Cisco Catalyst IW9167I Heavy Duty Access Point Software Configuration Guide, Cisco IOS XE 26.1.x

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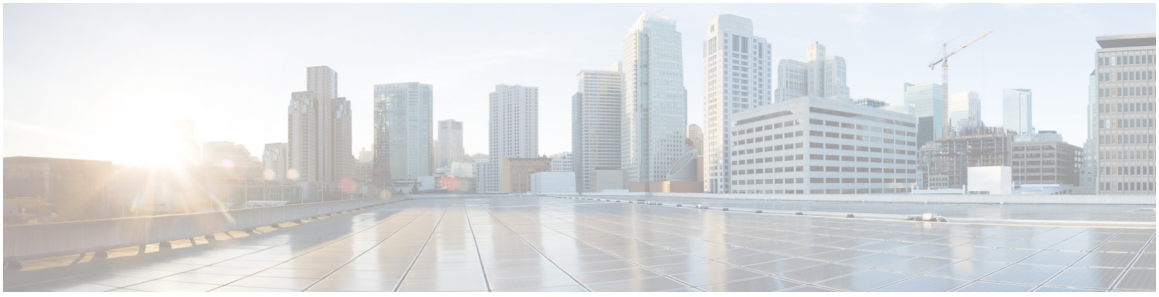

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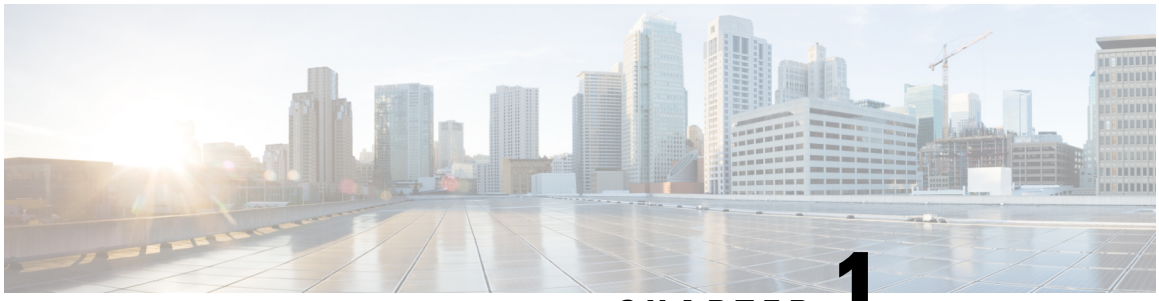


CHAPTER 1

Introduction

Overview of the Access Point

The Cisco Catalyst IW9167I Heavy Duty Access Point (IW9167I) is a robust wireless device designed for outdoor and industrial environments, featuring a durable cast-aluminum case and built-in antenna for high-throughput connectivity.

- Supports Wi-Fi 6 and 6-GHz hardware for Wi-Fi 6E deployments, providing up to 1.2 GHz additional spectrum.
- Operates in multiple CAPWAP AP modes: Local, Flexconnect, Sniffer, Monitor, and Site survey.

Supported features and deployment information

The IW9167I is engineered for reliable wireless connectivity in challenging environments, offering advanced features and flexible deployment options.

- Cast-aluminum enclosure for protection against water, dust, and extreme temperatures
- Built-in antenna for high-density Wi-Fi client support
- Wi-Fi 6E support for increased capacity and reduced interference

The IW9167I access point can operate in multiple modes, each tailored for specific deployment scenarios and requirements.

- **Local mode** : The default mode where the AP serves clients, creating two CAPWAP tunnels (management and data) to the controller for central switching.
- **Flexconnect mode** : Data traffic is switched locally, not sent to the controller. The AP behaves like an autonomous AP but is managed by the controller and continues to function if the controller connection is lost.
- **Sniffer mode** : The AP captures and forwards all client packets on a given channel to a remote machine running packet analyzers such as Airopeek or Wireshark, including details like timestamp, signal strength, and packet size.

Note In sniffer mode, the server receiving the data must be on the same VLAN as the wireless controller management VLAN; otherwise, an error message is displayed.

- **Monitor mode** : The AP acts as a dedicated sensor for location-based services, rogue AP detection, and intrusion detection, without serving client data traffic.
- **Site Survey mode** : The AP GUI is enabled for configuring RF parameters during site survey investigations. For more information, see the Access Points Survey Mode section in the *Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide* .

For more information about configuring the AP on the Wireless Controller, see the Cisco Catalyst 9800 Series Wireless Controller Software Configuration Guide .

Related Documentation

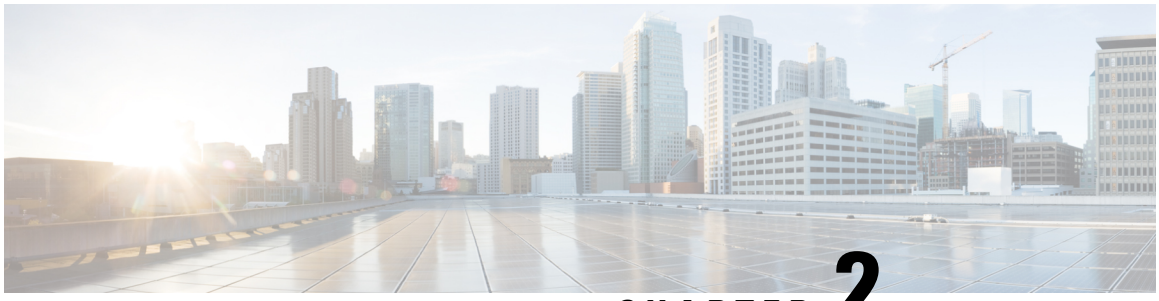
This topic provides links and references to additional documentation and support resources for the Cisco Catalyst IW9167I Heavy Duty Access Point.

To view all support information for the Cisco Catalyst IW9167I Heavy Duty Access Point, see https://www.cisco.com/c/en/us/support/wireless/catalyst-iw9167-series/series.html .

In addition to the documentation available on the support page, you will need to refer to the following guides:

- For information about IW9167I hardware, see *Cisco Catalyst IW9167I Heavy Duty Access Point Hardware Installation Guide* .
- A full listing of the AP's features and specifications is provided in Cisco Catalyst IW9167 Heavy Duty Series Data Sheet .
- For more information about the configuration on Cisco Catalyst 9800 Series Wireless Controllers, see https://www.cisco.com/c/en/us/support/wireless/catalyst-9800-series-wireless-controllers/products-installation-and-configuration-guides-list.html .
- For more information about Cisco IOS XE, see the relevant documents at:

  http://www.cisco.com/c/en/us/products/ios-nx-os-software/ios-xe/index.html



CHAPTER 2

Configure Indoor Deployment

Indoor deployment

From IOS XE Release 17.12, IW9167IH supports indoor deployment for -E and -ROW(GB) domains.

Table 1: Domains and countries cupporting indoor deployment

PID	Description
IW9167IH-E	EU domain
IW9167IH-ROW (GB)	ROW domain configured with the GB country code

The -E and -ROW(GB) domains support U-NII-2C (excludes channel 144). Indoor deployment involves U-NII-1 and U-NII-2A to channel list.

When indoor deployment is disabled, 5G radio supports channels 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

When indoor deployment is enabled, 5G radio supports channels 36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140.

Enable indoor mode

This procedure describes how to enable indoor mode using the wireless controller.

Procedure

Use the **ap name** *ap-name* **indoor** command to enable the indoor mode.

Example:

```
Device# ap name ap-1 indoor
```

This command causes the AP to reboot. Once the AP has rebooted and registered with the wireless controller, assign the appropriate country code to the AP.

Disable indoor mode

This procedure describes how to disable indoor mode on the AP.

Procedure

Use the **ap name** *ap-name* **no indoor** command to disable the indoor mode.

Example:

```
Device# ap name ap-1 no indoor
```

Verify the indoor deployment of an access point

This procedure describes how to verify the indoor deployment using **show** commands.

Procedure

Use the **show ap name** *ap-name* **config general | inc Indoor** command on the device to check the indoor deployment status.

Example:

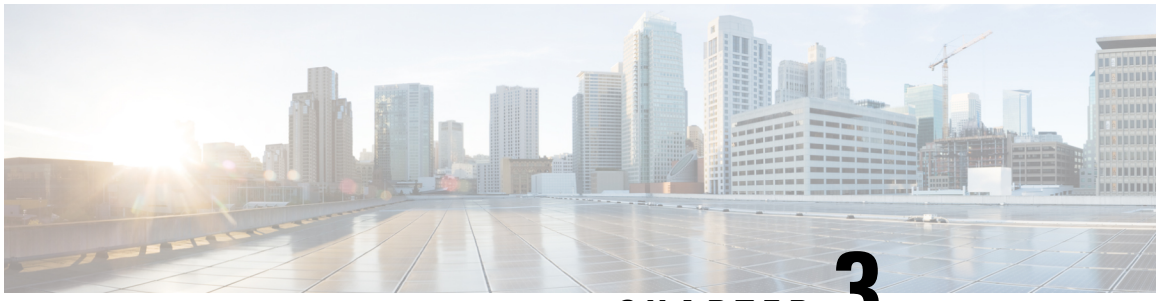
```
Device# show ap name ap-1 config general | inc Indoor
```

The following is a sample output when the indoor deployment is enabled:

```
AP Indoor Mode                                  : Enabled
```

The following is a sample output when the indoor deployment is disabled:

```
AP Indoor Mode                                  : Disabled
```



CHAPTER 3

6 GHz Low Power Indoor AP Support for EU and United Kingdom

6 GHz low power indoor AP support for EU and United Kingdom

Starting from IOS XE Release 17.12, IW9167I access points can operate in low power indoor mode in the EU and United Kingdom.

- Available for IW9167IH-E and IW9167IH-ROW (GB) models.
- Supports only the U-NII-5 sub channel lists (5925MHz - 6425MHz) in the Wi-Fi 6E band.
- Applicable for deployments in the EU and United Kingdom regions.

Supported models and channel information for LPI mode

Only IW9167IH-E and IW9167IH-ROW (GB) can be configured as an indoor AP in LPI mode for the EU and United Kingdom. In this mode, only the U-NII-5 sub channel lists (5925MHz - 6425MHz) in the Wi-Fi 6E band are supported.

For more information about the Wi-Fi 6E band, see Wi-Fi 6E: The Next Great Chapter in Wi-Fi White Paper .

Enable 6 GHz low power indoor mode

This procedure describes how to enable IW9167I 6 GHz LPI mode.

Procedure

Step 1 Use the **show ap summary** command to verify that the access point PID is either IW9167IH-E or IW9167IH-ROW (GB).

```
Device# show ap summary

Number of APs: 2
CC = Country Code
RD = Regulatory Domain
AP Name          Slots AP Model  Ethernet MAC    Radio MAC      CC   RD  IP Address     State
Location
-------------------------------------------------------------------------------------------------------------
APFC58.9A17.0F14 3     IW9167IH-E fc58.9a17.0f14  fc58.9a17.11a0 DE   -E 192.168.57.102 Registered
default location

APFC58.9A17.E640 3     IW9167IH-E fc58.9a17.e640  fc58.9a17.ec00 DE   -E 192.168.57.101 Registered
default location
```

Step 2 Configure the AP to indoor mode, see Enable indoor mode, on page 3 .

Step 3 Use the **ap name** *ap-name* **no dot11 6ghz slot** *slot* **shutdown** command to configure 6 GHz radio.

```
Device# ap name APFC58.9A17.0F14 no dot11 6ghz slot 2 shutdown
```

Step 4 Use the **ap name** *ap-name* **dot11 6ghz slot** *slot* **channel** *channel* command to configure 6 GHz radio channel.

```
Device# ap name APFC58.9A17.0F94 dot11 6ghz slot 2 channel 33
```

Step 5 Use the **ap name** *ap-name* **dot11 6ghz slot** *slot* **channel width***width* command to configure 6 GHz radio width.

```
Device# ap name APFC58.9A17.0F94 dot11 6ghz slot 2 channel width 80
```

Verify 6 GHz low power indoor

This procedure describes how to verify the 6 GHz LPI configuration

Procedure

Step 1 Use the **show ap dot11 6ghz summary** command on the wireless controller.

Example:

```
Controller# show ap dot11 6ghz summary
* global assignment

AP Name            Mac Address    Slot Admin State Oper State Width Txpwr         Channel Mode
-------------------------------------------------------------------------------------------------
APFC58.9A17.0F14  fc58.9a17.11a0  2    Enabled     Up         80     1/8 (17 dBm) (33,37,41,45)
                           LOCAL
```

Step 2 Use the **show controllers dot11Radio 2 frequency** command on the AP to view the supported U-NII-5 sub channel lists in LPI mode within the Wi-Fi 6E band.

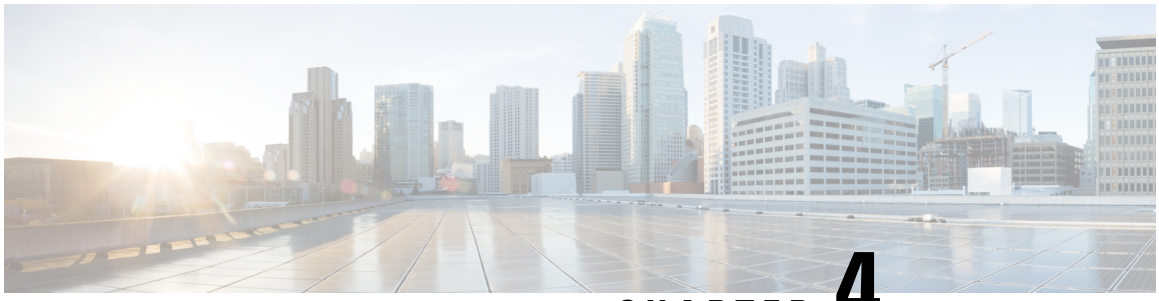
Example:

```
AP# show controllers dot11Radio 2 frequency

Configured Frequency: 6115Mhz Channel: 33 20MHz
Serving Frequency: 6115Mhz Channel: 33 20MHz
Allowed Frequency:
5955MHz(  1)  5975MHz(  5)  5995MHz(  9)  6015MHz( 13)  6035MHz( 17)
6055MHz( 21)  6075MHz( 25)  6095MHz( 29)
6115MHz( 33)  6135MHz( 37)  6155MHz( 41)  6175MHz( 45)  6195MHz( 49)
6215MHz( 53)  6235MHz( 57)  6255MHz( 61)
6275MHz( 65)  6295MHz( 69)  6315MHz( 73)  6335MHz( 77)  6355MHz( 81)
6375MHz( 85)  6395MHz( 89)  6415MHz( 93)
```

What to do next

For more configuration commands of Wi-Fi 6E band operation, see Configure and Verify Wi-Fi 6E Band Operations and Client Connectivity.



CHAPTER 4

AFC Support for 6 GHz Standard Power Mode

AFC support for 6 GHz standard power mode

The Automated Frequency Coordination (AFC) 6 GHz Standard Power mode enables Cisco Catalyst IW9167I access points to operate in designated frequency bands with regulated power, coordinated through an AFC service.

- Standard power APs must obtain available frequencies and power levels from the AFC system before activation.
- The AFC system determines allowable frequencies and maximum power based on regulatory information (FCC for the United States and ISED for Canada).
- Transmission power is limited to a maximum of 36 dBm EIRP, and operation is permitted in specific UNII frequency bands.

Reference information for AFC 6 GHz standard power mode

The Cisco Catalyst IW9167I supports AFC 6 GHz Standard Power mode, requiring APs to coordinate with the AFC system for frequency and power assignments. The AFC system uses regulatory data and AP characteristics to model interference and assign channels.

- Standard power APs coordinate through an AFC service using AP location and antenna data to avoid interference.
- In the U.S., operation is allowed in the UNII-5 (5.925–6.425 GHz) and UNII-7 (6.525–6.875 GHz) bands.
- From Release 17.18.1, the -A (Canada) domain supports standard power using AFC in the UNII-5, UNII-6, and UNII-7 bands (5.925–6.875 GHz).

Table 2: Radio 6 GHz Power Mode Support

Deployment Mode	Low-power Indoor Support	Standard Power Support
Outdoor	No	Yes

Table 3: 6 GHz Target Power

Antenna Gain	Max Conducted per Path Power (SP/AFC)		Tx x Rx Chains	Max EIRP (SP/AFC)
	20-80 MHz	160 MHz		
5 dBi	10 dBm	10 dBm	4x4	21 dBm

Verify AFC status on an AP

This procedure describes how to verify the AFC request and response data, as well as the current operating power mode, on an AP using commands.

Procedure

Step 1 Use the **show rrm afc** command to verify the AFC request and response data on the AP.

Example:

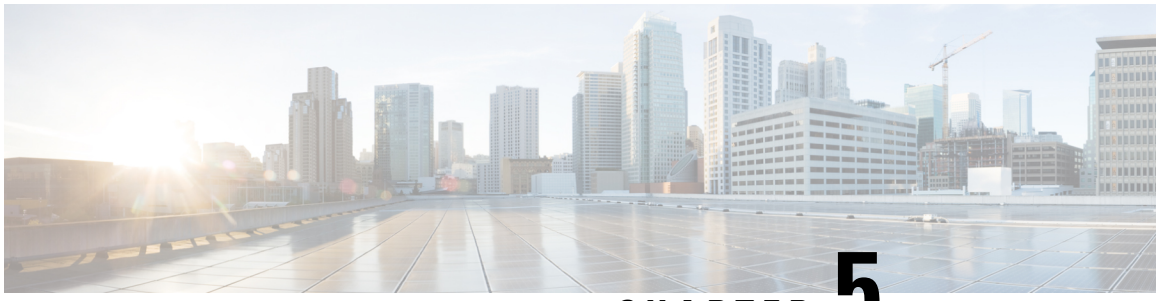
```
Device# show rrm afc

Location Type: 1
Deployment Type: 2
Height: 129
Uncertainty: 5
Height Type: 0
Request Status: 5
Request Status Timestamp: 2023-08-31T06:20:17Z
Request Id Sent: 5546388983266789933
Ellipse 1: longitude: -121.935066 latitude: 37.512830 major axis: 43 minor axis:
9 orientation: 36.818100
AFC Response Request ID: 5546388983266789933
AFC Response Ruleset ID: US_47_CFR_PART_15_SUBPART_E
```

Step 2 Use the **show controllers dot11Radio 2 | i Radio** command to verify the current operating power mode.

Example:

```
Device# show controllers dot11Radio 2 | i Radio
Dot11Radio2     Link encap:Ethernet  HWaddr 24:16:1B:F8:06:C0
Radio Info Summary:
Radio: 6.0GHz (SP)
```



CHAPTER 5

Mesh Support

Mesh support

Mesh support enables the IW9167IH AP to operate in bridge or flex+bridge modes, extending wireless networks through mesh backhaul on both 2.4 GHz and 5 GHz frequencies.

- Supports bridge and flex+bridge modes for flexible deployment.
- Allows mesh backhaul using 2.4 GHz and 5 GHz frequencies.
- Enables point-to-point, point-to-multipoint, and mesh network topologies for indoor and outdoor environments.

Mesh support configuration and operational details

From Cisco IOS XE 17.15.1 release, the IW9167IH AP supports bridge or flex+bridge modes, extending the wireless network through mesh backhaul that supports both 2.4 GHz and 5 GHz frequencies.

Note Disable the 6 GHz radio before configuring the IW9167IH APs in bridge or flex+bridge mode. Enable the 6 GHz radio only when the IW9167IH APs are not in bridge or flex+bridge mode.

This feature allows rapid transitions between bridge and flex+bridge modes. When you run the **ap name IW9167IAP mode bridge** command, the AP automatically reboots and transitions to bridge or flex+bridge mode.

Note When issuing the **ap name IW9167IAP mode bridge** command while the AP is in local mode, the AP automatically reboots and switches to bridge mode. Similarly, when issuing the **ap name IW9167IAP mode bridge** command while the AP is in flex mode, the AP automatically reboots and switches to flex + bridge mode.

In bridge mode, APs can wirelessly form a point-to-point or point-to-multipoint bridge. As a result, APs in bridge mode can connect to different locations. Several APs can also create a mesh network for indoor or outdoor environments.

The flex+bridge mode enables FlexConnect capabilities on mesh (bridge mode) APs.

For information on configuring mesh on Catalyst 9800 Wireless Controllers, see the Configure Mesh on Catalyst 9800 Wireless LAN Controllers .

Configure the Bridge mode

This procedure describes how to configure the bridge mode on the wireless controller.

Procedure

Step 1 Use the **ap name** *ap-name* **mode bridge** command to change AP to bridge mode.

```
Controller# ap name IW9167IAP mode bridge
```

Step 2 (Optional) Use the **ap name** *ap-name* **mode clear** command to return or reset the AP from bridge mode back to local or flexconnect mode.

```
Controller# ap name IW9167IAP mode clear
```

Verify Bridge mode on a Wireless Controller

This procedure describes how to to view the AP mode and model details.

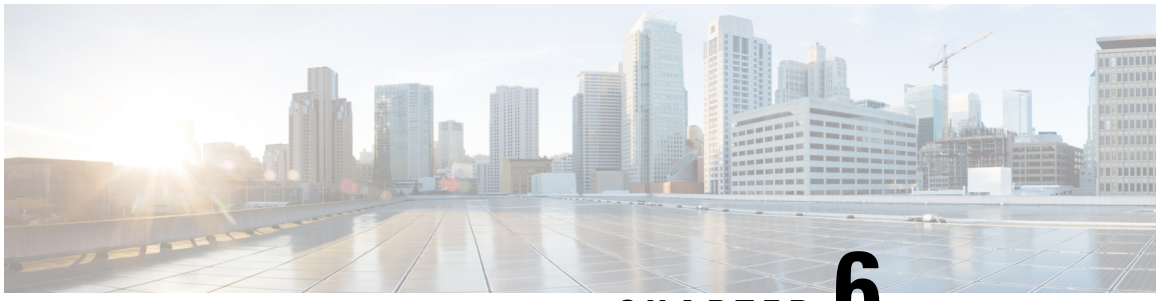
Procedure

Use the **show ap name** *ap-name* **config general** command on the wireless controller to view the AP mode and model details.

Example:

```
Controller# show ap name IW9167IAP config general

    AP Mode                                 : Bridge
    AP Model                              : IW9167IH-B                                : IW9167IH-B
```



CHAPTER 6

GNSS

GNSS

With Release 26.1.1, two GNSS enhancements are available: an option to enable or disable GNSS from the controller, and improved output for the **show gnss info** command, offering more detailed runtime status and diagnostics.

Disable GNSS

From release 26.1.1, you can dynamically disable the GNSS service on a specific access point. This capability is especially useful when weak satellite signals could cause an AP to report inaccurate coordinates. By disabling GNSS in such cases, you can prevent incorrect location data from affecting the system and ensure the AP uses an alternative location source.

Use this procedure on the controller to disable the GNSS service.

Procedure

Use the **ap name** *ap-name* **geolocation gnss shutdown** command to specify the AP and disable the GNSS service on that AP.

Example:

```
Device# ap name AP-BLR-01 geolocation gnss shutdown
```

The configuration persists across AP reboots.

Enable GNSS

Use this procedure on the controller to enable the GNSS service.

Procedure

Use the **ap name** *ap-name* **no geolocation gnss shutdown** command to specify the AP and enable the GNSS service on that AP.

Example:

```
Device# ap name AP-BLR-01 no geolocation gnss shutdown
```

Check the status of the GNSS module

Starting with release 26.1.1, you can set the state of the GNSS module to administratively down. Use this procedure on the AP to check the status of the GNSS module.

Procedure

Use the **show gnss info** command to view the status of the GNSS module.

Example:

```
Device# show gnss info

GNSS State Down
```

GNSS status and diagnostics

The updated **show gnss info** command now includes more detailed runtime GNSS status and diagnostics including satellite distribution, signal quality, number of satellites, location, uncertainty ellipse and more.

A sample output is provided.

```
AP# show gnss info

GnssState: Started
ExternalAntenna: true
Fix: 3D-Fix ValidFix: true Time: 2022-01-01 00:01:01
Latitude: 37.4080 Longitude: -121.9530
HorAcc: 0 hDOP: 0.84
Uncertainty Ellipse:
 Major axis: 0 Minor axis: 0 Orientation: 0
Altitude MSL: 176.4 HAE: 0 VertAcc: 0
```

```
NumSat: 10
pDOP: 1.75 hDOP: 0.84 vDOP: 1.54 nDOP: 99.99 eDOP: 99.99 gDOP: 99.99 tDOP: 99.99
LastFixTime: 2022-01-01 00:01:00
SatelliteCount: 4

Const.    SatId CNO   Elev. Azim.
GPS       1     47    28    110
GPS       7     44    55    127
GPS       8     45    19    44
GPS       9     42    3     175

GNSS_PostProcessor:
Latitude: 37.4080 Longitude: -121.9530
HorAcc: 32.413618 hDOP: 18.628516
Uncertainty Ellipse:
 Major axis: 44.269861 Minor axis: 10.924539 Orientation: 141.70748
Altitude MSL: 360.78333 HAE: 0 VertAcc: 0

CiscoGNSS: N/A

Last Location Acquired:
Latitude: 37.4080 Longitude: -121.9530
HorAcc: 3.6618832 hDOP: 2.1045306
Uncertainty Ellipse:
 Major axis: 5.151356 Minor axis: 0.00035979961 Orientation: 146.63993
Altitude MSL: 310.9 HAE: 0 VertAcc: 0
Derivation Type: GNSS_PostProcessor
Time: 2025-10-05 01:28:46
```