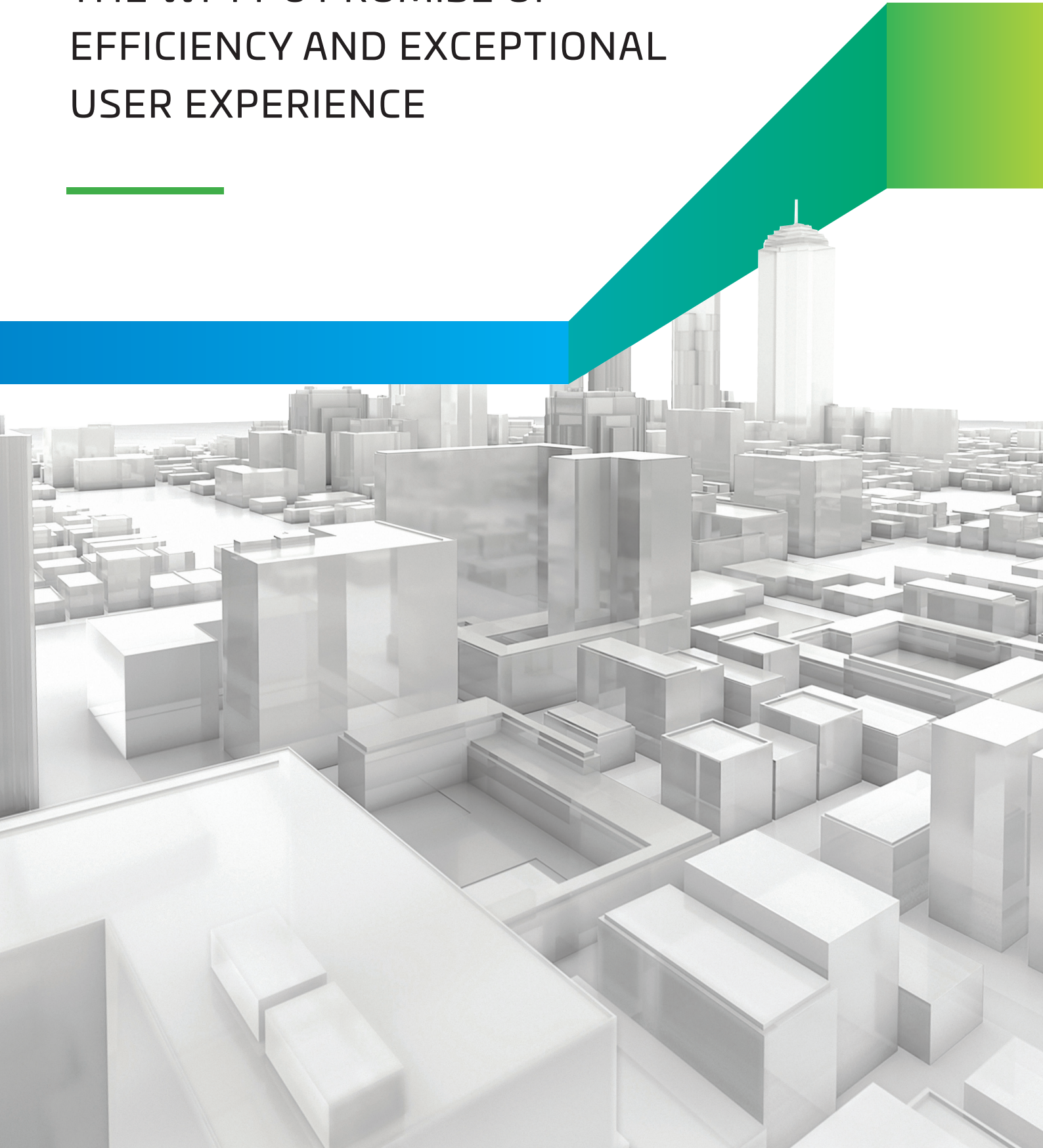


CHAPTER 4

THE WI-FI-6 PROMISE OF
EFFICIENCY AND EXCEPTIONAL
USER EXPERIENCE



User experience is crucial in today's digital, hyper-connected environment. Beyond poor user experience, every minute of unplanned downtime can cost enterprises anywhere from \$5,600 to \$9,000. More worrying for network managers is the growing volume of reported outages that hinder organizations from accelerating digital innovations.

For organizations that operate networks that serve not just employees but customers, students or subscribers, all the analytics that an organization embarks on to help improve the customer experience would be pointless if Wi-Fi network performance were poor. In the hospitality sector, for example, studies show that nine out of 10 guests will not rebook a hotel if their Wi-Fi experience was bad. The same would likely be true for venues.

Indeed, readily available Wi-Fi is a foundation of the digital economy. It is not only a productivity tool that empowers employees to work and collaborate better but also a platform that enables organizations to interact directly with their customers via apps, websites and other digital services on the Internet and the Intranet.

Hence, business and IT leaders – particularly

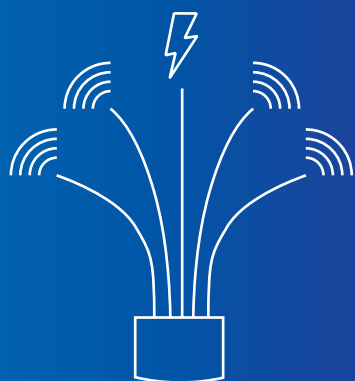
within the hospitality, healthcare and retail industries – mostly agree that a bad Wi-Fi experience will negatively affect brand reputation. This is where Wi-Fi 6 offers the critical advantage of dramatically increased wireless bandwidth and network efficiency compared to legacy Wi-Fi 4 or 5.

WI-FI 6

[Wi-Fi 6](#) made its way into new installations in 2019. It is designed to allow for wireless data rates up to 10 Gbps – with real-world throughput of up to 5 Gbps – and to operate in today's increasingly busy and crowded environments, such as airports, stadiums, hotels, apartment and commercial buildings and entertainment venues.

With an expected four-fold capacity increase over its 802.11ac Wave 2 predecessor, Wi-Fi 6 deployed in dense device environments supports higher service-level agreements to more diverse and concurrently connected users and devices.

Wi-Fi 6 networks enable IoT devices to work better and more efficiently. And they make possible a new wave of IoT devices. Significantly, features such as Wi-Fi 6's Target Wake Time provide the battery efficiency that allows the consolidation of services onto



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a single Wi-Fi or IP infrastructure and the handling of ever-increasing load being put on networks.

Wi-Fi networks have been useful in alleviating the strain on LTE networks in high-density areas to enhance customer experience. Wi-Fi 6's support of multi-user, multiple-input, multiple-output (MU-MIMO) technology enables any compatible access point (AP) to handle traffic from up to eight users simultaneously at the same speed.

Still, enterprises will only realize the full benefit of Wi-Fi 6 with the right cabling infrastructure to serve as backhaul for the AP. The data rates of APs are increasing quickly with the Ethernet interface advancing from 1 GbE to 2.5 GbE and 5 GbE. To deliver the bandwidth needed for current and future applications, the TSB-162-A standard recommends running two Category 6A cables to each service outlet supporting an AP.

Further, the ISO/IEC 11801-6 standard lists typical indoor ranges of an AP that should be used based on the frequency band and data rate of Wi-Fi services. The list helps to determine the coverage of an average grid and placement of cabling and service outlets.

SPECIALTY ACCESS POINTS

Every network deployment has its own unique requirements. Providing Wi-Fi in every room of a hotel or a university residence hall, for example, requires a different form factor and feature set from serving an office environment. Deploying Wi-Fi outdoors, or in a large stadium, demands still other considerations.



CommScope, with RUCKUS in its fold, offers a large portfolio of [indoor and outdoor AP options](#) to suit any type of deployment. This includes wall-mounted Wi-Fi plus Ethernet switch APs for hospitality and multi-dwelling unit environments, as well as APs that make use of a building's existing coaxial cabling for backhaul.

The CommScope [Ruckus R750 802.11ax](#) indoor Wi-Fi AP for ultra-dense client environments is one the first APs to be Wi-Fi CERTIFIED 6. This certification from the Wi-Fi Alliance validates the use of the R750 in environments such as stadiums, hotels, convention centers and schools. Being Wi-Fi CERTIFIED 6, more connected R750 APs can achieve peak performance simultaneously in these environments while supporting the Wi-Fi CERTIFIED WPA3 security protocol.

CHAPTER 4: THE WI-FI-6 PROMISE OF EFFICIENCY AND EXCEPTIONAL USER EXPERIENCESUCCESS STORY: [HUNTINGTON INDEPENDENT SCHOOL DISTRICT](#), TEXAS, U.S.A

RELIABLE, HIGH-PERFORMANCE WI-FI WIDENS E-LEARNING POSSIBILITIES

The Huntington Independent School District (ISD) serves more than 1,600 high school, middle school, intermediate school and elementary school students on five campuses. Teachers and administrators have been committed to supporting the students' needs and they expect the district-wide wireless network to do the same.

However, when the Wi-Fi network crashed district-wide while 400 middle-school students were logged onto digital learning courseware, the vendor's response was slow. Problems continued even after replacing APs and patching software. Costs mounted.

Having a small IT staff, maintaining separate wired and wireless networks was time intensive. The administration agreed to replace the existing infrastructure given its severe limitations and poor vendor support. The Huntington ISD's priority was to seek a network partner with top-notch support and technology that would take the district far into the future.

SOLUTION

For starters, CommScope enabled the school district IT to converge its wired and wireless networks onto a single management platform. With the [RUCKUS SmartZone network controller](#), the team could manage every AP and switch from a single console.

The Wi-Fi 6 certified RUCKUS indoor APs and stackable [multi-gigabit ICX switches](#) enabled the school district to ramp up internet speed to 2 Gbps. The Ruckus 802.11ax APs are geared with patented technology to fit any unique budget, performance requirement, or deployment scenario. They overcame issues such as high client density and Wi-Fi-unfriendly building materials to enhance network reliability.



The network provided a clear and easy upgrade path to higher speeds. CommScope engineers worked closely with the IT staff to integrate legacy switches with the ICX stackable switches as the former were gradually replaced.

CHAPTER 4: THE WI-FI-6 PROMISE OF EFFICIENCY AND EXCEPTIONAL USER EXPERIENCESUCCESS STORY: [HUNTINGTON INDEPENDENT SCHOOL DISTRICT](#), TEXAS, U.S.A**BENEFITS**

The new network is significantly easier to manage and update. For example, an ICX switch added to a stack automatically inherits the stack's existing configurations. Each AP can be configured for 2.4 GHz or 5 GHz on the fly from the SmartZone console. IT can check the Wi-Fi status in every school from a dashboard.

To strengthen safety, security and emergency communications, IT can easily set up SSIDs on the Wi-Fi to open secure parts of the network for users or events. The network's rock-solid Wi-Fi performance has made district-wide online testing feasible again.



The school district could also consider [RUCKUS Cloudpath Enrollment System](#) to manage the onboarding of students and device authentication as well as [RUCKUS Analytics](#) cloud-based network monitoring to look at network utilization and optimize performance.