

Upgrading the Firmware on the WIM

This chapter contains the following sections:

- Prerequisites To Upgrading Firmware, on page 1
- Upgrading the EWC AP Firmware, on page 3
- Firmware Upgrade Using The AP Command Line Interface (CLI), on page 3
- Upgrading 17.9 to 17.11.1 and Greater UIW Image, on page 4
- Download 17.11 UIW and CAPWAP Image to Host Router, on page 5
- Upgrade to CAPWAP 17.11 from 17.9, on page 6
- Install the UIW 17.11 Images, on page 7
- Upgrading the UIW Image From IOS XE 17.11 to IOS XE 17.12 and Greater, on page 8
- Downgrading the Image, on page 9

Prerequisites To Upgrading Firmware

Important Cisco recommends updating your router to IOS XE release 17.11.1 or greater before attempting to upgrade the module firmware.

Check that the following prerequisites exist:

- There must be a network connection between the IR1800 and the AP.
- The IR1800 will need a tftp server enabled for the AP to obtain the images.

IR1800 Configuration

See the following example:

```
Router#sh run int vlan1
Building configuration...

Current configuration : 60 bytes
!
interface Vlan1
ip address 10.10.10.1 255.255.255.0

interface Wl0/1/4
switchport mode access
```

```
switchport access vlan <id>
(In the example above vlan 1 is used)
end
```



Note The vlan id can be any in the range <1-4094>

Configuring the Wi-Fi Module with an IP Address for EWC AP and CAPWAP

Prior to upgrading or converting the Wi-Fi module, it must have an IP address. There are two methods:

1. Configuring the DHCP server on the IR1800 to provide an IP Address for the Wi-Fi Module.

```
IR1800 Router:
Router#sh run | sec vlan1
ip dhcp pool vlan1
 network 10.10.10.0 255.255.255.0
 default-router 10.10.10.1
Router#

WP-WIFI6: Gets ip from IR1800 DHCP server
APBCE7.120C.D748#sh ip in br
Interface          IP-Address    Method   Status   Protocol   Speed    Duplex
wired0             10.10.10.2    DHCP     up       up         1000     full
auxiliary-client   unassigned    unset    up       up         n/a      n/a
apr0v0             n/a           n/a      up       up         n/a      n/a
apr1v0             n/a           n/a      up       up         n/a      n/a
APBCE7.120C.D748#
```

2. Configuring the Wi-Fi Module with a Static IP Address.

   Use the **capwap ap ip** <*ip address*> <*netmask*> <*gateway*> command

```
APBCE7.120C.D748#capwap ap ip 10.10.10.4 255.255.255.0 10.10.10.1
[*12/07/2023 14:01:39.3510] ethernet_port wired0, ip 10.10.10.4, netmask 255.255.255.0,
 gw 10.10.10.1, mtu 1500, bcast 10.10.10.255, dns1 0.0.0.0, is_static true, vid 0,
static_ip_failover false, dhcp_vlan_failover false

APBCE7.120C.D748#ping 10.10.10.1
Sending 5, 100-byte ICMP Echos to 10.10.10.1, timeout is 2 seconds

PING 10.10.10.1
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0.997/1.100/1.221 ms
APBCE7.120C.D748#
```

Configuring the Wi-Fi Module with an IP Address for UIW WGB Mode Running IOS XE 17.13.1 and Greater

Use the **configure ap address ipv4 static** <*ip address*> <*netmask*> <*gateway*> command. For example:

```
APBCE7.120C.D748#configure ap address ipv4 static 10.10.10.2 255.255.255.0 10.10.10.1
```



Note Gateway IP Address is the IR1800 Router SVI IP Address.

Configuring the Wi-Fi Module with an IP Address for UIW WGB Mode Running IOS XE 17.11.x and 17.12.x

With the router running IOS XE 17.11.x and 17.12.x, the single **configure ap address** command mentioned above will appear to work, but does not put a full IP presence on the Wi-Fi module. Additional commands are needed to put a "dummy" ssid configuration on the unit. The following commands are a prerequisite:

```
configure ssid-profile dummy ssid dummy authentication open
configure dot11 1 mode wgb ssid dummy
configure dot11 1 enable
configure dot11 1 disable
```

Note If WGB radio is already configured and enabled, then the static ip address can be added directly and does not require the above prerequisite steps.

Confirm the sub-if is “wbridge.x” as shown in the following example:

```
WGB#sh datapath command /click/br_router/dump_root_subifs
Root_port BG-ID   Hop-Address       Sub-If     VID VAP Trunk  Sec_Trunk Vlan-Trans Learn
Uni-Flood Flood-Age
 57       1       BC:E7:12:0C:E4:0F wbridge.0  0   0   true   true      false      false
true      0
```

Use the **configure ap address ipv4 static** *<ip address> <netmask> <gateway>* command. For example:

```
APBCE7.120C.D748#configure ap address ipv4 static 10.10.10.2 255.255.255.0 10.10.10.1
```

Upgrading the EWC AP Firmware

The firmware can be upgraded from the access point command line interface or the WebUI while in EWC mode.

This section describes the prerequisites for the upgrade, as well as steps to perform the upgrade.

Firmware Upgrade Using The AP Command Line Interface (CLI)

There are two methods to get the image files to the IR1800 bootflash. Secure Copy and TFTP transfer.

Prior to upgrading the image, ensure that vlan1 and the Wi-Fi module have IP addresses set. Check the Prerequisites To Upgrading Firmware, on page 1 section.

Using Secure Copy

1. Copy the image files to the IR1800 bootflash:

Note In order to use secure copy (scp), you must first set up an SSH configuration. See Configuring Secure Shell.

```
Router# copy scp: bootflash:
Address or name of remote host []? 192.168.1.2
Source username [xxxxx]?Enter
Source filename []? /auto/users/<your-image>
Destination filename [<your-image>]?
```

```
This is a Cisco managed device to be used only for authorized purposes.
Your use is monitored for security, asset protection, and policy compliance.

Password: <your-password>
Sending file modes: C0644 208904396 <your-image>
...........
[OK - 208904396 bytes]
208904396 bytes copied in 330.453 secs (632176 bytes/sec)
```

2. Configure the IR1800 to act as SFTP server.

```
ip scp source-interface Vlan1   ! VLAN interface to be modified based on the configuration
sftp-server bootflash:<your-image>
```

3. Upgrade the AP firmware from AP CLI.

```
#ap-type ewc-ap sftp://10.10.10.1/ap1g8 sftp://10.10.10.1/<your-image>
```

Using TFTP Transfer

1. Copy the image files to the IR1800 bootflash:

```
Router# copy tftp: bootflash:
Address or name of remote host []? 192.168.1.2
Source filename []? /auto/users/<your-image>
Destination filename [<your-image>]?
...........
[OK - 208904396 bytes]
208904396 bytes copied in 330.453 secs (632176 bytes/sec)
```

2. Configure the IR1800 to act as TFTP server.

```
ip tftp source-interface Vlan1   ! VLAN interface to be modified based on the
configuration
tftp-server bootflash:<your-image>
```

3. Upgrade the AP firmware from AP CLI.

```
#ap-type ewc-ap tftp://10.10.10.1/ap1g8 tftp://10.10.10.1/<your-image>
```

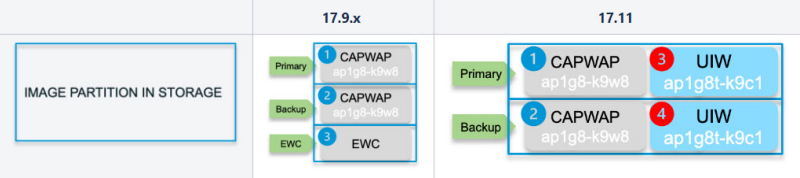
Upgrading 17.9 to 17.11.1 and Greater UIW Image

Starting with IOS XE 17.11.1, the image architecture changed to a new image type. The Unified Industrial Wireless (UIW) image for the WP-WIFI6 module was introduced. The image name is ap1g8t-k9c1. The UIW image will serve the WGB functionality instead of the traditional CAPWAP (ap1g8-k9w8) image.

If the UIW image has never been programed, this chapter will describe the progress to program the new image into the Wi-Fi module's flash partition.

If the UIW image is already installed, skip this chapter.

The two types of image will coexist on the device, and each image will own its independent primary and backup partitions. The following table shows the image partition differences between IOS XE 17.9 and 17.11:



Because the UIW image is supported from IOS XE 17.11 and greater, the device running on an older image that never installed UIW image should follow these steps to start the upgrade:

- Download the 17.11 UIW and CAPWAP Image to Host Router
- Upgrade to CAPWAP 17.11 from 17.9
- Install the UIW 17.11 Images

Download 17.11 UIW and CAPWAP Image to Host Router

Download the required images onto your IR1800 prior to beginning the upgrade. You will need the following images:

- 17.11 CAPWAP CCO image
- 17.11 UIW CCO image

Procedure

Step 1 Prior to upgrading the image, ensure that vlan1 and the Wi-Fi module have IP addresses set. Check the Prerequisites To Upgrading Firmware, on page 1 section.

Step 2 Place the images into the *flash:* directory on the IR1800.

a) Configure the tftp blocksize

```
IR1800(config)#ip tftp blocksize 8192
```

b) Download the version 17.11 UIW CCO image

```
IR1800#copy tftp://<TFTP IP>/ap1g8t-k9c1-tar.17.11.0.155.tar flash:
```

c) Download the version 17.11 CAPWAP CCO image

```
Download 17.11 CAPWAP CCO image:
IR1800#copy tftp://<TFTP IP>/ap1g8-k9w8-tar.153-3.JPP.tar flash:
```

Step 3 Configure the IR1800 as TFTP server.

```
IR1800(config)#tftp-server bootflash:ap1g8t-k9c1-tar.17.11.0.155.tar
IR1800(config)#tftp-server bootflash:ap1g8-k9w8-tar.153-3.JPP.tar
```

Upgrade to CAPWAP 17.11 from 17.9

Tip When typing in longer command strings, it is easy to lose your place while lots of console messages are appearing. You can stop the messages from appearing by using the **logging console disable** command.

Procedure

Step 1 Enter the AP_WIFI6 shell. After login to the IR1800 via console/ssh, you can execute the **hw-module session 0/3** command to redirect to the AP_WIFI6 console. Then issue **Ctrl-a Ctrl-q** to return to IR1800.

```
IR1800#hw-module session 0/3
```

Step 2 Make sure the running image is always in CAPWAP mode before starting the upgrade. If running in WorkGroupBridge mode or EWC mode, convert to CAPWAP mode using the **ap-type capwap** command. The ap-type change will cause the Wi-Fi module to reboot. See the following examples:

a) WorkGroupBridge Mode

```
AP_WIFI6#sh running-config | inc Mode
AP Mode       : WorkGroupBridge

AP_WIFI6#ap-type capwap

Note: After rebooting, check the running image is CAPWAP:

APE8EB.349C.14F8#sh running-config | inc Mode
AP Mode       : Local
```

b) EWC Mode

```
WLC#wireless ewc-ap ap shell username <username>

AP_WIFI6#ap-type capwap
AP is the Master AP, system will need a reboot when ap type is changed to CAPWAP
. Do you want to proceed? (y/N)y

Note: After rebooting, check the running image is CAPWAP:
APE8EB.349C.14F8#sh running-config | inc Mode
AP Mode         : Local (or FlexConnect)
```

Step 3 Upgrade the CAPWAP 17.11 image into **primary partition for ap1g8-k9w8** (partition 1). Verify the network is reachable via the PING command, and then upgrade to 17.11 CAPWAP CCO image.

Note
The download and reboot time will take about 6 minutes.

```
AP_WIFI6#ping <IP of IR1800 TFTP> For example:192.168.145.77
AP_WIFI6#logging console disable
AP_WIFI6#archive download-sw /reload tftp://<IP of IR1800>/ap1g8-k9w8-tar.153-3.JPP.tar
Starting download AP image tftp://<IP of IR1800 TFTP>/ap1g8-k9w8-tar.153-3.JPP.tar ...
!This may take a few minutes.
!If longer, please abort command, check network and try again.
      -=O=-    #     #    #   #
```

Step 4 Continue to upgrade the CAPWAP **backup partition for ap1g8-k9w8** (partition 2).

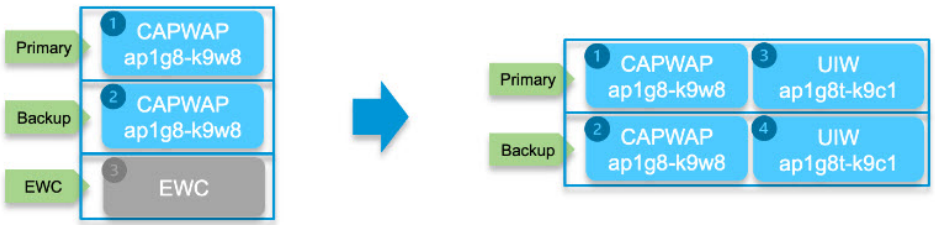
Verify the network is reachable via PING message and then upgrade 17.11 CAPWAP CCO image with the CLI **option no-reload**. For example:

```
AP_WIFI6#ping <IP of IR1800 TFTP or Infra TFTP, for example: 192.168.145.77>

AP_WIFI6#logging console disable
AP_WIFI6#archive download-sw /no-reload tftp://<IP of IR1800 TFTP>/ap1g8-k9w8-tar.153-3.JPP.tar
```

Install the UIW 17.11 Images

The following steps describe the procedure to install the primary and backup UIW partition 3 and 4. Both the primary and backup partitions will be updated together, therefore, step 2 only needs to be executed once. Refer to the following image:



Important The EWC image will be permanently removed due to limited storage, and cannot return to EWC mode!

Tip When typing in longer command strings, it is easy to lose your place while lots of console messages are appearing. You can stop the messages from appearing by using the **logging console disable** command.

Procedure

Step 1 Determine whether the UIW image is already programed by using the **config boot mode wgb** command.

a) If the command fails, the UIW image had never programed. Proceed to Step 2.

The following example shows the UIW image is missing:

```
AP_WIFI6#sh version | inc AP
Cisco AP Software, (ap1g8),

AP_WIFI6# config boot mode wgb
Error: Unified client image missed.
```

b) If the command succeeds, the UIW image is already programed. Proceed to Step 4.

The following example shows the UIW image exists:

```
AP_WIFI6#sh version | inc AP
Cisco AP Software, (ap1g8),

AP_WIFI6#config boot mode wgb
Image swapping will restore the device to factory settings.
Are you sure to proceed? (y/n) y
AP starts factory reset...
```

Step 2 Install the UIW 17.11 image with the **no-reload** option in CAPWAP 17.11. Both the primary and backup partitions (3 and 4) will be updated together.

```
AP_WIFI6#ping <IP of IR1800 TFTP or Infra TFTP>
AP_WIFI6#logging console disable
AP_WIFI6#archive download-sw /no-reload tftp://<IP of IR1800 TFTP>/ap1g8t-k9c1-tar.17.11.0.155.tar
**************************************************************
Detected field upgrading unified client image by CAPWAP image...
New image will be added into flash, but EWC will be removed.
Are you sure to proceed?(y/n) y
After the upgrade, please remember to switch the mode manually.
Press any key to continue
**************************************************************
```

Note
If the procedure fails with the status **upgrade.sh: INFO: unified client image exists, please try command: config boot mode**, the upgrade failed because the device already has a programed UIW image. Go back to Step 1.

Step 3 Once the UIW is installed on the device, the image type can be changed to WGB by using the **configure boot mode wgb** CLI. This will reboot the Wi-Fi module, load the UIW software, and perform a factory reset.

```
AP_WIFI6#configure boot mode wgb
Image swapping will restore the device to factory settings.
Are you sure to proceed? (y/n) y
AP starts factory reset...
Full Factory Reset triggered: clear all files from storage..
```

Step 4 Log in with the default credentials as described in Default WIM Passwords.

Step 5 Verify the UIW image type is ap1g8t:

```
AP_WIFI6#sh version | inc AP
Cisco AP Software, (ap1g8t), C6, RELEASE SOFTWARE
AP Running Image     : 17.11.0.155
```

What to do next

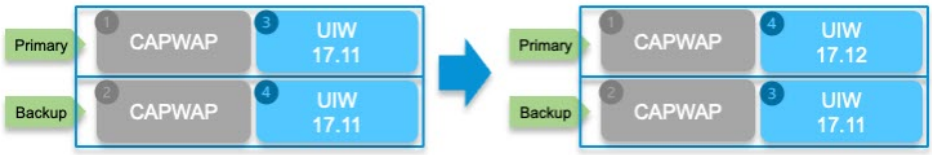
Manually configure the WGB with basic functionality. Refer to Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide, Cisco IOS XE Dublin 17.11.x for additional information.

Upgrading the UIW Image From IOS XE 17.11 to IOS XE 17.12 and Greater

Before upgrading the UIW image, please make sure the running image type is also UIW (ap1g8t-k9c1). If the device has never installed the UIW image and running the IOS XE 17.11 CAPWAP image, start the upgrade from Step 3 under Install the UIW 17.11 Images, on page 7.

Note The image program only permits upgrading under the same image type, for example, CAPWAP to CAPWAP image and UIW to UIW image. If this is not your current type, change the image type before upgrading.

The primary UIW images will be upgraded to the new version, refer to the following example of 17.12:



Procedure

Step 1 Make sure your device is running the IOS XE release 17.11 UIW image.

```
AP_WIFI6#sh version | inc AP
Cisco AP Software, (ap1g8t), C6, RELEASE SOFTWARE
AP Running Image     : 17.11.0.155
```

Step 2 Set up the TFTP server locally on the IR1800. Refer to Download 17.11 UIW and CAPWAP Image to Host Router, on page 5. Then set a static IP address in the AP_WIFI6.

```
AP_WIFI6#config ssid default ssid default auth open
AP_WIFI6#config dot11 1 mode wgb ssid default
AP_WIFI6#configure ap address ipv4 static <ip> <netmask> <gateway>
AP_WIFI6#reload
```

Step 3 The new UIW image can upgrade the old UIW image directly through the **archive** command, which will replace the image in partition 4 and make it primary.

```
AP_WIFI6#ping <IP of IR1800 TFTP or Infra TFTP> For example 192.168.145.77
AP_WIFI6#archive download-sw /no-reload tftp://<IP of TFTP>/ap1g8t-k9c1-tar.17.12.1.5.tar
```

Important
The **archive** command can be used to upgrade from any UIW image to another UIW image. There is no version checking.

Downgrading the Image

The WIM WGB mode and new WGB features migrate from CAPWAP image (ap1g8-k9w8) to UIW image (ap1g8t-k9c1) and are supported after.

Important Downgrading to 17.10 and below is **NOT** supported.