MULTI-GIGABIT ACCESS AND SWITCHING TO MAKE THE MOST OUT OF WI-FI 6

Communications networks are more complex than ever before. High-bandwidth, media-rich applications, the bring-your-own-device (BYOD) culture and the Internet of Things (IoT) have hastened businesses toward 802.11ac Wave 2 Wi-Fi implementations, even as 802.11ax (Wi-Fi 6) begins to gain awareness.

Demand for always-on internet and Wi-Fi connection is expected to surge in the next 5 years. Employees now expect use of streaming video in the workplace. And it is not just Smart City initiatives that are driving the need of access. Rural Wi-Fi connectivity projects in India, for instance, are embarking on rolling out Wi-Fi across thousands of villages.

Even as more apps now reside in the cloud, the edge has become increasingly more wireless. Wireless access points (APs) have essentially become part of a converged access platform where multiple functions – ranging from an IoT gateway to firewalling to SD-WAN, and so on – are performed. Access is established through radios operating in different licensed and unlicensed spectrum and different air interfaces from Wi-Fi to LTE to Bluetooth Low-Energy (BLE) to ZigBee.

Regardless, Wi-Fi networks in particular will have to be more efficient, flexible and intelligent than ever before. The networks will utilise sensors and machine data combined with innovations such as artificial intelligence to automatically provision for added capacity and proactively solve potential problems before it impacts the user.

Concurrently, increased dependence on data-intensive wireless and cloud-based applications has driven demand for multi-gigabit connectivity between wireless APs and Ethernet switches at the edge.

MULTI-GIGABIT CONNECTIVITY

With the 802.11ac (Wi-Fi 5) and now 802.11ax (Wi-Fi 6) specifications, an AP has the potential of more than one-gigabit throughput. Wi-Fi 6 was built to handle more devices and bandwidth-hungry applications. But a single Wi-Fi 6 client can quickly overtax existing 1 GbE backhaul links on a typical AP. This has generated interest in multi-gigabit connections between APs and switches.

Bridging the performance gap between gigabit and multi-gigabit Wi-Fi is becoming necessary in demanding environments such as stadiums, exhibition halls, hotels and even primary and K-12 schools.

Most 802.11ac APs are equipped with two 1 GbE ports, with some featuring 2.5 GbE ports.

The new 802.11ax (Wi-Fi 6) APs will support up to 10 Gbps theoretically. But practical limits slow throughput so these APs will be equipped with 5 GbE ports.

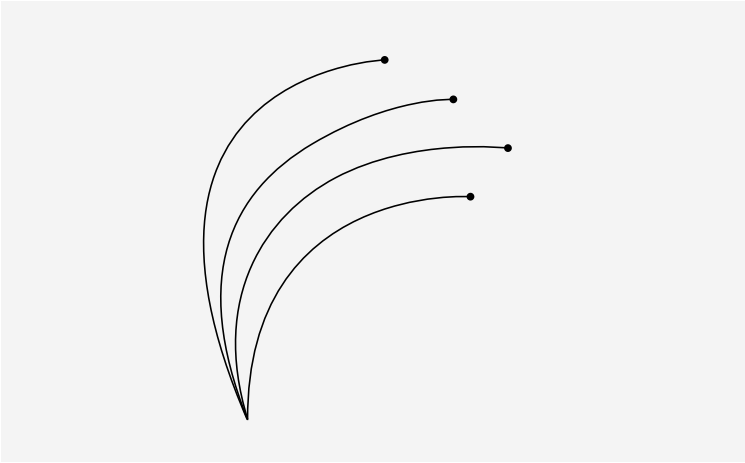
APS AND SWITCHES

Ruckus Networks, now part of CommScope, has been deploying Wi-Fi in extremely challenging venues that have incredible capacity requirements, such as stadiums and arenas. CommScope Ruckus offers multi-gigabit options that include APs and switches optimized for Wi-Fi 5 or Wi-Fi 6 with 2.5GbE connections, or Wi-Fi 6 via flagship APs or ICX Z-Series switches with 2.5/5/10 GbE ports.

These multi-gigabit solutions allow organisations to balance cost, performance and Wi-Fi client density. For example, the CommScope Ruckus R750 802.11ax indoor AP for ultra-dense client environments is Wi-Fi CERTIFIED 6 from the Wi-Fi Alliance.

Meanwhile, the Ruckus ICX 7150-C10ZP, ICX 7150-48ZP and ICX 7650-48ZP provide rich options for 2.5/5/10 GbE Ethernet switching fit for different deployment scenarios with the R750. Additionally, the Ruckus ICX 7850 switch is designed to deliver 100 GbE edge-to-core connectivity for multi-gigabit enterprise and campus networks.

To maintain a consistent and richer Wi-Fi 6 user experience, the combination of CommScope Ruckus multi-gigabit switching, Wi-Fi technology and unified network controller, with CommScope's structured cabling, provides a comprehensive end-to-end network solution.



CABLING, POE TO OPTIMISE WI-FI

The cabling infrastructure needed to support the latest Wi-Fi APs must be upgraded to handle bandwidth-hungry devices and applications such as virtual reality, 4K video streaming and wearables. Critical connectivity is also needed to support operational use cases like IoT devices, video surveillance, asset tracking, climate control systems, smart locks and point-of-sale.

Generally, multi-gigabit technology leverages commonly deployed Cat 5e (for 2.5 Gbps) or Cat 6 (for 5 Gbps) cabling. Hence, enterprises can maximise the performance of their Wi-Fi networks and obtain multi-gigabit access capacity over an existing cable plant.

To ensure optimal performance of these APs, Category 6A cabling infrastructure and multi-gigabit switches that support the 802.3bt PoE standard to its full 90 W should be installed. Ruckus multi-gigabit switches already offer up to 90 W per port and up to 1500 W of total PoE budget along with uplinks of up to 100 Gbps to future-proof the network.

SUCCESS STORY: UNIVERSITY TECHNOLOGY OF SYDNEY (UTS) INSEARCH, AUSTRALIA

SEAMLESS, SCALABLE WI-FI LAYS FOUNDATION FOR LEARNING INNOVATION

UTS Insearch is the pathway provider for University Technology Sydney (UTS). It has locations across the world with a campus in Sri Lanka opened in late 2019. The UTS Insearch main Sydney campus spans five buildings and 70 classrooms. The organisation supports over 5,000 students and more than 300 staff from 75 different countries.

UTS Insearch requires a high-performance network solution in its main campus that meets current and future Wi-Fi needs with superior connectivity and coverage. Seamless Wi-Fi, coupled with high-speed wired connections, has become a core foundation on which digital curriculums and connected classrooms are built.

However, UTS InSearch's legacy APs were delivering sub-par speed and could not support a high-density of concurrent connections to support an international student base who needs seamless internet connectivity for study and to communicate with friends and family from their home countries.

SOLUTION

UTS Insearch upgraded its legacy APs to the CommScope Ruckus 802.11ac APs, which incorporate Ruckus' BeamFlex+ patented antenna technology. It also deployed the CommScope Ruckus ICX switches to enhance the wired network. The solution provides an easy upgrade path to CommScope Ruckus Smart Positioning Technology (SPoT) cloud-based location services for room utilisation monitoring.

The organisation was impressed by the Ruckus portfolio's high RF performance, seamless upgrade path and excellent customer service, with ongoing expert consultation that was tailored to the needs of the project.

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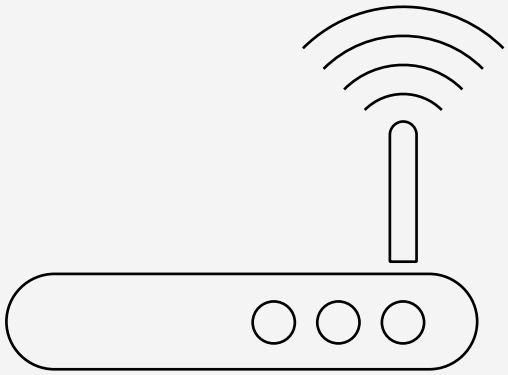
The Ruckus APs were deployed across the campus, focusing on high-user demand areas such as lecture theatres, high thoroughfare corridors and main common areas.

A CommScope Ruckus SmartZone network controller manages not only the APs, but also the ICX switches. Implementation of Cloudpath for certificate-based BYOD management is also on the roadmap.

BENEFITS

Superior RF performance means that the team is able to use about 30-40% fewer APs compared to the previous hardware. The Ruckus ICX switches, meanwhile, provide high performance, flexible scalability and simplified management for mid-to-large scale deployments to meet current and future network demands.



Using Ruckus SPoT services to monitor room utilisation helps to minimise wasted space and energy costs. The upgraded Wi-Fi network has also enabled UTS Insearch to add new services that support learning innovation over time.

In the near future, CommScope will help UTS Insearch to manage a Campus Fabric using their Virtual SmartZone controller. The maximum number of ICX switches will also be increased from 36 to 50+ to support larger deployments.