



Configuring Location Settings

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Finding Feature Information

Your software release may not support all of the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <http://www.cisco.com/go/cfn>. An account on Cisco.com is not required.

Information About Configuring Location Settings

The switch determines the location of client devices by gathering Received Signal Strength Indication (RSSI) measurements from access points all around the client of interest. The switch can obtain location reports from up to 16 access points for clients, RFID tags, and rogue access points.

You can configure the path loss measurement (S60) request for normal clients or calibrating clients to improve location accuracy.

How to Configure Location Settings

Configuring Location Settings (CLI)

SUMMARY STEPS

1. `configure terminal`
2. `location plm {calibrating [multiband | uniband] | client burst_interval}`
3. `location rssi-half-life {calibrating-client | client | rogue-aps | tags } seconds}`
4. `location expiry {calibrating-client | client | rogue-aps | tags } timeout}`
5. `location algorithm {rssi-average | simple}`
6. `location admin-tag string}`
7. `location civic-location identifier {identifier | host}`
8. `location custom-location identifier {identifier | host}`
9. `location geo-location identifier {identifier | host}`
10. `location prefer {cdp | lldp-med | static} weight priority_value}`
11. `location rfid {status | timeout | vendor-name}`
12. `end`

DETAILED STEPS

| | Command or Action | Purpose |
|--------|---|--|
| Step 1 | <p><code>configure terminal</code></p> <p>Example: Switch# <code>configure terminal</code></p> | Enters global configuration mode. |
| Step 2 | <p><code>location plm {calibrating [multiband uniband] client <i>burst_interval</i>}</code></p> <p>Example: Switch(config)# <code>location plm client 100</code></p> | <p>Configures the path loss measurement (S60) request for calibrating clients or non-calibrating.</p> <p>The path loss measurement request improves the location accuracy. You can configure the burst_interval parameter for the normal, noncalibrating client from zero through 3600 seconds, and the default value is 60 seconds.</p> <p>You can configure the path loss measurement request for calibrating clients on the associated 802.11a or 802.11b/g radio or on the associated 802.11a/b/g radio.</p> <p>If a client does not send probes often or sends them only on a few channels, its location cannot be updated or cannot be updated accurately. The location plm command forces clients to send more packets on all channels. When a CCXv4 (or higher) client associates, the Switch sends it a path loss measurement request, which instructs the client to transmit on the bands and channels that the access points are on (typically, channels 1, 6, and 11 for 2.4-GHz-only access points) at a configurable interval (such as 60 seconds) indefinitely.</p> |

| | Command or Action | Purpose |
|--------|--|---|
| Step 3 | <p>location rssi-half-life {<i>calibrating-client</i> <i>client</i> <i>rogue-aps</i> <i>tags</i>} <i>seconds</i></p> <p>Example: <pre>Switch(config)# location rssi-half-life calibrating-client 60</pre></p> | <p>Configures the RSSI half life for the clients, calibrating clients, RFID tags, and rogue access points.</p> <p>You can enter the location rssi-half-life parameter value for the clients, calibrating clients, RFID tags, and rogue access points as 0, 1, 2, 5, 10, 20, 30, 60, 90, 120, 180, or 300 seconds, and the default value is 0 seconds.</p> <p>Some client devices transmit at reduced power immediately after changing channels, and RF is variable, so RSSI values might vary considerably from packet to packet. The location rssi-half-life command increases accuracy by averaging nonuniformly arriving data using a configurable forget period (or half life).</p> <p>Note We recommend that you do not use or modify the location rssi-half-life command.</p> |
| Step 4 | <p>location expiry {<i>calibrating-client</i> <i>client</i> <i>rogue-aps</i> <i>tags</i>} <i>timeout</i></p> <p>Example: <pre>Switch(config)# location expiry calibrating-client 50</pre></p> | <p>Configures the RSSI timeout value for the clients, calibrating clients, RFID tags, and rogue access points.</p> <p>You can enter the RSSI timeout value for the clients, RFID tags, and rogue access points from 5 through 3600 seconds, and the default value is 5 seconds.</p> <p>For the calibrating clients, you can enter the RSSI timeout value from 0 through 3600 seconds, and the default value is 5 seconds.</p> <p>Ensuring that recent, strong RSSIs are retained by the CPU is critical to location accuracy. The location expiry command enables you to specify the length of time after which old RSSI averages expire.</p> <p>Note We recommend that you do not use or modify the location expiry command.</p> |
| Step 5 | <p>location algorithm {<i>rssi-average</i> <i>simple</i>}</p> <p>Example: <pre>Switch(config)# location algorithm rssi-average</pre></p> | <p>Configures the algorithm used to average RSSI and signal-to-noise ratio (SNR) values.</p> <p>You can enter the location algorithm rssi-average command to specify a more accurate algorithm but requires more CPU overhead or the location algorithm simple command to specify a faster algorithm that requires low CPU overhead but provides less accuracy.</p> <p>Note We recommend that you do not use or modify the location algorithm command.</p> |
| Step 6 | <p>location admin-tag <i>string</i></p> <p>Example: <pre>Switch(config)# location admin-tag</pre></p> | <p>Sets administrative tag or site information for the location of client devices.</p> |
| Step 7 | <p>location civic-location identifier {<i>identifier</i> <i>host</i>}</p> <p>Example: <pre>Switch(config)# location civic-location identifier host</pre></p> | <p>Specifies civic location information.</p> <p>You can set the civic location identifier either as a string or host.</p> |

| | Command or Action | Purpose |
|----------------|---|--|
| Step 8 | location custom-location identifier <i>{identifier host}</i> Example: <pre>Switch(config)# location custom-location identifier host</pre> | Specifies custom location information. You can set the custom location identifier either as a string or host. |
| Step 9 | location geo-location identifier <i>{identifier host}</i> Example: <pre>Switch(config)# location geo-location identifier host</pre> | Specifies geographical location information of the client devices. You can set the location identifier either as a string or host. |
| Step 10 | location prefer <i>{cdp lldp-med static}</i> weight <i>priority_value</i> Example: <pre>Switch(config)# location prefer weight cdp 50</pre> | Sets location information source priority. You can enter the priority weight from zero through 255. |
| Step 11 | location rfid <i>{status timeout vendor-name}</i> Example: <pre>Switch(config)# location rfid timeout 100</pre> | Configures RFID tag tracking options such as RFID tag status, RFID timeout value, and RFID tag vendor name. You can enter the RFID timeout value in a range from 60 and 7200 seconds. |
| Step 12 | end Example: <pre>Switch(config)# end</pre> | Returns to privileged EXEC mode. Alternatively, you can also press Ctrl-Z to exit global configuration mode. |

Modifying the NMSP Notification Interval for Clients, RFID Tags, and Rogues (CLI)

The Network Mobility Services Protocol (NMSP) manages communication between the mobility services engine and the controller for incoming and outgoing traffic. If your application requires more frequent location updates, you can modify the NMSP notification interval (to a value between 1 and 180 seconds) for clients, active RFID tags, and rogue access points and clients.



Note

The TCP port (16113) that the controller and mobility services engine communicate over must be open (not blocked) on any firewall that exists between the controller and the mobility services engine for NMSP to function.

SUMMARY STEPS

1. **configure terminal**
2. **nmsp notification interval** {attachment *seconds* | location *seconds* | rssi [clients *interval* | rfid *interval* | rogues [ap | client] *interval*]}
3. **end**

DETAILED STEPS

| | Command or Action | Purpose |
|---------------|---|---|
| Step 1 | configure terminal Example: Switch# <code>configure terminal</code> | Enters global configuration mode. |
| Step 2 | nmsp notification interval {attachment <i>seconds</i> location <i>seconds</i> rssi [clients <i>interval</i> rfid <i>interval</i> rogues [ap client] <i>interval</i>]} Example: Switch(config)# <code>nmsp notification interval rssi rfid 50</code> | Sets the NMSP notification interval value for clients, RFID tags, and rogue clients and access points. You can enter the NMSP notification interval value for RSSI measurement from 1 through 180 seconds. |
| Step 3 | end Example: Switch(config)# <code>end</code> | Returns to privileged EXEC mode. Alternatively, you can also press Ctrl-Z to exit global configuration mode. |

Modifying the NMSP Notification threshold for Clients, RFID Tags, and Rogues (CLI)**SUMMARY STEPS**

1. **configure terminal**
2. **location notify-threshold** {clients | rogues ap | tags } *threshold*
3. **end**

DETAILED STEPS

| | Command or Action | Purpose |
|--------|---|--|
| Step 1 | configure terminal Example: Switch# <code>configure terminal</code> | Enters global configuration mode. |
| Step 2 | location notify-threshold {clients rogues ap tags } threshold Example: Switch(config)# <code>location notify-threshold clients 5</code> | Configures the NMSP notification threshold for clients, RFID tags, and rogue clients and access points. You can enter the RSSI threshold value from zero through 10 db. |
| Step 3 | end Example: Switch(config)# <code>end</code> | Returns to privileged EXEC mode. Alternatively, you can also press Ctrl-Z to exit global configuration mode. |

Monitoring Location Settings and NMSP Settings

Monitoring Location Settings (CLI)

This section describes the new commands for location settings.

The following commands can be used to monitor location settings on the switch.

Table 1: Monitoring Location Settings Commands

| Command | Purpose |
|---|---|
| <code>show location summary</code> | Displays the current location configuration values. |
| <code>show location statistics rfid</code> | Displays the location-based RFID statistics. |
| <code>show location detail client_mac_addr</code> | Displays the RSSI table for a particular client. |

Monitoring NMSP Settings (CLI)

This section describes the new commands for NMSP settings.

The following commands can be used to monitor NMSP settings on the switch.

Table 2: Monitoring NMSP Settings Commands

| Command | Purpose |
|---|---|
| show nmsp attachment suppress interfaces | Displays the attachment suppress interfaces. |
| show nmsp capability | Displays the NMSP capabilities. |
| show nmsp notification interval | Displays the NMSP notification intervals. |
| show nmsp statistics connection | Displays the connection-specific NMSP counters. |
| show nmsp statistics summary | Displays the common NMSP counters. |
| show nmsp status | Displays the status of active NMSP connections. |
| show nmsp subscription detail | Displays all of the mobility services to which the switch is subscribed. |
| show nmsp subscription detail <i>ip_addr</i> | Displays details only for the mobility services subscribed to by a specific IP address. |
| show nmsp subscription summary | Displays details for all of the mobility services to which the switch is subscribed. |

Examples: Location Settings Configuration

This example shows how to configure the path loss measurement (S60) request for calibrating client on the associated 802.11a or 802.11b/g radio:

```
Switch# configure terminal
Switch(config)# location plm calibrating uniband
Switch(config)# end
Switch# show location summary
```

This example shows how to configure the RSSI half life for a rouge access point:

```
Switch# configure terminal
Switch(config)# location rssi-half-life rogue-aps 20
Switch(config)# end
Switch# show location summary
```

Examples: NMSP Settings Configuration

This example shows how to configure the NMSP notification interval for RFID tags:

```
Switch# configure terminal
Switch(config)# nmsp notification interval rssi rfid 50
```

```
Switch(config)# end
Switch# show nmsp notification interval
```

This example shows how to configure the NMSP notification threshold for clients:

```
Switch# configure terminal
Switch(config)# nmsp notify-threshold 5
Switch(config)# end
Switch# show nmsp statistics summary
```

Additional References for Location Settings

Related Documents

| Related Topic | Document Title |
|----------------------------|--|
| System management commands | <i>System Management Command Reference, Cisco IOS XE Release 3SE (Cisco WLC 5700 Series)</i> |

Standards and RFCs

| Standard/RFC | Title |
|--------------|-------|
| None | — |

MIBs

| MIB | MIBs Link |
|--------------------------------------|--|
| All supported MIBs for this release. | To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs |

Technical Assistance

| Description | Link |
|---|--|
| <p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p> | <p>http://www.cisco.com/support</p> |

Feature History and Information For Performing Location Settings Configuration

| Release | Feature Information |
|--------------------|------------------------------|
| Cisco IOS XE 3.3SE | This feature was introduced. |

