Spotty, unreliable connectivity affecting student experience and safety on campus?

Celona 5G LAN provides secure and scalable public and private cellular connectivity for campuses

celona

Educational institutions, ranging from schools to universities, are centers for innovation and the exchange of ideas. These facilities have a growing list of network demands, from classroom equipment and labs for video creation, staff communication, and sports arenas. In addition, one of the key requirements in recent times is enhancing campus security with the ability to provide emergency alerts and e911 service to the smartphones of every student and staff on campus. Such a solution would replace traditional blue-box security systems, which are outdated and rarely get used on campus

Public cellular coverage has been problematic at these institutions. On one hand, campus IT teams have little control of public carrier coverage on campus and on the other hand, technologies like Distributed Antenna Systems (DAS) also fall short in providing a robust, scalable solution to meet campus needs. Traditional Wi-Fi networks and fixed Ethernet infrastructure often fail to meet key criteria such as dependability, security, performance, coverage, capacity, and mobility.

Celona 5G LAN offers campuses a private 4G/5G solution that not only enables connectivity for campus operations but also provides 5-bar public wireless coverage for staff, students, and guests in hard-to-reach places throughout the campus both indoors and out.

> *Celona has helped reduce the costs and complexity of extending wireless connectivity campus-wide. With the extended range, roaming, and decreased latency, we can now deliver seamless mobile connectivity across the entire campus.*
>
> **Geoffrey Cirullo**
> Deputy CIO
> Stanislaus State

Why is reliable wireless connectivity critical for Higher Ed. Campuses?

Improve campus safety

- Support e911 and wireless emergency alerts (WEA) on student and staff's mobile phones regardless of their Mobile Network Operator (BYOD)
- Prioritize campus security communication during an event
- Support video surveillance and access control for remote campus locations without running expensive cabling.
- Provide a more accessible alternative to using campus blue emergency boxes

Provide public cellular coverage wherever needed

- Indoor: Classrooms, dorms, auditoriums, gyms, cafeterias, libraries, medical centers
- Outdoor: Parking garages, quads, agricultural properties, research facilities
- Mixed: Stadiums, auditoriums.

Improve connectivity for campus operations, advanced research and learning

- Segment private wireless network to prioritize university needs
- Reliable connectivity at gaming events: Point-of-sale terminals, coach-player communication
- Ability to setup connectivity at remote research sites, farm land etc, without additional cabling
- High bandwidth wireless connectivity for AR/VR/robotics equipment.

Challenge with existing wireless technologies

Existing wireless technologies have failed to keep up with campus connectivity needs.

Public cellular networks

- Good coverage depends on factors like the distance from the macro cell tower, the construction material used in campus buildings, and the surrounding landscape and obstructions that can block signals, population and topography

- Universities lack the ability to manage and control security policies, QoS in a public cellular network

- Can become cost prohibitive with data usage fees charged for applications like HD video camera streams.

Wi-Fi

- Requires a significantly large number of access points (APs) to cover a campus, impacting cost and operations.

- Lacks the ability to provide emergency and e911 calling capabilities

- Deteriorates as the large number of devices connecting to the network grows

Traditional Distributed Antenna System (DAS)

- Cost-prohibitive for most campus locations

- Complex deployment and MNO contract negotiations can take months to deploy

- MNO DAS subsidies are going away for all but the largest deployments (arenas and convention centers)

> " *Celona's 5G LAN system has not only allowed us to improve the performance and maximize our investment in critical stadium systems but has given us the control we needed without the complexity associated with cellular technology,* "
>
> **Jeff Patton,**
> Network Manager at HSG.

Why consider Celona 5G LAN?

Celona 5G LAN is a private 4G/5G network that can be deployed across a campus, including in hard-to-reach areas. The same network can provide 5-bar public cellular coverage for T-Mobile and AT&T subscribers as well as support private cellular use cases for university operations and business critical applications.

These include:

- Coverage and capacity for students, faculty, and staff
- IoT devices for asset tracking, environmental monitoring, and smart building management
- Campus security and safety
- Research and innovation at innovation labs
- Mobile applications for accessing campus resources and services
- Smart parking, letting drivers know where cars can be parked
- AR/VR labs for immersive educational experiences
- Digital signage, allowing administrators to provide up-to-date information easily
- Stadiums, ensuring a positive game experience for fans

Key benefits:

- Network is owned and managed by campus IT team
- Scale as needed from a single room to campus wide: indoor, outdoor, parking garages, etc
- Supports e911 calling anywhere inside the campus on all carriers and BYOD devices
- Highly reliable and faster network supporting large number of simultaneous devices
- 1 private wireless access point can connect up to 1M Sq-ft outdoors or 50,000 Sq-ft indoors
- Plugs directly into existing enterprise LAN infrastructure and network policies.
- Maximum security includes SIM authentication and integration with existing firewalls and Network Access Control systems.
- Deploys in just a few weeks at a fraction of the cost of DAS.
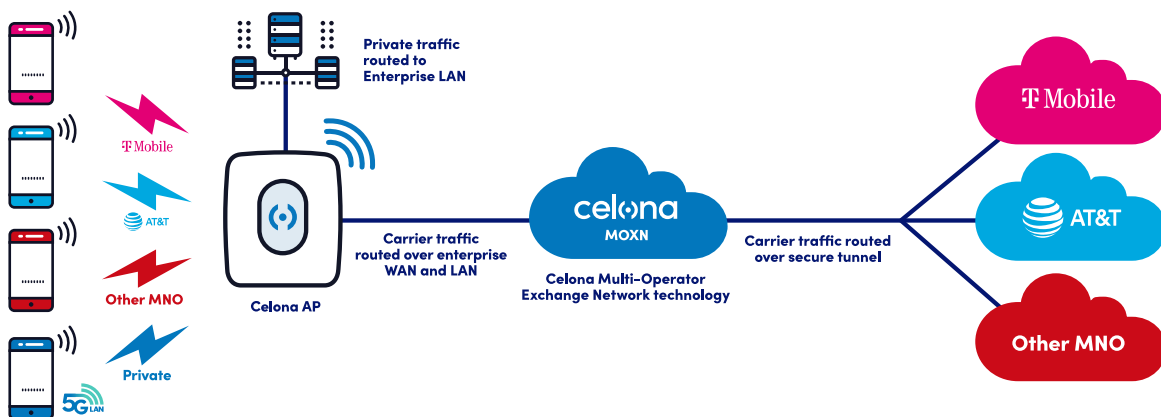
5G LAN technology is a real game changer allowing us to meet new demands driven by COVID while future-proofing our infrastructure for new use cases that haven't been feasible with conventional wireless.

Geoffrey Cirullo
Deputy Chief Information Officer
CSU Stanislaus

Network	5G LAN Public Network	5G LAN Private Network
Description	5 bars of Public Carrier (T-Mobile, AT&T) coverage wherever needed	High performance coverage for university operations, including security and safety, smart building management, asset tracking and more.
Devices/SIM	• Most carrier provided phones. • Carrier provided SIMs/ eSIMs	• Wide range of devices, including phones, tablets, cameras, and IoT sensors. • Celona Private wireless SIM/eSIM
Use cases	• Supports e911 calling + emergency services. Campus safety calling • Improves carrier coverage in areas with poor MNO reception	• Security Cameras • OT devices- tablets, smartphones etc. • Access control • Point of sale terminals • Autonomous robots • VR/AR applications.
Works where-ever coverage is needed	• Indoor: Classrooms, dorms, auditoriums, gyms, cafeterias, libraries, health clinics • Outdoor: Parking garages, research facilities, microfarms, quads • Mixed: Stadiums, auditoriums, research facilities	

Product Documentation

Solution Brief: In-building public cellular coverage from Celona
Product Brief: Celona Neutral Host & MOXN™ Architecture

Want to learn more?

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