

Cisco Wireless Innovations

25 og 26 Oktober 2023

Ib Hansen: lbhansen@cisco.com

Solution Engineer

The “Wireless-First” World

Reliable

Always-on, Predictable

Scalable Performance

Bandwidth/Bounded Latency

Secure

Software-defined Segmentation

92% of Internet Traffic Starts on Wi-Fi

Wireless Laptops

Tablets & Phones

Wearables

AR, VR, smart watches

Digital Building

Lighting, heating,
cameras, badge reader

IoT

Robots, infusion
pumps, sensors

Audio and Video

Teleconferencing, VoIP

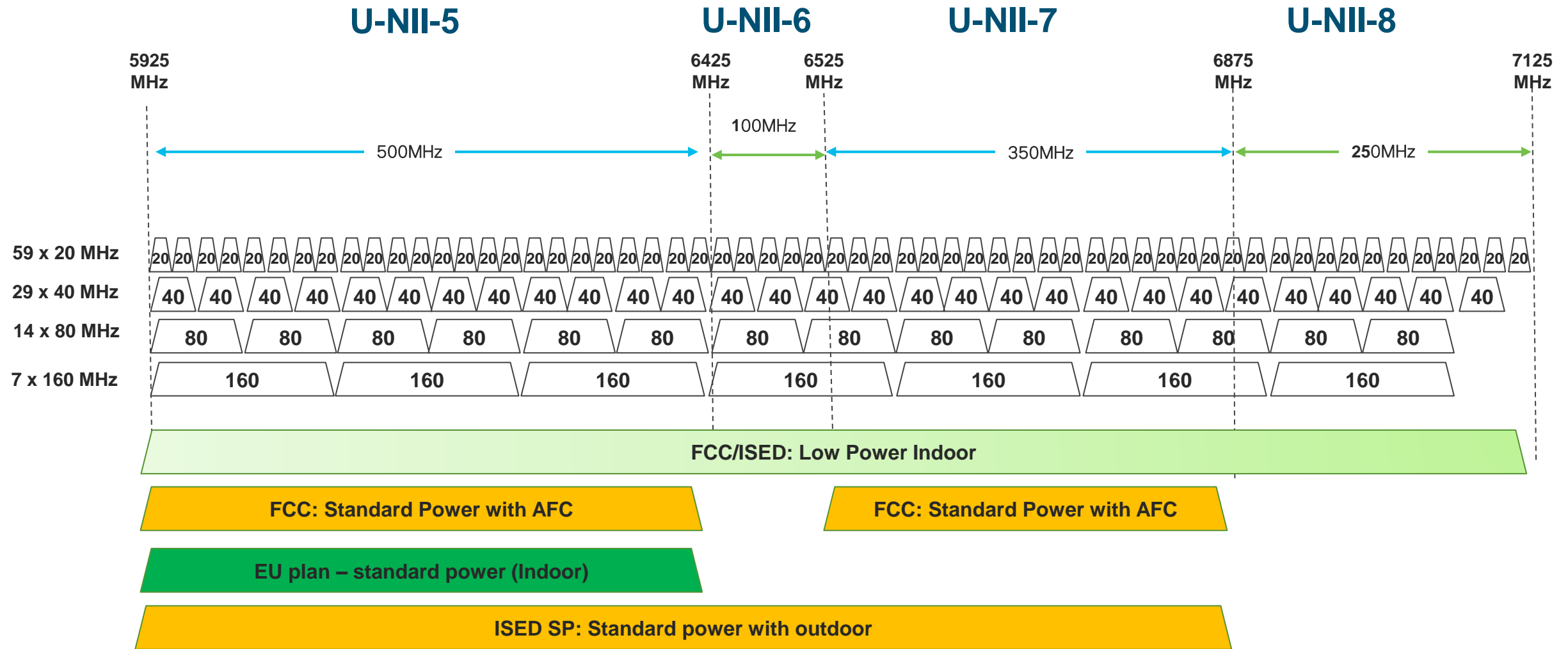


Agenda

- WiFi 6E Status and product Update
 - Standard update
 - Products update
 - Software update
- Platform Update
 - Simplify with AI /ML
 - AI-RRM
 - Event Viewer delen af Assurance
 - CleanAir Pro
 - Wireless Assurance
 - AP auto location

Standard Update

6GHz Spectrum availability



**Exact channel plan still to be finalized*

FCC, ISED defined two power modes. ETSI & Other Regulatory –TBD

What's next for spectrum in Europe?



ITUWRC

- International Telecommunications Union
- 193 countries divided into 3 regions
- Treaty conference on global radio regulation – **World Radio Conference** – November 2023 Agenda Item 1.2:
 - IMT sharing and compatibility studies, with a view to ensuring the protection of services to which the frequency band is allocated on a primary basis, for the frequency bands:
 - 7 025–7 125 MHz (globally);
 - 6 425–7 025 MHz (Region 1/EMEA)

6 GHz – New Device Classes



Low Power Indoor AP

- Indoor Only
- Integrated Antenna Required
- Can use the full 1200 MHz spectrum
- Does not require AFC
- Power Spectral Density: 5dBm/MHz
- Max EIRP: 30 dBm

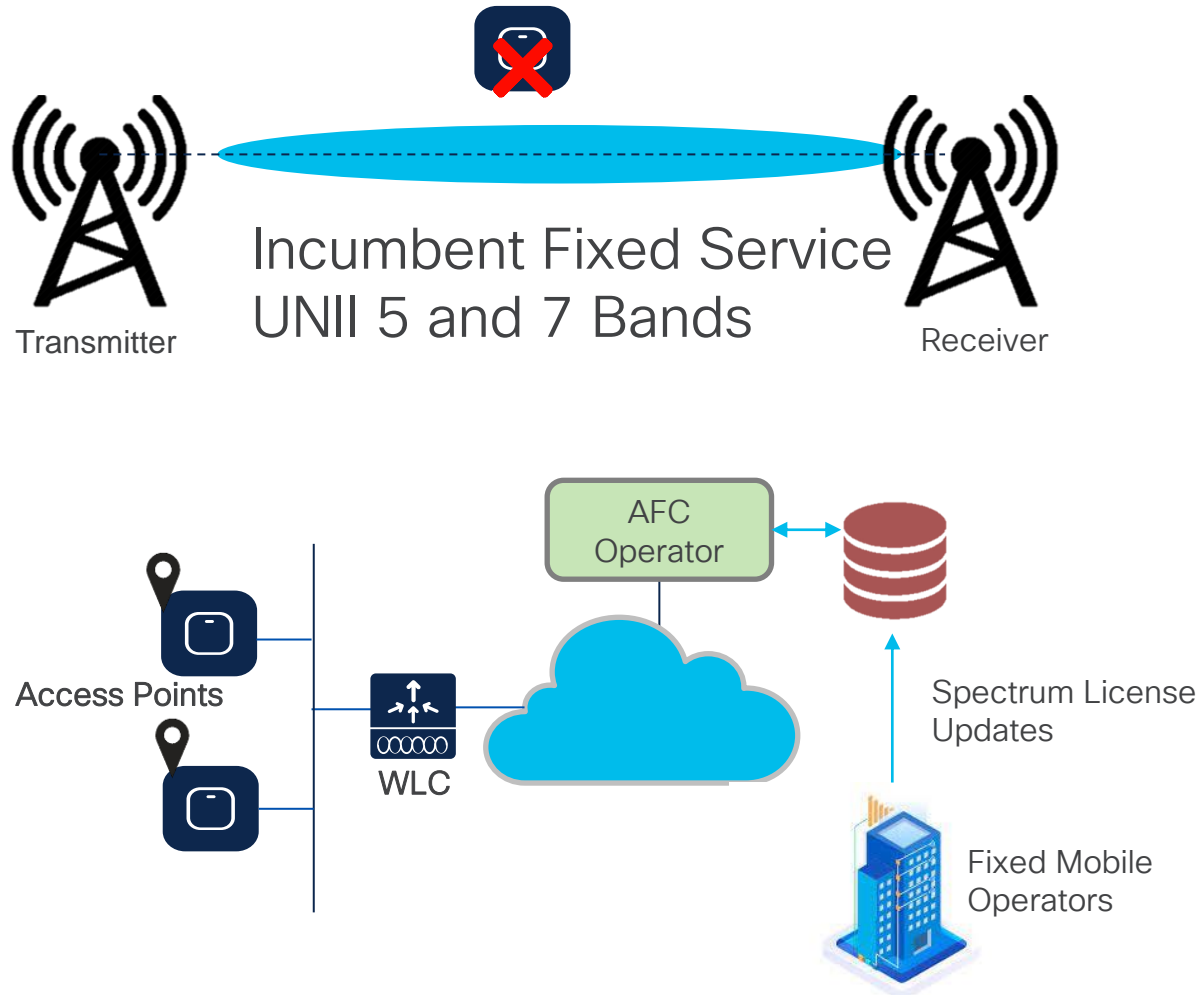


Standard Power AP

- Indoor or Outdoor
- Integrated or **External Antenna**
- UNII-5 and UNII-7 Bands Only (US)
- Power Spectral Density: 5dBm/MHz
- **Requires AFC**
- Power Spectral Density: 23 dBm/MHz
- Max EIRP: 36 dBm

Regulations vary by country

Automatic Frequency Co-ordination



General

360 View

AFC

Power

AP CAC

QOS

Sensor Statistics

TrustSec

EoGRE

BLE

Power Mode

Request

Response

Request ID

4800059180754946818

Response Code

Success

Ruleset ID

US_47_CFR_PART_15_SUBPART_E

Last Received Time

07/03/2023 18:25:18

Expire Time

07/04/2023 18:24:56

<< Hide

Channel Response Data

Low EIRP

High EIRP

No Response from AFC Service

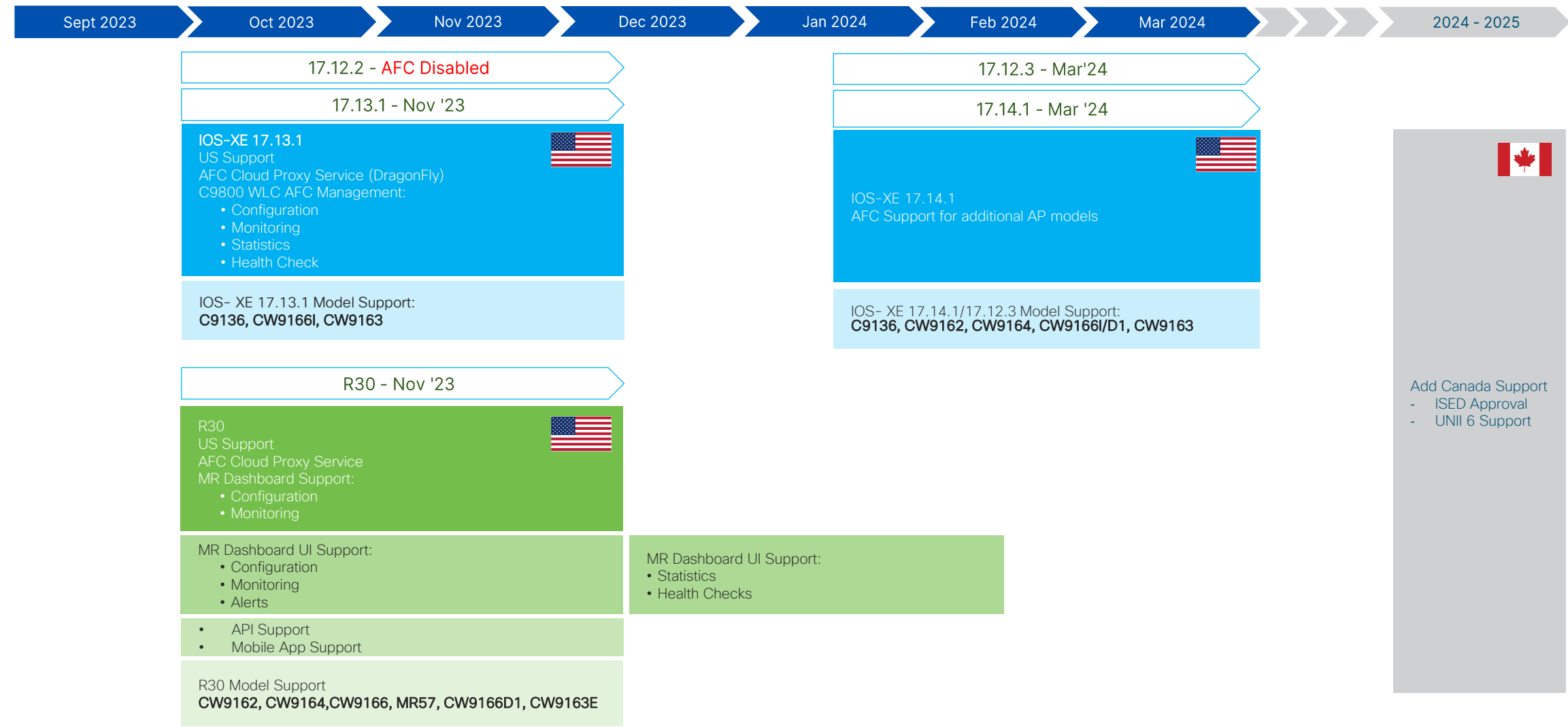
NR

Channel Width	Global Operating Class	Channel Number Max EIRP																														
20MHz	131	1 36	5 36	9 36	13 36	17 36	21 36	25 36	29 36	33 36	37 36	41 36	45 36	49 36	53 36	57 36	61 36	65 36	69 36	73 36	77 36	81 36	85 36	89 36	93 36	97 NR	101 NR	105 NR	109 NR	113 NR	117 36	121 36
40MHz	132	3 36	11 36	19 36	27 36	35 36	39 36	43 36	51 36	59 36	67 36	75 36	83 36	91 36	99 NR	107 NR	115 NR	123 NR	131 NR	139 NR	147 NR	155 NR	163 NR	171 NR	179 NR	187 NR	195 NR	203 NR	211 NR	219 NR	227 NR	235 NR
80MHz	133	7 36	15 36	23 36	31 36	39 36	47 36	55 36	63 36	71 36	79 36	87 36	95 NR	103 NR	111 NR	119 NR	127 NR	135 NR	143 NR	151 NR	159 NR	167 NR	175 NR	183 NR	191 NR	199 NR	207 NR	215 NR	223 NR	231 NR	239 NR	
160MHz	134	15 36	23 36	31 36	39 36	47 36	55 36	63 36	71 36	79 36	87 36	95 NR	103 NR	111 NR	119 NR	127 NR	135 NR	143 NR	151 NR	159 NR	167 NR	175 NR	183 NR	191 NR	199 NR	207 NR	215 NR	223 NR	231 NR	239 NR		
80+MHz	135	7 NR	15 NR	23 NR	31 NR	39 NR	47 NR	55 NR	63 NR	71 NR	79 NR	87 NR	95 NR	103 NR	111 NR	119 NR	127 NR	135 NR	143 NR	151 NR	159 NR	167 NR	175 NR	183 NR	191 NR	199 NR	207 NR	215 NR	223 NR	231 NR	239 NR	

Response from AFC:
Channel Numbers and Max EIRP allowed

Automated Frequency Coordination (AFC): Central database of frequencies, which are available in the AP's same geographical location, and where the AP does not risk to interfere with other systems (e.g. fixed satellites)

AFC Feature Roadmap



Industry's best & broadest Wi-Fi 6E portfolio



Indoor Access Points

 Management mode can be changed

Cisco® Catalyst® 9166D1

Directional, Tri-Radio with 12 Spatial Streams!



Penta-Radio Architecture

- 2.4 GHz Client Radio: 4x4:4SS
- 5 GHz Client Radio: 4x4:4SS
- 6 GHz Client Radio 4x4:4SS (XOR to 5GHz)
- Dedicated tri-band auxiliary radio
- 2.4 GHz IoT Radio



Directional antenna architecture

- 2.4+5 GHz: 6 dBi gain (70x70 deg), 6 GHz: 8 dBi (60x60)*
- Same X,Y as CW9166I – and only 0.1cm taller!
- Wide support for pan/tilt combinations



Internet of Things Capabilities

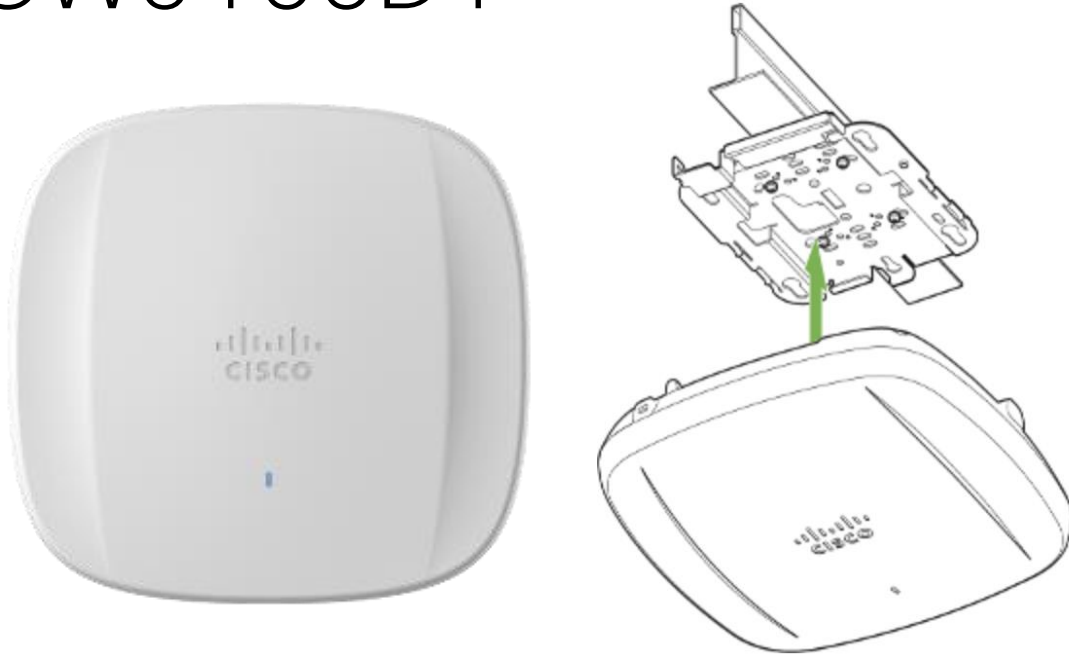
- Built-In Environmental Sensors
- Application Hosting Technology
- USB port with 4.5 W power output



5 Multigigabit (mGig) PoE Port

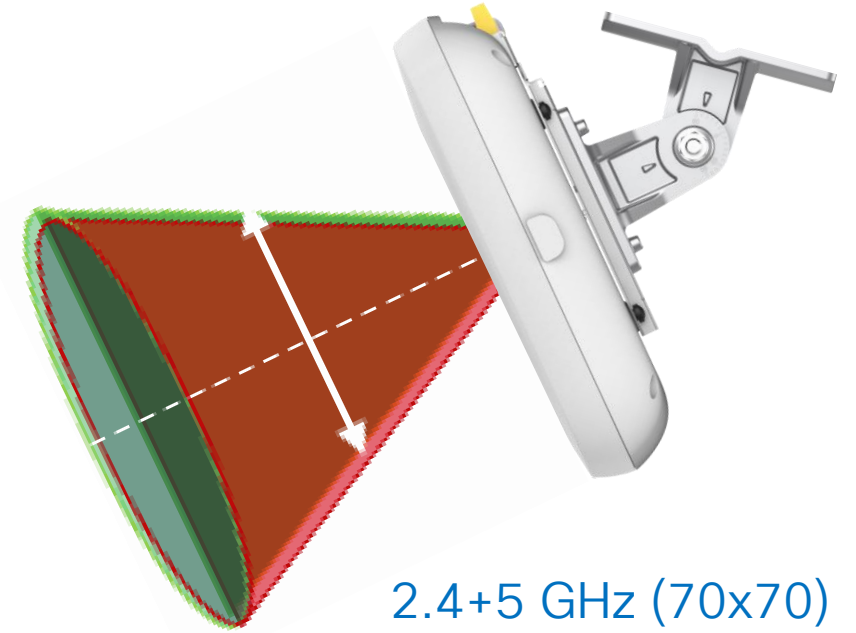
- Optional DC Power

Antenna differences between CW9166i and CW9166D1



CW9166i designed with an integrated omni-directional antenna ceiling mount for a “360 degree” coverage pattern – ideal for offices, conventional buildings

BRKSWN-2024

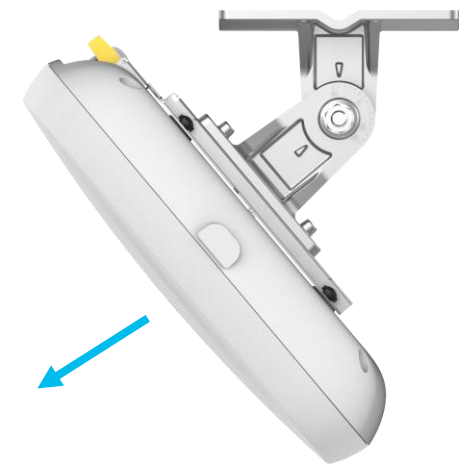
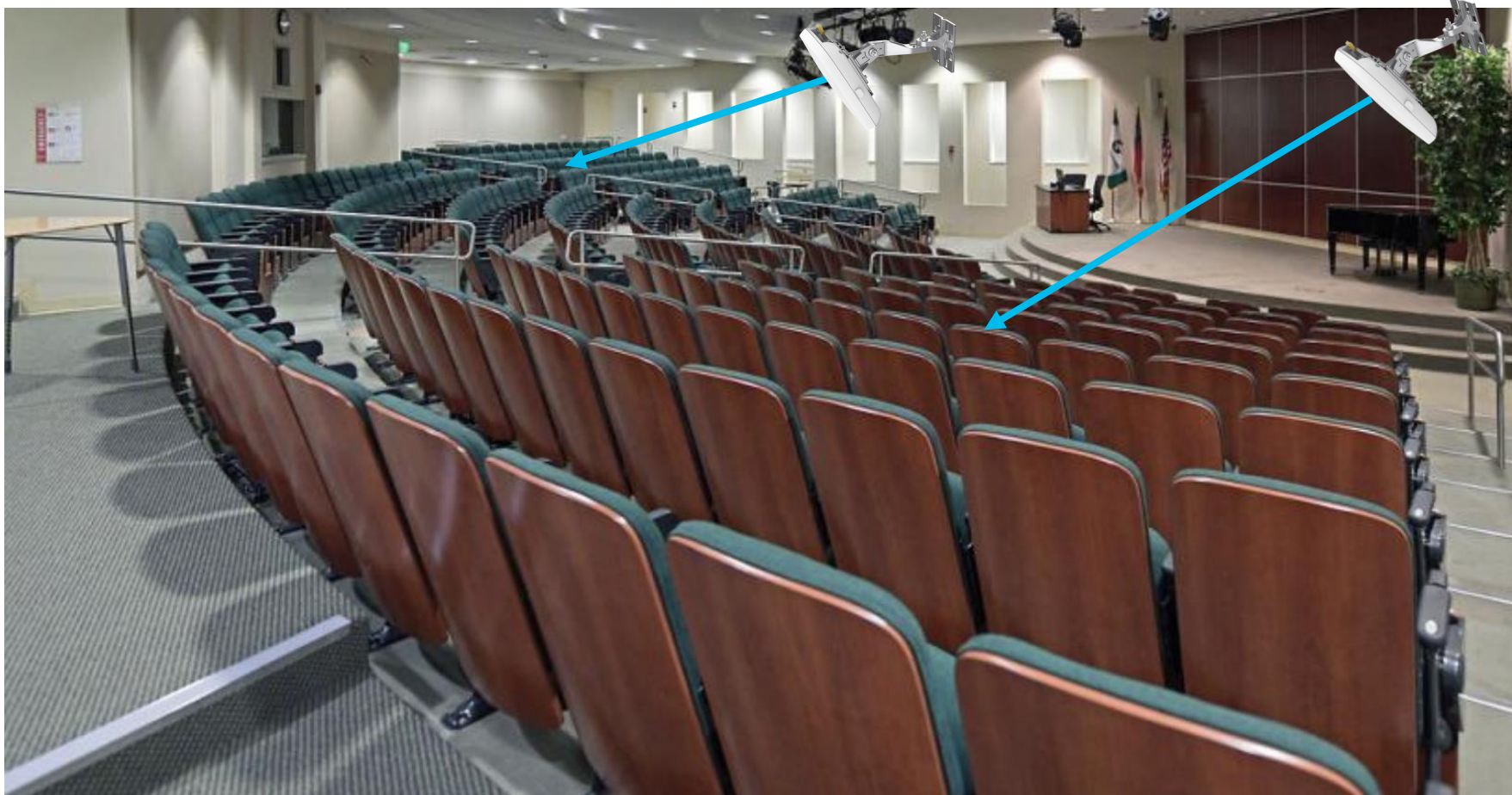


2.4+5 GHz (70x70)
6 GHz (60x60)

CW9166D1 designed with an integrated directional antenna allowing the coverage pattern to favor the area the AP is facing – ideal for warehouse, auditoriums etc.

12

Use cases - Auditoriums (Focused connectivity)



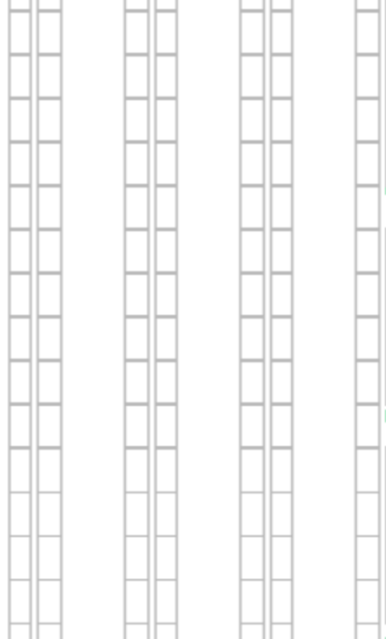
Focusing the direction of the signal improves range, increases signal strength and reduces retries improving overall performance

While an Omni-Directional would work, in this fashion, RF connectivity is optimized as each AP is focused into a specific area

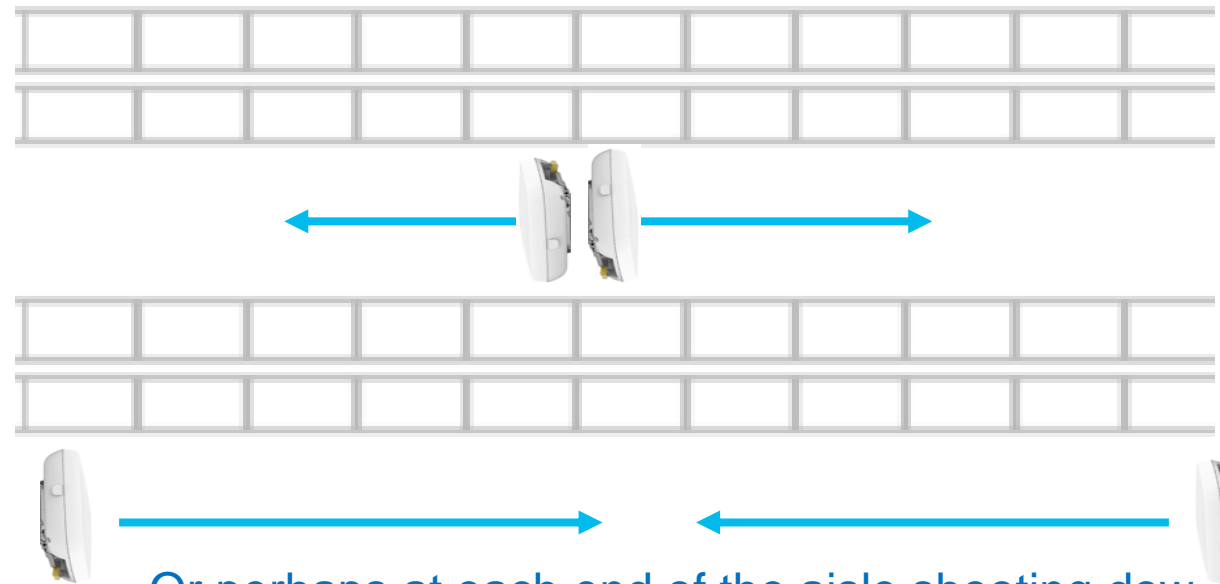
Use cases - Warehouse (High ceilings / long aisles)

Warehousing challenges

- High Ceilings
- Long aisles
- Stock material changes (seasonal)
- AP (distance to client) & mounting



Back-to-Back units in center of aisle covering long aisles
(Ability to adjust tilt)



Or perhaps at each end of the aisle shooting down the aisle

Omni-directional pattern is problematic in these areas as AP should be directional and located high to avoid tow motors, changing stock material etc.



Cisco Catalyst CW9163E Access Point

Expanding Wi-Fi 6E to Outdoor RF environments from IOS-XE 17.13.1 and Meraki R30

Cisco® Catalyst® CW9163E

Outdoor, Tri-Radio with 6 Spatial Streams!



Compatible with existing Antenna Mount of
Catalyst & Meraki



Penta-Radio Architecture

1. 2.4 GHz : 2x2:2 SS
2. 5 GHz : 2x2:2 SS
3. 6 GHz : 2x2:2 SS
4. Dedicated tri-band auxiliary radio
5. 2.4 GHz IoT Radio

[†] 6 GHz subject to
AFC availability



2.5 Gig (mGig) PoE Ports



Internet of Things Capabilities

- BLE/Thread/Zigbee Ready



Antenna

- Omni-directional Di-pole (PID: CW-ANT-O1-NS-00)
- Directional Patch (Future) (PID: CW-ANT-D1-NS-00)
- Inbuilt GPS to obtain Latitude/Longitude
- Optional External GPS Antenna

Dual mode: Cisco WLC or Meraki Cloud

Catalyst IW9167E Overview

Catalyst® IW9167E Access Point



Tri-Radio Architecture in Heavy-Duty Design

- Wi-Fi 6/6E *, 802.11AX, MU-MIMO, OFDMA
- External antenna – 8 x Type N
- Tri-Radio architecture
 - 2.4-GHz, 4x4:4SS, up to 20MHz
 - 5-GHz radio, 4x4:4SS, up to 80 MHz
 - 5/6-GHz radio, 4x4:4SS, up to 160 MHz
- Dedicated scanning radio for spectrum intelligence
- 2.4-GHz IoT radio
- Built-in GNSS with TNC connector



Wireless backhaul (Cisco URWB)

OR

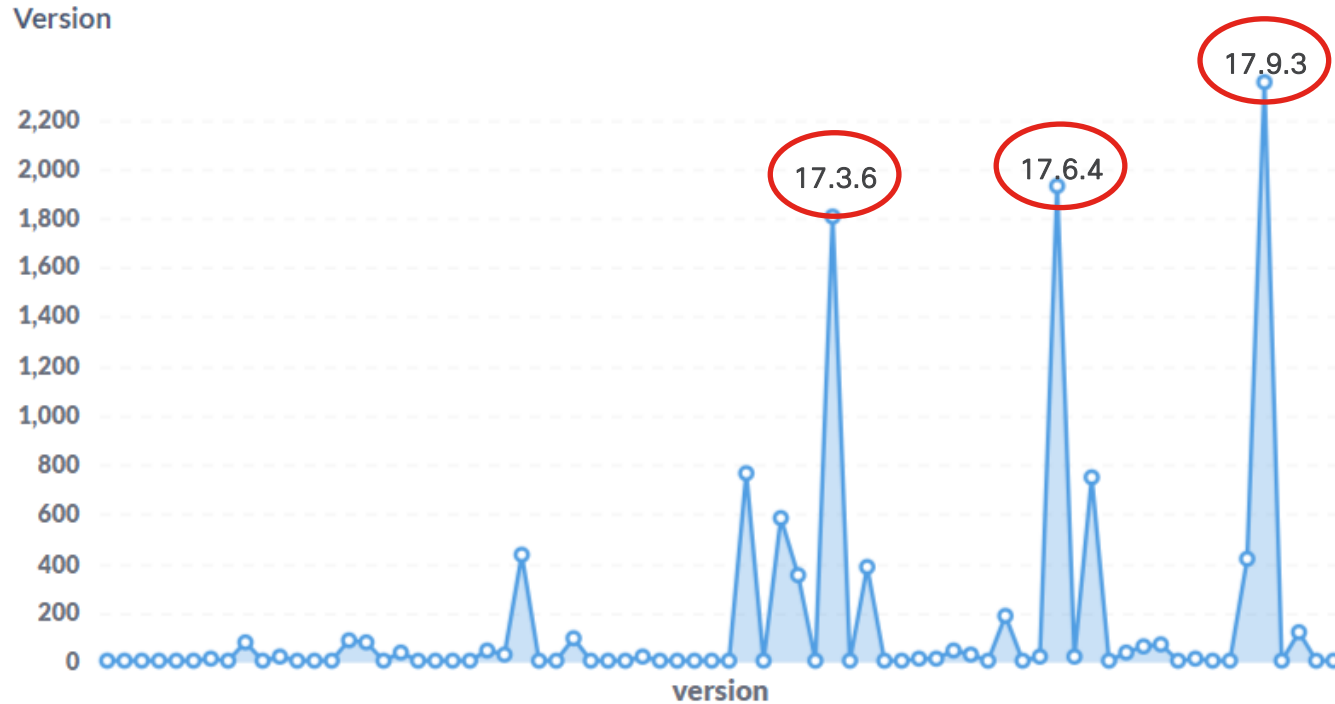
Wi-Fi 6E access point



* 6E ready

Software update

Software recommendation



WLC version usage based on TAC data

17.9.x is the most adopted releases

17.9.4 is recommended gold star release for all deployments

17.3 train has reached End of Vulnerability/Security Support on 30th September 2023

17.12.x for 9166D1 and IW9167

Wave1 AP support in 17.9.x & 17.12.x trains

What happens after LDoS date?

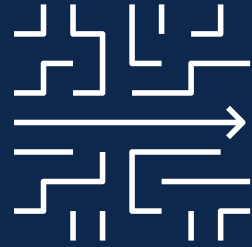


AP 1700, 2700, 3700, 1572 EU/Japan
EOVSS/LDOS Apr 30,2024



AP 1572 US
EOVSS/LDOS Nov 30,2025

- Support for 802.11ac W1 APs has started in 17.9.3 and 17.12.1
- No support after the EOVS/LDOS date, starting from the next maintenance software release.
- Important: No support = AP will not be able to join the WLC on software released after the LDoS date
- Example: AP 1700 LDoS date is April 30th 2024 > the last supported release for this AP will be 17.9.5 and 17.12.3, as they will come out around the LDoS date. AP 1700 will not be able to join releases 17.9.6 or 17.12.4 as these are past the LDOS date



Platform: Simplify with ML/AI



Focus Areas for Wireless AIOps



Client & App Assurance

Tools to distinguish between client and application anomalies and network anomalies.



Wireless



Switching



Routing

RF Assurance

Tools to automate RF tuning to optimize client connectivity and performance on Wi-Fi.



Wireless

Infrastructure Assurance

Tools to flag network and service issues, determine root cause, recommend actions and auto-remediate.



Wireless



Switching



Routing

Serviceability

Tools to reduce support engagement and to help improve support experience when engaged.



Wireless



Switching



Routing

Quantifiable Outcomes of Wireless AIOps



Improve client experience by 75% by simplifying complex analysis with exclusive ecosystem data!



Client and Application Assurance

Reduce 6 weeks of manual fine-tuning and triaging complex RF issues to a single click!



RF Assurance

Gain peace of mind with 24/7 Wi-Fi availability, performance, change impact assessment!



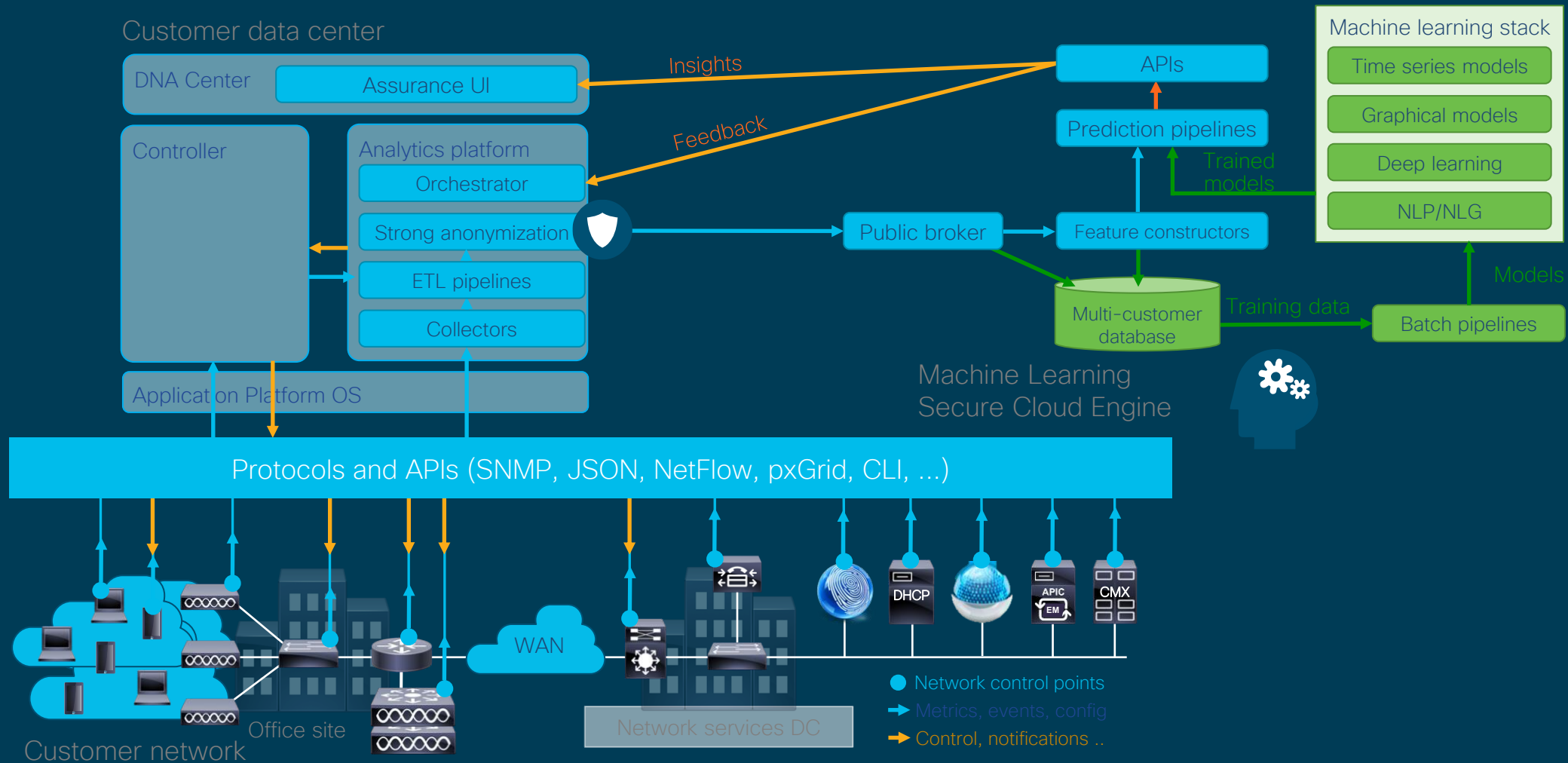
Infrastructure Assurance

Eliminate hours of recreating client issues through automated forensic captures and RCAs!



Serviceability

AI = Cloud Service !!!!



CleanAir™ Pro

RF Excellence

Why is Cisco's CleanAir Technology so Unique?

Introduceret med 3502 APet i 2010

▼ **802.11a/n**
Network
▼ RRM
RF Grouping
TPC
DCA
Coverage
General
Client Roaming
Media
EDCA Parameters
DFS (802.11h)
High Throughput (802.11n)
CleanAir

► **802.11b/g/n**
► **Media Stream**
Country
Timers
► QoS

Avoid Foreign AP interference ☒ Enabled
Avoid Cisco AP load ☐ Enabled
Avoid non-802.11a noise ☒ Enabled
Avoid Persistent Non-WiFi Interference ☐ Enabled
Channel Assignment Leader WLC04 (10.96.0.233)
Last Auto Channel Assignment 290 secs ago
DCA Channel Sensitivity **Medium** (15 dB)
Channel Width ☐ 20 MHz ☒ 40 MHz
Avoid check for non-DFS channel ☐ Enabled

DCA Channel List

DCA Channels

36, 40, 44, 48, 52, 56, 60, 64, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140

Select	Channel
<input checked="" type="checkbox"/>	124
<input checked="" type="checkbox"/>	128
<input checked="" type="checkbox"/>	132
<input checked="" type="checkbox"/>	136
<input checked="" type="checkbox"/>	140

Extended UNII-2 channels ☒ Enabled

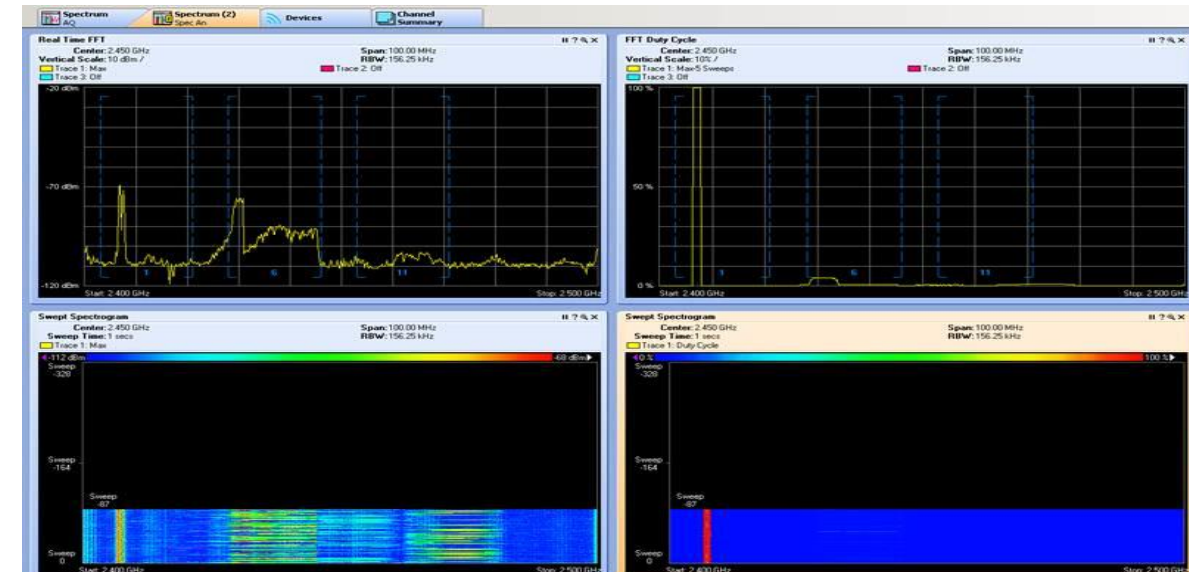
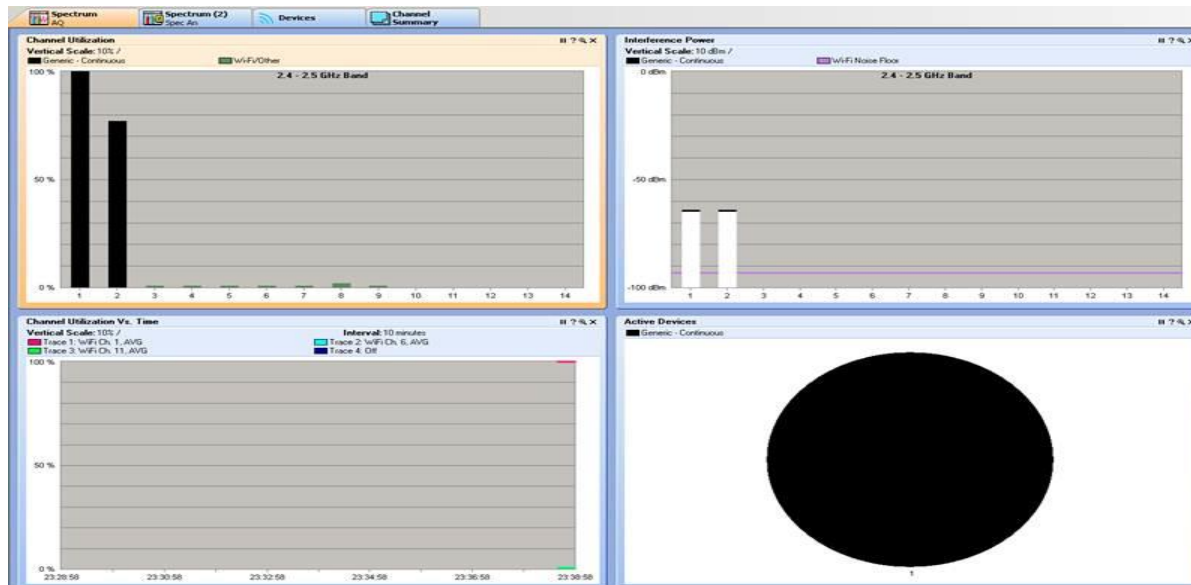
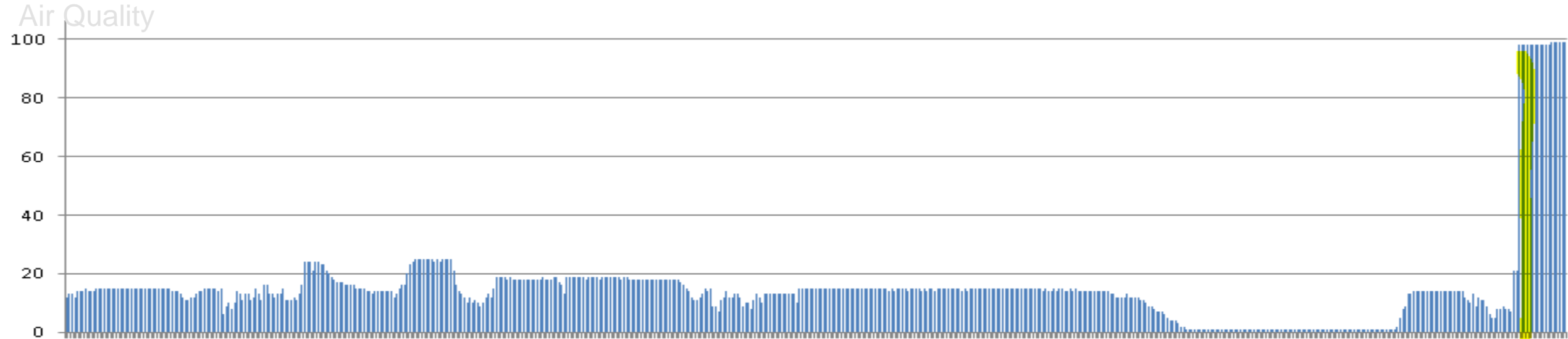
Event Driven RRM

EDRRM ☒ Enabled
Sensitivity Threshold **Medium**



Why is Cisco's CleanAir Technology so Unique?

Introduceret med 3502 APet i 2010



Cisco CleanAir Pro™

The Evolution of Cisco Wi-Fi Excellence into 6 GHz

Is Cisco CleanAir Pro still CleanAir ?

Detect and Classify Non – Wi-Fi interference

To Wi-Fi, if it's not Wi-Fi – then its noise

Set Severity Metric per Interferer

Important to identify which source is causing the most harm

Establish Air Quality for all interfaces on the AP

Track how much the combined impact is affecting Wi-Fi service in the cell

Merge same Type interferers

Correlation of duplicate alarms from other neighboring APs of same event

CleanAir

CleanAir Pro



CleanAir Pro™ ML Based Classification

- ML-based
 - Train classifier based on the collected metrics/statistics
 - Data set includes both cabled and OTA data, mixed/unmixed with Wi-Fi
 - Thousands of samples per device type
- Data Collection
 - Built-in command that triggers saving off raw spectrogram data for later offline retraining of classifier
 - Enhancements can be distributed back through WLC or Catalyst Center



Cisco CleanAir Pro™

The Evolution of Cisco Wi-Fi Excellence into 6 GHz

6E Ready

- 6E Packet capture (iCap)
- WIDS/WIPS/Rogue Detection

IOS-XE 17.7
DNAC 2.3.2 (Frey)

Spectrum Based Features

- 6 GHz Spectrum Analysis (iCap)
- 6 GHz RRM enhancements
- FastLocate

IOS-XE 17.8
DNAC 2.3.3 (Guardian)

Spectrum Insight is foundational for great Wi-Fi

*Classification & Reporting

- ML based interference classifier
- RF Interference Detection Reports
- Air Quality Index Reports

IOS-XE 17.9 *2.4 and 5 GHz only
DNAC 2.3.4 (Groot)

6 GHz Classifiers

- Continuous TX
- Video Repeater
- 6 GHz Merging enhancements

IOS-XE 17.10 6 GHz Detection

6 GHz Mitigation

- ED-RRM for 6 GHz
- Automated Signature Capture for ML

IOS-XE 17.13 6 GHz Mitigation

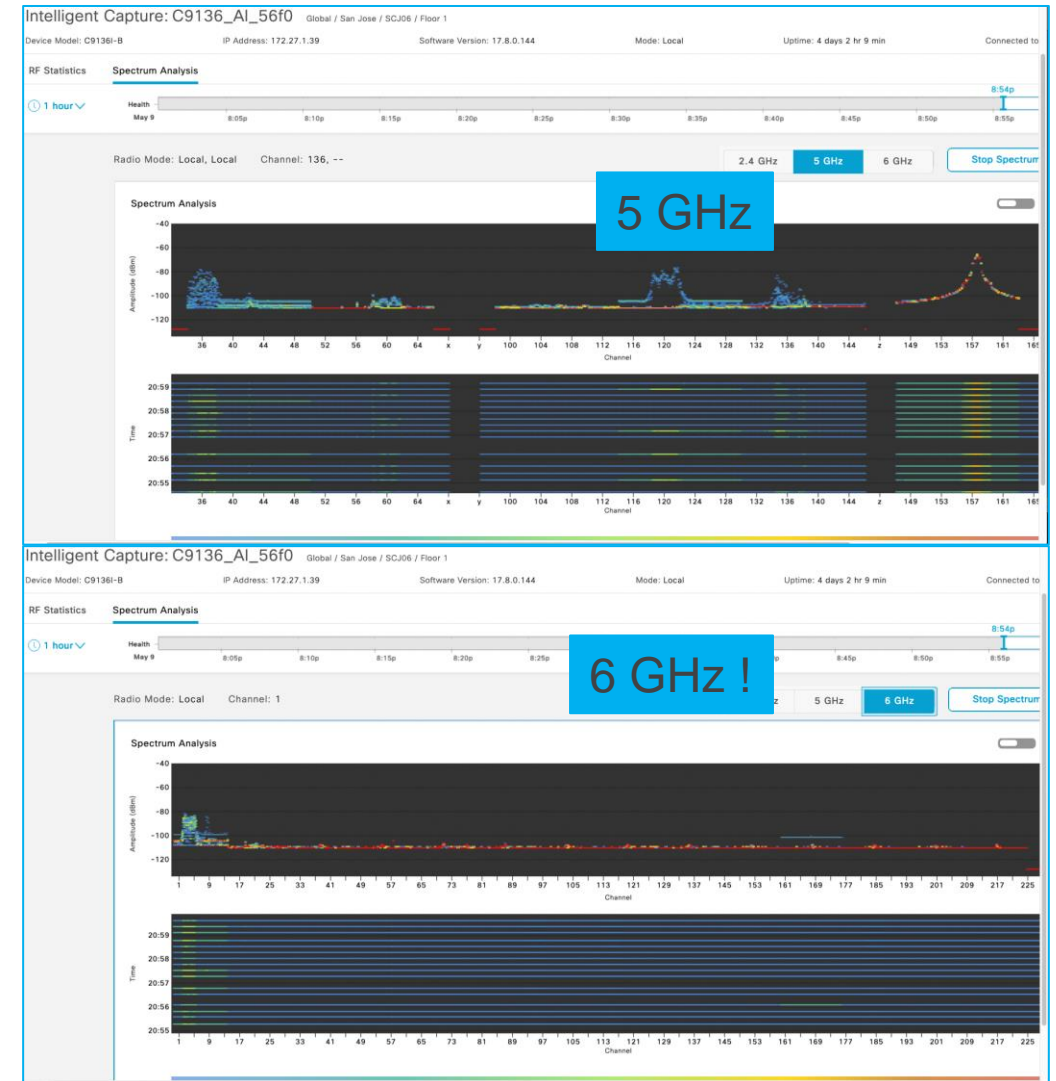
Above & Beyond

- AFC integration**
- ML driven Dynamic Interference signature updates & capture**
- IoT Radio integration**

Great for client device testing and validation

CleanAir™ Pro and Cisco Catalyst Center iCAP Spectrum for 2.4, 5 and 6 GHz!

- iCAP Spectrum allows viewing of raw Spectrum from CleanAir and CleanAir Pro enabled Catalyst APs
- 2.4, 5 and 6 GHz spectrum available on demand!
- IOS-XE 17.8 and Cisco Catalyst Center 2.3.2 w/Assurance required



AI-Enhanced RRM

What is Radio Resource Management (RRM)?

The Foundation for Mitigating RF Issues

RRM is a feature on the WLC that automatically optimizes wireless configurations to improve wireless performance and limit interference.

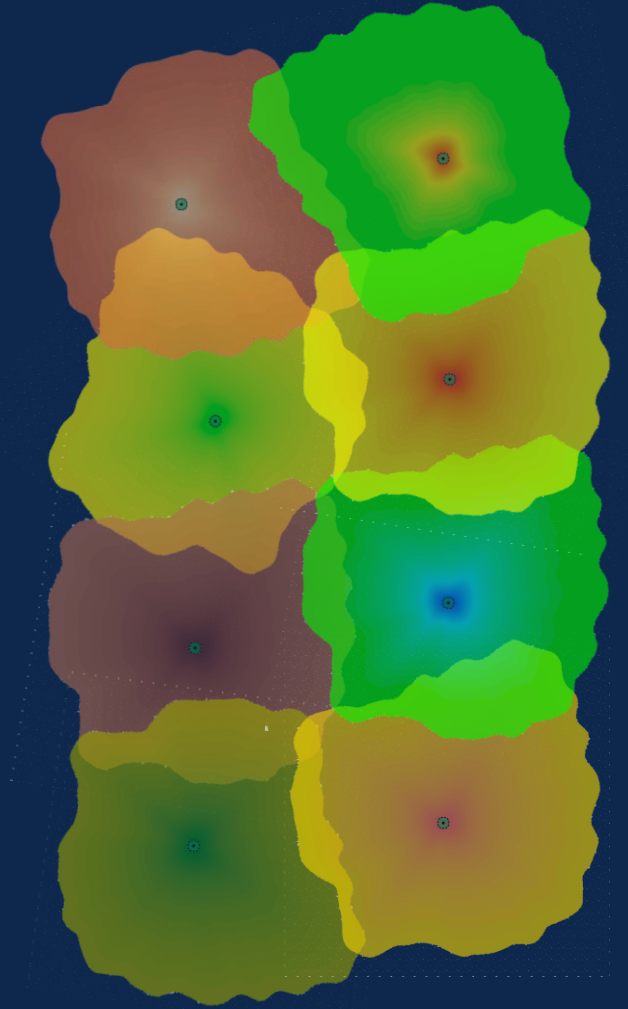
Some Examples:

Flexible
Radio Assignment

Transmit
Power Control

Dynamic
Channel Assignment

Dynamic
Band Selection



Configuration > Radio Configurations > RRM

6 GHz Band 5 GHz Band 2.4 GHz Band FRA

General Coverage DCA TPC RF Grouping Spatial Reuse

Profile Threshold For Traps Reset to Defaults

Throughput (Bps)* 1000000

Noise/Interference/Rogue/CleanAir/SI Monitoring Channels ⓘ

Channel List Country Channels

RRM Neighbor Discover Type Transparent

Monitor Intervals

Neighbor Packet Frequency (seconds)* 180

Reporting Interval (seconds)* 180

Neighbor Timeout factor* 20

For 6 GHz band, some parameters like Interference Percentage, Clients, Noise, Utilization Percentage and RRM Neighbor Discover Mode is configured in [default-rf-profile-6ghz](#)

Configuration > Radio Configurations > RRM

6 GHz Band 5 GHz Band 2.4 GHz Band FRA

General Coverage DCA TPC RF Grouping Spatial Reuse

Enable Coverage Hole Detection ☒

Data Packet Count* 50

Voice Packet Count* 100

Data Packet Percentage* 50

Voice Packet Percentage* 50

For 6 GHz band, few global coverage parameters like Data RSSI Threshold, Voice RSSI Threshold, Minimum Failed Client per AP and Percent Coverage Exception Level per AP is configured in [default-rf-profile-6ghz](#)

Configuration > Radio Configurations > RRM

6 GHz Band 5 GHz Band 2.4 GHz Band FRA

General Coverage DCA TPC RF Grouping Spatial Reuse

Dynamic Channel Assignment Algorithm

Channel Assignment Mode ☒ Automatic ☐ Off

Interval 10 minutes

Anchortime 0

Channel Assignment Leader c9800-40-TMEDNAC (10.70.0.15)

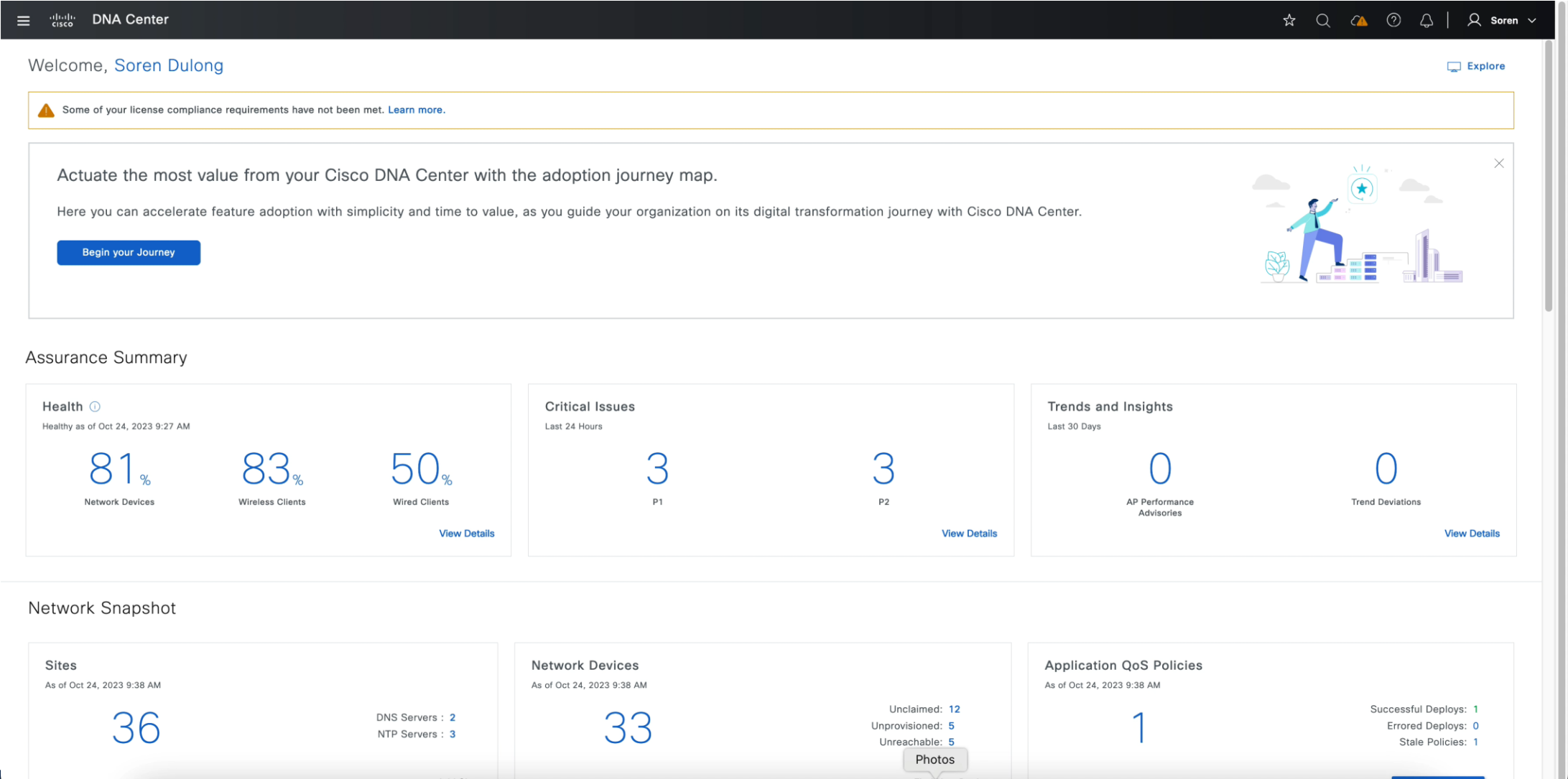
Last Auto Channel Assignment 474 second(s) ago

DCA Channel Sensitivity medium

Traditional RRM

Requires Expertise, Lack of Visibility and Serviceability

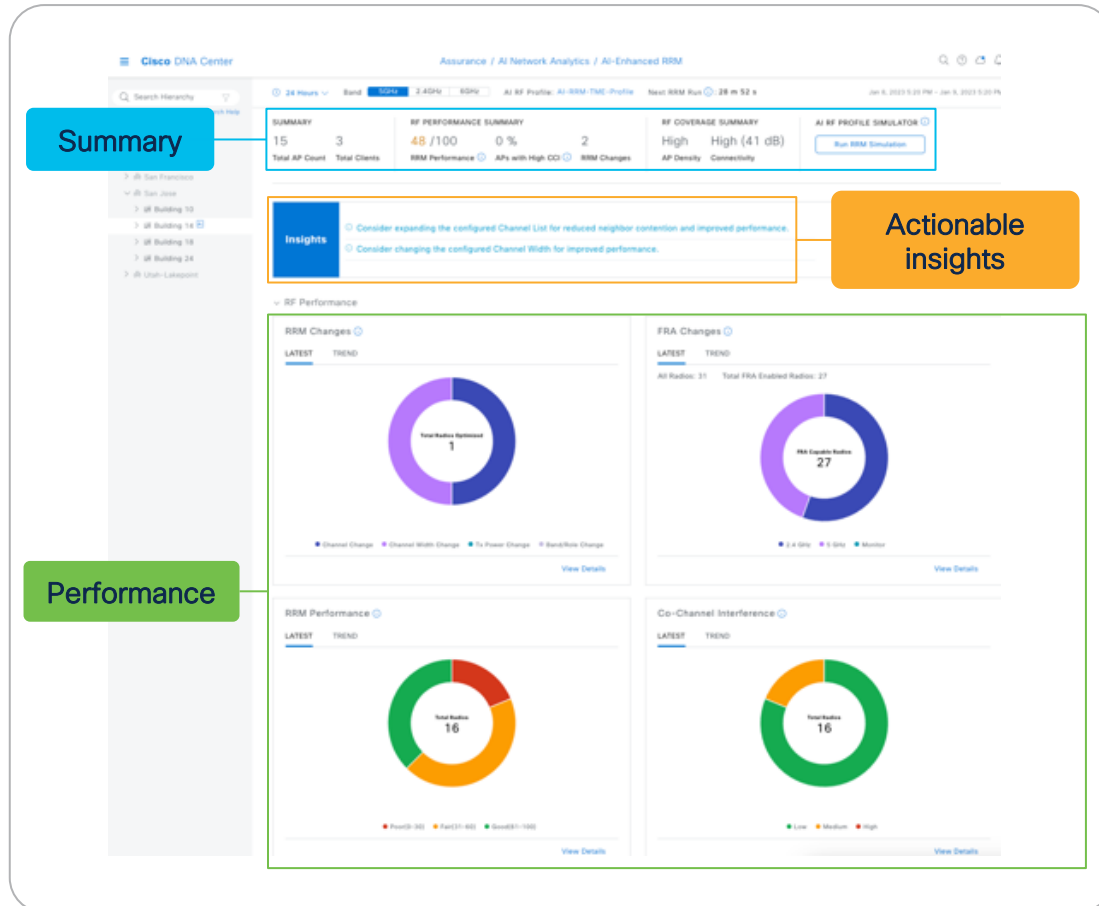
Event Viewer Catalyst Center Demo



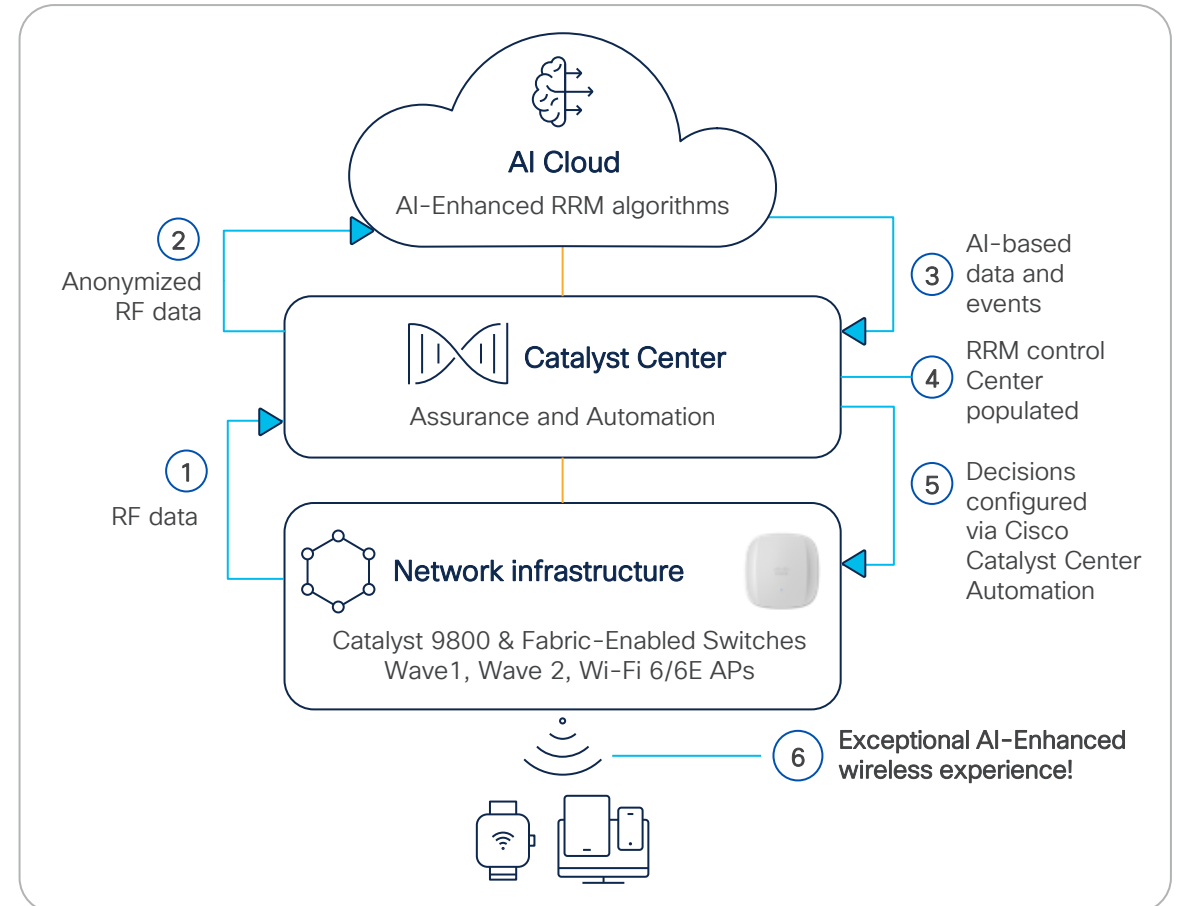
AI-Enhanced RRM is AI that Powers RF Optimization

Provides Users with Better Wi-Fi and Admins with a Better RF Management Experience!

Instantaneous visibility



Proactive optimizations



AI-Enhanced RRM key customer benefits

Better RF, better insights, reduced operational costs and time

AI-driven self-optimizing RF

Leverages machine learning to find patterns and optimize your RF before issues happen.



Measured Improvements in RF KPIs!

- CCI Reduction: Up to 40%
- SNR Downlink Gain: Up to 7 dB
- RRM Changes Reduction: Up to 75% at busy hours

Performance visibility

Provides per-building visibility into RF health using Wireless Config Analyzer algorithm.

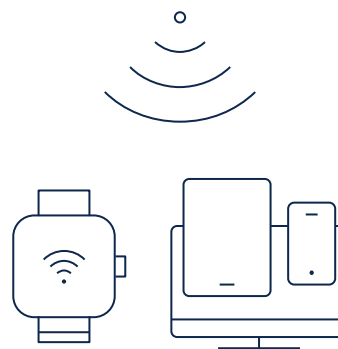


Actionable insights

AI-derived recommendations on RRM setting changes for a more optimal performance.

Complete historical context

Understand exactly what RRM changes occurred at a per-AP level, and how they benefit the network.



Simplified RRM configuration

Complicated traditional RRM configurations are simplified, with policy toggles and thresholds.

We've created a new enablement workflow that doesn't require admins to manage their network configurations on Catalyst Center!

1

Enable AI-Enhanced RRM cloud access in Settings

Cisco AI Analytics

AI Network Analytics

AI Network Analytics harnesses machine learning to drive intelligence in the network, empowering administrators to effectively improve network performance and accelerate issue resolution. AI Network Analytics eliminates noise and false positives significantly by learning the network behavior and adapting to your network environment.



Enable AI Network Analytics

AI-ENHANCED RRM

Provides sophisticated closed-loop optimization of your radio network based on historical data, while delivering visual insights into why and how. AI-Enhanced RRM delivers macro level suggestions for config optimization and the ability to apply these within minutes. AI-Enhanced RRM is applicable to sites running Catalyst 9800.

⚠ This feature can be enabled only if AI Network Analytics is enabled.

2

Select the newly designed workflow and deployment option!



Configure AI-Enhanced RRM

Deploy AI-enhanced RRM with or without provisioning your wireless controllers and access points.

Wireless

...

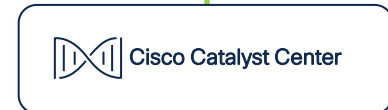
Enable Without Device Provisioning

This flow enables AI-Enhanced RRM without provisioning your wireless controllers or access points.

If you do not want Cisco DNA Center to manage the configuration of your devices, choose this option.

3

AI-Enhanced RRM is enabled without device provisioning!

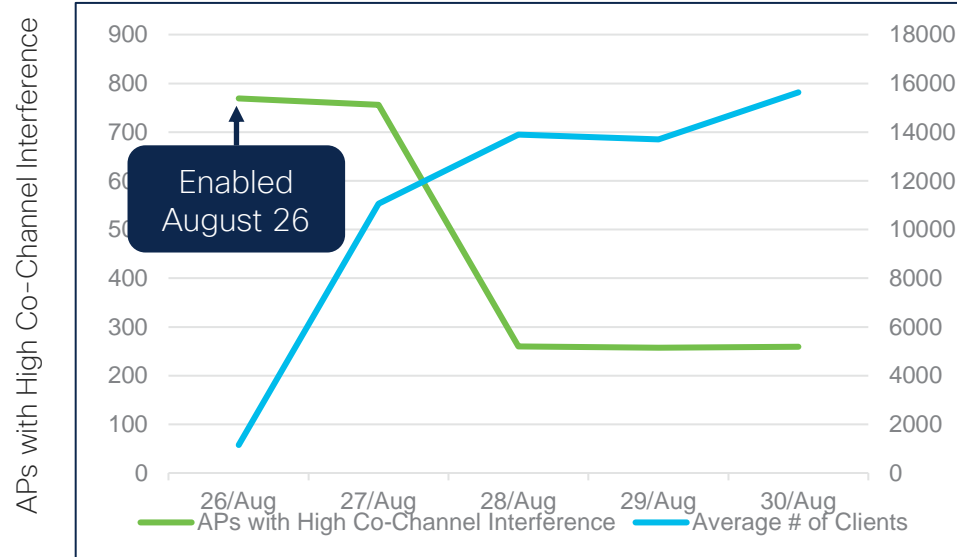


Cisco IMPACT 2023 Analysis

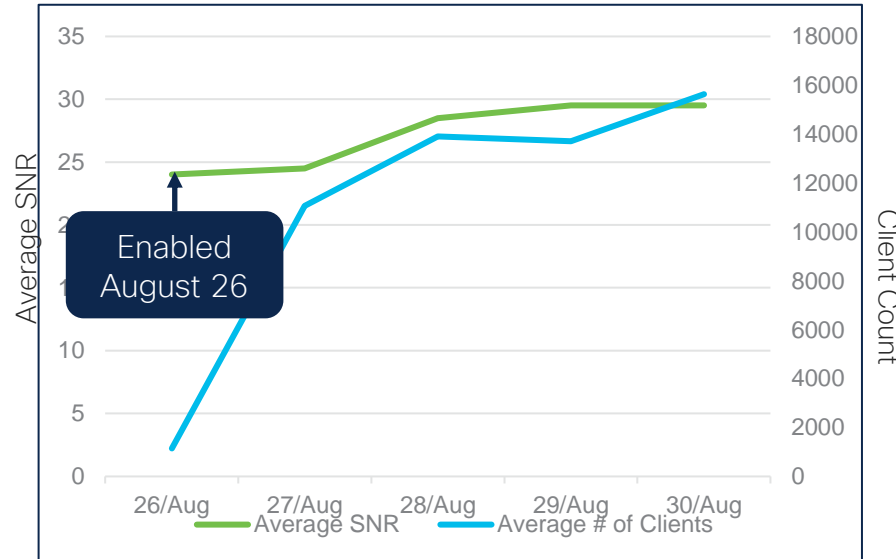


AI-Enhanced RRM Significantly Improved the Wireless Experience at Cisco IMPACT in August 2023

APs with High Co-Channel Interference Decreased by 28%!



Client SNR Increased by ~4dB!



AI-Enhanced RRM Deployment

- **Location:** Mandalay Bay, MGM Grand, Delano
- **Contiguous Square Footage:** 280 Km/2
- **WLC Count:** 2 x C9800-80
WLC Version: 17.9.3
- **AP Type:** 3800s and 9130E
AP Count: 2352 (with 2526 enabled radios)
- **Catalyst Center:** 1 Running 2.3.3.7
- **Spectrum:** 5 GHz

AI-Enhanced RRM converged the wireless network within 6 hours and continued to improve the wireless experience in the high-density environment after a large influx of clients began to join.

Assurance AI / ML

AI NETWORK ANALYTICS (7 Dages view)

All

P1: 0

P2: 10

P3: 4

P4: 0

AI-Driven: 14

Total Open: 14

Export

Search Table

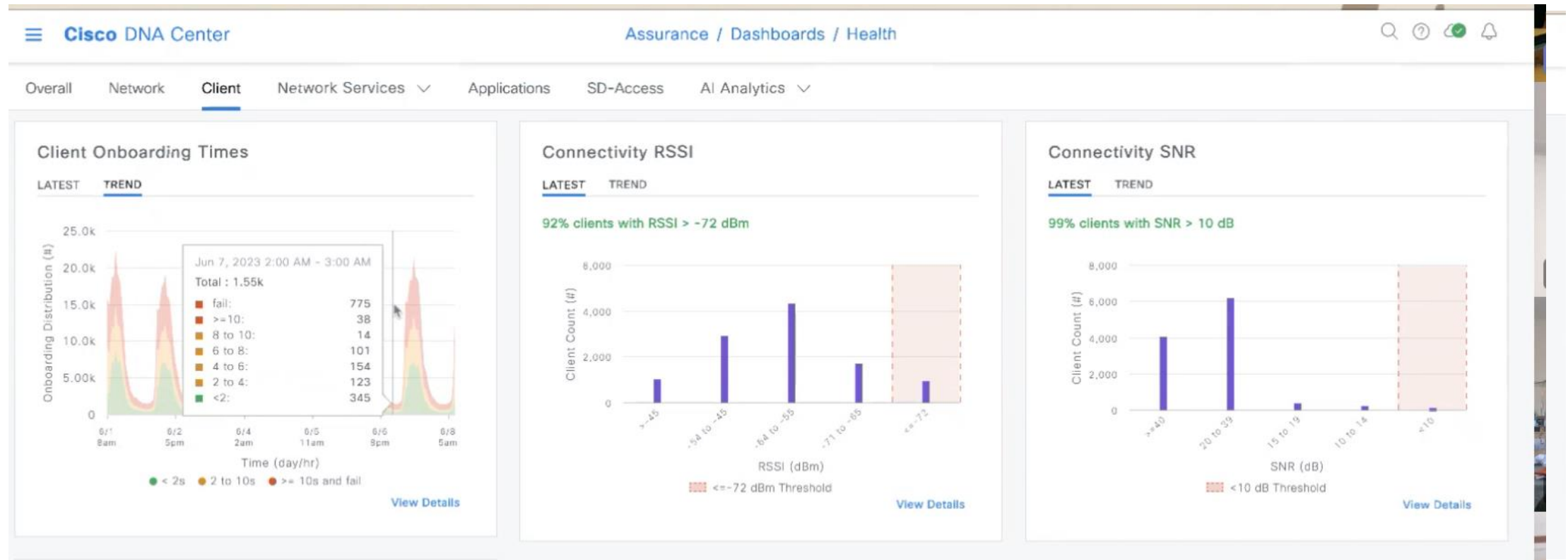
Priority	Issue Type	Device Role	Category	Issue Count	Site Count (Area)	Device Count	Last Occurred Time
P2	AI Excessive failures to roam - High deviation from baseline	WIRELESS	Onboarding	2	2	--	Jun 1, 2023 12:30 PM
P2	AI Excessive failures to connect - High deviation from baseline	WIRELESS	Onboarding	1	1	--	Jun 1, 2023 11:00 AM
P2	AI Excessive time to get an IP Address - High deviation from baseline	WIRELESS	Onboarding	4	4	--	May 31, 2023 12:00 PM
P2	AI Excessive time to get Authenticated - High deviation from baseline	WIRELESS	Onboarding	1	1	--	May 30, 2023 6:30 AM
P2	AI Excessive time to connect - High deviation from baseline	WIRELESS	Onboarding	1	1	--	May 29, 2023 7:30 AM
P2	AI Drop In total radio throughput	ACCESS POINT	Application	1	1	--	May 26, 2023 6:00 PM
P3	AI Drop in radio throughput for Social Applications	ACCESS POINT	Application	4	2	--	Jun 1, 2023 9:00 AM

7 Records

Show Records: 10

< 1 >

Onboarding



Onboarding

Client Onboarding Times

As of Jun 8, 2023 9:53 AM

7 Days TREND: Jun 1, 9:53 AM - Jun 8, 9:53 AM

Global

Overall

✓ 59% clients with Onboarding times < 10s

Association

✓ 94% clients with Association times < 5s

Authentication

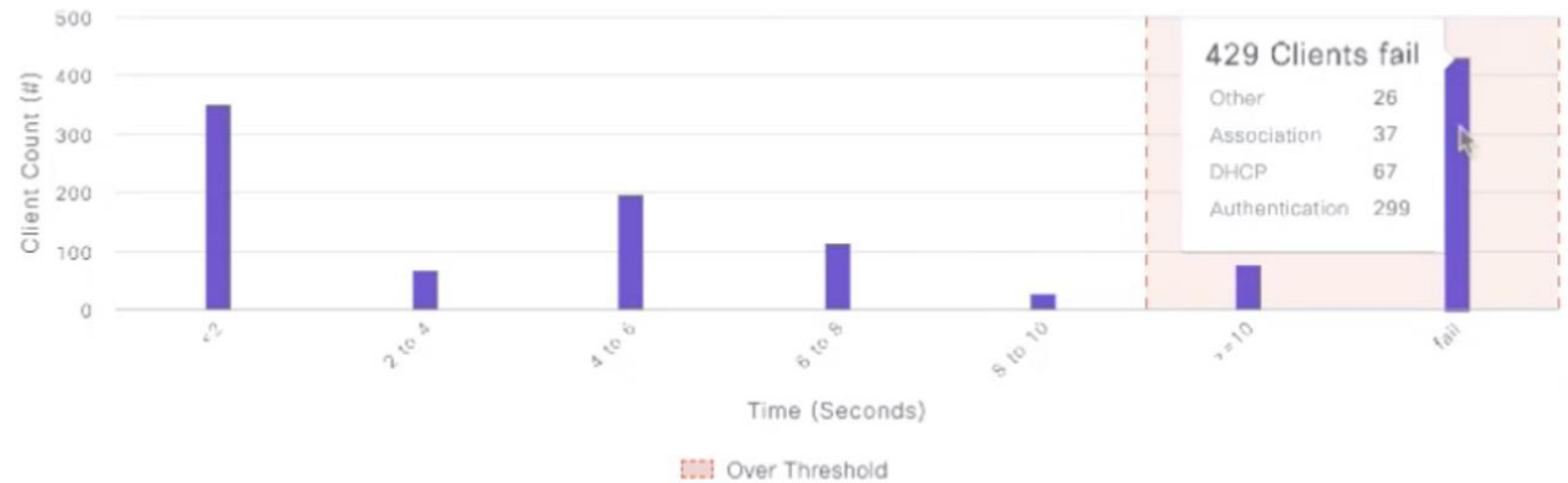
✓ 66% clients with Authentication times < 5s

DHCP

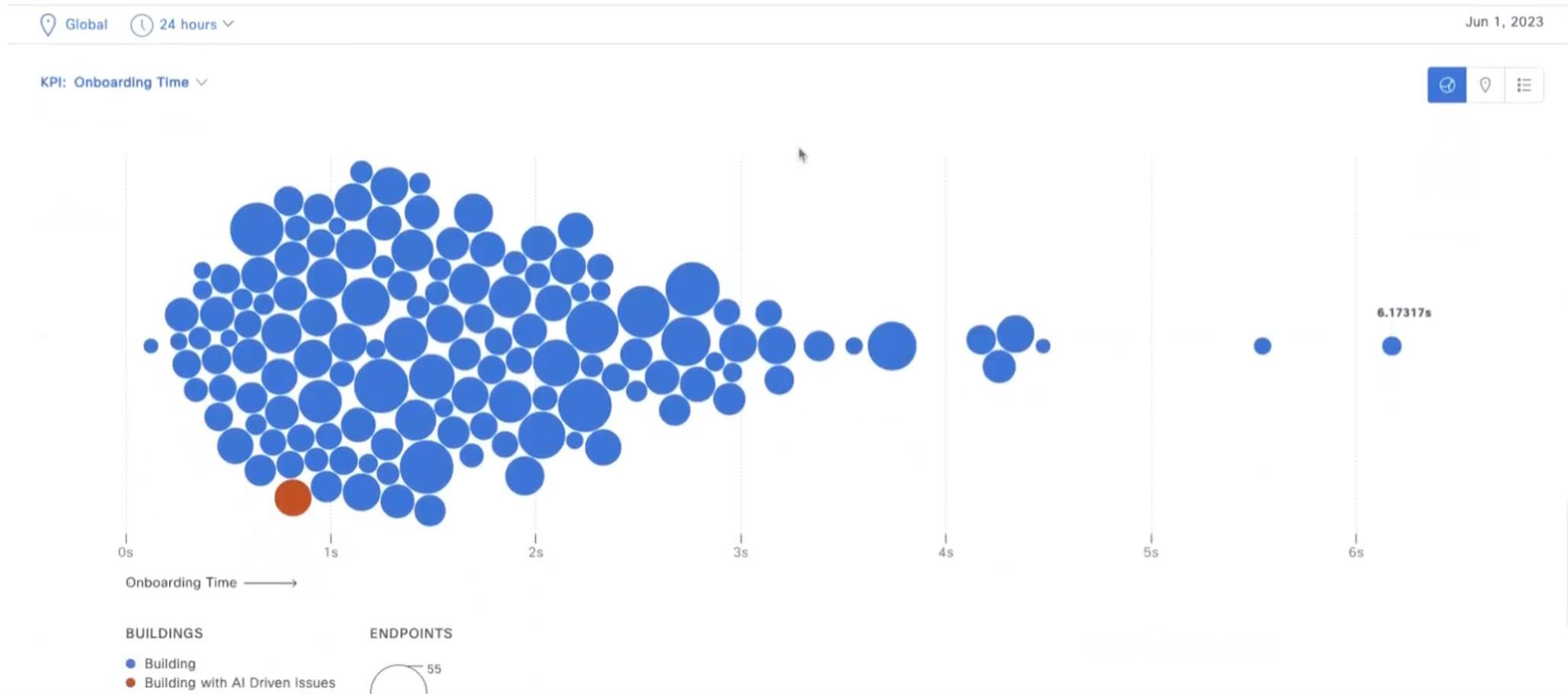
✓ 56% clients with DHCP times < 5s

Overall

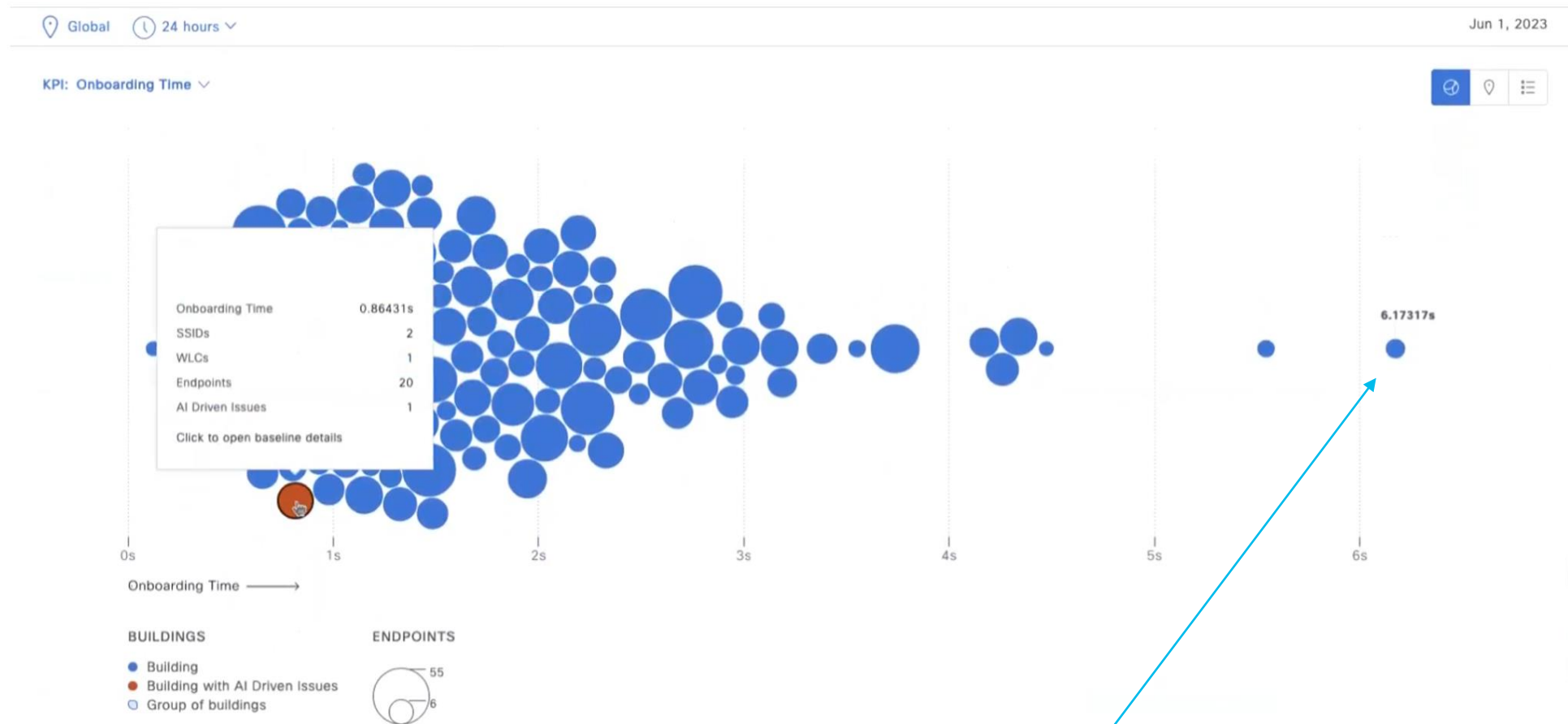
LATEST TREND



Onboarding



Onboarding



© 2

Hvorfor er denne ikke rød ?

Onboarding

AI Network Analytics

High Percentage of Onboarding Failures

Cisco AI



This issue is triggered based on a deviation from a predicted baseline for your specific environment. [Learn More](#)



The network is experiencing a high percentage of onboarding failures compared to usual. Clients are experiencing multiple onboarding failures while connecting to SSID eduroam.

Time: June 1, 2023 11:00 AM - 3:30 PM

Location: Global

Is this issue helpful?

IMPACTED SUMMARY FOR THIS NETWORK

Is this issue helpful?

1

Impacted Sites

169

Impacted Clients

Problem

Impact

Root Cause Analysis

Suggested Actions

Potential Root Causes

Network Causes

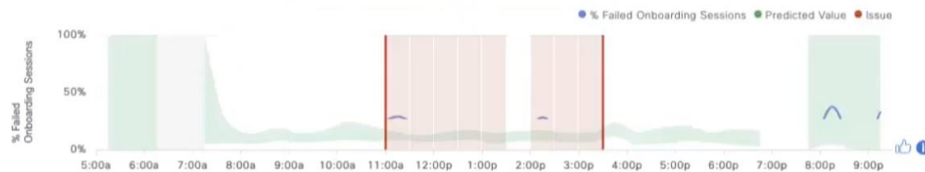
Failed Distribution

Failed Percentage

Failed Count

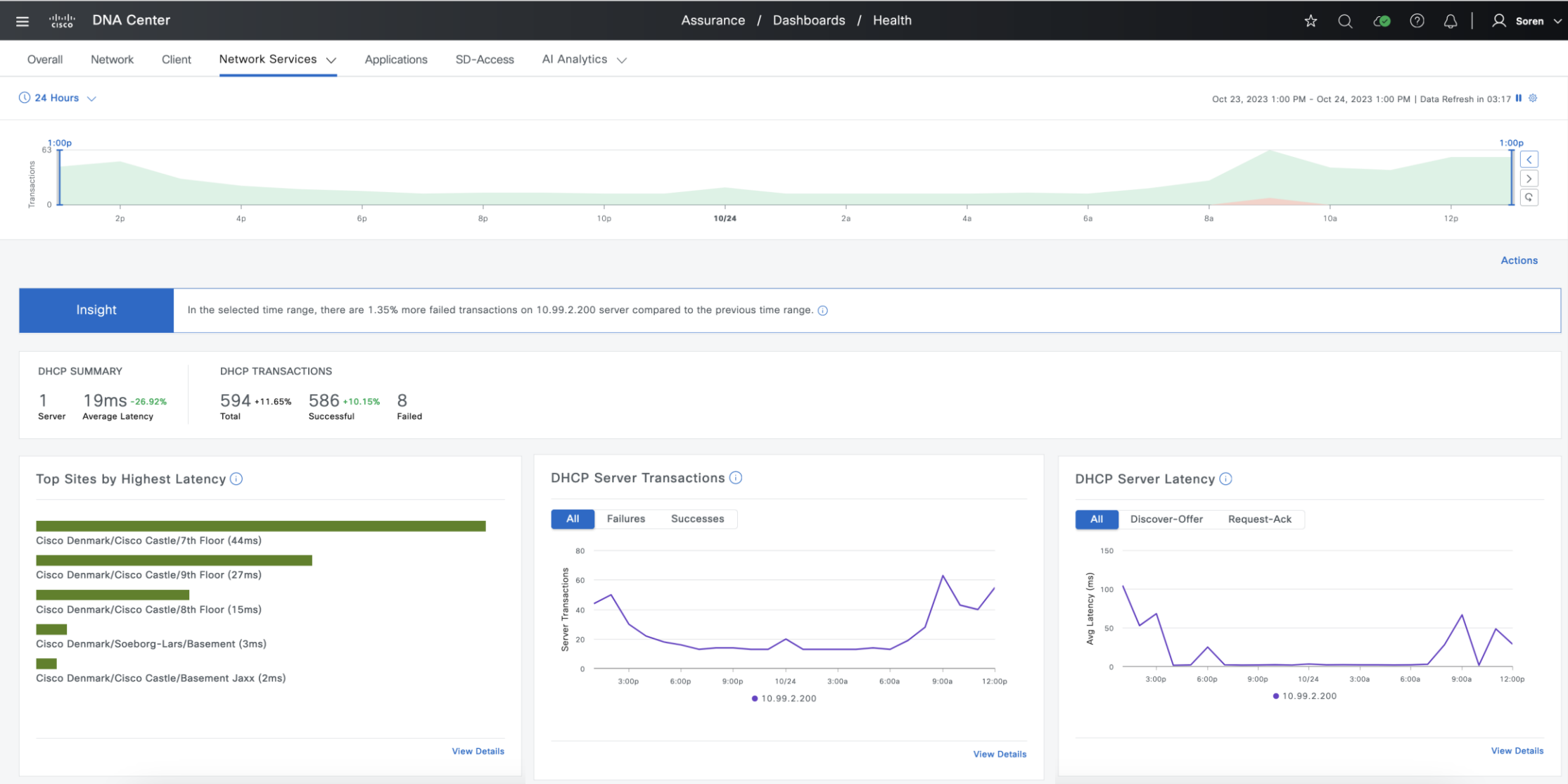
DHCP and AAA failures.: High failure rate for AAA, please check the AAA server for detailed logs and verify the DHCP servers (connectivity, DHCP pools, load on the server)

Add KPI



© 2019 Cisco and/or its affiliates. All rights reserved.

Network Services Insights (Cisco DK)



AP Auto Location

Access Point - GPS Module

To obtain Geolocation co-ordinates



Access Point with GPS module installed

PID: CW-ACC-GPS1=

Supported Access Points:

Catalyst WLC: C9130, C9136, CW9162, CW9164, CW9166I/D

Meraki: MR57, CW9162, CW9164, CW9166I/D

Usecases

Enable increased customer efficiency and new business models

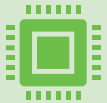


Network Admin efficiency is improved as

AP locations are automatically placed on maps
AP location changes are detected, and Network Admins are notified
AP location fidelity test available on demand



Enables easier Customer deployment of location services

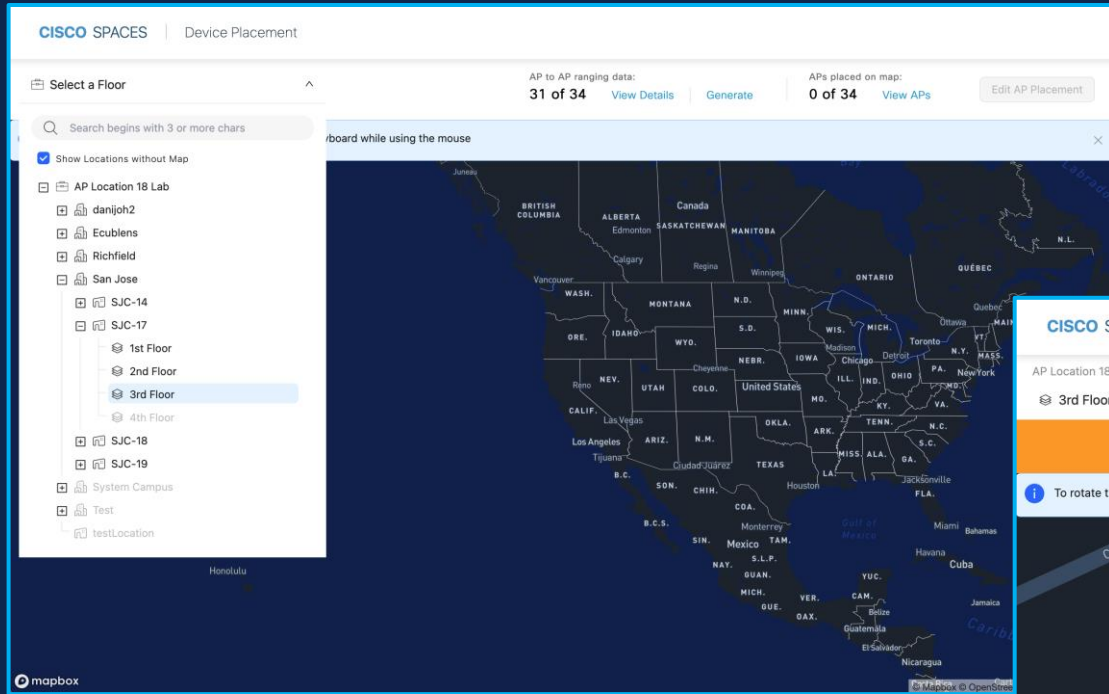


Single Cisco Product Identifier (PID) enabled as AP detects the regulatory domain in which it is located

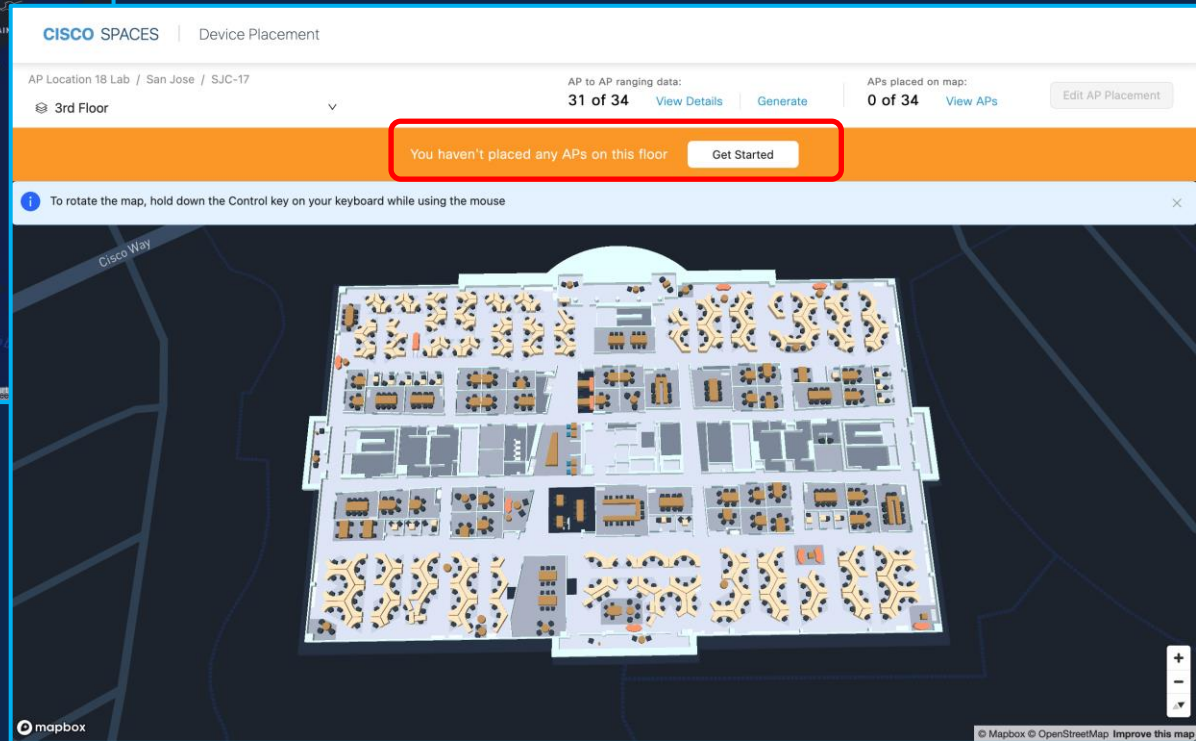


Better location accuracy for AFC

AP Placement Workflow



1 Step 1 – Choose building and floor



2 Step 2 – View existing AP Map

✓ Note: Banner to assist user in starting AP Auto Location workflow if no APs are on the map

AP Location Flow (continued...)

CISCO SPACES | Device Placement

Place APs on 3rd Floor:

1 Add APs to the floor 2 Add Anchor APs 3 Auto-place APs 4 Review and Publish

Please select APs from this list that you are certain exist on your floor. This will help optimize our algorithm and help prevent unnecessary APs from being added to the map. [Learn More](#)

Search

Name	AP Model	Mac Address	Controller	Site Tag	Switch Name	IP
<input checked="" type="checkbox"/> SJC17-31A-AP193	CW9166I-B	10:19:20:fe:62:20	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-32a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-32A-AP173	CW9166I-B	6c:8d:77:2e:4f:00	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-32a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-32A-AP170	C9136I-B	68:7d:b4:5d:1d:c0	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-31a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-32A-AP166	CW9166I-B	6c:8d:77:2e:5c:00	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-32a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-31A-AP194	CW9166I-B	6c:8d:77:2e:4f:40	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-31a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-31A-AP196	CW9166I-B	6c:8d:77:2e:58:80	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-31a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-32A-AP168	CW9166I-B	6c:8d:77:2e:5c:60	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-32a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-31A-AP198	CW9166I-B	6c:8d:77:2e:58:a0	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-31a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-32A-AP175	CW9166I-B	6c:8d:77:2e:56:80	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-32a-sw1.cisco.com	10.32
<input checked="" type="checkbox"/> SJC17-31A-AP195	CW9166I-B	6c:8d:77:2e:58:20	10.32.12.134	SJC17-Floor3	dnspaces-sjc17-31a-sw1.cisco.com	10.32

Selected APs (20)

SJC17-31A-AP193	SJC17-32A-AP173	SJC17-32A-AP170
SJC17-32A-AP166	SJC17-31A-AP194	SJC17-32A-AP192
SJC17-31A-AP196	SJC17-32A-AP168	SJC17-31A-AP198
SJC17-32A-AP175	SJC17-31A-AP195	SJC17-32A-AP167
SJC17-32A-AP172	SJC17-31A-AP201	SJC17-31A-AP197
SJC17-32A-AP169	SJC17-31A-AP200	SJC17-31A-AP199
SJC17-32A-AP171	SJC17-32A-AP174	

Cancel

3 Step 3 – Select APs

CISCO SPACES | Device Placement

Place APs on 3rd Floor:


1 Add APs to the floor 2 Add Anchor APs 3 Auto-place APs 4 Review and Publish

To create anchor points for the map, manually position the APs located in each corner of the floor. [Learn More](#)

Search

Name

- ☒ SJC17-31A-AP197
Lat: 37.408099999999996, Long: -121.926829
- ☐ SJC17-31A-AP198
Lat: 37.408425, Long: -121.92696
- ☐ SJC17-31A-AP199
Lat: 37.408599, Long: -121.92718
- ☒ SJC17-31A-AP200
Lat: 37.4081491, Long: -121.92739035
- ☐ SJC17-31A-AP201
Lat: 37.408306, Long: -121.92714
- ☒ SJC17-32A-AP166
Lat: 37.408173, Long: -121.92765
- ☐ SJC17-32A-AP167
Lat: 37.408404, Long: -121.92779
- ☐ SJC17-32A-AP168
Lat: 37.408019, Long: -121.92771
- ☐ SJC17-32A-AP169
Lat: 37.408029, Long: -121.92775

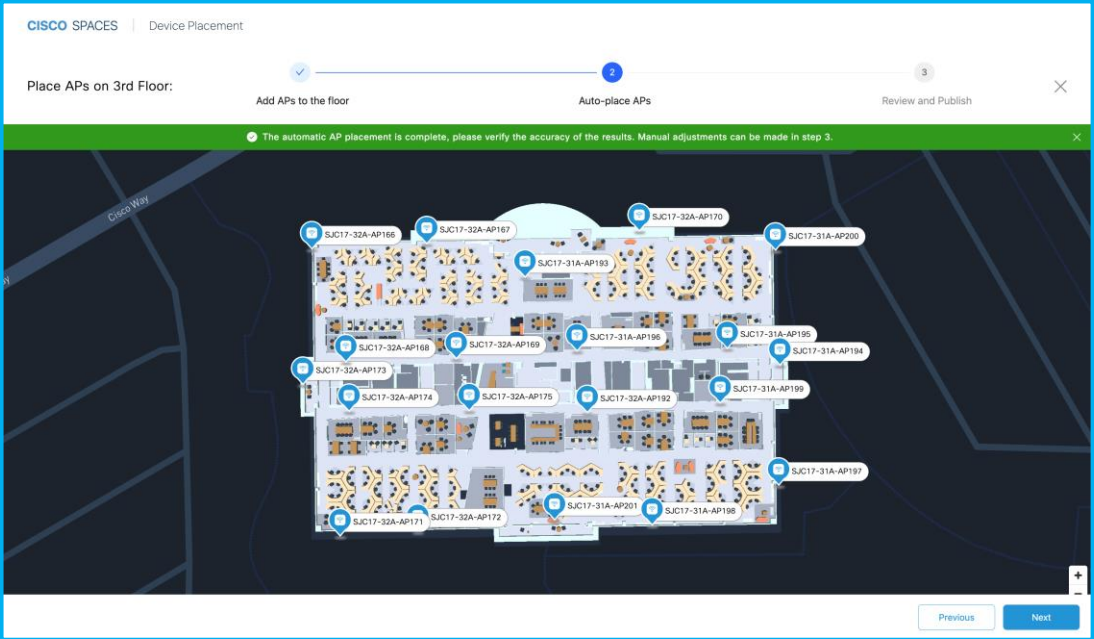


Previous Next

4 Step 4 – Position known APs

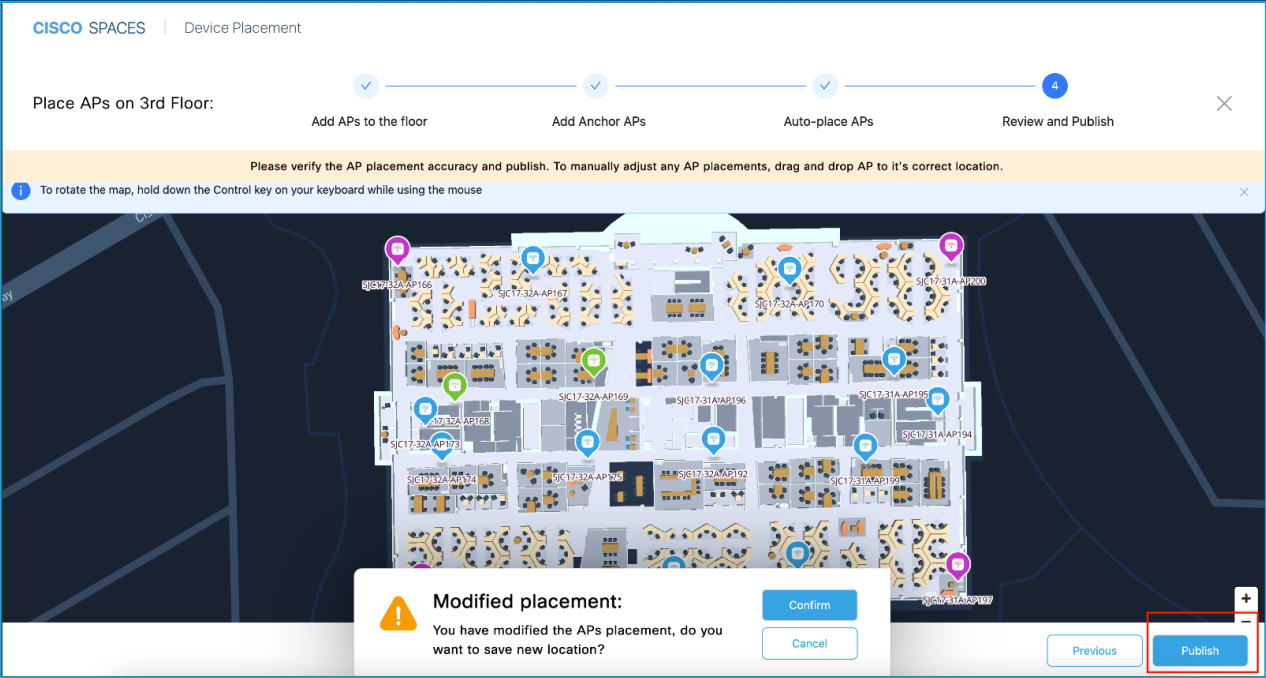
Note: It is recommended to place at least 4 APs with known location as “Anchor” APs, for the algorithm to compute relative locations of other APs

AP Location Flow (continued...)



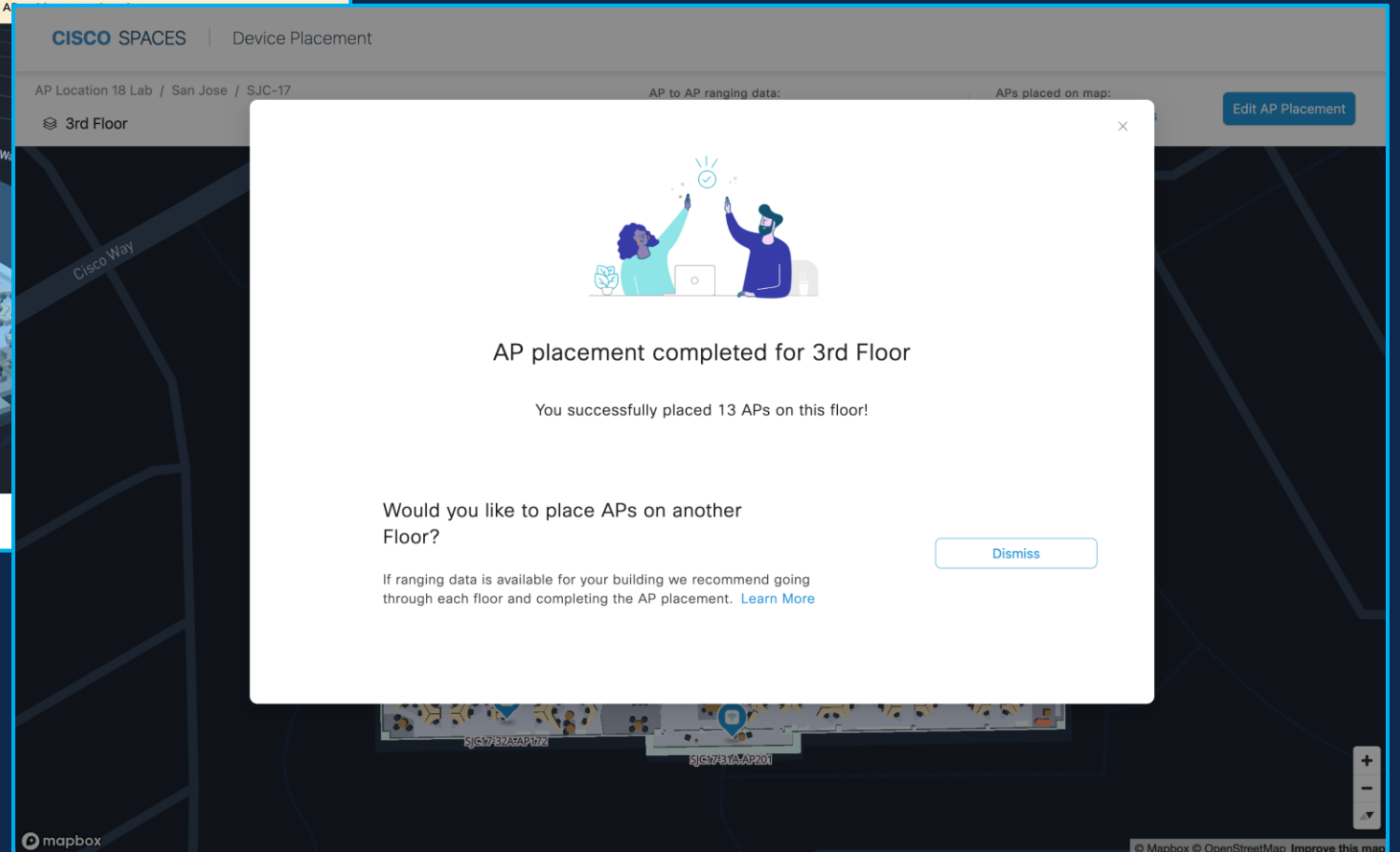
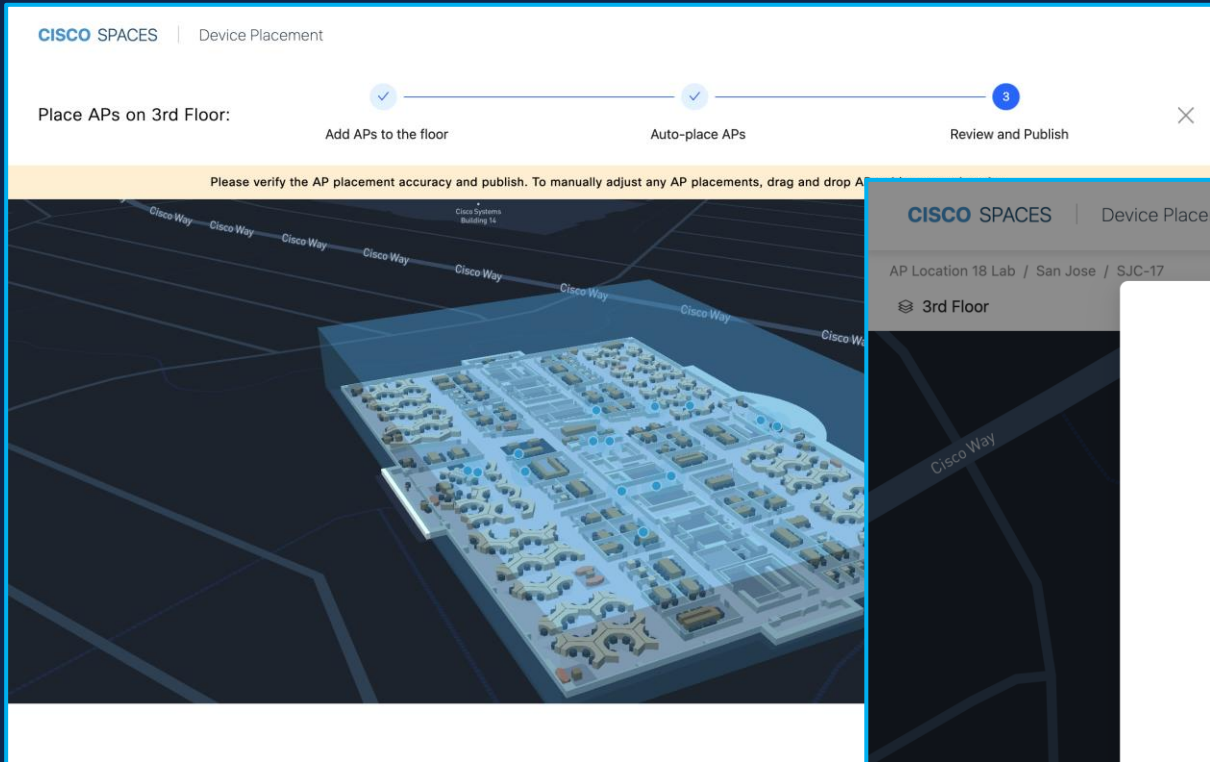
5

Step 5 – Review/Refine AP Placement



AP Placement Completed

6 Step 6 – Calculation phase



7

Step 7 – Publish Successfully



The bridge to possible