

Understand Best Practices AP Auto-Locate in Spaces AnyLocate

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Introduction

This document describes best practices and troubleshooting for AP Auto-Locate in Cisco Spaces AnyLocate.

Overview

Cisco Spaces AnyLocate (AP Auto-Locate) uses FTM ranging, GNSS (GPS) data, and AP-to-AP relative positioning to determine access point placement on floor maps.

This document provides configuration requirements, best practices, validation steps, and troubleshooting guidance to help ensure accurate AP placement and successful ranging.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

Wireless LAN Controller (WLC) Validation

These configurations are mandatory for AP Auto-Locate to function correctly.

FTM and Geolocation

FTM ranging and AP geolocation must be enabled on the controller.

Refer to Cisco documentation:

- [Geolocation Derivation](#)
- [FTM Ranging Configuration](#)

These features enable AP-to-AP distance measurements and GPS-based positioning.

TDL (Telemetry) Subscriptions

TDL Subscriptions between Spaces and WLC must be Active. This is the channel through which ranging data is relayed.

- TDL Subscription number is prefixed with first 7 digits of Connector ID, suffixed with [11-21].
- Required TDL subscriptions, functions, and respective minimum WLC code versions required:

subscription-id	tdl-uri	min-version-required
11	/services;serviceName=ewlc_oper/rrmAPautoRfdot11Data	Always present

14	/services;serviceName=wncloudm_oper/ap_gnss_loc_data	>=17.12.0
12	/services;serviceName=ewlc_oper/ap_sensor_cache	>=17.12.0
13	/services;serviceName=ewlc_oper/ap_ranging_data	>=17.12.0
17	/services;serviceName=ewlcevent/geo_loc_asc_meas	>=17.12.2
18	/services;serviceName=ewlc_oper/cdp_cache_data	>=17.12.0
20	/services;serviceName=ewlcevent/geoloc_disruptive_ranging	>=17.13.0
21	/services;serviceName=ewlcevent/ap_movement	>=17.13.0
22	/services;serviceName=ewlcevent/tdoa_events	>=17.18.2

Validation Commands

- **Show active subscriptions**

```
show telemetry ietf subscription all
```

- **Show Subscription Details**

```
show telemetry ietf subscription <subscription-id> receiver
```

- **Removing Subscription**

```
(config)# no telemetry ietf subscription <subscription-id>
```

Components Used

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

- Spaces Connector 3 - Location Service 3.1.0.94 or later
- Catalyst 9800 - Minimum version 17.12.1 (17.15 for 917x APs)
- Supported AP models - 9130, 9136, 9164, 9166
- CAD file of floormap - DWG format (Published in Spaces)
- 6 GHz must be enabled for ranging accuracy (WLAN enabled for 6GHz).
- AnyLocate is not supported for default Catalyst site tag (must place APs in new site tag).
- Use Beta UI (Edit in Spaces Home dashboard).

Upload a completed CAD file to Spaces in Locations & Maps (Rich Maps Section). It must be tied to a Location Hierarchy element which can be created from CSV method. The Rich Map generation process can take from 3 days to 2 weeks. CAD can be rejected based on layer criteria and requirements.

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.

NETCONF Requirement

AnyLocate uses NETCONF/SSH to poll the AP list from the controller.

NETCONF must be enabled and the current credentials must be updated in the Spaces UI. If AP list is not polled properly within 30-days, AP ranging data is purged from Spaces

GPS Validation

To validate GNSS functionality:

```
show gnss status
```

- Check the number of satellites heard by APs.
- A minimum of 4 satellites is required for reliable GPS positioning.
- GPS validation is best suited for cloud-side validation and anchor placement.

Best Practices

Ranging Behavior

Allow 15 minutes for neighbor tables and ranging data to populate.

Ensure at least one WLAN is active on:

- 5 GHz
- 6 GHz (recommended for improved ranging accuracy)

Ranging Scope

To avoid performance issues, site tags are configured on per-floor or per-building basis:

- Ranging under 250 APs at a time is recommended via either of these options:
 - Per-site tag, or
 - Selected APs



Note: Ranging too many APs simultaneously can leave some APs without ranging data and incomplete operations.

Operational Considerations

AP ranging is performance-impacting and must be scheduled during a maintenance window.

Default FTM parameters are recommended.

Ensure CAD files are dimensionally accurate and match the physical space.

Map Service Restriction

If Catalyst Center maps exist in Cisco Spaces:

- AnyLocate maps cannot be published to the Map Service.
- The CatC floor map must be removed before publishing AnyLocate results.

Ranging Troubleshooting Commands

WLC Commands	Description
--------------	-------------

show ap geolocation ranging capability	Details AP ability to participate in ranging
show ap geolocation summary	Gives gnss data for all the APs
show ap geolocation gnss-capable summary	Shows whether the APs are GPS-capable or not.
show ap geolocation ranging request	APs to which ping request is sent and APs from which reports are received
show ap geolocation ranging report	Gives complete list of all the latest and best records received from all FTM capable APs
show ap geolocation ranging status	Shows AP-to-AP ranging detection with neighboring APs.

AP commands	Description
show ap name <gray-ap-name> geo ranging status	AP-to-AP ranging status for an AP that appears gray on the floor map
show spaces endpoint connection detail	GNSS-related information at the access point (AP) level
show spaces endpoint key authentication	
show spaces endpoint key access	

AP Placement

AP Color Key

- **Solid Blue** – Anchor-possible, decided by algorithm (typically edge APs)
- **Light Blue** – standard ranged AP
- **Gray** – No ranging data
- **Green** – Manually placed AP by user

AP Overlay

Initial placement is anchorless, based on AP-to-AP relative distances. Hence, this is not the actual position, just the cluster of APs with their relative position based on their distances.

The AP overlay could require manual rotation to align with the floor map. Use the rotation function to manually spin the full AP overlay to sit on top of the Rich maps

It is possible that the initial placement is not aligned with map orientation, but is accurate relative to AP location.



Anchor AP Requirement

Ensure the network has a minimum of 4–5 anchor APs whose locations can be determined either via GPS or manual placement based on known relative positions.

These anchor APs are used as reference points to calculate the relative positions of the remaining APs in the network.

GPS Considerations

GPS availability depends on:

- AP model
- Physical location
- Proximity to windows

- First-floor APs often have poor GPS signal quality.

Isolation and Line-of-Sight

Line-of-sight is extremely important to ranging. If an AP is isolated or has no path to be heard by other APs (at least 3), it does not generate ranging data.

Ensure the AP is mounted near a window or has a clear line of sight to the sky to allow the GPS module to obtain the satellite signal:

- It links with neighboring APs.
- When it is not ranged, user needs to manually place AP. (Displayed as gray AP).

Accuracy

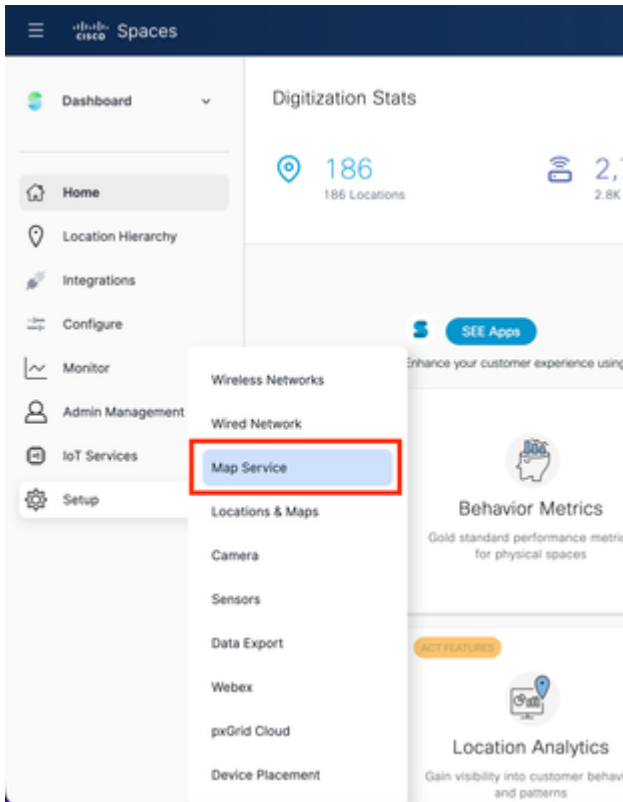
Accuracy is highly dependent on the aforementioned isolation and line-of-sight factors. A review of the physical space is possibly required to confirm if APs are positioned to properly range.

Some manual intervention on AP placement is highly recommended after system placement to ensure highest degree of AP placement

AP placement has downstream effects on asset and location tracking due to RTLS requirements of AP location reference point.

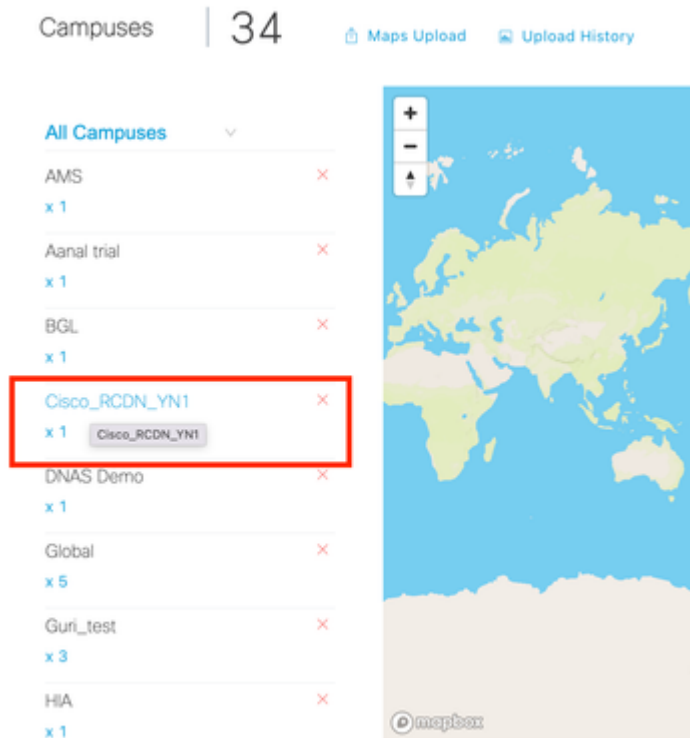
Delete a Catalyst Center Floor Map Image in Cisco Spaces

- Log in to the Cisco Spaces dashboard.
- Navigate to **Setup > Map Service**.



- Drill down through the location hierarchy:
1. **Campus > Building > Floor**


Campus:



Building:

Campuses | 34 [Maps Upload](#) [Upload Histor](#)

All
Cisco_RCDN_YN1 ▾

RCDN_5_YN1 ×  x 4

Cisco Systems RDCN Bldg 5 CIS Lab...


Floor:

Campuses | 34 [Maps Upload](#) [Upload H](#)

All / Cisco_RCDN_YN1
RCDN_5_YN1 ▾

Cisco Systems RDCN Bldg 5 CIS Lab, Richardson, Texas 75074, United States

RCDN5_Floor1_YN1 ×  x 0

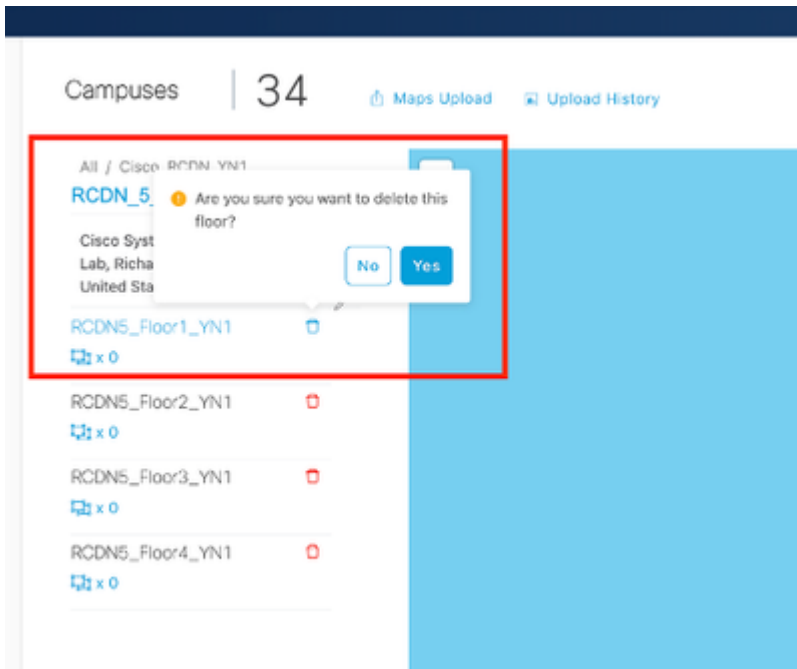
RCDN5_Floor2_YN1 ×  x 0

RCDN5_Floor3_YN1 ×  x 0

RCDN5_Floor4_YN1 ×  x 0

mapbox

1. Select the floor you want to remove.
2. Click the **Delete (trash)** icon next to the floor.
3. When prompted with **Are you sure you want to delete the floor?**, click **Yes** to confirm.



Once confirmed, the floor map image is deleted from Cisco Spaces.