# *Sparta High School Builds with Brick, Mortar and Quantum*





## SPARTA HIGH SCHOOL

***Sparta, NJ***

### The Challenge

- Two to three years of impending school renovations created a complex setup of changing buildings and trailers
- Space limitations in temporary classrooms mandated a compact hardware solution
- Long-term communications solution required a system that enabled multiple buildings to share bell schedules and announcement files within and between existing and newly constructed school buildings, and the ability to grow the system as needed
- 96 existing stations with plans for future expansion

### The Solution

Founded in 1959, Sparta High School is home to approximately 1100 students, more than 100 faculty members and a multitude of sports and co-curricular activities. In recent years, a residential development and population boom has resulted in a steady increase in school enrollment. The high school already exceeds the state-recommended student capacity by more than 100 students and growth is expected to continue.

In the summer of 2006, Bogen approached the Sparta Township Board of Education about using the high school as a test bed for its new Quantum Multicom IP communications system. The high school was already using Bogen's Multicom-2000® Administrative Communications System, so this test would improve the school's communications flexibility and provide future expansion capability without requiring extensive equipment replacement. Bogen upgraded the existing system simply by installing QSPC1 Quantum processor cards in the Multicom equipment rack. A two-node Quantum system was up and running in October of 2006 without disrupting the start of a busy school year.

To accommodate its growing population, the Board of Education proposed a referendum to increase the high school's classroom and program space, and modernize the existing building. The expansion project includes the demolition of pods that currently exist on either side of the building and replacing the pods with completely new wings.

In addition to the actual construction of the new wings, the impending expansion required a solution for both short- and long-term communications problems caused by moving classes into temporary trailers adjacent to the school. Administrators were pleased with the operation of the Quantum system, and decided to take advantage of Quantum's network integration and flexibility.

Sparta purchased a new QCR48 Quantum Compact Rack unit for installation in one of the trailers. A single network drop went back to the school, with short station wiring drops to the other trailers seamlessly connecting the trailers with the main building for communications and bells. No additional conduit or wiring was needed to connect the new QCR48 to the existing Quantum system. When the new wings are completed, the QCR48 will be relocated to its permanent position. Quantum's flexibility will allow the school to place the QCR48 almost anywhere, and to configure the various nodes to best meet their needs.

### System Components

Bogen was able to upgrade the high school's Multicom-2000 system to a Quantum system by replacing the processor card from their existing hardware with the new Quantum processor card (QSPC1). Because this site was a test bed for Quantum, Bogen added a second card cage and power supplies along with the QSPC1 cards to create a 2-node system. Backwards compatible with all Multicom-2000 systems, the Quantum processor card easily integrates with existing hardware to provide users with new and enhanced features. The addition of the trailer classrooms did not present a problem for Quantum. All hardware installation and programming was complete in just one day, creating a Quantum system to meet both present and future needs.

Resident in the QCR48, the Quantum Model QSPC1 Processor Card contains a flexible, easy-to-use user interface, enabling quick and efficient programming via the Quantum application interface. The solution simplifies the high school's communications, enabling intra-facility connections by linking administrative and staff locations within a single building and between

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multiple building sites. Quantum also addresses communications issues associated with continued and future renovations, extending communications throughout the school campus or if desired across the entire school district, including Sparta's four other schools and the administration building.

## The Result

The high school upgraded to an expandable, comprehensive communications solution and leveraged their existing network infrastructure with little capital expense. With Quantum, school administrators control facility bell schedules, announcements, and alarm tones from an easy-to-use browser-based interface; interconnect and communicate between multiple Quantum nodes within a building or campus; send announcements to the rest of the facility or facilities; and record announcement files and download them to Quantum from any authorized computer on the network.

## System Highlights

Bogen's Quantum Multicom IP is a comprehensive communications network that connects administrative areas and staff locations in a single building, multiple building sites throughout a campus, or an entire school district. Quantum enables facility- or district-wide mass notification, paging to zones or select point-to-point communications. Emergency notification, direct-dial 911, emergency alarm tones, pre-recorded messages and network time synchronization are possible, and Quantum also supports media control of VCRs and DVDs. The system nodes are interconnected using existing network infrastructure. In many installations this greatly reduces the need for long home-run wiring, conduit, trenching, surge protectors, and associated installation costs.

Quantum is highly scalable, with as many as 64 processor nodes combining to serve up to 16,000 stations per facility, and up to 99 facilities possible in a Quantum district. A full 64-node system handles up to 960 central office telephone lines, and up to 512 non-blocking calls and pages. Distributed facility architecture allows for convenient deployment of hardware throughout a facility, and easily accommodates future expansion.

Each Quantum system includes a built-in master clock with 32 schedules, including calendar-based holiday schedules, and up to 1,024 programmable events per facility. Each unit offers up to 64 multipurpose time/paging/security zones.

The Quantum Commander is Quantum's comprehensive, browser-based control suite, enabling administrators to control facility bell schedules, announcements, alarm tones, and many other features from the easy-to-use interface; and interconnect and communicate between multiple Quantum systems within a building, campus or district.

Quantum Commander allows access from any computer and eliminates the need for special PC software. Authorized personnel easily access functions related to the manual setup of tones, pre-recorded messages, external equipment operation and schedule selection through the intuitive user interface. Quantum also enables equipment maintenance personnel to access, configure, and update system software remotely, reducing the need and cost of site visits.

# Product Highlights

## Compact Rack System

The Quantum Compact Rack system (QCR48) is a self-contained school communications solution that functions independently or as a node in a larger Quantum Multicom IP system. Designed to mount easily in existing IT equipment racks and to allow convenient, economic distribution of Quantum nodes throughout a facility, the QCR48 provides a system capacity of 58 stations, including support of up to 10 administrative VoIP phones (model QSIP1). The Quantum Compact Rack System is also available in a 34-station capacity model (QCR24).

## Processor Cards

The Quantum Model QSPC1 Processor Card is required to operate the Quantum Multicom IP system. Containing a PowerPC CPU, 12 channels of DSP, non-volatile flash memory, and two Ethernet Local Area Network (LAN) interfaces, the card handles all system operational functions. The card also contains a crystal-controlled real-time clock (with battery backup), relay driver circuits, external function inputs, audio tone synthesizer, and voltage supervision circuits.

## Administrative Display Telephones

The Bogen MCDS4 is a 12-push-button DTMF-dialing telephone, designed as an administrative station in Bogen Multicom-2000® and Quantum Multicom IP Systems. The MCDS4 incorporates a high-contrast supertwist LCD-type display panel, and a unique, easy-to-read menu-driven display system to provide rapid, efficient, and reliable control over the system's paging, intercom, or signal distribution features.

## System Equipment

QSR-Series
Quantum Rack System

QSPC1
Quantum Processor Card


QUANTUM COMMANDER
Browser-based Control Suite

QCR24
Quantum Compact Rack System

MCDS4
Administrative Display Phone

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