Evanston Township High School

Providing a combined digital communication system to ensure the safety of students, staff and visitors

Case Study

The most important thing we build is trust

Overview

Cobham Wireless joined forces with a number of organizations to provide a Chicago area school with a state-of-the-art cellular and public safety communication system, based on an intelligent digital distributed antenna system (idDAS), donated to the school.

Challenge

The building materials used in one of America's largest high schools prevented 4G LTE cellular and first responder coverage reaching the core of the building.

The Challenge

Evanston Township High School (ETHS) near Chicago is the largest high school under one roof in the United States. The 65,000-acre site is based around the school's most historic building, dating from the late 19th century. Over one million square feet of indoor space serves ETHS' 4,000+ students and staff. However, in-building coverage was unreliable for the first responder's (Evanston's Police and Fire Departments) radio communications and could not support the high volumes of cellular traffic generated by students and staff.

The signal from the traditional Evanston public safety towers and AT&T macrocells was not able to penetrate into the core of the school; a common problem in many buildings due to their construction materials. This was of particular concern for ETHS officials and Evanston Police and Fire Departments, as being able to contact first response teams rapidly is crucial in a public building of this size.

Improving the AT&T in-building coverage was also vital, as the ETHS public safety team relies on AT&T's Push-to-Talk service for its internal communications. Improving coverage was also a key consideration for the many staff and students who subscribe to AT&T's cellular service. Finally, AT&T was awarded the national FirstNet contract earlier this year (March 2017) for building a dedicated network for first responders. The ETHS project will help lay the groundwork for the critical public safety broadband network rollout, which will cover the entire United States.

The Solution

As part of a collaborative project organized by Keith Radousky of Radvisory 5G, Cobham Wireless partnered with a number of organizations to donate and install a combined intelligent digital Distributed Antenna System (idDAS) for ETHS. These organizations included RFS, Galtronics, Graybar, Chicago Communication, and Fullerton Engineering. The multi-carrier system provides both public safety and cellular coverage for the core of the building, supporting AT&T's 4G technologies and both the VHF and UHF bands for Evanston Police and Fire Departments. It is also upgradeable to support FirstNet when necessary.

The multi-company initiative, led by Cobham Wireless, also saw the company working closely with ETHS and the Evanston Fire and Police Departments to ensure the system was robust and reliable. Using an off-air signal, AT&T is providing the cellular network communication from its nearby cell tower, which connects to the idDAS within the building. AT&T also donated a significant amount of engineering and testing time to ensure the project's success.

"The safety and wellbeing of our staff and students is our primary concern, and communication between emergency teams plays a major part in this." commented Mary Rodino, CFO, ETHS. "The project has tackled the school's connectivity problems. This is probably the first time that a community has banded together in this way, and the project

has helped forge closer links between the school, AT&T, local police and fire departments, and the wireless industry."

This is one of the first deployments of Cobham Wireless' idDAS system in North America. The CPRI-based idDAS digital system features a patented CPRI router that enables digitized RF packets to be sent to any point within the system. It features market leading Uplink Dynamic Range which reduces noise and interference, and maximizes bandwidth and throughput. Power sharing on a per-channel, per remote basis, can be easily controlled via software. Each operator has full control over their allocated power for each of their sectors through the GUI. With the automated commissioning features, deployment time is greatly reduced when compared to a standard analogue system with significant savings in labor costs. The system offers great flexibility as future sectors or remote units can be added without any changes to the existing hardwiring of the system, and up to four remote units can be cascaded. New remote unit expansions can be done via cascading fiber off existing remote units to remove the need of costly fiber runs to existing buildings. Being digital, the system works with any kind of pre-existing fiber within a building, which again saves cost.

"AT&T is pleased to support this project and has been impressed by the collaborative efforts to achieve better and more reliable cellular and public safety communications inside ETHS" said Warren Salek, AT&T Reginal AVP on the Radio Access Network.

Evanston Police Department Communication Coordinator, Perry Polinski, added, "Problems over the years with in-building radio coverage to support public safety emergency and first responders necessitated the need to investigate ways to increase coverage within the High School. We are very pleased with the improvement in radio coverage and it was a pleasure working with the High School and many companies involved."

The Benefit

The inbuilt system provides significantly improved coverage in the core of the school, as well as a public safety system for Evanston's police and fire departments. It currently supports AT&T and there are plans for other tier one US operators to join.

Replacing the analogue system with a digital DAS solution means that Evanston Township High School has the most advanced DAS system on the market. It can be upgraded to support Firstnet Public Safety LTE as well as other future band deployments by the operators. The project also highlights the cost savings of deploying a public safety and cellular system simultaneously, as infrastructure and labor costs can be shared.

"The project has really shined a spotlight on the need for reliable in-building coverage in public buildings in order to keep communities safe," commented Matt Thompson, VP Sales Americas at Cobham Wireless. "We've provided equipment for the likes of the Pentagon, the 2016 World Cup Stadiums, and the World Trade Center, so we have a strong history in both public safety and cellular deployments. We're excited to now add Evanston to that list and highlight our next generation digital DAS system. Our objective in donating the equipment, along with our partners, is to encourage the many schools, hospitals, justice centers and other government buildings to explore this technology, which clearly serves the public interest."

"This collaborative project serves so many, most importantly the ETHS Students/Faculty and First Responders," commented Keith Radousky, President at Radvisory 5G. "Many thanks to Cobham Wireless, and all the participating companies, for providing the equipment and services that made this worthy endeavour possible."

"AT&T is pleased to support this project and has been impressed by the collaborative efforts to achieve better and more reliable cellular and public safety communications inside ETHS"

Warren Salek, AT&T Reginal AVP on the Radio Access Network

"The safety and wellbeing of our staff and students is our primary concern, and communication between emergency service teams plays a major part in this.

"The project has tackled the school's connectivity problems. This is probably the first time that a community has banded together in this way, and the project has helped forge closer links between the school, AT&T, local police and fire departments, and the wireless industry."

Mary Rodino, CFO, Evanston Township High School