CISCO Connect

From Signal to Site: The Latest in Wireless and Branch Solutions

Ian Procyk
Solutions Engineer - Solutions Designer @VE7HHS

Rubens Lima
Solutions Engineer – Routing&SD-WAN

Sai Suchandan
SD-WAN Technical Marketing Engineer – Technical Leader

Arvind Gangadharan
Engineering Product Manager

November 19, 2025

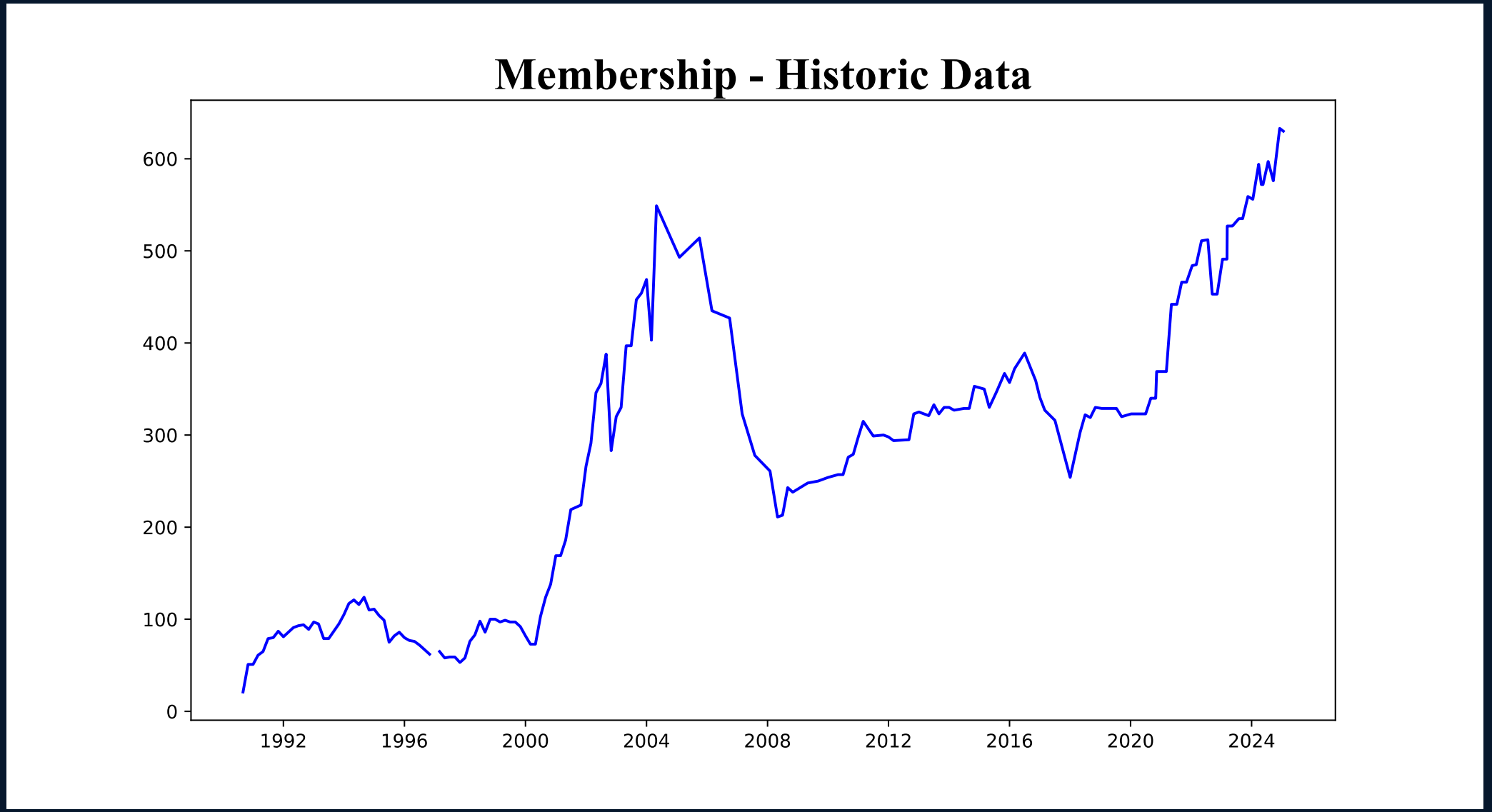
Agenda Part 1 (Wireless)

1. Industry / Spectrum Update
2. What's New? (AP,WLC/Campus GW)
3. Wi-Fi 6E / 7 Migration Considerations

Agenda Part 2 (Branch)

1. Cisco Unified Branch
2. Evolution to Cisco Secure WAN
3. AIOps & Analytics

The 802.11 Working Group Has Never Been Larger...

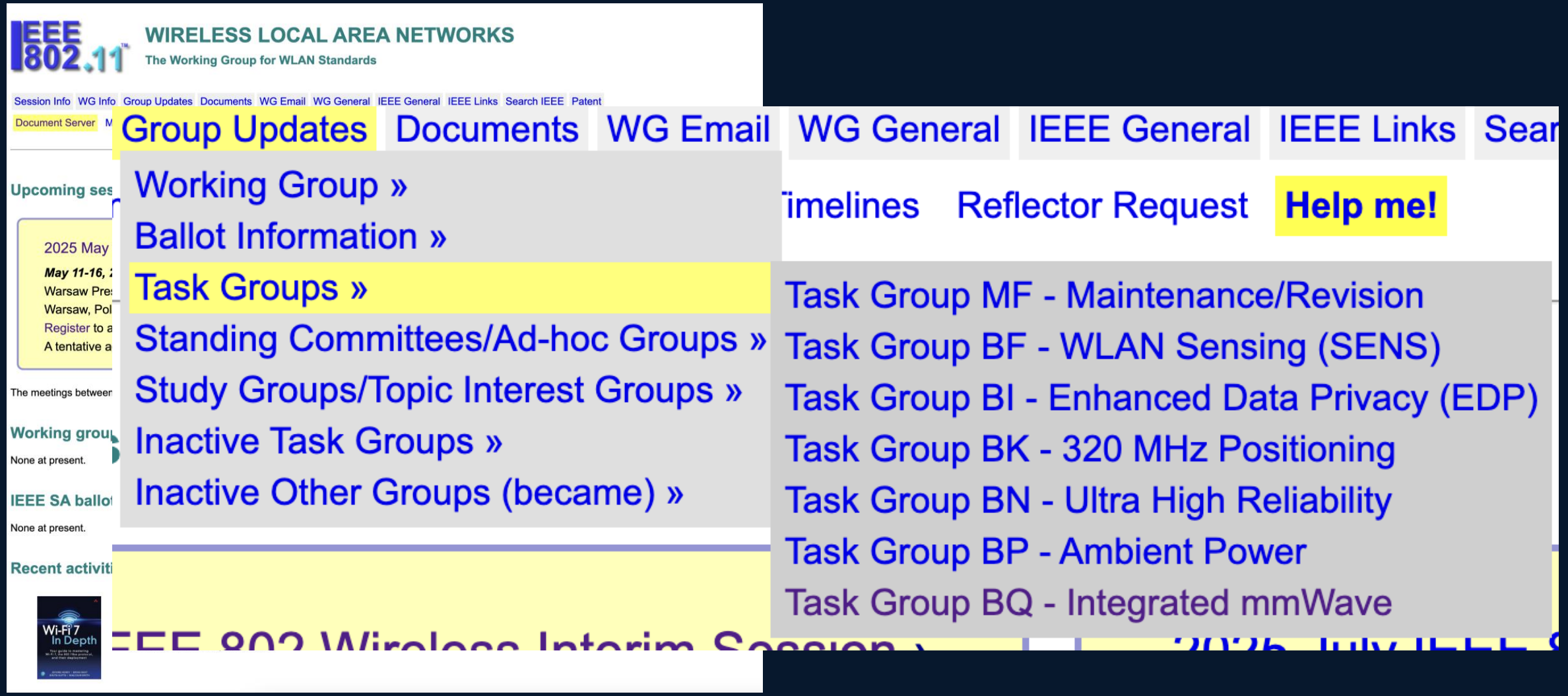


Some of the Cisco 802.11 Team

IEEE 802.11 – Vancouver – Nov 2024

IEEE 802.11 – Atlanta – March 2024

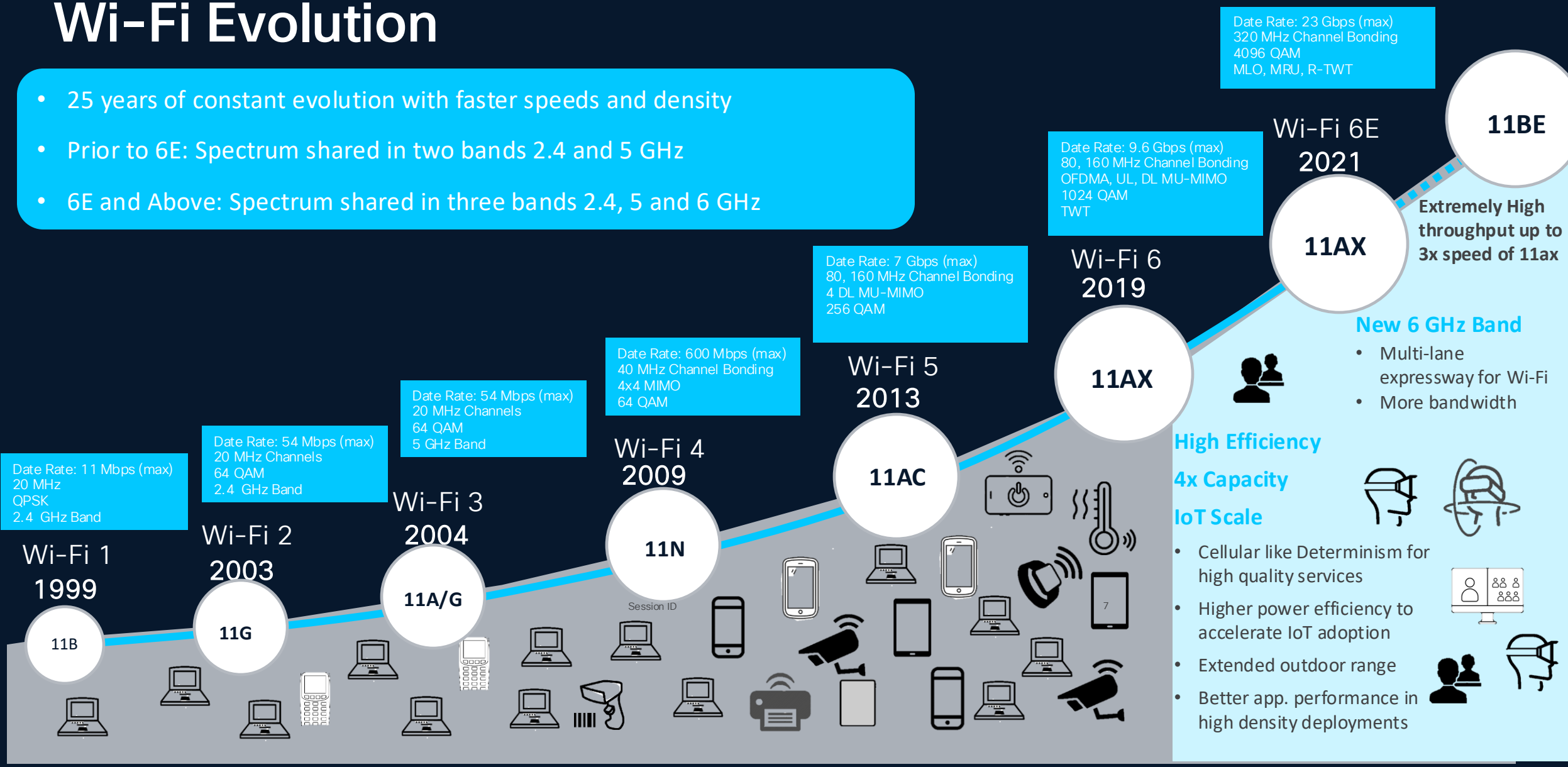
Want to See Where Things Will Be In 5 Years?



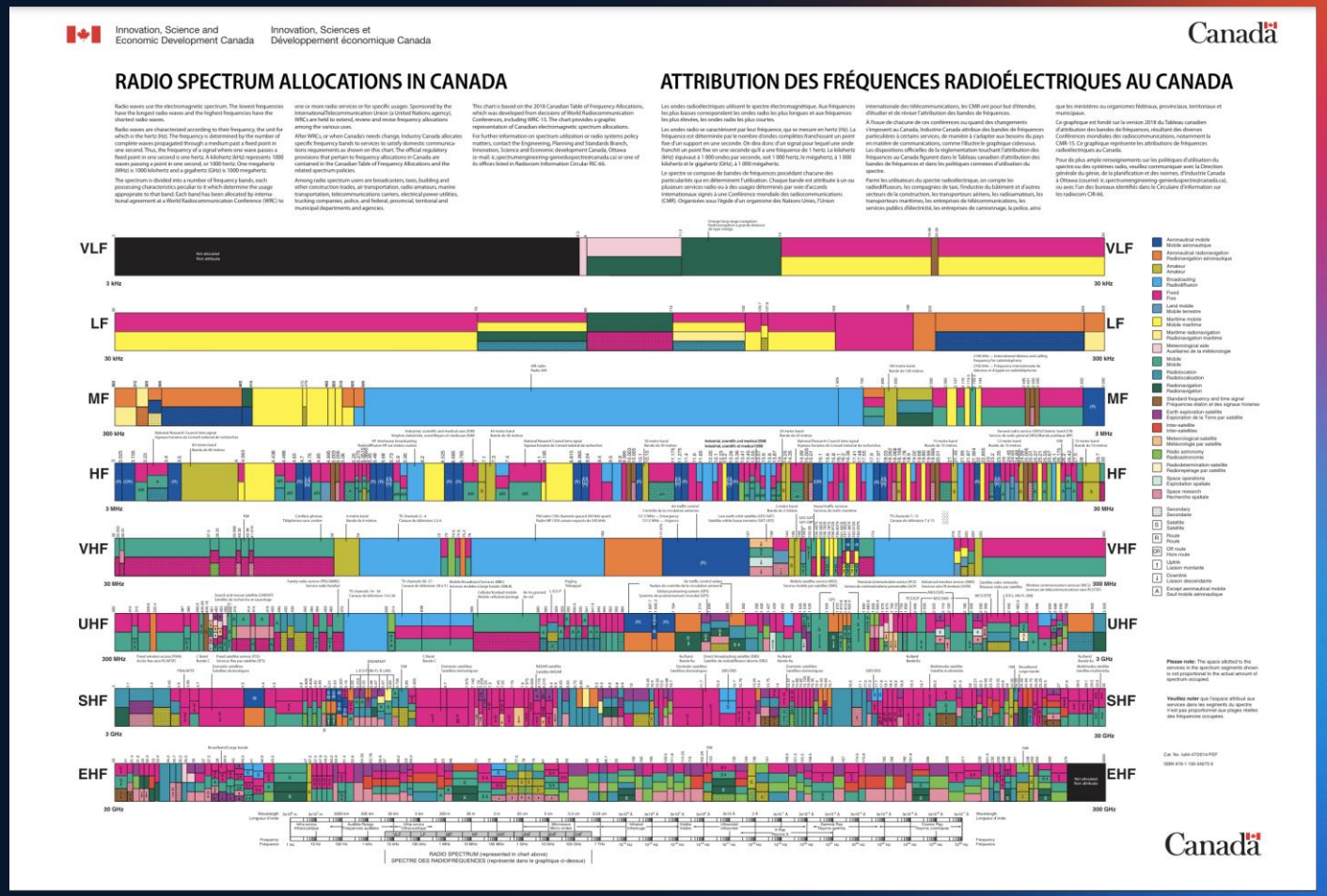
http://ieee802.org/11/

Wi-Fi Evolution

- 25 years of constant evolution with faster speeds and density
- Prior to 6E: Spectrum shared in two bands 2.4 and 5 GHz
- 6E and Above: Spectrum shared in three bands 2.4, 5 and 6 GHz



Canadian Spectrum Update



Innovation, Science and Economic Development Canada

Innovation, Sciences et Développement économique Canada

Canada

RADIO SPECTRUM ALLOCATIONS IN CANADA

Radio waves use the electromagnetic spectrum. The lowest frequencies have the longest radio waves and the highest frequencies have the shortest radio waves.

Radio waves are characterized according to their frequency, the unit for which is the hertz (Hz). The frequency is determined by the number of complete waves propagated through a medium past a fixed point in one second. Thus, the frequency of a signal where one wave passes a fixed point in one second is one hertz. A kilohertz (kHz) represents 1000 waves passing a point in one second, or 1000 hertz. One megahertz (MHz) is 1000 kilohertz and a gigahertz (GHz) is 1000 megahertz.

The spectrum is divided into a number of frequency bands, each possessing characteristics peculiar to it which determine the usage appropriate to that band. Each band has been allocated by international agreement at a World Radiocommunication Conference (WRC) to one or more radio services or for specific usages. Sponsored by the International Telecommunication Union (a United Nations agency), WRCs are held to extend, review and revise frequency allocations among the various uses.

After WRCs, or when Canada's needs change, Industry Canada allocates specific frequency bands to services to satisfy domestic communications requirements as shown on this chart. The official regulatory provisions that pertain to frequency allocations in Canada are contained in the Canadian Table of Frequency Allocations and the related spectrum policies.

Among radio spectrum users are broadcasters, taxis, building and other construction trades, air transportation, radio amateurs, marine transportation, telecommunications carriers, electrical power utilities, trucking companies, police, and federal, provincial, territorial and municipal departments and agencies.

This chart is based on the 2018 Canadian Table of Frequency Allocations, which was developed from decisions of World Radiocommunication Conferences, including WRC-15. The chart provides a graphic representation of Canadian electromagnetic spectrum allocations.

For further information on spectrum utilization or radio systems policy matters, contact the Engineering, Planning and Standards Branch, Innovation, Science and Economic development Canada, Ottawa (e-mail: ic.spectrumengineering-genieduspectre.ic@canada.ca) or one of its offices listed in Radiocom Information Circular RIC-66.

ATTRIBUTION DES FRÉQUENCES RADIOÉLECTRIQUES AU CANADA

Les ondes radioélectriques utilisent le spectre électromagnétique. Aux fréquences les plus basses correspondent les ondes radio les plus longues et aux fréquences les plus élevées, les ondes radio les plus courtes.

Les ondes radio se caractérisent par leur fréquence, qui se mesure en hertz (Hz). La fréquence est déterminée par le nombre d'ondes complètes franchissant un point fixe d'un support en une seconde. On dira donc d'un signal pour lequel une onde franchit un point fixe en une seconde qu'il a une fréquence de 1 hertz. Le kilohertz (kHz) équivaut à 1 000 ondes par seconde, soit 1 000 hertz, le mégahertz, à 1 000 kilohertz et le gigahertz (GHz), à 1 000 mégahertz.

Le spectre se compose de bandes de fréquences possédant chacune des particularités qui en déterminent l'utilisation. Chaque bande est attribuée à un ou plusieurs services radio ou à des usages déterminés par voie d'accords internationaux signés à une Conférence mondiale des radiocommunications (CMR). Organisées sous l'égide d'un organisme des Nations Unies, l'Union internationale des télécommunications, les CMR ont pour but d'étendre, d'étudier et de réviser l'attribution des bandes de fréquences.

À l'issue de chacune de ces conférences ou quand des changements s'imposent au Canada, Industrie Canada attribue des bandes de fréquences particulières à certains services, de manière à s'adapter aux besoins du pays en matière de communications, comme l'illustre le graphique ci-dessous. Les dispositions officielles de la réglementation touchant l'attribution des fréquences au Canada figurent dans le Tableau canadien d'attribution des bandes de fréquences et dans les politiques connexes d'utilisation du spectre.

Parmi les utilisateurs du spectre radioélectrique, on compte les radiodiffuseurs, les compagnies de taxi, l'industrie du bâtiment et d'autres secteurs de la construction, les transporteurs aériens, les radioamateurs, les transporteurs maritimes, les entreprises de télécommunications, les services publics d'électricité, les entreprises de camionnage, la police, ainsi que les ministères ou organismes fédéraux, provinciaux, territoriaux et municipaux.

Ce graphique est fondé sur la version 2018 du Tableau canadien d'attribution des bandes de fréquences, résultant des diverses Conférences mondiales des radiocommunications, notamment la CMR-15. Ce graphique représente les attributions de fréquences radioélectriques au Canada.

Pour de plus amples renseignements sur les politiques d'utilisation du spectre ou des systèmes radio, veuillez communiquer avec la Direction générale du génie, de la planification et des normes, d'Industrie Canada à Ottawa (courriel : ic.spectrumengineering-genieduspectre.ic@canada.ca), ou avec l'un des bureaux identifiés dans le Circulaire d'information sur les radiocom CIR-66.

VLF 3 kHz – 30 kHz

LF 30 kHz – 300 kHz

MF 300 kHz – 3 MHz

HF 3 MHz – 30 MHz

VHF 30 MHz – 300 MHz

UHF 300 MHz – 3 GHz

SHF 3 GHz – 30 GHz

EHF 30 GHz – 300 GHz

RADIO SPECTRUM (represented in chart above)
SPECTRE DES RADIOFRÉQUENCES (représenté dans le graphique ci-dessus)

Aeronautical mobile
Mobile aéronautique
Aeronautical radionavigation
Radionavigation aéronautique
Amateur
Amateur
Broadcasting
Radiodiffusion
Fixed
Fixe
Land mobile
Mobile terrestre
Maritime mobile
Mobile maritime
Maritime radionavigation
Radionavigation maritime
Meteorological aids
Auxiliaires de la météorologie
Mobile
Mobile
Radiolocation
Radiolocalisation
Radionavigation
Radionavigation
Standard frequency and time signal
Fréquences étalon et des signaux horaires
Earth exploration-satellite
Exploration de la Terre par satellite
Inter-satellite
Inter-satellites
Meteorological-satellite
Météorologie par satellite
Radio astronomy
Radioastronomie
Radiodetermination-satellite
Radiorepérage par satellite
Space operations
Exploitation spatiale
Space research
Recherche spatiale
Secondary
Secondaire
S Satellite
Satellite
R Route
Route
OR Off route
Hors route
I Uplink
Liaison montante
I Downlink
Liaison descendante
A Except aeronautical mobile
Sauf mobile aéronautique

Please note: The space allotted to the services in the spectrum segments shown is not proportional to the actual amount of spectrum occupied.

Veuillez noter que l'espace attribué aux services dans les segments du spectre n'est pas proportionnel aux plages réelles des fréquences occupées.

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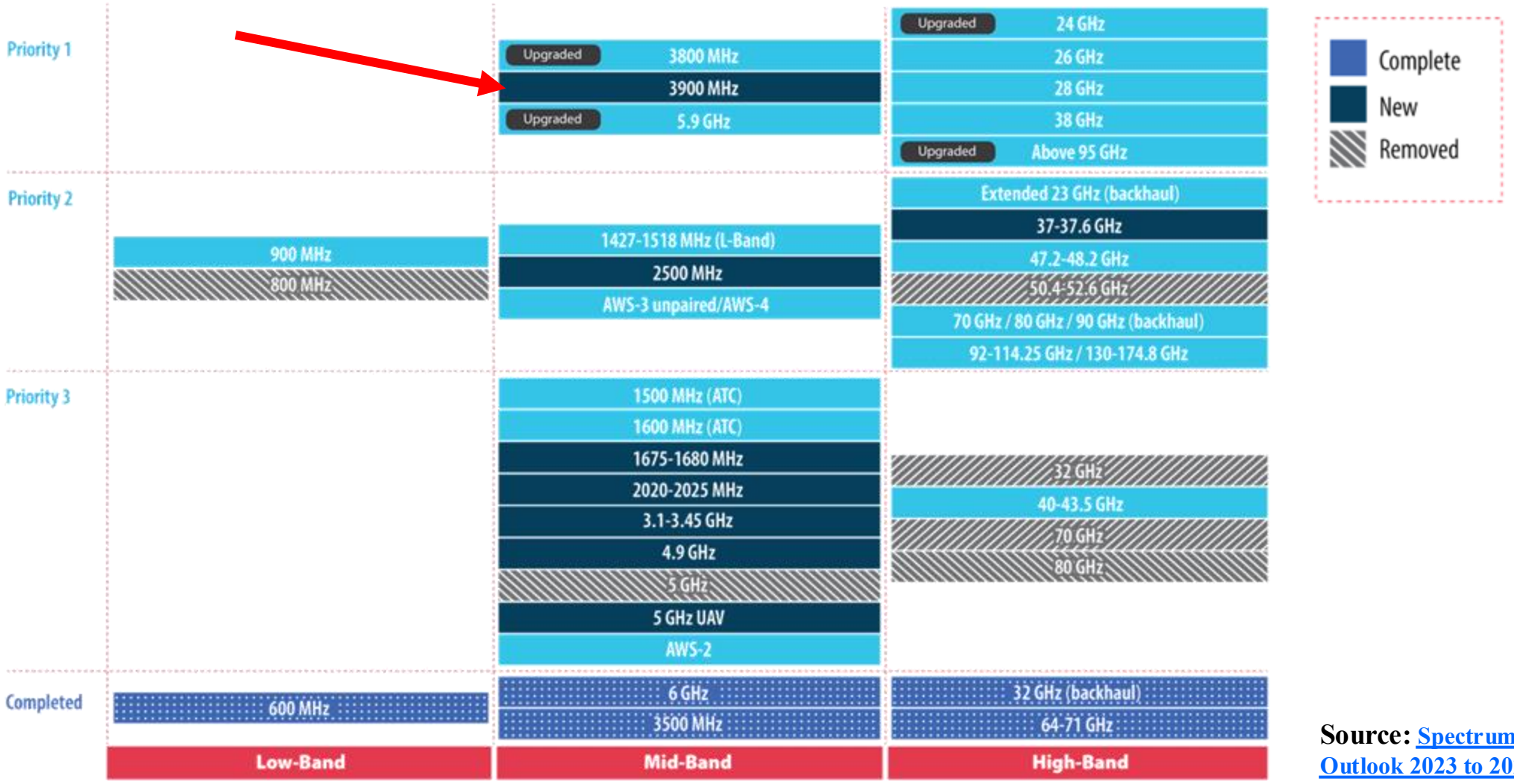
Canada

ISED Spectrum Priorities 2023-2027

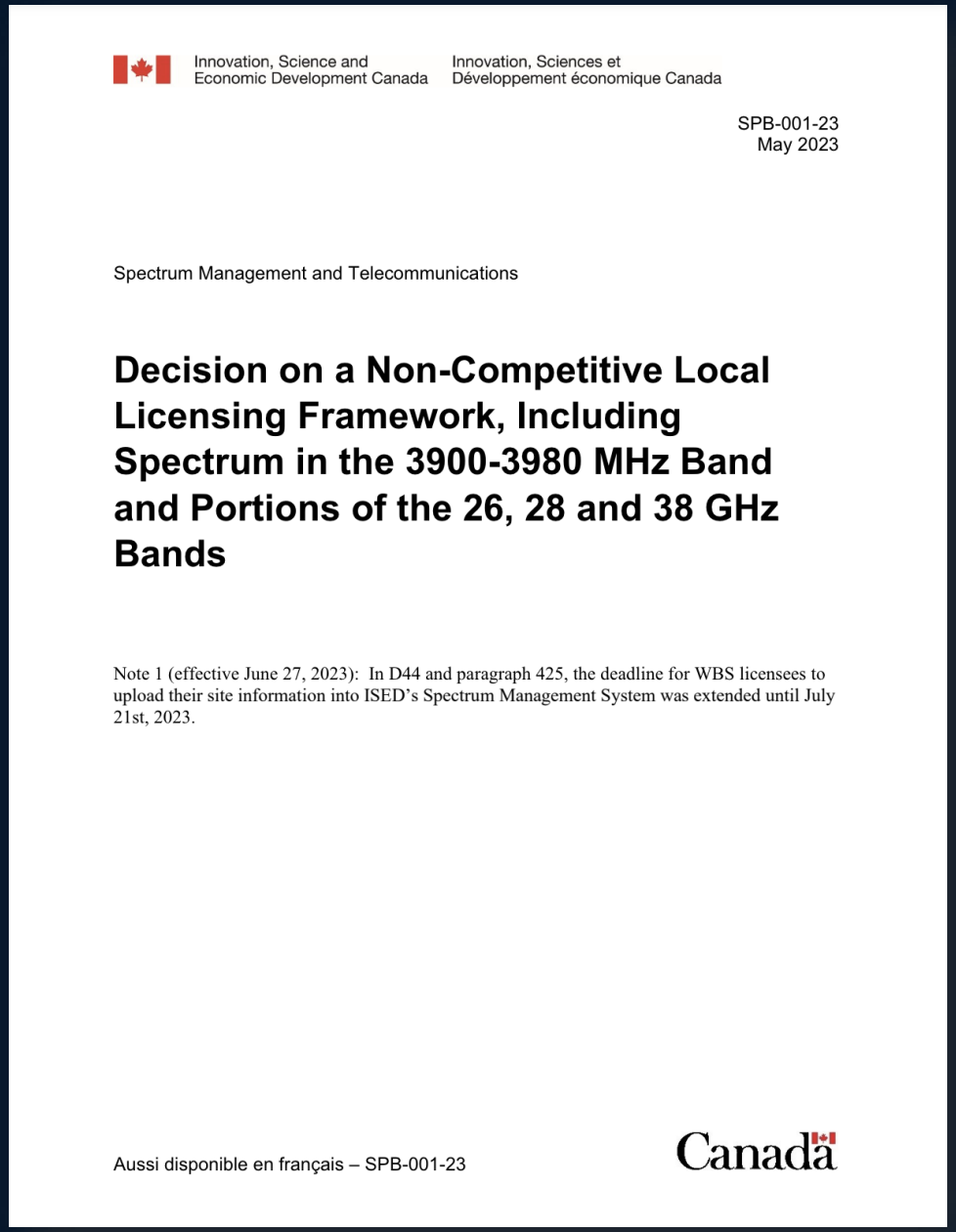


Source: [Spectrum Outlook 2023 to 2027]

P5G Spectrum in Canada

ISED views the development of a non-competitivelocal (NCL) licensing framework as a way to provide a broad range of users, including businesses and industry verticals, with the opportunity to acquire licences in localized areas across the country.

In addition, as NCL licensing frameworks generally promote more intensive use of spectrum by means of spectrum sharing, new users should benefit from lower barriers to entry, and reliable, easy access to spectrum.



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Innovation, Sciences et Développement économique Canada

SPB-001-23
May 2023

Spectrum Management and Telecommunications

Decision on a Non-Competitive Local Licensing Framework, Including Spectrum in the 3900-3980 MHz Band and Portions of the 26, 28 and 38 GHz Bands

Note 1 (effective June 27, 2023): In D44 and paragraph 425, the deadline for WBS licensees to upload their site information into ISED's Spectrum Management System was extended until July 21st, 2023.

Aussi disponible en français – SPB-001-23

Canada

ISED's Statement on 6GHz

6 GHz Band in Canada

- In May 2021 ISED published the Decision on the Technical and Policy Framework for Licence-Exempt Use in the 6 GHz Band

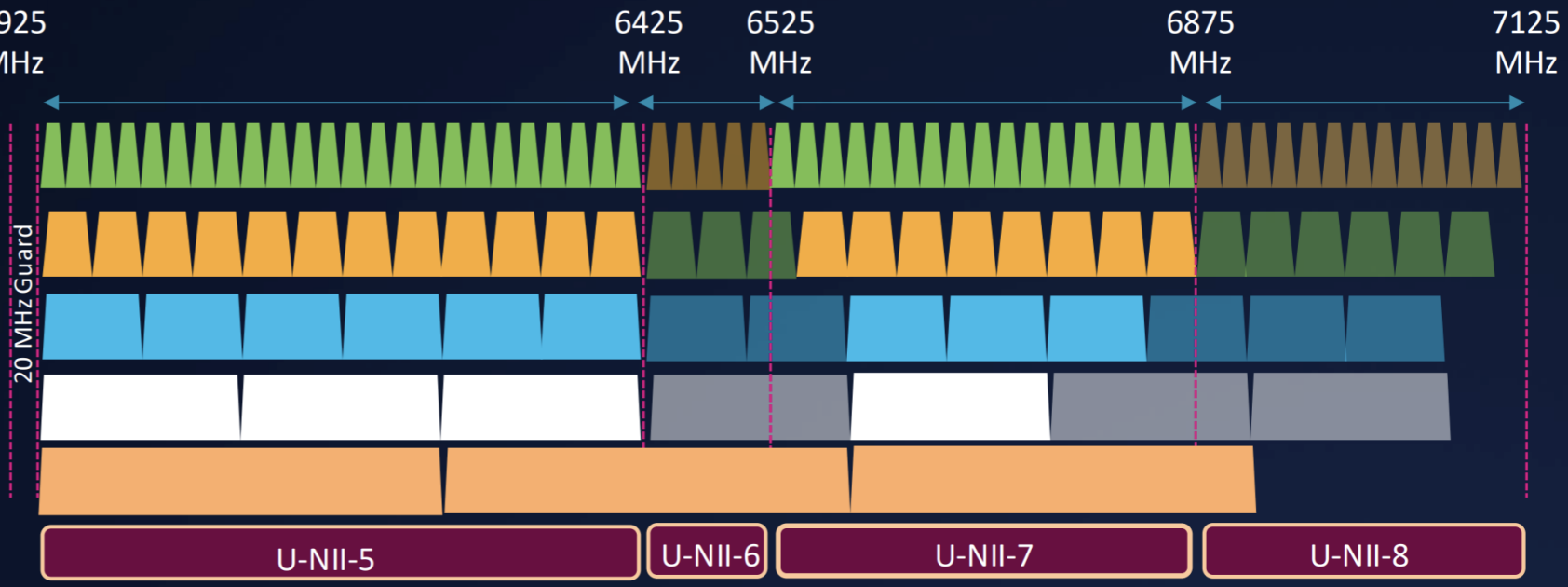
- ISED's objectives for licence-exempt use of the 6 GHz band in Canada are:

  - Fostering innovation and investment in new wireless technologies and services
  - Supporting greater choice and affordability of wireless services for consumers and businesses
  - Facilitating deployment and timely availability of wireless broadband Internet across the country

Wi-Fi 7 – 320 MHz Channel Width

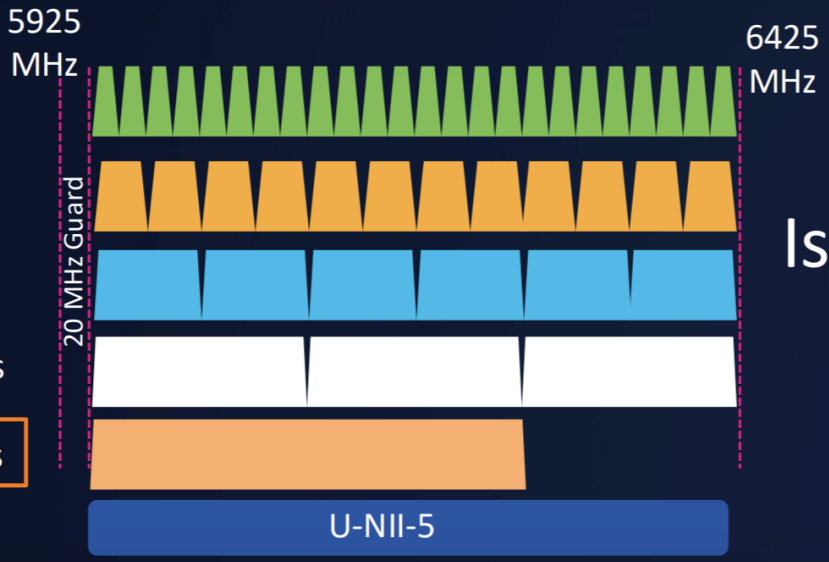
ited States
nada
Korea
00 MHz

59 x 20 MHz channels
29 x 40 MHz channels
14 x 80 MHz channels
7 x 160 MHz channels
3 x 320 MHz channels LPi



urope/CEPT
ost APAC
00 MHz

24 x 20 MHz channels
12 x 40 MHz channels
6 x 80 MHz channels
3 x 160 MHz channels
1 x 320 MHz channels



Is this a possibility ?

Note: 3x320 MHz channels LPi
1x320 MHz channels SP –(US)
2x320 MHz channels SP – (Canada)
U-NII-7

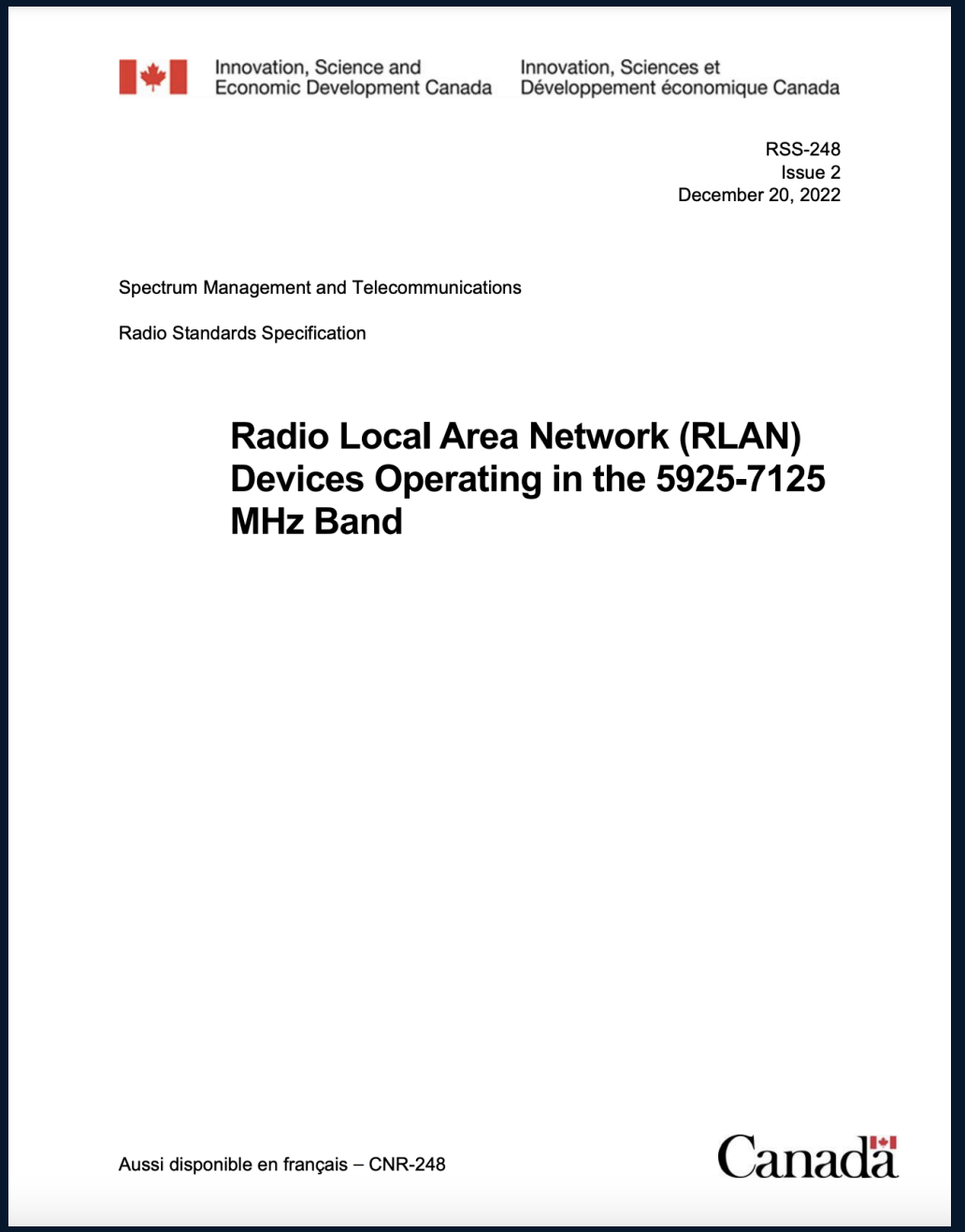
6E (5.925-7.125GHz) Facts

Indoor APs

- Must have integrated antennas
- Operation on oil platforms, automobiles, trains, maritime vessels and aircraft shall be prohibited
- Must be inside a building

Outdoor (Standard Power APs)

- Requires GPS & AFC –*internet connected*
- Can use external antennas



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RSS-248
Issue 2
December 20, 2022

Spectrum Management and Telecommunications

Radio Standards Specification

Radio Local Area Network (RLAN) Devices Operating in the 5925-7125 MHz Band

Aussi disponible en français – CNR-248

Canada

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DBS-06
Issue 1
December 20, 2022

Spectrum Management and Telecommunications

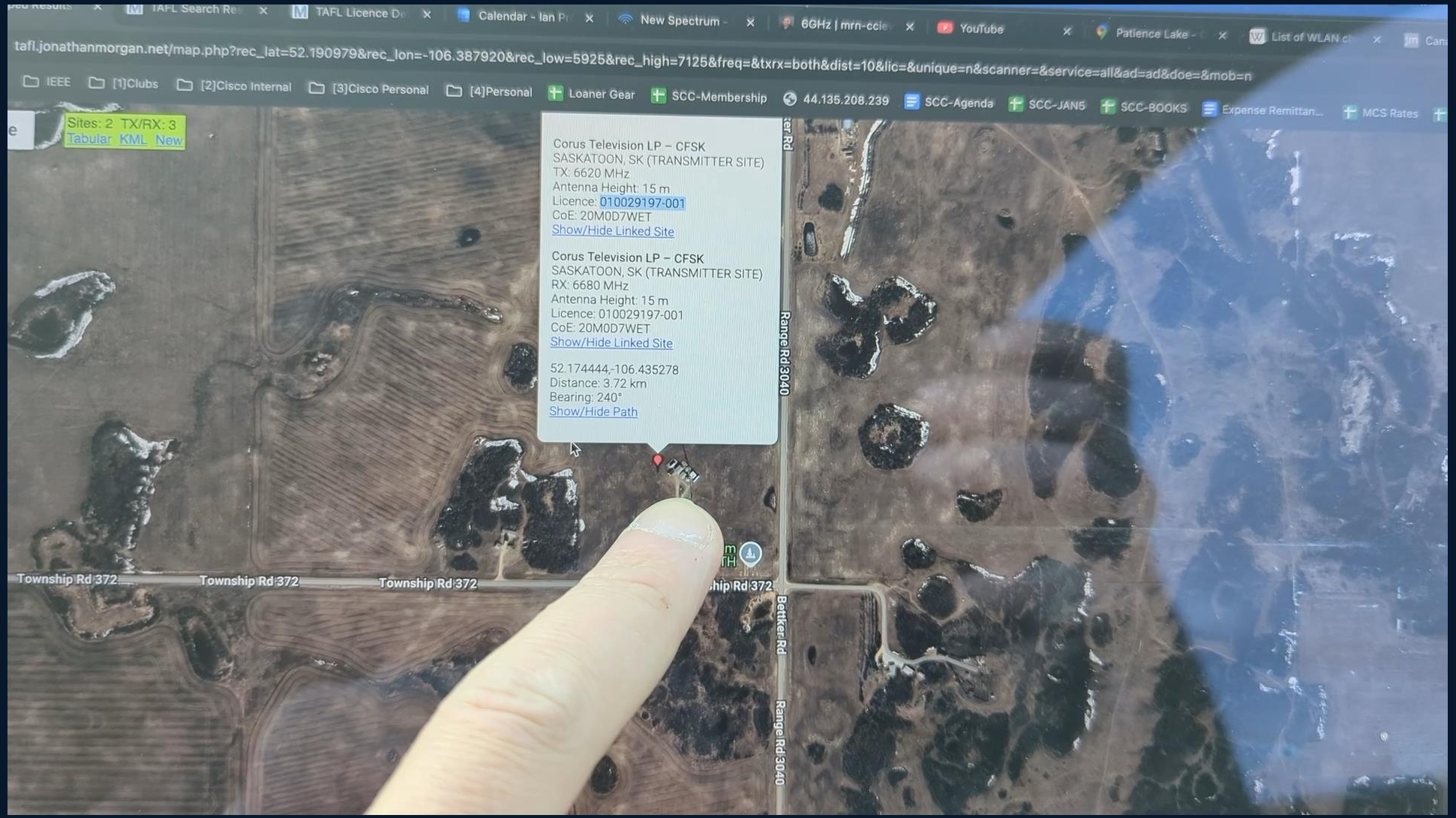
Database Specifications

Automated Frequency Coordination (AFC) System Specifications for the 6 GHz (5925-6875 MHz) Frequency Band

Aussi disponible en français – CBD-06

Canada

Real World Example



Another First...

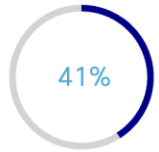
UBC & Cisco Wireless BU
First AFC testing for Wi-Fi in Canada

6GHz Outdoor With CW9163 on 17.17 Code (May 26)

afc
Monitoring
AFC

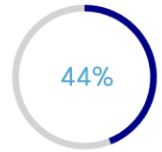
General | Join Statistics | AFC Statistics

Active AFC Status



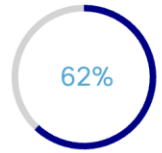
Percentage of Wi-Fi 6E APs whose AFC Status is Active or Active-Warning
Click to filter

Geolocation Known



Percentage of Wi-Fi 6E APs that have the geolocation information available
Click to filter

Standard Power



Percentage of Wi-Fi 6E APs that are operating in standard power mode
Click to filter

AP Name	Radio MAC	AFC Status	Power Mode Capability	Current Power Mode	AP Admin State	6 GHz Radio Admin State	RF-Profile Admin State	RF-Profile tx-power std	AFC Country allowed	Location Known	Height Kn
KLNK01-D0	087b.8734.df20	Inactive	SP/LPI	LPI	Up	Up	Yes	No	Yes	Yes	No
TWSC01-G2-9163E	087b.8738.e5a0	Active	SP	SP	Up	Up	Yes	NA	Yes	Yes	Yes
TWSC01-G2-9163E	087b.8738.e5a0	Inactive	SP	SP	Up	Up	Yes	NA	Yes	Yes	No
TWSC01-E3-9163E	087b.8738.e6a0	Active	SP	SP	Up	Up	Yes	NA	Yes	Yes	Yes
TWSC01-E3-9163E	087b.8738.e6a0	Inactive	SP	SP	Up	Down	Yes	NA	Yes	Yes	No
TWSC01-F6-9163E	087b.8739.0e20	Active	SP	SP	Up	Up	Yes	NA	Yes	Yes	Yes
TWSC01-F6-9163E	087b.8739.0e20	Inactive	SP	SP	Up	Down	Yes	NA	Yes	Yes	No
TWSC01-G5-9163E	087b.8739.0e40	Active	SP	SP	Up	Up	Yes	NA	Yes	Yes	Yes
TWSC01-G5-9163E	087b.8739.0e40	Inactive	SP	SP	Up	Down	Yes	NA	Yes	Yes	No
TWSC01-F3-9163E	087b.8739.0ec0	Active	SP	SP	Up	Up	Yes	NA	Yes	Yes	Yes

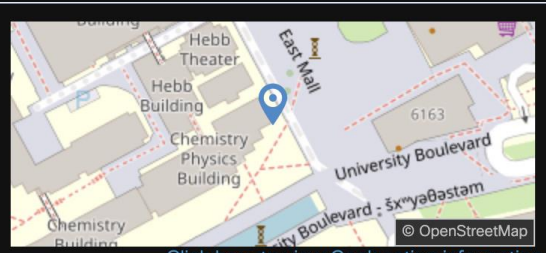
1 2 3 4 5 6 7 8 9 10 ... 10

1 - 10 of 341 it

6GHz Outdoor With CW9163 (May 26)

AP Name
BLUE01-20-LEE
Ethernet MAC
c414.a26d.0740

Location	default location
IP Address	10.40.153.191
Model	CW9163E-A
Serial Number	FJC283319Y1
Power Status	Power Injector/Full Power
Fabric	Disabled
Rogue Detection	Enabled
BLE Antenna Type	Internal
Antenna Monitoring	Disabled
AP Country Code	CA - Canada



Click here to view Geolocation information

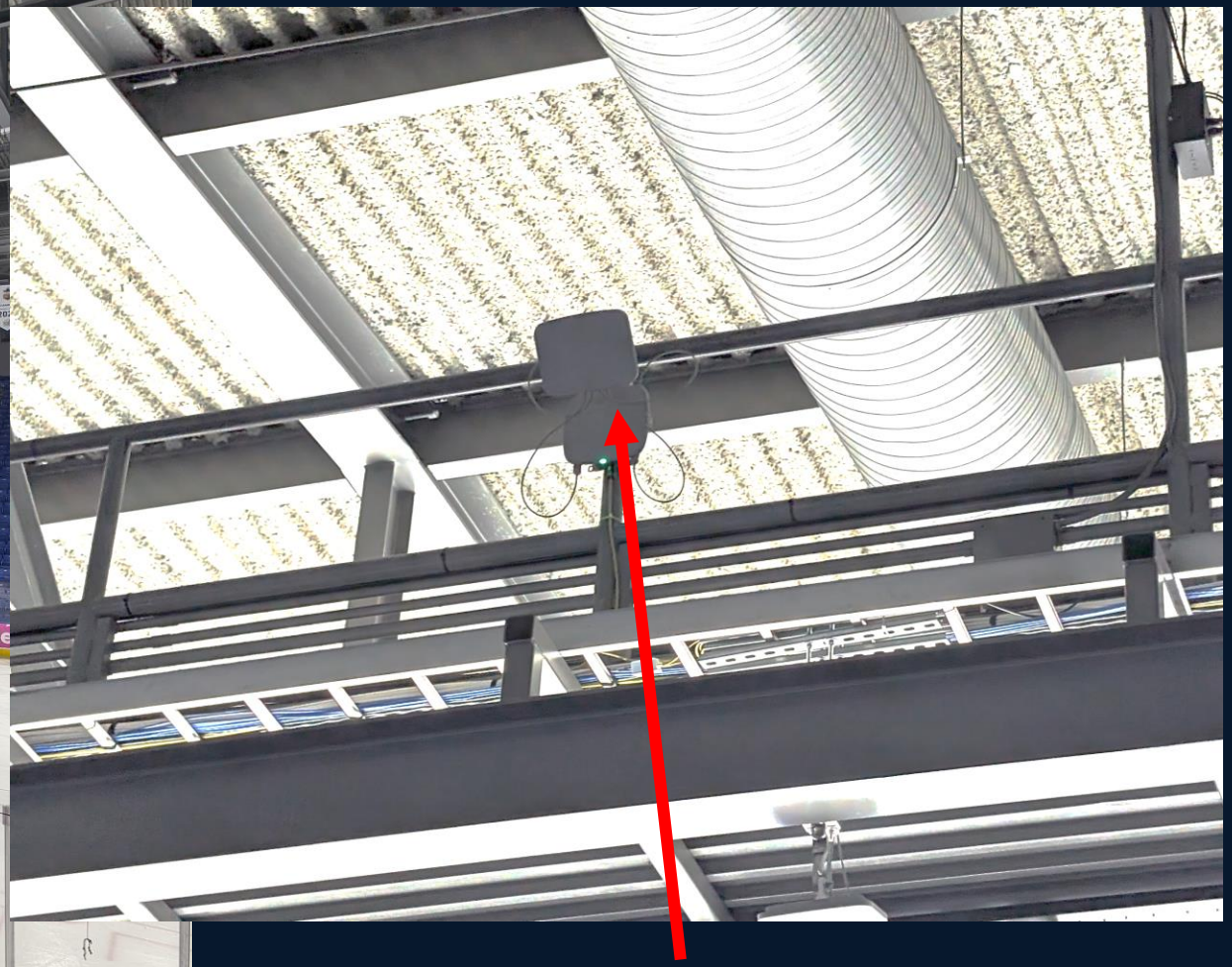
WPA3 Capability	Enabled
AP VLAN Tag	NA
DHCP Server	Disabled
Software Version	17.17.0.87 (Boot Version: 1.1.2.4)
LED State	Enabled
Up Time	19 hours 31 minutes 48 seconds
Join Date and Time	05/21/2025 13:21:10
aWIPS	Enabled, 0 Alarms

	Slot 0 (2.4 GHz)	Slot 1 (5 GHz)	Slot 2 (6 GHz)
Radio Type	802.11ax - 2.4 GHz	802.11ax - 5 GHz	802.11ax - 6 GHz
Radio Role (Radio Mode)	Automatic (Local)	Automatic (Local)	Automatic (Local)
Admin Status	Enabled	Enabled	Enabled
Number of Clients	0	1	0
Current Channel	1*	64*	117*
Channel Width	20 MHz*	40 MHz*	160 MHz*
Power Level	*1/8 (25 dBm)	*1/8 (13 dBm)	~4/8 (14 dBm)
Channel Utilization	95%	22%	4%
Transmit Utilization	21%	6%	0%
Receive Utilization	0%	0%	0%

Row Labels	eduroam	ubcsecure	Grand Total
2.4GHz	14	25	39
5.0GHz	41	195	236
6.0GHz	48	166	214
Grand Total	**103**	**386**	**489**

24hr client counts per band

AFC Testing Underway @ UBC (April 25th)



CW9163 with AFC Running!


Heading
268°
Orientation
W
W
NW
N
NE
E
SE
S
SW
14/39
Fix/Sats.
26
Error (ft)
Pitch/Roll (°)
U76 L08
Mag. field (µT)/decl.
58/53/16°
Accel. (g)
0.00
Speed (km/h)
0.0
Altitude (ft) MSL
318
Last fix
16:35:14
Latitude (gps)
49.260660°N
Longitude (gps)
123.242190°W
Batt. (71°F 3.74V)
44%
DOP/HDOP/VDOP
1.9/1.1/1.5
Brightness (lux)
29
Pressure (atm)
Rotation (°/s)

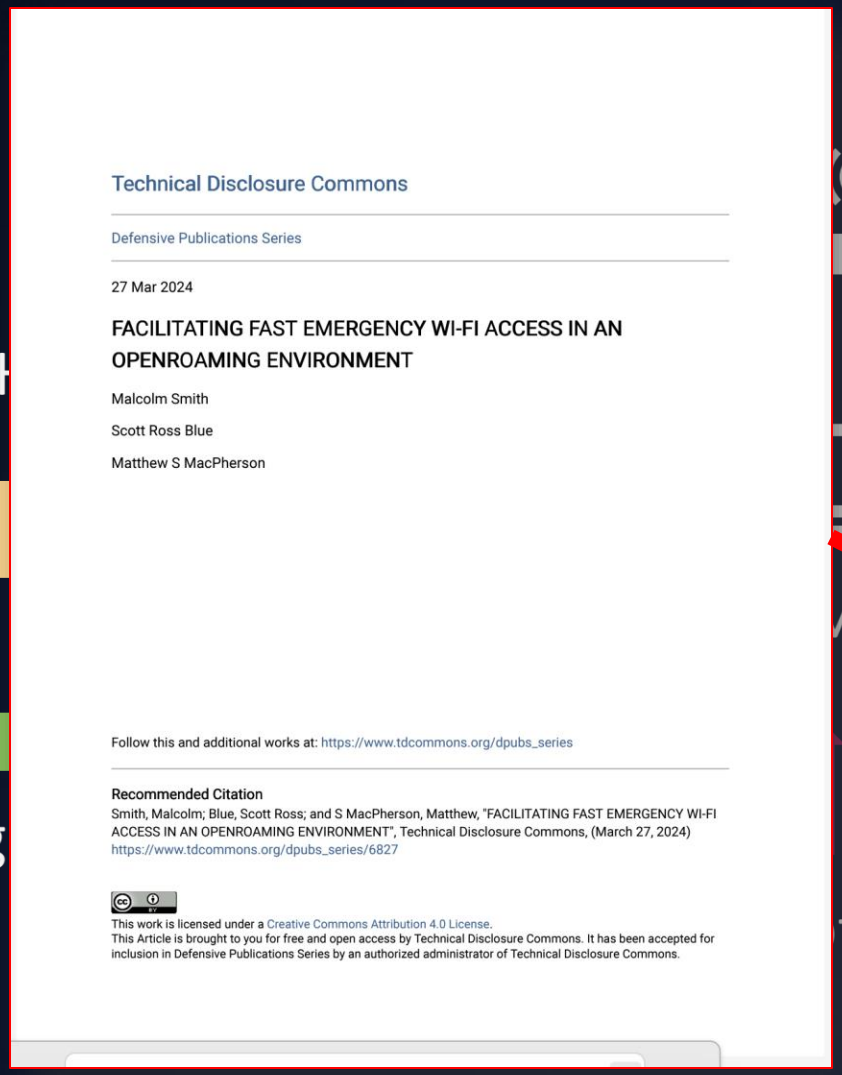
What is Wi-Fi 7 (and a bit of 11be)

320 MHz in 6 GH

Preamble puncturing

Mandatory in 6. Optional in 5

Min ch. width of 80



Technical Disclosure Commons

Defensive Publications Series

27 Mar 2024

FACILITATING FAST EMERGENCY WI-FI ACCESS IN AN OPENROAMING ENVIRONMENT

Malcolm Smith

Scott Ross Blue

Matthew S MacPherson

MLO

timization

Enhanced Security

Compressed Block Ack

(512 MPDUs)

EPCS

(EMERGENCY PREPAREDNESS COMMUNICATION SERVICES)

Unifying Catalyst & Meraki

Catalyst		Meraki
Catalyst Center	MANAGEMENT	**Meraki Dashboard**
Catalyst License	LICENSE	**Meraki License**
Catalyst Hardware	CISCO HARDWARE	**Meraki Hardware**

Wi-Fi 7 for Every Operational Scale

CW9172

6 spatial streams

Omnidirectional

Ceiling mount and wall plate form factor

CW9176I

12 spatial streams

Omnidirectional

10 Gbps, GPS, UWB

CW9176D1

12 spatial streams

Integrated directional

10 Gbps, GPS, UWB

CW9178

16 spatial streams

Omnidirectional

2x 10 Gbps, GPS, UWB

NEW

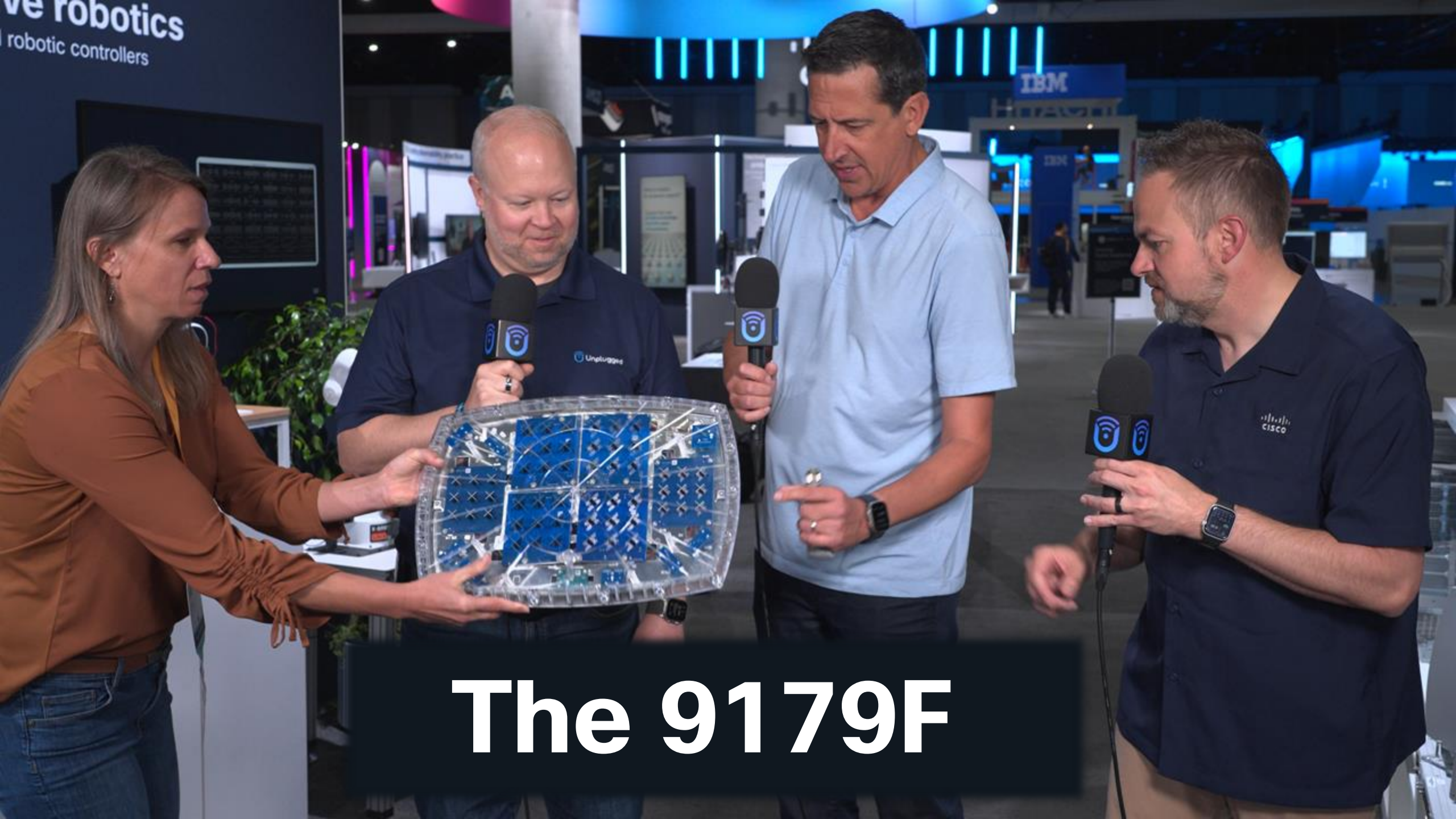
CW9179F

16 spatial streams

Software-defined radios

2x 10 Gbps, GPS

Wi-Fi 7 | Global use AP | Unified license | AI optimized


ve robotics
robotic controllers
IBM
The 9179F


cisco Live!
Kara
Mulessa
Cisco

Indoor

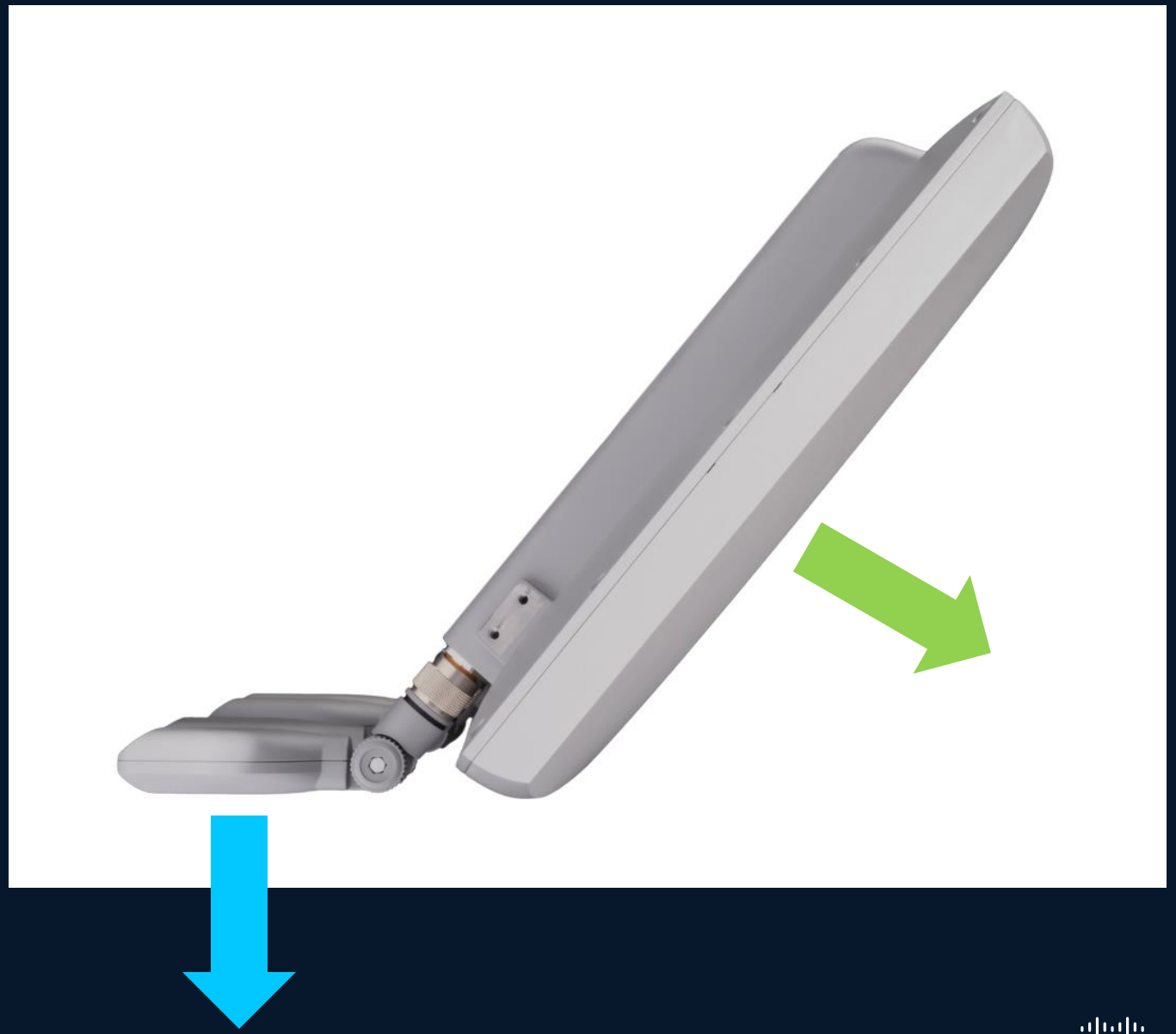
Outdoor

Same PID! – The difference is the “Environment Pack”

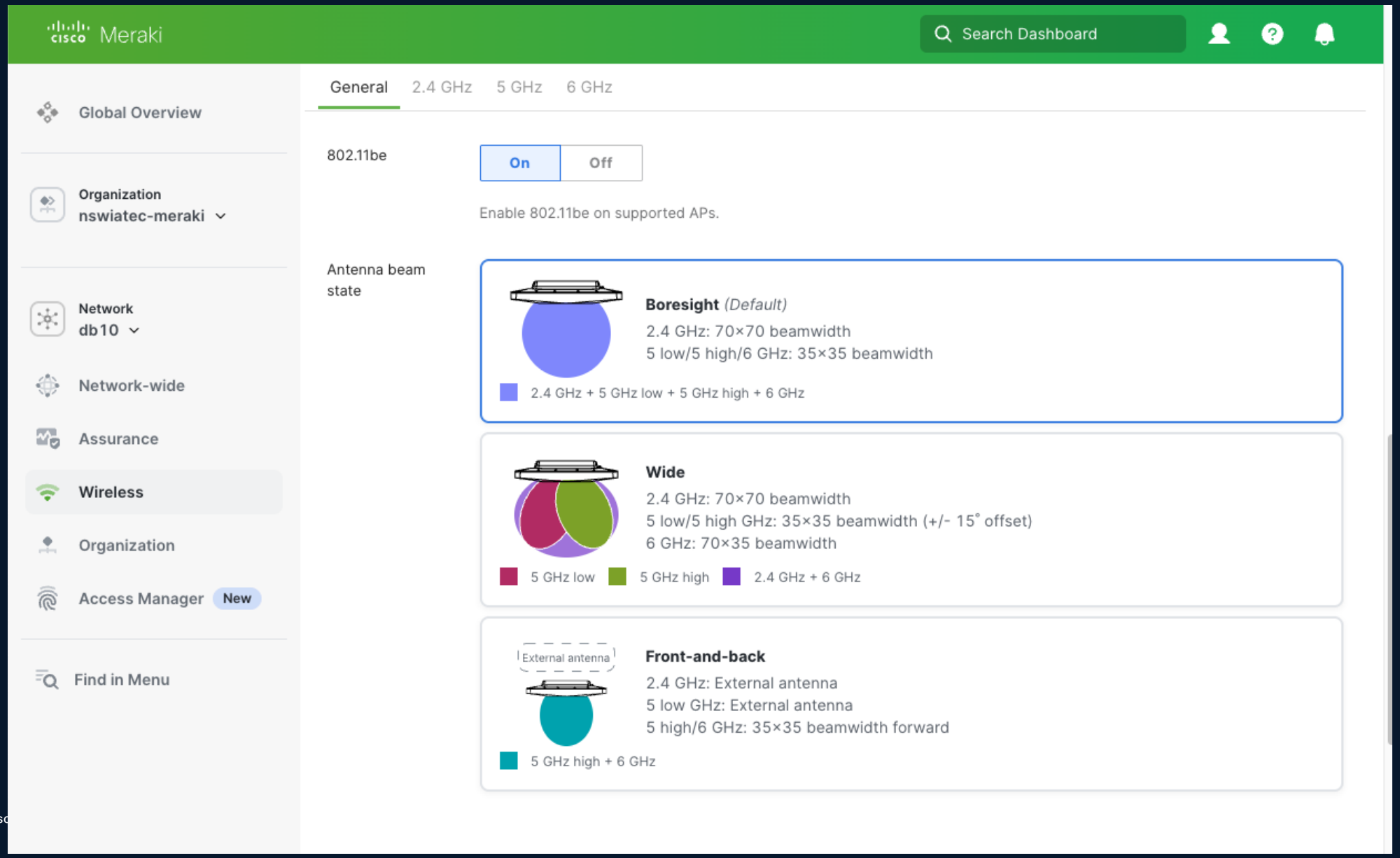
The Environment Pack

Allows the AP to go from LPI to SP (outdoor) mode

Front and Back Mode:



Switchable Antenna Configuration



Front-and-back mode is not limited to the new antenna

The Wi-Fi 7 Portfolio

CW9176I

CleanAir® Pro

12 Spatial Streams
4x4: 4 MU-MIMO
across 3 radios, 3 bands
(2.4/5GHz (XOR), 5 GHz, 6GHz)

BLE/IoT radio

Single 10Gbps multigigabit

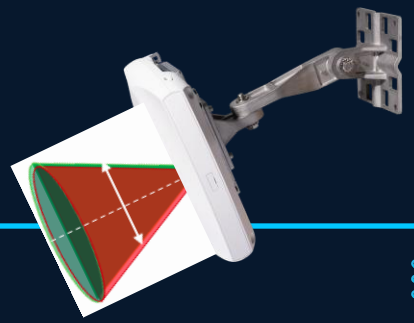
Ultra Wide Band (UWB)

USB 2.0 – 9W

Accelerometer

Built-in GPS/GNSS, w/ support for ext. antenna

Integrated Omnidirectional Antenna



CW9176D1

CleanAir® Pro

12 Spatial Streams
4x4: 4 MU-MIMO
across 3 radios, 3 bands
(2.4/5GHz (XOR), 5 GHz, 6GHz)

BLE/IoT radio

Single 10Gbps multigigabit

Ultra Wide Band (UWB)

USB 2.0 – 9W

Accelerometer

Built-in GPS/GNSS, w/ support for ext. antenna

Integrated Directional Antenna (70x70)

CW9178I

CleanAir® Pro

16 Spatial Streams
4x4: 4 MU-MIMO
across 4 radios, 3 bands
(2.4 GHz, dual 5GHz, 6GHz)

BLE/IoT radio

Dual 10Gbps multigigabit

Ultra Wide Band (UWB)

USB 2.0 – 9W

Accelerometer

Built-in GPS/GNSS, w/ support for ext. antenna

Integrated Omnidirectional Antenna

Same brackets as always

Already Wi-Fi 7 certified!

Introducing Integrated UWB Support for AnyLocate in Wi-Fi 7!

What is Ultra Wideband (UWB)?

A short-range, high-frequency wireless technology enabling <1 meter location accuracy

Which APs include embedded UWB?

CW9176I, CW9176D1, and CW9178I

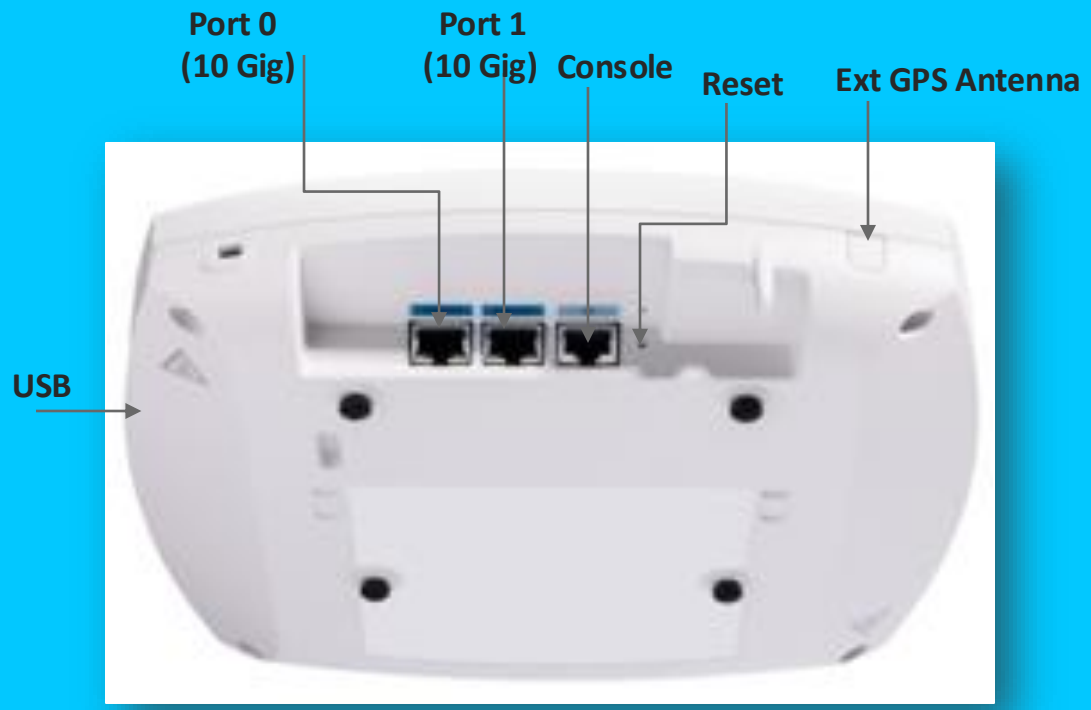
Is it replacing other sources of location data, like Fine Time Measurement (FTM)?

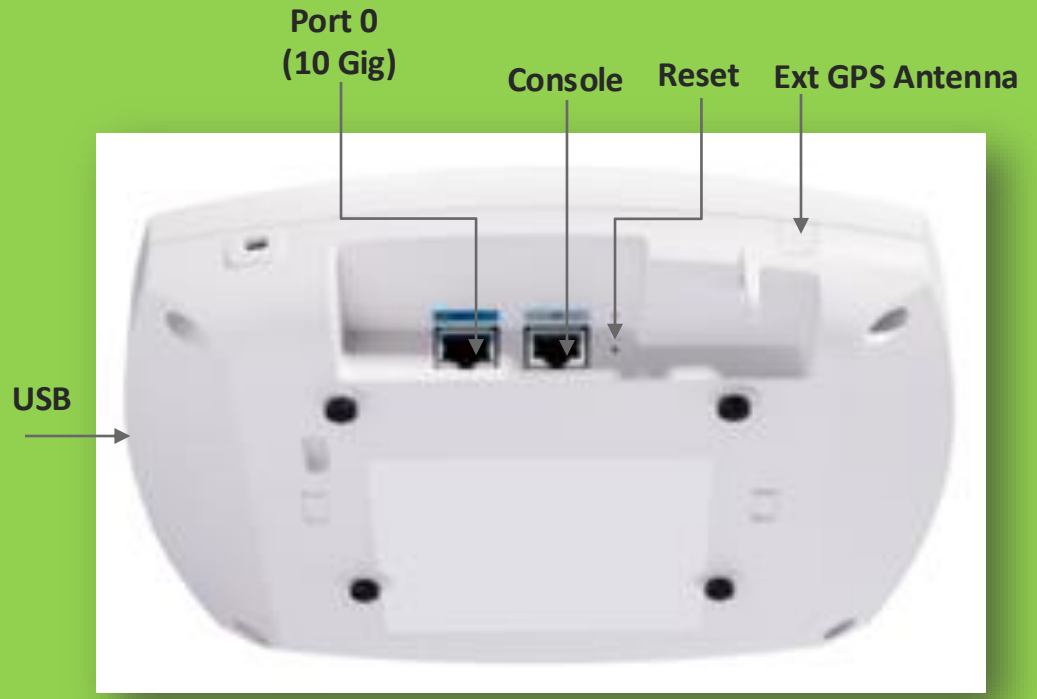
No, it will be used in complement with FTM to enhance the accuracy of AP-to-AP location, which is the foundation of other location use cases.

Is UWB available yet in client devices?

UWB is supported in a growing number of devices from vendors like Apple, Google, Samsung. Cisco is working toward device support with major vendors.

Cisco Wireless CW9178I/CW9176I/D Ports





CW9178I

CW9176I/D

Console port cover from mfg.

The Wi-Fi 7 Portfolio (2x2)

NEW

CleanAir® Pro

CW9172I

6 Spatial Streams

2x2:2 across 3 radios, 3 bands
(2.4GHz, 5GHz, 6GHz)
-or-
2x2:2 on 2.4GHz and 4x4:4 on 5GHz

BLE/IoT and dedicated scan radio

Single 2.5Gbps multigigabit uplink

USB 2.0 – 4.5W

DC Power Jack

Integrated Omnidirectional Antenna

Global Use AP

CleanAir® Pro

CW9172H

6 Spatial Streams

2x2:2 across 3 radios, 3 bands
(2.4GHz, 5GHz, 6GHz)

BLE/IoT and dedicated scan radio

Single 2.5Gbps multigigabit uplink

3x 1Gbps LAN port with 1x POE out

1x Passthrough port

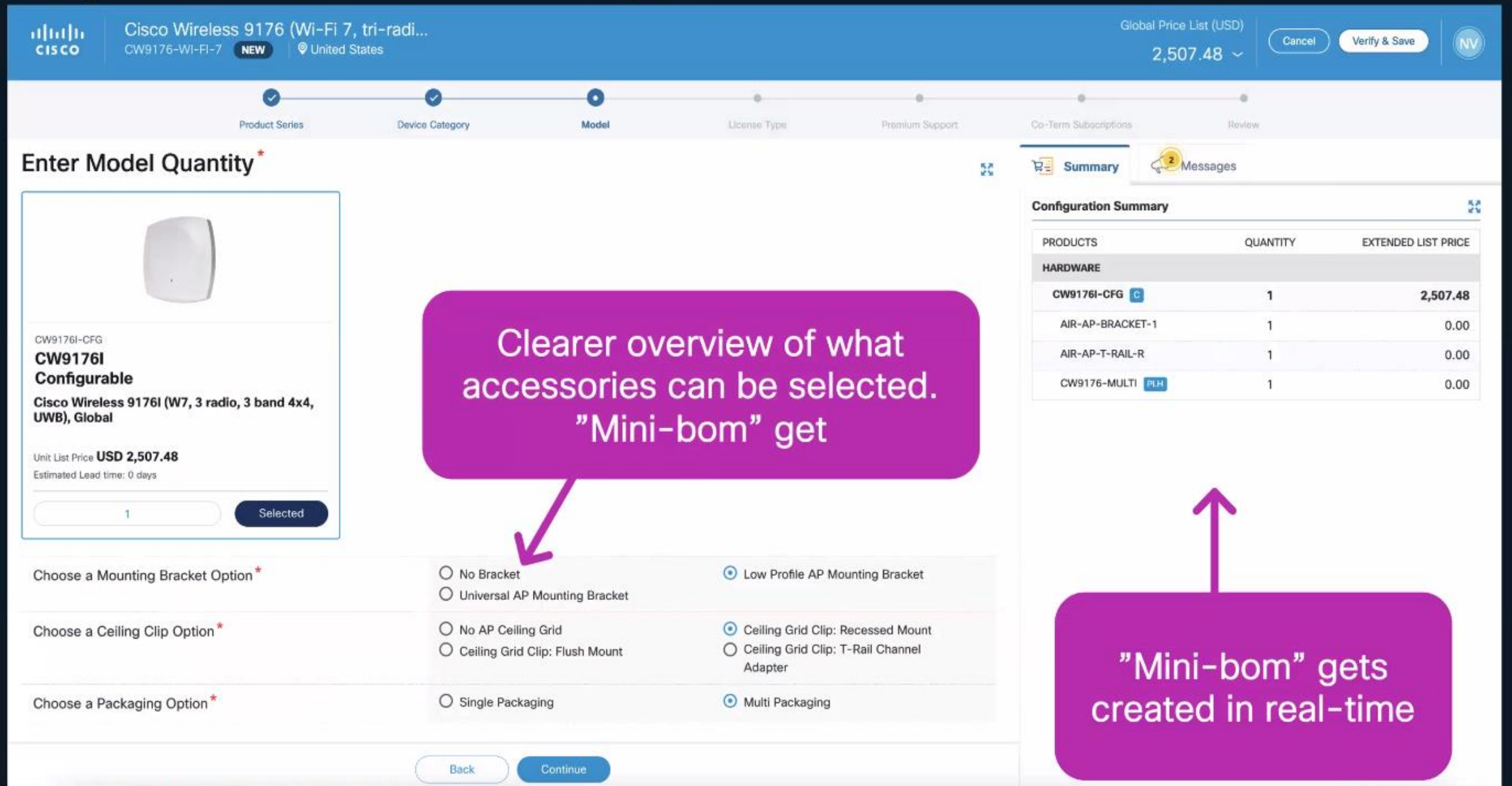
Integrated Omnidirectional Antenna

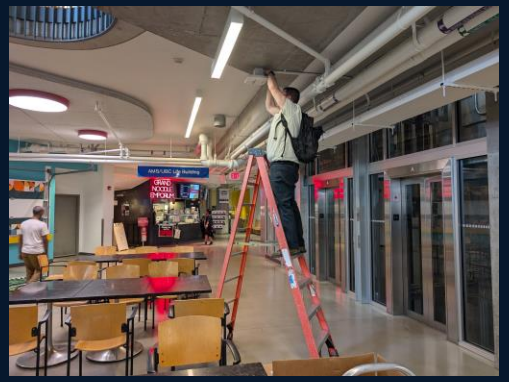
Global Use AP

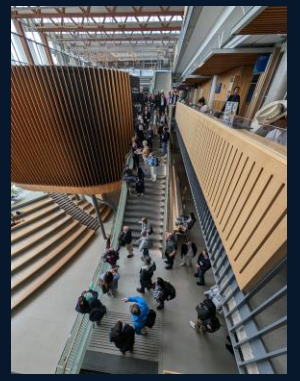
Same brackets as always. 9172H compatible with Meraki or Catalyst brackets

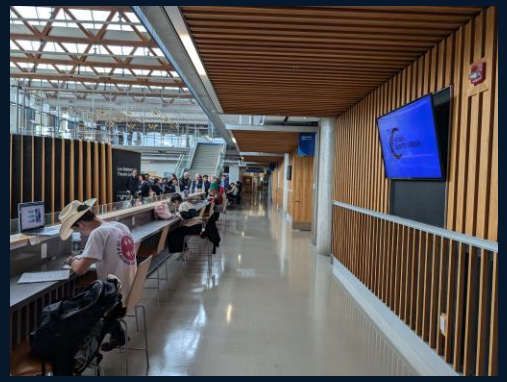
cisco

If you select configurable







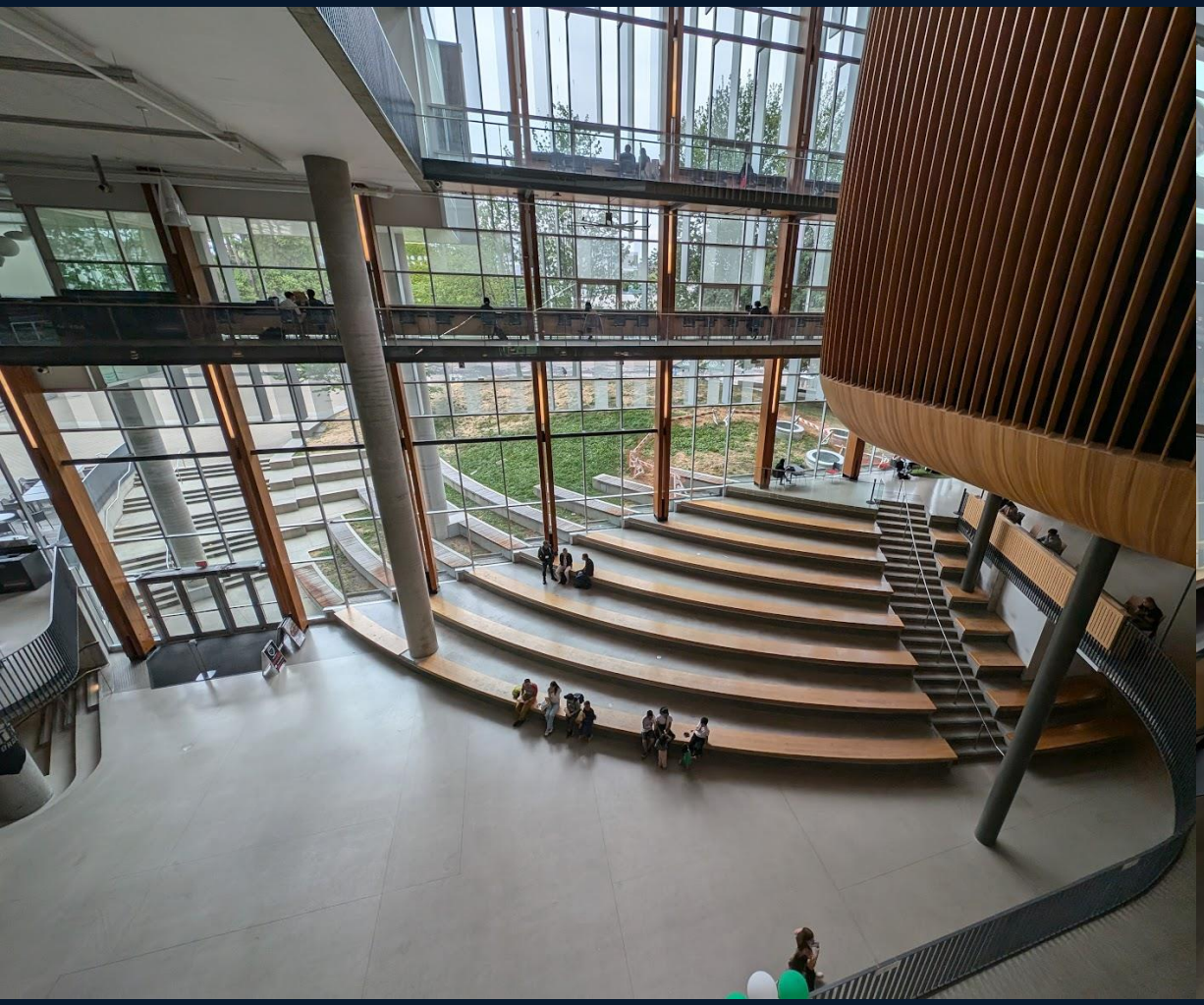


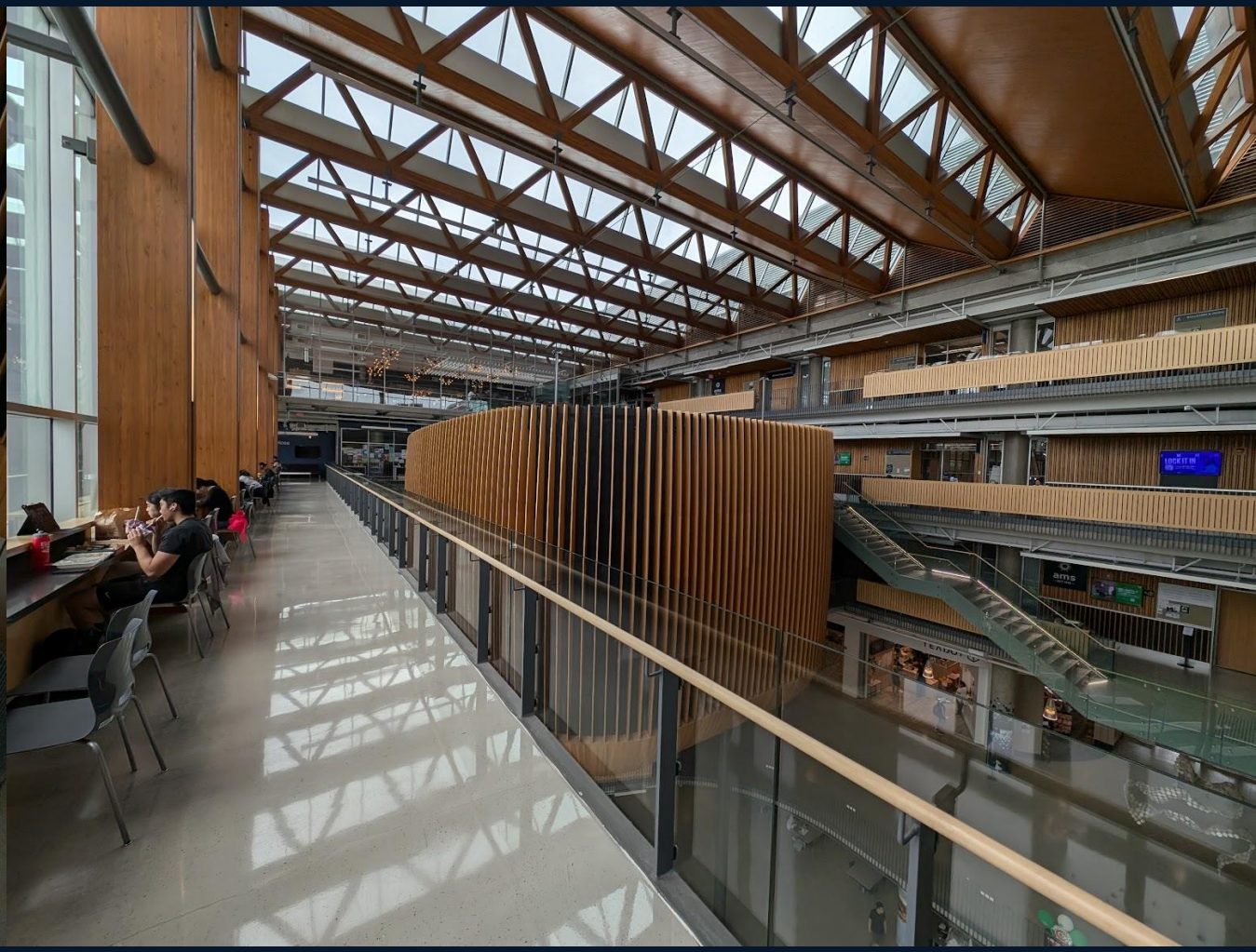
9178’s on the bench…

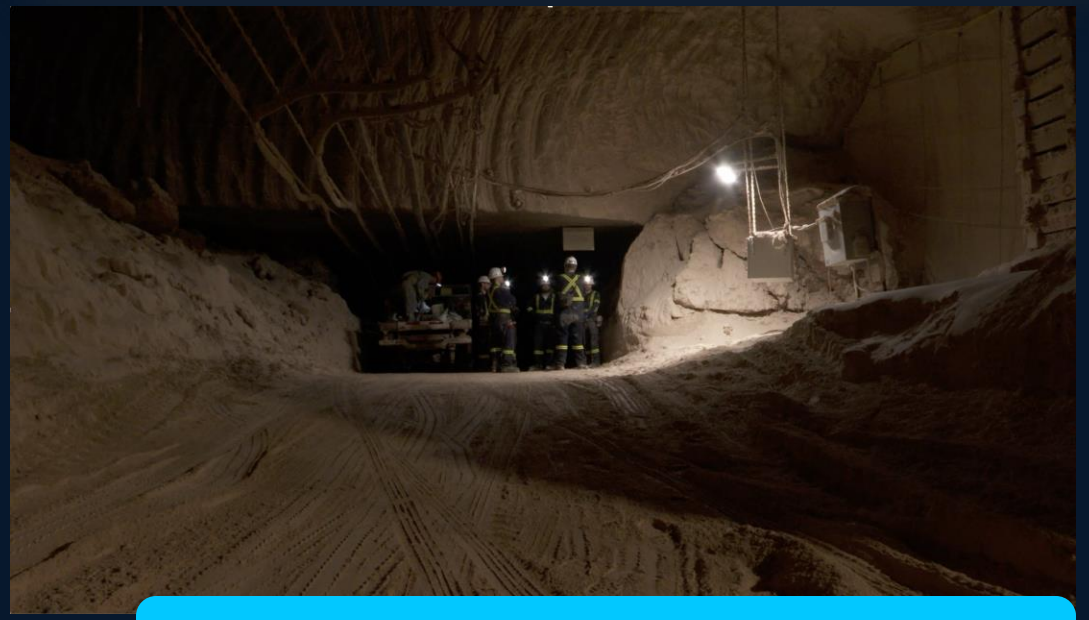
Summer 2024 Beta Testing

Geoff Armstrong, UBC IT

UBC Student Union Building – Great Test Area!







Nutrien – Wi-Fi 7 Global Launch

Deploying and Migrating to Wi-Fi 7

Recommendations, tips, and tricks

Power Considerations

Recommendation:
802.3bt (Cisco UPOE) is the suggested power input for full operation of AP

802.3at (PoE+) and 802.3af (PoE) are also supported by the CW9178I/CW9176I&D

Security Requirements

Mandatory:
WPA3 is mandatory for 11be rates and MLO.

WPA3 was not required for prior Wi-Fi generations; hence, it must be top of mind.

Multigigabit Switching

Recommendation:

Use a Multigigabit switch with 10G Capability.

Better user experiences with speeds beyond 1 Gbps. Cat 6/6A cabling recommended.

Wireless Coverage

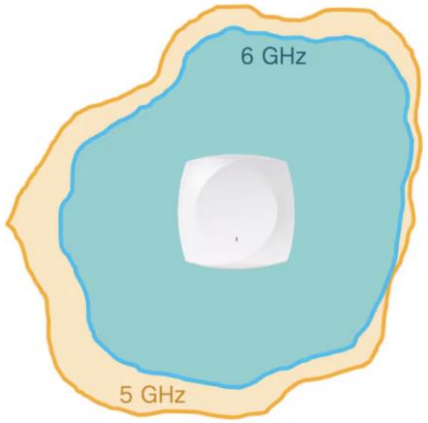
Recommendation:
Ensure uniform cell size for 5 and 6 GHz cells. 2.4 & 5 GHz does not need a new site survey

Review the current RF coverage of 5 GHz network to achieve similar coverage for 6 GHz network.

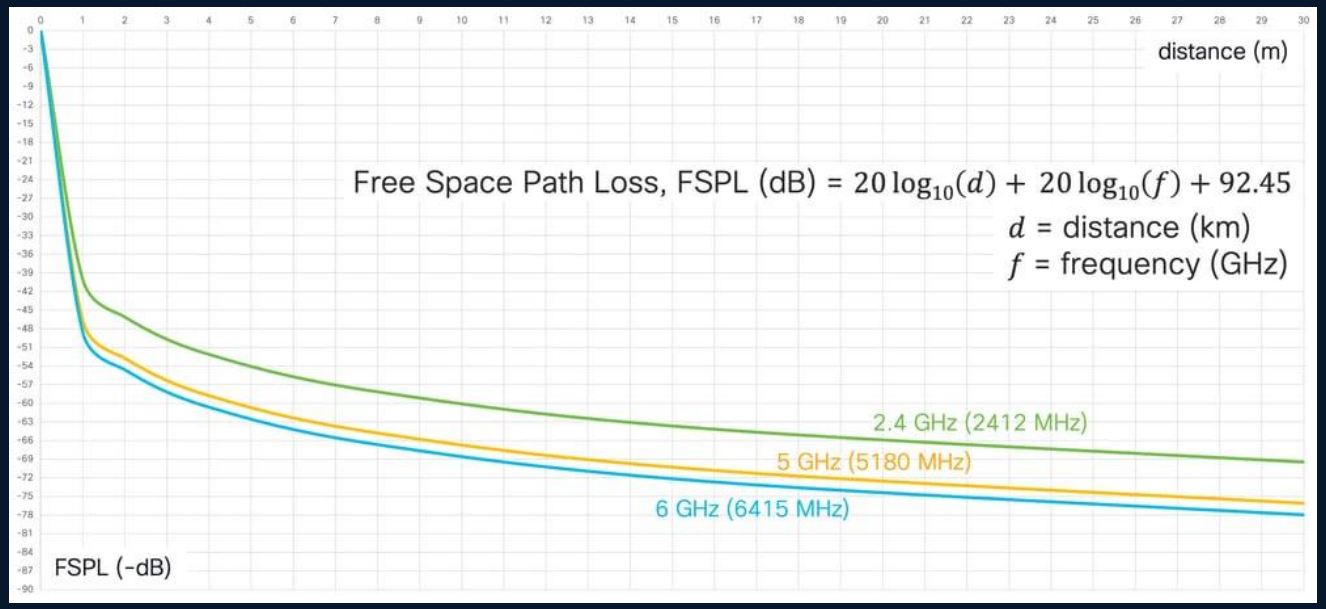
Review Global Use AP Functionality; especially for WLC Management Mode Deployments

cisco

More Thoughts on migration...(Published May 26th)



Assuming similar antenna gains/patterns and the same transmit power level, the 6 GHz radio is expected to cover slightly less than the 5 GHz radio.
The overall 6 GHz coverage throughout multiple APs could be more comparable, especially if those APs are already dense enough for good 5 GHz coverage.



Migrate to 6 GHz and Wi-Fi 7

Contents

Introduction

This document describes design and configuration guidelines to optimize the performance of Wi-Fi 7 and fully leverage the 6 GHz spectrum.

Why 6 GHz and Wi-Fi 7

6 GHz is a new band that became available in 2020 for WLAN operations and was initially exploited by the Wi-Fi 6E certification. While Wi-Fi 6E still relies on the same 802.11ax standard (certified under Wi-Fi 6 for the 2.4/5 GHz bands), it extends to operate on the 6 GHz band only, provided specific requirements are met.

Wi-Fi 7 corresponds to the certification of the IEEE 802.11be standard and, as opposed to Wi-Fi 6E that is restricted to 6 GHz only, is defined for usage in all three bands: 2.4, 5 and 6 GHz. Wi-Fi 7 also comes with new features compared to previous certifications.

6 GHz and/or Wi-Fi 7 have specific requirements to be supported, which often translates into new configurations and RF designs, especially compared to what we were used up until the 2.4/5 GHz bands and Wi-Fi 6. For example, just like using WEP security prevents us from using 802.11 standards other than 802.11a/b/g, newer standards come with higher security prerequisites, to push the adoption of more secure networks.

https://www.cisco.com/c/en/us/support/docs/wireless/catalyst-9800-series-wireless-controllers/223061-migrate-to-wi-fi-7-and-6ghz.html

Scales up to
5,000 APs
and 50,000 clients

Easy migration for
existing LAN
controller
architectures

No need to
re-cable, change
VLANs, or disrupt
operations

Introducing

The New Campus Gateway

AVAILABLE TODAY

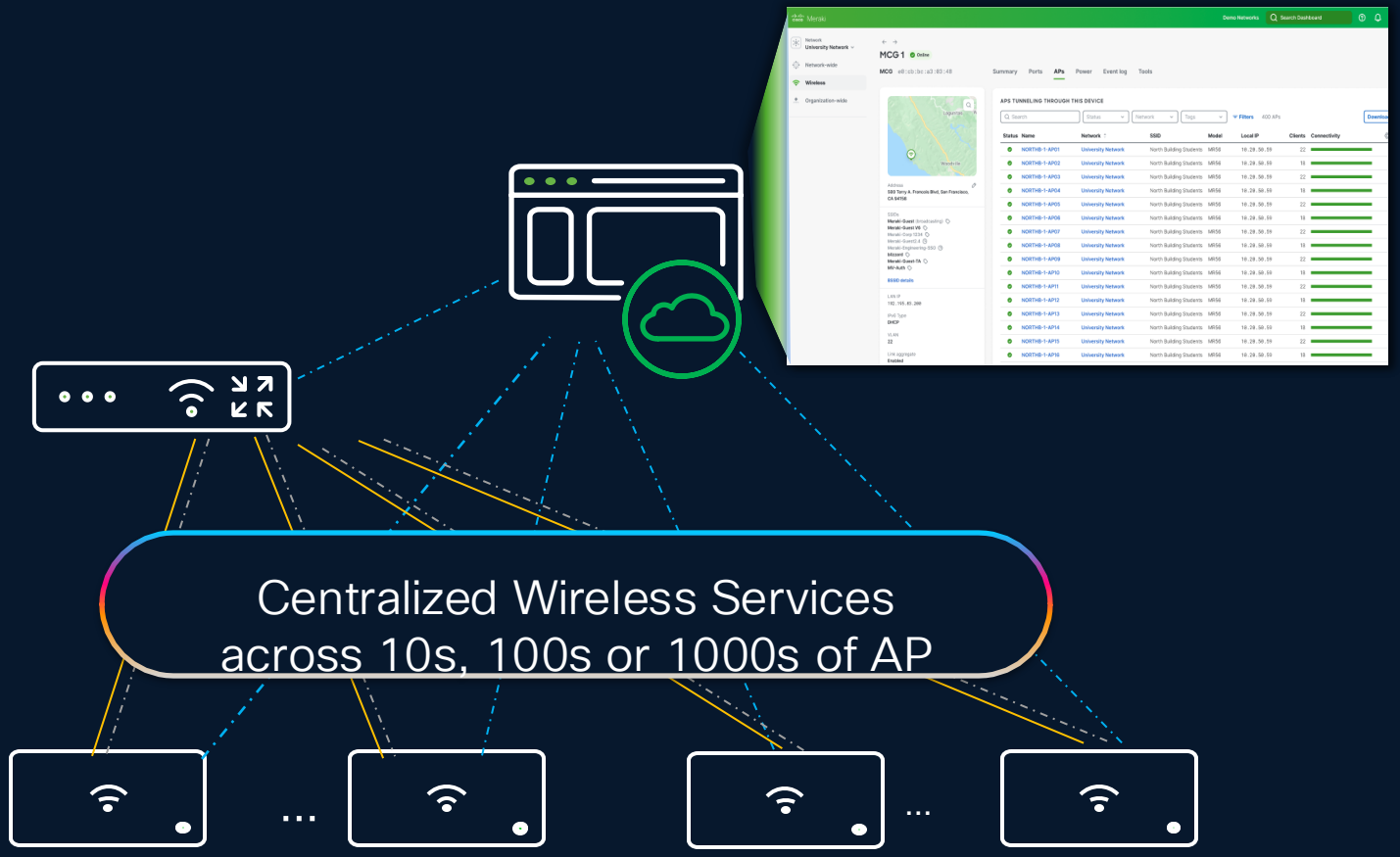
Cisco Campus Gateway

Campus Gateway, MCG

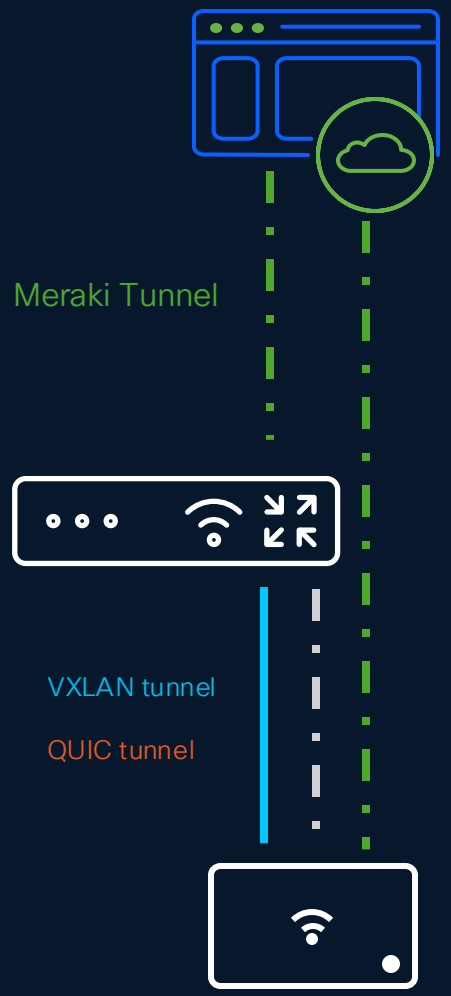
Large Campus Ready

Deploy without redesign

Seamless roaming at scale



Campus Gateway Architecture Details



Meraki Dashboard

Management Plane
- Configuration management
- Monitoring & troubleshooting
- Software management
- Licensing. etc.
- Serviceability/debugging

Non-real time Control Plane
- AutoRF
- AirMarshall
- AI-RRM

Campus Gateway

Data Plane
- Data plane termination
- VLAN termination
- ARP proxy
- mDNS Gateway

Real time Control Plane
- AAA Proxy
- Roaming - Key management
- Dstore (client DB)

Accesss Point

Data Plane
- Bridge local SSIDs
- Tunnel central SSIDs
- QoS
- Rate Limit
- Adaptive policy tagging

Real time Control Plane
- Client Authentication
- Client state machine
- Telemetry

Campus Gateway (MCG): Feature Set at Launch

Infrastructure

ARP proxy
Active- Active Redundancy
LAG support
VLAN pooling
Tunnel configuration per SSID
Client isolation/P2P Blocking
BUM traffic blocking
IPv6 client support

Performance & Scale

Scale to 5,000 APs and 50,000 Clients
100Gbps throughput & 200Gbps
Clustered

Security

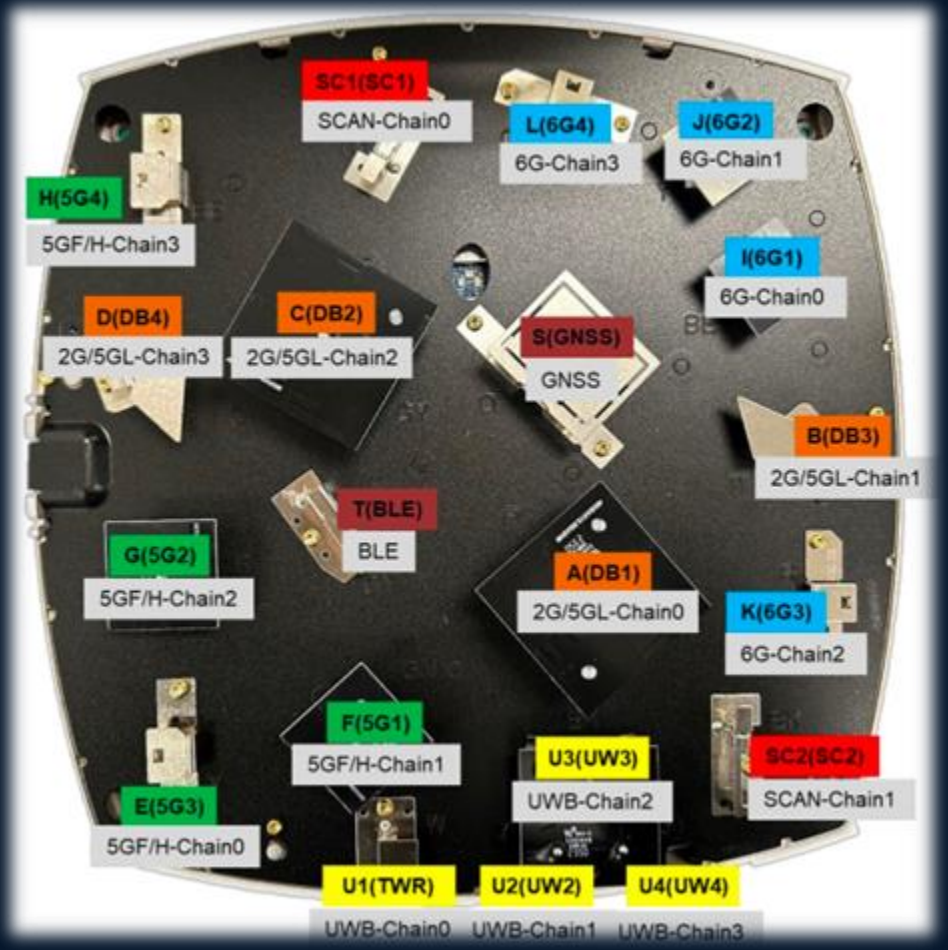
MCG as Radius Proxy
AAA Override & CoA
Named VLAN override
L3 and URL ACLs
Adaptive Policy(SGTs)

Services

QoS (DSCP marking UP/DW)
Traffic Inspection & Classification at MR
mDNS Gateway
Wi-Fi Personal Network (WPN)

“ Bro -15.4W ? Really? ”

20 Transmitters in here!



16 TX/RX Chains
3 RX Chains for Scanning Radio
1 TX/RX chain for IoT/BLE

CW9178I Power over Ethernet

Default Configuration (Fixed Power profile)

Power source	Number of spatial streams	2.4-GHz radio (slot 0)	Primary 5-GHz radio (slot 1)	Secondary 5-GHz radio (slot 2)	6-GHz radio (slot 3)	mGig PHY 0 link speed	mGig PHY 1 link speed	USB	IoT/GPS/UWB Scan Radio
802.3af (PoE)	NA	Disabled	Disabled		Disabled	1G	Disabled	Disabled	Y
=< 30W 802.3at* (PoE+) (Quad Radio)	8***	2x2	2x2 (LB)	2x2(HB)	2x2	2.5G	2.5G	Disabled	Y
=< 30W 802.3at* (PoE+) (Tri Radio)	8**	2x2	4x4(FB)	Disabled	2x2	1G	1G	Disabled	Y
>30 W 802.3bt (PoE++/UPOE)	16	4x4	4x4(LB)	4x4(HB)	4x4	10G	10G	Yes/9W	Y

* For the initial software release, MLO on 9178 is not supported when powering AP with <30W

Note:

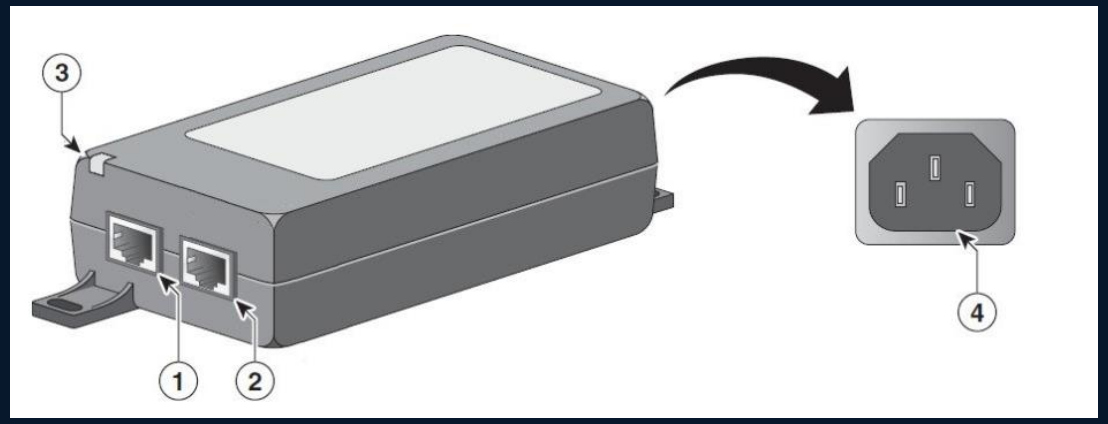
1. CW9178I can operate as a Tri-Radio with 5 GHz radio operating in 4x4 Full Band (or) operate as Quad-Radio with 5 GHz in Slot 1 as 4x4 Lower Band (UNII-1 &2) and Slot 2 as 4x4:4, Higher Band (UNII-2C &3)
2. *** - Starting IOS-XE 17.15.3 release, 6 spatial streams support in IOS-XE 17.15.2, with 2x2:2 on 2.4/5/6 GHz radios
3. CW-INJ-8, AIR-PWRINJ7, MA-INJ-6 are Cisco's 802.3bt power injectors.

PHY = Physical layer
PoE = Power over Ethernet
UPoE = Universal Power over Ethernet

When You Have No PoE... CW-INJ-8 Injector

Product Highlights

- Reduces cost and simplifies installations
- Powers devices up to 100 meters away
- Supports 10/100/1000 & 2.5/5/10 Gbps Multigigabit Ethernet
- Fully IEEE 802.3bt standard compliant (Type 3, Class 6)
- Power load detection and fault diagnostic LEDs



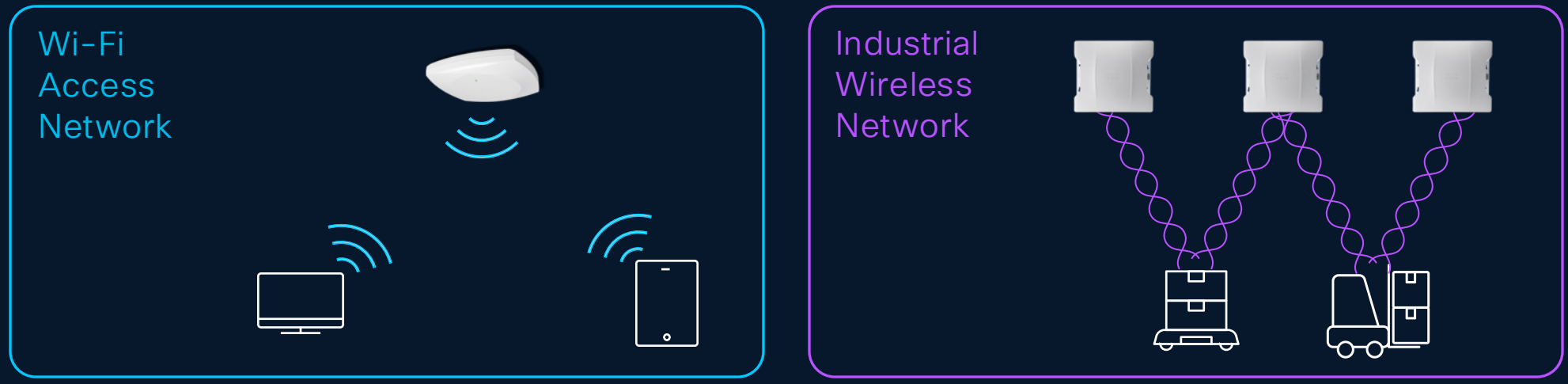
1. AP Connector Port (Data + Power Out)
2. Switch Connector Port (Data In)
3. Status LED
4. Power Input

CW-INJ-8 is the official power injector for Wi-Fi 7 Access Points

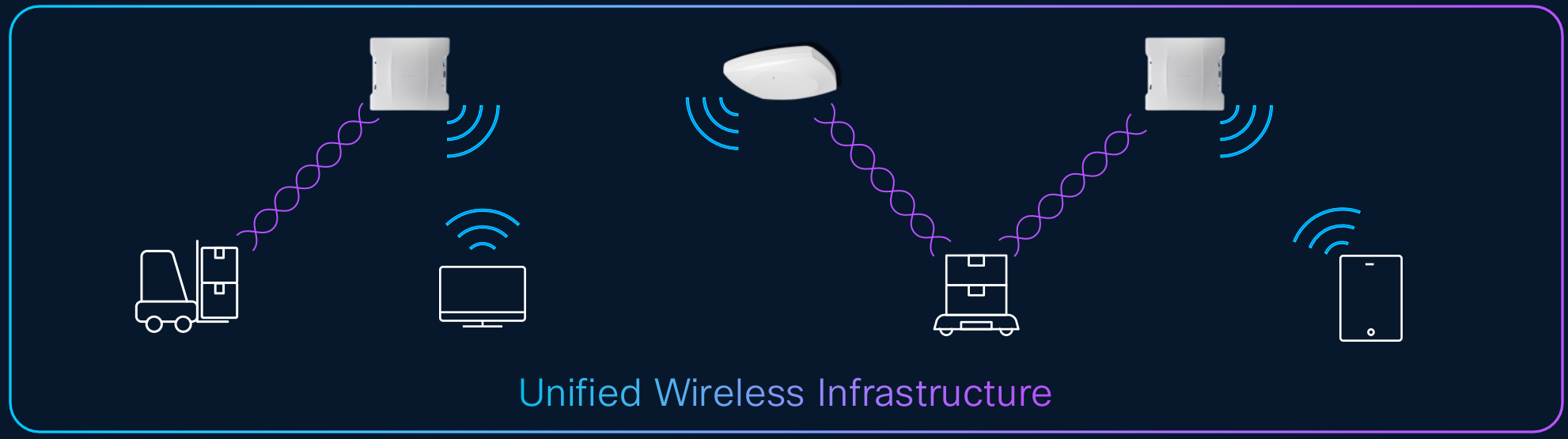
Ultra-Reliable Wireless Backhaul

Introducing Simultaneous Wi-Fi and URWB

Before



Now



URWB Statistics

Latency

Good

Jitter

Good

Packet Loss last 3 mins

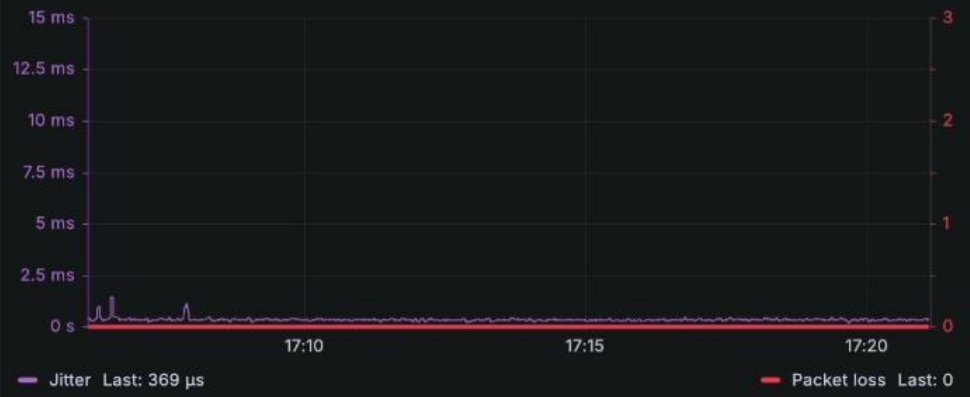
0 packets

Connected AP

Hallway-CW9178

Latency

Stability



3 Minute Comparison

0.5% less latency on URWB

74.0% less jitter on URWB

Packet loss is equal

Wi-Fi Statistics

Latency

Good

Jitter

Good

centered moving mean(cumulative mean(Last))

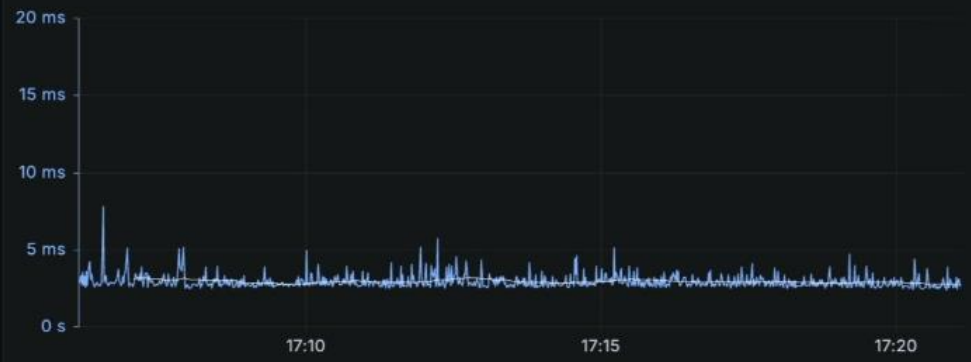
Packet Loss last 3 mins

0 packets

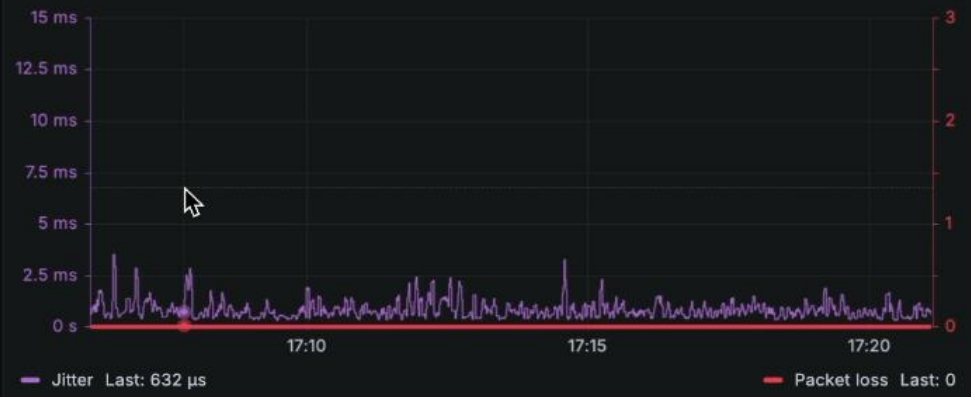
Connected AP

Hallway-CW9178

Latency



Stability



Supported Access Points

Wi-Fi 7

CW9176I,
CW9176D1

CW9178I

Focus for 17.18.1
(*Early Release*)

APs with dual-5GHz will allow split roles.
For example: slot1=Wi-Fi, slot2=URWB

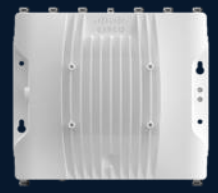
Wi-Fi 6E

CW9136I

CW9166I,
CW9166D1

IW9165E

IW9165D



IW9167E
IW9167E-HZ

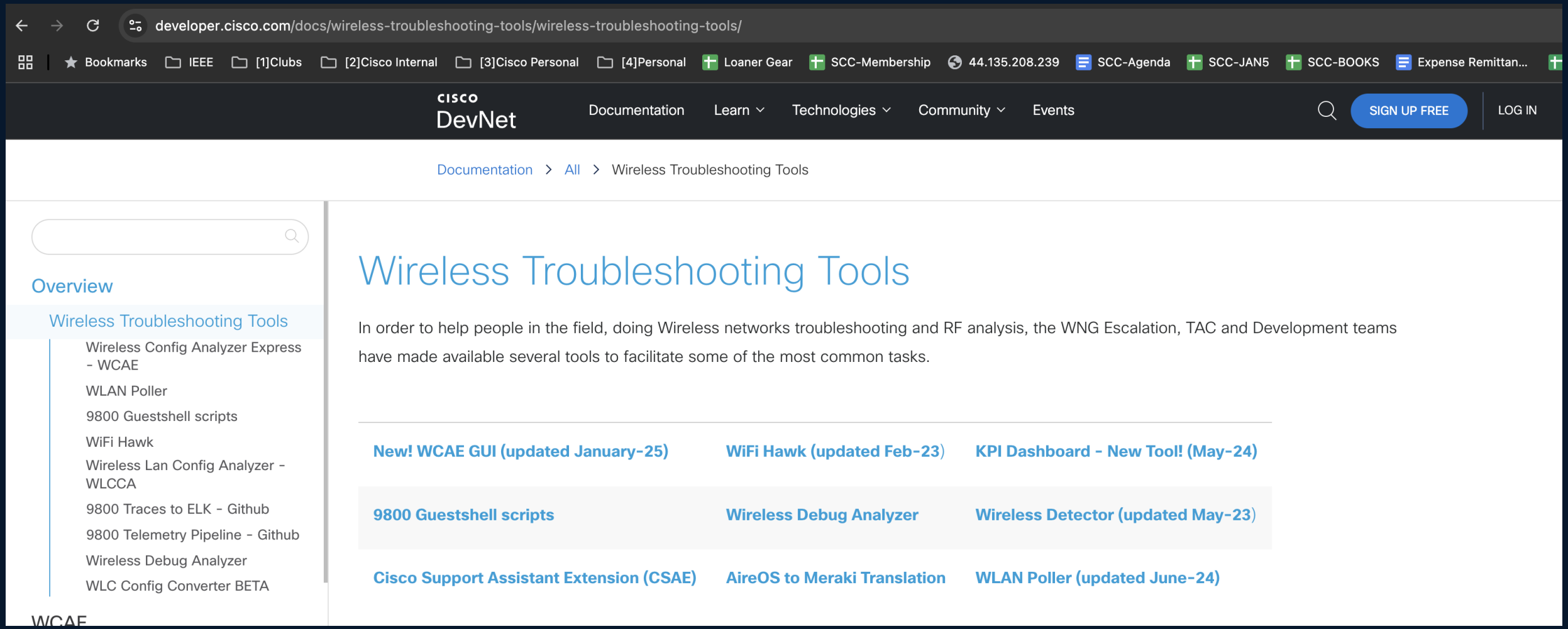
IW9167I

Wi-Fi 6

C9130
(AXE, AXI)

C9124
(AXE, AXI, AXD)

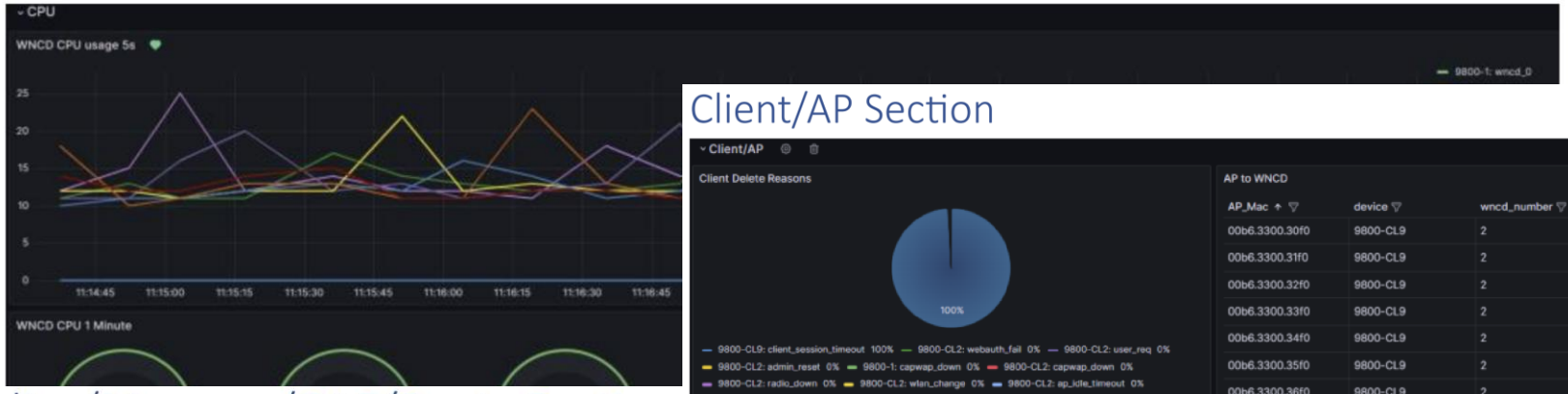
cisco



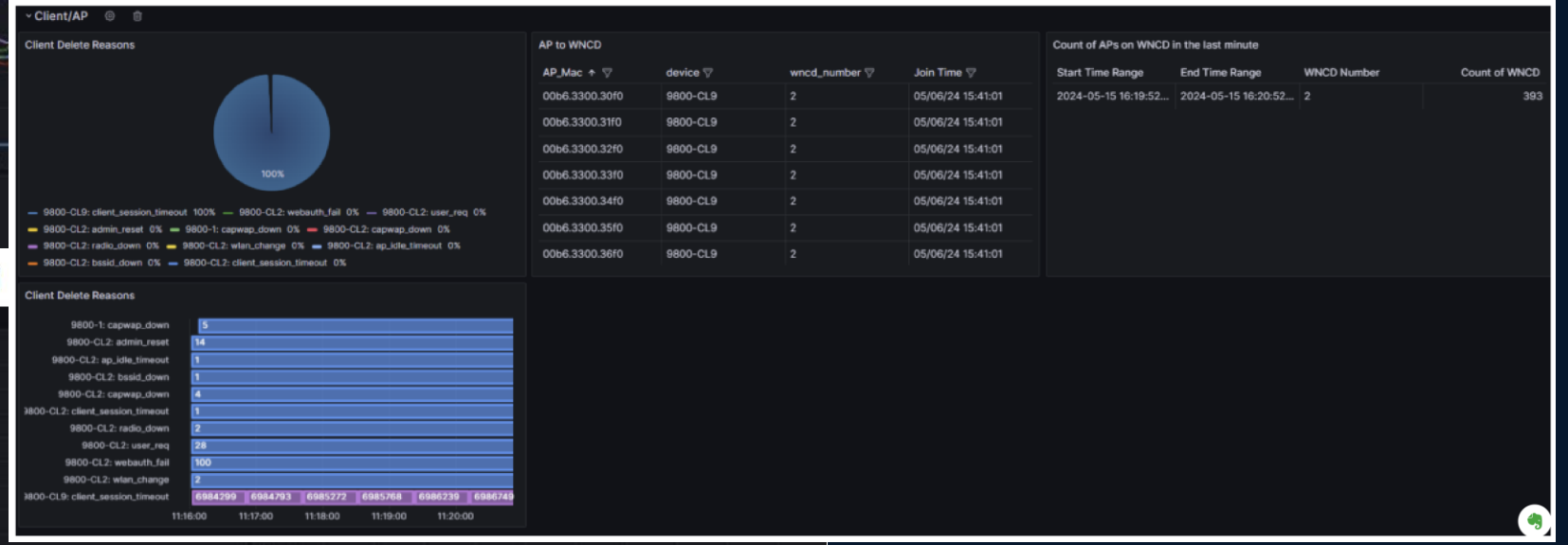
https://developer.cisco.com/docs/wireless-troubleshooting-tools/wireless-troubleshooting-tools/

KPI Monitoring

CPU Section



Client/AP Section



Radius/Memory/CAC/Punts Section

Want to Learn More? Wi-Fi 7 Book

Cisco authors...

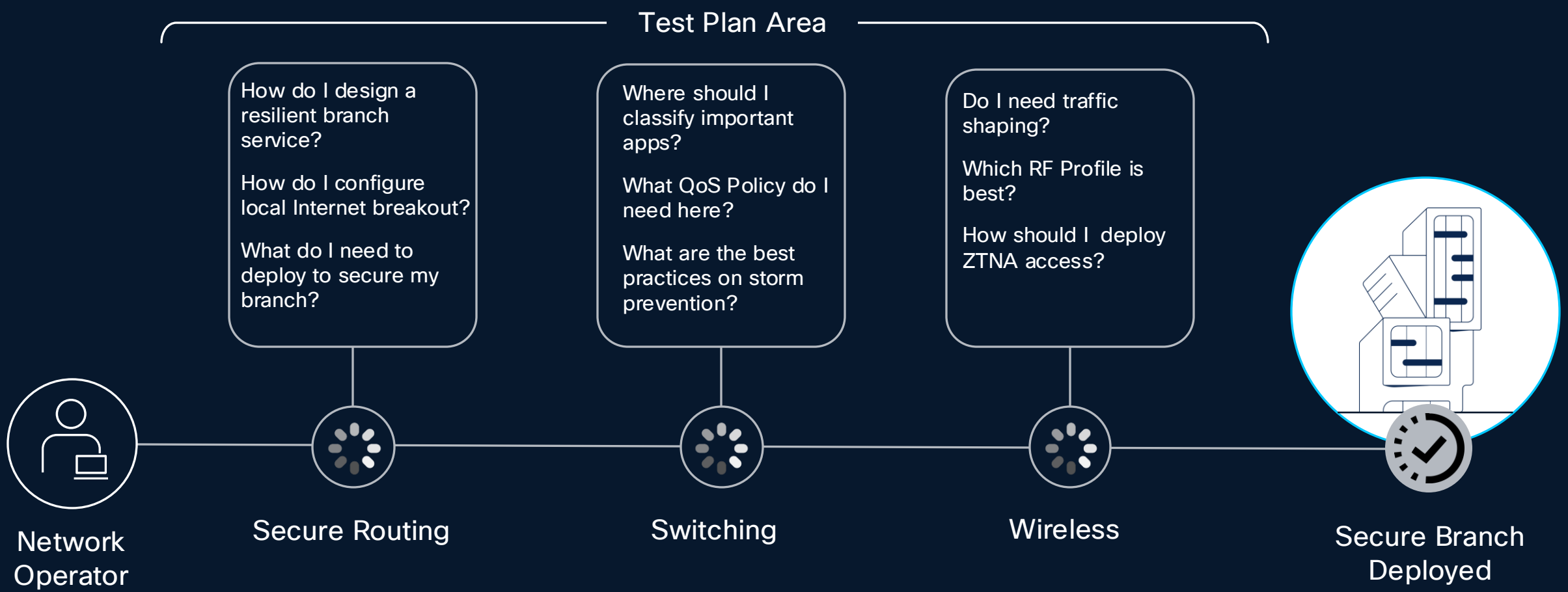
"Unplugged Connectivity"- All WLAN All the Time

YouTube

youtube.com/@getunplugged

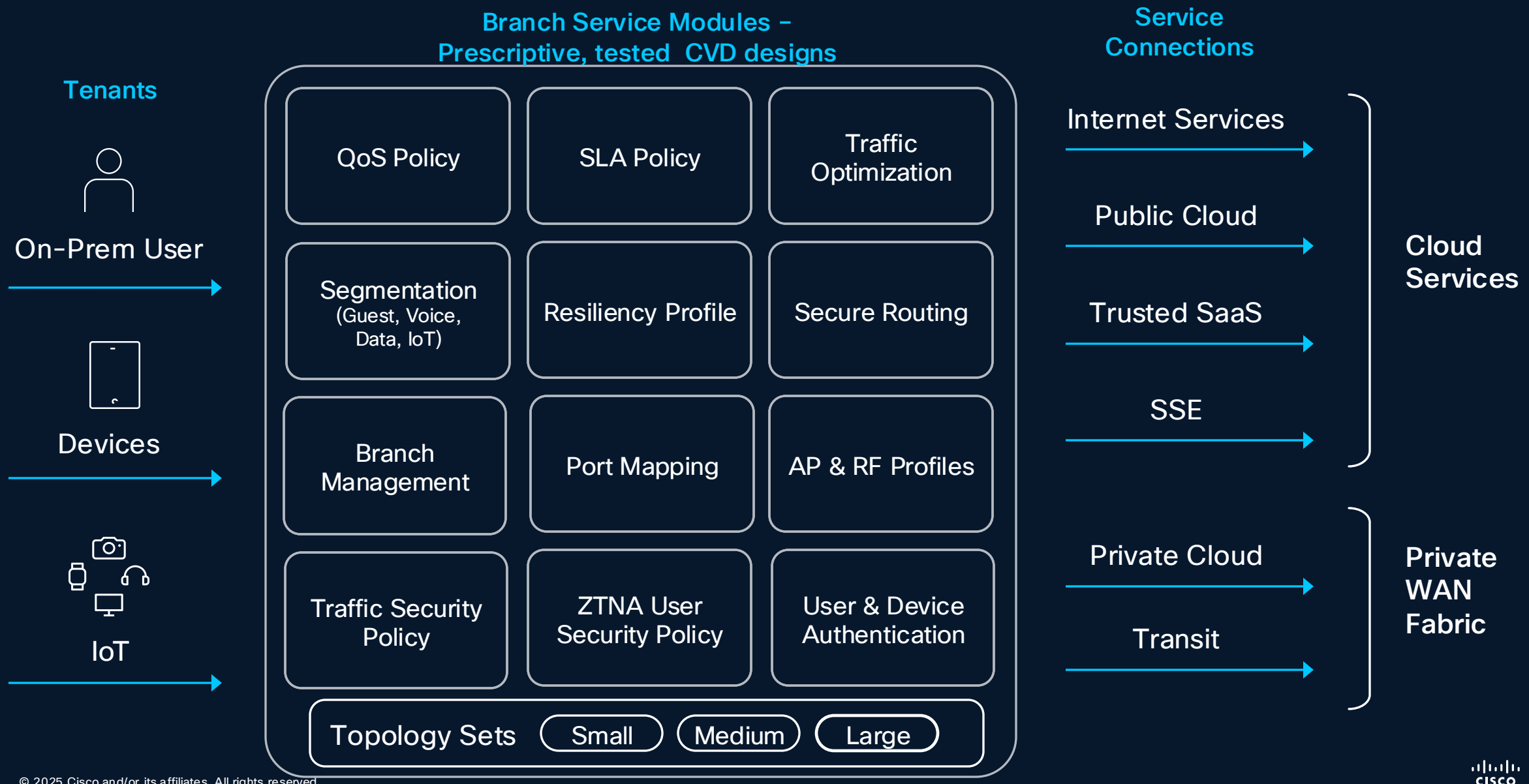
Cisco Unified Branch

What's the Situation Today?

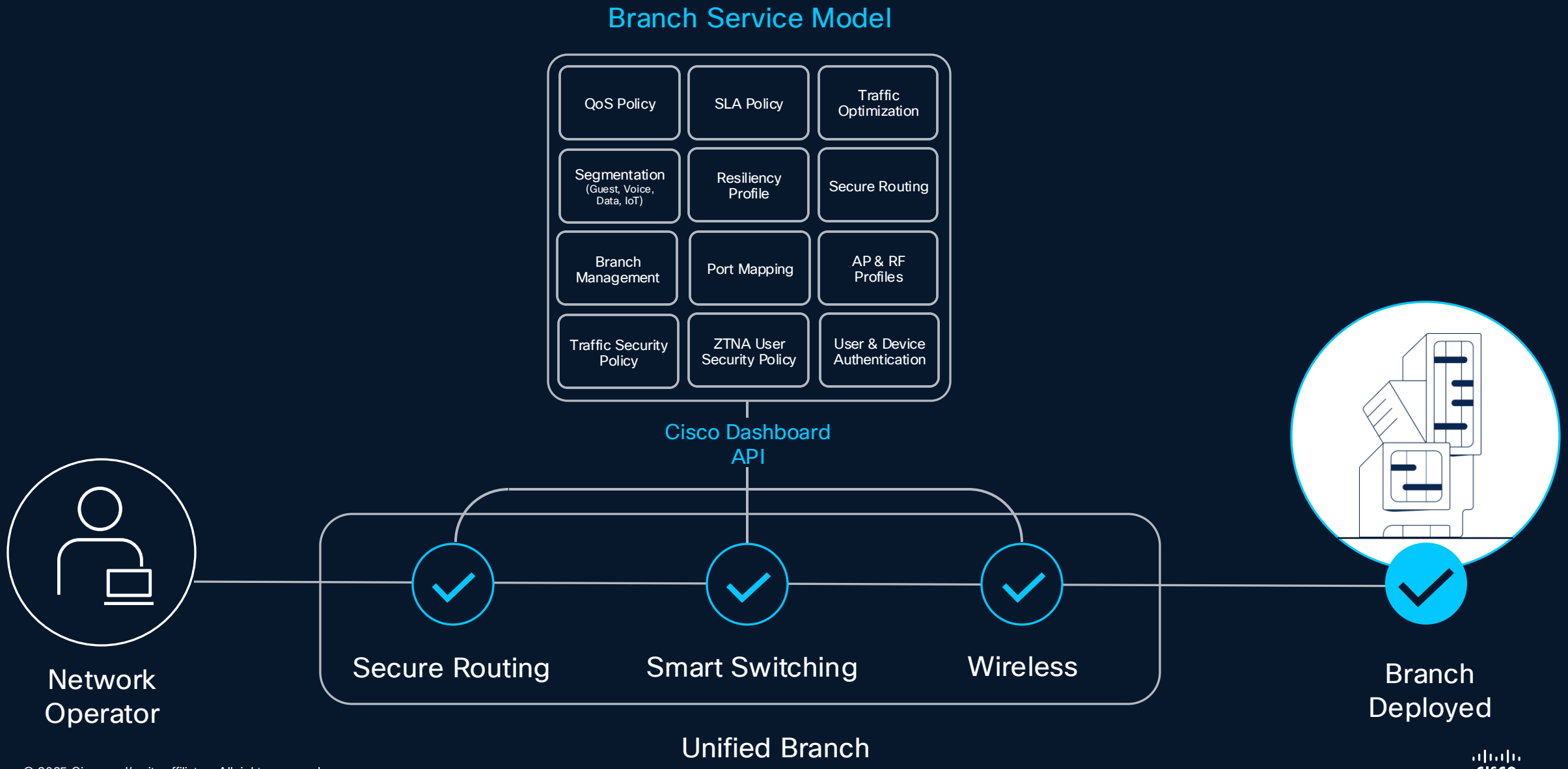


All these steps can take days, if not weeks to perform

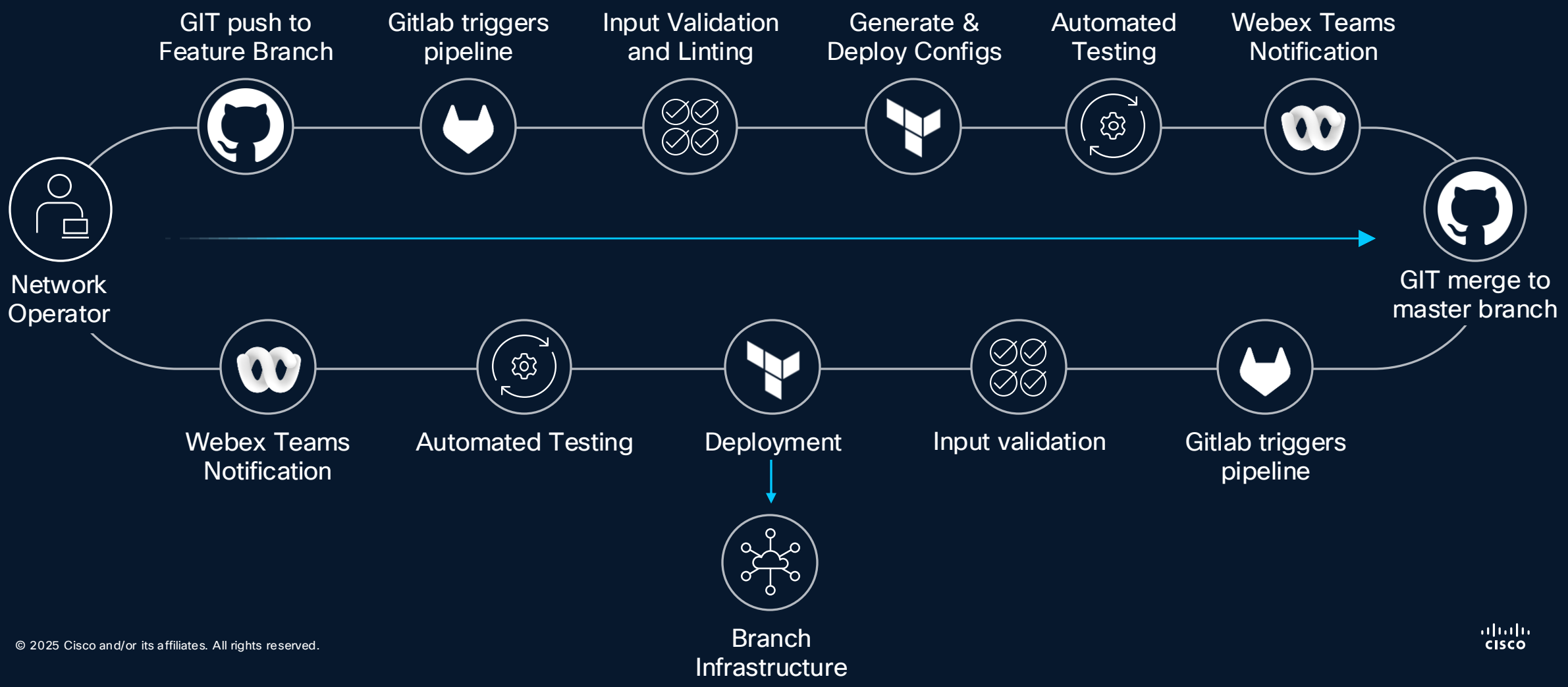
The Service Driven Branch



What's Different Here?



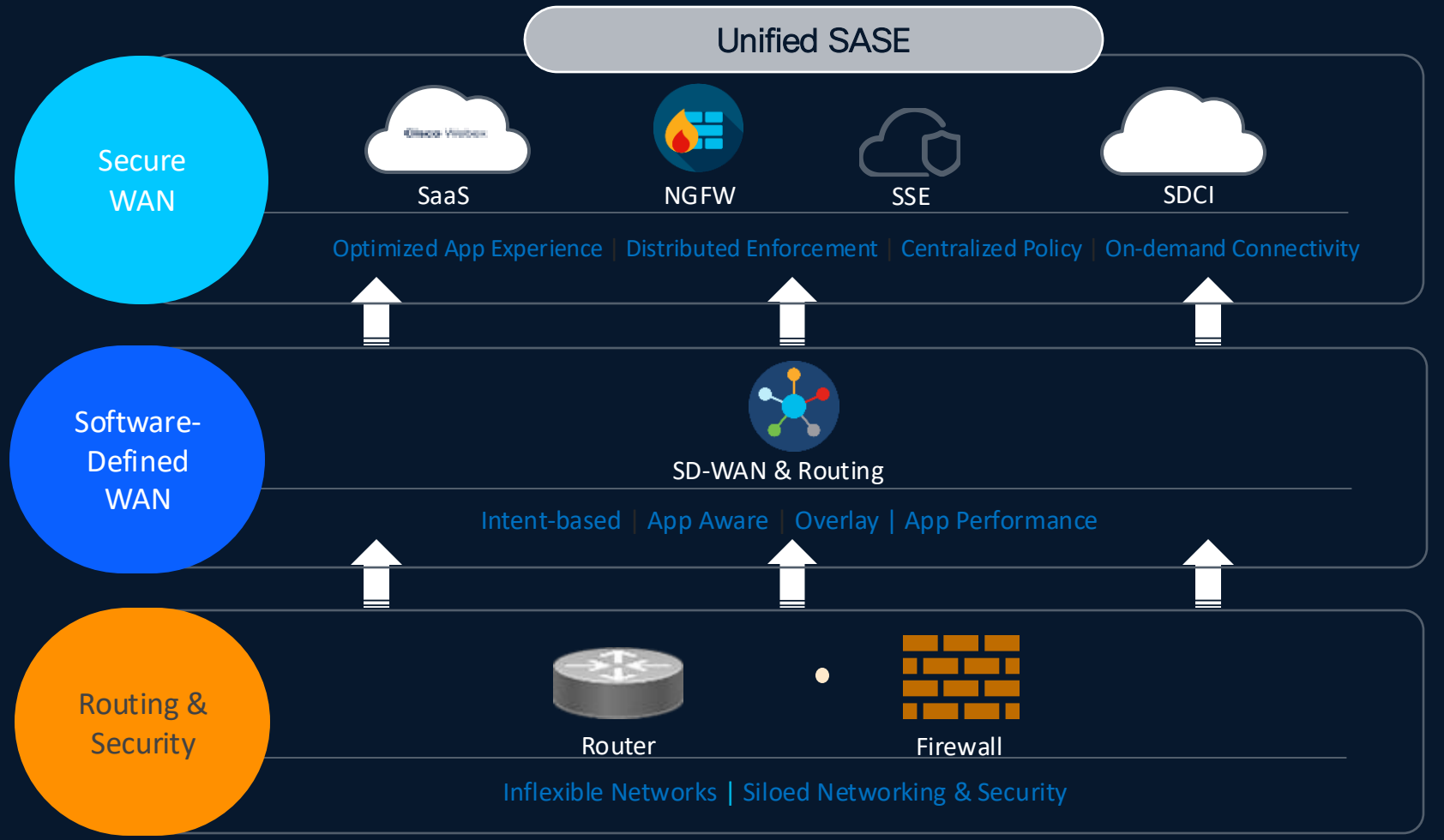
Branch as Code Workflow



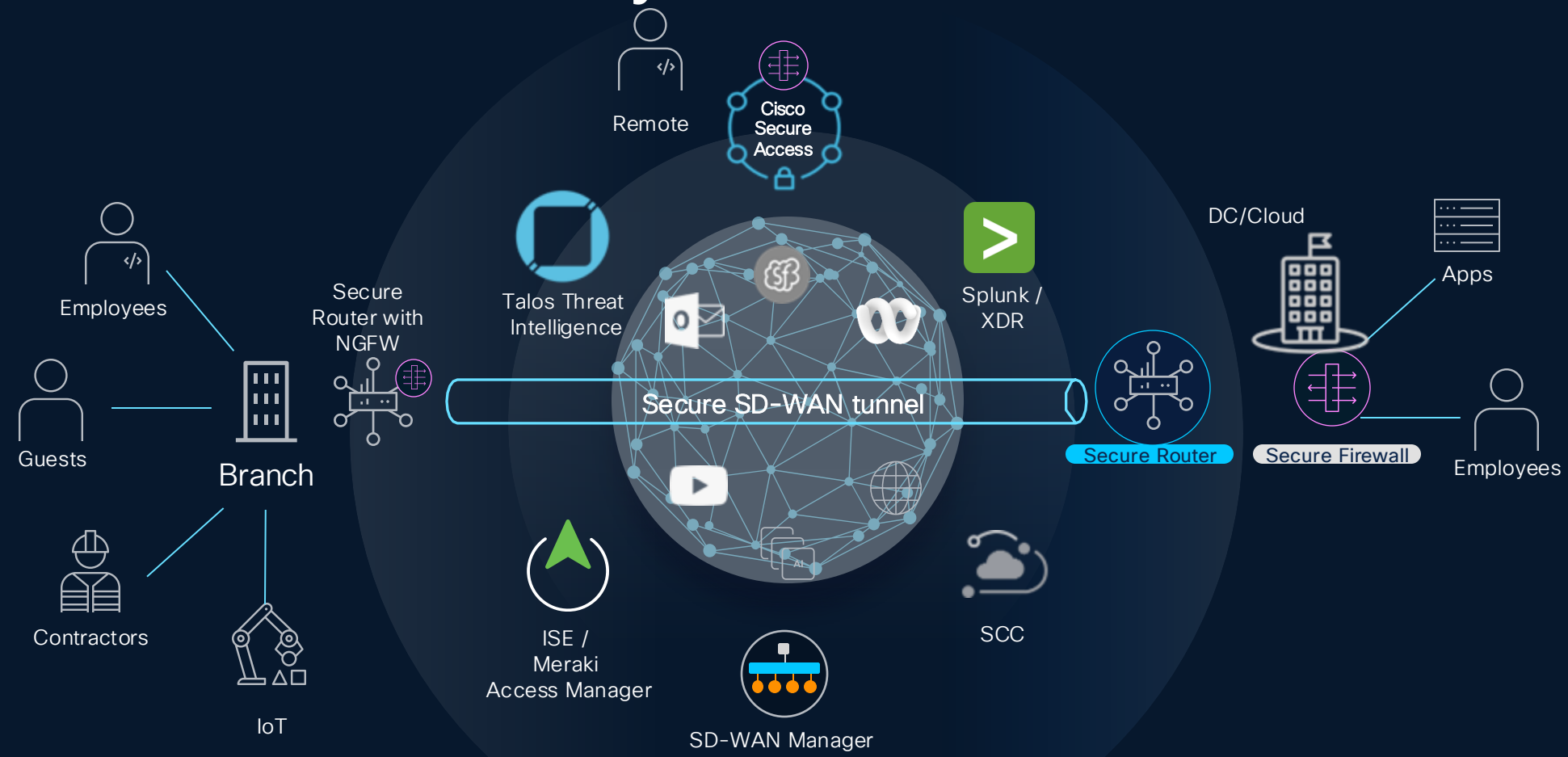
Evolution to Secure Access

Evolution to Cisco Secure WAN

Security and Networking Converge



Cisco Secure WAN Ecosystem



Secure Router - Next Generation Firewall

L3 – L7 FW
Manage traffic traversing the branch

IPS/IDPS
Protect assets from bad actors

AMP
Protect against malware

Sandboxing
File Analysis using Threat Grid

URL-F
Filter Internet traffic based on Web reputation and category

TLS Decryption
Inspect encrypted traffic

EVE*
Protect against Encrypted threats without full decryption

File Control*
Controls the file upload/download based on TYPE

*Future Capabilities

Cisco 8000 Series Secure Router

Future proof Fabric

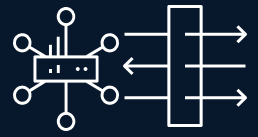
Safeguard your infrastructure using PQC and Secure Boot

Advanced Security

AI/ML powered security such as Encrypted Visibility Engine and Snort-ml

WAN Insights

Advanced WAN insights leveraging Thousand Eyes natively



Higher Performance

Up to x3 increase in security throughput

Improved Security Throughout

Small Branch

C8100

1 Gbps**

Medium Branch

C8200

2.5 Gbps**

Large Branch

C8300

7 Gbps*

C8400

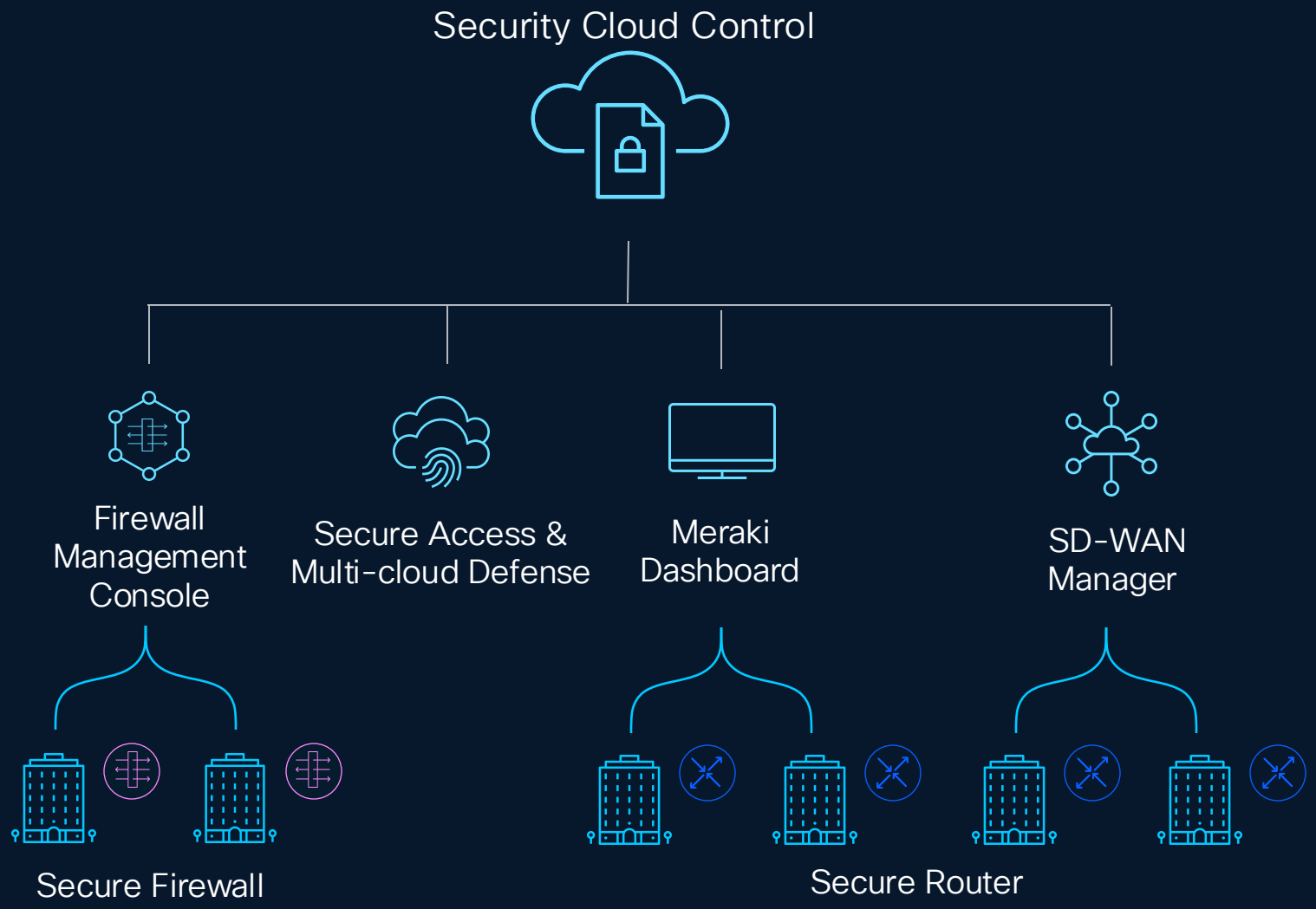
11 Gbps*

Threat Protection Traffic Profile (DIA+NAT+ L7FW+IPS+URLF+AMP)

* Release (17.15.3)

** Release (17.18.1)

Management of Secure Router NGFW Using SCC



Security Object/Policy Configuration

- Create security objects for Secure Router NGFW stack
- Push security policies to different security solutions using single orchestrator

Monitoring

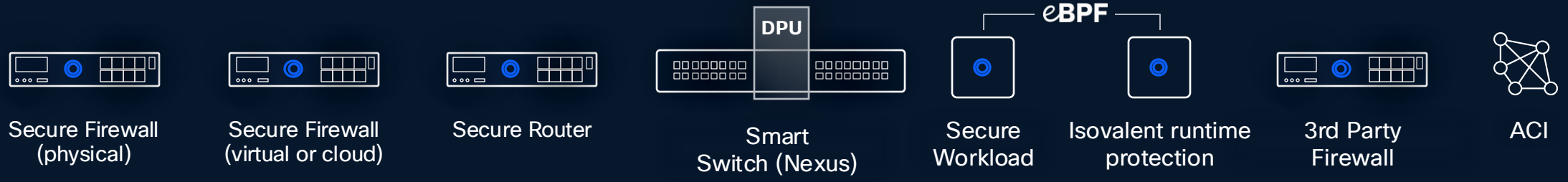
- Common logging repository via SAL (Security Analytics and Logging)

Troubleshooting (Future)

- Leverage SCC tools for security troubleshooting

Cisco Hybrid Mesh Firewall Goes Broader and Deeper

Security cloud control

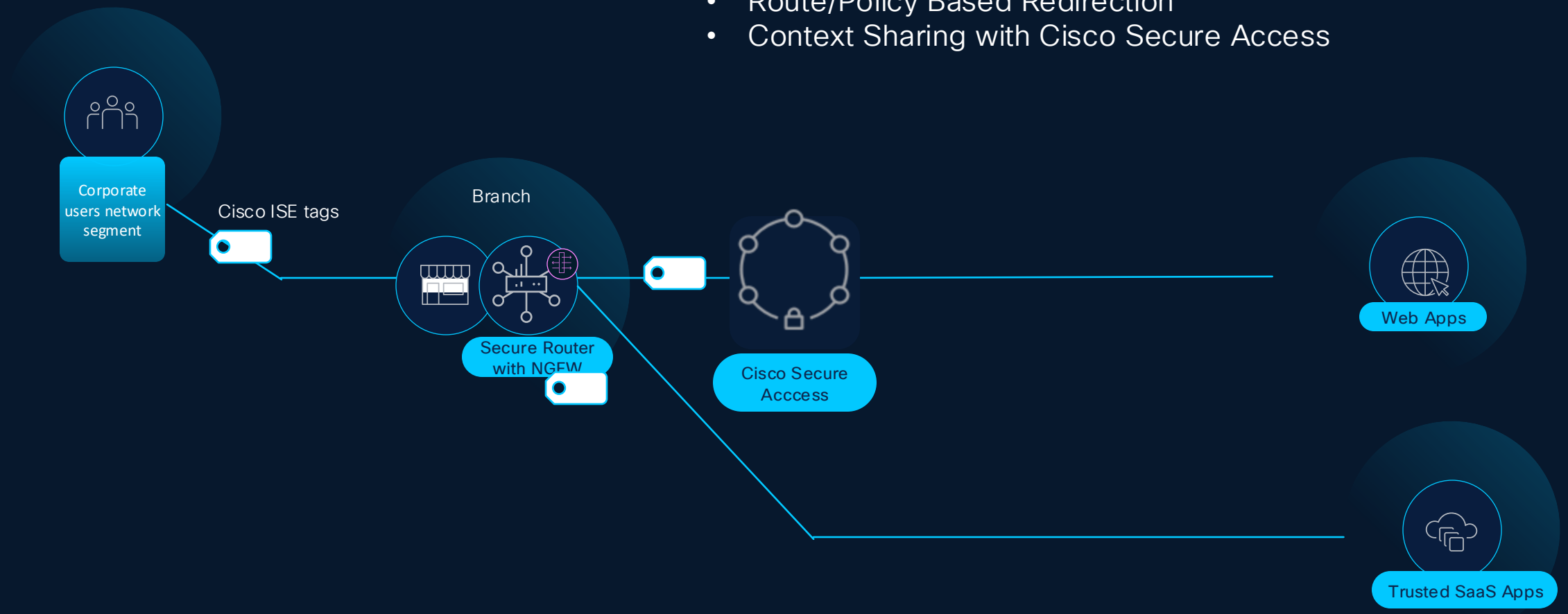


Write policy once, enforce across the mesh

cisco

Cisco Secure Access Integration: Secure Internet Access

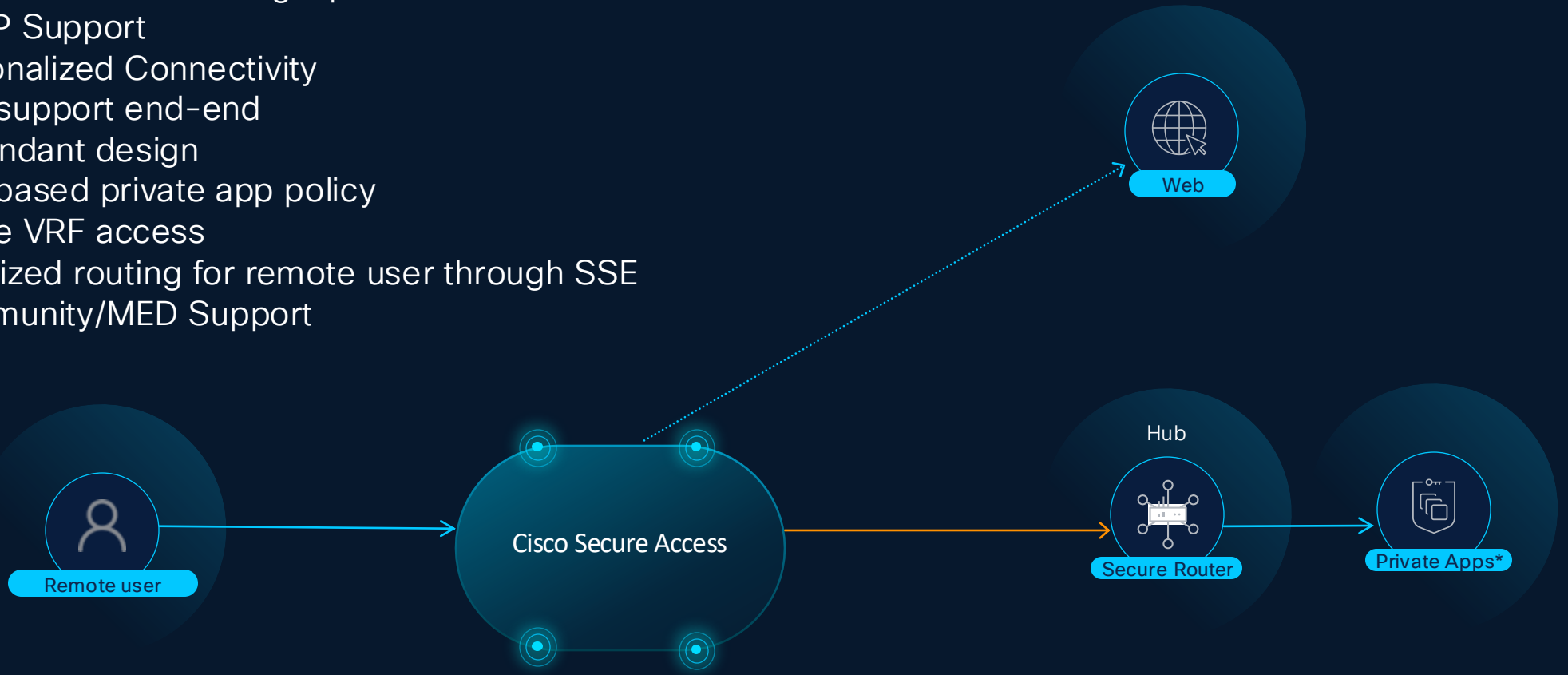
- Automated Tunnel bring-up with region selection
- ECMP/Weighted ECMP/HA
- Route/Policy Based Redirection
- Context Sharing with Cisco Secure Access



Secure Private Access for Remote users

- Automated Tunnel bring-up
- ECMP Support
- Regionalized Connectivity
- BGP support end-end
- Redundant design
- SGT based private app policy
- Single VRF access
- Localized routing for remote user through SSE
- Community/MED Support

PRIVATE PREVIEW



Private Preview – November 2025 Release (17.18.2)

AIOps, Analytics & Observability

AIOPs Vision

Troubleshooting

Offer actionable insights to accelerate RCA & reduce MTTR

Optimization

Optimize to improve operational efficiency & application experience

Operational

Simplify Day-0 & Day-N operations for reliability & consistency

Predictive Path Recommendations

Proactive guidance for maintaining network stability

Optimize WAN performance

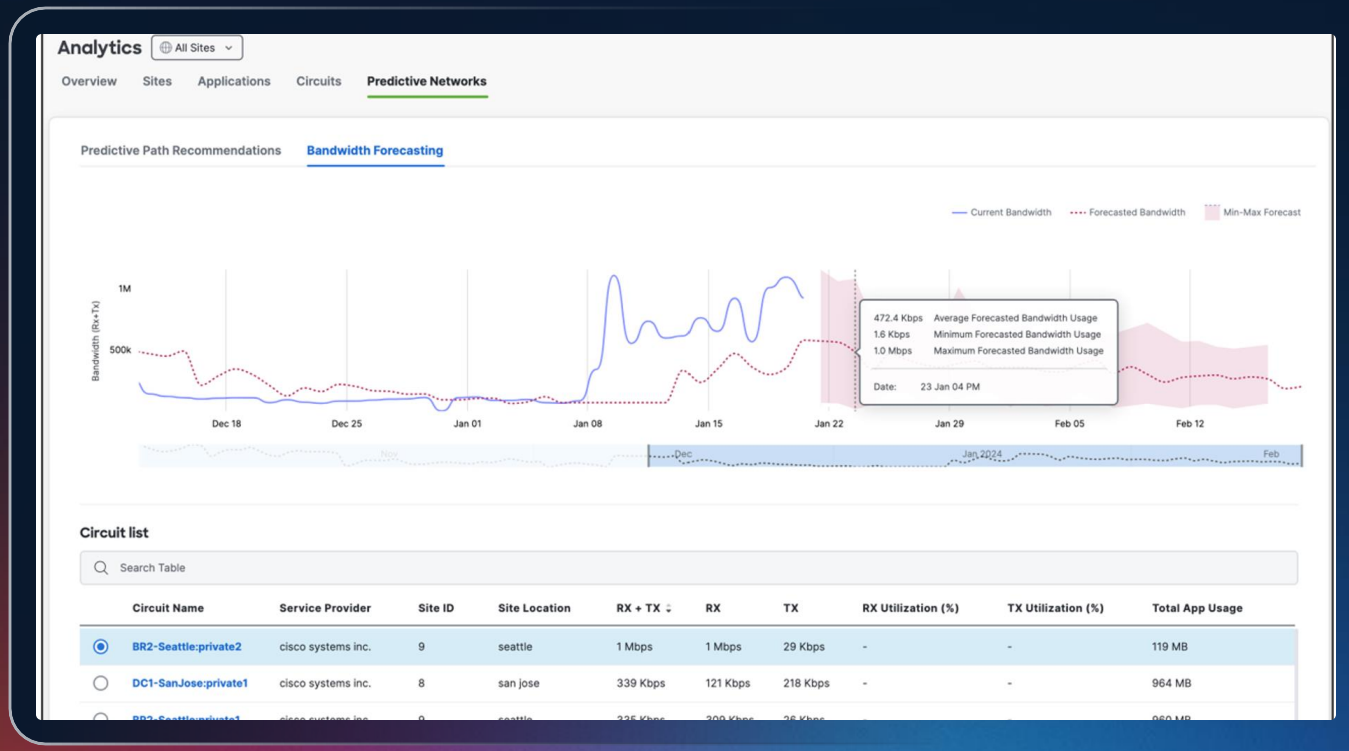
Generate long-term recommendations for network optimization

AVAILABLE NOW

Bandwidth Forecasting

Monitor usage trends for capacity planning

Get a better understanding of growth trends, seasonality, surge, min/max band, and performance



AVAILABLE NOW

Anomaly Detection

Identify unusual patterns in network metrics* & cellular usage** before they manifest into larger issues

Fine-tune your network to improve end-user experience

Streamline operations & reduce downtime

* AVAILABLE NOW

** BETA

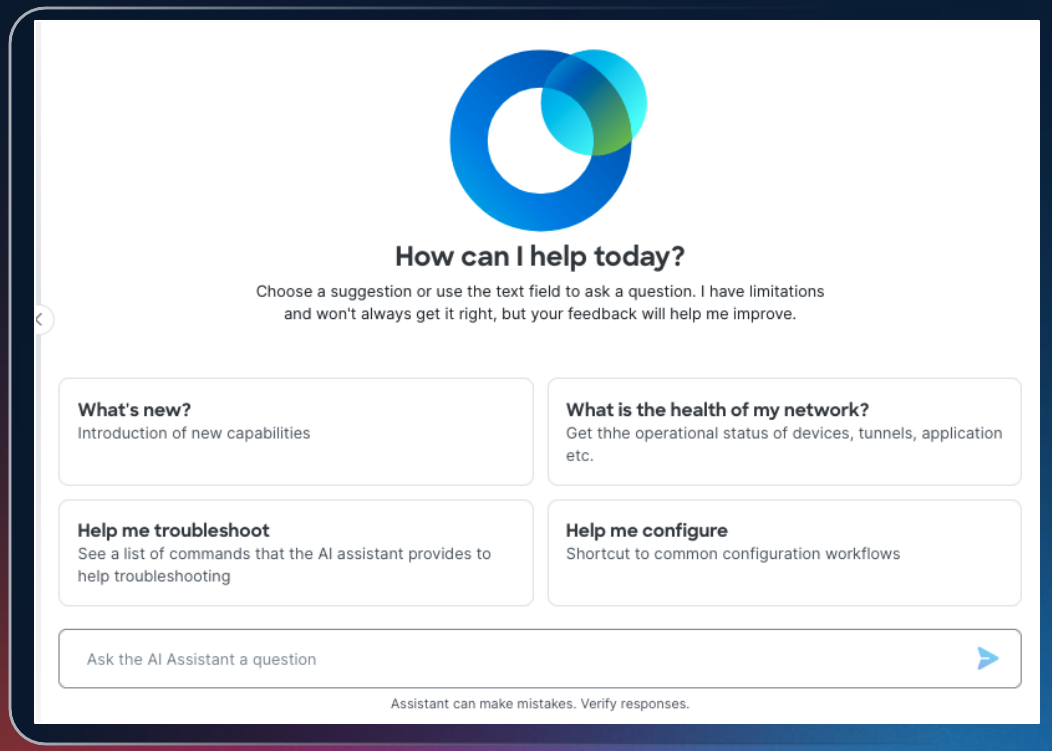
AI Assistant

Conversational, intuitive interface to help with operations

Contextual documentation help

Troubleshooting assistance

TAC case management



Catalyst WAN Manager: Private Beta

Meraki Dashboard: LIVE

Observability

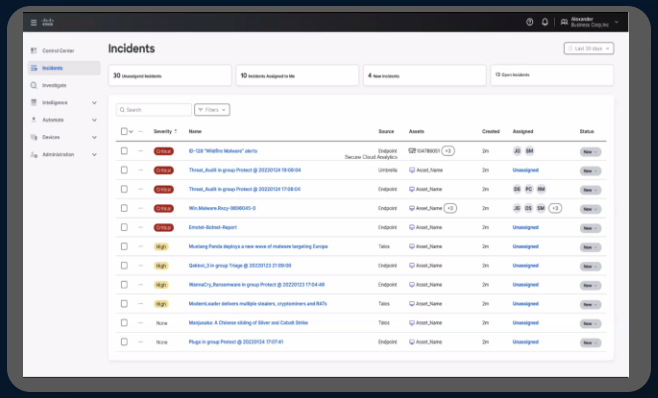
ThousandEyes and Splunk

UNIFIED OPERATIONS

ThousandEyes Integration

Network & Security Operations Center

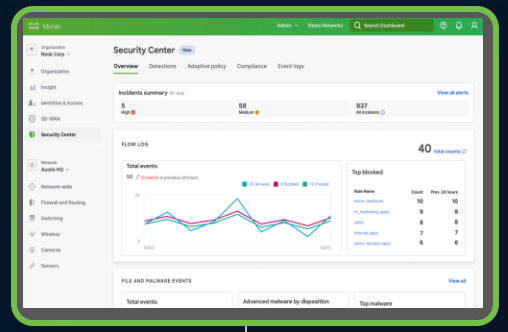
Real-time monitoring, response and reporting of Network & Security Events



Splunk Integration

Network Operations Center

- Network Visibility
- Network Configuration
- Minimize Downtime
- Incident Management



Security Operations Center

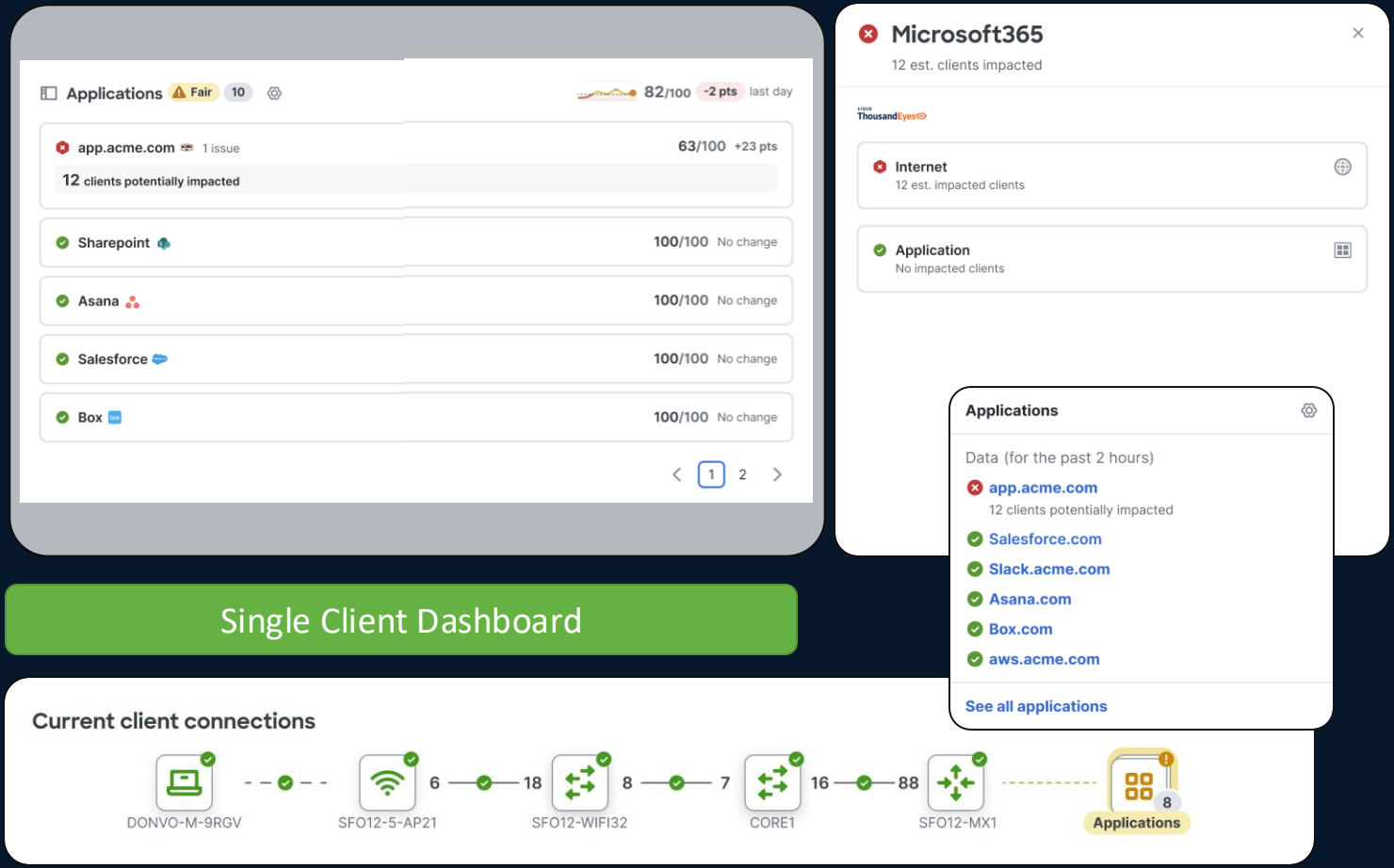
- Threat Monitoring & Detection
- Incident Response
- Threat Intelligence
- Incident Management

Application Observability

ThousandEyes Assurance Integration

- Per-Application Health with active probing
- Visibility beyond the WAN
- Differentiate internet or application server issue
- Integration with both network & single-client workflows

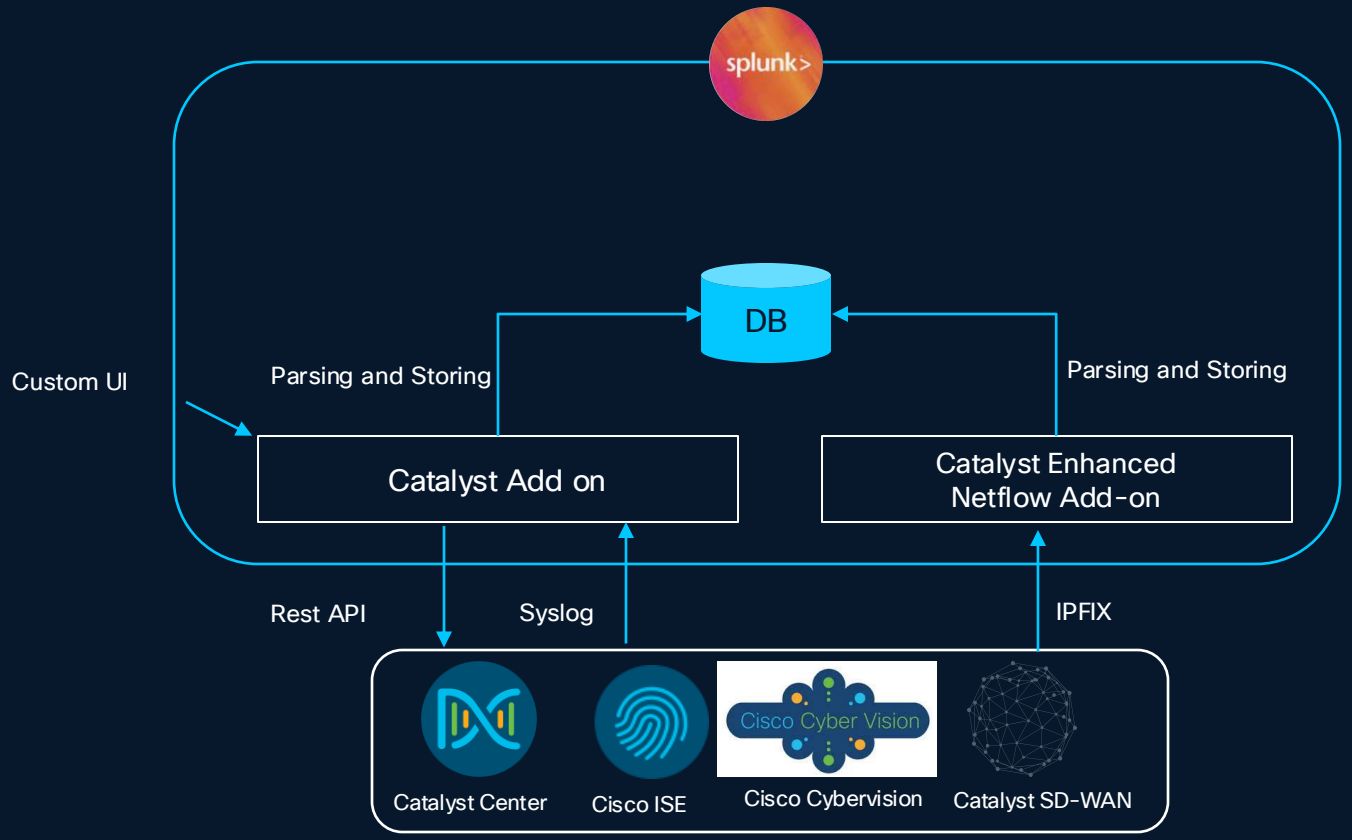
Assurance Overview Dashboard



Single Client Dashboard

Splunk Integration

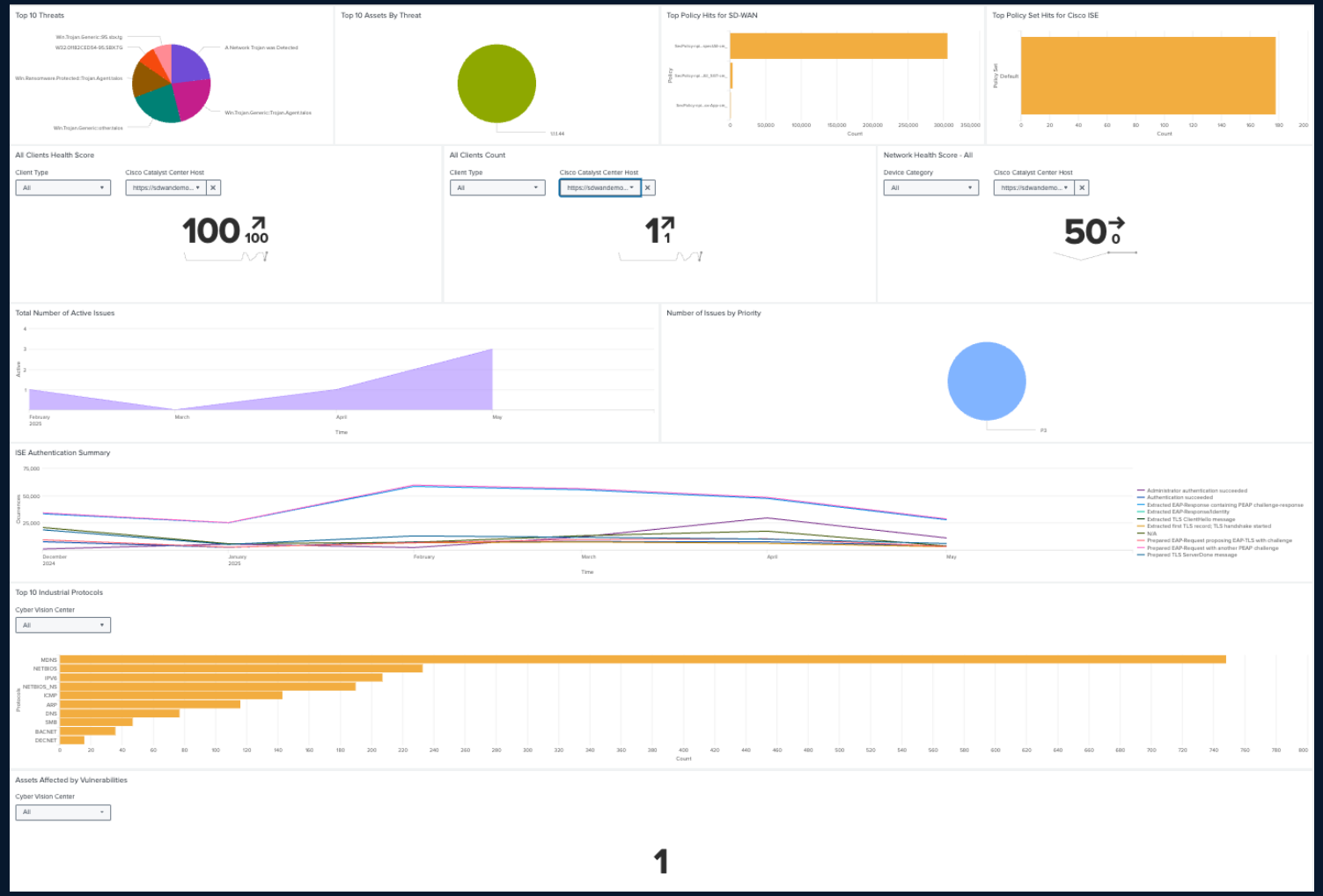
Technical Add-on Architecture



Two TAs used for ingesting telemetry

- Catalyst Add on – Processes API, Syslog and Netflow v10
- Enhanced Netflow Add on – Processes Netflow v9
- TAs adhere to the Splunk gold standard
- Conforms to CIM (common information model) for many of the data ingested
- Catalyst App
- Dashboard with preconfigured charts to visualize data
- Help monitor notifications, events and logs from multiple enterprise networking products on a single pane of glass – covers both the network infrastructure and controllers

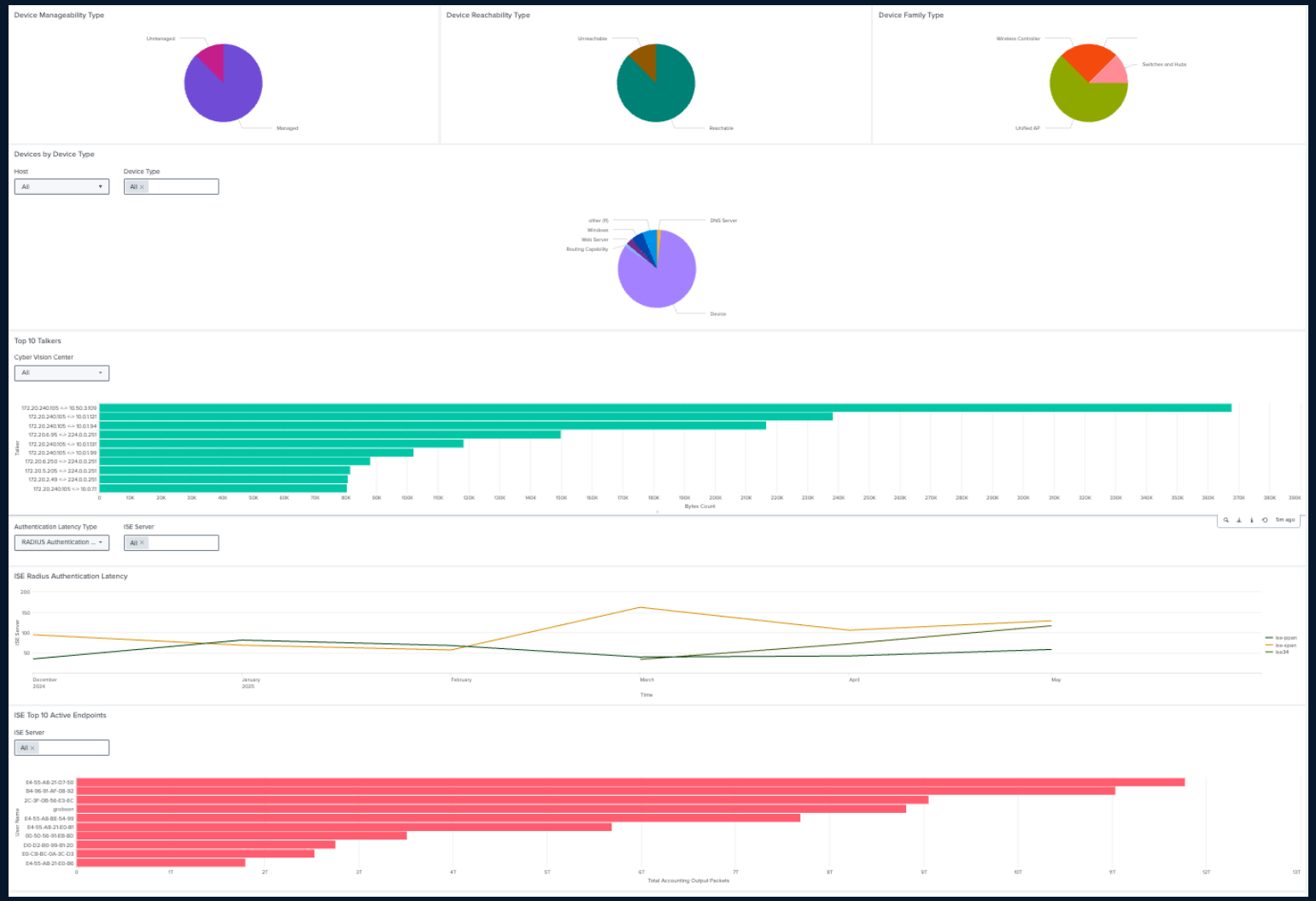
End to End Visibility – Overview Page



Overview Page

- Provides high-level summary of most pressing issues in the network
- Contains a mix of network and security events

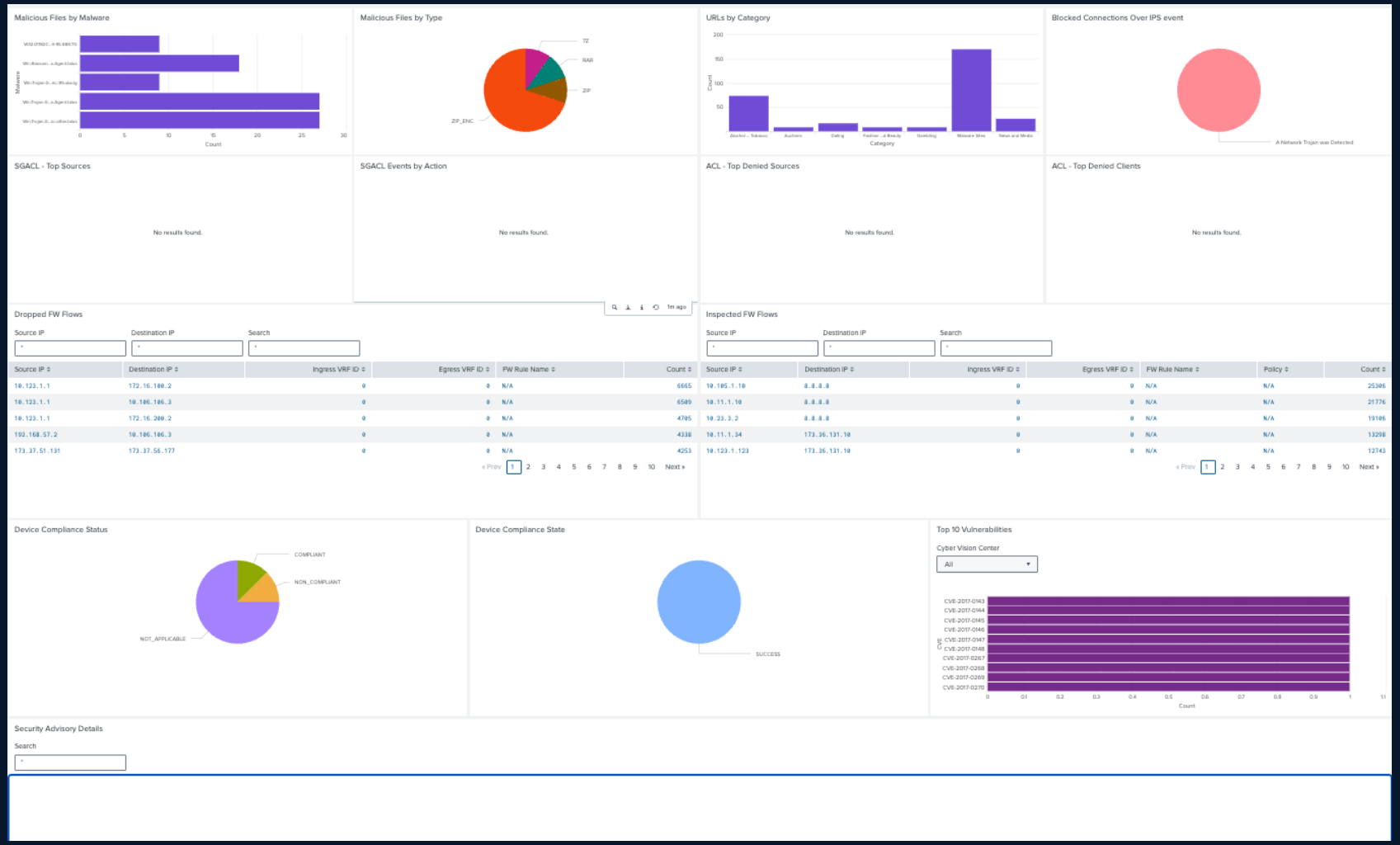
End to End Visibility – Network Insights



Network Insights Page

- Detailed visibility into device health stats
- Focus on network infrastructure

End to End Visibility – Security Insights



Security Insights Page

- Detailed visibility into device health stats
- Focus on network infrastructure

CISCO Connect

Thank you


CISCO