

celona

Product Brief

Private Wireless and Celona 5G LAN Overview



What is Private Wireless

Private Wireless is an LTE/5G network stood up by the enterprise to exclusively cater to its wireless needs. In the U.S., most private cellular networks use the CBRS (Citizens Broadband Radio Service) band, whereas worldwide other bands like n77, n78, n79 are being used.

While Wi-Fi is a great fit for home or office environments, the technology does not provide reliable wireless connectivity at uncarpeted enterprise locations such as [distribution centers](#), [manufacturing facilities](#), oil & gas fields, [mining sites](#), large public venues, ports & transportation hubs etc. These operations require vast outdoor/indoor wireless coverage that cannot be delivered reliably and cost-effectively by Wi-Fi. Public cellular coverage on the other hand is expensive and enterprises are unable to manage their own network and setup where coverage is required.

Wireless connectivity challenges in uncarpeted enterprise include:



Spotty wireless coverage

Unreliable connectivity causes delays in gathering and transmitting data, often resulting in a loss of productivity. Wireless signal strength is patchy around temporary storage across sites.



Unreliable Quality of Service (QoS)

Wi-Fi is unable to guarantee throughput and latency levels for business-critical applications.



Mobility issues

The constant movement of personnel and equipment across a large area requires endpoints to move from one access point to another. As devices on the Wi-Fi network scan and connect to the nearest access point, connections often drop in motion. As a result, some applications constantly disconnect in this environment leading to a poor user experience and significant drops in productivity.



Total cost of operations (TCO)

To cover the footprint of large outdoor and indoor semi-industrial environments, Wi-Fi requires a large number of access points. Significant engineering resources are needed to undertake complex mesh deployments and install new cabling to connect the access points. Overall, this leads to an extremely high total cost of ownership.




Future applications

Applications such as autonomous guided vehicles (AGV), high-def video surveillance, and automated gate check-in/exit of vehicles all require a far more reliable and consistent wireless link than Wi-Fi can deliver.

What is Celona 5G LAN

Celona 5G LAN is a turn-key private wireless solution uniquely engineered for the enterprise. It includes:



4G/LTE APs

- AP 12 LTE Indoor
- AP 11 LTE Outdoor
- AP 13 LTE In/Outdoor

5G NR APs

- AP 20 Multi mode Configured 5G
- AP 22 5G Indoor
- AP 21 5G Outdoor

Celona Access Points

Enabling the highest levels of performance and range seen in enterprise wireless, Celona APs come integrated with private spectrum access globally and self-organizing RF intelligence to maximize network capacity - indoors and out.

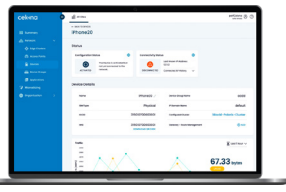
[More info](#)



Celona Edge OS

A scalable and resilient cloud-native network operating system, built for enterprise deployments. It delivers converged 4G/5G core services, intelligent spectrum management and a full-function IP stack for seamless connectivity into enterprise LANs.

[More info](#)



SIMs/eSIMS

Celona Orchestrator

A cloud-based network orchestration and management platform that delivers complete visibility and control over your network, devices, and traffic flows - including zero touch installation of Celona SIMs, APs, and Edge OS.

[More info](#)

The industry's only turnkey private wireless expressly engineered for the enterprise

Celona 5G LAN delivers an end-to-end solution from the radio, core, and spectrum management to network and subscriber management systems. It's built from the ground up to create the best possible Day 0, Day 1, and Day N experience for customers at a lower TCO.

[5G LAN routing feature brief >](#)

Enterprise friendly management and operations

Get unmatched simplicity and ease-of use with Celona's cloud-based management system for deploying, configuring, and monitoring your private 5G network.

[Orchestrator brief >](#)

Tight integrations to secure all wireless communications

A business-critical wireless network requires enterprise grade security to protect against cybersecurity threats. The Celona 5G LAN solution extends the inherently strong security architecture of cellular networks, such as support for eSIM and IMEI lock, with a tight integration between existing enterprise security systems to safeguard the network from edge-to-cloud.

[5G LAN security whitepaper >](#)

Industrial strength private wireless designed for the most critical business apps

Business critical apps need deterministic performance from wireless, but the exact requirements vary from app to app. Celona 5G LAN features MicroSlicing technology for deterministic performance for all your mission-critical applications.

[Microslicing feature brief >](#)

Global spectrum model support

A wide range of spectrum bands for LTE and 5G ensure Celona is an ideal fit for global facilities looking for a common networking infrastructure.

[AP product brief >](#)

Device certification program eliminates guess work on compatibility

Many popular devices used at uncarpeted enterprise are certified to work with Celona private wireless:

- Zebra TC26, TC58, TC78
- Zebra ET45, ET85
- Zebra L10 Series tablet
- Honeywell CT47
- Getac: ZX10, F110G6
- Digi: EX50, iX10
- Sierra Wireless RV55
- Cradlepoint R500
- MultiTech MultiConnect rCell 600

[See full list of certified devices >](#)

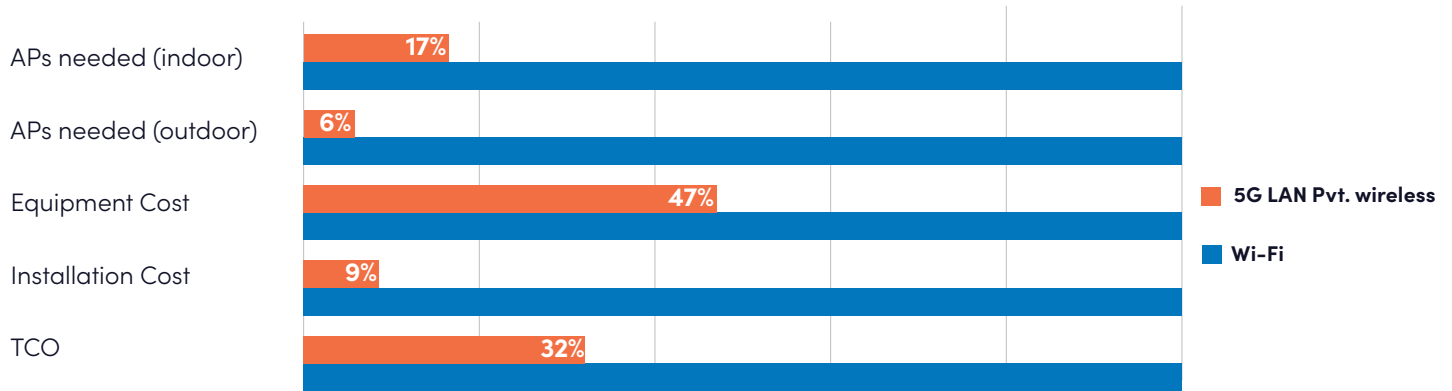
Connectivity challenges & the unique advantages of private wireless

Issue	Public Cellular Best for roaming outside the company's facilities	Wi-Fi Best for home & office	5G LAN Private Wireless Best for indoor/outdoor uncarpeted enterprise
Spotty coverage Spotty wireless coverage indoor and especially outdoor causes delays in gathering and transmitting data, often resulting in loss of productivity	 <p>Cellular coverage depends on the location of macro towers, construction materials, landscape and other external factors</p>	 <p>Poor Network Coverage especially outdoors Lower transmission power Susceptibility to spectrum noise - co-channel interference</p>	 <p>More pervasive wireless due to higher transmit power, lower noise floor and low wireless interference</p>
Unreliable QoS Mission critical applications require definitive latency and throughput	 <p>Public Cellular is best effort and cannot guarantee QoS without expensive on-site installations</p>	 <p>No guarantee on throughput and latency as Wi-Fi does not support deterministic QoS with strict priority Contention-based (CSMA-CA), requiring devices to "fight" for access, making prioritizing challenging</p>	 <p>Guaranteed SLA for critical applications. 5G LAN features Microslicing™ technology that enables deterministic QoS with strict priority. Guaranteed bit rate and guaranteed latency values can be configured for each device and application</p>
Mobility Issues Autonomous vehicles, robotics traverse large areas at speeds > 25 mph	 <p>Mobility outdoors is ok, but indoors is a challenge due to poor signal strength and depends on building materials used</p>	 <p>Not designed for seamless mobility - handover decisions made by devices which have to disconnect and reconnect to APs based on proximity</p>	 <p>Private wireless is specifically designed for seamless mobility within the company's indoor/outdoor facilities. The network infrastructure controls handover decisions that are precisely timed</p>
Inadequate security/Control Enterprise IT team need control of QoS and security policies	 <p>Carriers set the routing, security and QoS policies. Enterprises have very little control</p>	 <p>Many Wi-Fi networks utilize pre-shared keys and open SSIDs to allow for IoT and/or guest device connectivity, opening doors to additional risk factors for critical enterprise infrastructure</p>	 <p>Complete control of routing, security and QoS policies. End-End security for data in-flight and at rest secured using SIM/eSIM technology</p>
Constantly increasing costs Total cost of providing wireless networks over a large area is cost prohibitive	 <p>Public cellular charge based on consumption and subject to overages and complex contracts</p>	 <p>More APs are required due to lower coverage range of Wi-Fi. Outdoor installs require expensive installation, trenching and cabling</p>	 <p>Fewer APs due to higher coverage range of Private Wireless. Outdoor APs can be roof mounted to provide very large outdoor coverage, avoiding cost of trenching, cabling etc.</p>

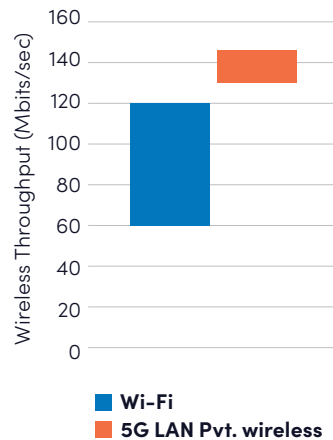
Performance of private wireless vs. Wi-Fi

Comparing Wi-Fi and Pvt. Cellular

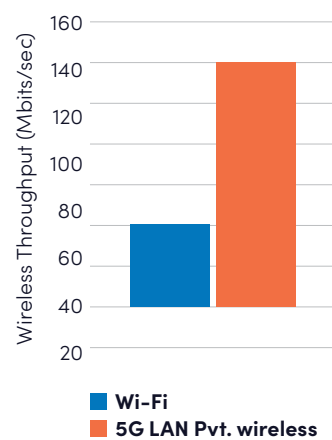
(Based on data from an actual distribution center.)



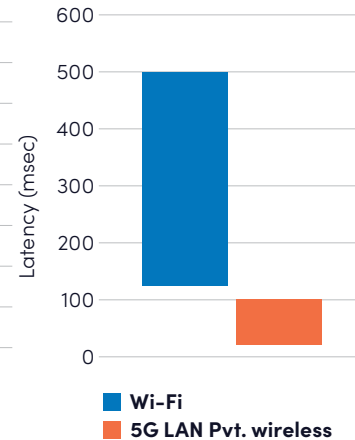
Throughput in a Loaded network



Throughput in motion



Latency in a Loaded network



Latency in motion



Real-life case study: Celona in action

In a paid study conducted by Celona, several stakeholders at a functioning warehouse were asked about their wireless requirements and operational challenges associated with poor connectivity. With both the Wi-Fi and Celona's 5G LAN Private Cellular solution available at the warehouse, researchers performed a comprehensive analysis and comparison of the two wireless technologies in terms of network performance and Total Cost of Ownership (TCO).

Watch the webinar replay to learn the findings and recommendations for IT managers deploying wireless not only at Warehouses and distribution centers, but also at seaports, construction sites, oil and gas fields

[WATCH WEBINAR](#)

Learn more about the [Celona Platform](#)



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