Wireless Connectivity for IR1800 Router

This chapter describes how to configure the Wi-Fi card to the internal switch interface and module management on the Cisco Catalyst IR1800 Rugged Series router.

This chapter contains the following sections:

IR1800 Configuration Overview

The following are some of the product configuration details:

- The module is fixed to subslot 0/3
- The Wi-Fi interface to communicate with the AP is known as Wl0/1/4
- By default, Wl0/1/4 is in VLAN 1
    - If a DHCP pool is set-up on VLAN1, AP (and associated clients) will get an IP address.
- The module cannot be hot-swapped but is field replaceable.
- The host router must be manually reloaded after the module is inserted.

WIM Module Management Commands

Commands used to view the status of the module from the IOS XE router console are:

- show platform

- show inventory
- show hw-module subslot 0/3 attribute
- show logging

Commands used to configure the module from the IOS XE router console are:

- hw-module subslot 0/3 maintenance enable | disable
- hw-module subslot 0/3 stop | start | reload [force]
- hw-module subslot 0/3 error-recovery password_reset
- hw-module session 0/3

Normal Router Bootup

The Wi-Fi module is powered on as soon as the host router reloads. The Wi-Fi module state turns from 'booting' to 'ok' when the host receives the 'ready' signal from Wi-Fi module. For example:

```
#show platform
Chassis type: IR1835-K9
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         IR1835-K9           ok                    15:25:47
 0/0      IR1835-1x1GE        ok                    15:23:37
 0/1      IR1835-ES-4         ok                    15:23:36
 0/3      WP-WIFI6-B          ok                    00:00:07
R0        IR1835-K9           ok, active            15:25:47
F0        IR1835-K9           ok, active            15:25:47
P0        PWR-12V             ok                    15:23:59
GE-POE    Unknown             ok                    15:23:59

# show logging
Apr  6 18:05:41.992 CST: %IOSXE_OIR-6-INSSPA: SPA inserted in subslot 0/3
Apr  6 18:05:54.886 CST: new extended attributes received from iomd(slot 0 bay 3 board 0)
Apr  6 18:05:55.226 CST: %SPA_OIR-6-ONLINECARD: SPA (WP-WIFI6) online in subslot 0/3
```

Deactivating and Reactivating the WIM Module

The WIM module can be removed from the router without being deactivated. However, we recommend that you perform a graceful deactivation (or graceful power down) before removing it. Use the following commands in EXEC mode:

1. **hw-module subslot 0/3 stop**

Note After deactivating a module using the **hw-module subslot 0/3 stop** command you want to reactivate it, use one of the following commands (in privileged EXEC mode).

2. **hw-module subslot 0/3 start**

3. **hw-module subslot 0/3 reload [force]**

Table 1: hw-module subslot Command Options

Command	Description
reload	Stops and restarts the specified module.
stop	Removes all interfaces from the module and the module is powered off.
start	Powers on the module similar to a physically inserted module in the specified slot. The module firmware reboots, and the entire module initialization sequence is executed.

Factory Reset

The user can execute the following command from the host router to factory reset the WIM:

```
Router# hw-module subslot 0/3 error-recovery password_reset
```

The above command sets the WIM to maintenance mode.

Note When you run the **hw-module subslot 0/3 error-recovery password_reset** command, the AP module automatically reloads to restore the configuration settings and enters the maintenance mode. In the maintenance mode, the AP module is on power on mode. Confirm the module configuration reset through the console or web UI. The user will need to issue the **hw-module subslot 0/3 reload force** command to reload the AP and take it out of maintenance mode.

The following sequence shows the factory reset:

```
Router# hw-module subslot 0/3 error-recovery password_reset
```

1. The WIM reloads.
2. The WIM is set to maintenance mode and shows out of service.

```
Router# show platform
Chassis type; IR1835-K9
Slot    Type           State          Insert time (ago)
0       IR1835-K9      ok             00:54:57
0/0     IR1835-1K1GE   ok             00:52:49
0/1     IR1835-ES-4    ok             00:52:46
0/3     WP-WIFI6-B     out of service 00:34:24
R0      IR1835-K9      ok, active     00:54:57
F0      IR1835-K9      ok, active     00:54:57
P0      P-R-12V        ok             00:53:09
GE-P06  Unknown        ok             00:53:09
```

The user should wait approximately 30 seconds, then use the following command:

```
Router# hw-module subslot 0/3 reload force
```

1. The WIM reloads.

2. The WIM quits maintenance mode. Wait for the WIM to turn to the ok state.

```
Router#show platform
Chassis type: IR1835-K9
Slot     Type           State    Insert time (ago)
0        IR1835-K9      ok       00:56:50
0/0      IR1835-1X1GE   ok       00:54:42
0/1      IR1835-ES-4    ok       00:54:39
0/3      WP-WIFI6-B     ok       00:01:36
```

WIM Power Down

The host router will power down the WIM if the WIM reloads 5 times within 20 minutes (for example, a continuous software crash):

```
*Apr  7 10:34:57.412 CST: %SPA_OIR-6-ONLINECARD: SPA (WP-WIFI6) online in subslot 0/3
*Apr  7 10:36:19.021 CST: %SPA_OIR-6-OFFLINECARD: SPA (WP-WIFI6) offline in subslot 0/3
*Apr  7 10:37:59.128 CST: %SPA_OIR-6-ONLINECARD: SPA (WP-WIFI6) online in subslot 0/3
*Apr  7 10:39:18.942 CST: %SPA_OIR-6-OFFLINECARD: SPA (WP-WIFI6) offline in subslot 0/3
*Apr  7 10:41:00.072 CST: %SPA_OIR-6-ONLINECARD: SPA (WP-WIFI6) online in subslot 0/3
*Apr  7 10:42:15.864 CST: %SPA_OIR-6-OFFLINECARD: SPA (WP-WIFI6) offline in subslot 0/3
*Apr  7 10:43:57.507 CST: %SPA_OIR-6-ONLINECARD: SPA (WP-WIFI6) online in subslot 0/3
*Apr  7 10:45:06.049 CST: %SPA_OIR-6-OFFLINECARD: SPA (WP-WIFI6) offline in subslot 0/3
*Apr  7 10:46:46.167 CST: %SPA_OIR-6-ONLINECARD: SPA (WP-WIFI6) online in subslot 0/3
*Apr  7 10:48:12.425 CST: %SPA_OIR-3-SPA_POWERED_OFF: subslot 0/3: SPA WP-WIFI6 powered off
 after 5 failures within 1200 seconds
*Apr  7 10:48:12.425 CST: %SPA_OIR-6-OFFLINECARD: SPA (WP-WIFI6) offline in subslot 0/3
```

```
Router# show platform
Chassis type: IR1835-K9
Slot      Type                State                 Insert time (ago)
--------- ------------------- --------------------- -----------------
0         IR1835-K9           ok                    16:45:16
 0/0      IR1835-1x1GE        ok                    16:43:06
 0/1      IR1835-ES-4         ok                    16:43:05
 0/3      WP-WIFI6-B          out of service        00:00:39
R0        IR1835-K9           ok, active            16:45:16
F0        IR1835-K9           ok, active            16:45:16
P0        PWR-12V             ok                    16:43:28
GE-POE    Unknown             ok                    16:43:28
```

Connect to the WIM through the Router Console

To connect to the WIM, first establish a connection to the host router through the console, ssh protocol, or telnet protocol.

Then re-direct to the Access Point from the host router. See the following example:

```
Router# hw-module session 0/3
Establishing session connect to subslot 0/3
To exit, type ^a^q   <-This sequence to disconnect is Ctrl-a Ctrl-q
picocom v3.1
port is: /dev/ttyWIFI
flowcontrol: none
baudrate is: 9600
parity: none
```

```
databits are: 8
stopbits are: 1
escape is: C-a
local echo is: no
noinit is: no
noreset is: no
hangup is: no
nolock is: yes
send_cmd is: sz -vv
receive_cmd is: rz -vv -E
imap is:
omap is:
emap is: crcrlf,delbs,
logfile is: none
initstring: none
exit_after is: not set
exit is: no
Type [C-a] [C-h] to see available commands
Terminal ready
Username:
```

Disconnect from the Access Point by performing the following:

```
issue ^a^q <-This sequence to disconnect is Ctrl-a Ctrl-q
Username:
Terminating...
Skipping tty reset...
Thanks for using picocom
Router#
```

Default WIM Passwords

The default passwords of the WIM are different depending on the mode and software release.

WIM CAPWAP AP Password

The default login credentials for CAPWAP AP are:

- Username: **Cisco**
- Password: **Cisco**
- Enable Password: **Cisco**

WIM EWC Password

The default credentials for Embedded Wireless Controller are:

- Username: **webui**
- Password: **Cisco**

Note These credentials can be used for over-the-air setup wizard UI access, or SSH/CLI-based day-0 provisioning.

WIM WGB Passwords

The default passwords of WGB mode on the WIM are different depending on the router and WIM software release. More details can be found in the following table:

Table 2:

IOS XE Release for the IR1800	WIM IOS XE Version	Default Passwords
17.9.x and earlier	ALL	Username: **Cisco** Password: **Cisco** Enable Password: **Cisco**
17.10.1 and later	17.7.1 and earlier	Username: **Cisco** Password: **Cisco** Enable Password: **Cisco**
	17.8.1 and later	Username: **Cisco1** Password: **GigabitEth01!** Enable Password: **AppleTree01@**

Determine WIM Image Type

Prior to the IOS XE 17.11.1 AP image, the Wi-Fi module WGB, CAPWAP image (ap1g8) was used for AP type conversions (either switch to CAPWAP mode or WGB mode).

IOS XE 17.11.1 and greater has a new image type, called a Unified Industrial Wireless (UIW) image. This image is called ap1g8t-k9c1. Concurrent radio with WGB and root AP functions will be supported under this new software image.

Determine the Image Type

Use the following commands:

Command	Image Type
`AccessPoint#sh version | inc AP` `Cisco AP Software, (ap1g8)`	CAPWAP Image
`AccessPoint#sh version | inc AP` `Cisco AP Software, (ap1g8t), C6, RELEASE SOFTWARE.`	UIW Image

`AccessPoint# show version | include AP`
`AP Image type:  EWC-AP IMAGE`
`AP Configuration:  NOT ME OR EWC-AP CAPABLE`
	EWC Image

To Identify if UIW Image is Installed or Not When Running CAPWAP Image

Use the following commands:

Command	Image Type
AccessPoint#**configure boot mode wgb** Image swapping will restore the device to factory settings. Are you sure to proceed? (y/n) **n** Process Canceled!	UIW Image Installed
AccessPoint#**configure boot mode wgb** Error: Unified client image missed.	No UIW Image Installed