The bridge to possible

Industrialne rozwiązania bezprzewodowe

Marcin Szreter
szreter@cisco.com

Industrial IoT networking portfolio Overview

Our solutions meet the needs of IT and operations

Industrial Ethernet switches

DIN-Rail, IP67, and Stackable Rackmount

IE3400

IE3300

IE3200

IE3100

IE3400H

IE9300

Industrial Cybersecurity

Cyber Vision, Secure Equipment Access

Industrial Wi-Fi and Ultra-reliable Wireless Backhaul

For outdoor conditions

IW9165E

IW9165D

IW9167i

IW9167E

IW9167E-HZ

Industrial Routers

Modular 4G/5G – for connecting remote and mobile assets

IR1100

IR1800

IR8300

IR8100

Data Control and Exchange

Edge Intelligence, IOx

Embedded Networking

Embedded routers and switches for industrial Makers

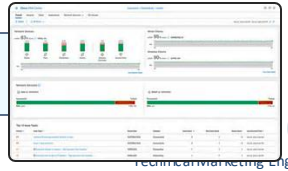
ESR6300

ESS3300

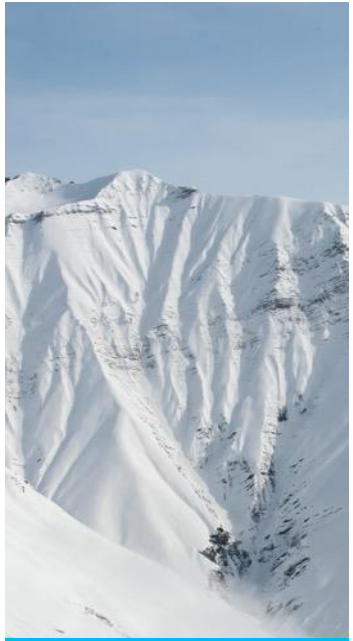
ESS9300

Management and Automation

Cisco Catalyst Center, Cisco Catalyst WAN Manager, Field Network Director

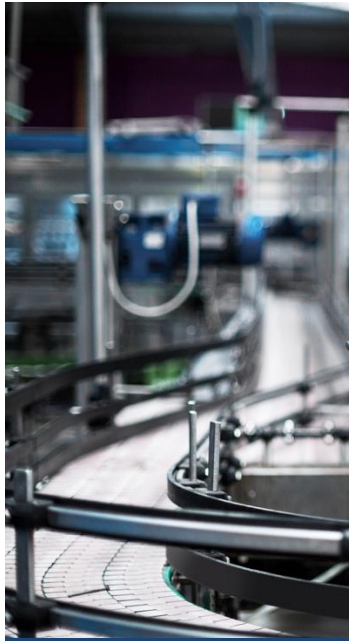


Catalyst IW9167 Heavy Duty Access Points
Your network goes wherever you need it



- 50C

+75C



Shock / Vibration

Water

Dust

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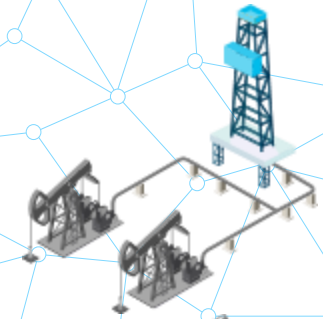
Manufacturing

Warehouse

Gas Station / Kiosk



Oil & Gas

Utilities

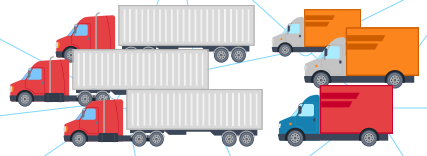
Parking Lot

Wireless technologies are key pillars of the Internet of Things but…

one size doesn't fit all.

Roadways

Distribution Center



Fleet

Seaport

Airport

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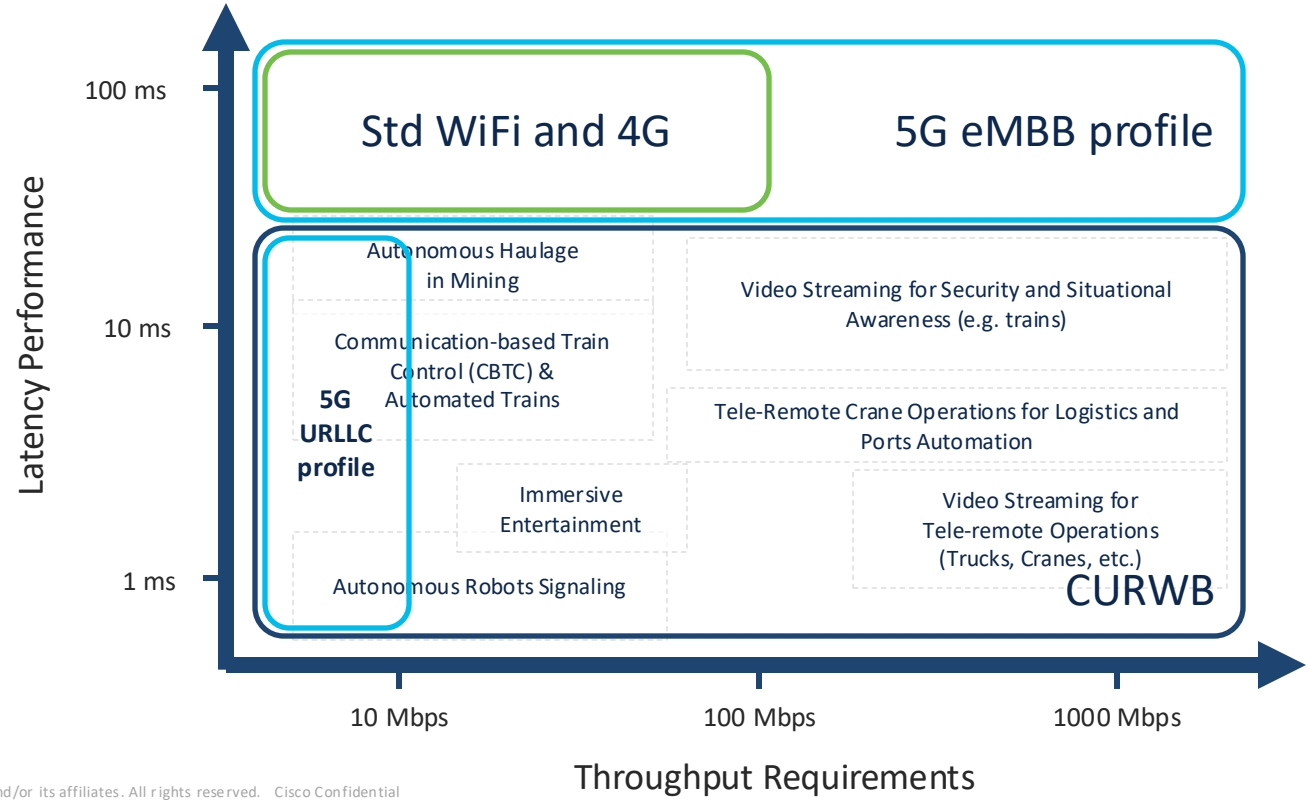
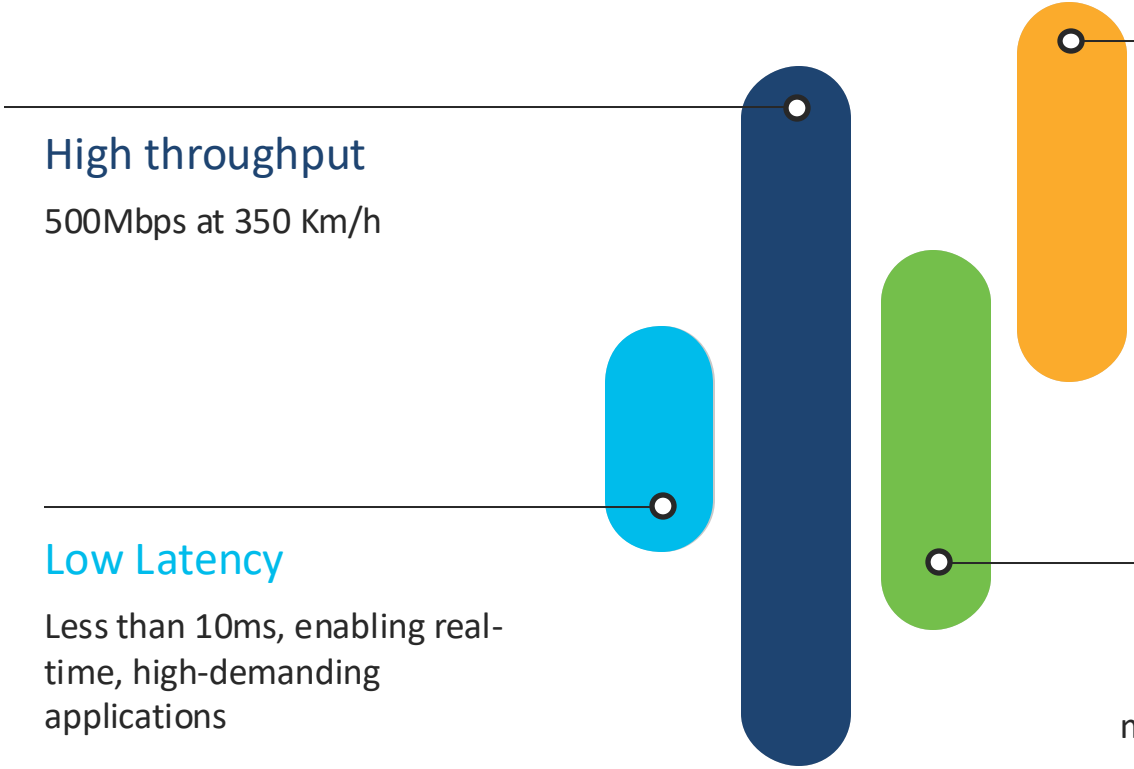
IoT Applications requirements vs technology



Just another wireless?



High throughput

500Mbps at 350 Km/h

Low Latency

Less than 10ms, enabling real-time, high-demanding applications

Seamless handoff

No downtime when roaming

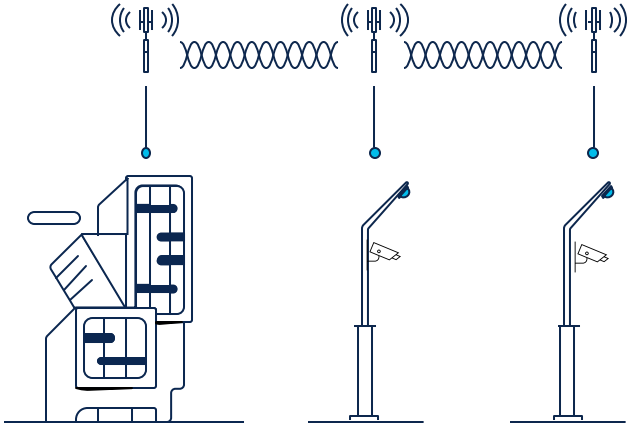
Stability & Reliability

To guarantee extreme uptime and maximum productivity of the OT network

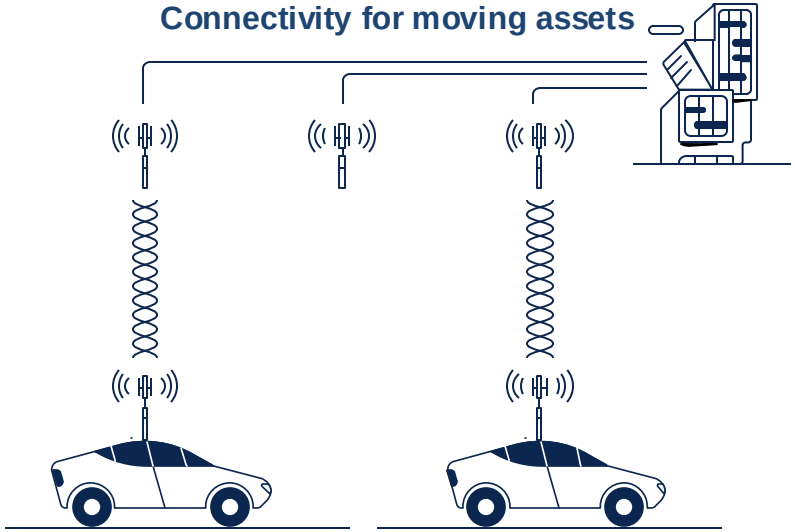
What is Cisco Ultra-Reliable Wireless Backhaul?

Reliable fiber-like wireless connectivity, anywhere

Connectivity where fiber isn't available or is too costly



Connectivity for moving assets

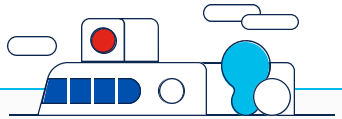


Proven • Deploys like Wi-Fi • Full control of your network • Unlicensed spectrum

What makes Cisco URWB Reliable?

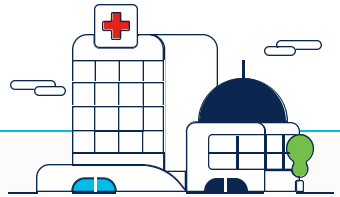
MPLS over the wireless

Low latency (<10 ms)
Single digit ms



High-speed mobility 0ms hand-off

Seamless roaming

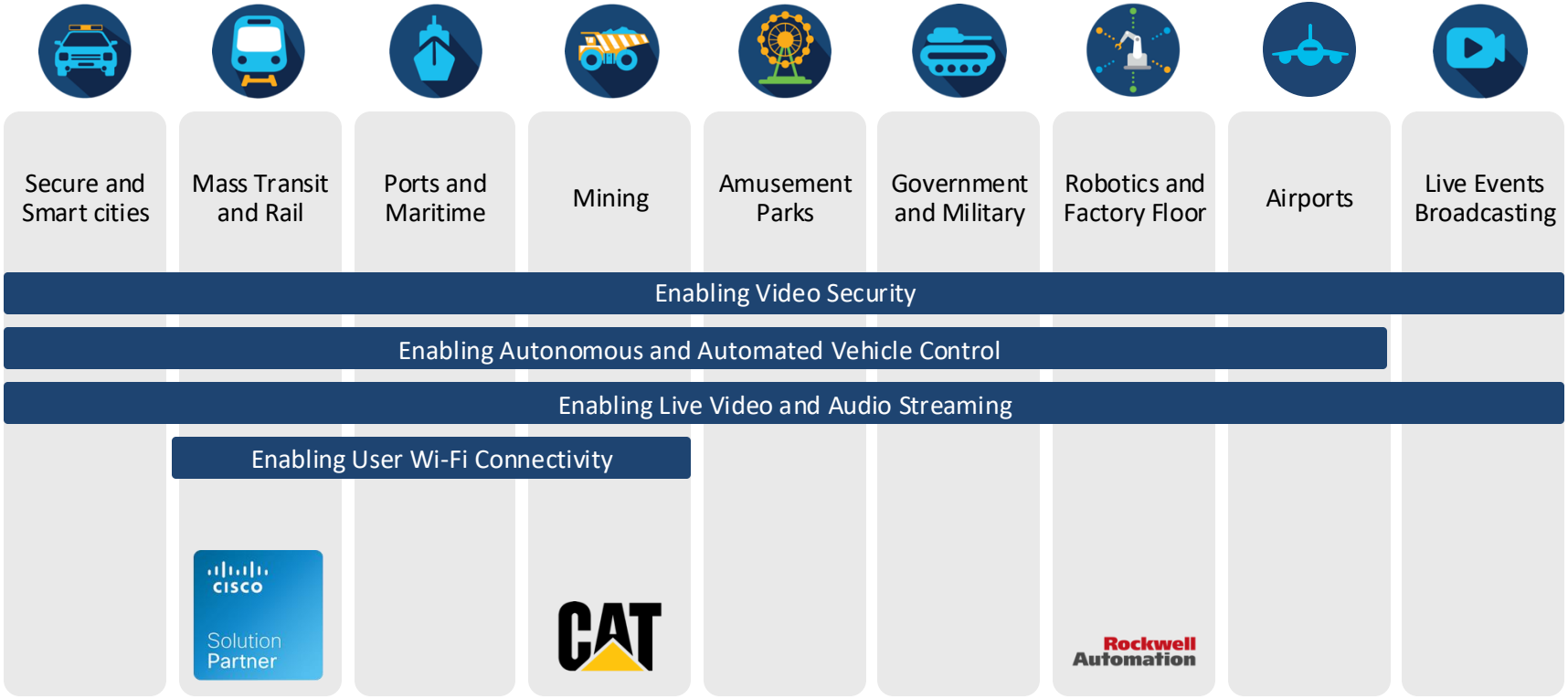


Ultra-fast failover

Carrier-grade availability

Self-healing network for up to 99.999% reliability
The enabler for industrial wireless automation

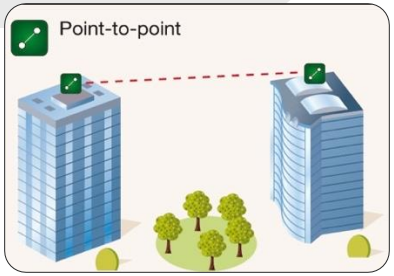
A world of opportunities - Vertical Markets

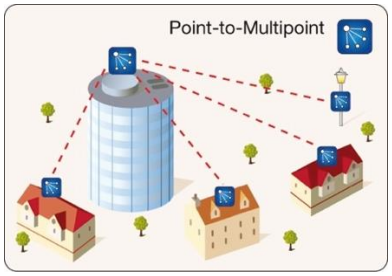


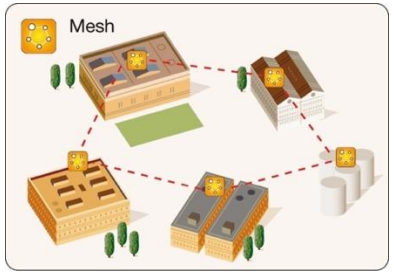
A bridge between Fixed Networks and Moving Vehicles

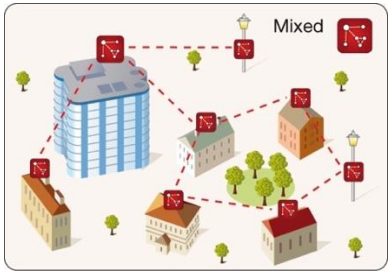
FIXED
Architecture

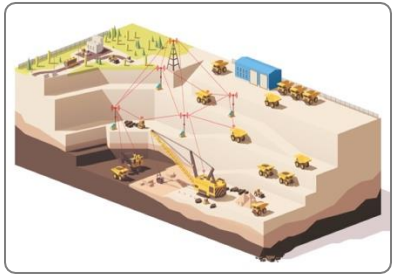
MOBILITY
Architecture

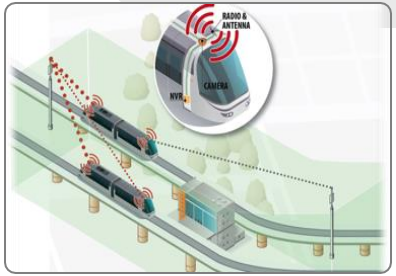


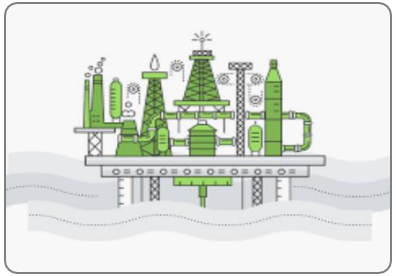












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Automation and Connectivity

Vehicle Connectivity	Equipment Uptime	Profitability
• New trends in automation • OT requires reliable and stable connections • The correct technology at the right cost	• 99.999% uptime often required • Low-latency to run real-time equipment	• Higher productivity • Reduction in mistakes and losses • Reaching and improving customers' SLAs

Products and technologies

Cisco Ultra-Reliable Wireless Backhaul's unique capabilities

1. Your own network
2. Ultra-low latency
3. Ultra reliable
4. High performance
5. Fast mobility

Private mobile network, custom-made to your needs

MPLS-based overlay

IP

To carry any TCP/IP data flow

Ultra-Low Latency

<10ms

up to

4.8 Gbps *

data rate

$0

no service provider subscription

Tested up to

350 km/h

no packet loss during handoffs (make before break)

Self-healing network

99.995% **

availability

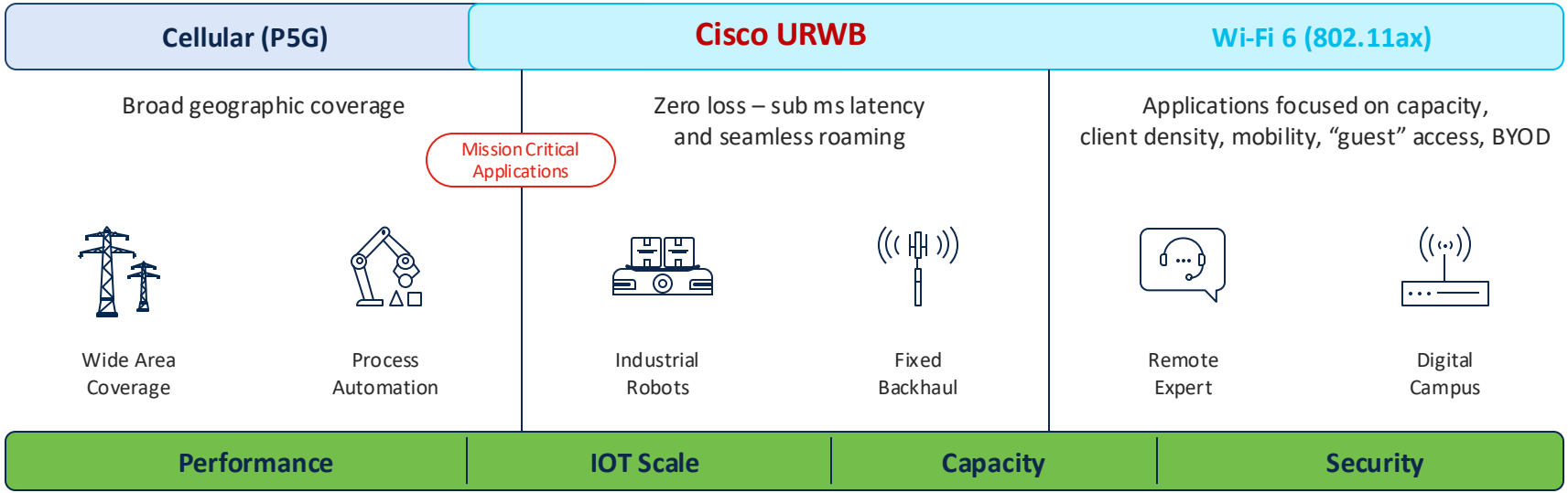
Unlicensed spectrum

*in 6GHz and 160MHz channel width – an increase from 866Mbps on legacy products

**with MPO

Multi wireless access – better together!

Cellular, Cisco URWB and Wi-Fi 6 are complementary technologies



Ultra reliable wireless is a key for critical operations

Applications have unique wireless requirements

High bandwidth

HD video, AGVs, 3D sensors

Low latency

Teleremote, AGVs, AMRs

High availability

Loss of connectivity causes safety issues or loss of money

Zero-loss handoffs

Real-time control of unmanned vehicles, support for applications at high speed

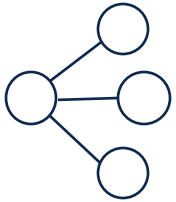
Ruggedization

IP67 protection (water and dust), hardened for shock, vibration, extreme temperatures. ATEX for explosion proof

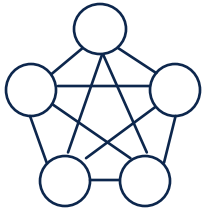
URWB for highly flexible wireless architectures

Point to Point

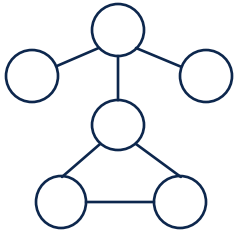
Point to Multipoint



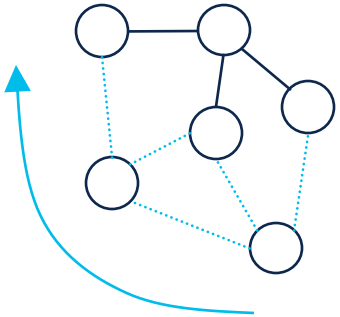
Mesh



Mixed



Mobility



Ultra-Reliable Wireless Backhaul to connect fixed and mobile assets for Ports OTS, T2G, Entertainment, Mining, Smart Cities

What makes Cisco URWB *Ultra*-Reliable?

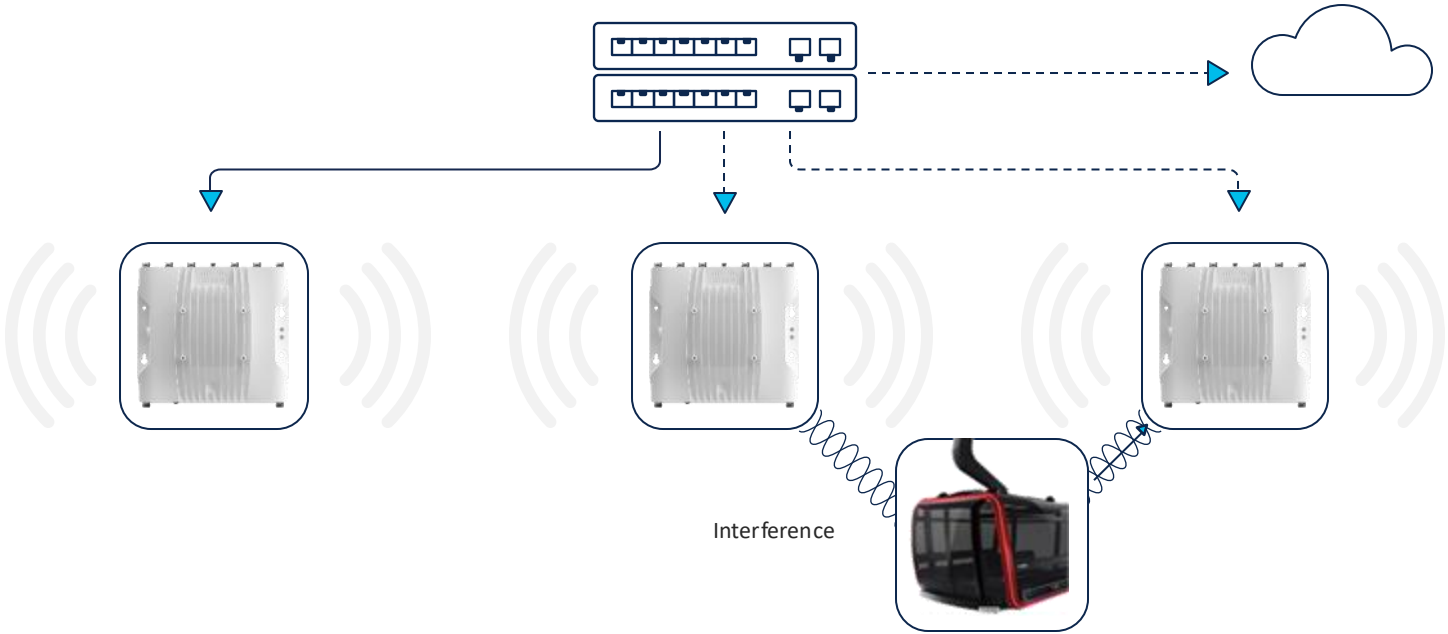
Cisco URWB's new patented technology: Multipath Operations

Take advantage of the «Diversity»

Time Diversity
Mitigates Fading and Medium Contention

Spatial Diversity
Mitigates blockages and obstacles

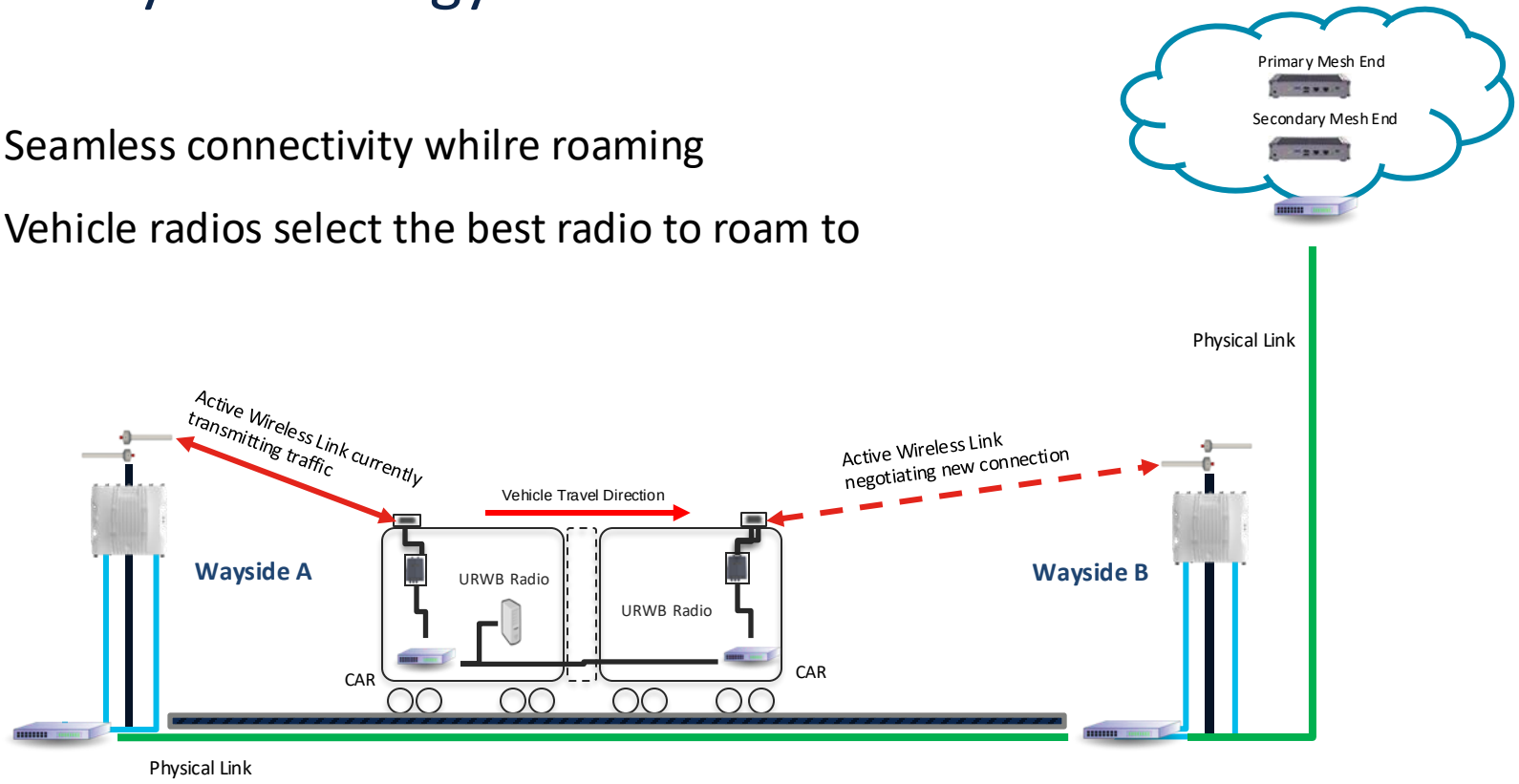
Frequency Diversity
Mitigates Interference



Duplicate high priority packets over up to 8 different paths

Fluidity techonlogy

- Seamless connectivity whilre roaming
- Vehicle radios select the best radio to roam to



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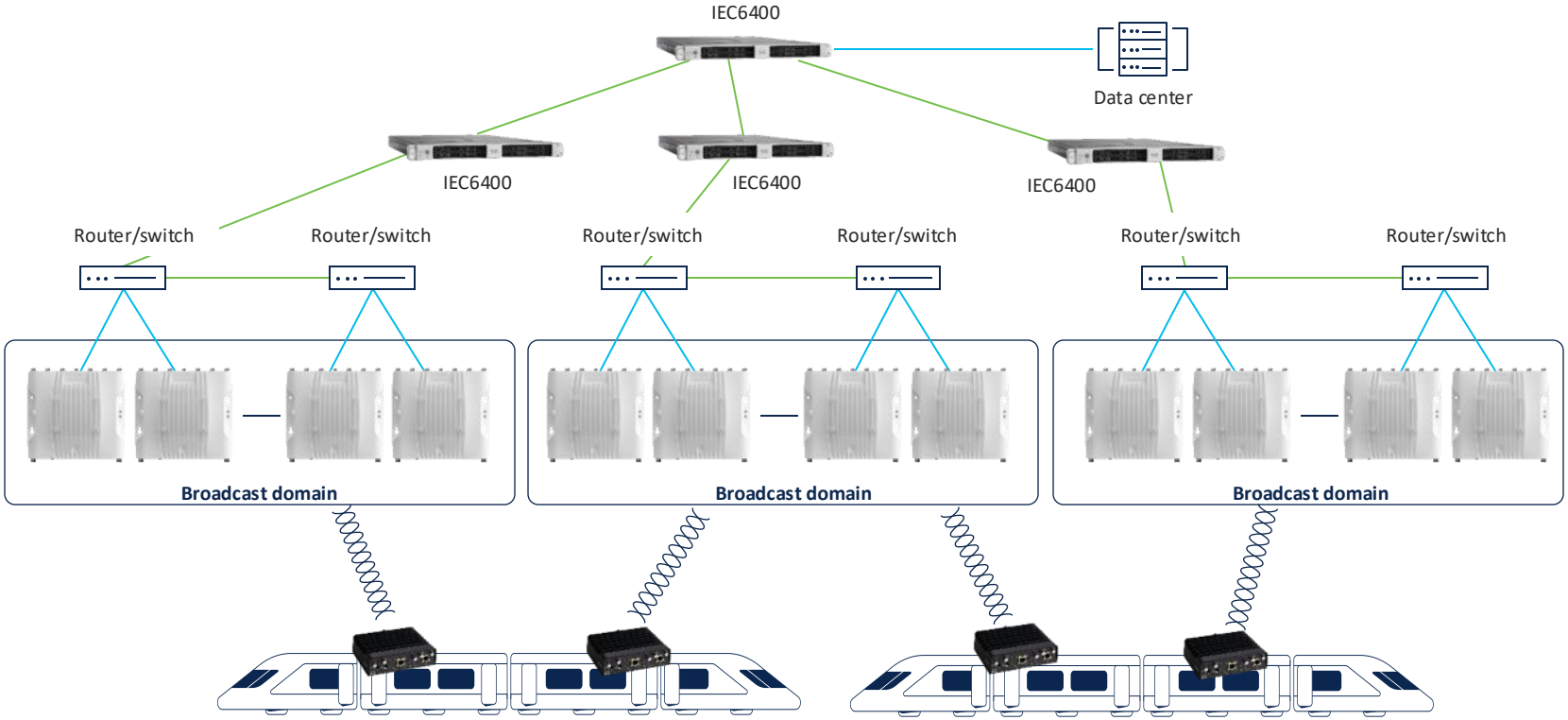
Extended reachability over multiple clusters



Next generation of outdoor and industrial wireless portfolio

Purpose-built dedicated wireless client

Catalyst® IW9165E Rugged Wireless Client

- Cisco URWB
- Wi-Fi 6/6E-ready*
- WGB

Wireless backhaul that's easy to deploy

Catalyst IW9165D Heavy Duty Access Point

- Cisco URWB
- Wi-Fi 6/6E-ready*
- WGB

Premier outdoor and industrial access point

Catalyst IW9167E Heavy Duty Access Point

- Cisco URWB
- Wi-Fi 6/6E-ready*
- WGB

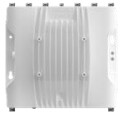
Catalyst IW9167I Heavy Duty Access Point

- Wi-Fi 6/6E-ready*

Connect more devices. Wirelessly. Reliably. Even on the move.

*Wi-Fi 6E subject to regulatory agencies' regulations and approvals.

Cisco Catalyst 6E Industrial Wireless Portfolio



	IW9165E	IW9165D	IW9167
Application	Wireless client for mobile assets	Wireless backhaul for fixed and mobile assets	Wireless backhaul for fixed and mobile assets
Radio	2 x 802.11ax radios (5GHz, 5/6GHz)	2 x 802.11ax radios (5GHz, 5/6GHz)	3 x 802.11ax radios (2.4GHz, 5GHz, 5/6GHz)
Antenna	4 x RP-SMA	Built-in 15dBi directional plus 2 x N-Type (f)	8 x N-Type (f)
Modulation	2x2 MIMO	2x2 MIMO	4x4 MIMO
Wireless Mode	WGB or URWB	URWB	WiFi, WGB, URWB
Ethernet	1 x 2.5Gbps + 1 x 1Gbps RJ45 Optional M12 adapter	1 x 2.5Gbps + 1 x 1Gbps RJ45 Optional M12 adapters	1 x 5Gbps RJ45 + 1 x SFP+ Optional M12 adapters
Expendability	BLE, GNSS, GPIO	BLE, GNSS	BLE, GNSS
Certifications	IP30, EN50155 -20C to +50C	IP67 -50C to +75C	IP67, EN50155 -50C to +75C

Catalyst IW9165E Rugged access point and wireless client

The 6 GHz-ready wireless client that connects mobile industrial assets

Prototype device pictured. Production device will vary.

Autonomous robots and vehicles for manufacturing, ports, logistics

Rail and light-rail rolling stock

EN50155 certified for rail operations

Connect more machines to your network

Compact form factor for integration in existing assets

Get more from your industrial assets

BLE, GNSS, GPIO capabilities for advanced use cases

Connect moving vehicles to your systems

Ultra low latency and zero packet loss during handoff

High performance and modular wireless

Dual 802.11ax radio with wide choice of antenna

Works with your Wi-Fi infrastructure

Supports WGB or URWB. Evolve as your needs change

Ultra-reliable broadband wireless connectivity for moving machines and vehicles

Catalyst IW9165D Heavy Duty Access Point

6 GHz-ready Wireless backhaul that's easy to deploy where fiber is not an option

Building-to-building, smart cities, intersections, roadways, railway, mining

Easily extend your network anywhere
Built-in directional antenna for long range connectivity

Fixed and mobile use cases simultaneously
External antennas enable future usages as needs evolve

Connect moving vehicles to your systems
Ultra low latency and zero packet loss during handoff

Build for harsh outdoors environments
IP67 rated enclosure, -40 to +70C, optional M12 adapters

High performance and modular wireless
Dual 802.11ax radio for PTP, PTMP, and mobile applications

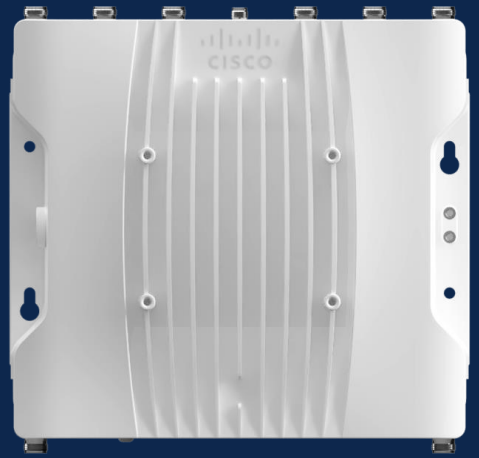
Ultra-reliable broadband wireless connectivity for moving machines and vehicles

IW9167E Heavy Duty vs IW9165E Rugged

Prototype devices pictured. Production device may vary.

Catalyst IW9167E overview

Catalyst® IW9167E Access Point



Tri-Radio Architecture in Heavy-Duty Design

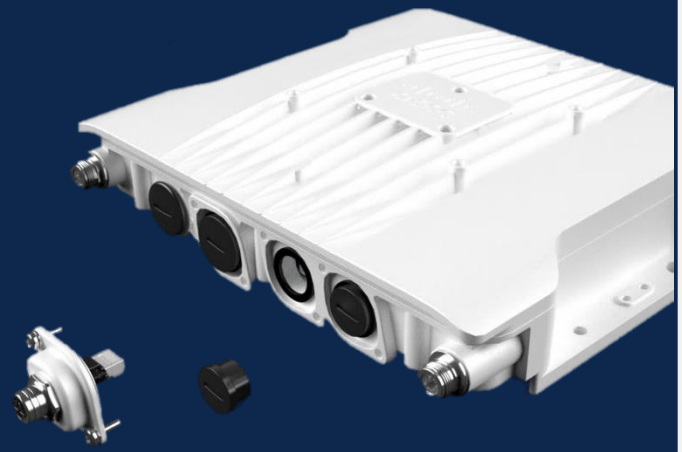
- Wi-Fi 6/6E*, 802.11AX, MU-MIMO, OFDMA
- External antenna – 8 x Type N
- Tri-Radio architecture
  - 2.4-GHz, 4x4:4SS, up to 20MHz
  - 5-GHz radio, 4x4:4SS, up to 80 MHz
  - 5/6*-GHz radio, 4x4:4SS, up to 160 MHz
- Dedicated scanning radio for spectrum intelligence
- 2.4-GHz IoT radio
- Built-in GNSS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

Wireless backhaul (Cisco URWB) OR Wi-Fi 6E access point

* 6 GHz operation subject to regulatory approval

Catalyst IW9167E overview

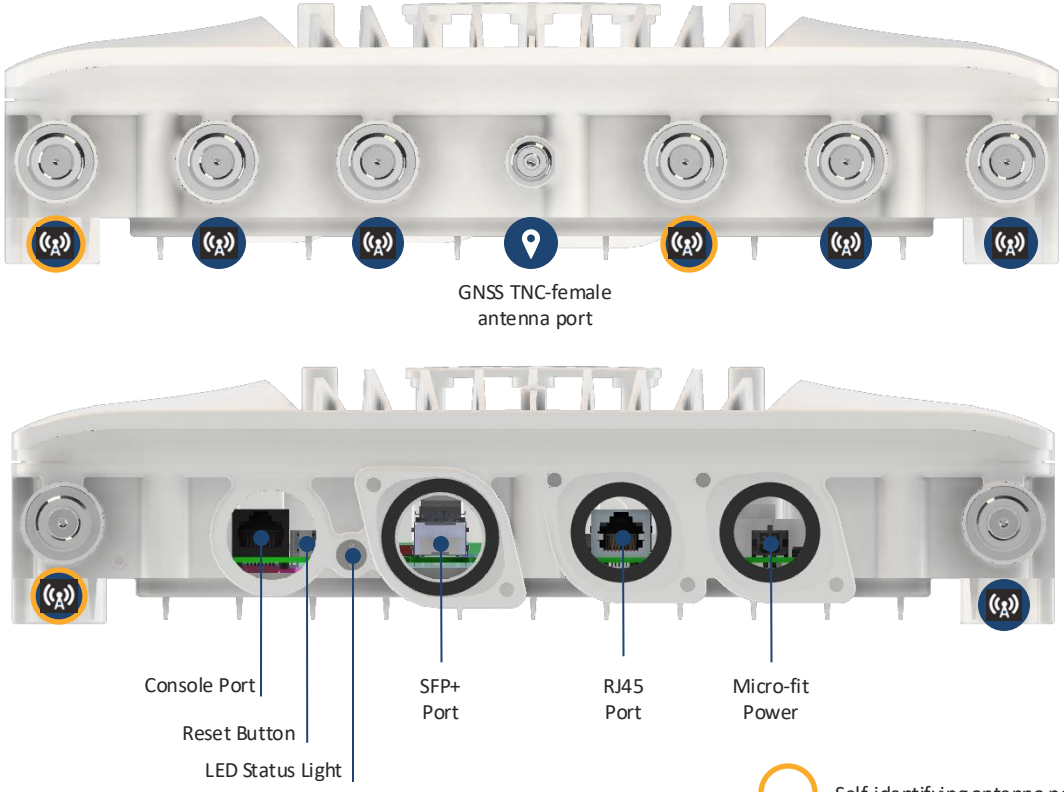
Catalyst® IW9167E Access Point



Flexible hardware options

- 1 x 5Gbps mGig RJ45 Interface
- 1 x SFP/SFP+ interface
- Dual power options
  - PoE-in (802.3at, 802.3bt, UPoE)
  - 24-48 VDC (max voltage range: 18 to 60 VDC)
- Dual mounting options – Pole & Wall mount
- IP66 and IP67 rated
- Shock and vibration resistant, EN50155 (Rail certified) with optional M12 adapters

Port overview



Self-identifying antenna port

* Hardware ready - supported in a future software release († Cisco URWB only)

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802.3bt PoE capable IE switches

PID	IE-3300-8U2X	IEM-3300-4MU
Base system or expansion module	POE Base System	Expansion module -compatible with IE-3300 & IE-3400 POE Base systems
Uplink Speed	2 x 10Gig	NA
Downlink Speed	8 x 1Gig	4 x 2.5G (mGig)
PoE Ports	8	4
Per Port PoE	60W (802.3bt type 3)	90W (802.3bt type 4)

IW9167E Variants

PID		Hardware		Software		Licensing
-AP		IW9167-x  x=regulatory domain/ROW	+	CAPWAP/MESH Software k9w8 feature set		DNA Licensing
-URWB	=			Unified Industrial Wireless (UIW) Software k9c1 feature set*	+	URWB IW Network and IOT-OD License
-WGB†						*No Separate License Required*

† WGB available on IW9167 with IOS-XE / UIW release 17.11.1+

* boot flag set at factory for URWB or WGB mode

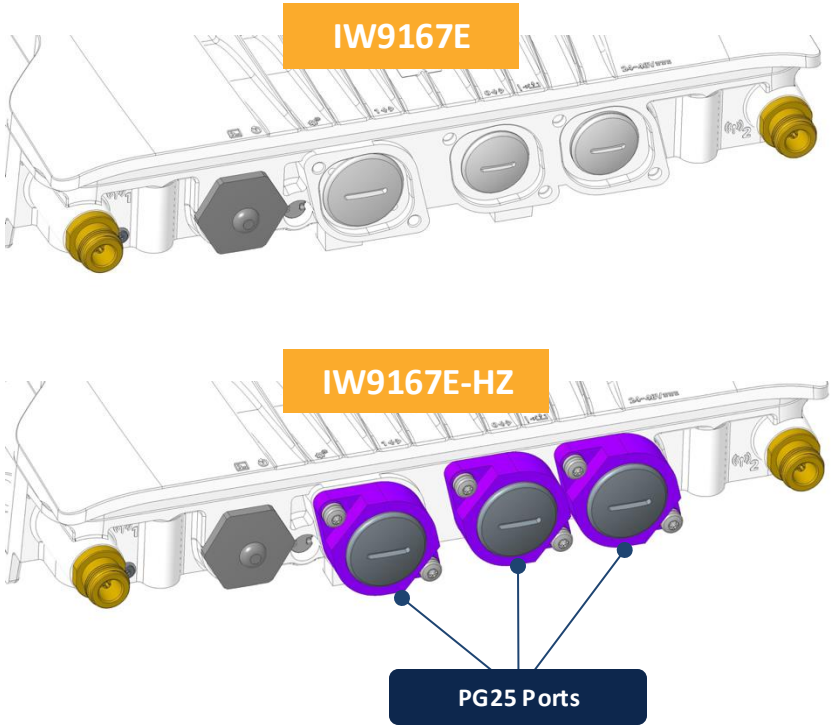
Catalyst IW9167E-HZ

Catalyst IW9167E-HZ Hardware Specifications

- Catalyst IW9167E-HZ shares all HW specifications listed for IW9167E unless stated otherwise
- Catalyst IW9167E-HZ has permanent PG25 ports extending .35” on bottom of Access Points but do not exceed overall dimensions listed
- Class I, Division 2, ATEX, and IECEx rated

Note: Weight for IW9167E-HZ is 9.4 lb (4.3 kg)

*M12 adapters are not compatible. See Installation Guide for gland requirements



Hazloc Supported Antennas




Model	AIR-ANT2513P4M-NS	AIR-ANT2588P4M-NS	AIR-ANT2547V-N-HZ	IW-ANT-OMV-2567-N
Ports/ Connector(s)	(4) N(f)	(4) N(f)	(1) N(m)	(1) N(m)
Radiation Pattern	Directional	Directional	Omnidirectional	Omnidirectional
Polarization	(2) Vertical (2) Horizontal	(2) Vertical (2) Horizontal	Vertical	Vertical
Gain, 2.4 GHz	13 dBi	8 dBi	4 dBi	4 dBi
Gain, 5 GHz	13 dBi	8 dBi	7 dBi	7 dBi
Gain, 6 GHz	-	-	-	7 dBi
Dimensions	36.8, 50.7 ,2.11 cm 14.5, 20, 0.8 in	30.5, 17.8, 2.6 cm 12, 7, 1 in	28.2, 3.2, 3.2 cm 11.1, 1.25, 1.25 in	28.7, 3.2, 3.2 cm 11.3, 1.25, 1.25 in

The bridge to possible

LTE/5G considerations

A complete portfolio

Secured and optimized for *every* use case

Demanding, mission critical deployments

ATMs, low voltage substations,
roadside traffic cabinets , renewables

Remote monitoring,
streetlights, intersections, advanced metering

Fleet, first-responders, pipelines

Mission-critical, Factory, high voltage substations

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Additional PIMs to Industrial Routing Cellular Portfolio

Platforms Supporting LTE/5G Modules

IR1101

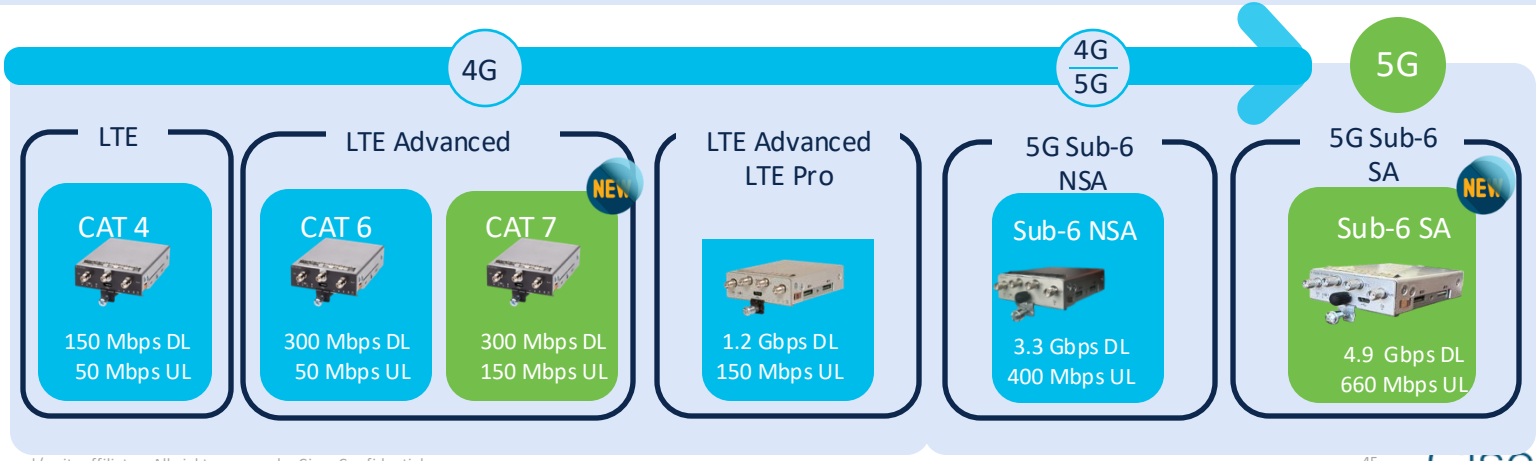
- Supports LTE CAT4/6/7/18 & 5G Sub-6 pluggable interface modules (PIMs)

IR1800

IR8140

- Pluggable: Variants supporting LTE CAT4/6/7/18 & 5G Sub-6 pluggable interface modules (PIMs)

IR8340



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Why Next-Gen 5G PIM?

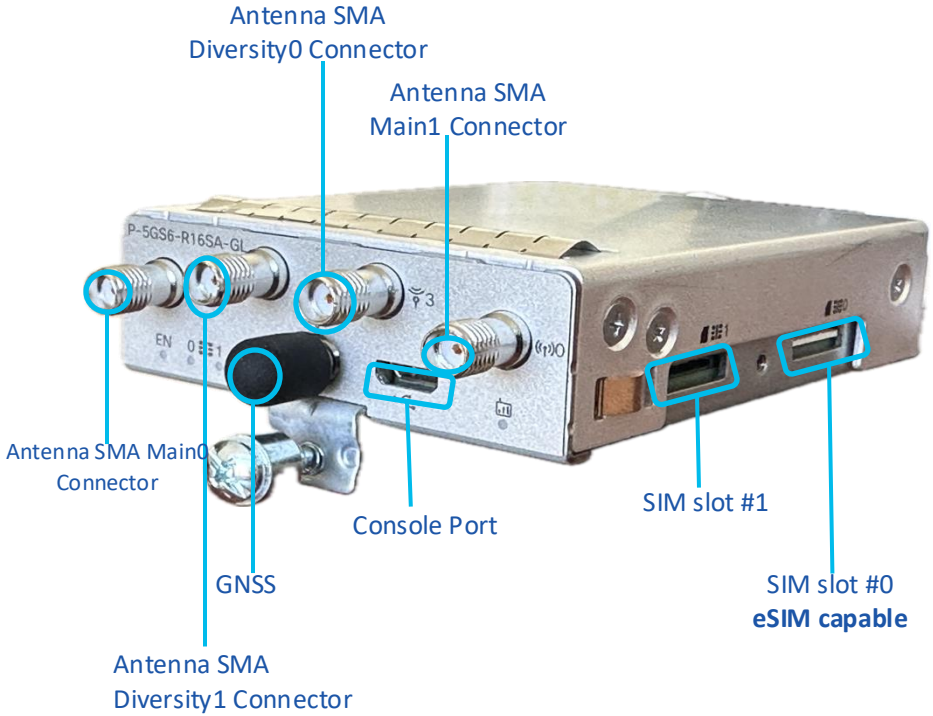
3 takeaways

- Upgradable architecture and ultimate flexibility
  - Enhancements introduced with 3GPP Release 16
- New 5G capabilities
  - SA **public & private**, network Slicing, new bands, etc,,
- Optimized for higher throughput
  - 4.9 Gbps DL / 660 Mbps UL

End-to-end managed solution with SD-WAN and FND

5G SA Pluggable Module

- Shared Cellular pluggable modules with Enterprise routers and IR platforms
- 4x4 MIMO SMA antenna ports
- Console port
- GNSS port
- 2 Removable physical SIM slots
  - ✓ Supporting eUICC SIM on SIM slot 0
- LEDs for the status of module, SIM, and service
- Supported on the base and EM slots on IR1101
  - ✓ 5G Performance on EM is less than 400 Mbps (using USB2 vs using USB3 on the base)



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