Quantum

MULTICOM IP



IP-Based Communications Solutions

BOGEN®

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IP-Based Communications Solutions



- Effective Communications Facility-Wide and Campus-Wide
- Leverage your network and lower your system costs
- Scalable, cost-effective and feature rich

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 facility, or an entire campus. It is filled with a variety of quality features and functions you can rely on every day for routine communications as well as depend on should an emergency situation occur.

Programming and changes are securely accessed and conveniently configured over the facility's network, or the internet. Authorized personnel may access Quantum using a web browser on any computer on campus or off-site.

For new constructions and facilities or campuses that are expanding in size, Quantum uses the LAN connections for programming and sending of audio messages and pages so there is no need for dedicated control cables between buildings or across long distances. Zone paging and All-Call Emergency Mass Notification assures that messages sent from an Administrator location are distributed exactly and only to the desired locations.

Sophisticated emergency features and functions help you, your staff, and students in a crisis situation. Options and access can be customized for each station. System options include direct dial 911, re-routing of emergency calls to a different station type in the same location if busy, choice of 4 dedicated emergency alarm tones, and system-wide emergency All-Call.

Key Communications Features for...

Facilities:

- Alert staff and students
- Select Zone Paging
- Pinpoint person-to-person communications
- Facility-wide mass notification
- Coordinate facility operations
- Station Call Rollover
- Direct Dial 911

Campuses:

- Interconnect all facilities with Quantum IP communications systems
- Make calls directly into classrooms or admin offices from other facilities
- Make all-call announcements into facilities from remote sites like Administrative offices
- Make district-wide All-Calls to all facilities simultaneously

Already Have Multicom? Just Add Quantum

Existing Multicom 2000 systems can be easily and cost effectively upgraded to Quantum functionality since the Quantum processor card is backwards compatible. Quantum seamlessly integrates with existing Multicom 2000 hardware, connected to a network, it provides enhanced features and functions.

Bogen's notification systems are an investment your facility makes once and benefits from in the future. Unlike competitive systems, Bogen's intercom systems are designed for backwards compatibility. This allows you to update your system with Bogen's latest system functionalities without needing to replace or install an entire new system.



QUANTUM PROCESSOR CARD

Quantum Facility Capacity Maximums:

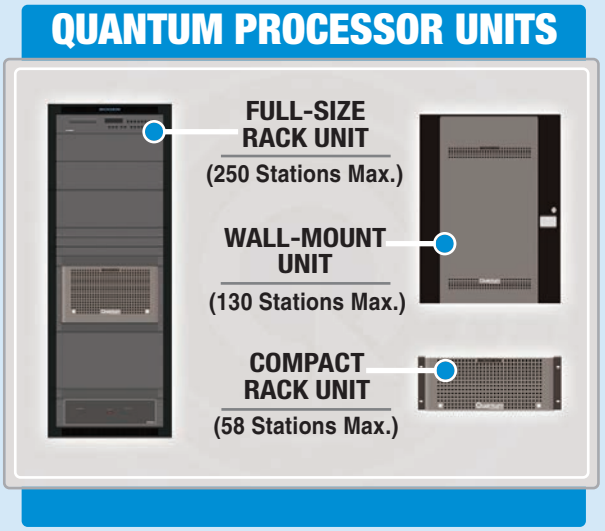
- **75** Quantum processors can be linked within one facility
- **18,750** stations using a combination of analog station devices and VoIP phones
- **600** non-blocking calls *(instantaneous capacity depends on call origination and destination)*
- **1.125** loop start central office telephone lines

Available Schedules, Zones, and Devices:

- **64** multi-purpose zones *(page, time, page+time, security)*
- **32** schedules, including calendar-based holiday schedules
- **1024** separate schedule events per facility
- **23** unique station device types
- **32** assignable classes of service

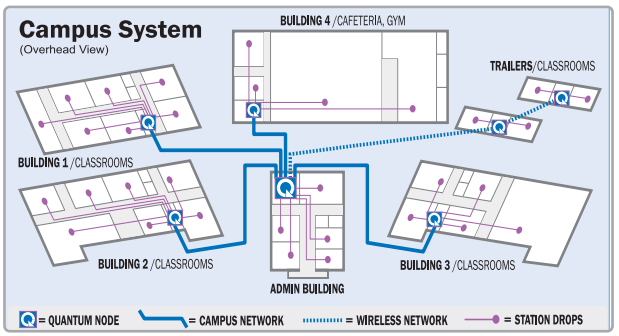
Quantum District Capacity:

- **99** interconnected facilities per district



Quantum Deployment:

The Quantum system is extremely scalable and can be deployed to meet the demands of any facility configuration. The Quantum system uses a distributed facility architecture that places processor nodes at appropriate locations throughout the facility and links them together into a single system using the existing network infrastructure. By breaking the system into smaller, local processor nodes, thousands of feet of interconnecting home-run wire, as well as any associated conduit, trenching, surge protectors and installation costs, are eliminated. The scalability of the Quantum processor nodes allows perfect tailoring of the hardware to the local capacity requirement.



Integrated Classroom, Campus, and District Solutions *(see center panel illustration)*

1. ***District-wide Communications***
Quantum allows entire school districts to be interconnected providing a way to make district-wide All-Call announcements, All-Call announcements to a single school and point-to-point communications between schools, B.O.E. offices, etc. Up to 99 facilities total can be interconnected into a district.

2. ***Upgrade Your Existing Multicom 2000 to a Quantum System***
Existing Bogen Multicom 2000 school intercom systems can be easily, and cost effectively upgraded with Quantum capabilities because it is backwards compatible. With this upgrade, the facility enjoys all the Quantum features, such as network-based control and district-wide interconnectivity.

3. ***Expansion of Existing Facilities***
New building additions can take advantage of the distributed facility architecture of Quantum by locating hardware near the new classrooms to provide shorter wiring runs and then use the facility's network infrastructure to link the existing and new sectors into one fully integrated school communications system.

4. ***Network Phone Connections***
Network connected VoIP phones are also available for Quantum. These phones provide a convenient way of installing phones in areas that already have a network drop.

5. ***Network Connections to Remote Locations***
Quantum hardware located in classroom trailers can easily connect to the main facility by means of the network drops feeding the trailers. If there are no existing drops, a wireless link can be used to make the network connections and carry the communications as well as the data to the remote classrooms.

Integrated Classroom, Campus, and District Solutions *(cont'd)*

6 ***Quantum Commander***

Quantum Commander is the web server-based configuration and control application for the Quantum system. The application is accessed through a browser so no special software is needed, allowing access from any computer. Functions relating to manual setup of tones, prerecorded messages, external equipment operation and schedule selection are easily accessed by authorized personnel through an intuitive user interface. Quantum can also allow equipment maintenance personnel remote access to the system reducing the need and cost of site visits.

7 ***Student Phones***

Telephones can be designated as Student Phones. These phones have unique limitations, such as toll restrictions, length of use and number of calls to the same number within a certain time period. This phone service is designed to allow students to make critical outgoing calls, but reduce abuse of the privilege.

8 ***Security Zone Alerts***

Quantum has the ability to monitor and alert administrators of any activity in key areas of the facility, such as a computer lab or media center. Security Zones can be installed and connected to appropriate sensors, such as motion or door position, so that any activity will be reported back to designated administrators' display phones.

9 ***Zones, Schedules, and Events***

Quantum provides a facility with up to 64 separate zones for time tones and paging, plus 32 schedules providing up to a total of 1024 separate tone events. These capacities allow facilities a large degree of scheduling detail that can be used for "school within a school" applications.

10 ***Prerecorded Messages***

User-supplied audio files can be loaded and triggered for playback from either administrative telephones, Quantum Commander, or an external contact closure. These audio files are played back as an emergency level All-Call announcement.

11 ***Call-In Confirmation***

The Call Assurance Call-In Switch provides visual confirmation that a call-in request has been logged with the Quantum system. Pushing the SC1's momentary rocker switch initiates a request for service to the Quantum system. The Quantum system then acknowledges this request by signaling back to the initiating SC1, which then illuminates its LED annunciator. The LED will remain lit until the call-in is serviced. At the end of the call, the LED will extinguish.

Classroom Devices

A wide range of speakers, telephones, and call switches are available to fit the specific needs of the classroom, multi-purpose room, zone or outdoor area.



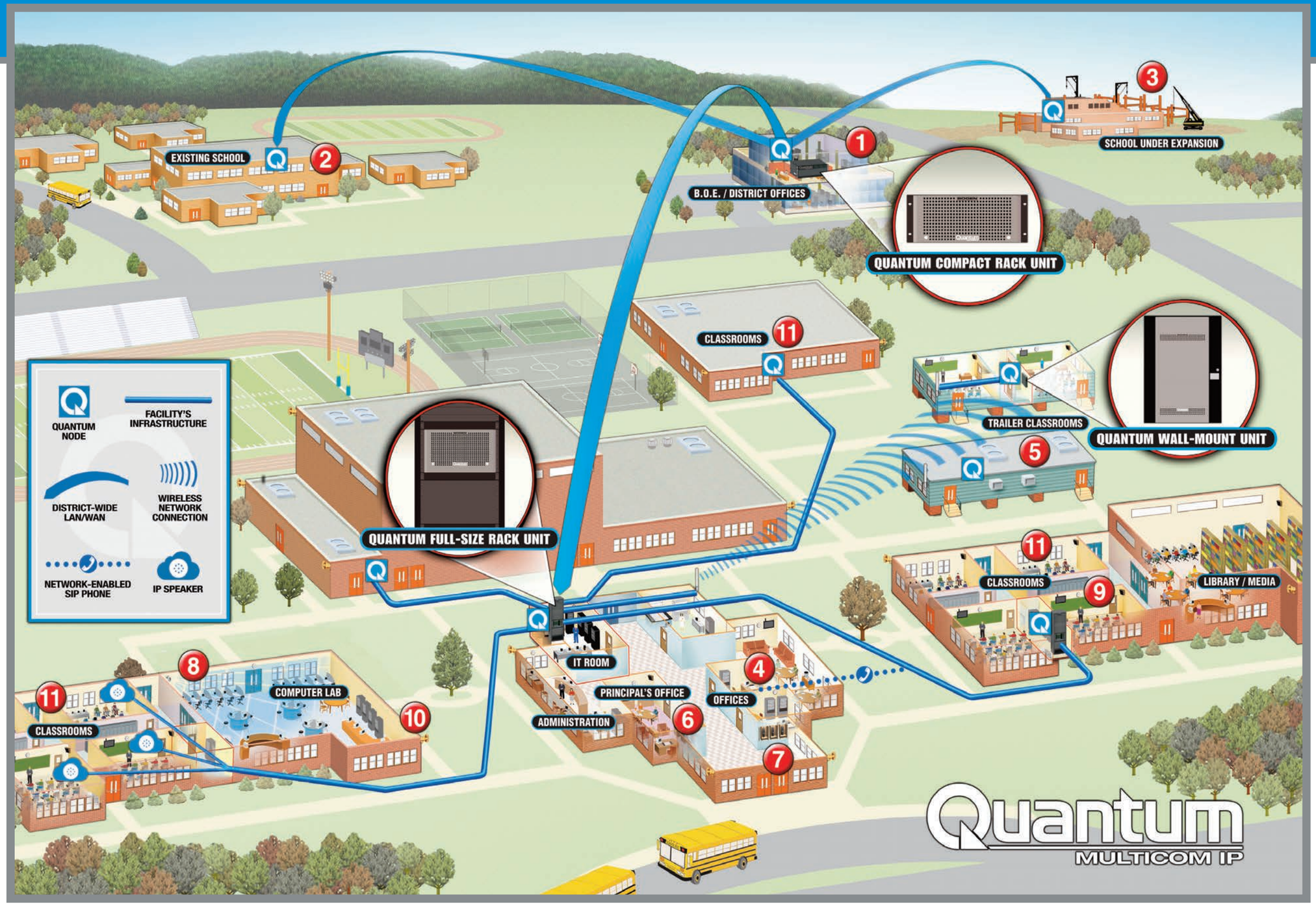
Office Devices

Administrative display telephones, VoIP (SIP) phones, wall displays and room speakers are available to address the needs of the main office and other administration areas.



An Overview of Quantum Integrated School, Campus, & District Solutions

1. District-wide Communications
2. Upgrade Your Existing Multicom 2000 to a Quantum System
3. Expansion of Existing Facilities
4. Network Phone Connections
5. Network Connections to Remote Locations
6. Quantum Commander
7. Student Phones
8. Security Zone Alerts
9. Zones, Schedules, and Events
10. Prerecorded Messages
11. Call-In Confirmation



For Illustrative Purpose Only.

Benefits for School Administrators...

- ***Browser-Based Remote Access***

  Administrators get easy browser-based control of facility bell schedules, prerecorded announcements, and alarm tones. Since the control is browser-based, special software is not needed. A URL and a password are all you need to access Quantum Commander from any location.

- ***Instant Notification When Secure Areas Accessed***

  Quantum's Security Zones can provide real-time notification of access into sensitive facility areas. As soon as a sensor is tripped, Quantum sends an alert via the administrator's phone or wall display. It can also trigger relays and/or emergency messages.

- ***Station Call Rollover***

  When a speaker and a telephone device are both located in a classroom, an administrator will always get through with Quantum's rollover feature. If one device is being used, then the administrator's call will automatically rollover to the other device.

- ***Administrator Phone Groups***

  Quantum allows administrator phones to be assigned into groups to ease managing calls when others are out of the office. If the destination phone isn't answered within 30 seconds, Quantum will automatically route the call to the other phones in the group.

- ***Call-In Confirmation***

  Using the SC1 "Secure Call" call switch, classroom users will know that their request for communications with an administrative station has been received and logged in the Quantum system.

- ***Survivability***

  Distributed Integration: Quantum is designed to survive network crashes by allowing individual processor nodes to operate autonomously. Losing network communications to one piece of Quantum hardware does not affect the others and even the affected hardware continues to operate, delivering bells and providing communications for devices connected to it locally.

  Fail-Safe Features: As an added safety measure, a mass notification feature can be hard-wired to all Quantum nodes within a facility, ensuring that Emergency All-Calls can be made during a complete system-wide network failure.

- ***Programmable Calendar and Holiday Schedules***

  Quantum contains a complete calendar function and holiday schedule feature that allows accurate and automatic execution of bell schedules throughout the year or years to come. Schedules are customizable, and easy to change. Calendars also allow automatic Daylight Savings Time adjustment.

- ***Limit Outgoing Student Phone Calls***

  Quantum's Student Phone feature provides students with the ability to make outgoing calls without abusing the privilege.

Benefits for District Superintendents...

- ***A System That Grows As You Need It To***

  Quantum is an expandable system. You can configure the system for your entire district all at once, or you can purchase for each individual school or building location over time.

- ***Communications For All, As Needed***

  Point-to-point calls between different facilities, All-Call paging into individual facilities, and District-Wide All-Call paging to all facilities.

Benefits for Facility Managers...

- ***Scalable To Your Needs***

  Quantum is extremely scalable and flexible. Quantum processor nodes can be deployed in the appropriate capacity for each location to make installation and maintenance as effective as possible.

- ***Runs On Existing Network***

  Quantum uses the school's existing network to trunk the voice and data signals between processor nodes. This can eliminate thousands of feet of interconnecting home-run wire, as well as any associated conduit, trenching, surge protectors and labor costs. This provides obvious benefits in the installation phase as well as the system's long-term maintenance.

- ***Network/Internet Setup & Maintenance***

  Quantum allows facility maintenance personnel or contracted dealers a simple means to remotely configure and diagnose the system operation through the facility's network or over the Internet.

- ***Network Time Synchronization***

  If provided with internet access, Quantum can synchronize with network time servers. This ensures accurate time and correctly sets and adjusts daylight savings time.

Benefits for IT Directors...

- ***Leverage Existing Network***

  Quantum leverages the facility's existing network to interconnect multiple processor nodes located throughout the facility. The network carries Quantum's system control data and VoIP-based communications to other system nodes. Nodes then convert the calls to and from the analog domain for delivery to their associated classroom end-of-line devices.

- ***VoIP Speakers***

  Since Quantum is VoIP-based, VoIP speakers can communicate with it. These devices allow a simple and effective way of adding speakers to an existing system.

- ***Duplicate Databases Secure Critical Data***

  The Quantum Commander, which is resident on each Quantum node, acts as a web server and provides browser-based access to the configuration and diagnostic features of the system. Each node holds duplicate databases for the system, providing redundancy for critical data.

- ***Node Operation Not Affected By Network Outages***

  Since even robust networks may fail, Quantum is designed to survive network crashes. All processor nodes can operate independently of one another. If a network connection is lost to one, the others remain operational. Even the affected node continues to operate, servicing bell schedules and local calls.

- ***Powerful Processor Card***

  The Quantum processor card is designed around a 250 MHz Power PC microprocessor platform running a Linux OS. This provides plenty of processing power and a processor card that will keep up with enhancements in system software for many years to come.

Also Available From Bogen



BOGEN TIME SYSTEMS

Time Displays & Master Clocks



APOGEE SOUND INTERNATIONAL

Pro Audio Sound Systems



MULTICOM-2000

Administrative Communication Systems



MediaMaster

Media Management / Delivery



BOGEN

Music & Paging Systems

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