Identify and Locate a Rogue AP/Client on 9800 Wireless Controllers

Contents

Introduction

This document describes how to detect and locate a rogue access point or a rogue client with the use of the 9800 wireless controller.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- IEEE 802.11 Fundamentals.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Wireless 9800-L Controller IOS® XE 17.12.1
- Cisco Catalyst 9130AXI Series Access Point.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

A Cisco rogue access point refers to an unauthorized wireless access point that has been installed on a network without the knowledge or approval of the network administrator.

These rogue access points can pose security risks to a network, and attackers can use them to gain unauthorized access, intercept sensitive information, or launch other malicious activities.

Cisco Wireless Intrusion Prevention System (WIPS) is a solution designed to identify and manage rogue access points.

A Cisco rogue client, also known as a rogue station or rogue device, refers to an unauthorized and potentially malicious wireless client device connected to a rogue access point.

Similar to rogue access points, rogue clients pose security risks because an attacker can connect to a network without proper authorization.

Cisco provides tools and solutions to help detect and mitigate the presence of rogue clients to maintain network security.

Scenarios

Scenario 1: Detect And Locate A Rogue Access Point

The next steps show you how to use the 9800 wireless controllers to help detect a rogue client or an access point that is not managed by the user network:

1. Use the wireless controller to find which of your access points detected the rogue device:

You can view the rogue access points or the rogue clients via GUI or CLI.

For the GUI, go to Monitoring tab, then Wireless, and choose Rogue, then you can use the filters to find your rogue device.

For the CLI, you can use the command **show wireless wps rogue ap summary** to view all detected rogue devices,

or you can use the command **show wireless wps rogue ap detailed <mac-addr>** to view the details on a specific rogue device.

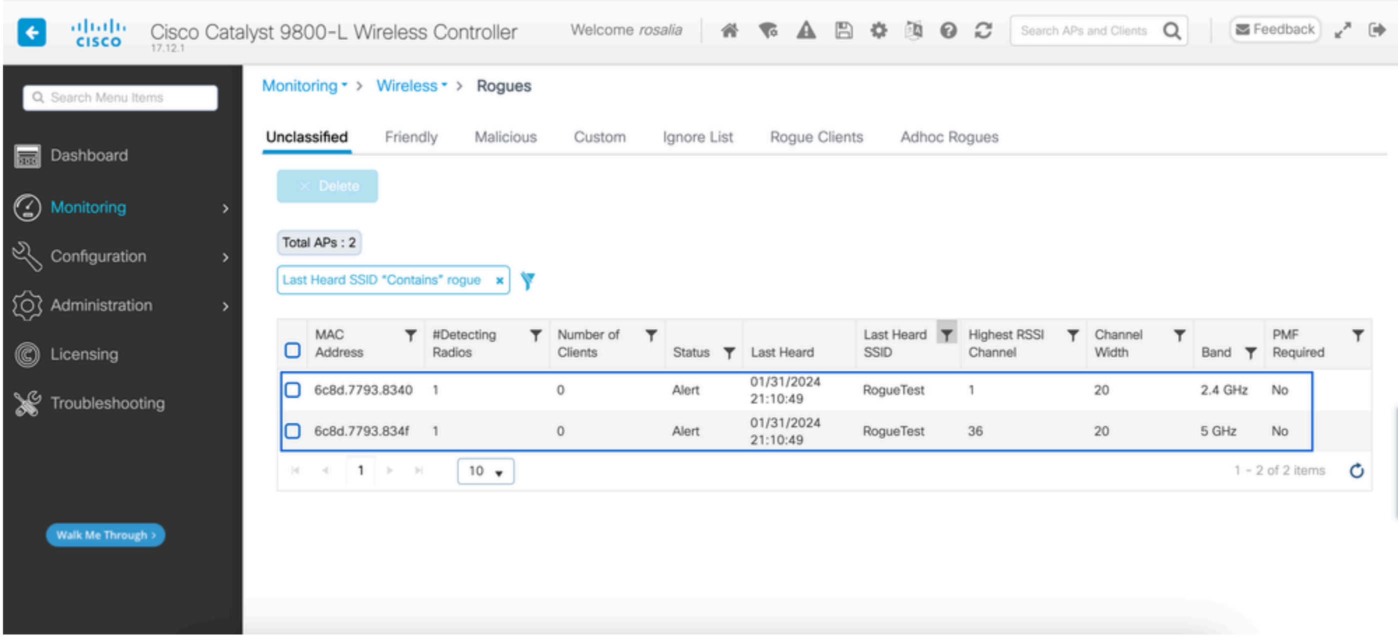
Here is the result from the CLI to view the list of the rogue devices via the command **show wireless wps rogue ap summary**:

```
9800L#show wireless wps rogue ap summary
Rogue Location Discovery Protocol : Disabled
Validate rogue APs against AAA : Disabled
Rogue Security Level : Custom
Rogue on wire Auto-Contain : Disabled
Rogue using our SSID Auto-Contain : Disabled
Valid client on rogue AP Auto-Contain : Disabled
Rogue AP timeout : 1200
Rogue init timer : 180

Total Number of Rogue APs : 137
MAC Address Classification State #APs #Clients Last Heard Highest-RSSI-Det-AP RSSI Channel Ch.Width GHz
---------------------------------------------------------------------------------------------------------
0014.d1d6.a6b7 Unclassified Alert 1 0 01/31/2024 21:28:09 1416.9d7f.a220 -85 1 20 2.4
002a.10d3.4f0f Unclassified Alert 1 0 01/31/2024 21:17:39 1416.9d7f.a220 -54 36 80 5
002a.10d4.b2e0 Unclassified Alert 1 0 01/31/2024 21:17:39 1416.9d7f.a220 -60 36 40 5
0054.afca.4d3b Unclassified Alert 1 0 01/31/2024 21:26:29 1416.9d7f.a220 -86 1 20 2.4
00a6.ca8e.ba80 Unclassified Alert 1 2 01/31/2024 21:27:20 1416.9d7f.a220 -49 11 20 2.4
00a6.ca8e.ba8f Unclassified Alert 1 0 01/31/2024 21:27:50 1416.9d7f.a220 -62 140 80 5
00a6.ca8e.bacf Unclassified Alert 1 0 01/31/2024 21:27:50 1416.9d7f.a220 -53 140 40 5
```

```
00f6.630d.e5c0 Unclassified Alert 1 0 01/31/2024 21:28:09 1416.9d7f.a220 -48 1 20 2.4
00f6.630d.e5cf Unclassified Alert 1 0 01/31/2024 21:27:40 1416.9d7f.a220 -72 128 20 5
04f0.212d.20a8 Unclassified Alert 1 0 01/31/2024 21:27:19 1416.9d7f.a220 -81 1 20 2.4
04f0.2148.7bda Unclassified Alert 1 0 01/31/2024 21:24:19 1416.9d7f.a220 -82 1 20 2.4
0c85.259e.3f30 Unclassified Alert 1 0 01/31/2024 21:21:30 1416.9d7f.a220 -63 11 20 2.4
0c85.259e.3f32 Unclassified Alert 1 0 01/31/2024 21:21:30 1416.9d7f.a220 -63 11 20 2.4
0c85.259e.3f3c Unclassified Alert 1 0 01/31/2024 21:27:30 1416.9d7f.a220 -83 64 20 5
0c85.259e.3f3d Unclassified Alert 1 0 01/31/2024 21:27:30 1416.9d7f.a220 -82 64 20 5
0c85.259e.3f3f Unclassified Alert 1 0 01/31/2024 21:27:30 1416.9d7f.a220 -82 64 20 5
12b3.d617.aac1 Unclassified Alert 1 0 01/31/2024 21:28:09 1416.9d7f.a220 -72 1 20 2.4
204c.9e4b.00ef Unclassified Alert 1 0 01/31/2024 21:27:40 1416.9d7f.a220 -59 116 20 5
22ad.56a5.fa54 Unclassified Alert 1 0 01/31/2024 21:28:09 1416.9d7f.a220 -85 1 20 2.4
4136.5afc.f8d5 Unclassified Alert 1 0 01/31/2024 21:27:30 1416.9d7f.a220 -58 36 20 5
5009.59eb.7b93 Unclassified Alert 1 0 01/31/2024 21:28:09 1416.9d7f.a220 -86 1 20 2.4
683b.78fa.3400 Unclassified Alert 1 0 01/31/2024 21:28:00 1416.9d7f.a220 -69 6 20 2.4
683b.78fa.3401 Unclassified Alert 1 0 01/31/2024 21:28:00 1416.9d7f.a220 -69 6 20 2.4
683b.78fa.3402 Unclassified Alert 1 0 01/31/2024 21:28:00 1416.9d7f.a220 -72 6 20 2.4
683b.78fa.3403 Unclassified Alert 1 0 01/31/2024 21:28:00 1416.9d7f.a220 -72 6 20 2.4
...
```

2. You can filter on one of the WLANs configured on your 9800 controller to see if you have any rogue devices that broadcasts the same WLANs.

The next figure shows the result where the C9130 detected this rogue on both bands:



Total APs : 2

Last Heard SSID "Contains" rogue

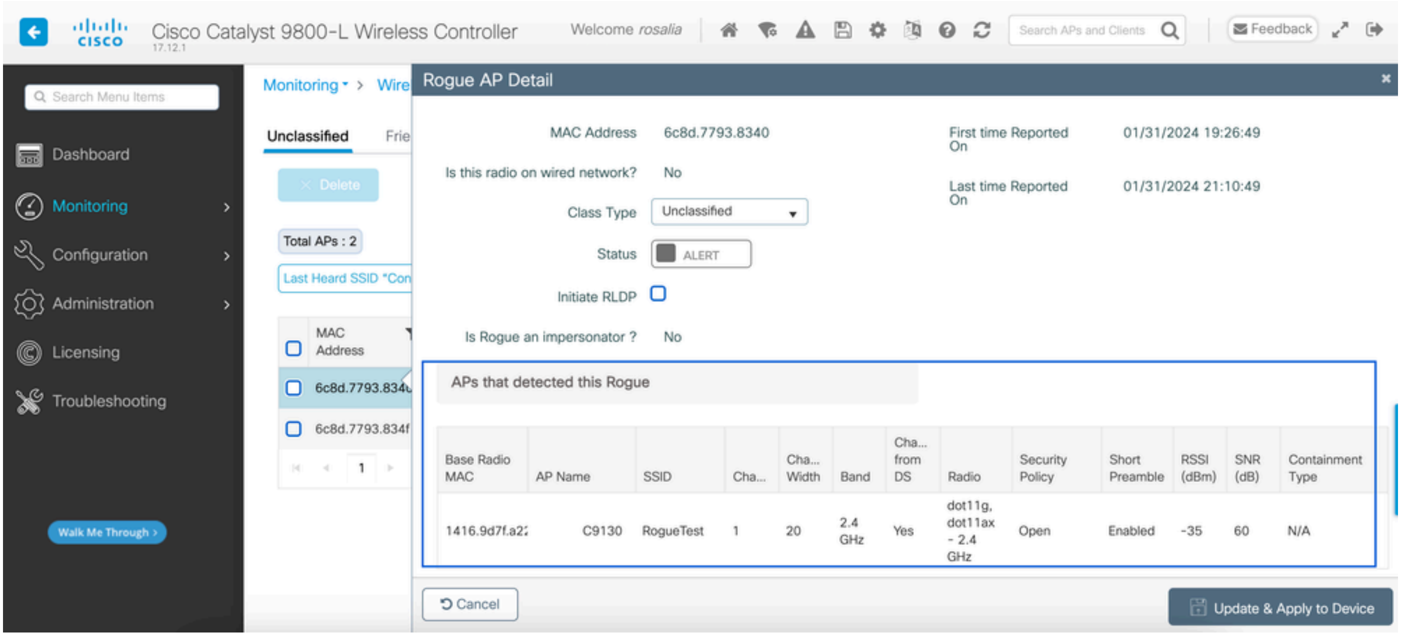
□	MAC Address	#Detecting Radios	Number of Clients	Status	Last Heard	Last Heard SSID	Highest RSSI Channel	Channel Width	Band	PMF Required
□	6c8d.7793.8340	1	0	Alert	01/31/2024 21:10:49	RogueTest	1	20	2.4 GHz	No
□	6c8d.7793.834f	1	0	Alert	01/31/2024 21:10:49	RogueTest	36	20	5 GHz	No

1 - 2 of 2 items

GUI Rogue List

3. List the access points that detected the rogue device.

The next figure shows the AP that detected this rogue, channel, RSSI value, and more information:



Rogue AP Detail

MAC Address 6c8d.7793.8340

Is this radio on wired network? No

Class Type Unclassified

Status ALERT

Initiate RLDP □

Is Rogue an impersonator ? No

First time Reported On 01/31/2024 19:26:49

Last time Reported On 01/31/2024 21:10:49

APs that detected this Rogue

Base Radio MAC	AP Name	SSID	Cha...	Cha... Width	Band	Cha... from DS	Radio	Security Policy	Short Preamble	RSSI (dBm)	SNR (dB)	Containment Type
1416.9d7f.a2:	C9130	RogueTest	1	20	2.4 GHz	Yes	dot11g, dot11ax - 2.4 GHz	Open	Enabled	-35	60	N/A

GUI Rogue AP Details

From the CLI you can view this information via the command **show wireless wps rogue ap detailed <mac-addr>**.

4. Find the closest access point to the rogue device based on the closest RSSI value.

Based on the results of how many access points detected the rogue device, you have to look for the closest AP based on the RSSI value displayed on the wireless controller.

In the next example only one AP detected the rogue, however with a high RSSI value, which means the rogue device is very nearby the AP.

The next is the output of command **show wireless wps rogue ap detailed <mac-addr>** to view the channel the AP/WLC heard this rogue device on, plus the RSSI value:

```
9800L#show wireless wps rogue ap detailed 6c8d.7793.834f
Rogue Event history

Timestamp #Times Class/State Event Ctx RC
-------------------------- -------- ----------- -------------------- ------------------------- ----
01/31/2024 22:45:39.814917 1154 Unc/Alert FSM_GOTO Alert 0x0
01/31/2024 22:45:39.814761 1451 Unc/Alert EXPIRE_TIMER_START 1200s 0x0
01/31/2024 22:45:39.814745 1451 Unc/Alert RECV_REPORT 1416.9d7f.a220/34 0x0
01/31/2024 22:45:29.810136 876 Unc/Alert NO_OP_UPDATE 0x0
01/31/2024 19:36:10.354621 1 Unc/Pend HONEYPOT_DETECTED 0x0
01/31/2024 19:29:49.700934 1 Unc/Alert INIT_TIMER_DONE 0xab98004342001907 0x0
01/31/2024 19:26:49.696820 1 Unk/Init INIT_TIMER_START 180s 0x0
01/31/2024 19:26:49.696808 1 Unk/Init CREATE 0x0


Rogue BSSID : 6c8d.7793.834f
Last heard Rogue SSID : RogueTest
802.11w PMF required : No
Is Rogue an impersonator : No
Is Rogue on Wired Network : No
Classification : Unclassified
Manually Contained : No
```

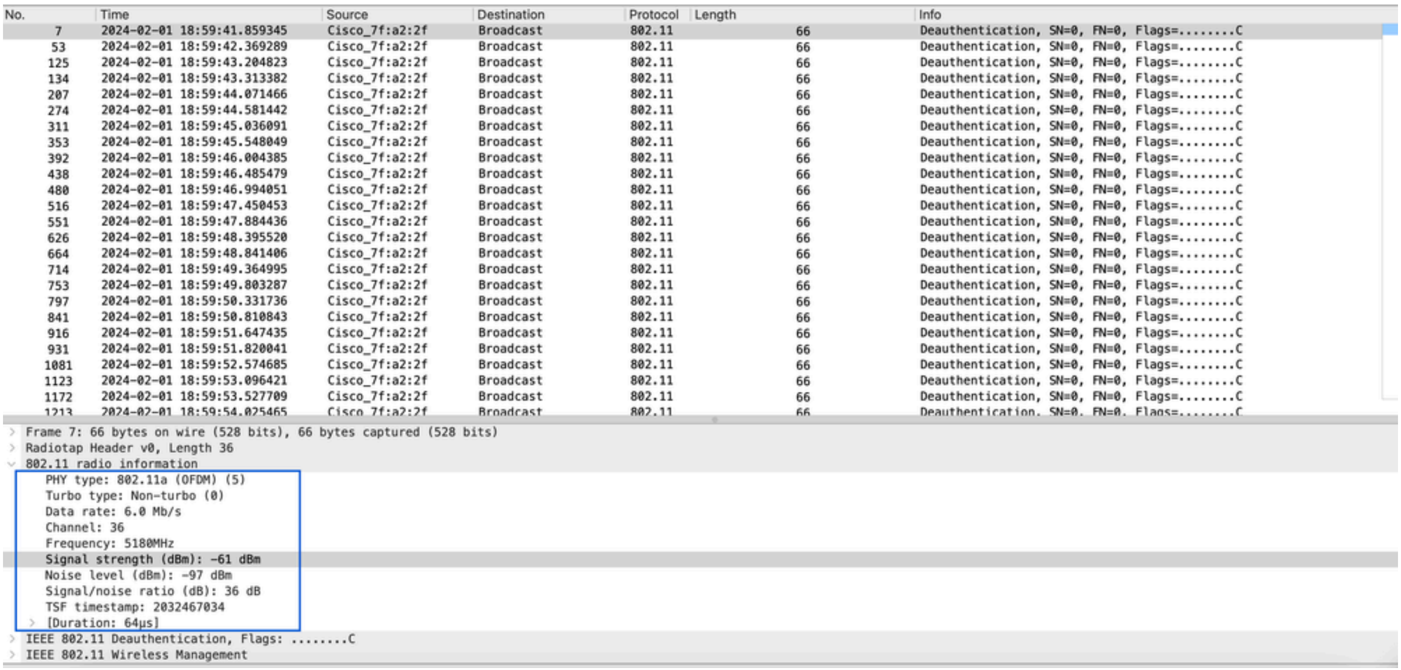
```
State : Alert
First Time Rogue was Reported : 01/31/2024 19:26:49
Last Time Rogue was Reported : 01/31/2024 22:45:39

Number of clients : 0

Reported By
AP Name : C9130
MAC Address : 1416.9d7f.a220
Detecting slot ID : 1
Radio Type : dot11ax - 5 GHz
SSID : RogueTest
Channel : 36 (From DS)
Channel Width : 20 MHz
RSSI : -43 dBm
SNR : 52 dB
ShortPreamble : Disabled
Security Policy : Open
Last reported by this AP : 01/31/2024 22:45:39
```

5. Collect over-the-air capture on the same channel to locate the rogue.

Now the channel where this rogue AP broadcasts is found, and based on the RSSI value, the 9130 access point heard this rogue at -35dBm, which is considered very close.

This gives you an idea on which area this rogue is located. The next step is to collect an over-the-air capture.

Next figure shows an over-the-air capture on channel 36, from the OTA You can see the rogue AP performs a containment de-authentication attack to the managed access point:



```
No.    Time                          Source            Destination   Protocol  Length  Info
   7   2024-02-01 18:59:41.859345   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
  53   2024-02-01 18:59:42.369289   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 125   2024-02-01 18:59:43.204823   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 134   2024-02-01 18:59:43.313382   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 207   2024-02-01 18:59:44.071466   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 274   2024-02-01 18:59:44.581442   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 311   2024-02-01 18:59:45.036091   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 353   2024-02-01 18:59:45.548049   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 392   2024-02-01 18:59:46.004385   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 438   2024-02-01 18:59:46.485479   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 480   2024-02-01 18:59:46.994051   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 516   2024-02-01 18:59:47.450453   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 551   2024-02-01 18:59:47.884436   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 626   2024-02-01 18:59:48.395520   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 664   2024-02-01 18:59:48.841406   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 714   2024-02-01 18:59:49.364995   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 753   2024-02-01 18:59:49.803287   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 797   2024-02-01 18:59:50.331736   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 841   2024-02-01 18:59:50.810843   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 916   2024-02-01 18:59:51.647435   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
 931   2024-02-01 18:59:51.820041   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
1081   2024-02-01 18:59:52.574685   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
1123   2024-02-01 18:59:53.096421   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
1172   2024-02-01 18:59:53.527709   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C
1213   2024-02-01 18:59:54.025465   Cisco_7f:a2:2f   Broadcast     802.11        66  Deauthentication, SN=0, FN=0, Flags=........C

> Frame 7: 66 bytes on wire (528 bits), 66 bytes captured (528 bits)
> Radiotap Header v0, Length 36
v 802.11 radio information
     PHY type: 802.11a (OFDM) (5)
     Turbo type: Non-turbo (0)
     Data rate: 6.0 Mb/s
     Channel: 36
     Frequency: 5180MHz
     Signal strength (dBm): -61 dBm
     Noise level (dBm): -97 dBm
     Signal/noise ratio (dB): 36 dB
     TSF timestamp: 2032467034
   > [Duration: 64µs]
> IEEE 802.11 Deauthentication, Flags: ........C
> IEEE 802.11 Wireless Management
```

Rogue AP OTA Capture

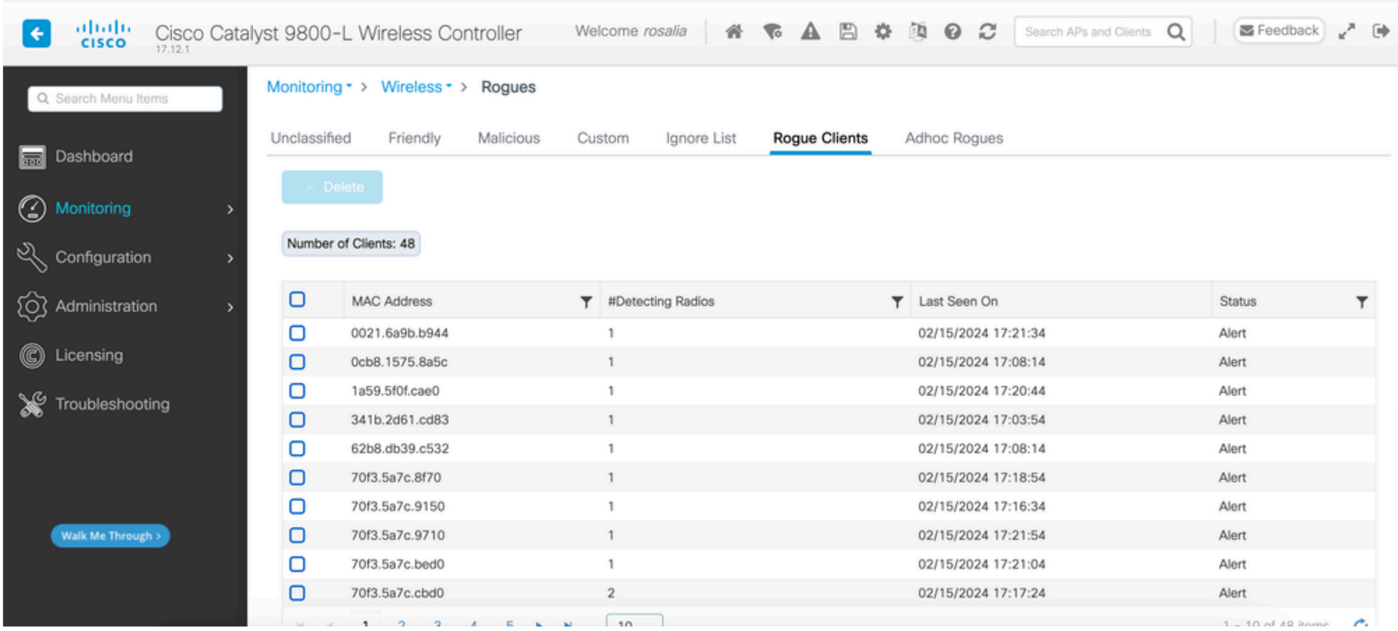
You can use the information from the previous figure to understand how close this rogue is, and at least you can have an idea where physically this rogue access point is located. You can filter via the rogue AP radio mac address, you would be able to see if the rogue is currently active or not if you check if you have beacon packets over the air.

Scenario 2: Detect and Locate a Rogue Client that sends an De-authentication Flood

The next steps show you how to use the 9800 wireless controller to find a rogue client connected to a rogue access point that is not managed by the user network or a rogue client who does an de-authentication attack:

1.Use the wireless controller to find the rogue client.

From the wireless controller GUI, navigate to the Monitoring tab, Wireless, then choose Rogue Clients, or you can use the command **show wireless wps rogue client summary** from the CLI to list down the rogue clients detected on the controller:



Number of Clients: 48

	MAC Address	#Detecting Radios	Last Seen On	Status
□	0021.6a9b.b944	1	02/15/2024 17:21:34	Alert
□	0cb8.1575.8a5c	1	02/15/2024 17:08:14	Alert
□	1a59.5f0f.cae0	1	02/15/2024 17:20:44	Alert
□	341b.2d61.cd83	1	02/15/2024 17:03:54	Alert
□	62b8.db39.c532	1	02/15/2024 17:08:14	Alert
□	70f3.5a7c.8f70	1	02/15/2024 17:18:54	Alert
□	70f3.5a7c.9150	1	02/15/2024 17:16:34	Alert
□	70f3.5a7c.9710	1	02/15/2024 17:21:54	Alert
□	70f3.5a7c.bed0	1	02/15/2024 17:21:04	Alert
□	70f3.5a7c.cbd0	2	02/15/2024 17:17:24	Alert

Rogue Client List GUI

Next output shows the CLI result:

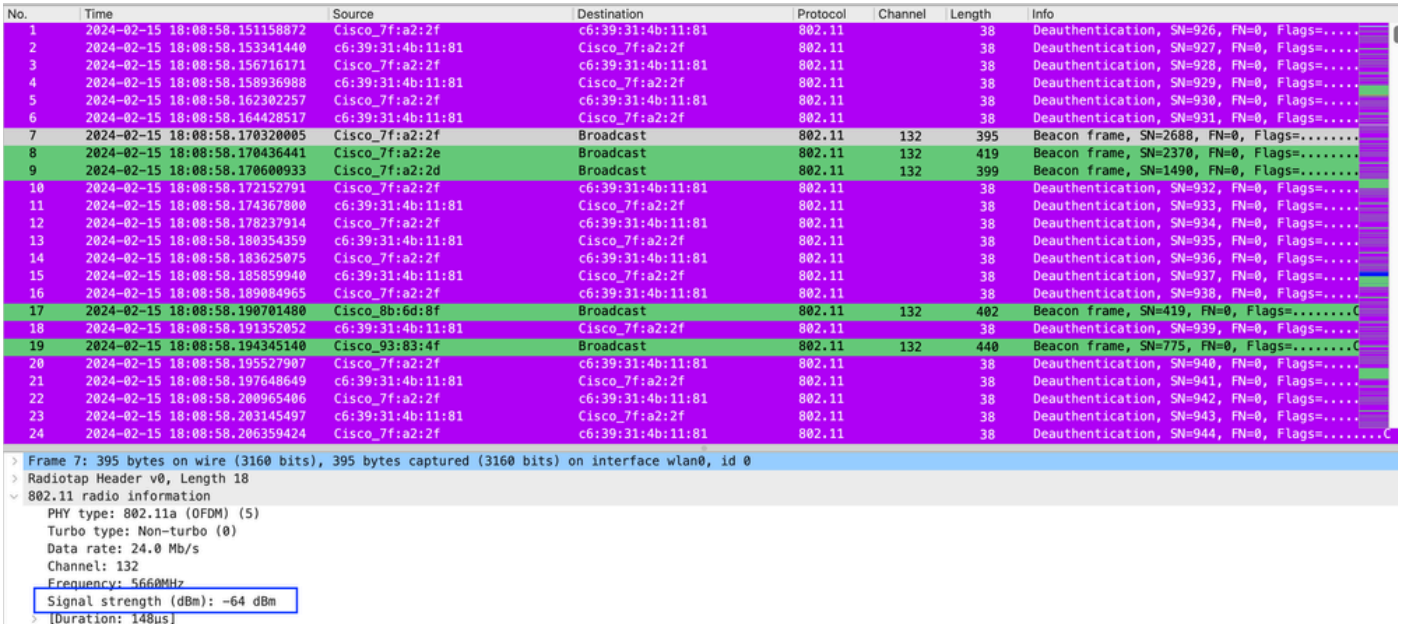
```
9800L#show wireless wps rogue client summary

Validate rogue clients against AAA : Disabled
Validate rogue clients against MSE : Disabled

Number of rogue clients detected : 49

MAC Address State # APs Last Heard
-------------------------------------------------------------------------
0021.6a9b.b944 Alert 1 02/15/2024 17:22:44
0cb8.1575.8a5c Alert 1 02/15/2024 17:08:14
1a59.5f0f.cae0 Alert 1 02/15/2024 17:20:44
341b.2d61.cd83 Alert 1 02/15/2024 17:03:54
62b8.db39.c532 Alert 1 02/15/2024 17:08:14
70f3.5a7c.8f70 Alert 1 02/15/2024 17:18:54
70f3.5a7c.9150 Alert 1 02/15/2024 17:23:04
70f3.5a7c.9710 Alert 1 02/15/2024 17:22:34
70f3.5a7c.bed0 Alert 1 02/15/2024 17:22:54
70f3.5a7c.cbd0 Alert 2 02/15/2024 17:17:24
70f3.5a7c.d030 Alert 1 02/15/2024 17:20:44
70f3.5a7c.d050 Alert 1 02/15/2024 17:20:44
```

```
70f3.5a7c.d0b0 Alert 1 02/15/2024 17:16:54
70f3.5a7c.d110 Alert 2 02/15/2024 17:18:24
70f3.5a7c.d210 Alert 1 02/15/2024 17:20:24
70f3.5a7c.d2f0 Alert 2 02/15/2024 17:23:04
70f3.5a7c.f850 Alert 1 02/15/2024 17:19:04
70f3.5a7f.8971 Alert 1 02/15/2024 17:16:44
...
```

2. The next output example shows the details about rogue client with mac address 0021.6a9b.b944, that was detected by a managed AP 9130 on channel 132. The next output shows more details:

```
9800L#show wireless wps rogue client detailed 0021.6a9b.b944

Rogue Client Event history

Timestamp #Times State Event Ctx RC
-------------------------- -------- ----------- -------------------- ------------------------- ----
02/15/2024 17:22:44.551882 5 Alert FSM_GOTO Alert 0x0
02/15/2024 17:22:44.551864 5 Alert EXPIRE_TIMER_START 1200s 0x0
02/15/2024 17:22:44.551836 5 Alert RECV_REPORT 0x0
02/15/2024 17:15:14.543779 1 Init CREATE 0x0

Rogue BSSID : 6c8d.7793.834f
SSID : Testing-Rogue
Gateway : 6c8d.7793.834f
Rogue Radio Type : dot11ax - 5 GHz
State : Alert
First Time Rogue was Reported : 02/15/2024 17:15:14
Last Time Rogue was Reported : 02/15/2024 17:22:44

Reported by
AP : C9130
MAC Address : 1416.9d7f.a220
Detecting slot ID : 1
RSSI : -83 dBm
SNR : 12 dB
Channel : 132
Last reported by this AP : 02/15/2024 17:22:44
```

3. After you collect an over-the-air capture on the same channel, you can see that you have a de-authenticated flood, where the rogue client uses one of the managed access point BSSID to disconnect clients:

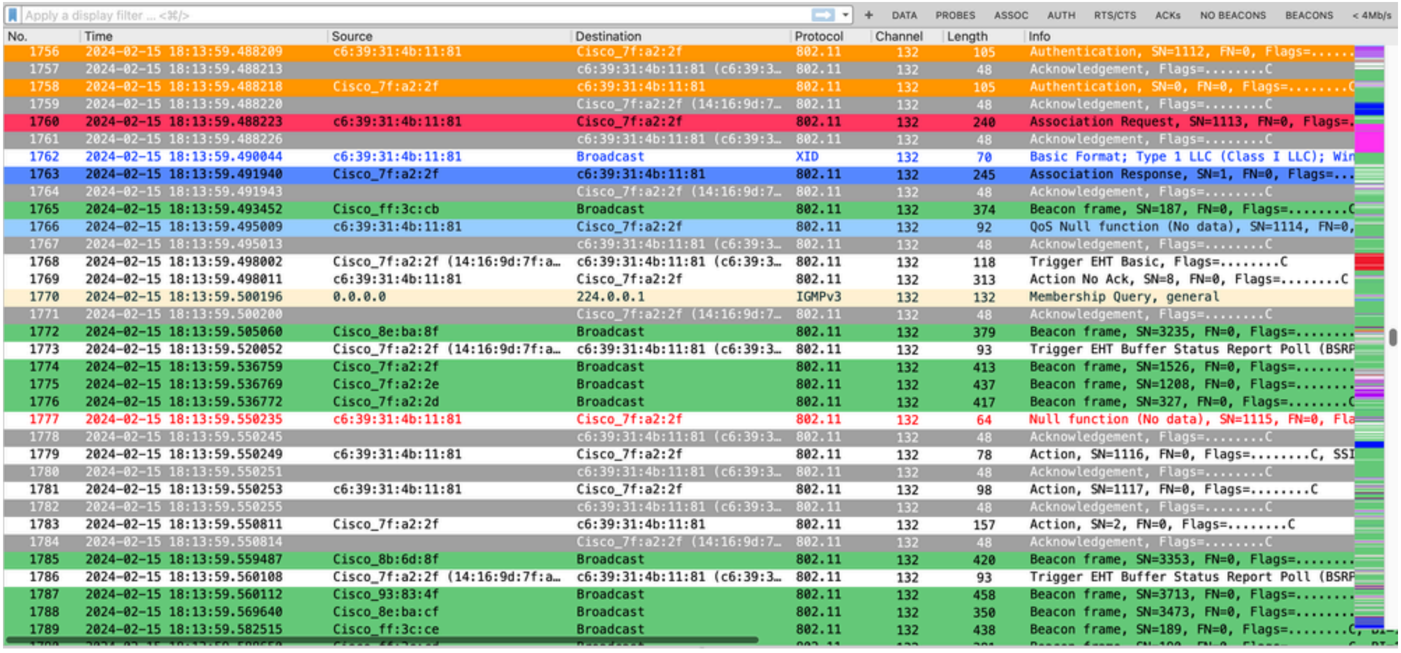


```
No.  Time                           Source              Destination         Protocol  Channel  Length  Info
1    2024-02-15 18:08:58.151158872  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=926, FN=0, Flags=.....
2    2024-02-15 18:08:58.153341440  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=927, FN=0, Flags=.....
3    2024-02-15 18:08:58.156716171  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=928, FN=0, Flags=.....
4    2024-02-15 18:08:58.158936988  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=929, FN=0, Flags=.....
5    2024-02-15 18:08:58.162302257  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=930, FN=0, Flags=.....
6    2024-02-15 18:08:58.164428517  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=931, FN=0, Flags=.....
7    2024-02-15 18:08:58.170320005  Cisco_7f:a2:2f      Broadcast           802.11    132      395     Beacon frame, SN=2688, FN=0, Flags=........
8    2024-02-15 18:08:58.170436441  Cisco_7f:a2:2e      Broadcast           802.11    132      419     Beacon frame, SN=2370, FN=0, Flags=........
9    2024-02-15 18:08:58.170600933  Cisco_7f:a2:2d      Broadcast           802.11    132      399     Beacon frame, SN=1490, FN=0, Flags=........
10   2024-02-15 18:08:58.172152791  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=932, FN=0, Flags=.....
11   2024-02-15 18:08:58.174367800  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=933, FN=0, Flags=.....
12   2024-02-15 18:08:58.178237914  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=934, FN=0, Flags=.....
13   2024-02-15 18:08:58.180354359  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=935, FN=0, Flags=.....
14   2024-02-15 18:08:58.183625075  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=936, FN=0, Flags=.....
15   2024-02-15 18:08:58.185859940  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=937, FN=0, Flags=.....
16   2024-02-15 18:08:58.189084965  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=938, FN=0, Flags=.....
17   2024-02-15 18:08:58.190701480  Cisco_8b:6d:8f      Broadcast           802.11    132      402     Beacon frame, SN=419, FN=0, Flags=........C
18   2024-02-15 18:08:58.191352052  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=939, FN=0, Flags=.....
19   2024-02-15 18:08:58.194345140  Cisco_93:83:4f      Broadcast           802.11    132      440     Beacon frame, SN=775, FN=0, Flags=........C
20   2024-02-15 18:08:58.195527907  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=940, FN=0, Flags=.....
21   2024-02-15 18:08:58.197648649  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=941, FN=0, Flags=.....
22   2024-02-15 18:08:58.200965406  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=942, FN=0, Flags=.....
23   2024-02-15 18:08:58.203145497  c6:39:31:4b:11:81   Cisco_7f:a2:2f      802.11             38      Deauthentication, SN=943, FN=0, Flags=.....
24   2024-02-15 18:08:58.206359424  Cisco_7f:a2:2f      c6:39:31:4b:11:81   802.11             38      Deauthentication, SN=944, FN=0, Flags=........C

> Frame 7: 395 bytes on wire (3160 bits), 395 bytes captured (3160 bits) on interface wlan0, id 0
> Radiotap Header v0, Length 18
v 802.11 radio information
    PHY type: 802.11a (OFDM) (5)
    Turbo type: Non-turbo (0)
    Data rate: 24.0 Mb/s
    Channel: 132
    Frequency: 5660MHz
    Signal strength (dBm): -64 dBm
  > [Duration: 148µs]
```

De-authentication OTA

The RSSI value for the packets is high, which means the rogue client is physically near the managed access point.

4. The next figure shows a clean network and a healthy environment over-the-air:



```
No.   Time                        Source                         Destination                    Protocol  Channel  Length  Info
1756  2024-02-15 18:13:59.488209  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      105     Authentication, SN=1112, FN=0, Flags=......
1757  2024-02-15 18:13:59.488213                                 c6:39:31:4b:11:81 (c6:39:3…    802.11    132      48      Acknowledgement, Flags=........C
1758  2024-02-15 18:13:59.488218  Cisco_7f:a2:2f                 c6:39:31:4b:11:81              802.11    132      105     Authentication, SN=0, FN=0, Flags=........C
1759  2024-02-15 18:13:59.488220                                 Cisco_7f:a2:2f (14:16:9d:7…    802.11    132      48      Acknowledgement, Flags=........C
1760  2024-02-15 18:13:59.488223  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      240     Association Request, SN=1113, FN=0, Flags=.
1761  2024-02-15 18:13:59.488226                                 c6:39:31:4b:11:81 (c6:39:3…    802.11    132      48      Acknowledgement, Flags=........C
1762  2024-02-15 18:13:59.490044  c6:39:31:4b:11:81              Broadcast                      XID       132      70      Basic Format; Type 1 LLC (Class I LLC); Win
1763  2024-02-15 18:13:59.491940  Cisco_7f:a2:2f                 c6:39:31:4b:11:81              802.11    132      245     Association Response, SN=1, FN=0, Flags=...
1764  2024-02-15 18:13:59.491943                                 Cisco_7f:a2:2f (14:16:9d:7…    802.11    132      48      Acknowledgement, Flags=........C
1765  2024-02-15 18:13:59.493452  Cisco_ff:3c:cb                 Broadcast                      802.11    132      374     Beacon frame, SN=187, FN=0, Flags=........C
1766  2024-02-15 18:13:59.495009  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      92      QoS Null function (No data), SN=1114, FN=0,
1767  2024-02-15 18:13:59.495013                                 c6:39:31:4b:11:81 (c6:39:3…    802.11    132      48      Acknowledgement, Flags=........C
1768  2024-02-15 18:13:59.498002  Cisco_7f:a2:2f (14:16:9d:7f:a…  c6:39:31:4b:11:81 (c6:39:3…    802.11    132      118     Trigger EHT Basic, Flags=........C
1769  2024-02-15 18:13:59.498011  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      313     Action No Ack, SN=8, FN=0, Flags=........C
1770  2024-02-15 18:13:59.500196  0.0.0.0                        224.0.0.1                      IGMPv3    132      132     Membership Query, general
1771  2024-02-15 18:13:59.500200                                 Cisco_7f:a2:2f (14:16:9d:7…    802.11    132      48      Acknowledgement, Flags=........C
1772  2024-02-15 18:13:59.505060  Cisco_8e:ba:8f                 Broadcast                      802.11    132      379     Beacon frame, SN=3235, FN=0, Flags=........
1773  2024-02-15 18:13:59.520052  Cisco_7f:a2:2f (14:16:9d:7f:a…  c6:39:31:4b:11:81 (c6:39:3…    802.11    132      93      Trigger EHT Buffer Status Report Poll (BSRP
1774  2024-02-15 18:13:59.536759  Cisco_7f:a2:2f                 Broadcast                      802.11    132      413     Beacon frame, SN=1526, FN=0, Flags=........
1775  2024-02-15 18:13:59.536769  Cisco_7f:a2:2e                 Broadcast                      802.11    132      437     Beacon frame, SN=1208, FN=0, Flags=........
1776  2024-02-15 18:13:59.536772  Cisco_7f:a2:2d                 Broadcast                      802.11    132      417     Beacon frame, SN=327, FN=0, Flags=........C
1777  2024-02-15 18:13:59.550235  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      64      Null function (No data), SN=1115, FN=0, Fla
1778  2024-02-15 18:13:59.550245                                 c6:39:31:4b:11:81 (c6:39:3…    802.11    132      48      Acknowledgement, Flags=........C
1779  2024-02-15 18:13:59.550249  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      78      Action, SN=1116, FN=0, Flags=........C, SSI
1780  2024-02-15 18:13:59.550251                                 c6:39:31:4b:11:81 (c6:39:3…    802.11    132      48      Acknowledgement, Flags=........C
1781  2024-02-15 18:13:59.550253  c6:39:31:4b:11:81              Cisco_7f:a2:2f                 802.11    132      98      Action, SN=1117, FN=0, Flags=........C
1782  2024-02-15 18:13:59.550255                                 c6:39:31:4b:11:81 (c6:39:3…    802.11    132      48      Acknowledgement, Flags=........C
1783  2024-02-15 18:13:59.550811  Cisco_7f:a2:2f                 c6:39:31:4b:11:81              802.11    132      157     Action, SN=2, FN=0, Flags=........C
1784  2024-02-15 18:13:59.550814                                 Cisco_7f:a2:2f (14:16:9d:7…    802.11    132      48      Acknowledgement, Flags=........C
1785  2024-02-15 18:13:59.559487  Cisco_8b:6d:8f                 Broadcast                      802.11    132      420     Beacon frame, SN=3353, FN=0, Flags=........
1786  2024-02-15 18:13:59.560108  Cisco_7f:a2:2f (14:16:9d:7f:a…  c6:39:31:4b:11:81 (c6:39:3…    802.11    132      93      Trigger EHT Buffer Status Report Poll (BSRP
1787  2024-02-15 18:13:59.560112  Cisco_93:83:4f                 Broadcast                      802.11    132      458     Beacon frame, SN=3713, FN=0, Flags=........
1788  2024-02-15 18:13:59.569640  Cisco_8e:ba:cf                 Broadcast                      802.11    132      350     Beacon frame, SN=3473, FN=0, Flags=........
1789  2024-02-15 18:13:59.582515  Cisco_ff:3c:ce                 Broadcast                      802.11    132      438     Beacon frame, SN=189, FN=0, Flags=........C, BI=
```

Healthy OTA

Related Information

- [Managing Rogue Devices]()
- [Classifying Rogue Access Points]()
- [Analyze and Troubleshoot 802.11 Wireless Sniffing]()
- [Cisco Technical Support & Downloads]()