NETWORK CONVERGENCE EMPOWERS THE INTERNET OF THINGS

The Asia-Pacific region accounts for around 35.7% of global Internet of Things (IoT) spending in 2019. As countries and enterprises in Asia Pacific continue to roll out Smart City and IoT initiatives, demand for more and better connections will increase, as will im-pact on network infrastructure. Leading hubs of IoT development have sprouted in China, South Korea, Taiwan, Hong Kong and Singapore, impacting major industries such as transportation, manufacturing, agriculture, government, healthcare, and retail.

Once IoT sensors are connected to the data centre, intelligent data will be generated to drive new analytics and services. Over the next five years, the expanding edge computing environment featuring greater processing power, storage and other advanced capabilities will establish robust communications back to centralised services.

Multi-access edge computing deployments are moving processing power to the end points and users to enable lower-latency applications. Wireless networks are also experiencing the convergence of licensed (4G/5G) and unlicensed (Wi-Fi, Bluetooth, LoRa, etc.) spectrum. For example, smart buildings will be served by reliable cellular coverage along with ubiquitous Wi-Fi and support for IoT wireless networks. With Citizens Broadband Radio Service private networking added to the mix, multiple networks will be converged under one roof in the future.

These trends are intensely reliant on the convergence of broadband fibre, copper and wireless as well as powered connectivity onto a network that connects data or processing sources and consumer end-points. The ubiquitous need for

bandwidth by consumers who increasingly rely on IoT devices reinforces the need for network convergence.

THE EFFICIENCY MANDATE

Wireless network architecture is evolving and creating more capacity with 4G/LTE densification and 5G wireless. More small cells as close to each other as 250 metres means that each access point (AP) creates more bandwidth per square metre while the promise of fixed wireless 5G in the sub 6 GHz range and millimetre wave band (i.e. 28GHz) creates more bandwidth as well as additional spectrum.

In tandem with this evolution, the converged network that IoT devices rely on must be efficient because of the efficiency that consumers expect of their IoT devices.

POWER

Developments in Power over Ethernet (PoE) technology will see a convergence between the delivery of power and bandwidth. IEEE 802.3bt – the 4-pair PoE standard also known as 4PPoE – increases the highest average power at the Power Sourcing Equipment out-put to about 90 W without compromising data bandwidth.

4PPoE can power more devices beyond lighting, Wi-Fi routers, IP cameras and industrial sensors, including even cellular small-cell base stations, retail point-of-sale terminals and digital signage systems. Grand View Research predicts that the global PoE market will reach US$3.77 billion by 2025 as more applications and devices utilising 4PPoE technology, which is compatible with data rates of up to 10GBASE-T, are introduced.

BACKHAUL FOR LOW LATENCY

Wireless networks will ultimately need to come together with wired counterparts. A traditional cellular network typically features a network of macro cells, each independently powered and interconnected by a backhaul network of varying types, inclusive of fibre, hybrid fibre coaxial, copper and microwave.

The CommScope-Ruckus end-to-end connectivity portfolio allows enterprises to design and install a seamless fibre, copper and wireless infrastructure. As wireless infrastructure becomes more centralised and data traffic in mobile networks continues to grow rapidly, wireless backhaul traffic will be converged onto the same fibre used by wireline services. Solutions for converged

wireless networks include CommScope's Smart Cities portfolio and CommScope Ruckus solutions ranging from Wi-Fi 6 to Citizens Broadband Radio Service (CBRS), IoT, and LTE.

FUTURE-PROOFED

Whether it's laying the groundwork for wireless and wired infrastructure, for data analytics, or for cabling within a building, decisions are being made today for sites that are going to be around for another 20 years. Ongoing developments such as the IoT, 5G, Multi-access Edge Computing, and new standards in PoE mean that it is important that preparation provides the greatest flexibility for the technologies and applications that lie ahead.
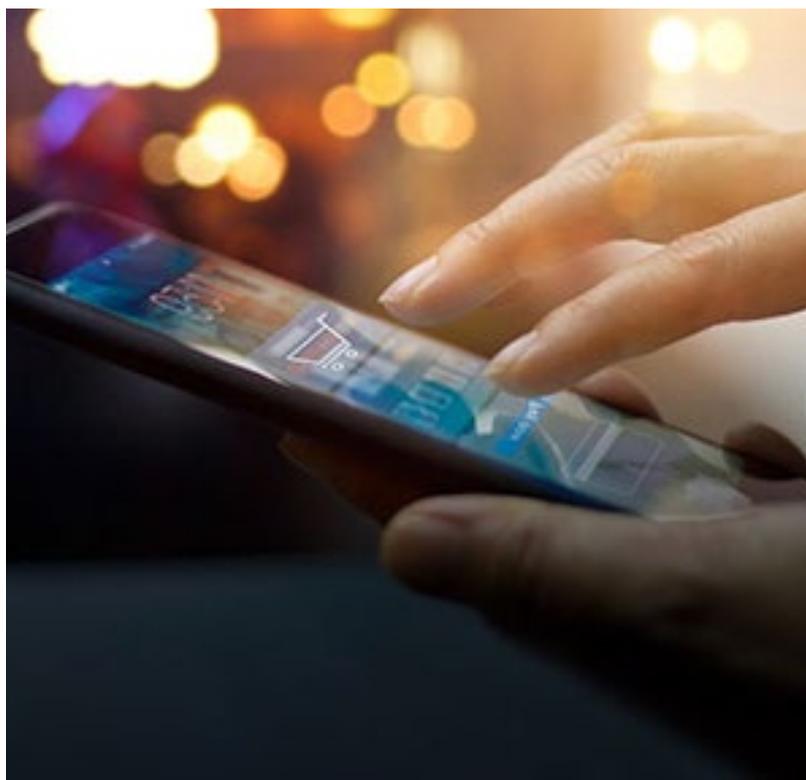
NETWORK CONVERGENCE EMPOWERS THE INTERNET OF THINGS

SUCCESS STORY: MILLENNIUM & COPTHORNE HOTELS, SINGAPORE

SMART CONVERGENCE LAYS FOUNDATION FOR FUTURE INNOVATION

Tech-savvy guests, evolving customer demands and technological innovations such as IoT are disrupting the hospitality industry. In an evolving landscape, Millennium & Copthorne (M&C) Hotels aimed to roll out services and innovations for their five hotels and corporate office in Singapore while increasing guest satisfaction regarding Wi-Fi performance and supporting multimedia content.

The global company owns and operates over 100 hotels worldwide, including the six properties in Singapore. A key concern was meeting current and future guest demands for bandwidth and seamless connectivity. It also required hotel-wide Wi-Fi coverage to support deployment of new digital services, IoT innovations, and room service robots.

Specifically, a network architecture that leverages the latest 802.11ac Wave 2 technology to provide strong and reliable Wi-Fi was needed for increased productivity and efficiency, improved collaboration amongst employees, and reduced operating costs.

SOLUTION

Over a short eight months, more than 2,900 CommScope Ruckus APs that leveraged the 802.11ac Wave 2 standard were deployed across the five hotels.
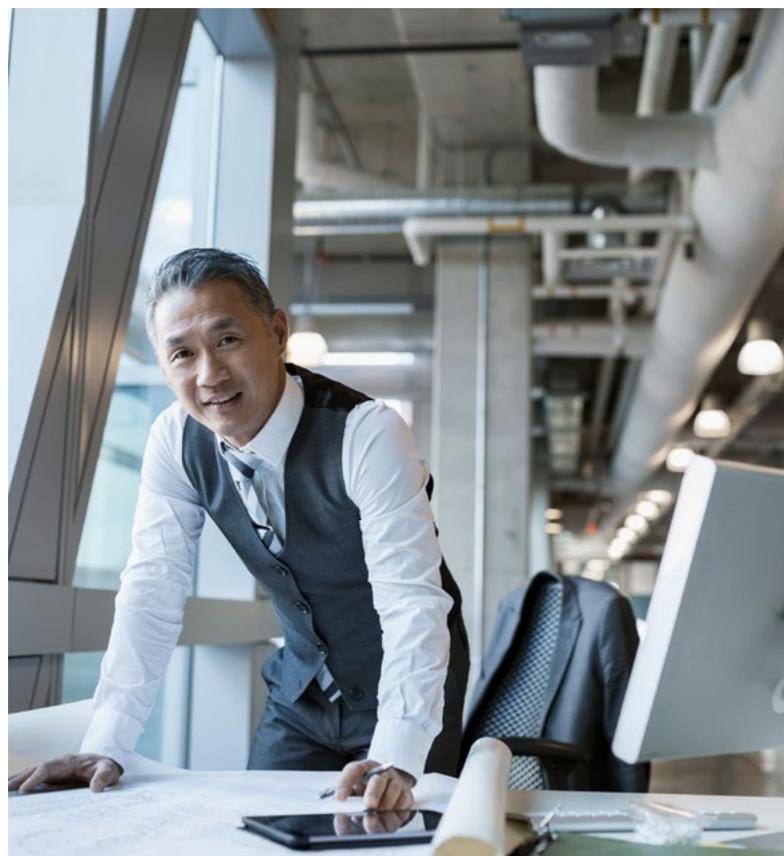
Over 135 CommScope Ruckus ICX switches were deployed to support latency-sensitive applications, such as real-time voice/video streaming, and to provide the aggregation functions. Each of the five hotels is individually managed by a 2-node SmartZone Cluster, which enhances resiliency for high availability requirements.

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To enhance guest experience, the hotel deploys service robots. The robots need a wide Wi-Fi coverage area with stable and reliable connections, as well as travel-far signals to operate and find its own way around the hotel to deliver room amenities to guests.

Also, CommScope has been easing hotel fibre deployments while enabling IoT solutions. CommScope's structured cabling products, along with the Ruckus ICX 7150-24F fibre switch, ICX 7150-C08 compact switch and Fiber Backpack, offer hospitality customers an end-to-end solution.

BENEFITS

The CommScope Ruckus range of specialty APs are geared for unique location-specific requirements. The H510 APs, which deliver in-room Wi-Fi, support more devices simultaneously. The R510 APs bring performance, reliability and coverage to medium-density indoor common areas. The R710 APs deliver reliable connectivity to high-density locations, such as ballrooms and pre-function areas, including the 3,800 sqm of convention space at Grand Copthorne WaterFront, and the T610 APs serve busy outdoor locations, such as swimming pools and tennis courts.

The Fiber Backpack allows for direct integration of Ruckus H510 in-room APs onto the fibre backbone for a clean, secure installation that leverages the scale, speed and efficiency of fibre-to-the-room architecture.