FastLocate for Cisco Catalyst Series Access Points

FastLocate

A FastLocate solution is a Wi-Fi location technology that

- collects received signal strength indication (RSSI) data or location data from data packets rather than probe requests
- increases the frequency of location updates, and
- improves the effectiveness of location-based services (LBS).

Feature history

Feature Name	Release	Description
FastLocate for Cisco Catalyst Series Access Points	Cisco IOS XE 17.1.1s	This feature enables higher location refresh rates by collecting RSSI or location information from data packets that APs receive. The network can then initiate location-based services (LBS) updates more frequently, leading to more accurate and timely device location tracking for Cisco Catalyst Series APs.

Traditional location tracking versus FastLocate

Traditional Wi-Fi location tracking relies on probe request messages from mobile devices. These probe requests are detected by multiple APs on different channels, and the RSSI or estimated location is sent to the APs to estimate the device's position.

However, Wi-Fi clients are increasingly probing less frequently to conserve battery life. Factors such as client type, operating system, driver, battery level, and current client activity influence how often a device sends probe requests, with intervals ranging from 10 seconds to five minutes. This inconsistency in probing leads to fewer data points and can affect the precision of real-world movement tracking.

FastLocate overcomes this limitation by using the more frequent data packets—rather than relying solely on probe requests—to collect RSSI and location data. These packets are aggregated by APs, enabling the network to initiate LBS updates more frequently and deliver higher location refresh rates.

Restriction for fabric deployments

Do not configure the Wireless Management Interface (WMI) as a loopback (Layer 3) interface in fabric deployments. Always use a VLAN interface for WMI to enable FastLocate functionality.

Supported access points

To view all supported access points, see the AP Feature Matrix

Cisco Aironet 4800 Series also supports Hyperlocation using Angle of Arrival location calculation.

When you enable FastLocate on a supported AP

- the Cisco RF Application-specific integrated circuit (ASIC) radios act as a Wireless Services Software Interface (WSSI) module. The radios then switch to monitoring mode and to off-channel scanning mode.
- radios scan all 2.4-GHz and 5-GHz channels sequentially, spending 150 milliseconds (also called dwell time) on each channel, and
- RF ASIC radios synchronize with the NTP server. After each off-channel dwell period, FastPath sends all collected RSSI records in a specific packet format to the controller.

FastLocate network components and functions

Certain network components are essential for successful packet RSSI location computation using FastLocate.

Network Components	Functionality
Wireless clients	send data, management, and control packets.
Cisco Catalyst 9800 Series Wireless Controller	• configures NTP server data and location parameters on AP. • forwards RSSI information to Cisco CMX or Mobility Services Engine through FastPath or datapath.

Network Components	Functionality
Cisco Catalyst 9120 Series AP	• operates location radio in monitor or equivalent role. • synchronizes time with NTP server. • collects RSSI data from all clients (both associated and unassociated). • forwards this RSSI data to the controller through CAPWAP.
Cisco CMX	• parses Fastpath location data received from the controller. • computes client physical locations. • renders this position on the GUI using location algorithms.

Configure FastLocate (GUI)

Configure the AP join profile to enable FastLocate on your APs.

Use this task to activate FastLocate location services for APs managed by the controller.

Before you begin

Identify the AP join profile you wish to update.

Procedure

Step 1 Choose **Configuration** > **Tags & Profiles** > **AP Join**.

Step 2 On the **AP Join** window, click the **default-ap-profile** AP join profile.

Step 3 In the **Edit AP Join Profile** window, click **AP**.

Step 4 Under **Hyperlocation**, check the **Enable Hyperlocation**.

Step 5 Click **Update & Apply to Device**.

Your selected AP join profile now has FastLocate (Hyperlocation) enabled and is applied to the device.

What to do next

Verify the configuration status and confirm location services are operating as expected.

Verify FastLocate

You can verify FastLocate on the controller and on APs.

Verify FastLocate on APs

```
Device# show ntp

Stratum   Version   Last Received   Delay    Offset    Jitter    NTP server
   1         4         123sec ago   1.169ms  -3.262ms  10.050ms    10.7.7.2

Device# show ap fast-path statistics

total packets sent   : 90001
invalid app ID drops : 0
application                  : 0 (HALO)
packets sent (CAPWAP)        : 90001
packets sent (APP HOST INTF) : 0
admin state drops            : 0
no dest IP drops             : 0
```

View FastLocate admin status details on the AP.

```
Device# show capwap client rcb

Hyperlocation Admin State    : Enabled
MSE Gateway MAC              : 00:50:56:86:0F:9D
WLC Hyperlocation Source Port: 9999
MSE IP Address               : 10.0.0.1
```

View FastPath related parameters on the AP such as source and destination IP addresses, port numbers, and the gateway MAC address.

```
Device# show ap fast-path configuration hyperlocation

source IP address     : 10.0.0.2
destination IP address: 10.0.0.1
source port (WLC)     : 9999
destination port (MSE): 2003
gateway MAC           : 00:50:56:86:0F:9D
ewlc hyperlocation MAC: 00:00:00:01:00:01
```

Verify FastLocate on Controller

View the summary of applications that send Fastpath or datapath data. The summary displays the hex code for the HyperLocation and BLE port numbers.

```
Device# show platform hardware chassis active qfp feature wireless wlclient
 cpp-client summary


Client Type Abbreviations:
RG - REGULAR     BL - BLE
HL - HALO        LI - LWFL INT
Auth State Abbreviations:
UK - UNKNOWN     IP - LEARN IP    IV - INVALID
L3 - L3 AUTH     RN - RUN
Mobility State Abbreviations:
UK - UNKNOWN     IN - INIT
LC - LOCAL       AN - ANCHOR
```

```
FR - FOREIGN     MT - MTE
IV - INVALID
EoGRE Abbreviations:
N - NON EOGRE    Y - EOGRE
CPP IF_H    DPIDX        MAC Address VLAN CT MCVL AS MS E WLAN POA
------------------------------------------------------------------------
0X31   0XF0000002 0000.0003.0001 122 BL 0 RN LC N NULL 0X32 0XF0000001 0000.0001.0001 122
HL 0 RN LC N NULL
```

Capture statistics of a selected application.

```
Device# show platform hardware chassis active qfp feature wireless wlclient
 datapath
cpp-if-handle register-code statistics start
```

The hex value of the register-code is obtained from the **show platform hardware chassis active qfp feature wireless wlclient cpp-client summary** command.

```
Device# show platform hardware chassis active qfp feature wireless wlclient
 datapath cpp-if-handle 0x32 statistics start
```

Display the statistics for the specified application.

```
Device# show platform hardware chassis active qfp feature wireless wlclient
 datapath
cpp-if-handle register-code statistics
```

The hex value of the register code is obtained from the **show platform hardware chassis active qfp feature wireless wlclient cpp-client summary** command.

```
Device# show platform hardware chassis active qfp feature wireless wlclient
 datapath cpp-if-handle 0x32 statistics
    Pkts   Bytes
Rx   232   38850
```