CASE STUDY

Higher Education

Baruch COLLEGE

Baruch College Transforms Student Technology Experience by Solving User Density and Wi-Fi Interference Challenges

Nestled in the center of Manhattan near Gramercy Park, Baruch College, a senior college within the City University of New York (CUNY) system and home to the country's largest AACSB-accredited business school, the Zicklin School of Business, faced a major Wi-Fi challenge. Demand for wireless service from 17,000 students exceeded the capability of its legacy network. A reliable solution had to be implemented quickly, because Wi-Fi use is a routine part of their students' academic work, as well as their campus social life.

Baruch students have a vested interest in technology, as each student is assessed a technology fee that accompanies their tuition. As a result, the students have a direct role in planning the technology that is deployed at Baruch, becoming an integral and active part of the college's Wi-Fi upgrade.

Baruch operates in one of the densest urban environments anywhere — New York City — working within 1,500,000 square feet of high-rise space that spans five city blocks.

Baruch's Newman Vertical Campus is a 17-story building in the heart of Manhattan where lots of students and interference were causing wireless headaches for its IT staff.

One of Baruch's main buildings, the Newman Vertical Campus, represents a good example of the challenges Baruch faced. A 17-story building consuming nearly an entire city block, the Newman Vertical Campus (pictured right) is built with glass, metal and other "Wi-Fi unfriendly" materials. The Newman Vertical Campus houses most of Baruch's academic departments, some 180 smart classrooms along with a gymnasium, theaters, and conference/event center facilities. At any time, the campus can have up to 10,000 students and staff online.

"In the heart of Manhattan, our Wi-Fi situation is unique," said Arthur Downing, Chief Information Officer at Baruch College. "We have an incredible density of users within a very confined area. Add to that an extraordinarily high amount of interference from surrounding Wi-Fi networks and you get a not-so-pretty picture of the challenges we faced."

Baruch has seen an explosion of Wi-Fi devices hitting their network and a greater demand for Wi-Fi connectivity from nearly every user group. According to the school, almost every student has a smart handheld device that they want to use on the network. Its legacy network, not designed to support this level of density, failed to provide the signal coverage and consistent connectivity to provide a reliable service. "Our students were becoming frustrated," said Downing.

COMPANY OVERVIEW

Ranked as one of the nation's top colleges, Baruch, a senior college of New York (CUNY) school, is a commuter college operating in the heart of downtown Manhattan. The school serves over 17,000 students within buildings spanning five city blocks. The Baruch campus is a very dense environment occupying more than 1,000,000 square feet of space.

REQUIREMENTS

- Support for hundreds of clients per AP
- Ability to mitigate non-802.11 and co-channel 802.11 interference
- Comprehensive wireless coverage
- Simplified wireless management and detailed reporting per user
- Flicker-free support for streaming multimedia
- Increased and consistent wireless performance on a per user basis
- Seamless roaming between buildings
- Maintain accurate records of every user and their identify on the network
- An easy way to manage guests

SOLUTION

- 500+ ZoneFlex 7962 dual-band 802.11n Smart Wi-Fi access points
- Redundant ZoneDirector 3000 WLAN controllers
- FlexMaster Wi-Fi management system

BENEFITS

- 10x client throughput improvement
- 2X+ client density per AP
- Complete coverage across campus
- Significant reduction in user complaints
- Stable client connectivity significantly reducing on-site AP support
- Guest access can be managed by any authorized user without relying on IT to configure each one individually

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"Delivering a Wi-Fi service in downtown Manhattan for this many users required a wireless system specifically designed to address density and interference issues.

And we finally found one."

Art Downing

Chief Information Officer
Baruch College

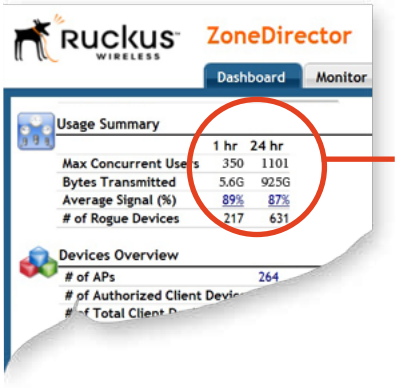
Downing noted that Baruch must compete with larger schools for student recruitment and that, given this day and age where the mobile Internet is a way of life for students, wireless connectivity has become a key criterion in their decision making process for a school.

But even with 150+ Wi-Fi access points deployed around its campus, Baruch was simply unable to provide uninterrupted coverage as students and staff moved between buildings. Blind spots where wireless coverage would simply drop off, unstable client connections and inconsistent wireless performance around the campus topped their list of "must fix" problems.

"When we started to see up to 30 people on a given AP with our previous system, the AP would literally die," said Martin Fries, manager of Network Services at Baruch.

Rather than use the Baruch Wi-Fi network, students ended up poaching nearby signals or bringing in their own access points or 3G routers that provided Wi-Fi access. "Today's students are capable of taking matters into their own hands. And they did," said Downing.

Baruch's wireless applications needs ranged from indoor in-classroom tablets for teachers to outdoor public access. In addition, Baruch required support for emerging wireless devices such as projectors, printers, and eventually voice over Wi-Fi phones.



Within a 24 hour period, Baruch has seen Wi-Fi data transfers in excess of 925 gigabytes

An early adopter of streaming multimedia within its curriculum — recording events, lectures, and other activities that students could view when they needed — Baruch's legacy Wi-Fi network was unable to support the increasing demand for asynchronous learning applications.

To solve these problems Baruch began a rigorous eight month evaluation process of all the leading wireless LAN systems — bringing in vendors including Cisco, Aruba, Xirrus, Meru, Motorola, Meraki, Trapeze, and others in for a

RIGHT

The fourth floor of Baruch's Newman Vertical Campus building required only 12 APs to provide complete coverage and support hundreds of clients per AP.

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"Ruckus has been delivering wireless service far faster than our legacy network.

During our initial roll-out, we experienced a 10x speed improvement. "

Art Downing

Chief Information Officer
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ABOVE

As students carry multiple network computing devices, over half of the Wi-Fi connections on Baruch's network now come from smart handheld devices.

two-week period to prove their technologies could operate as advertised.

After the exhaustive, on-campus testing, Baruch selected the Ruckus ZoneFlex system and immediately began deploying ZoneFlex 7962 dual-band 802.11n APs throughout its campus.

"Most of the discussions we had with vendors about their products focused on solving problems after the client connection — problems that really weren't central to our needs," said Downing. "Across the board, the technical solution vendors demonstrated, with the exception of Ruckus, focused too heavily on special tinkering they had done with existing technology rather than new technology.

Ruckus differentiated itself by demonstrating to us that students could connect to our Wi-Fi network at very fast data rates the first time and every time they tried — wherever they roamed. And, the deployment has proved this."

Since deploying the Ruckus ZoneFlex system, Baruch has seen user trouble calls effectively vanish. User throughput rates per AP are now triple that of the legacy network and Wi-Fi blind spots are gone. "Ruckus has been delivering wireless service far faster than our legacy network," said Downing. "During our initial roll-out, we experienced a 10x speed improvement."

Hundreds of dual-band 802.11n Ruckus ZoneFlex 7962s are deployed across different subnets and centrally managed by redundant ZoneDirector 3000s to ensure non-stop wireless availability.

The Ruckus ZoneDirectors automatically synchronize network configuration and runtime information like generated guest passes, generated and activated dynamic PSKs, and authenticated captive portal clients. If the active ZoneDirector becomes unavailable, the standby ZoneDirector becomes active, taking over wireless LAN management, and providing network services.

According to Baruch, the college solicited a third-party to conduct an extensive site survey of the campus. To support one of their main campus buildings, 257 APs of the legacy provider were required. "With ZoneFlex, we have that same number of APs covering multiple buildings and about four times the amount of space," concluded Fries.

For system-wide management, Baruch uses Flexmaster for visual mapping, generating usage, traffic, and trend reports to determine the effectiveness of the Wi-Fi network.

The wireless network works seamlessly with Baruch's existing firewall and backend Active Directory domain system. Baruch also leverages the Ruckus hot spot features to provide guest access to visitors using its conference center. Baruch is able to easily generate timed guest passes with unique passphrases that allows for secure access to the wireless network.

Wireless user identity and tracking was also an essential requirement for Baruch as the college is required to take disciplinary action based on conduct. To adhere to compliance issues, Baruch uses FlexMaster to capture user names and device information to generate historical usage reports.

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