

Smart **Wi-Fi** for

# EDUCATION



# Smarter Wi-Fi Fosters The Learning Experience

## IT'S A REQUIRED COURSE OF ACTION FOR EDUCATION

*Faster, more dependable Wi-Fi connectivity that's affordable is fundamental. It must cover large campuses, yet reach every small nook and cranny of a classroom. It must support multimedia applications while providing secure connectivity for staff, students, and guests. Limited budgets and IT staff mean that educators need a new approach. Ruckus passes the test with flying colors.*



Combining adaptive antenna technology, band steering, and airtime fairness makes Ruckus Smart Wi-Fi ideal for high-density classroom environments giving students reliable high-speed wireless network access.



Patented smart antenna arrays in every access point provides longer range and more reliable Wi-Fi connections, requiring fewer APs than competitive alternatives.

### Dealing With High Density

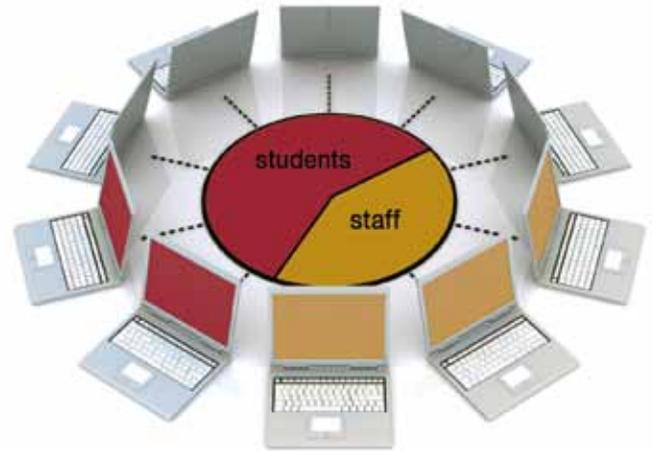
A major concern within the education market is dealing with high density environments such as lecture halls, gymnasiums, and theaters. With a flood of Wi-Fi enabled devices simultaneously accessing the wireless network, the Ruckus ZoneFlex™ system is designed to provide a best-in-class solution for supporting a high-capacity of concurrent wireless users. Applying patented adaptive antenna technology that gets users on and off the Wi-Fi network quickly, this technology is combined with capabilities including client load balancing, airtime fairness, band steering, and per user rate limiting to ensure hundreds of users can access a single access point that delivers reliable and fast Wi-Fi connectivity.

### Campus Coverage: Here, There, Everywhere

Universities and colleges (state/community/private) often encompass large properties with multiple buildings. Getting reliable and complete Wi-Fi coverage within every square foot of each facility without deploying a huge number of access points has been a real challenge. The Ruckus ZoneFlex family of products delivers the best possible Wi-Fi coverage using our patented BeamFlex™ technology that directs signals toward associated clients, picking the best performing path and constantly mitigating interference. ZoneFlex delivers two to four times the coverage using fewer APs, costing less money and requiring less deployment time. Institutions of higher learning may now deliver Wi-Fi to places where it's never been before — simply and easily.

### Strong Wi-Fi Security, Simple to Administer

Ruckus has fully integrated features to handle BYOD stress points for both administrators and users. We leverage existing resources by integrating with current network segmentation and security architectures, authentication protocols, and directory services. Second, Ruckus has built easy and intuitive device provisioning and onboarding processes that are foolproof for users and simple to implement by IT staff. Third, our device fingerprinting and access control features enable differentiated policies for specific device types and user roles, as well as enhanced monitoring and visibility to improve network operations, troubleshooting, and policy changes over time. Finally, Ruckus provides the RF stability, scalability, and capacity needed to enable BYOD. Robust wireless performance enables users to connect and stay connected, making BYOD initiatives work.

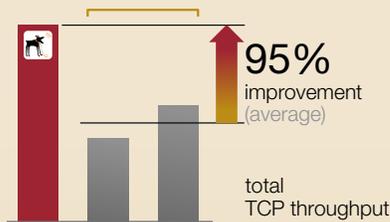


## Ruckus Smart Wi-Fi delivers MORE CONSISTENT PERFORMANCE at longer distances

Source:

### High Density: 90 active clients per AP

adaptive antennas + conventional Wi-Fi learning-based SON implementations



### Interference: 6 APs, 120 clients, 1 busy rogue AP



*"We have an incredible density of users (17,000 students) within a very confined area (1,500,000 sq. ft. high-rise spanning five city blocks), add to that an extraordinarily high amount of interference from surrounding wireless networks and you get a not-so-pretty picture of the challenges we faced. Since deploying Ruckus, we experienced a 10x speed improvement, Wi-Fi blind spots are gone, and our user trouble calls have effectively vanished."*

**Arthur Downing**

Chief Information Officer, Baruch College

### No Ethernet? No Problem

For many educational institutions, Ethernet is not ubiquitous. What about portables, cafeterias, auditoriums and assembly halls? Unlike other WLAN solutions, the Ruckus ZoneFlex system employs Smart Mesh Networking, allowing schools to easily add Wi-Fi by simply plugging them into a power outlet. This eliminates adding additional Ethernet cabling and unnecessary expenses. An advanced smart antenna array ensures unprecedented reliability for the mesh backbone minimizing packet loss, steering signals over the fastest paths, and increasing range between mesh nodes.





### Smarter Wi-Fi optimized for IP-based video

Video has become an essential application within higher education institutions. IP-based video cameras and streaming IP-based video content over Wi-Fi is now taking center stage. Our heritage as a company has been focused on supporting IP-based video over Wi-Fi. Through the use of our patented adaptive antenna array and heuristics-based traffic classification and prioritization, the Ruckus ZoneFlex system delivers flicker-free video to laptops, tablets, and even televisions. Our products and technology have been uniquely designed to support latency-sensitive traffic types such as streaming HD video.

*“The ZoneFlex system gave us all the requisite central management but with a lot more value. The system requires fewer APs, provides a more consistent and adaptive signals without external antennas and is ridiculously simple to install and manage. It’s hard not to like that.”*

Christopher Stave

Computing and Network Services Manager

**DREW**  
UNIVERSITY



# TOP 10

## RUCKUS DELIVERS TOP 10 WI-FI MUSTS FOR EDUCATION

- 1 Wi-Fi coverage everywhere**  
2x to 4x coverage improvement through integrated long-range, high-gain antenna array
- 2 Reliable client connectivity**  
Adaptive beamsteering automatically avoids interference and steers signals over the best performing paths
- 3 Consistent Wi-Fi performance at range**  
Massive antenna diversity and client feedback ensures highest data rates to end stations
- 4 Indoor and outdoor managed as one**  
Unified configuration, administration, and management of all APs through a single interface
- 5 Multimedia support**  
Automatic interference mitigation ensures flicker-free streaming of voice and video
- 6 High density environments**  
Band steering and airtime fairness enables a large number of concurrent users
- 7 No new cabling**  
Highly adaptive and reliable Wi-Fi meshing eliminates the need to cable every AP
- 8 Flexible deployment options**  
Deploy APs with or without a controller, install controllers on-site or in remote locations
- 9 Robust but simplified security options**  
Automatic generation and installation of unique per user encryption keys (Dynamic PSK)
- 10 Easy to configure and deploy**  
Graphical user interface with easy to understand point and click commands

### Eliminate recurring broadband costs with point-to-multipoint, long range Wi-Fi

Many schools pay exorbitant costs for running fixed broadband lines to each school or site. New 5GHz, 802.11n high-performance bridges effectively eliminate these recurring costs — saving schools tens of thousands of dollars each year. A pair of Wi-Fi bridges can deliver up to 190 Mbps at 1.5 kilometers and offers performance up to 50 Mbps at 10 km (LoS).

The Ruckus ZoneFlex WLAN system configures in minutes so you're on time and under budget.

## Smart Educators are choosing Ruckus smart Wi-Fi Solutions to solve challenges and raise the curve

PROBLEM	RUCKUS SMART WI-FI SOLUTION
Spotty Coverage	High-gain smart antenna system extends Wi-Fi signals two to four times farther, requiring fewer APs per school
Unstable Wi-Fi connectivity	Patented adaptive antenna technology within every Ruckus smart Wi-Fi access point ensures stable client connectivity and mitigates packet loss to ensure the highest performance possible
Disparate WLAN systems	Indoor and outdoor APs mesh together and are managed centrally by the ZoneDirector controller
Too many APs to manage	Requires one-third to one-half the number of APs over conventional omnidirectional Wi-Fi products
No multimedia support	Provides up to 32 discrete WLAN networks that can be used to concurrently support IP-based video, voice, and administrative applications
Controllers in each school	Distributed forwarding architecture enables a single centrally located network operation center to manage the entire Wi-Fi infrastructure without sitting in the data path
Guest management	Intuitive, browser-based facility lets staff generate a unique and timed Wi-Fi guest pass in less than 60 seconds
Complex installation and management	Entire WLAN configures in minutes; APs self-configure by automatically discovering the controller. Ruckus Smart Wi-Fi systems can be remotely configured and managed



Sistema Universitario Ana G. Méndez

we're feeling the love  
from a marquee list of  
**WORLD-RENOWNED  
CUSTOMERS**

## Ruckus transforms learning at Baruch by solving High user density and wi-fi interference



Baruch College, a commuter college located in downtown Manhattan near Gramercy Park, serves over 17,000 students within buildings spanning five city blocks. The Baruch campus is a dense environment occupying more than 1,000,000 square feet.

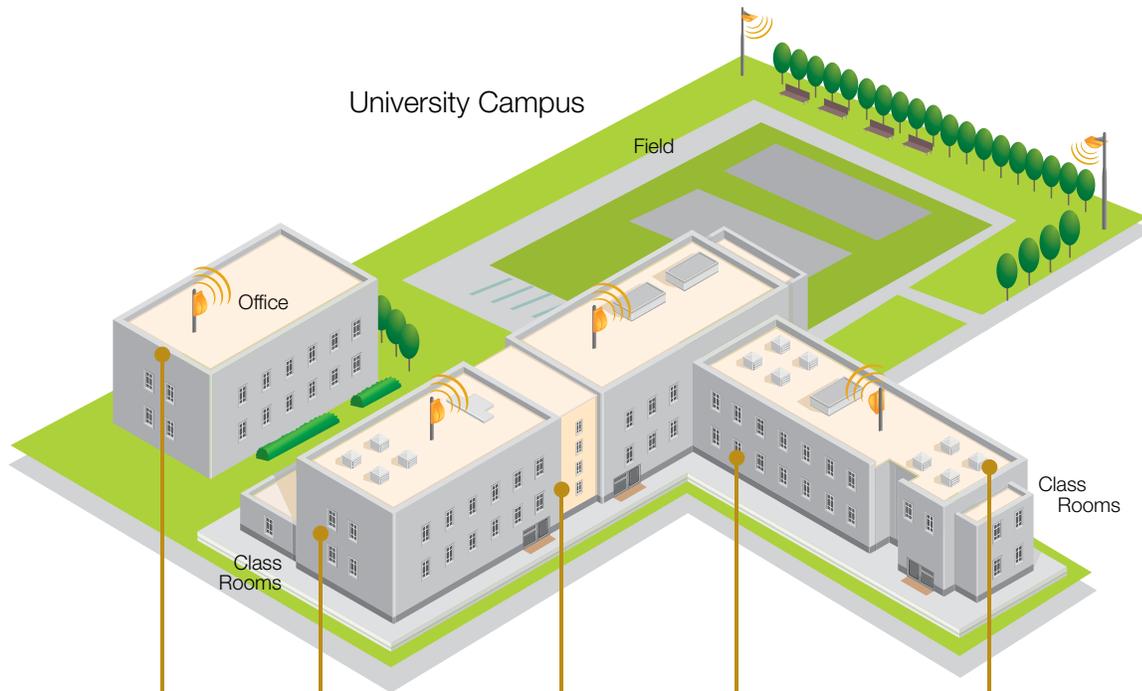
Baruch, an early adopter of streaming multimedia within its curriculum — recording events, lectures, and other activities for their students to access as needed; keeping in mind that at any time the campus may have up to 10,000 students and staff online. Therefore, the college empowered the students to help evaluate the top Wi-Fi vendors: Cisco, Aruba, Xirrus, Meru, Motorola, Meraki, Trapeze, and Ruckus to determine who would be in charge of their Wi-Fi upgrade.

After the exhaustive, on-campus testing, the college as a whole selected the Ruckus ZoneFlex system and immediately began deploying 500+ ZoneFlex 7962 indoor dual-band 802.11n access points (APs) throughout the entire campus. Baruch also deployed redundant ZoneDirector 3000 series WLAN controllers with FlexMaster centralized Wi-Fi management for visual mapping as well as generating usage, traffic, and trend reports.

During the initial rollout within the Newman Vertical Campus that houses 180 smart classrooms, a gymnasium, theatres, and conference/events facilities, Baruch experienced a 10x speed improvement.

# Ruckus Smart Wi-Fi Delivers Education's Most Flexible Deployment Options

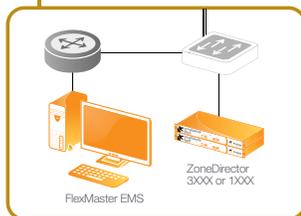
**INTERNET ACCESS, MULTIMEDIA SERVICES, VOIP,  
IP VOD, IPTV STREAMING, GUEST NETWORKING,  
STAFF ADMINISTRATION, OUTDOOR EVENTS**



Many AP options — deployed with or without controller



Adaptive antenna technology and airtime fairness for high density areas

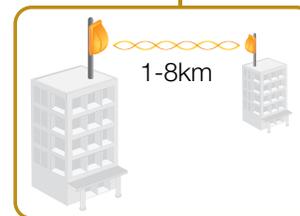


Controllers out of the datapath — deployed onsite or offsite

Unified end-end management of entire indoor/outdoor system



Reliable outdoor SmartMesh Networking minimizes Ethernet cabling



Long-range point-to-point/multipoint 802.11n bridging

# Complete Portfolio for **EDUCATION**

## ZoneFlex 7982



Indoor dual-band, 3x3:3 802.11n AP with integrated smart antenna array and PoE (802.3af/at) support

## ZoneFlex 7372



Indoor dual-band, two-port 802.11n AP with integrated smart antenna array and PoE (802.3af/at) support

## ZoneFlex 7352



Indoor single-band, two-port 802.11n AP with integrated smart antenna array and PoE (802.3af/at) support

## ZoneFlex 7762



Outdoor dual-band, two-port 802.11n AP with integrated smart antenna array and PoE (802.3at/af) support

## ZoneFlex 7731



Outdoor long-range, point-to-point/multipoint 802.11n 5 GHz bridge

## ZoneFlex 7321



Indoor single-band, two-port 802.11n AP with integrated smart antenna array and PoE (802.3af) support

## ZoneDirector Controllers



Central wireless LAN controllers supporting from 6 to 1,000 Ruckus APs

## FlexMaster



Linux-based remote Wi-Fi system management software

# Smart Wi-Fi

Designed and Built for **Pervasive Performance...**  
Available from **Ruckus Wireless**

Ruckus Wireless, Inc.  
350 West Java Drive  
Sunnyvale, CA 94089 USA  
(650) 265-4200 Ph \ (408) 738-2065 Fx

[www.ruckuswireless.com](http://www.ruckuswireless.com)