



Solves coverage issues
at K-12 and Universities
for voice and data.

-  Performance Leadership
-  Ease of Install
-  Leaders in Value
-  Fastest Project Timeline
-  Carrier Grade Approved

Improving cellular coverage is a growing need for schools and universities. This is partially driven by trends of students using smart phones in classrooms as a learning tool, but more often driven by public safety needs to connect to 9-1-1. Cellular connectivity is no longer a luxury, and Wi-Fi is simply not a good enough solution for this problem. Nextivity has partners across the country that are installing these solutions to help educators, in a quick and reliable way.






According to the National Emergency Number Association, more than 80 percent of 9-1-1 calls are made from wireless devices in most areas of the U.S. In accordance with guidelines set by the Safer Buildings Coalition for location accuracy when emergency calls are placed from a mobile phone from inside buildings, schools need to ensure that staff and students can make 9-1-1 calls from anywhere within its facilities in the event of an emergency.

Cel-Fi solutions are available for AT&T, Verizon, T-Mobile, Sprint, and FirstNet coverage in buildings, campuses, remote locations, and vehicles for K-12 schools and universities. Cel-Fi products are the most powerful solutions available in the market, designed for quicker installation, and affordability. Cel-Fi products provide uniform, high quality cellular signal throughout a building, and are scalable to the size needed. Cel-Fi solutions are carrier-grade technology and guaranteed network safe.

Unlike older analog boosters and passive DAS technology, Cel-Fi QUATRA delivers a cellular signal that is up to 1000x stronger, utilizing CAT 5e cabling for RF and Power over Ethernet, with no signal attenuation right to the perimeter of the building. Cel-Fi QUATRA can be installed in just days (compared to months typical of other solutions), and at a price point that meets the budget. Communication is not optional in the educational environment, rely on equipment that ensures the best coverage.

The award-winning carrier-grade solution.



-  **Highest Coverage Gain:** Up to 100 dB Max Gain
-  **All Digital:** Cat5e PoE/RFoE Solution
-  **Scalable:** Up to 75K Sq. Ft. Coverage per Network Unit
-  **Dual Mode:** Off-Air or SuperCell Mode
-  **Network Safe:** Carrier-Approved

Cel-Fi Laredo School District (TX) Solution



OVERVIEW

Laredo Independent School District (ISD) is made up of 33 educational institutions including elementary, middle, and high schools, and has an annual average enrollment of 24,000 students and more than 4,500 employees. For the safety of its students and staff, the Texas-based school district sought an in-building cellular coverage solution to alleviate inadequate cellular service and provide coverage into and throughout its facilities.



THE CHALLENGE:

- Inadequate cellular service

THE NEED:

- Student Safety
- Security
- Emergency Communications
- Mass Notifications
- Safer Buildings Coalition location accuracy for 9-1-1 calls

SOLVING COMMUNICATION NEEDS

"Laredo Independent School District, like many other institutions, has recognized a need to fortify communications for staff and students within our facilities. Our students' safety and security are paramount. Having reliable communications through their mobile devices is now a basic need at our campuses for emergency communications and mass notifications," says Miguel Munoa, Assistant Superintendent of Technology Services at the Laredo, Texas-based school district. Laredo ISD is a member of the South Texas Purchasing Alliance (CTPA).

NEED: In accordance with guidelines set by the Safer Buildings Coalition for location accuracy when emergency calls are placed from a mobile phone from inside buildings, Laredo ISD wanted to ensure that staff and students could make 9-1-1 calls from anywhere within its facilities in the event of an emergency.





THE CHALLENGE:

- School district requires reliable cellular coverage in multiple buildings ranging from 10,000 to 200,000 square feet to meet safety guidelines
- Building materials block cellular signals from penetrating campus facility walls
- Solution must meet strict technical and safety requirements

Laredo ISD was experiencing dead zones in its facilities due to building materials that were obstructing cellular carriers' macro signals from penetrating into and throughout campus buildings. This included sheet metal roofs and in some cases double layers of roofing from when a new roof was built on top of an older roof during recent renovations. Laredo also added new cinderblock outer walls to the original brick walls as part of the renovation. Cinderblock is a common construction material for school facilities, and is known for blocking cellular signals.

THE SOLUTION: CEL-FI QUATRA



The district was looking for an off-air solution that amplified and distributed signal from the cellular towers for all major U.S. carriers. ISD also wanted to minimize new cable runs, and keep them hidden. Remote management and monitoring was a must, to deliver updates and ensure up-time. The design solution for Cel-Fi QUATRA was cost-effective, while meeting and exceeding ISD's technical and safety requirements.

FUTURE PROOFING: The design leveraged the Coverage Units (CUs) with antenna extensions because this configuration enabled signal to reach in all of the areas that needed to be covered. There was a 90% improvement in the signal throughout the entire facility. This design covers all areas and delivers a future-proof solution.

THE RESULTS: *"The Cel-Fi QUATRA solution offers a simple, manageable system that is scalable, reliable, and carrier agnostic. The result is enterprise grade service delivery that provides consistent communications for all of our students and teachers while giving them peace of mind as they carry out their day-to-day activities at our campuses,"* says Munoa.

Cel-Fi QUATRA's innovation comes from its ability to boost signal per band need by carrier, this intelligence is part of the unique "Smart Technology" that exists in the phone itself. Unlike passive DAS BDA solutions, which just takes what is outside and simply blasts it indoors with noise and all. Cel-Fi QUATRA is the only carrier-grade smart solution on the market, intelligently boosting each individual operator's signal in a safe way; all while providing the tools for installers to ensure the best performing solution possible.

Cel-Fi K-12 Solutions



Franklin Elementary School (IN)



Problem: Multi-School District, complained of poor cellular coverage throughout their buildings. Needed carrier-grade coverage and quick project timelines within planned budget.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

Glen Lake School (MI)



Problem: School complained of very poor signal quality throughout. Needed a solution for all carriers.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

Minimbah State School (AU)



Problem: Poor Cellular Coverage affected the School's ability to run their business via their wireless EFTPOS machine in the administration office. Payments were not always able to be collected causing problems with parents and staff alike.

Solution:

- **Equipment Used:** Cel-Fi GO

"Not only are staff happy to have a fully operational EFTPOS machine ensuring they can deal with parent payments on the spot, but they also have a solid 5 bars of signal throughout their offices. The signal amplification extends inside and outside the admin building, with parents and teachers now able to sit in the shade around the building perimeter and use their personal phones with a solid four bars of signal." – Dan Campbell, Integrator

Fayetteville City Schools (TN)



Brother Martin High Schools (LA)



Plug & Play: "When school offices need a cellular coverage solution, they can use a temporary solution while awaiting a permanent multi-carrier solution. A plug & play self-install solution like Cel-Fi PRO (AT&T) and Cel-Fi DUO+ (Verizon / T-Mobile), can get an office running in a matter of minutes." – Bruce York, Nextivity Inc.

Cel-Fi University Solutions



University Center AT LYNN University (FL)



Problem: Newly built University Center supports retention goals by providing a central hub that encourages engagement and facilitates inclusion for up to 3,000 students. The three-story, 60,000 square foot building features restaurants, collaboration spaces, student affairs offices, and more. Low-E glass windows were installed for energy efficiency, but their metallic film prevented cellular signals from entering the building.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

"Students, faculty, and staff can now use their cell phones indoors thanks to strong, reliable signals powered by Cel-Fi QUATRA. Cel-Fi QUATRA definitely makes their lives easier and more convenient, and adds to the experience we're trying to provide at Lynn University." – Zach Minich, Project Manager

Science Center at University of Wyoming (WY)



Problem: Several Masonry buildings across campus suffer from poor signal coverage.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

Warren County College (NJ)



Problem: Cellular coverage for all carriers is not good due to macro signal and new construction.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

"As an engineering company, innovation is in our blood," says Werner Sievers, CEO of Nextivity. "Every day since our founding in 2006, we've worked diligently to create solutions that solve the root problem of poor indoor cellular coverage, collaborating with carriers, regulatory bodies, partners, and end users. Cel-Fi QUATRA 4000 represents the best of what we've achieved to date, and we're not finished yet."



Student Housing at Arizona State University (AZ)



Problem: An apartment complex consisting of six buildings, the stucco exterior coupled with its LEED certification made it impossible for cellular signals to penetrate the buildings. There was literally zero indoor coverage on the first two floors with poor coverage on the two top levels.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

"This demographic has grown up in a digital world. Their cell phones are their lifeline, so they need good coverage. Cel-Fi QUATRA CUs will cover a 100-foot radius where everyone else on the market covers a 50-foot radius. This gives you more of a coverage bubble that goes up and down floors as well as just on that individual floor. We were able to use half as many units and stagger and spread them out in the hallways to get great coverage throughout the building and save them money in the design. They didn't want to see these devices, so having half as many was a positive. But most importantly, Cel-Fi QUATRA uses Cat5e cabling and it's so much easier to run a Cat5e down to a coverage unit as opposed to an RG-11 garden hose that doesn't bend, doesn't turn, and it's big and bright blue. It's hard to hide that huge RG-11 garden hose down a hallway. Having a strong cellular connection inside a building is no longer optional, especially for millennials. With Cel-Fi QUATRA, it's easy to make always-on connectivity a reality for those who need it most," says Adam Rubey, Integrator.

University of Texas Medical Center (TX)



Problem: Provide services on the 8 floors in areas of importance and concern at the MARC bldg. Mainly Masonry buildings, poor inside signal coverage.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

VCU Health Community Memorial Hospital (VA)



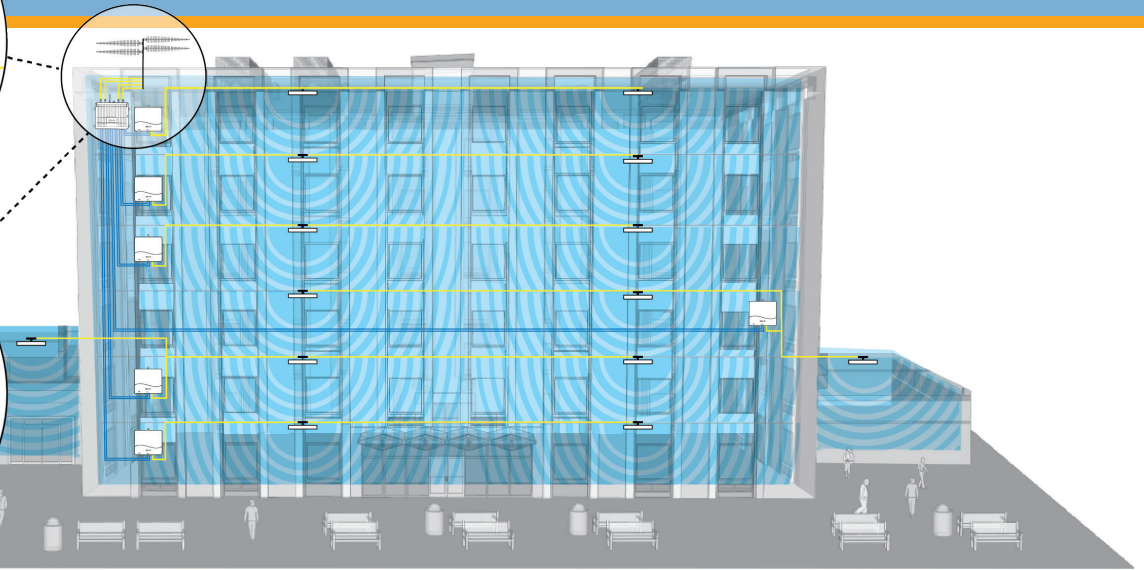
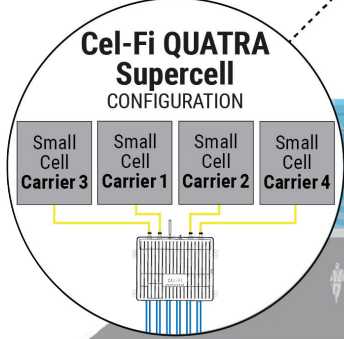
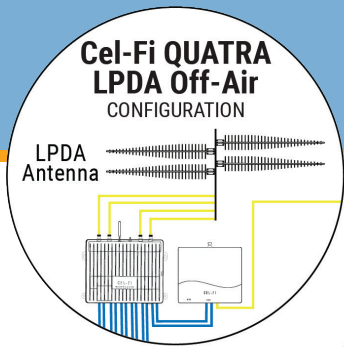
Problem: Needed consistent cellular coverage for staff members throughout areas of the building. A lot of concrete and metal and there were a number of construction changes over the years leaving us with a lot of dead spaces.

Solution:

- **Equipment Used:** Cel-Fi QUATRA
- **Carrier Needed:** Multi-Carrier

"When you find a good product like Cel-Fi, it's a wonderful thing." — Eric Williams, CHM Communications Coordinator

Which Cel-Fi QUATRA do you need for your building?

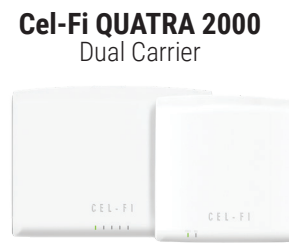
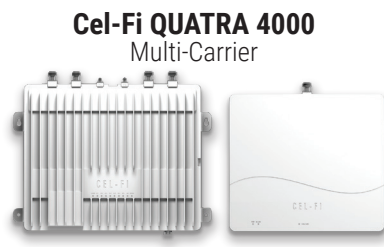
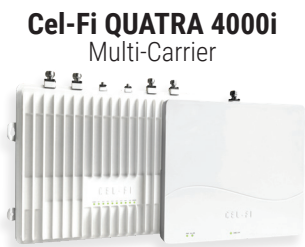


OFF AIR CONFIGURATION

Cel-Fi QUATRA can be installed off-air, using either a MIMO panel or omni donor antenna to provide high-quality in-building wireless connectivity. Cel-Fi QUATRA can be deployed by installers or IT personnel with Cat5e skills (no RF engineering skills needed). Cel-Fi QUATRA is a scalable solution that utilizes one or multiple NUs, depending on the environment and size of the space, with up to four distributed CUs connected to each NU.

SUPERCELL CONFIGURATION

A Supercell is comprised of a Cel-Fi QUATRA system connected to a small cell. Multiple Cel-Fi QUATRA systems can be connected to a single small cell, or multiple small cells, to form a coordinated Supercell. A Supercell with Cel-Fi QUATRA is more efficient than multiple small cells, and the CUs of a Cel-Fi QUATRA system connected to a Supercell do not interfere with one another.



Model Family	Carrier Support Capability	Scalable Coverage per Network Unit (up to Sq. Ft.)	Coverage Unit per Network Unit	Max Gain (up to dB)	Donor Source Options		Coverage Antenna Options (passive elements available)	All-Digital RFoE & PoE	Bands Supported
					Off-Air Mode	Supercell Mode			
Q4000i Part 90	Multi	75,000	6	100	Yes	Yes	Included Blade / External	Yes	2/4/5/12/13/25/26/30/41/71
Q4000 Part 20	Multi	75,000	6	100	Yes	Yes	Included Blade / External	Yes	2/4/5/12/13/25
Q2000	Dual	50,000	4	100	Yes	No	Internal / External	Yes	2/4/5/12/13/25
Q1000	Single	50,000	4	100	Yes	Yes	Internal / External	Yes	2/4/5/12 2/4/5/13 1/3/8/20 1/7/8/20 1/3/7/8 3/5/7/28