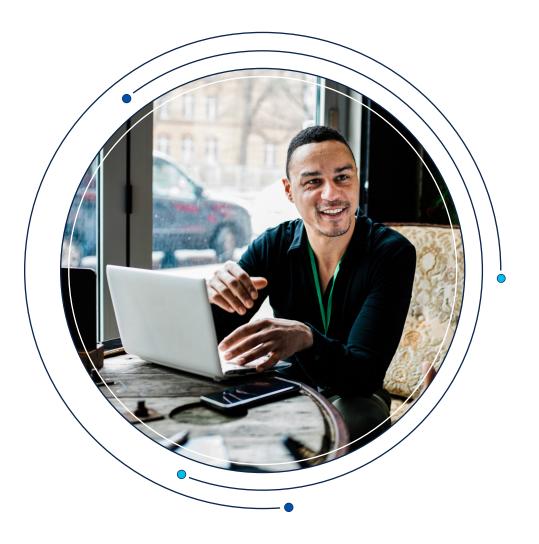


# ((( III ))) I Cisco Industrial Wireless Monitor



Cisco<sup>®</sup> Industrial Wireless (IW) Monitor is a networkwide, on-premises monitoring tool, allowing any <u>Cisco Ultra-Reliable Wireless</u> <u>Backhaul</u> (URWB) customer to proactively maintain and monitor one or multiple wireless Operational Technology (OT) networks. IW Monitor displays data and situational alerts from every Cisco URWB device in a network, in real time.

IW Monitor supports fixed and roaming network architectures and allows easier end-to-end troubleshooting of any Cisco URWB system. It can be operated as a standalone system or in parallel with a sitewide Simple Network Management Protocol (SNMP) monitoring tool. It is designed to support network installations used in smart cities, rail, mining, ports and terminals, entertainment, smart factories, and military applications.

#### Features and benefits

- On-premises monitoring tool for Cisco URWB
  networks
- Wizard setup for quick and easy installation
  and deployment
- Real-time dashboard displaying uptime, throughput, latency, jitter, and other network Key Performance Indicators (KPIs)
- Customizable section view to easily check groups of radios
- Customizable monitoring alerts for prompt response
- Radio-by-radio data logging with a minimum sampling interval of 300 ms
- Real-time radio configuration display for quick and accurate troubleshooting
- Side-by-side comparison of radio KPIs over time and over vehicle position
- Data logging export via remote syslog

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#### Dashboard view

The dashboard shows overall network performance and offers customizable segmentation of the network into clusters. This allows for easy monitoring of network sections or parts of a fleet of vehicles, maximizing network usage and performance. Clusters can include backhaul point-to-point links, point-to-multipoint distribution networks, vehicle access networks, wayside networks, and vehiclemounted radios. IW Monitor displays and tracks real-time KPIs within each cluster, including the number of active radios, the number of connected IP edge devices, end-to-end latency, jitter, upload and download throughput in real time, and system uptime.

	Co Dashboard	°o Table View	짜 Data Analysis	() Topology	Log							© -1	ahaha cisco
Real-time	monitoring												
(@) ,	inable network performance chec Settings > Network		URWB devices online	2		0 Kbps Throughput TX	0 Kbps Throughput RX	0 Sent Packets/s	0 Received Packets/s	6.50 ms Average latency Last 6 hours trend	<b>11</b> Edge devices	72.2 % Average uptime Last 7 days	
Tunne	I-01											Edit /	
	O out of 1	0 ms Average latency	0 Edge dev	ices	0 % Average up	time							
Trains	-A1	Last 6 hours trend			Last 7 day	s						Edit 🖉	
	O out of 1	0 ms Average latency	0 Edge dev	rices	100 % Average up								
		Last 6 hours trend			Last 7 day								

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## Table view

The table view allows customers to condense sections of the network into a tabular view, isolating specific radio configurations and performance statistics. During troubleshooting, this drastically reduces the time needed to understand system performance on a radio-by-radio basis.

NITOR	Dashboard	Table View	Data Analysis	Topology	Log								© -1
Status	Label		IP Address	Mes	h ID	FW version		Role	Frequency	TX Power	Chanr	nel width	More
MP	Cisco-81.16	1.128	192.168.1.13	5.8	1.161.128	8.8.1.10	R1 R2	Disabled Fixed Infra	- 0 MHz	- 19 dBm	- 160 M	MHz	
ME	Cisco-81.16	1.152	192.168.1.10	5.8	1.161.152	8.8.1.10	R1 R2	Fixed Infra Fixed Infra	5745 MHz 5180 MHz	17 dBm 19 dBm	80 Mi 160 N		
Latency 4.60 ms	Jitter 23.75 ms	Lice	nse Intage									[2] Dev	ice configuration page
Realtime	e links R1											Frequency	y: 5745 MHz
Link						Total Tpt.	Throughput	M.C.S. (rate)		L.E.R.	P.E.R.	RSSI	
Cisco-81.10 192.16	61.152 (R1) 58.1.10 ←	Cisco-1.72.0 5.1.72.0	35 (R1) 35			0.08 Mbps	0.03 Mbps 0.05 Mbps	0/2 LGI 20 MH 0/2 LGI 20 MH		0 %	0 %	- -56 dBm	TX RX
Cisco-81.16	61.152 (R1) 58.1.10	Cisco-1.72.9	90 (R1)			0.05 Mbps	0.02 Mbps	0/2 LGI 20 MF		4 %	0 %	-	TX RX
132.10		0.1.72.0					0.03 Mbps	0/2 LGI 20 MH	z (0 Mbps)		-	-42 dBm	64
Cisco-81.16	61.152 (R1) 58.1.10	Cisco-1.72.9	92 (R1)			0.05 Mbps	0.02 Mbps	0/2 LGI 20 MF	z (0 Mbps)	7 %	0 %	-	тх
192.16	58.1.10 -	5.1.72.9	92				0.03 Mbps	8/1 LGI 80 MH	iz (390 Mbps)	-	-	-57 dBm	RX
Cisco-81,10	61,152 (R1)	Cisco-1.72.9	93 (R1)				0.02 Mbps	0/2 LGI 20 MH	iz (0 Mbps)	4 %	0 %		тх
192.16	61.152 (R1) 58.1.10 ←	5.1.72.1	93			0.05 Mbps	0.03 Mbps	0/2 LGI 20 MF	iz (0 Mbps)	-	-	-69 dBm	RX
Channel u	tilization break	down											TX Ø RX
5.1.72.85 0.17 %			5.1.72	2.90 • 0.03 %		5.1.	72.92 • 0.03 %		5.1.72.93 • 0.03 %				99.67 %

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#### Data analysis

The data analysis view allows data to be recorded from URWB radios at a user-defined rate. Individual radios and parameters can be analyzed at customized sampling rates, allowing comparative analysis of network performance over time while enabling a better understanding of past network behavior and future improvement. Sampling rates can be set to a minimum interval of 300 ms per radio, allowing data to be collected at a rate two orders of magnitude higher than the nextbest SNMP monitoring tool on the market. This is particularly valuable where traditional **SNMP or Internet Control Management** Protocol (ICMP) monitoring solutions are inadequate-for example, when a network has latency requirements of less than 1 second. Data can also be exported in different formats to facilitate easier, guicker reporting.



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### Topology

Topology view provides an overview of the whole network while making it possible to focus on the KPIs of a single radio deployed along the network.

IW Monitor also allows customers to synchronize network information with available vehicle positioning data (support for GNSS telemetry data will be available in future releases\*). This is particularly valuable in environments such as mines, where wireless infrastructure has a dynamic nature, or in container terminals, where RF network performance can vary dramatically depending on the current location. \*Planned for spring/summer 2024.

## IW Monitor deployment options

IW Monitor is available as a virtual image for installation on a local server. It captures high-frequency radio telemetry in real time, preventing duplicated latency and delivering precise network metrics.

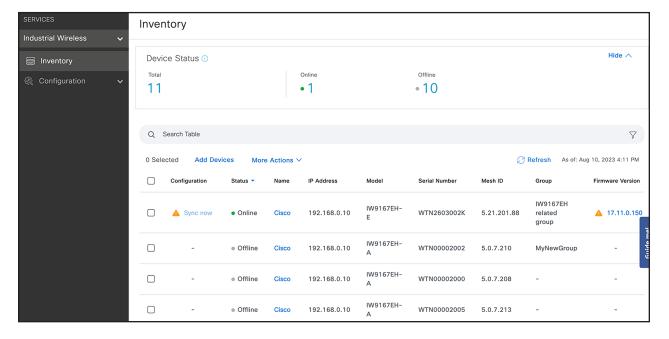
Cloud access is also possible for a unified experience when managing the URWB IW devices through the Industrial Wireless service.

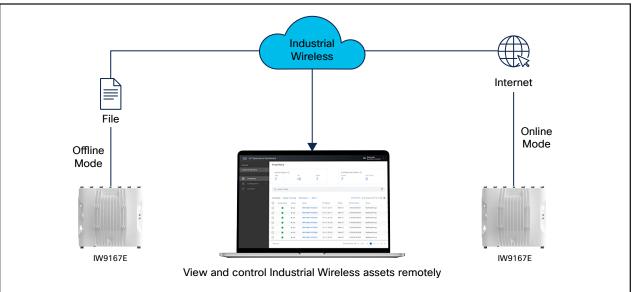
				(d) (*) (f	5.21.200.136 ^ 10.115.11.116/24	
			Test116 MP - 10.115.11.116		Mesh ID 5.21.200.136	උ Web page
	ME - 10.115.11.127		MP - 10.115.11.116		Model IW9167	Firmware 17.12.2.17
	5180 18 5200			)	R1 Freq 5200 MHz	R2 Freq
	P 10.115.11.119				R1 Ch. width 20 MHz	R2 Ch. width -
Å	5180 R2				R1 Role Fixed Infra	R2 Role Disabled
Aggr. Throughput 0.02 Mbps Frequency 5200 MHz X						
Test116 (R1) 10.115.11.116 ↔ (R2) 10.115.11.127						
UPLINK → Throughput LER RER. RSSI MC5   Rate 0 Mbps 0% 0% -53 dBm 7/2 SGI @20 MHz   130 Mbps						
DOWNLINK ← Throughput LER P.E.R. RSSI MCS   Rate 0.02 Mbps 0% 0% -27 dBm 5/2 SGI @20 MHz   104 Mbps						
Channel utilization Others						

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#### Industrial Wireless service

While IW Monitor is used to monitor URWB networks, the Industrial Wireless (IW) service is used to provision and manage URWB IW devices. It is a secure, cloudnative, scalable service. It also allows you to configure and upgrade the firmware of connected devices remotely. For air-gap networks, the offline mode still allows for creating templates and configuration files that can be locally uploaded to the device through the WebUI or commandline interface. To learn more about the IW service, see the <u>Cisco Industrial Wireless</u> Service in At-a-Glance.





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