



The bridge to possible

7 Ways to Optimize User Experience using Catalyst Center

Wireless AI Ops & Assurance

Karthik Iyer
Sr. Technical Marketing Engineer
BRKEWN-2029

cisco Live!

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Cisco Webex App

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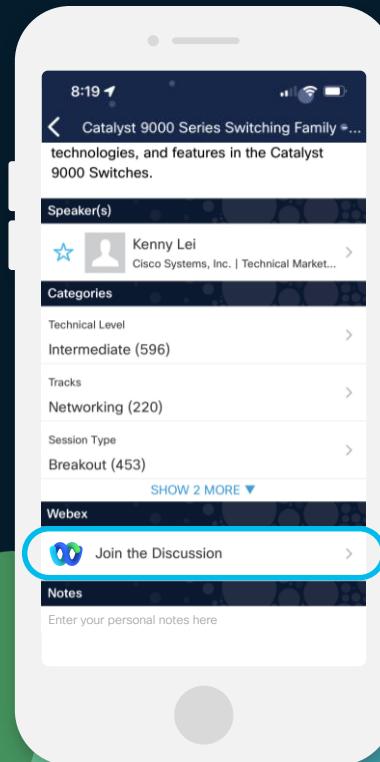
How

- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
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Karthik Iyer

Technical Marketing Engineer- AI-Driven Wireless Solutions



► Fields of Expertise

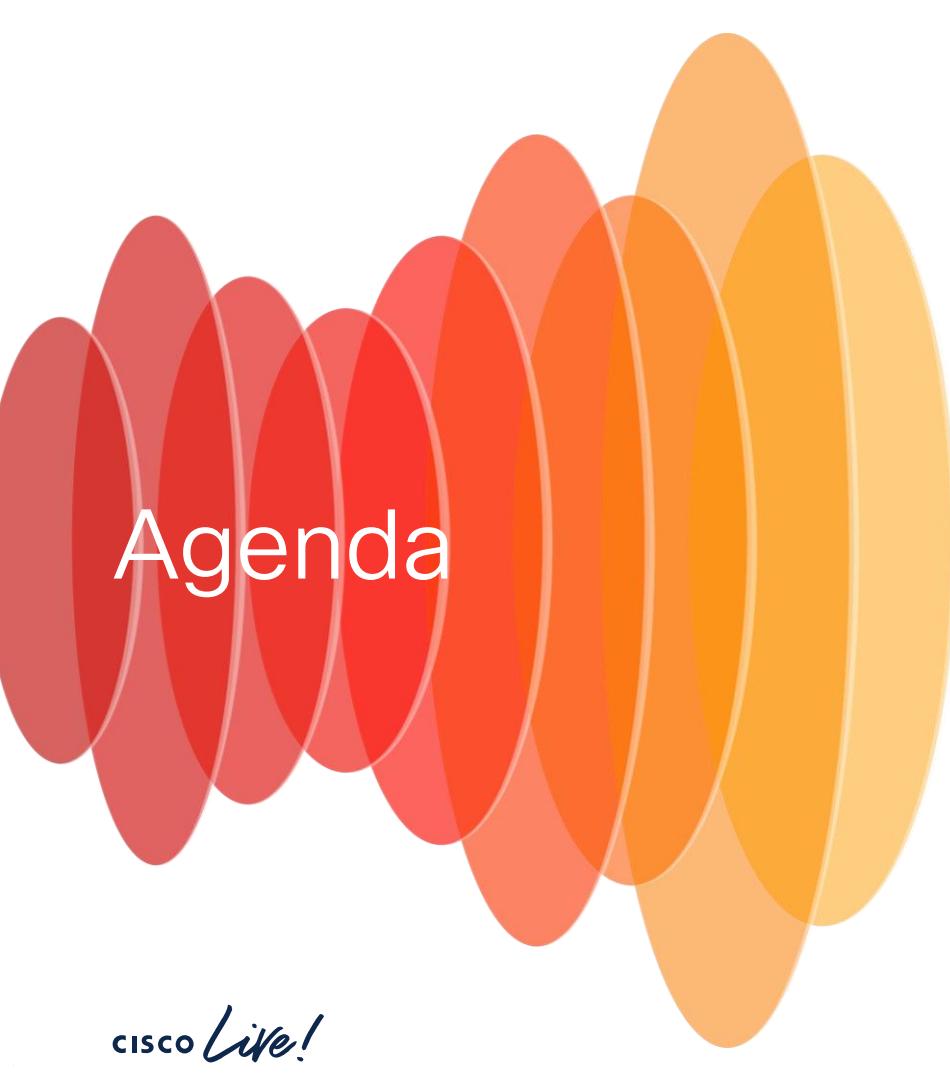
Wireless Assurance and Automation, Wi-Fi 6/6E APs

► Personal Life

Indian, Silicon Valley Resident, San Jose State University Alumni

► Hobbies

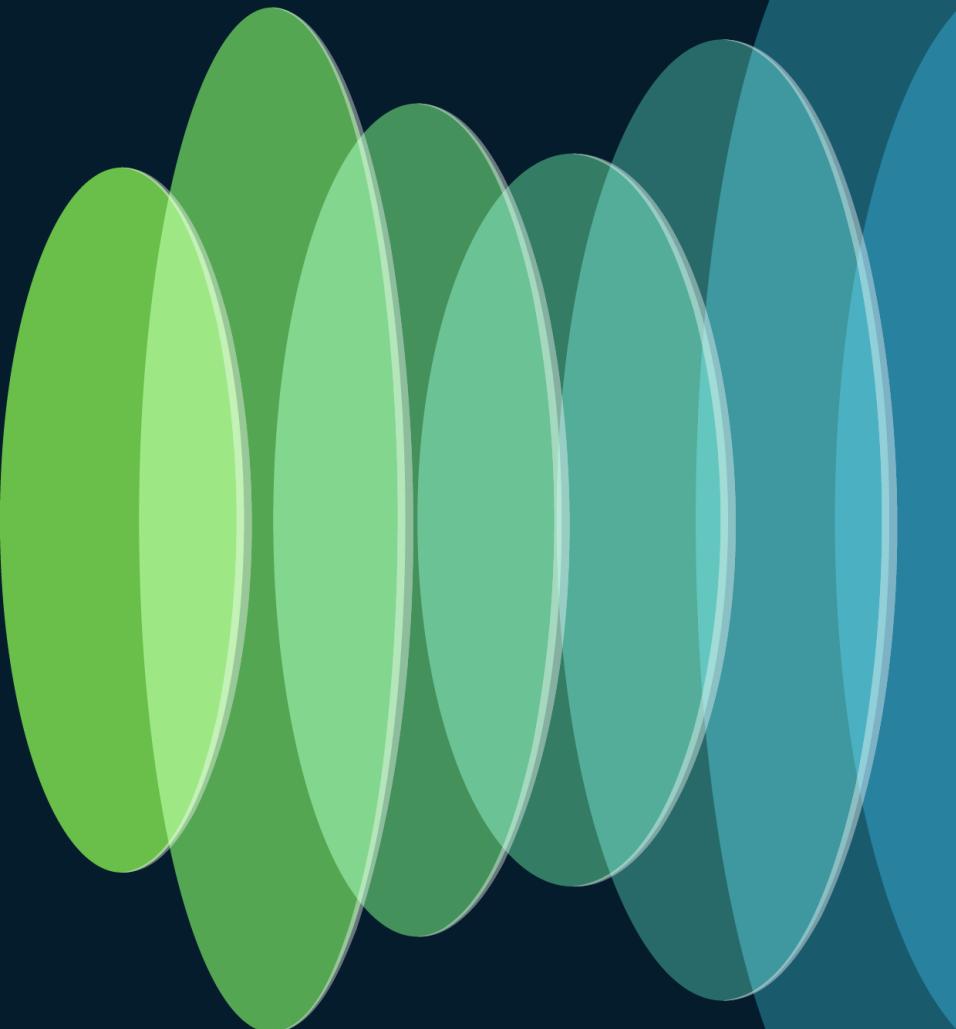
Motorcyclist, Formula 1 Enthusiast



Agenda

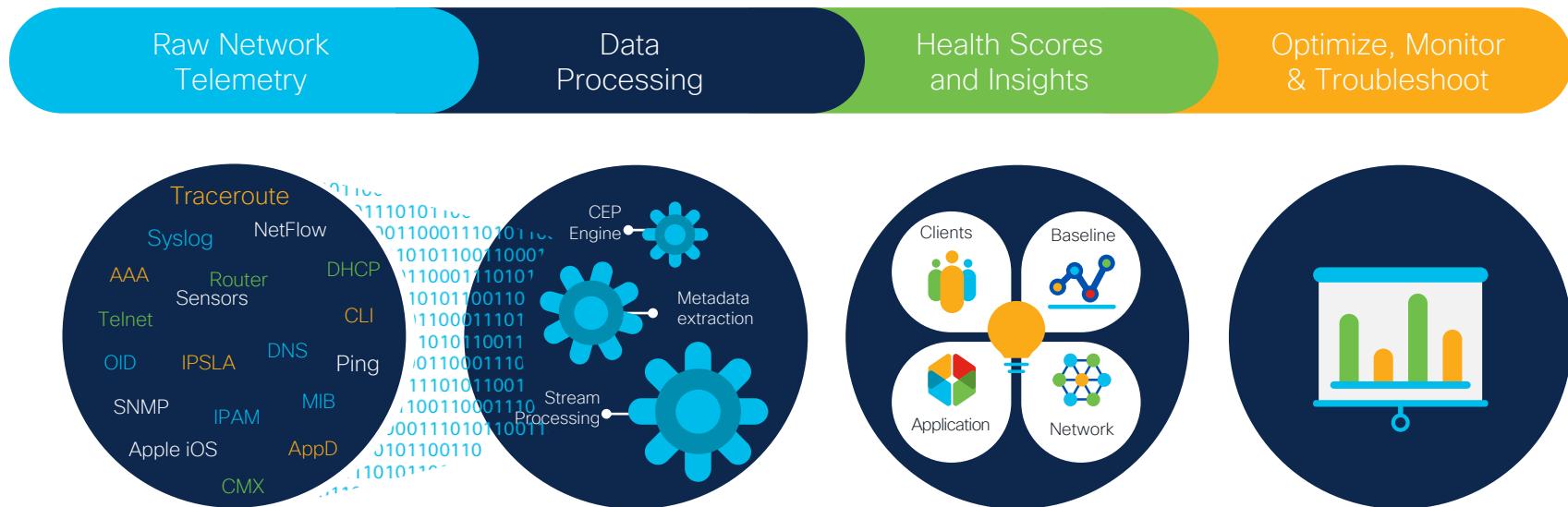
- **The Power of AIOps with Wireless Assurance**
 - What is AIOps?
 - 3D Maps
 - AnyLocate
 - AI-Enhanced RRM
- **Wireless Troubleshooting with AIOps**
 - AI Network Analytics
 - Site Analytics
 - ISE 360
 - Assurance dashboard
- **Simpler Wireless Management**
- **Conclusion**

What is AIOps?

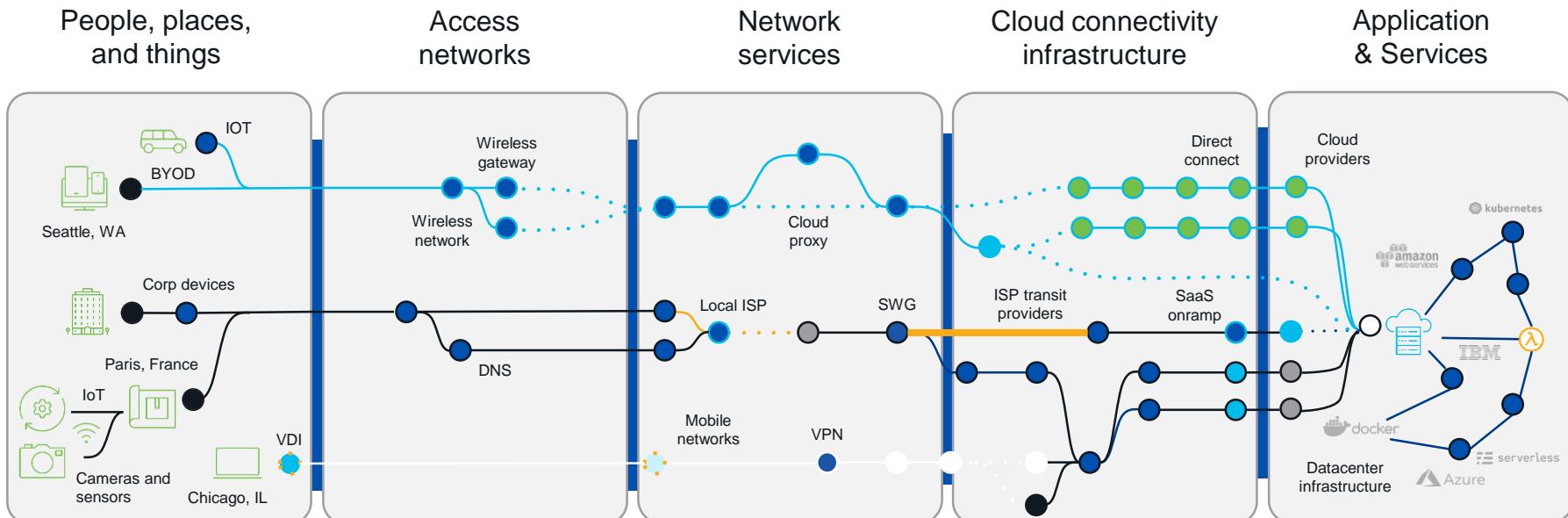


AIOps – Artificial Intelligence for IT Operations

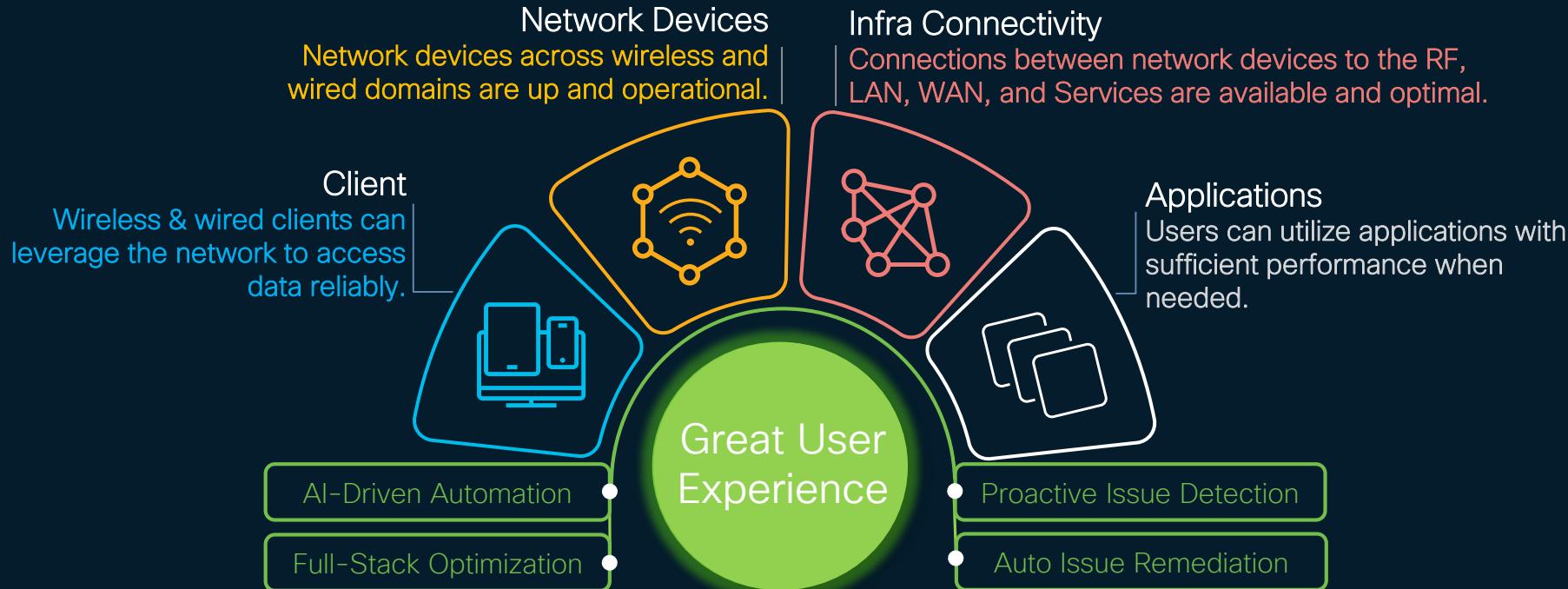
Transforms raw data into actionable insights



Networks are More Complex Than You Think

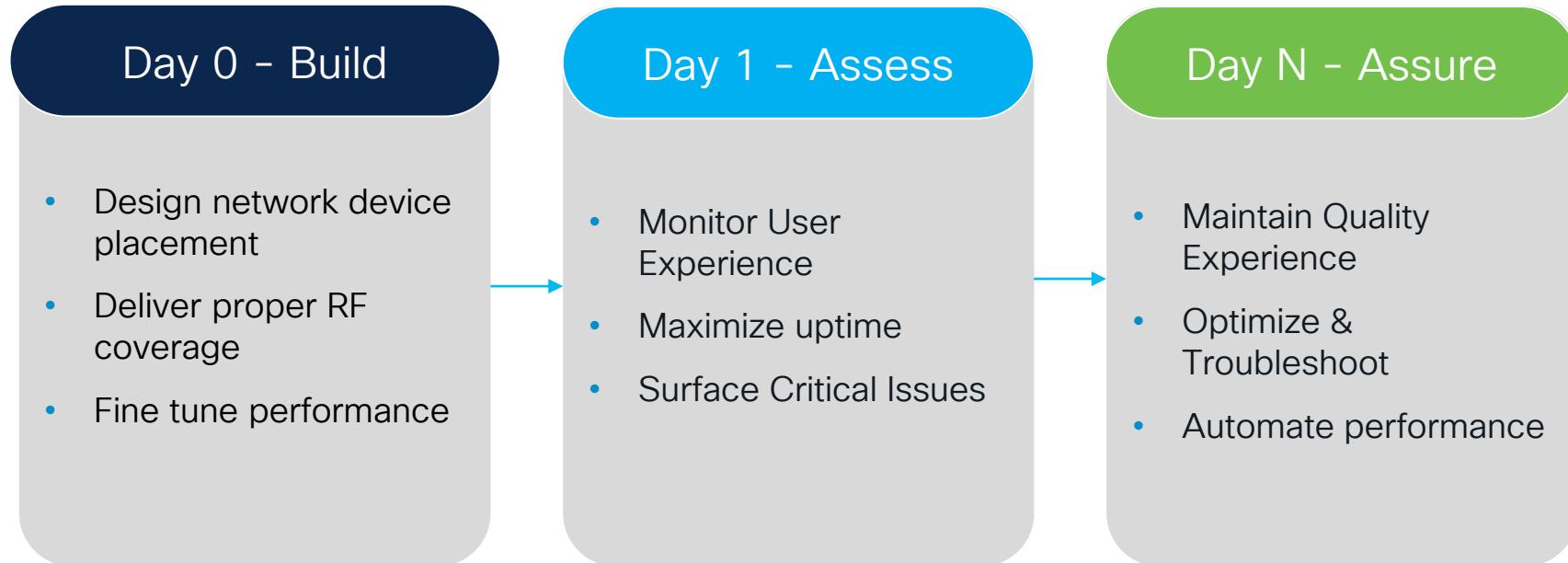


Cisco AIOps & Assurance Focus Areas and Vision



Cisco AIOps & Assurance enables great user experiences!

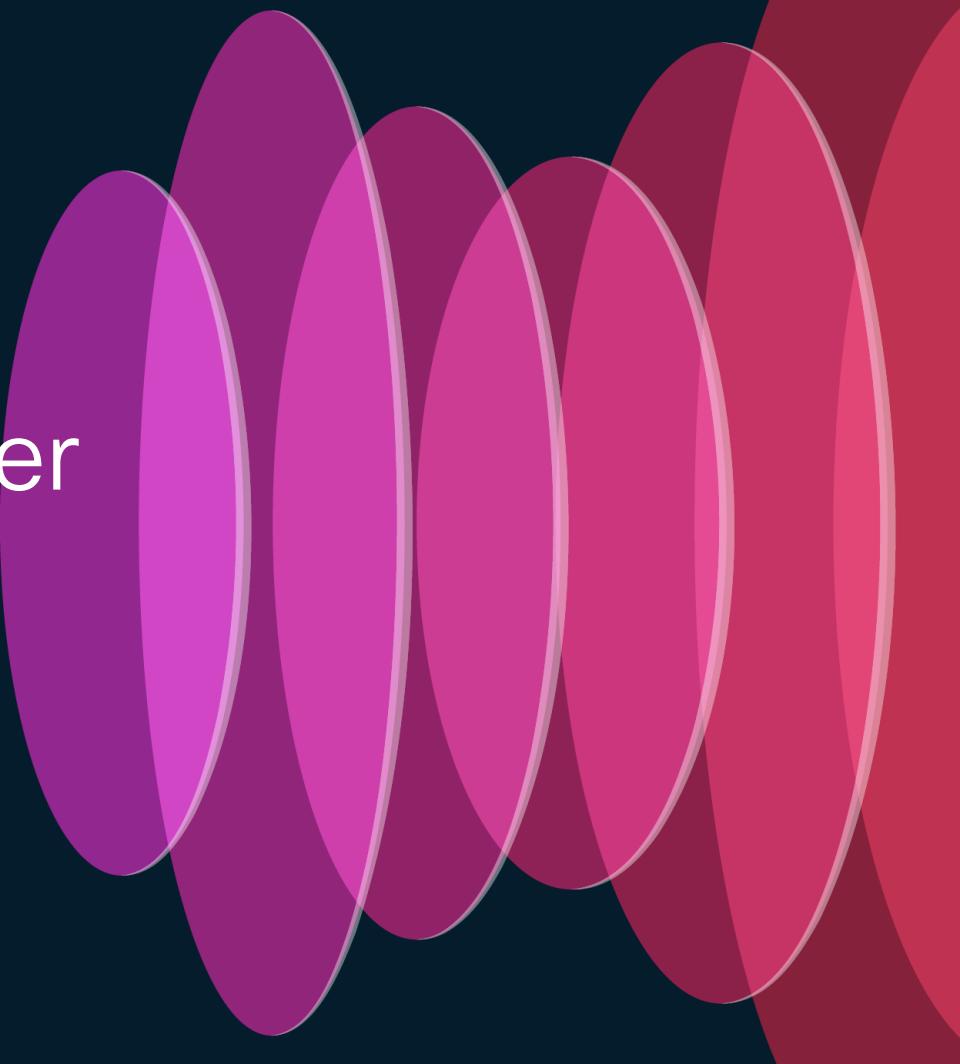
Simplify Network Management with AIOps & Assurance



Day 0

Wireless 3D Analyzer

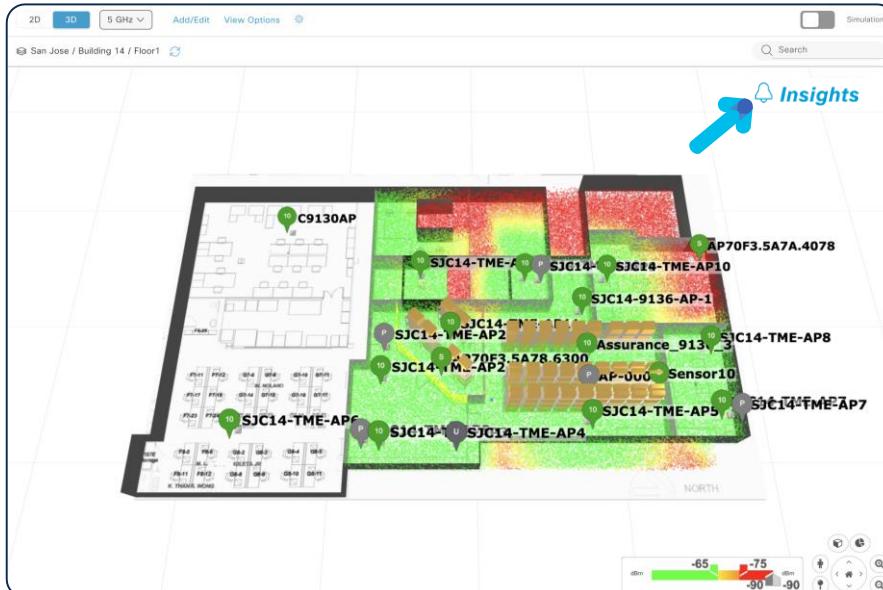
Advanced Insights and Recommendations



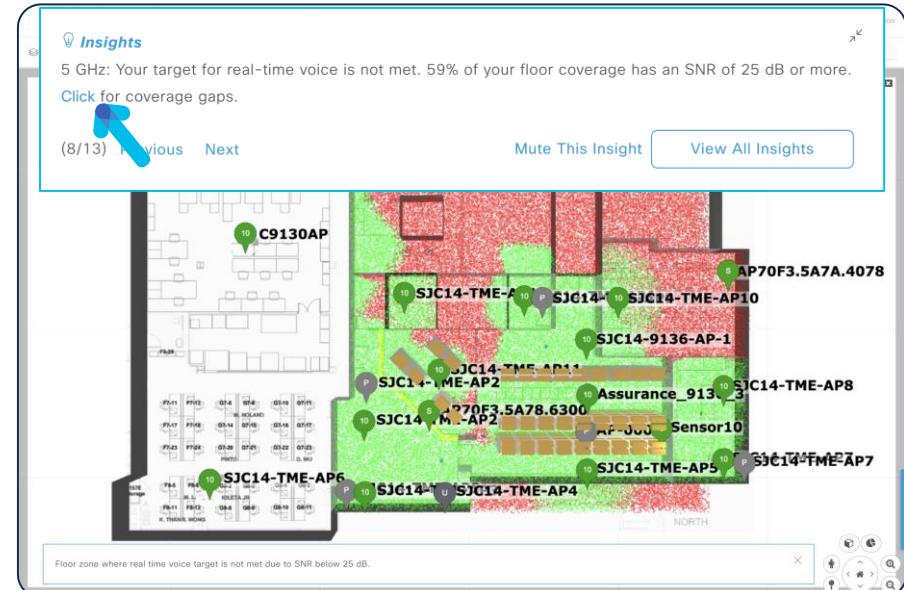
Monitoring SLAs With Visual Insights

Visibility Into Areas of Coverage That Need Attention

- 1 Click on the  icon to view SLAs that meet or miss the configured threshold.



- 2 A banner appears with a list of insights. Clicking on **Click** adjusts the map for you to view insight details.



Customizing SLAs for Visual Insights

Tailor Visual Insights to Your Network Environment

Insight Configuration / Global Configuration

Global Configuration

Global configuration for all insights

2.4GHz	5GHz	6GHz
Noise Floor	Noise Floor	Noise Floor
-90	-90	-90
dB	dB	dB

Last Modified: Fri, 12 Mar 2021 16:59:53 GMT

Insight Configuration / SLA Compliance

SLA Compliance

Insight on SLA compliance percentage

Enabled

2.4GHz	5GHz	6GHz
RSSI Target	RSSI Target	RSSI Target
-40	-40	-40
dBm	dBm	dBm
SNR Target	SNR Target	SNR Target
10	10	10
dB	dB	dB
Height	Height	Height
3.00	3.00	3.00
ft	ft	ft
Coverage	Coverage	Coverage
85	85	85
%	%	%

Last Modified: Wed, 26 Jan 2022 20:37:37 GMT

Insight Configuration / Voice Coverage

Voice Coverage

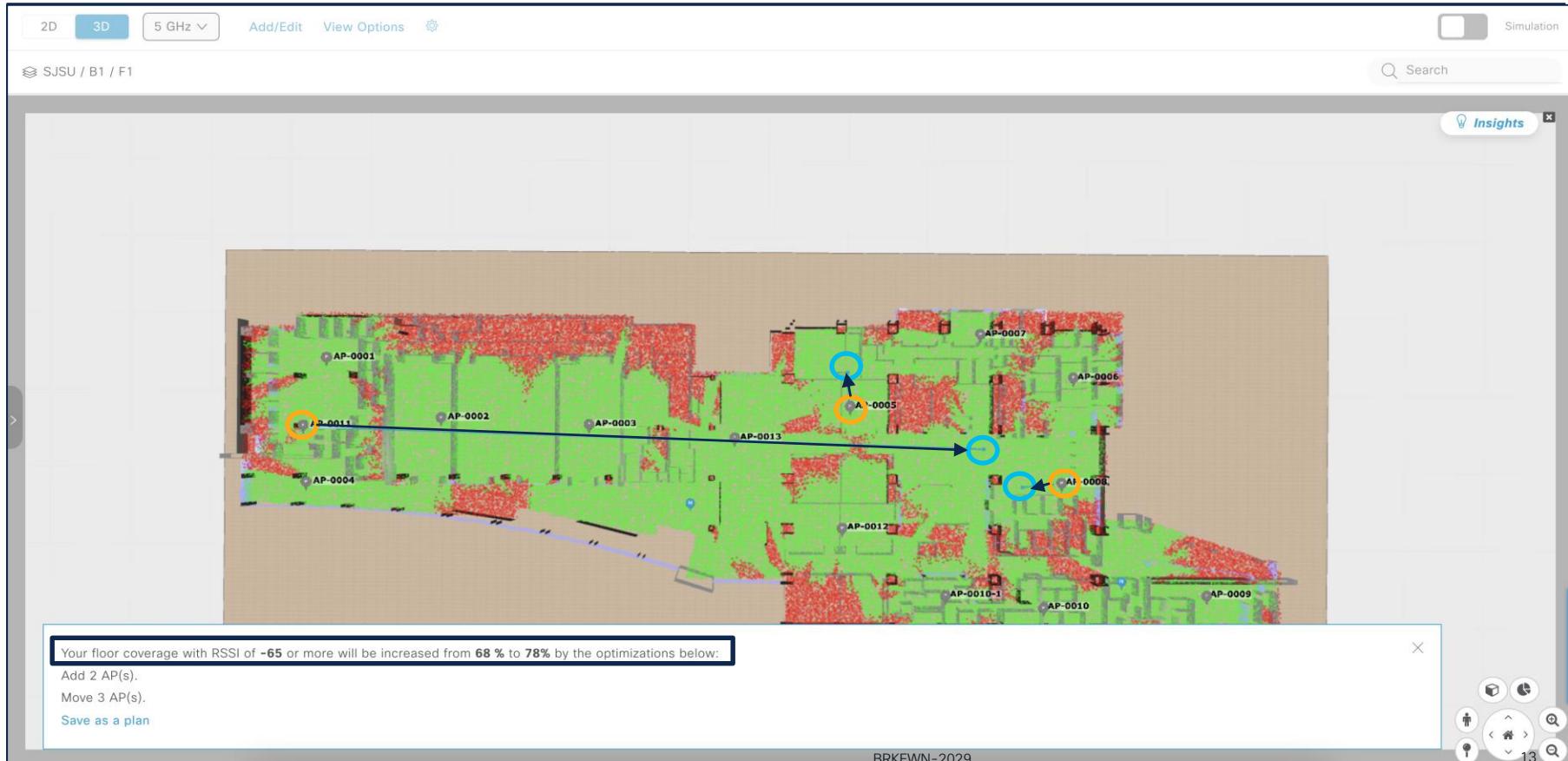
Insight on percentage of voice coverage

Enabled

2.4GHz	5GHz	6GHz
RSSI Target	RSSI Target	RSSI Target
-67	-67	-67
dBm	dBm	dBm
SNR Target	SNR Target	SNR Target
25	25	25
dB	dB	dB
Height	Height	Height
3.00	3.00	3.00
ft	ft	ft
coverage	coverage	coverage
85	85	85
%	%	%

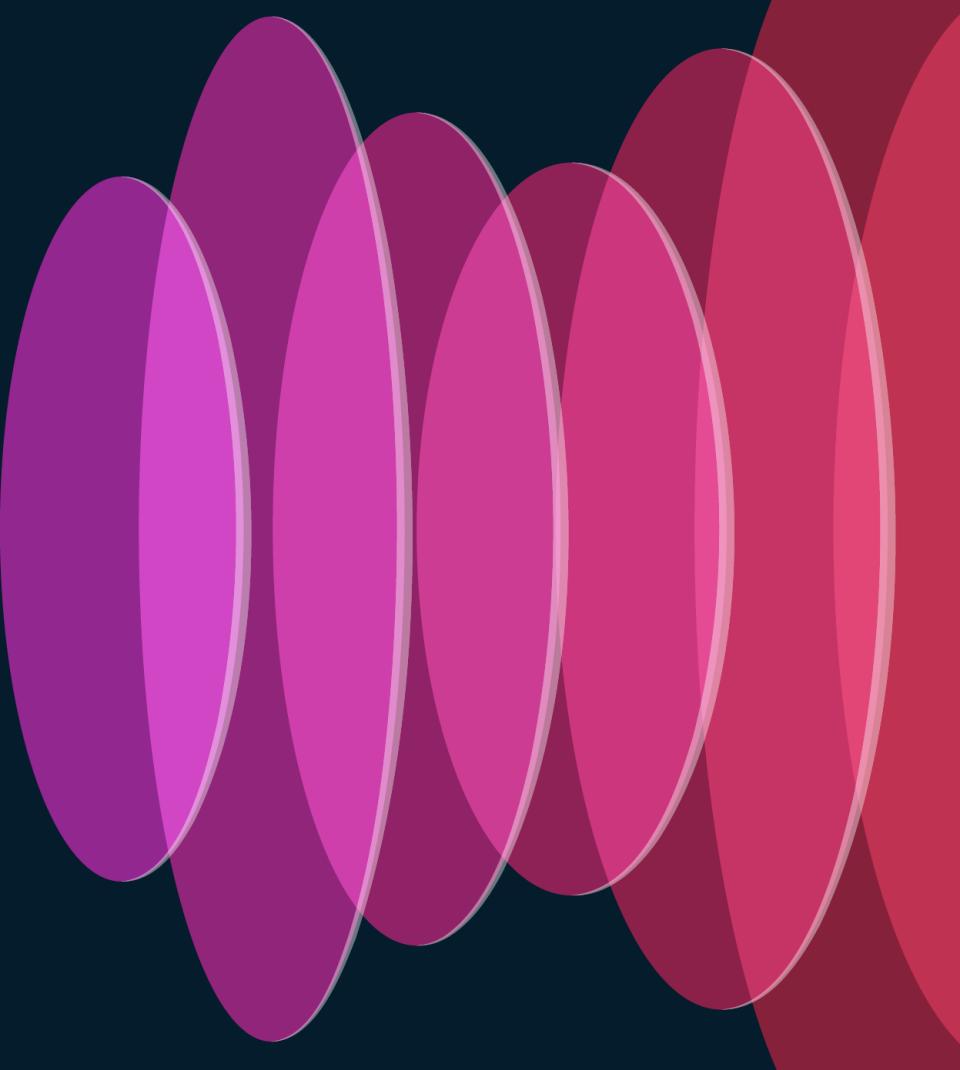
Last Modified: Fri, 12 Mar 2021 16:59:53 GMT

Leverage RF Optimizer for AP Redeployment Suggestions starting from 2.3.3!



Day 0

Partner Integration



Ekahau Project import with API



Screenshot of the Ekahau Insights software interface showing a heatmap of a warehouse and office area. The heatmap displays signal strength levels (green to red) and various access points (API export) labeled with their respective IDs (001, 002, 003, 004, 005, 006, 008, 011, 012, 013, 014, 016, 018). The interface includes a sidebar with project navigation, a top bar with search and user information, and a bottom table with access point details.

Ekahau Insights - Cisco Catalyst Center

ekahau.cloud/projects/c068c75e-2eca-47b0-89bc-abfd89826fc7/7057381?heatmap_type=sig-strength

Dan Marinescu-Gava
Ekahau

Warehouse
Floor 0 - Ground

Location Tags Sharing

Heatmaps

Rating Criteria Primary Coverage

2.4 GHz 5 GHz 6 GHz All

Primary Coverage All Simulated

Attenuation: - Dry wall: 3dB - Glass partitions: 3dB - Laminated glass: 3dB - Concrete wall: 12dB - Acoustic panel: 12dB - Pellets: 2dB/m

Height: Office: 2.5m Warehouse: 5m Racks: 2.5m Pellets: 2.5m

Warehouse Area Office Area

API export - 001 API export - 002 API export - 003 API export - 004 API export - 005 API export - 006 API export - 008 API export - 011 API export - 012 API export - 013 API export - 014 API export - 016 API export - 018

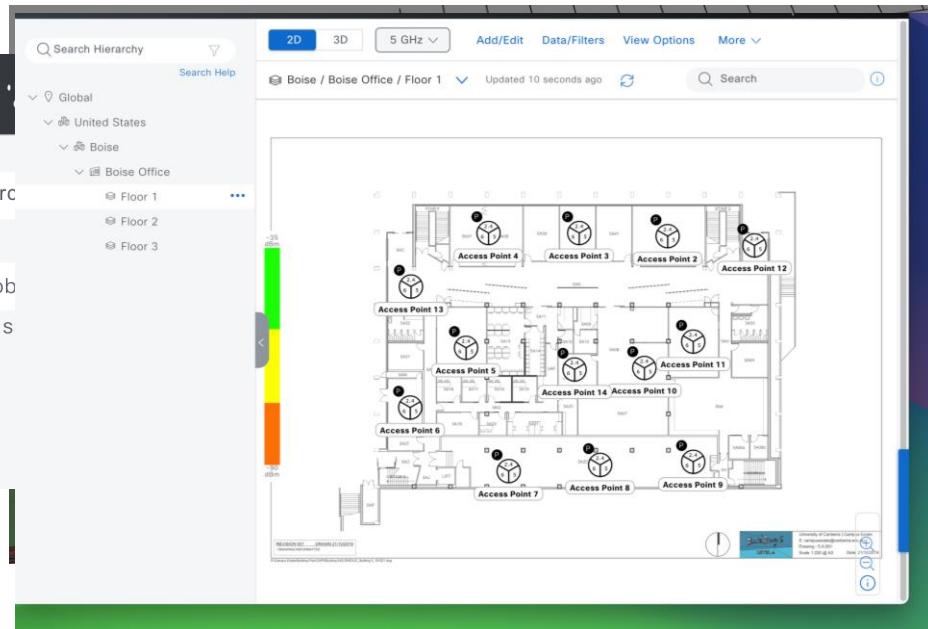
Ekahau Best Practices: Warehouse Area, Office Area

Ground Floor (Floor 0)

Name ↑	Model	Vendor	Generation	Radios	Channels & Power	Height	Installation
API export - 001	Catalyst 9164	Cisco	3	4	11(8dBm), 100(14dBm), 5(14dBm), Off	2.4 m	CEILING
API export - 002	Catalyst 9164	Cisco	3	4	56(14dBm), 29(14dBm), Off	2.4 m	CEILING
API export - 003	Catalyst 9166D1	Cisco	3	4	11(5dBm), 108(9dBm), 1(14dBm), Off	10.0 m	WALL

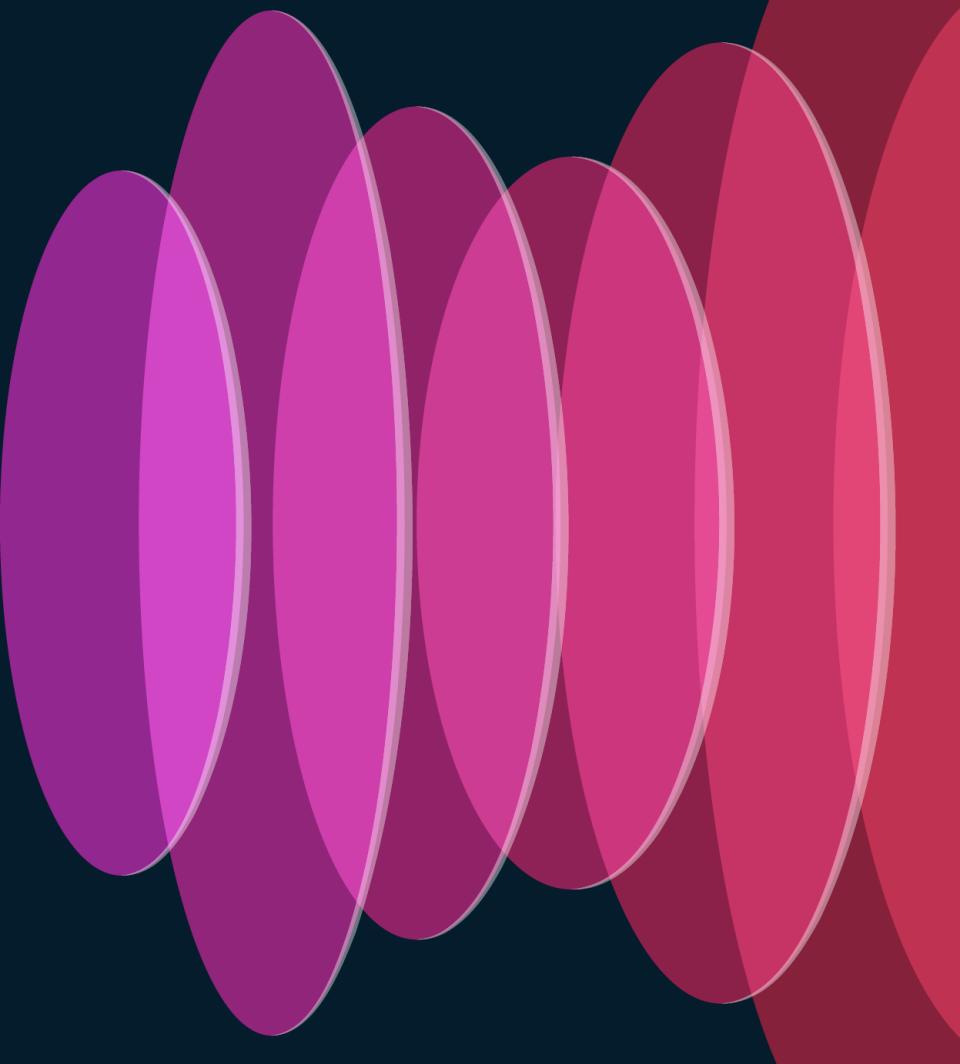
Hamina import Integration

- Export project file from Hamina dashboard
- Define the area and building
- Download hierarchy and project file
- Upload the sites and then the floor map to Catalyst Center



Day 0

AnyLocate



AnyLocate

Automatically determine AP location and place them on maps



Reduce deployment time, complexity, and cost



Improve client location services accuracy



Easier, more accurate troubleshooting

AnyLocate also enables new technologies for client location!

Supported on: CW9166, CW9164, C9136, C9130, C9120* with DNA-Advantage license

* AP-to-AP only

cisco *Live!*

Demo in IF

Available on
Spaces now

Catalyst Center
beta July 2024

How confident are you in your AP map placement?

How much of your AP deployment time is spent tracking and positioning APs?

Have you ever remodeled a space and found the APs were reinstalled in the wrong locations?

Have you ever needed to locate an AP and didn't know where it was mounted?



AP Auto Locate Demo

APs are Auto Located on the Map

AP Auto Locate - Preview Results

San Jose / SJC-17 / Floor3

Show distances 15 Changes Change Anchors Discard

Filter Results

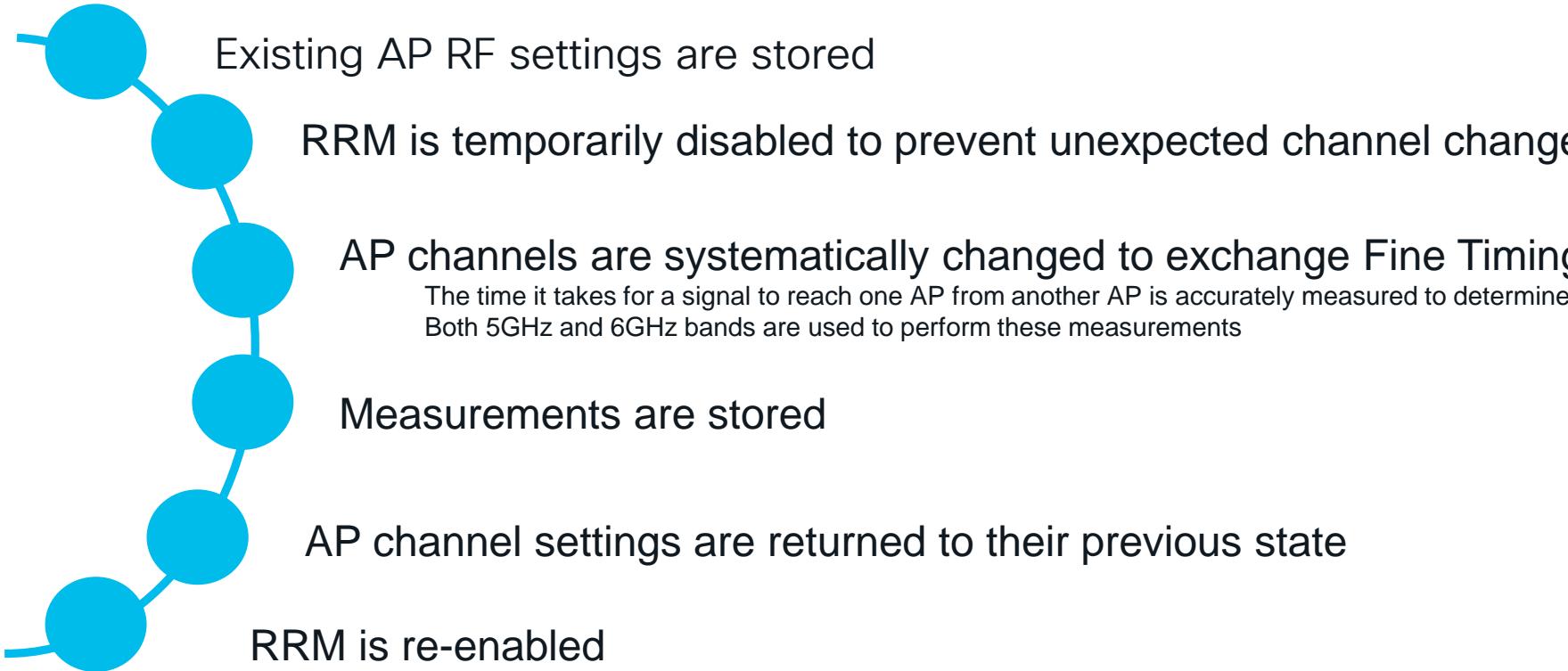
All (19)

Anchor APs (4)

Positioned APs (15)



AP Auto Locate Ranging Process



Day 1

AI-Enhanced RRM



AI-Enhanced RRM Vision

Create unified architecture to enable AI-Driven RRM services for all Cisco's customers



Simplify Network Programming



Client Assisted RF Optimizations



Deployment Agnostic RRM

What is radio resource management?

RRM is a Wireless Controller (WLC) feature that automatically optimizes wireless configurations to improve wireless performance.

Some examples

Flexible Radio Assignment (FRA)

Transmit Power Control (TPC)

Dynamic Channel Assignment (DCA)

Dynamic Band Selection (DBS)



Traditional RRM

Requires Expert Tuning

Lacks Visibility

Snapshot-Based Optimizations

RRM configuration on the Catalyst 9800 UI

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

Throughput (Bps)*

Noise/Interference/Rogue/CleanAir/SI Monitoring Channels

Channel List

RRM Neighbor Discover Type

Monitor Intervals

Neighbor Packet Frequency (seconds)*

Reporting Interval (seconds)*

Neighbor Timeout factor*

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*

Voice Packet Count*

Data Packet Percentage*

Voice Packet Percentage*

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

Anchortime

Channel Assignment Leader

Last Auto Channel Assignment

DCA Channel Sensitivity

AI-Enhanced RRM

Simplified Configurations

Complete Visibility

Trend-Based optimizations

AI RF Profile

▼ Basic Settings

Radio Frequency Settings

2.4 GHz 5 GHz 6 GHz [i](#)

Busy Hours [i](#)

Start Time 9:00 End Time 17:00 Busy Hour Sensitivity [i](#)
 Low Medium High

Enable RF Settings

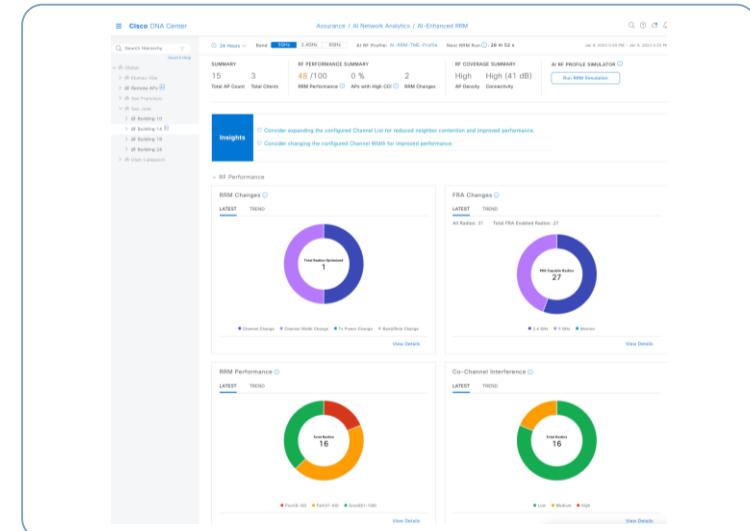
Flexible Radio Assignment [i](#)
 2.4 GHz 5 GHz 6 GHz

Dynamic Channel Assignment [i](#)
 2.4 GHz 5 GHz 6 GHz

Dynamic Bandwidth Selection [i](#)
 2.4 GHz 5 GHz 6 GHz

Transmit Power Control [i](#)
 2.4 GHz 5 GHz 6 GHz

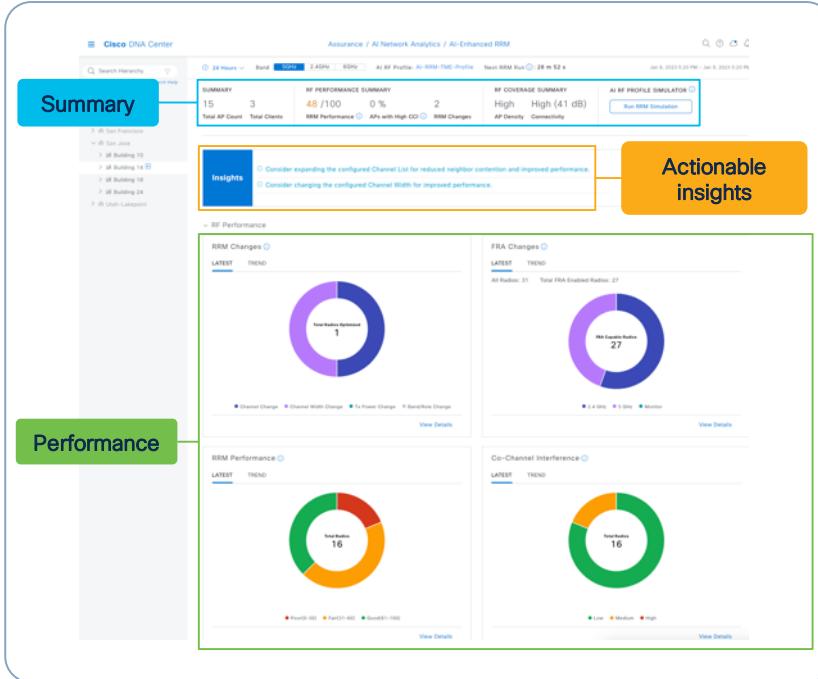
AI-Enhanced RRM control center



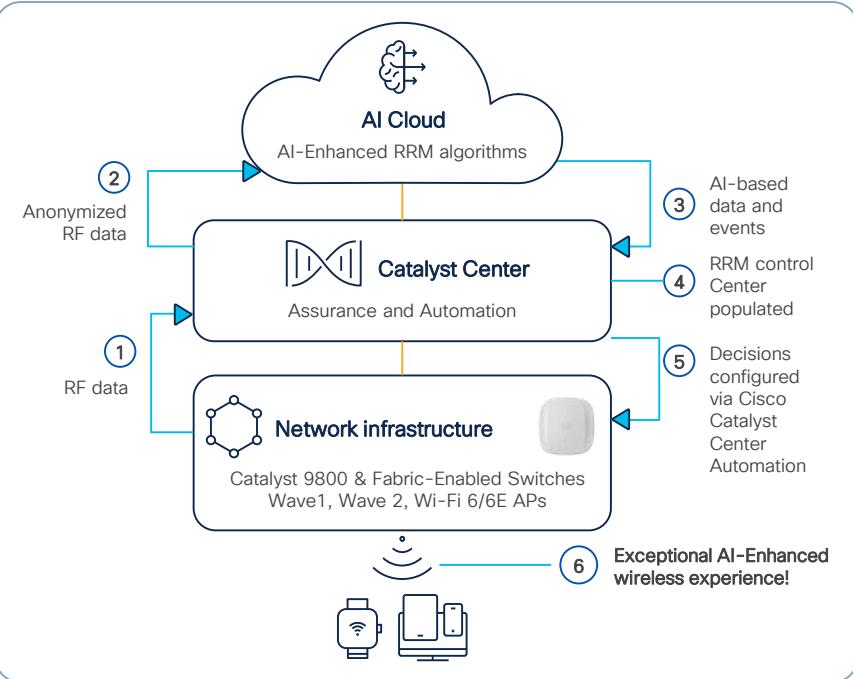
AI-Enhanced RRM is AI that Powers RF Optimization

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.



Performance visibility

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



Complete historical context

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



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

Actionable insights

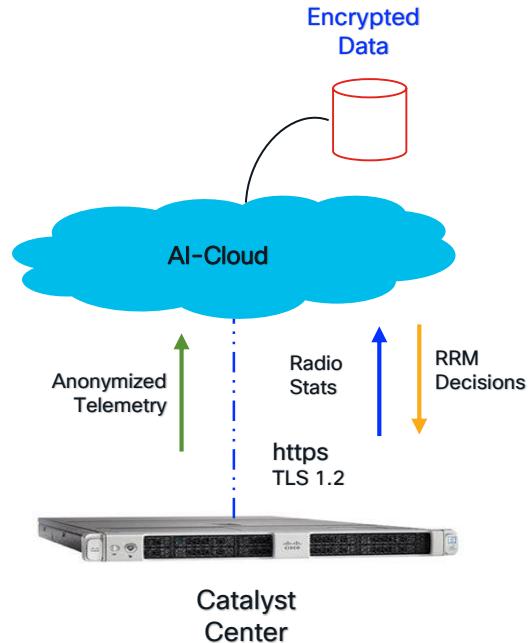
AI-derived recommendations on RRM setting changes for a more optimal performance.

Simplified RRM configuration

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

AI Cloud telemetry collection

Utilizing Raw Device Telemetry Exclusively



RF Stats	Radio Configs	Network Information
PHY Stats	Channel	WLC IP
MAC Stats	Power	Base Radio MAC
Client Count	Bandwidth	WLC MAC
RF Events (Interrupts)	Operational Mode	AP Ethernet MAC

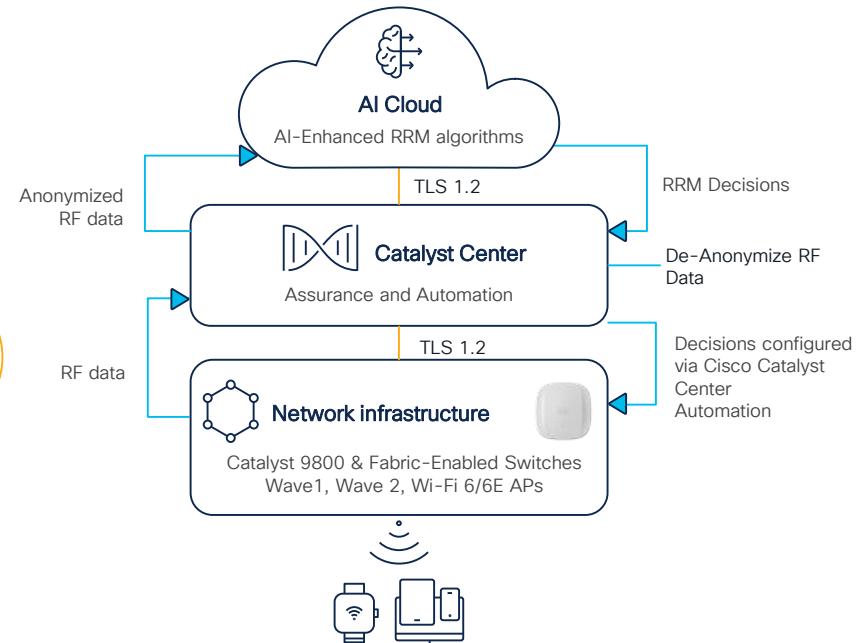
Protecting Your Data in the Cloud

with AI-Enhanced RRM Privacy Measures

Anonymized RF Data is encrypted with AES256 CTR and Base64 Encoding

Encryption Key is locally stored on Cisco Catalyst Center

All Data Stored in the AI Cloud is encrypted

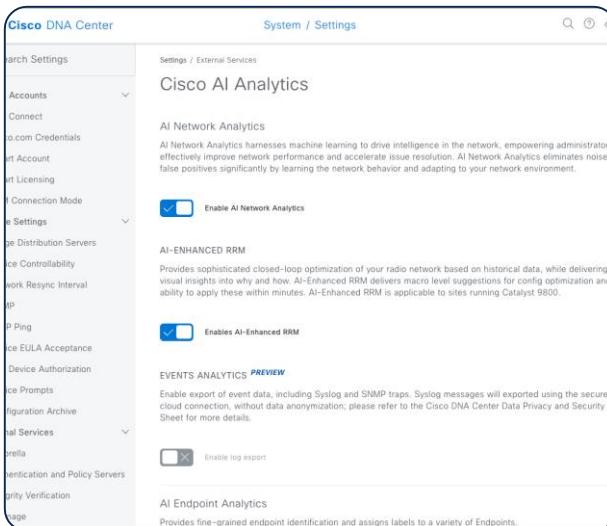


Refer to [Cisco Catalyst Center Privacy Data Sheet](#) for more information on Cisco Catalyst Center Data Privacy!

Enabling AI-Enhanced RRM for Provisioning-Enabled Deployments

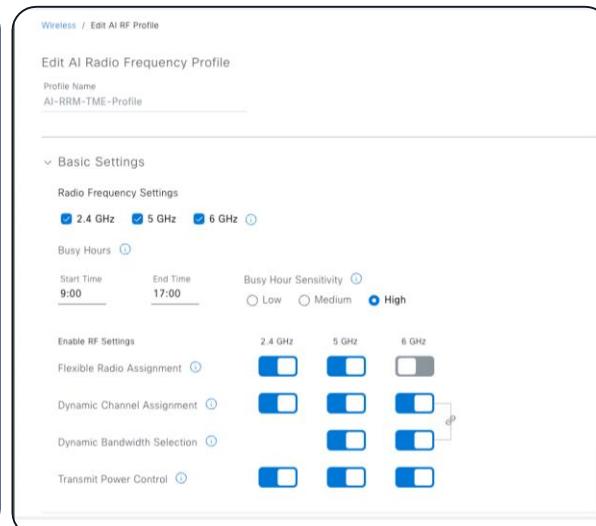
Traditionally, this solutions requires customers to manage their Catalyst 9800 configurations through Catalyst Center's Network Settings

1 Give AI-Enhanced RRM Cloud Access in Settings.



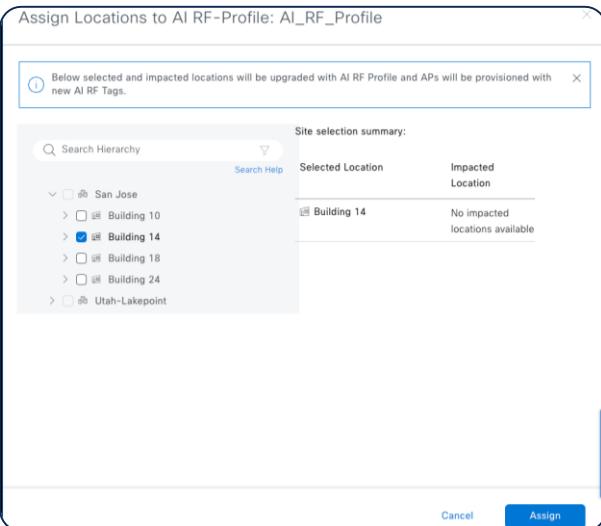
The screenshot shows the Cisco DNA Center interface under 'System / Settings'. The 'Cisco AI Analytics' section contains the 'Enable AI Network Analytics' checkbox, which is checked. The 'AI-ENHANCED RRM' section contains the 'Enables AI-Enhanced RRM' checkbox, which is also checked. Both checkboxes are highlighted with a blue border.

2 Create an AI RF Profile.



The screenshot shows the 'Edit AI Radio Frequency Profile' page. The 'Profile Name' is set to 'AI-RRM-TME-Profile'. Under 'Basic Settings', the 'Radio Frequency Settings' section has checkboxes for 2.4 GHz, 5 GHz, and 6 GHz, with 5 GHz checked. The 'Busy Hours' section shows start time at 9:00 and end time at 17:00, with 'Busy Hour Sensitivity' set to 'High'. The 'Enable RF Settings' section includes 'Flexible Radio Assignment', 'Dynamic Channel Assignment', 'Dynamic Bandwidth Selection', and 'Transmit Power Control', each with its own set of checkboxes.

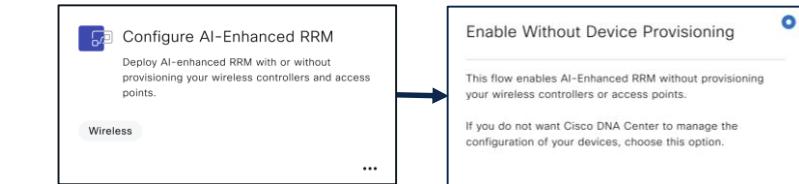
3 Assign AI RF Profile to a building, and provision your C9800 & APs.



The screenshot shows the 'Assign Locations to AI RF-Profile: AI_RF_Profile' page. A message at the top states: 'Below selected and impacted locations will be upgraded with AI RF Profile and APs will be provisioned with new AI RF Tags.' The 'Site selection summary' table shows a hierarchy of locations: San Jose (Building 10, Building 14, Building 18, Building 24) and Utah-Lakepoint. Under 'Selected Location', 'Building 14' is selected. Under 'Impacted Location', 'No impacted locations available' is listed. At the bottom are 'Cancel' and 'Assign' buttons.



What mitigates these pain points?



New AI-Enhanced RRM Workflow for Assurance Only Customers!

Benefits of the AI-Enhanced RRM Workflow

Easier to Enable, with the Same Power of AI!

Doesn't Require C9800 to be Provisioned on Catalyst Center!

- Taking away this requirement means that all Catalyst Center users with supported hardware can leverage the power of AI.
- Users can continue managing their network settings on their C9800 directly.

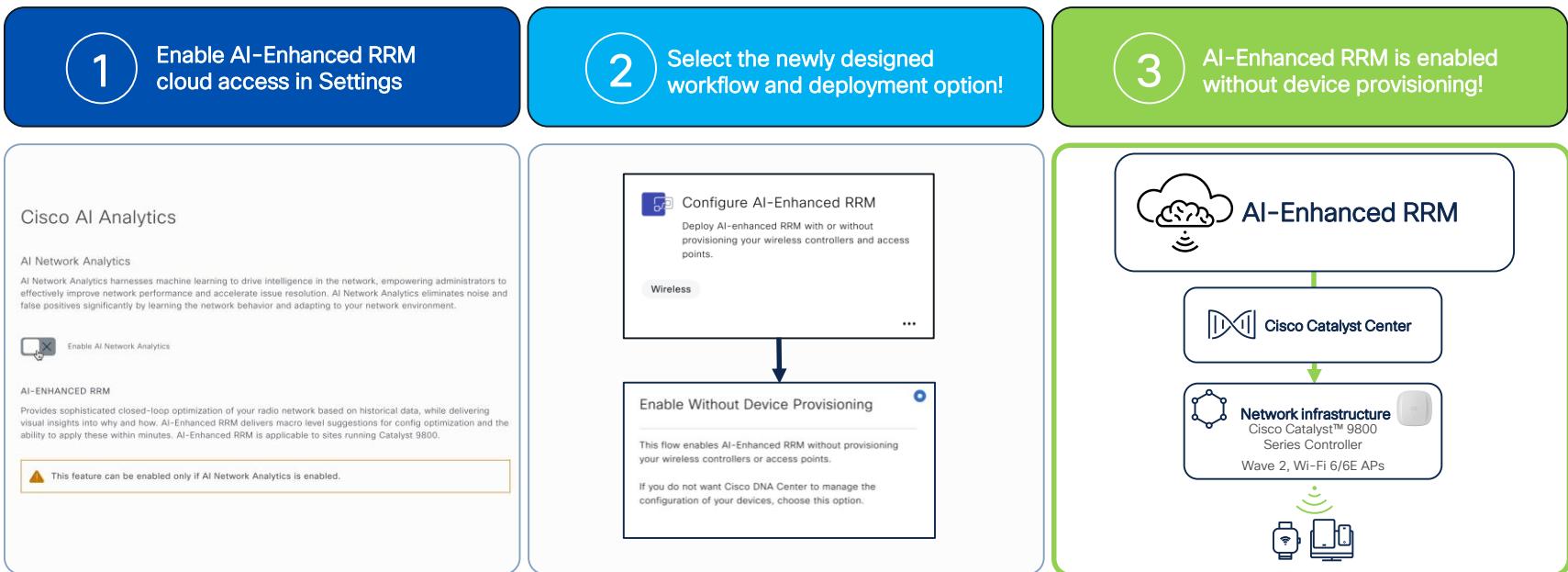
Greatly Simplified Workflow!

- Combined all steps to enable AI-Enhanced RRM to a single workflow within the Workflow page titled, “Configure AI-Enhanced RRM -> Enable Without Device Provisioning”.
- Admins no longer need to jump to different areas on Catalyst Center to figure out how to enable AI-Enhanced RRM!

Power of AI Remains the Same

- While enabling AI-Enhanced RRM has gotten significantly easier, all the amazing customer benefits remain the same.
- There are no loss with regards to solution capability.

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



Software and Hardware Support Matrix for AI-Enhanced RRM's Workflow for Assurance-Only Deployments

Cisco IOS XE WLC Software	Cisco Catalyst Center Software and Licensing
17.9.3 or newer (17.12.1 recommended)	2.3.7.4 (Patch 2) with DNA Advantage License
Cisco Access Point Hardware	
Wave 1, Wave 2, Catalyst Wi-Fi 6 and 6E Access Points	
Cisco IOS XE WLC Hardware	
C9800-CL	
C9800-L	
C9800-40	
C9800-80	



**How do we efficiently
bring Auto RF towards
the RRM North Star
vision?**



X



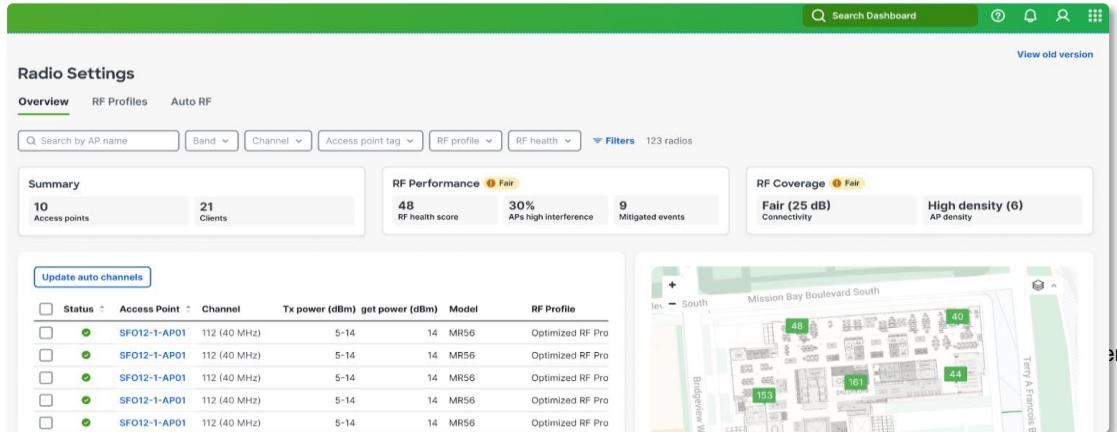
Integration with AI-Enhanced RRM

- Inherit advanced RRM features with less development cycles.
- Auto RF will be enterprise & high-density deployment ready

Unified AI-RRM

- Autonomous Wi-Fi for Zero-Touch Operation
- Closed-Loop AI Operations
- Unified AI Infrastructure,
- Unified Wi-Fi device Telemetry

Meraki Dashboard



Meraki Dashboard

Search Dashboard

View old version

Radio Settings

Overview RF Profiles Auto RF

Search by AP name Band Channel Access point tag RF profile RF health Filters 123 radios

Summary
10 Access points 21 Clients

RF Performance Fair
48 RF health score 30% APs high interference 9 Mitigated events

RF Coverage Fair (25 dB)
Fair (25 dB) Connectivity High density (6) AP density

Update auto channels

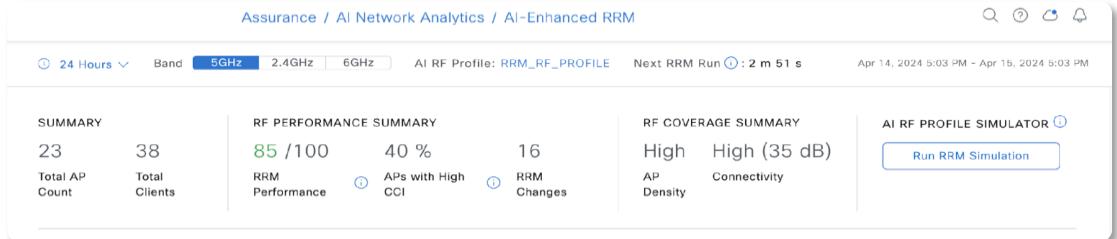
Status	Access Point	Channel	Tx power (dBm)	Get power (dBm)	Model	RF Profile
Green	SFO12-1-AP01	112 (40 MHz)	5-14	14	MR56	Optimized RF Pro
Green	SFO12-1-AP01	112 (40 MHz)	5-14	14	MR56	Optimized RF Pro
Green	SFO12-1-AP01	112 (40 MHz)	5-14	14	MR56	Optimized RF Pro
Green	SFO12-1-AP01	112 (40 MHz)	5-14	14	MR56	Optimized RF Pro
Green	SFO12-1-AP01	112 (40 MHz)	5-14	14	MR56	Optimized RF Pro

Mission Bay Boulevard South

South

101 48 40 153 44 Terry A. Francois Bldg

Catalyst Center



Assurance / AI Network Analytics / AI-Enhanced RRM

24 Hours Band 5GHz 2.4GHz 6GHz AI RF Profile: RRM_RF_PROFILE Next RRM Run: 2 m 51 s Apr 14, 2024 5:03 PM - Apr 15, 2024 5:03 PM

SUMMARY		RF PERFORMANCE SUMMARY			RF COVERAGE SUMMARY		AI RF PROFILE SIMULATOR	
23 Total AP Count	38 Total Clients	85 /100 RRM Performance	40 % APs with High CCI	16 RRM Changes	High AP Density	High (35 dB) Connectivity	Run RRM Simulation	

AI-Enhanced RRM Will Significantly Improve Meraki's Wi-Fi!

Trend-Based RRM

Optimize RF with 2 weeks of data enabling more sophisticated & efficient RRM optimization!

Flexible Radio Assignment

Place radios on the most optimal band/mode to minimize interference on 2.4 GHz at the touch of a button!

Enhanced Busy Hour

Optimizations are deferred until after the busy hour, using busy hour data, rather than just suppressed!

Radio Settings

Overview RF Profiles **AI-RRM**

Trend-based RRM Enable
Trend-based RRM uses an AI engine to improve the performance of your network ⓘ

Flexible radio assignment Enable FRA
FRA optimizes the 2.4 GHz band by strategically disabling redundant radios to reduce interference ⓘ

AI channel planning Enable AI channel planning
Improved Channel Assignment by leveraging artificial intelligence to optimize channel planning capabilities ⓘ

Busy hour Enable busy hour
AI-RRM will minimize changes during the most active hours of the day ⓘ

Sensitivity ⓘ Low Medium High

Auto schedule
Based on historical data of up to the last 6 weeks ⓘ
23:00 → 08:00 ⓘ

Manual schedule

RF Summary Bar in Radio Settings

- Understand RF Performance at-a-glance per network
- RF health score considers all critical RF metrics
- Mitigated events shows benefits of AI Channel Planning
- New discovery workflow with advanced filtering

Same AI engine with similar visibility as Catalyst Center's AI-RRM Control Center!

Day 1

AI Network Analytics

Meet Alex, a professional facing WiFi issues. Frustrated by poor connectivity, Alex seeks a solution. Join us as we explore the journey to resolve Alex's WiFi problems.



Image generated by AI

Alex tried to google how to fix the Wi-Fi and found a gazillion types of issues and solutions to fix the issue. What could it be?



Image generated by AI

AI-Enhanced RRM, AI Network Analytics, Machine Reasoning Engine

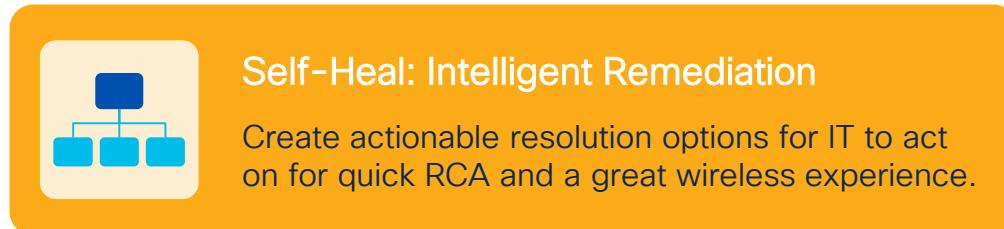
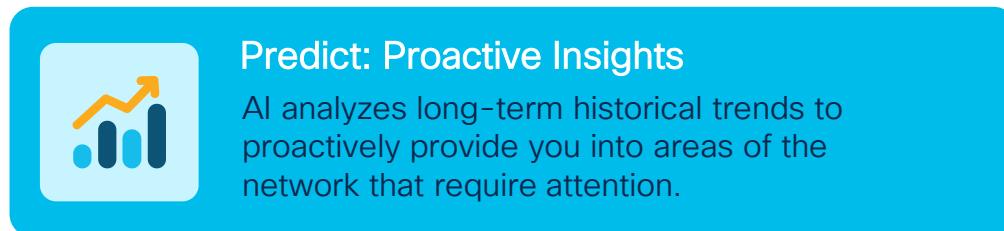
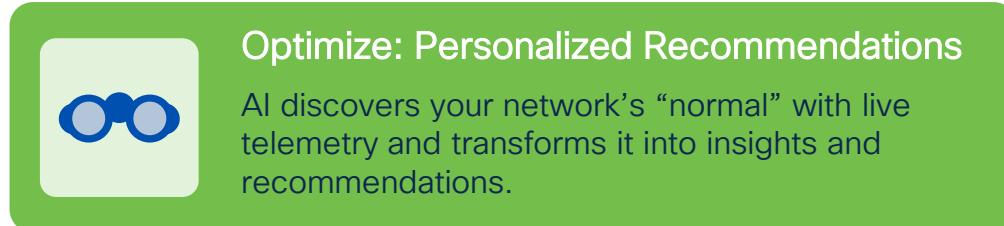
Artificial Intelligence makes Cisco Catalyst Center smarter



Cisco Catalyst Center



CISCO *Live!*



Unleash AI Network Analytics to Prioritize, Optimize, and Remediate with AI

Available
from v2.1.2+ (2020+)

Predictive Analytics/Self-Heal
Anticipate and Prevent Failures



AI-Enhanced
RRM

Wireless Data Collection
Machine Reasoning Engine

Comparative Analytics
Compare KPIs Internally and to Peers



Peer
Comparison



Network
Comparison

Trends and Insights
Proactive exploration plus system generated
insights



Event
Analytics



AP Performance
Advisories



Network
Insights



Network
Heatmaps

Personalized Anomaly Detection
Separate normal from abnormal and show
RCA



AI-Driven
RCA



Site Analytics

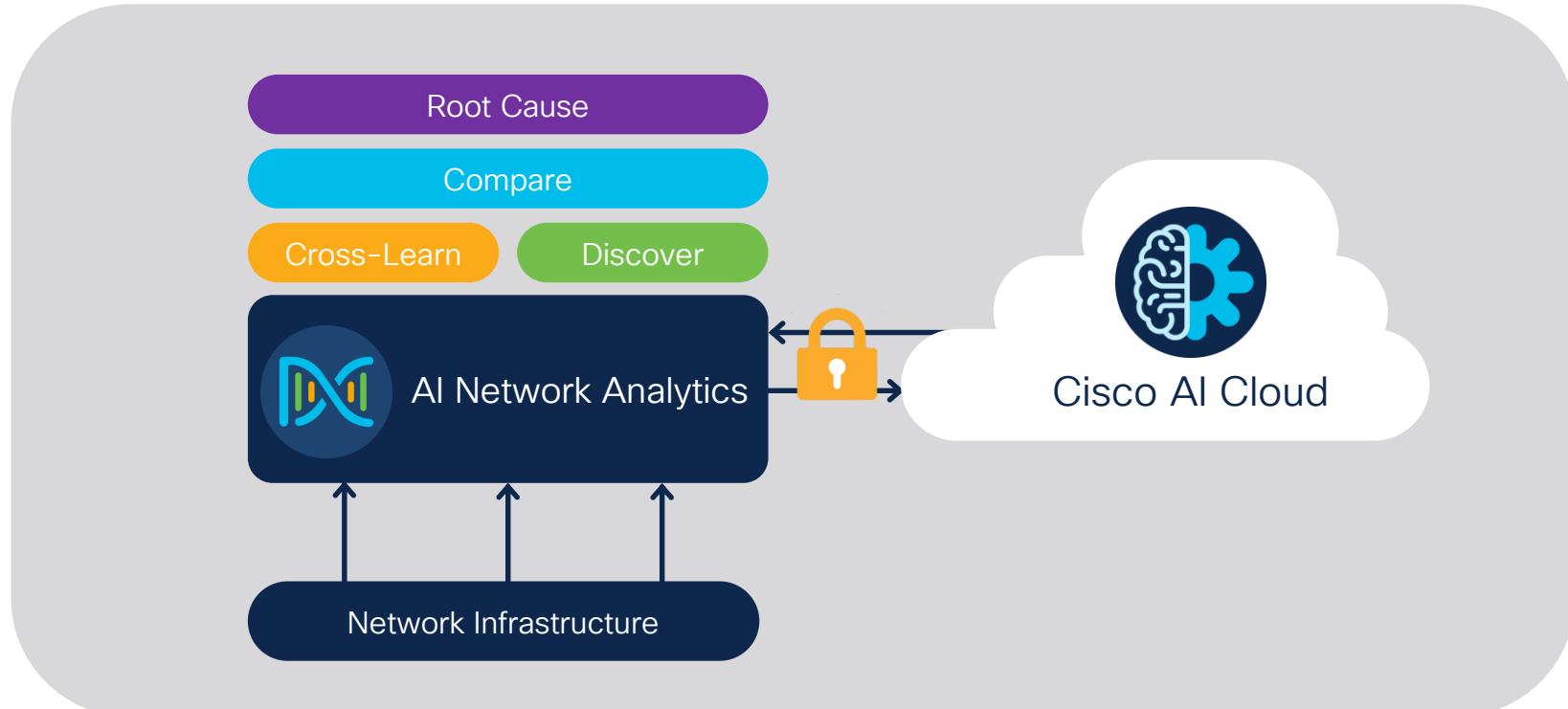
Dynamic Baselining
Define Normal for a Given Network



Baselines

Cisco AI Network Analytics Architecture

Proactively Discover and Root Cause Your Issues



AI-Driven Baseline Dashboard

Pinpoint buildings with clients that have onboarding issues

Available
V2.1.2 (2020)

Pain Points

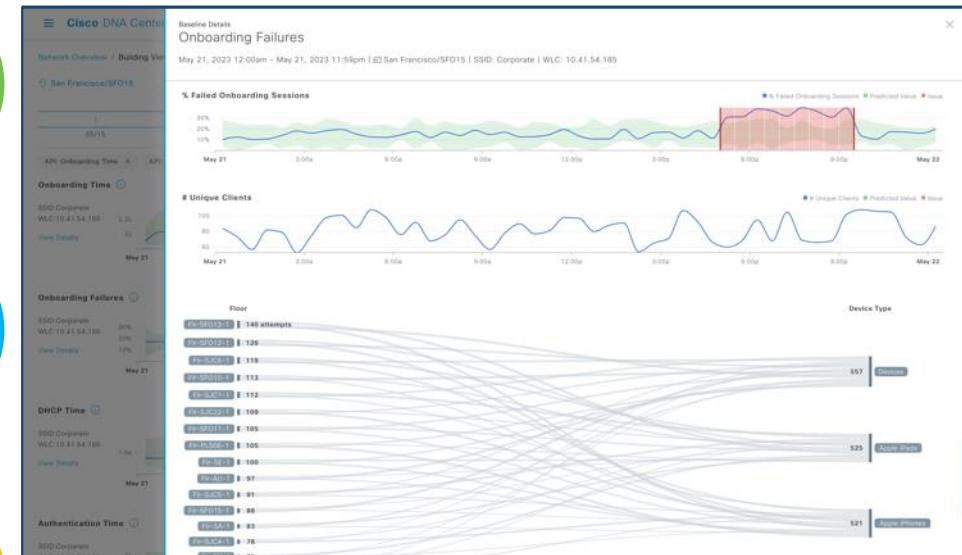
Wireless networks are dynamic and issues triggered with a static min/max threshold may result in false positives.

Feature Capability

Identifying client onboarding KPIs that deviate from the norm, and provides unique view to RCA the issues.

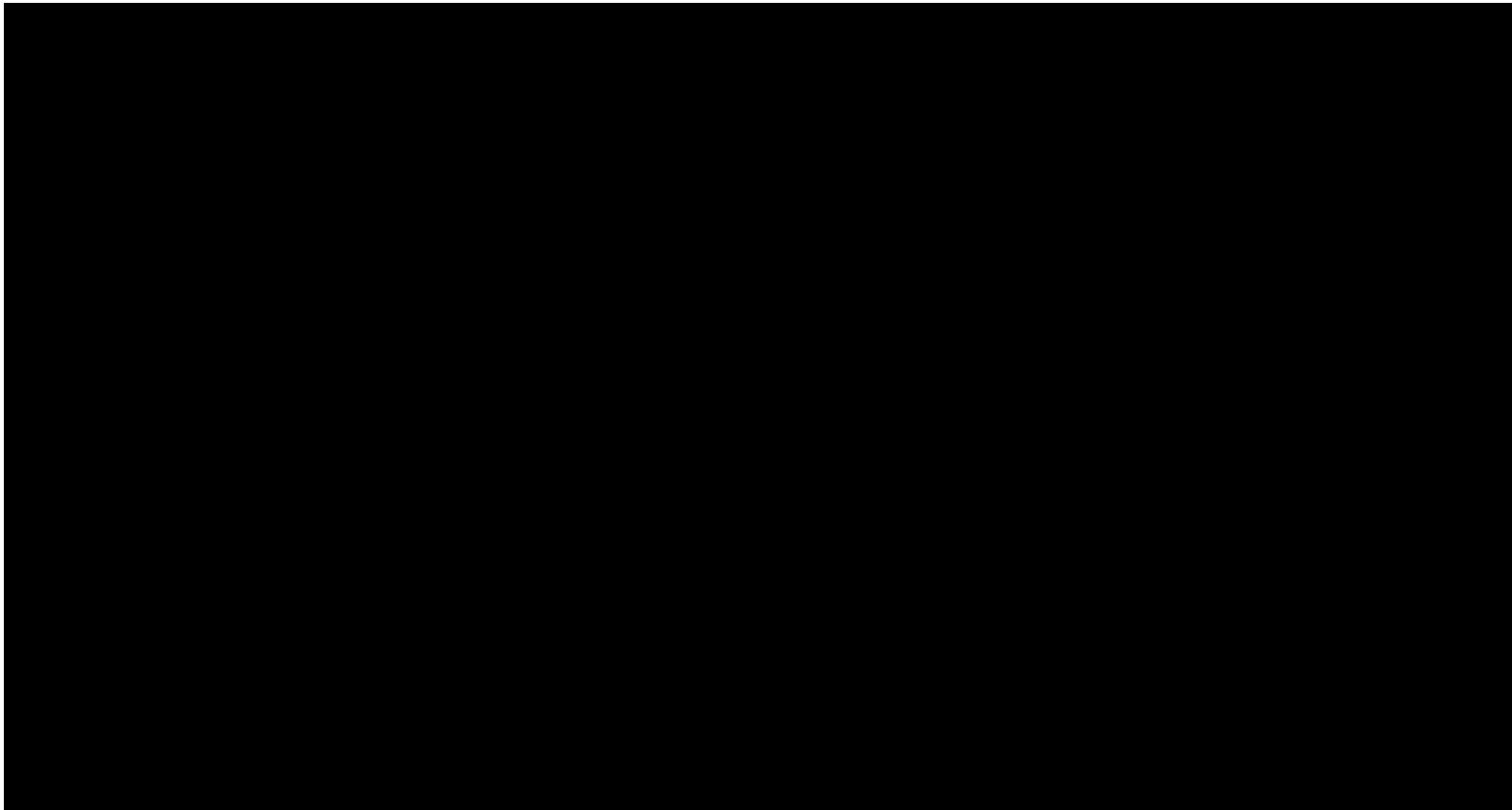
Customer Benefits

Users receive accurate alerts for significant deviations in onboarding issues, and providing a triaging view.



Intuitive View to Pinpoint the Source of Failure

AI-Driven Baseline Dashboard



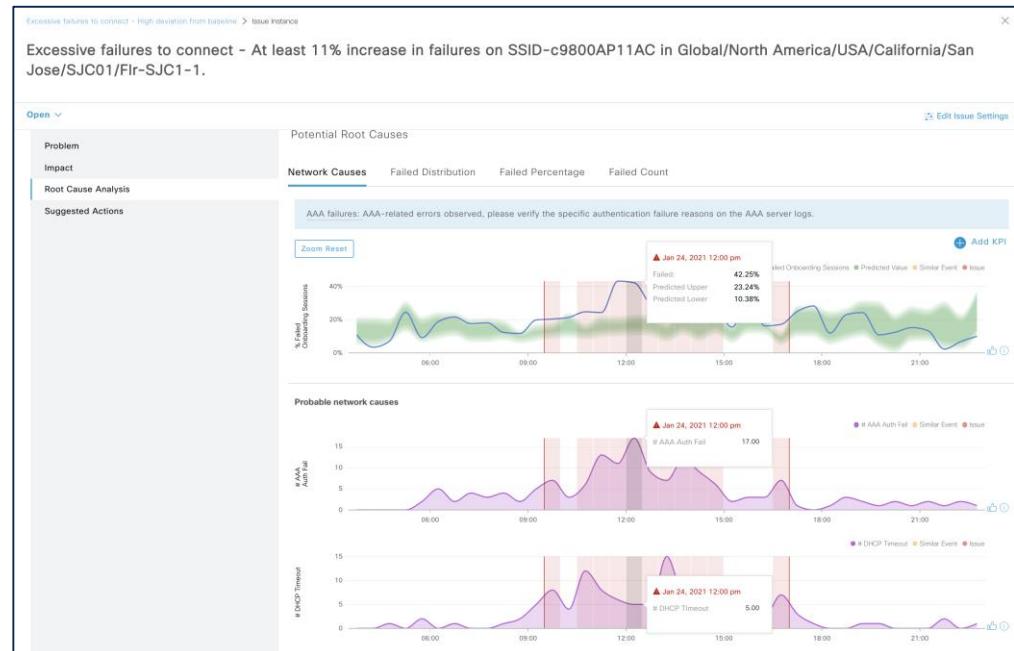
Cisco AI Network Analytics Feature Summary



AI Driven Issues

Discover and Root Cause network risks and anomalies from the AI-generated baselines

13 KPIs: Onboarding & Throughput



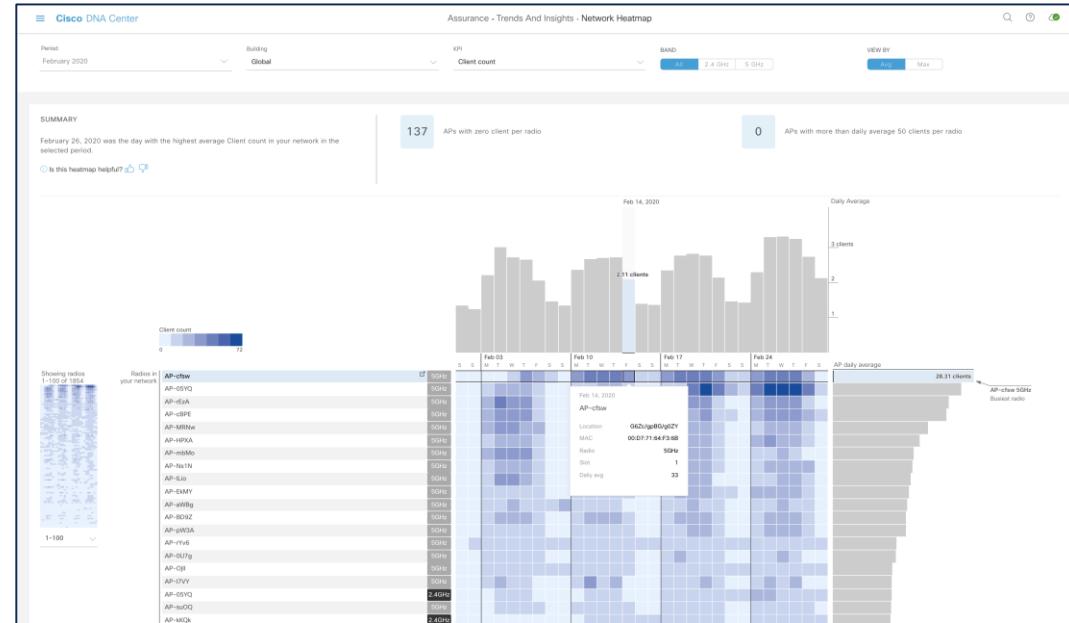
Cisco AI Network Analytics Feature Summary



Network Heatmaps

Optimize AP Performance across the network through visual exploration of performance KPIs

17 KPIs: RF & Application



AI-Driven AP Performance Advisories

Identify APs with Potentially Poor Client Experience

APs are grouped into four categories based on Machine Learning. Those with the highest impact are highlighted in orange.

High Co-Channel Interference (2.4 GHz)

High Co-Channel Interference

Radios with co-channel interference and channel utilization higher than the reference, possibly indicating a sub-optimal channel plan.

Impacts: 9 Radios, 184 Endpoints

Top 3 APs Affecting Client Experience: SFO15...20-03, SFO15...24-01, SFO15...24-02

High Client Activity (2.4 GHz)

High Client Activity

Radios experiencing higher client activity than the reference, possibly indicating the need to review the network capacity in these areas.

Impacts: 3 Radios, 116 Endpoints

Top 3 APs Affecting Client Experience: AP9124_2, AP9130_1, AP9105_2

High AP Density (2.4 GHz)

Selected period: Wed, September 19th 2021 - Wed, October 27th 2021

Over the last 4 weeks

High AP Density

Radios with transmission power lower than the reference, possibly indicating a mismatch between the RF settings and the actual deployment density.

Impacts: 2 Radios, 54 Endpoints

Top 3 APs Affecting Client Experience: SCJ01...130_2, SCJ01...130_3

Low AP Density (5 GHz)

Low AP Density

Radios with transmission power higher than the reference, possibly indicating a lower than optimal deployment density.

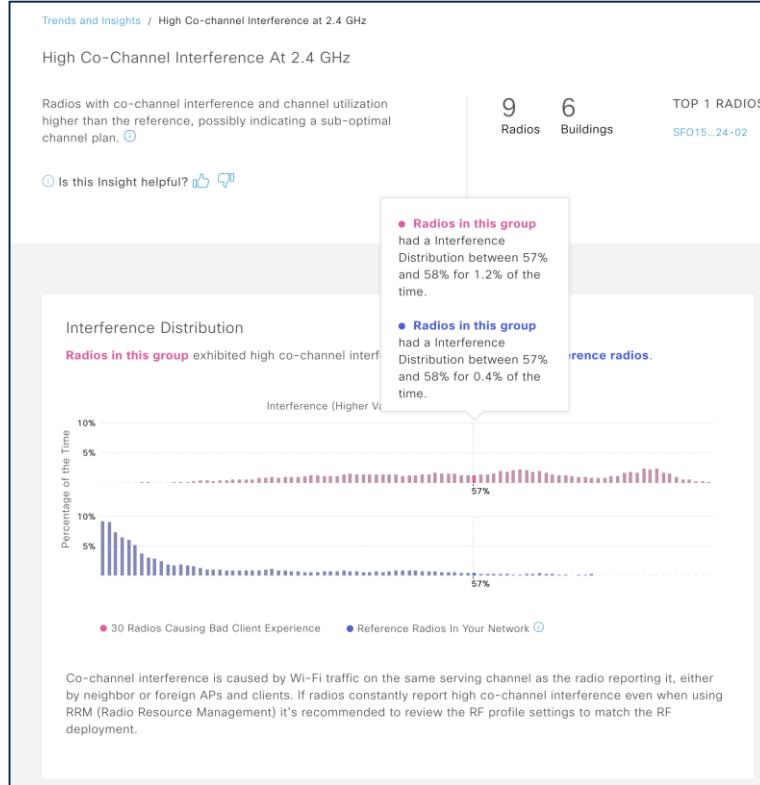
Impacts: 18 Radios, 9 Endpoints

Top 3 APs Affecting Client Experience: AP9124_2, AP9130_1, AP9105_2

Low AP Density

AP Performance Advisories

Leverage AI to Group APs Giving Poor Client Experience from 2.2.3 & 2.2.2.4



Pain Points

No view into groups of APs causing poor client experience due to similar reasons.

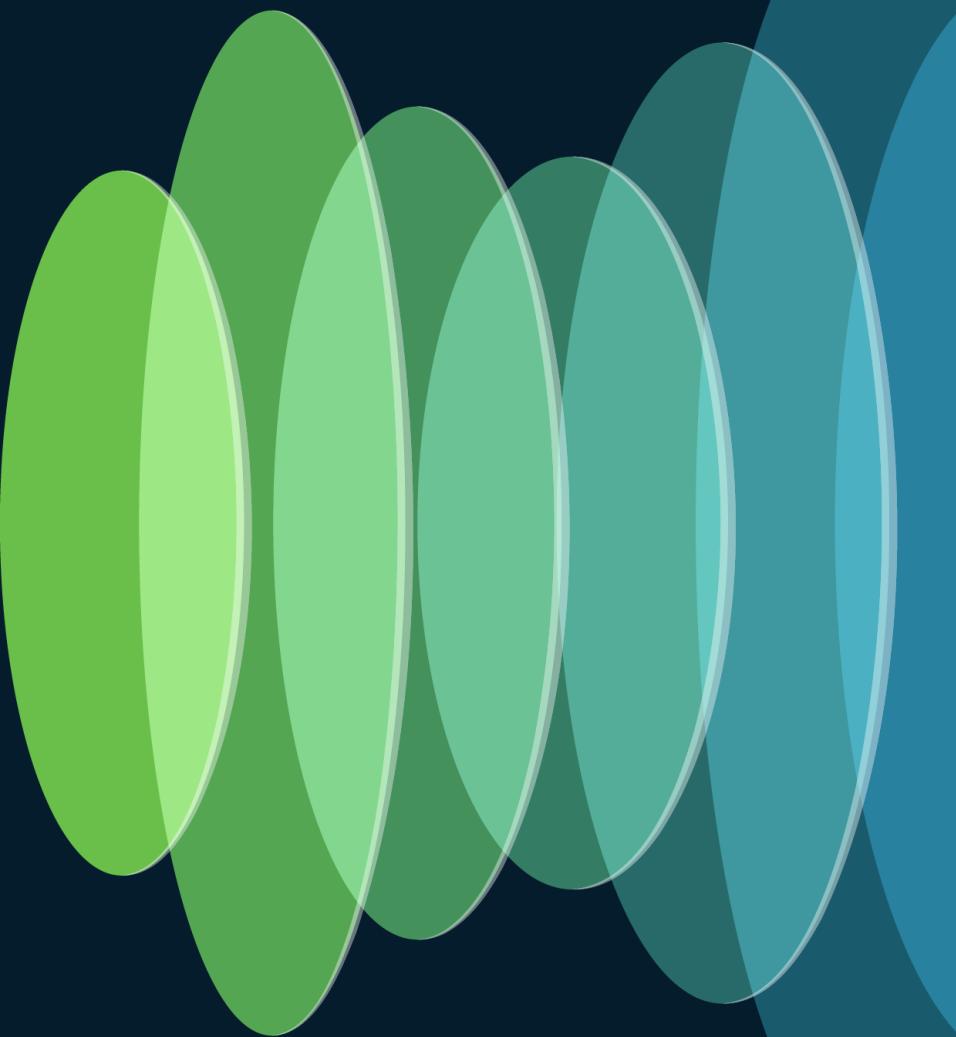
Feature Capability

Leverages AI to analyze 4 weeks of data to group APs and provides impact and root causes.

Customer Benefits

Identify poor performing groups of APs and mitigates potential risks more efficiently.

Event Analytics



Event Analytics

Challenge/Pain Points

- As a network administrator I would like the events dashboard to be more interactive and provide comprehensive analytics and powerful visualisation of the network events. It should provide valuable insights into network performance, security, and troubleshooting

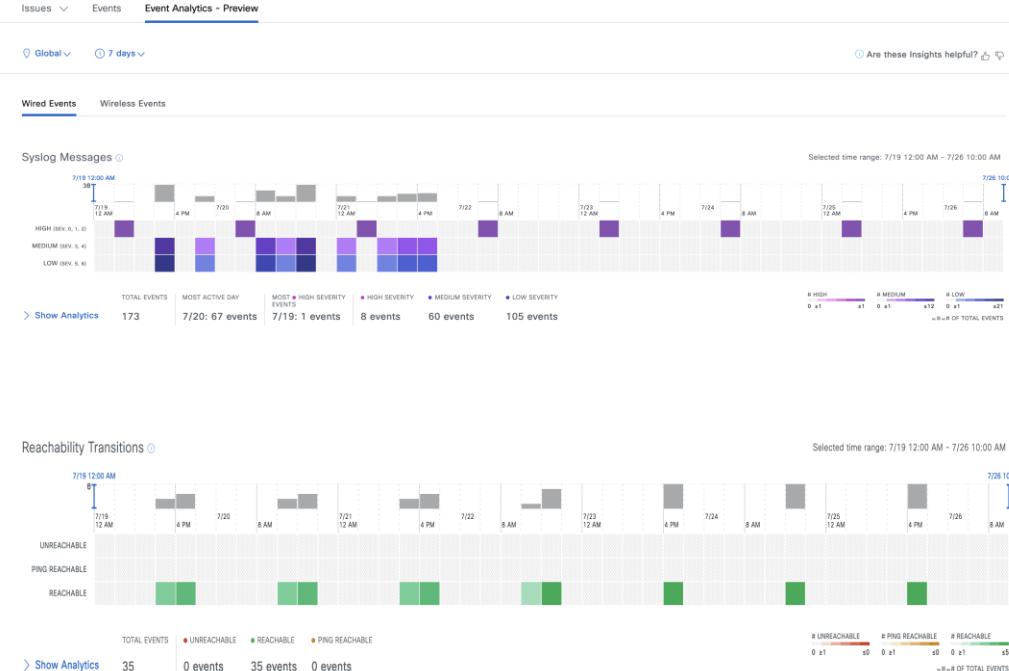
Feature Capability

- Event Analytics aggregates and processes event data, extracting relevant metrics and generating insightful analytics.
- It offers a user-friendly interface that allows users to explore data visually through intuitive graphs and charts to allow specific focus on areas of the network, time periods and event types of interest
- Type of events supported are Syslog and Reachability

Platform/Dependency

- Event Analytics needs to be enabled under AI Analytics
- Requires DNA Advantage License

Assurance -> Issues and Events -> Event Analytics - Preview



Event Analytics

Network event viewer & analytics platform for End-to-End Assurance

Single-pane-of-glass view across all network events facilitating observability & analytics

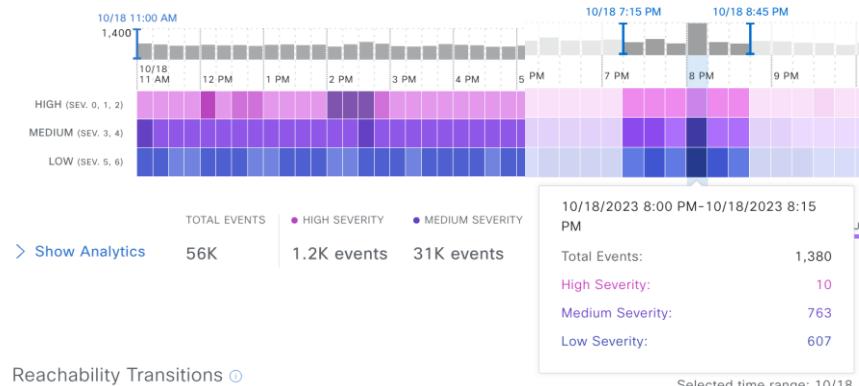
Realtime Analytics: Empower customer exploration & insight discovery

Effortlessly explore millions of events with intuitive synchronisation and correlation across event domains at different temporal scales

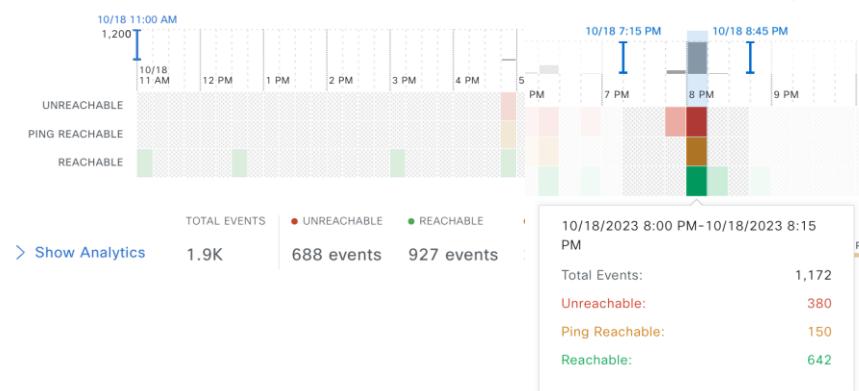
Event Analytics

- Intuitively navigate from millions of events to specific sites, devices or events of interest
- Correlate & compare trends & patterns across events & network domains
- Available in Catalyst Center 2.3.7.1 (phased rollout)

Syslog Messages ⓘ

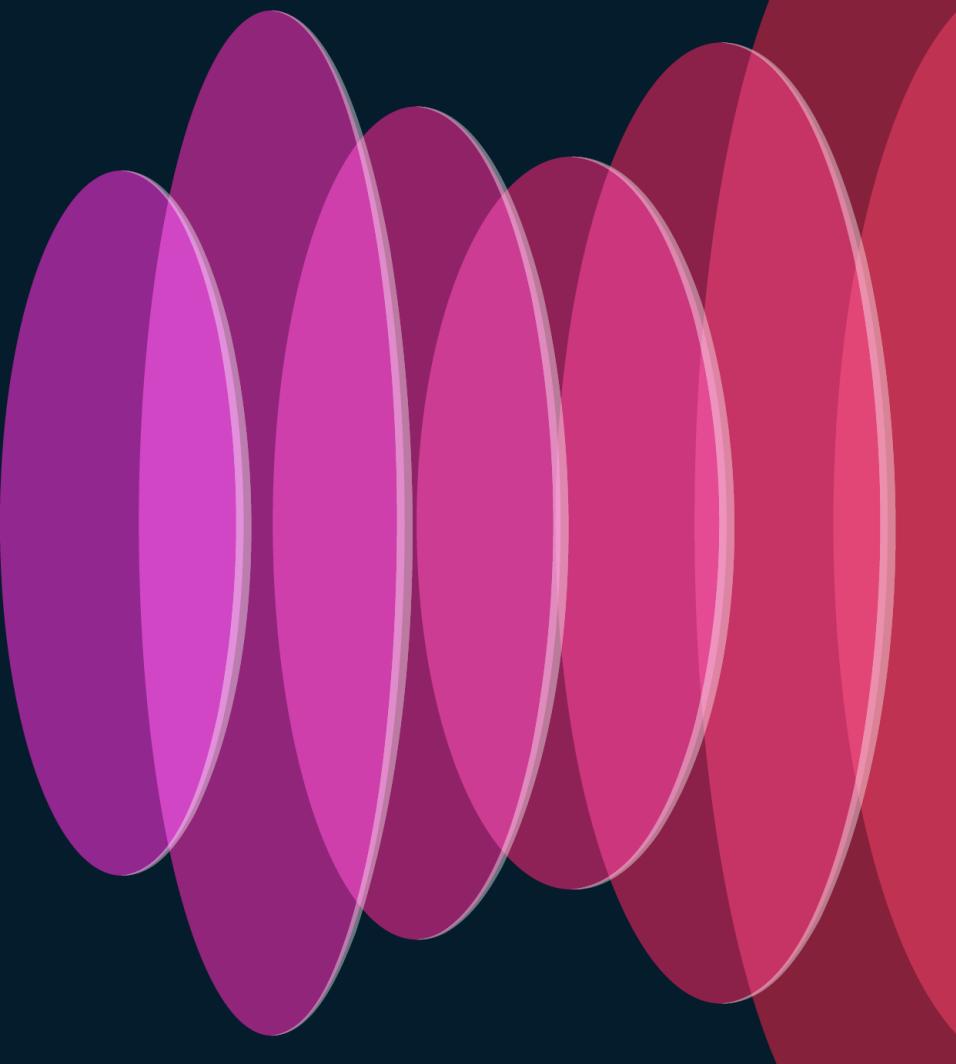


Reachability Transitions ⓘ



Day 1

Site Analytics



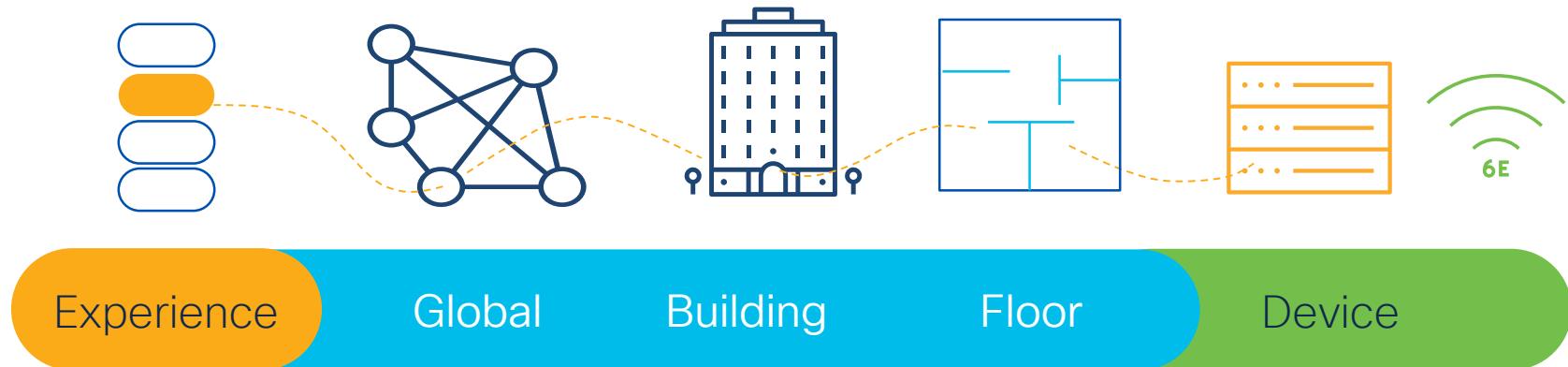
Use Case- Proactive Insights of the wireless environment



As a network admin, I would like to use various Assurance Capabilities in Catalyst Center to get proactive insight into the wireless network to understand how the network is performing

Focus on End User Experience with Site Analytics

Visualize Critical Wireless SLAs from global to Endpoint Level

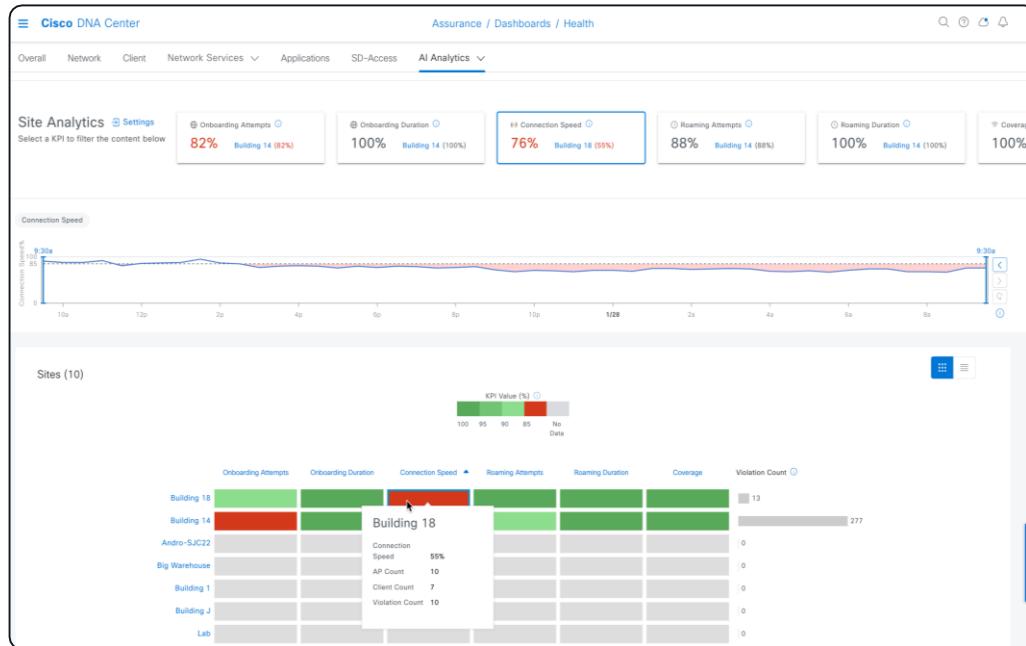


SLAs Personalized to
your network

Critical SLAs such as onboarding speed, connection
speed, and coverage visualized at every level!

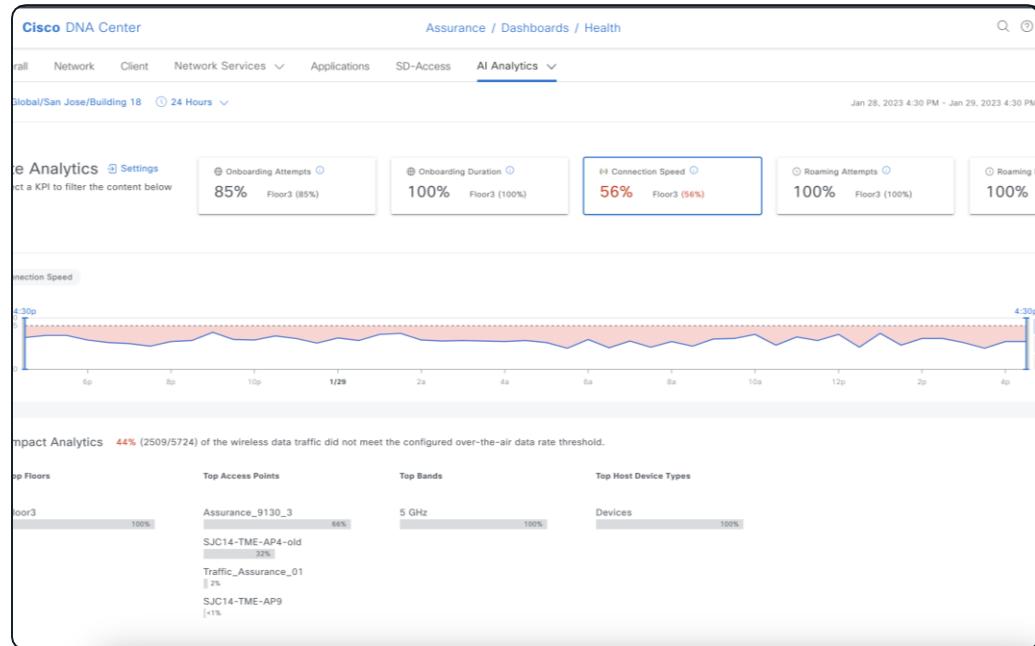
Isolate Problem Devices
Supporting Up to Wi-Fi 6 & 6E

Network experience from a Global to Endpoint level with Site Analytics



Global view of per-site Wireless experience via SLAs

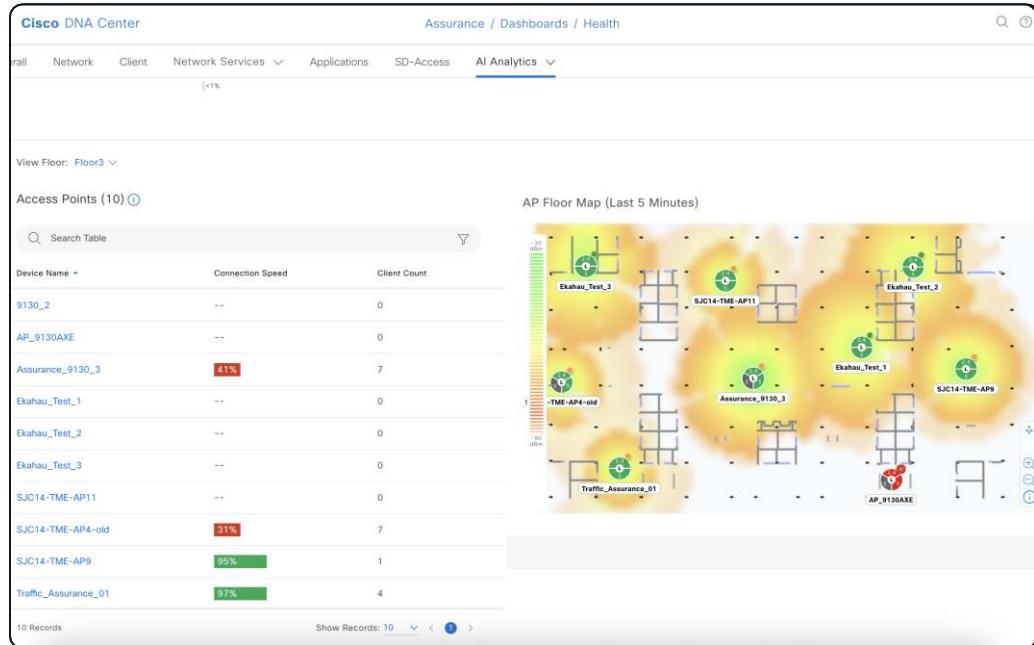
Network experience from a Global to Endpoint level with Site Analytics



Global view of per-site Wireless experience via SLAs

Building view of KPI trendline and Impact Analysis

Network experience from a Global to Endpoint level with Site Analytics



Global view of per-site Wireless experience via SLAs

Building view of KPI trendline and Impact Analysis

Floor view device level KPIs with heat map

In Progress
Target 2HCY24

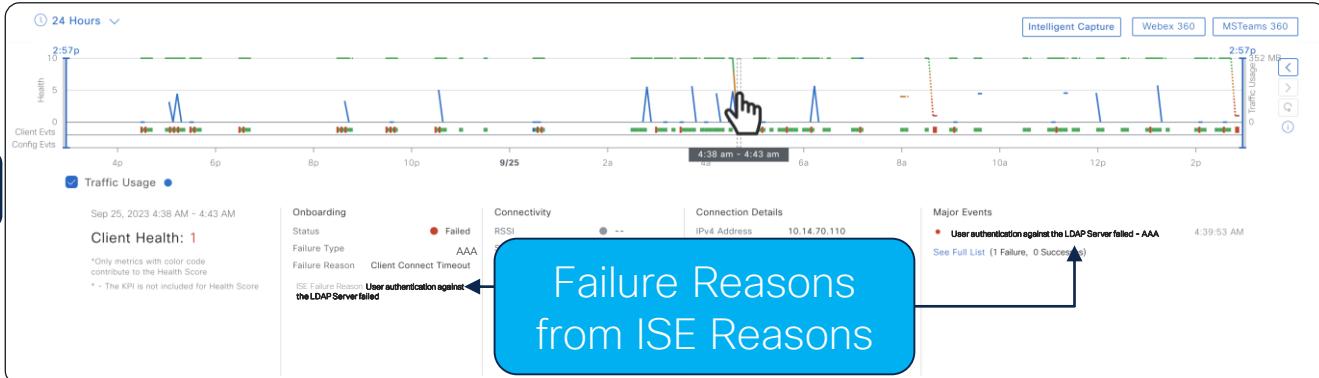
Day N

ISE Failure Integration

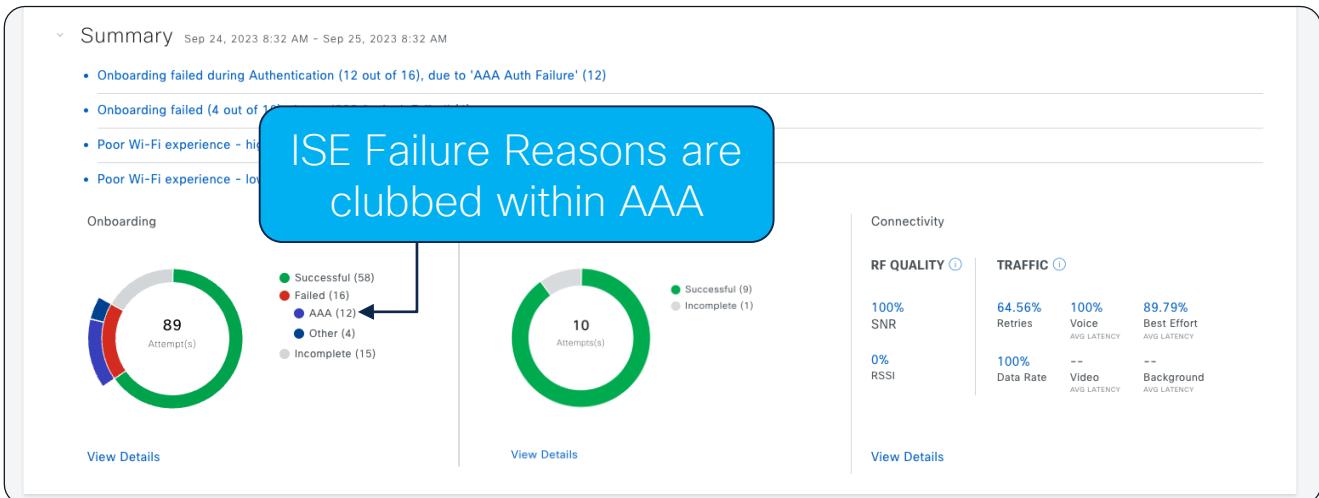
Triaging Authentication Issues Made Easy!

ISE Failures Added to Client 360

Network Timeline

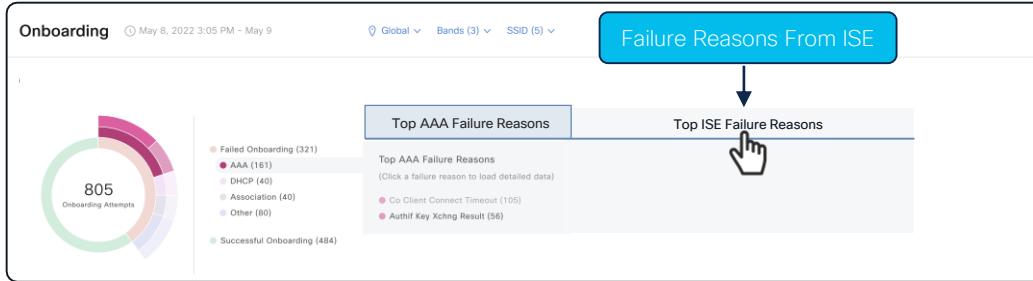


Summary Widget

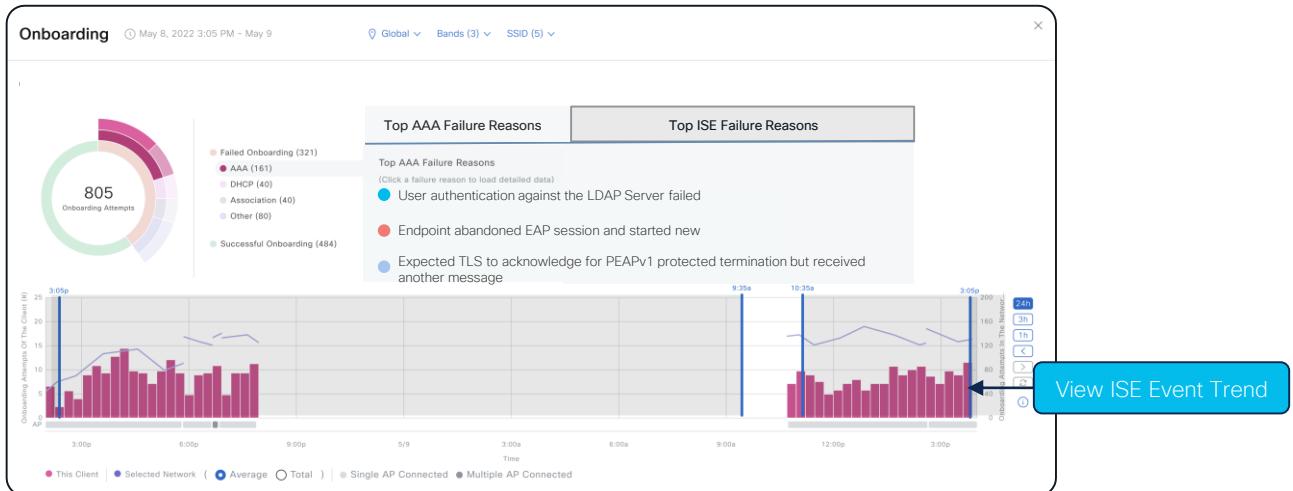


Detailed ISE Failures Summary Widget Integration

AAA Failures
(Sent from WLC)

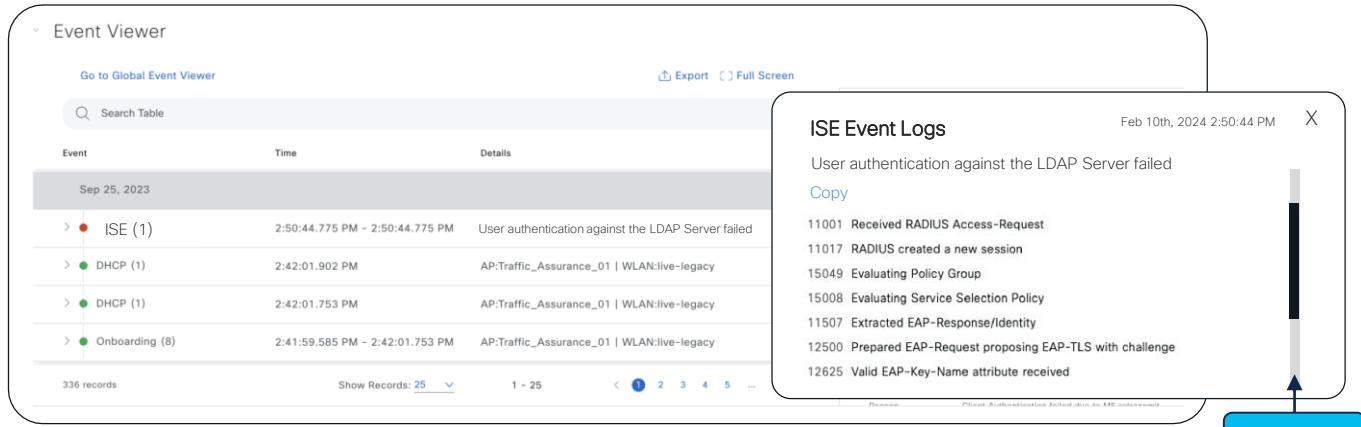


ISE Failure
(Sent from ISE)



Showing Detailed ISE Failure Logs on Client 360's Event Viewer

ISE Integration
in Event Viewer



Event Viewer

Go to Global Event Viewer Export Full Screen

Search Table

Event	Time	Details
Sep 25, 2023		
> ISE (1)	2:50:44.775 PM - 2:50:44.775 PM	User authentication against the LDAP Server failed
> DHCP (1)	2:42:01.902 PM	AP:Traffic_Assurance_01 WLAN:live-legacy
> DHCP (1)	2:42:01.753 PM	AP:Traffic_Assurance_01 WLAN:live-legacy
> Onboarding (8)	2:41:59.585 PM - 2:42:01.753 PM	AP:Traffic_Assurance_01 WLAN:live-legacy

336 records Show Records: 25 1 - 25

ISE Event Logs

Feb 10th, 2024 2:50:44 PM X

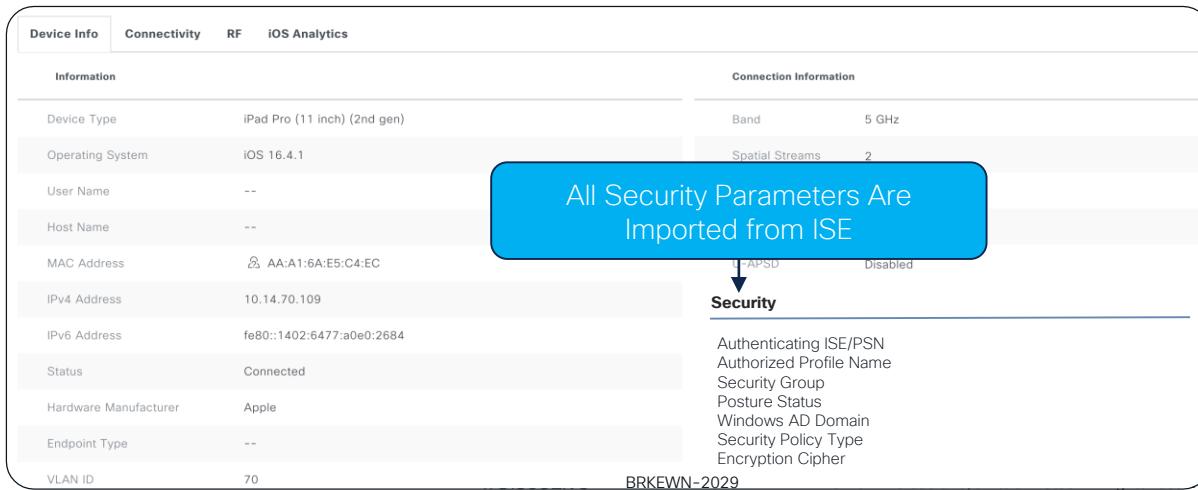
User authentication against the LDAP Server failed

Copy

11001 Received RADIUS Access-Request
11017 RADIUS created a new session
15049 Evaluating Policy Group
15008 Evaluating Service Selection Policy
11507 Extracted EAP-Response/Identity
12500 Prepared EAP-Request proposing EAP-TLS with challenge
12625 Valid EAP-Key-Name attribute received

Scrollable

New Security Section
in Device Info



Device Info Connectivity RF iOS Analytics

Information

Device Type	iPad Pro (11 inch) (2nd gen)
Operating System	iOS 16.4.1
User Name	--
Host Name	--
MAC Address	AA:A1:6A:E5:C4:EC
IPv4 Address	10.14.70.109
IPv6 Address	fe80::1402:6477:a0e0:2684
Status	Connected
Hardware Manufacturer	Apple
Endpoint Type	--
VLAN ID	70

Connection Information

Band	5 GHz
Spatial Streams	2

All Security Parameters Are Imported from ISE

APDS

Security

Authenticating ISE/PSN
Authorized Profile Name
Security Group
Posture Status
Windows AD Domain
Security Policy Type
Encryption Cipher

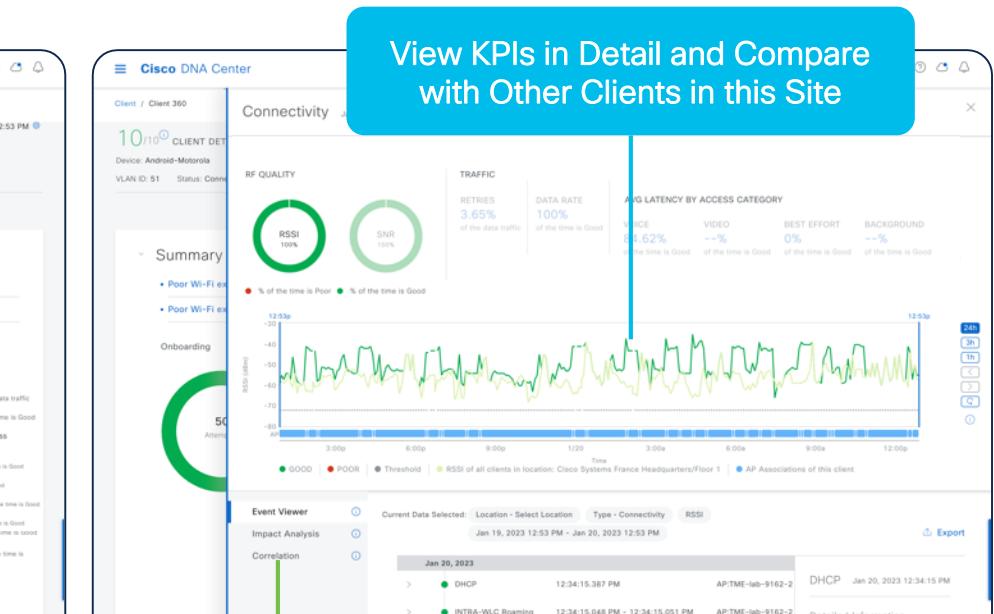
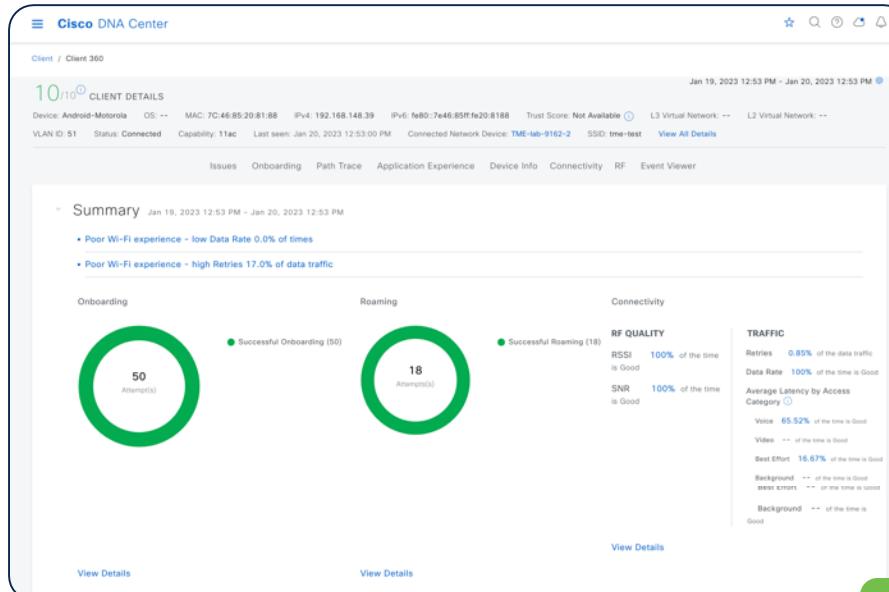
BRKEWN-2029

Reactive Troubleshooting of wireless client connectivity/latency issues



Enhanced Troubleshooting on the Client 360!

Critical KPIs that Define Wireless Experience from v2.3.6



Client 360- Latency per Client data

Challenge/Pain Points

- When Client reports Connectivity or Slowness issue, as a Network admin I should be able to view and understand overall experience of that client for a given time range and check its Latency across access categories and correlate if this issue is because of any problem in Network Devices or Network Services.

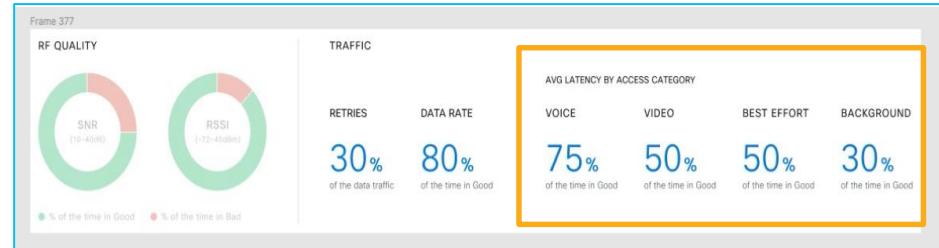
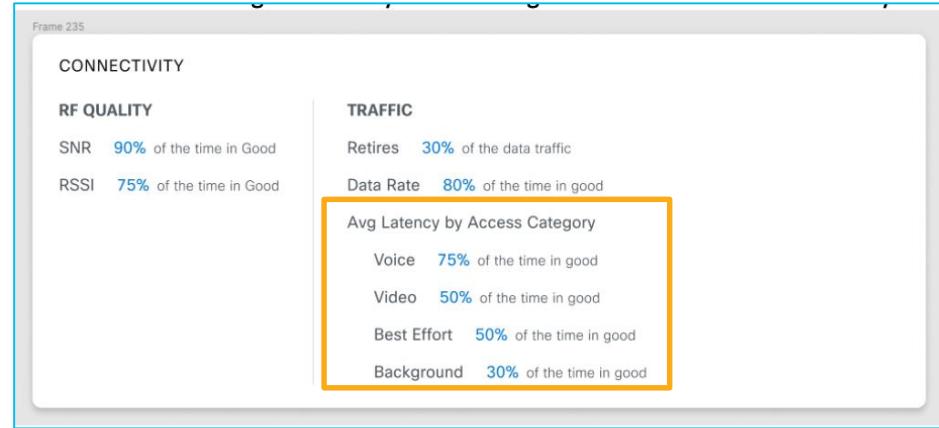
Feature Capability

- New Client latency Stats added to Client360 page under overall Summary. This will help customer to debug and correlate the Client connectivity and slowness issue.
- Trendline to view the latency per client by category and band
- Client Latency stats comes every 5mins from AP to Controller and Catalyst Center receives the data using “ClientRfStats” event

Platform/Dependency

- Supported on IOS XE starting from 17.11
- Requires DNA Advantage License

Assurance -> Dashboard -> Health -> Client



SSID Monitoring on C9800

Challenge/Pain Points

- As a network administrator, I want to see assurance data only for specific critical SSID's like corporate SSID's and Catalyst Center should filter out data for non-critical SSID's.

Feature Capability

- New capabilities added to WLC to send WSA data per SSID and update Catalyst Center with all clients present on WLC
- Ability from Catalyst Center Assurance settings to Disable/Enable SSID filtering

Platform/Dependency

- Supported on IOS XE starting from 17.11

Assurance -> Settings -> SSID Monitoring Settings

Cisco DNA Center

Assurance / Settings / SSID Monitoring Settings



SSID Monitoring

By default, Cisco DNA Assurance monitors all SSIDs. However, you can enable or disable SSID monitoring of specific SSIDs without impacting the SSID configuration or wireless connection to these SSIDs.

What is impacted: When an SSID isn't monitored, Cisco DNA Assurance doesn't collect its client data. So, detailed data and charts for these clients aren't available on the Client 360 page. Also, other data like client health, client-specific issues, and intelligent capture isn't available for these clients. In addition, the dashlets on the Client Health page don't include data from clients on unmonitored SSIDs.

What is NOT impacted: There's no impact on SSID functionality on the APs. Wireless clients continue to connect to these SSIDs and all other SSIDs, as configured. Clients on monitored SSIDs continue to have detailed data available on their Client 360 pages.

To see the scheduled actions, check the [Activity Page](#).

Search Table					
Network Name (SSID)	Client Count	DNAC Monitoring Status	Action	Controller Config Status	Last Modified
TME_live_psk	61	Enabled	Disable	--	--
1 Records					
Show Records: 10 < > <input type="button" value="Print"/>					

AFC Assurance for Catalyst Center

Integrated with AP 360, WLC 360, and Network Health pages

In Progress

AP 360 – Standard Power Service

Detail Information		Mar 27, 2024 12:47 PM	
Device	RF	Ethernet	PoE
Radio Specific KPIs			
Radio 0	Radio 1	Radio 2	Radio 3
GENERAL INFORMATION			
Current Channel	37	Tx Power	13 dBm
Extended Channel(2)	NA	Clean Air Status	Up
Mode	Local	Admin State	Enabled
RF Profile	demo-ai-profile_6	Current Channel Width	30 MHz
Band	6 GHz	Expiration	Aug 05, 2024 8:20AM
		6 GHz Power Mode	Standard Power or Low Power Indoor
		Max. Allowed EIRP	36 dBm
		AFC Defined Location	Location type: GNSS Lat/long: (45, -122) Uncertainty: 10 meters
STANDARD POWER SERVICE			
Standard Power (SP) operation is only allowed with UNII-5 and UNII-7 channels for this domain			
Standard Power Channel and Power Availability			
20 MHz	1	9	14
40 MHz	3	11	19
80 MHz	7	23	39
160 MHz	15	47	79
320 MHz	31		
● <10 dBm ● 10-20 dBm ● >20 dBm ○ Disabled			

AP and Client Tools

Challenge/Pain Points

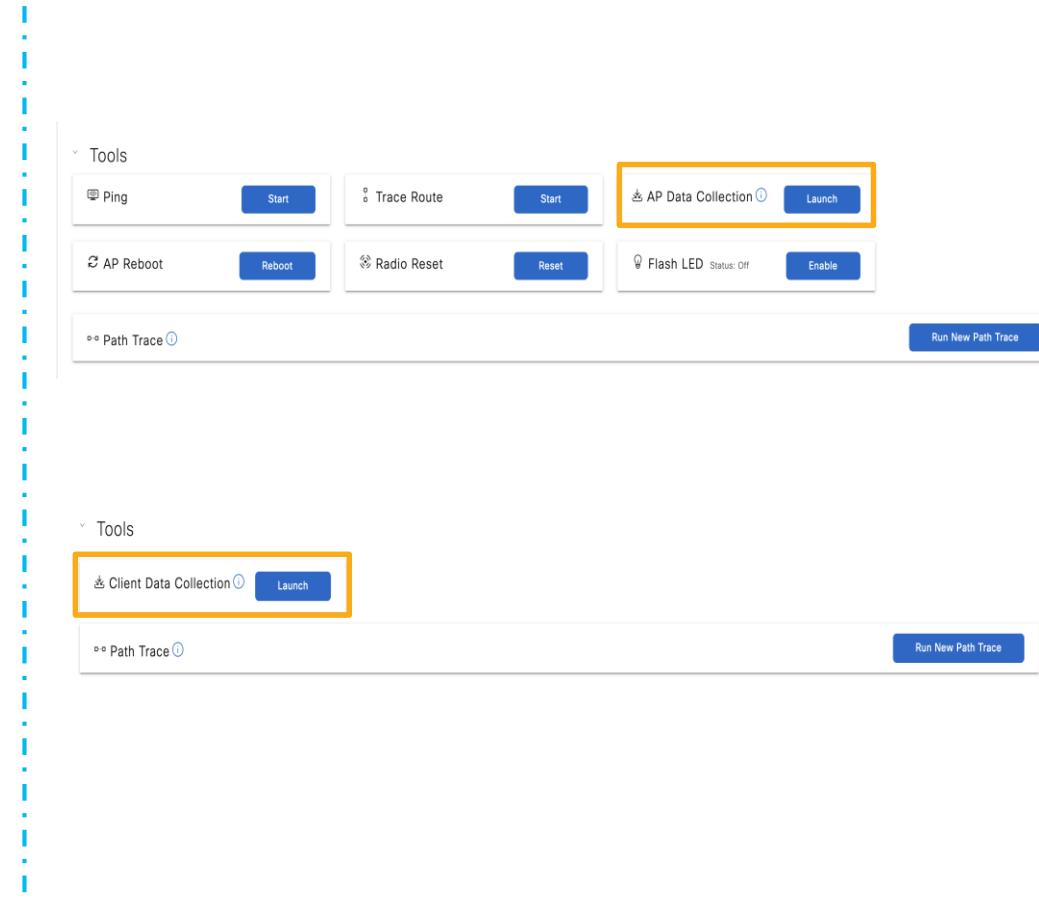
- For Wireless AP and Wireless Client Data Collection, we manually need to go to Tools > Network Reasoner, which is a disconnect in flow if I am on the Client or AP 360 page

Feature Capability

- Ability to launch into Wireless Client Data Collection Workflow on the Network Reasoner Page from the Tools section of Client 360
- Ability to launch into AP Data Collection Workflow on the Network Reasoner Page from the Tools section of AP 360

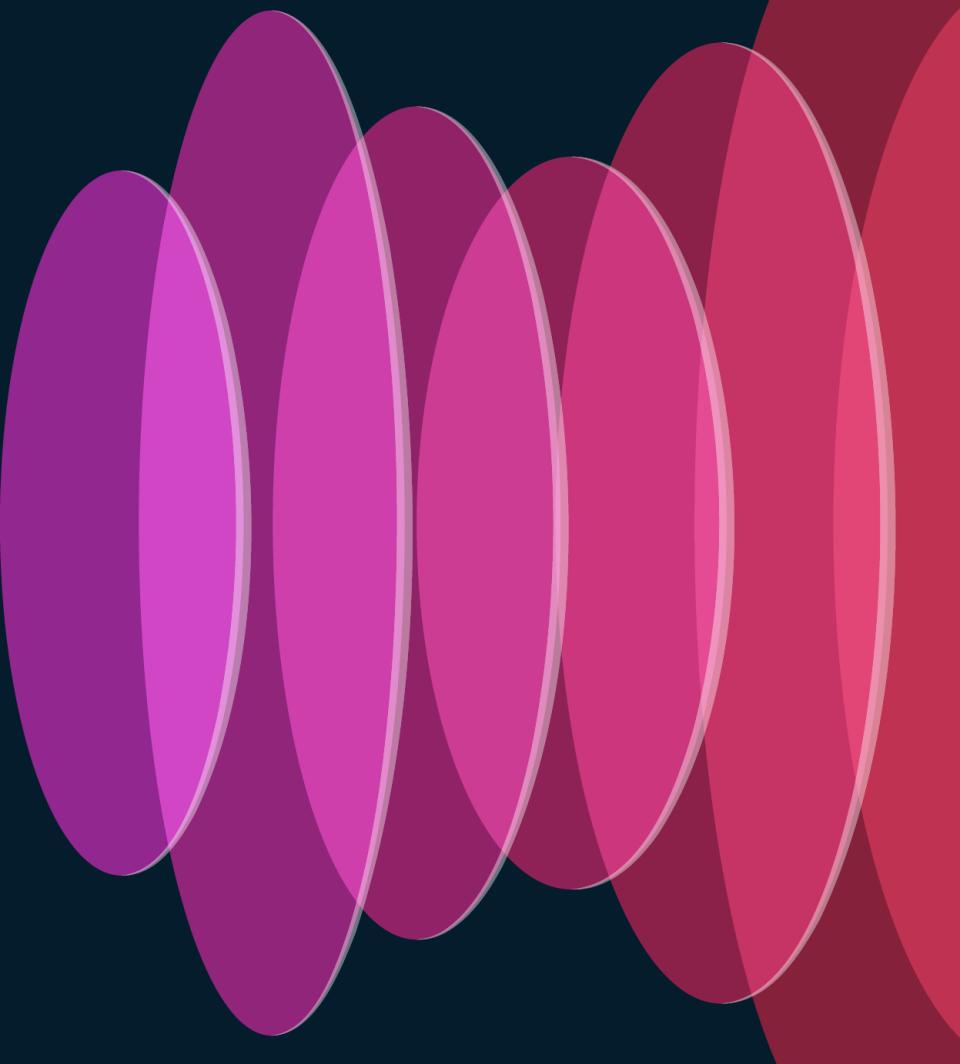
Platform/Dependency

- NA



Day N

OTA Sniffer



Introducing OTA Sniffer with Intelligent Capture



Capture All Packets on AP Supported Bands from 2.3.6!



1

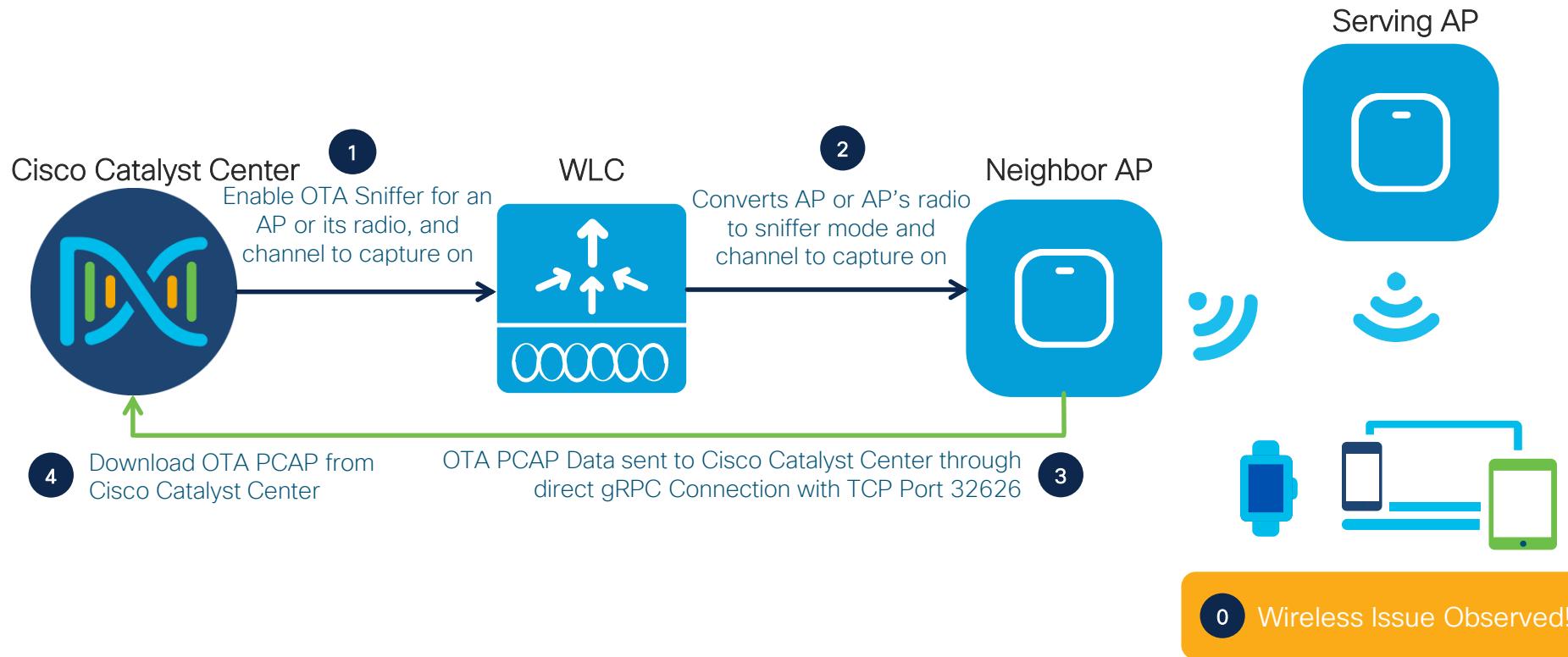
Perform OTA channel packet capture from anywhere in your wireless network remotely.



2

Diagnose wireless roaming, non-roaming, and any other issues at the channel level.

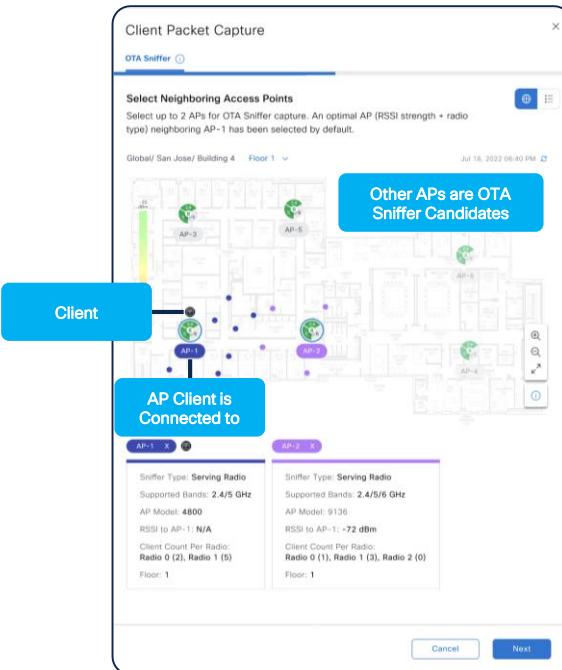
Intelligent Capture OTA Sniffer Topology



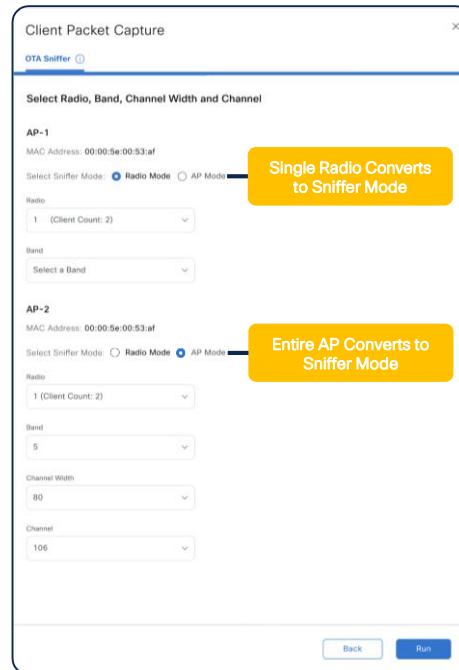
Next Level Serviceability with the OTA Sniffer Capture

Intelligent Capture can now capture ALL packets on a defined band from 2.3.6!

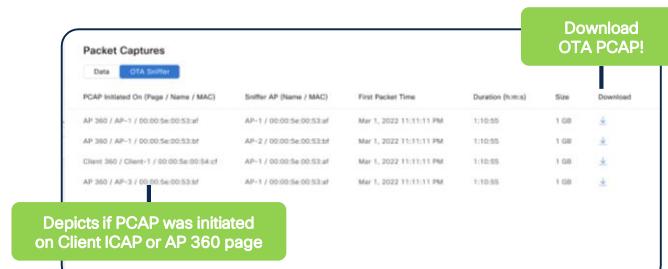
1 Start OTA PCAP on Client or AP 360 and Select Up to 2 APs



2 Define Radio and Band to Capture and Start it!



3 Download the OTA PCAPs
Directly on the Page!



Machine Reasoning Engine for Wireless Serviceability

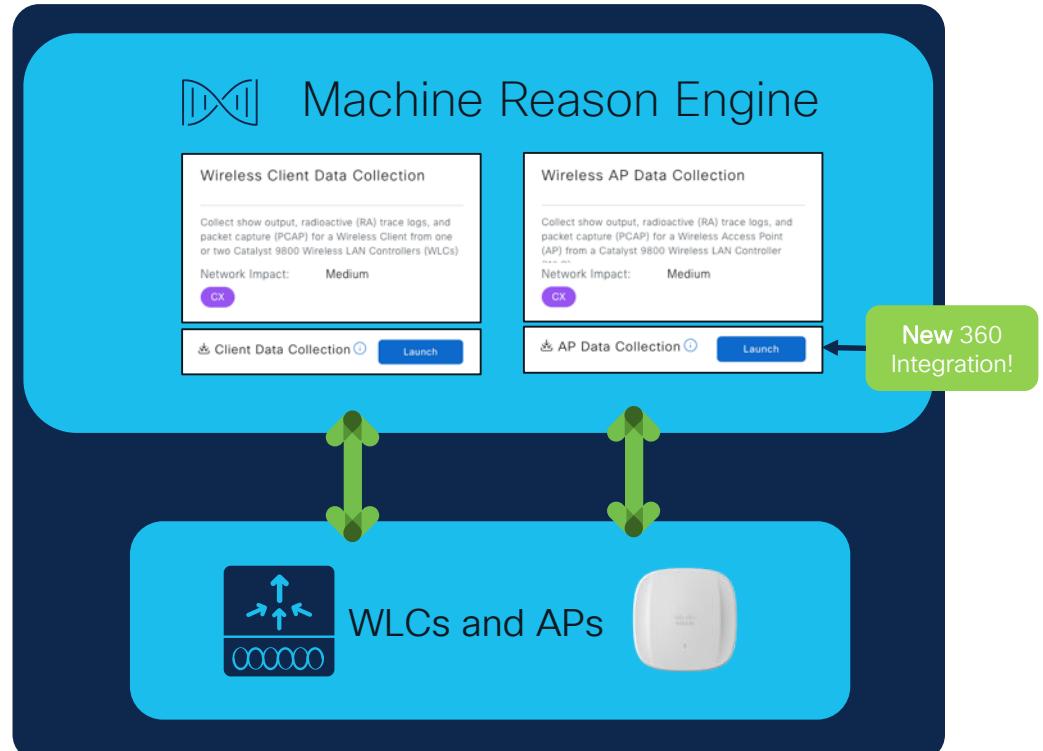
With Client and AP Data Collection Catalyst Center v2.3.6

Use case:

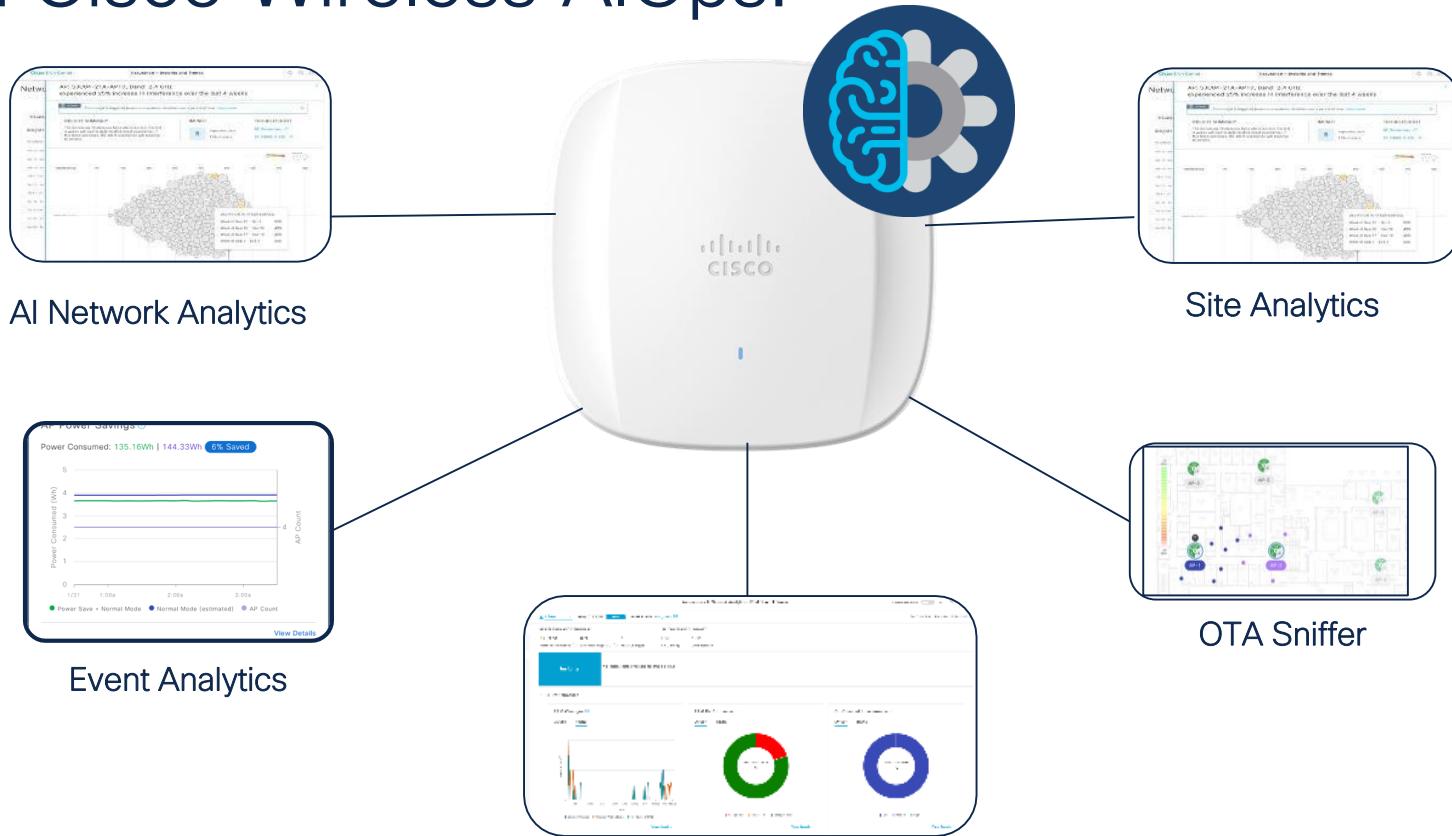
Cisco Catalyst Center can grab AP and Client debug logs needed for troubleshooting via the Wireless Client and AP Data Collection MRE Workflows on the Network Reasoner page.

Key Benefits:

- Significantly improves serviceability experience as logs are collected for you and made available directly on the MRE UI.
- No need to manually SSH into WLC/APs, run CLI/Debug commands then copy paste logs into .txt files any longer.
- Integration into Client and AP 360 page under tools from Cisco Catalyst Center v.2.3.7.



Unleash the True Potential of Your Wireless with Cisco Wireless AIOps!



Networking

Wireless Automation & Troubleshooting

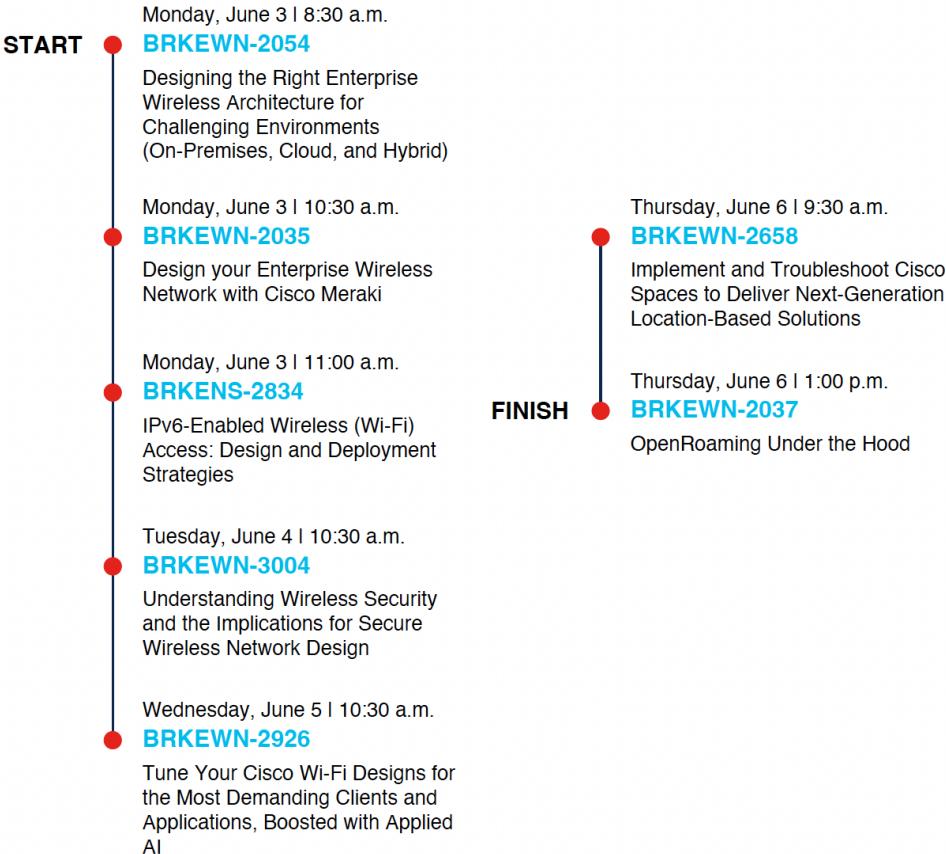
Learn from experts on wireless topics such as automation and analytics for enterprise wireless networks, and best practice in troubleshooting wireless networks from speakers who are at the forefront of wireless innovation. You will understand our AI/ML strategy for Cisco Wireless.



Networking

Secure Wireless Design

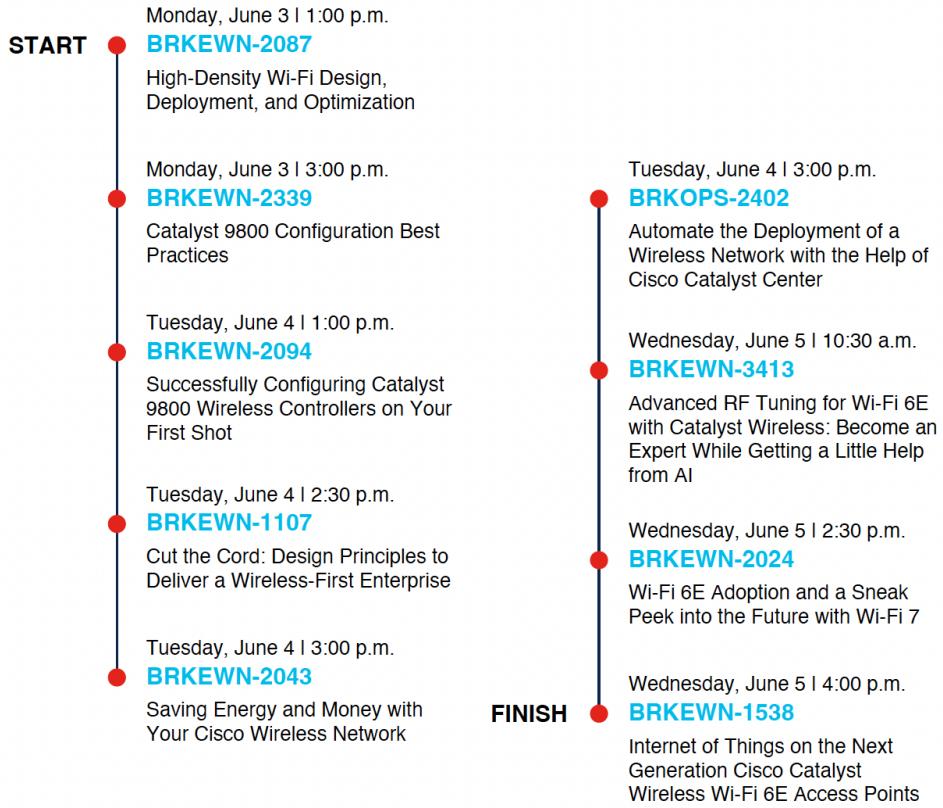
Learn about design best practices for Cisco wireless solution, including many security optimizations. You will also learn about energy optimizations for Cisco Wireless deployments. Finally you will learn how to enable Smart Workspaces and locations based services that leverage your Cisco Wireless and BLE solution.



Networking

Wi-Fi 6/6E

Learn from experts on wireless topics such as WiFi6 and WiFi6E standards enhancements. You will understand what you need to know about designing for 6GHz, migrating from AireOS to Catalyst 9800 or to Cloud management with Meraki, and what you need to know about 5G and WiFi6E coexistence.



Complete Your Session Evaluations



Complete a minimum of 4 session surveys and the Overall Event Survey to be entered in a drawing to **win 1 of 5 full conference passes** to Cisco Live 2025.



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Contact me at: karthiyy@cisco.com



The bridge to possible

Thank you

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