



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 corner 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 smart Wi-Fi passes the test with flying colors.



Combining adaptive antenna technology, band steering, and airtime fairness makes Ruckus Smart Wi-Fi ideal for high-density environments, providing students with fast and reliable Wi-Fi connectivity.



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

Dealing With High Density

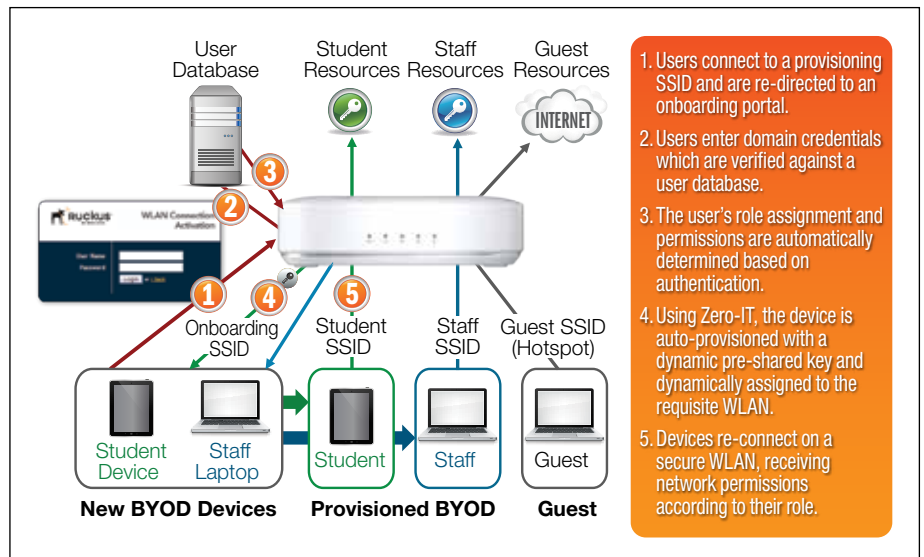
A major concern within the education market is how to deal with high-density environments such as classrooms and lecture halls. With the flood of Wi-Fi-enabled devices simultaneously accessing the wireless network, the Ruckus ZoneFlex™ system is designed to provide a best-in-class solution with high-capacity support for concurrent wireless users. Applying patented adaptive antenna technology that gets users on and off the wireless 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

K-12 school campuses range from one large, vintage-built location to a more modern multi-modular classroom construction. So, getting good Wi-Fi coverage to every nook and cranny of each classroom 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 high-gain directional antenna arrays. Our patented BeamFlex™ technology directs signals toward associated clients, picking the best performing path and constantly routing signals around interference as it is encountered. ZoneFlex delivers two to four times the coverage using fewer APs and costing far fewer dollars. Schools can now take 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.

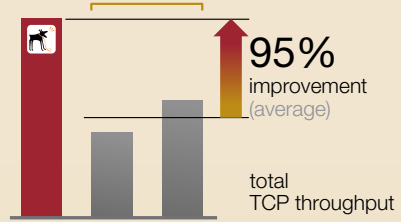


1. Users connect to a provisioning SSID and are re-directed to an onboarding portal.
2. Users enter domain credentials which are verified against a user database.
3. The user's role assignment and permissions are automatically determined based on authentication.
4. Using Zero-IT, the device is auto-provisioned with a dynamic pre-shared key and dynamically assigned to the requisite WLAN.
5. Devices re-connect on a secure WLAN, receiving network permissions according to their role.

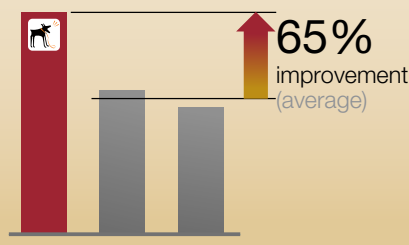
Ruckus Smart Wi-Fi delivers MORE CONSISTENT PERFORMANCE at longer distances

High Density: 90 active clients per AP
 adaptive antennas + conventional Wi-Fi
 learning-based SON implementations

Source:



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



No Ethernet? No Problem

For many educational institutions, Ethernet is not ubiquitous. What about portables, cafeterias, auditoriums, assembly halls and stadiums? Unlike other WLAN solutions, the Ruckus ZoneFlex system employs SmartMesh Networking, allowing schools to easily add Wi-Fi by simply plugging APs 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.

"To see if the Ruckus ZoneFlex system lived up to the hype, we performed extensive capacity testing and were astounded. We were able to connect 78 concurrent devices to a single, dual-band 802.11n AP without the AP breaking a sweat. Each laptop, iPhone, and tablet device was simultaneously streaming video. We ended up running out of devices to connect. We've now deployed some 1,000 APs across 43 sites and have never been more satisfied."

Joseph McBreen
 Chief Information Officer, St. Vrain Valley School District





Smarter Wi-Fi optimized for IP-based video

Video has become an essential application within K-12 environments. 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.

"If we don't have reliable wireless, you may as well cancel school. The Ruckus ZoneFlex system was less than half the cost per node of competitive, enterprise-class systems, and provided capabilities like SmartMesh Networking and adaptive RF routing that was not supported by other 'industry-leading' solutions."

Tim Kamps
Director of Technology



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 antenna technology automatically avoids interference and steers signals over the best performing paths
- 3 Comprehensive BYOD solution**
Users authenticate via a captive portal and are automatically configured for a role-based secure SSID
- 4 Consistent Wi-Fi performance at range**
Massive antenna diversity and client feedback ensure highest data rates to end stations
- 5 Indoor and outdoor managed as one**
Unified configuration, administration, and management of all APs through a single interface
- 6 Interactive classroom enablement**
Automatic interference mitigation ensures flicker-free streaming of voice and video
- 7 High density environments**
Band steering and airtime fairness enable a large number of concurrent users
- 8 No new cabling**
Highly adaptive and reliable Wi-Fi meshing eliminates the need to cable every AP
- 9 Flexible deployment options**
Deploy APs with or without a controller, install controllers on-site or in remote locations
- 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 5 GHz 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



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from a marquee list of
**WORLD-RENOWNED
CUSTOMERS**



Ruckus Makes the Grade at St. Vrain Valley School District

St. Vrain Valley School District, located 30 miles north of Denver, is one of the largest school districts in Colorado. St. Vrain serves 13 communities via 26 elementary, 10 middle, and 9 high schools spanning 411 square miles. The district is comprised of 27,000 students and 4,000 faculty members all accessing 10,000 network devices, including 3,500 laptops.

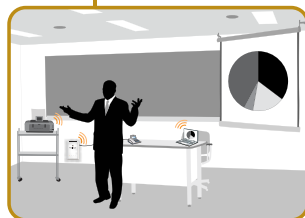
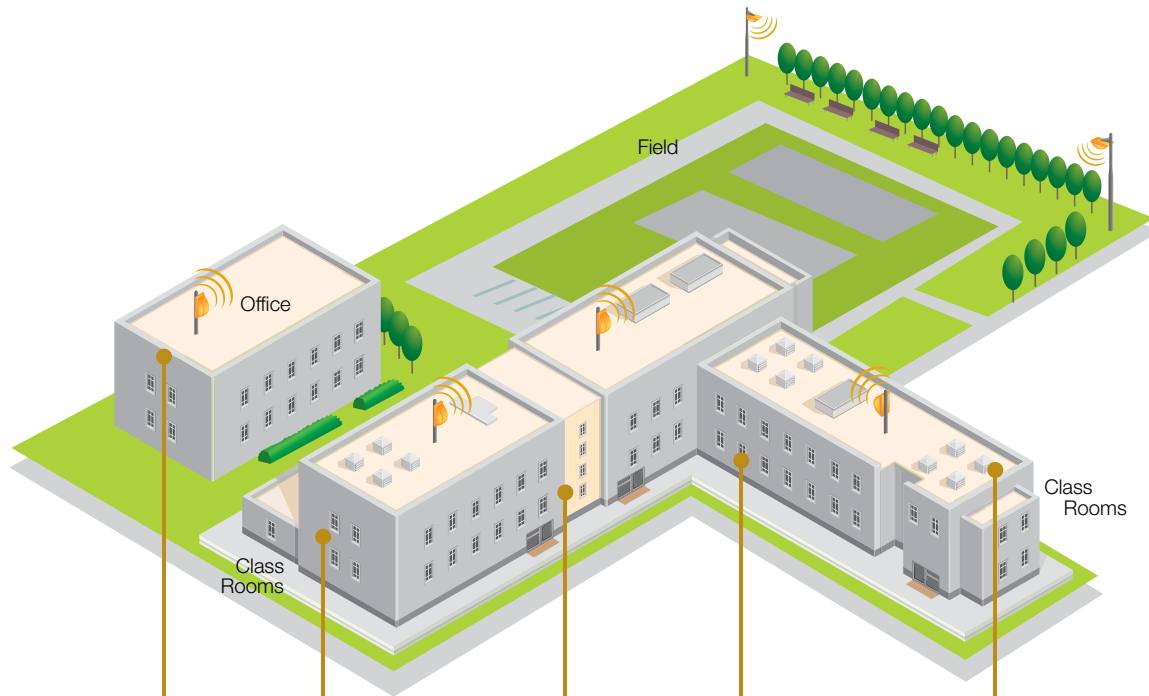
St. Vrain understood that in order to elevate both the learning and teaching experience they would need to create an untethered and ubiquitous wireless experience, vastly improving upon their deficient pre-existing WLAN infrastructure. This would be no 'easy A' given the school district's expansive size, limited budget, and overtaxed IT staff.

Many of St. Vrain's buildings were RF challenged. One middle school's science lab was — and still is — surrounded by metal materials and electrical equipment, making Wi-Fi signal propagation virtually impossible. Their new WLAN would have to pass some big tests...and Ruckus did. During one stress test, 60 concurrent devices connected to one access point (AP). All were simultaneously streaming video from two classrooms — and never lost signal.

St. Vrain replaced their prior Cisco WLAN infrastructure with a Ruckus 802.11n WLAN consisting of 657+ ZoneFlex dual-band indoor APs (ZF7962/ZF7363), 34 ZoneDirector controllers (1000/3000) with Smart OS, and FlexMaster centralized Wi-Fi management.

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

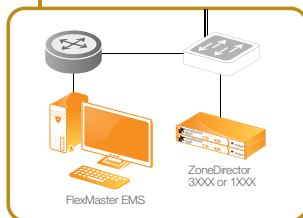
**INTERACTIVE CLASSROOMS, BYOD, VOIP,
IP VOD, IPTV STREAMING, GUEST NETWORKING,
STAFF ADMINISTRATION, OUTDOOR EVENTS**



Many AP options — deployed with or without controller



Adaptive antenna technology and airtime fairness for high density areas

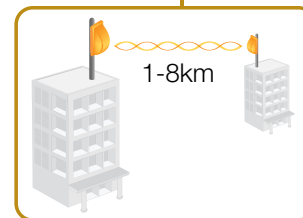


Controllers out of the datapath — deployed onsite or offsite

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



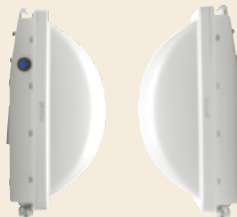
Indoor single-band, two-port 802.11n AP with integrated smart antenna array and PoE (802.3af/at) support

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**

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