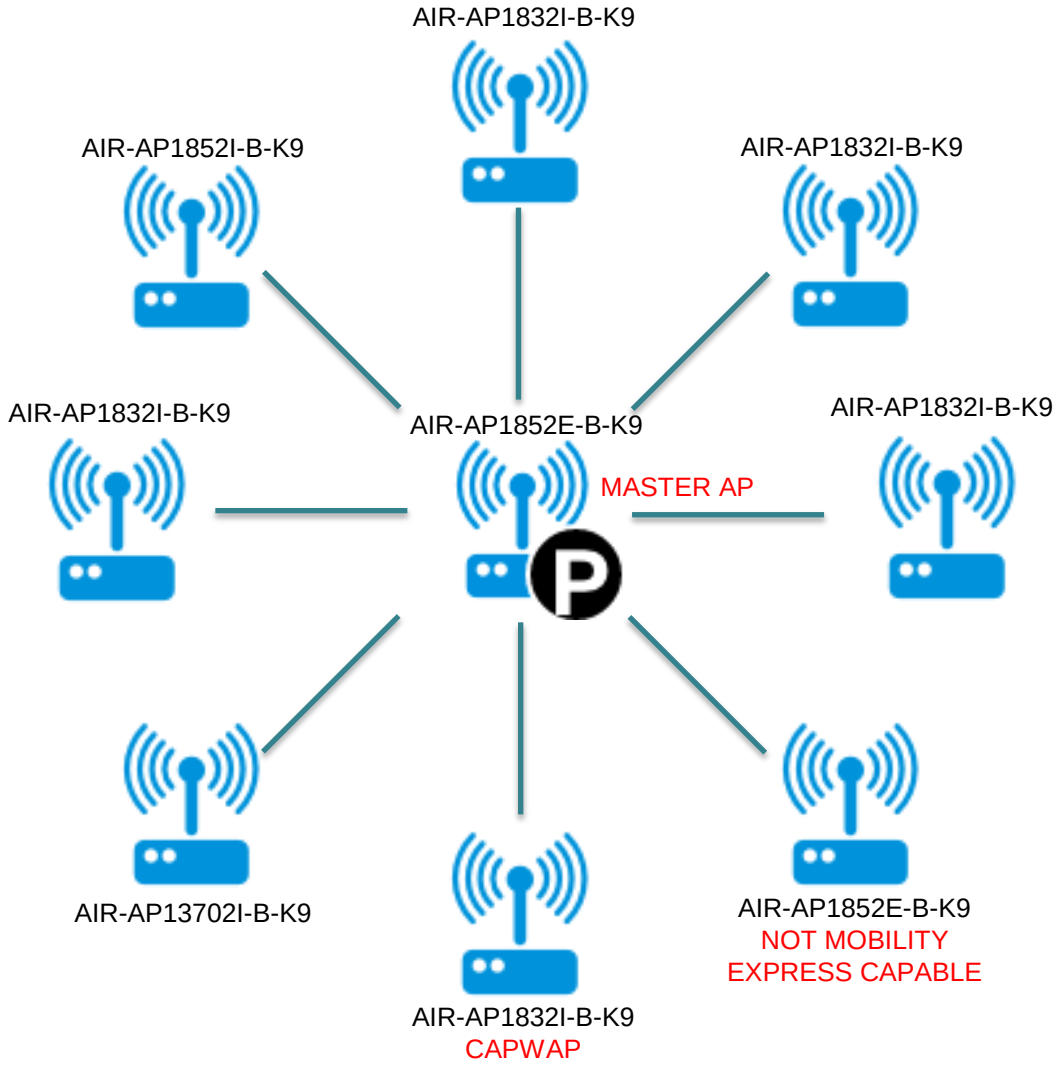
```
AP Image version (active)  : 8.1.10.159
AP Image version (backup)  : 0.0.0.0
```

Conversion is NOT needed

Mobility Express Failover and Master Election

Master Election

- Only 1800 series access points with AP Type as MOBILITY EXPRESSS CAPABLE will participate in Master Election
- Master Election and client connectivity is restored in a less than 2 minutes
- SSO is not supported
- Standalone mode is currently not supported on 1800 APs
- Standalone mode on 1700, 2700, 3700 etc. Access Points will continue to service existing clients



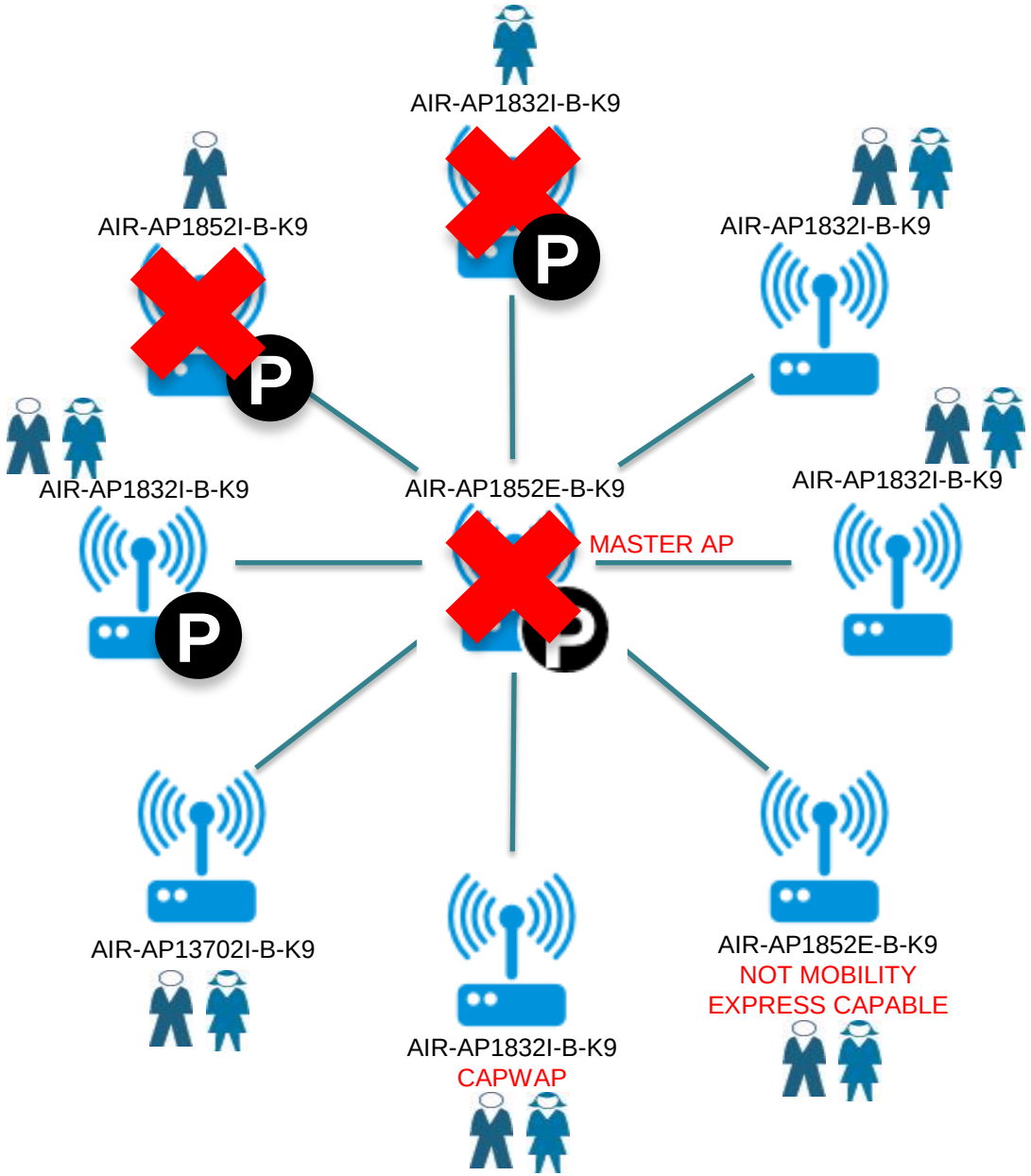
Master Election Process

Most capable Access Point - 1850 vs. 1830

Least Client Load

MAC Address 7-ab-5a-6

Lowest MAC address



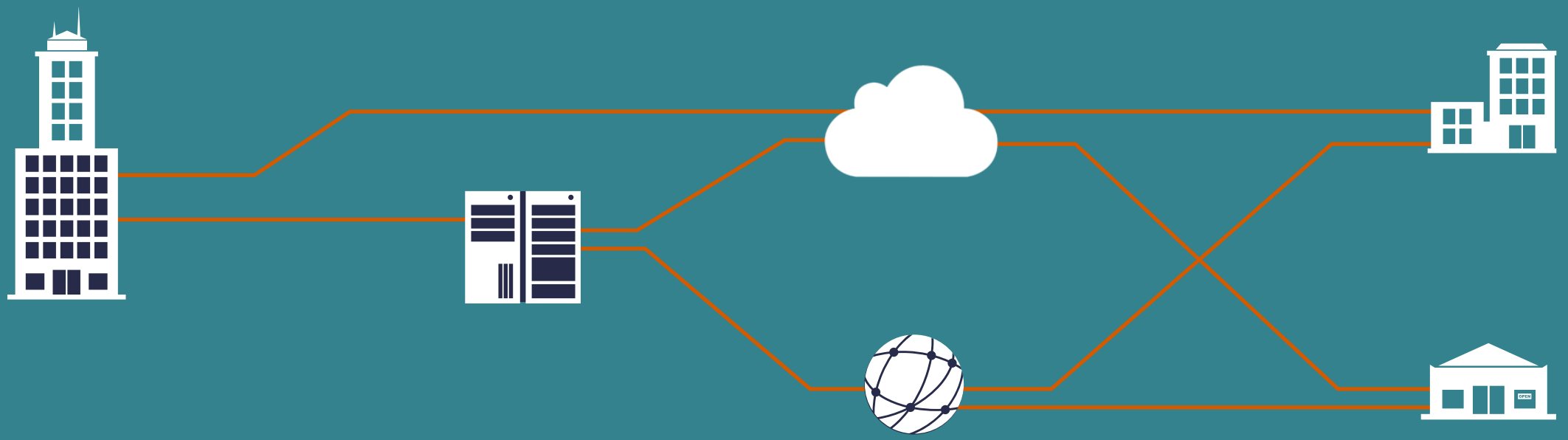
Interoperability

AireOS 8.1.122.0

ISE Express 1.4
802.1x Authentication

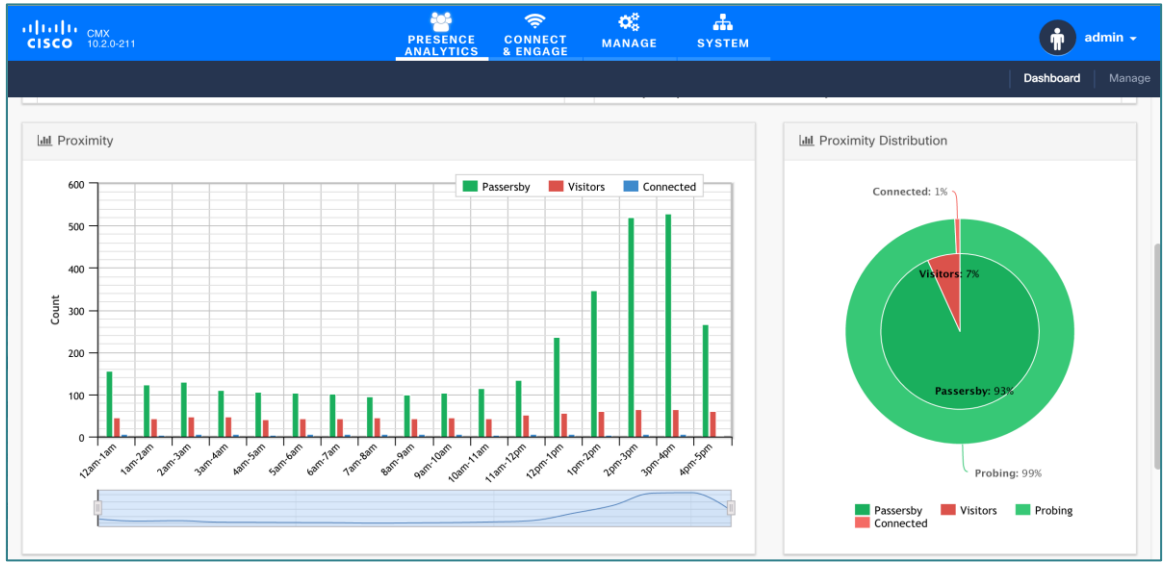
CMX 10.2
Presence

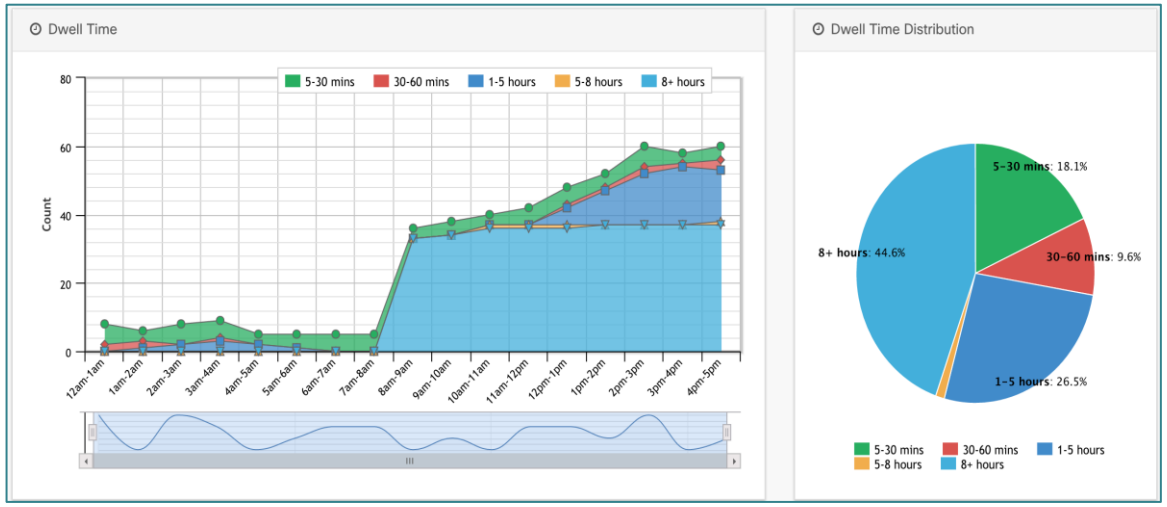
PI 3.0 Patch 1.0

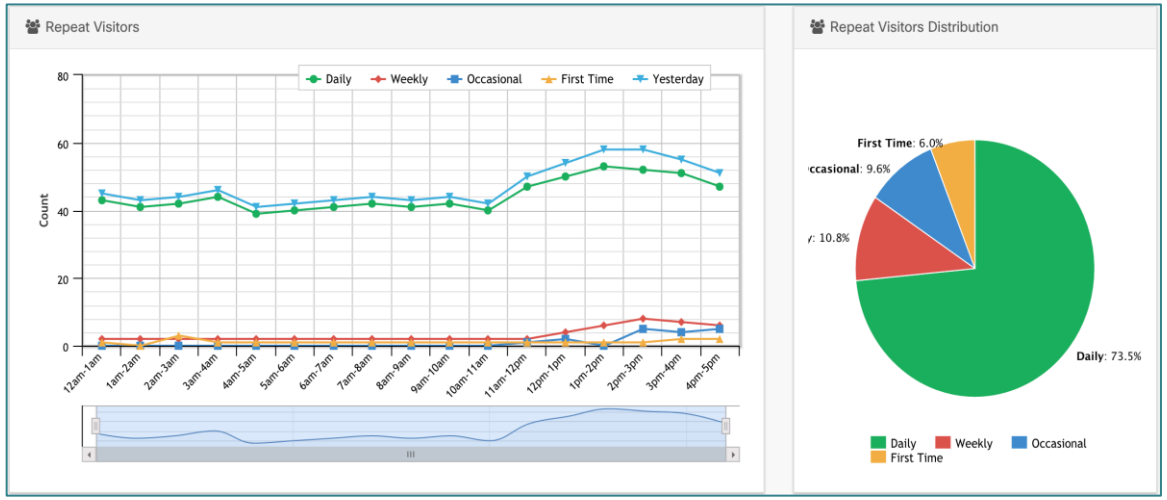


CMX 10.2 (Presence) support for Mobility Express

- Add Mobility Express Controller IP in CMX
- Create sites with one or more APs for Presence Analytics







Prime Infrastructure (3.0.1) support for Mobility Express

- Add Mobility Express Controller IP in PI
- View AP details, WLANs etc.