

Cumberland County Detention Center

COVERAGE
SYSTEMS

Powerwave provides Sheriff Deputies 100% audio voice coverage, increasing safety and security within prison walls

Distributed
Antenna System

Frequency Range: 800 MHz
Coverage Reliability: 100%

Coverage Area: 250,000 sq. ft.
Venue Type: Government Building

Challenge

Provide access to Fayetteville's 16 channel Motorola SmartNet® 800 MHz trunked communications systems inside prison walls.

Solution

Powerwave's LinkNet Platform, a flexible and scalable solution that can simultaneously manage multiple channels over a single distributed antenna system.

Result

Sheriff Deputies now receive 100% audible voice coverage in all critical areas and 95% coverage in all other areas within the detention center, providing a greater sense of security and safety for everyone.

The Customer Established in 1778, Fayetteville adopted its name in honor of Marquis de LaFayette, the French general who served in the American forces during the Revolutionary War. Throughout North Carolina's rich history consisting of ratifying the U.S. Constitution; chartering the University of North Carolina, the nation's oldest state university; playing significant role in the Civil War, and ceding North Carolina's western lands to what is now the state of Tennessee, Fayetteville has been both a political and economical leader. That is why today, Fayetteville is the fourth largest metropolitan area in North Carolina and home to a population of approximately 125,000 people. This unprecedented growth has also led to the construction of a new Cumberland County Detention Center. Located in the downtown area, this newly constructed 568-bed, 250,000 square foot facility is governed by the Cumberland County Sheriff's Office and utilized to detain prisoners charged of a crime or various crimes. These crimes range from shoplifting to murder. The prisoners' incarceration period at the Cumberland County Detention Center ranges from days to years depending on the complexity of the charged crime.

The Challenge Responsible for enforcing the law and preserving the peace in an effort to improve the quality of life for the citizens and visitors to Cumberland County, the Cumberland County Sheriff's Office depends heavily on the city's 16 channel Motorola SmartNet® 800 MHz trunked communications system to respond to and mitigate emergency situations. This also includes maintaining

operations and order within the old Cumberland County Detention Center, a 266-bed facility. With insufficient beds to house over 300 prisoners, cells became over crowded and keeping order within the facility became increasingly difficult. Lacking an In-building wireless communications system also contributed to these difficulties, as wireless signals have difficulty penetrating inside structures, and those that do are severely weakened. This is due to construction materials such as concrete, steel and mortar. As a result, cellblocks experienced radio dead spots, which could jeopardize the safety of the Sheriff Deputies that operated the facility, a major concern that required the attention of Sheriff Officials.

The Wireless Partner With radio communication dead spots and the safety of Sheriff Deputies in jeopardy, Sheriff Officials awarded Triangle Communications - a subsidiary of CTA LLC - the contract to provide overall project management and installation of an In-building wireless coverage communications system for their new Cumberland County Detention Center. Located in Fayetteville, North Carolina, Triangle Communications is a Motorola Dealer and Service Center and a provider of wireless communications services to commercial, public safety, utility and transportation customers across the United States.

The Solution With extensive experience in public safety applications, best-in-class technology, and a local presence, Powerwave Technologies was contracted by Triangle Communications to supply an engineered

LinkNet™



Powerwave Technology

Powerwave's LinkNet Platform is the most flexible and scalable solution on the market today, and the only one that can simultaneously manage traditional cellular and paging services, as well as private wireless and public safety frequencies under a single antenna distribution network.

Key Advantages

- **Low infrastructure costs** by converge all commercial, private and public safety wireless frequencies under a single antenna distribution network
- **An effectively maintenance-free common DAS** by using passive multi-service components
- **Future-proof system** through modular design that enables amplification modules to be easily added to keep pace with future enhancements or a change in user demand with minimal effort and expense
- **High system availability** through the use of passive DAS components and hot-swappable amplification modules that enable replacements to be made easily and while the network is live
- **Reliable and clear wireless communications** offered through your choice of broadband or channelized service modules that can be configured to allow a 25 kHz up to 15 kHz channel spacing

In-building wireless solution for the newly constructed Cumberland County Detention Center. It was paramount to Sheriff Officials that the designed solution guarantee coverage and long-term performance of the county's 800 MHz trunked communications system - the lifeline to Sheriff Deputies, staff, and prisoners. During the initial phase of the project, Powerwave conducted a thorough on-site survey to determine the complete RF landscape. The study of the frequency spectrum performed during this phase revealed that the use of a traditional broadband bi-directional amplifier solution would experience strong interference from adjacent commercial licensed channels. These channels presented themselves from a near by Nextel cell site located one mile north of the detention center. As a result, Powerwave recommended the installation of their proprietary LinkNet™ Platform - a flexible, practical, scalable and cost-effective In-building wireless solution. Specifically designed to extend multiple channels simultaneously over a single distributed antenna system, the LinkNet™ Platform offered the Cumberland County Sheriff's Office the flexibility to expand their communications system easily and cost-effectively. But most importantly, LinkNet's narrowband capability would block out undesired frequencies to offer interference free radio communications among Sheriff Deputies during emergency situations or routine operations. These key benefits, among others, weighed heavily on the Cumberland County Sheriff's Office decision to approve the recommended solution. As a result, Powerwave set forth in supervising the installation of their solution, which included the deployment of their unique LinkNet Convergence Platform to accommodate the County's 16 channel system, a Gateway Module to offer on-site management and control of system parameters, and a Single Distributed

Antenna System that comprised of: 6,000 feet of coaxial cable; two line amplifiers; Powerwave's patented Tap-In™ signal taps that selectively control where and how much signal is radiated; and numerous flush mounted ceiling antennas to provide balanced coverage.

The Results By working in partnership, Triangle Communications and Powerwave Technologies were able to provide the Cumberland County Sheriff's Office with a turn-key solution for extending two-way radio communications inside the Cumberland County Detention Center. Now Sheriff Deputies can receive 100% audible voice coverage in all critical areas where prisoners are not under direct escort, and 95% coverage in all other areas within the detention center that are outside secured walls. With the increased coverage, Sheriff Officials, Deputies and prisoners alike are provided with a greater sense of security and safety.

For more about Cumberland County Detention Center, visit www.co.cumberland.nc.us/sheriffsofc.

For more about Triangle Communications, visit www.amerizonwireless.com.

"We are very pleased with Powerwave's In-building wireless coverage solution. The Cumberland County Detention Center proved to have coverage in all areas of the facility, even in areas we weren't expecting to. Triangle Communications and Powerwave's pleasant, professional and experienced staff members, made this project a great success. As a result, we plan to implement similar systems in other government facilities within Cumberland County."

Thomas B. Cooney, P.E. , Assistant County Engineer – Cumberland County, North Carolina

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