

Networks Are Being Asked to Do More Than Ever

Video Conferencing



AR/VR



Cloud Everything



Location Tracking



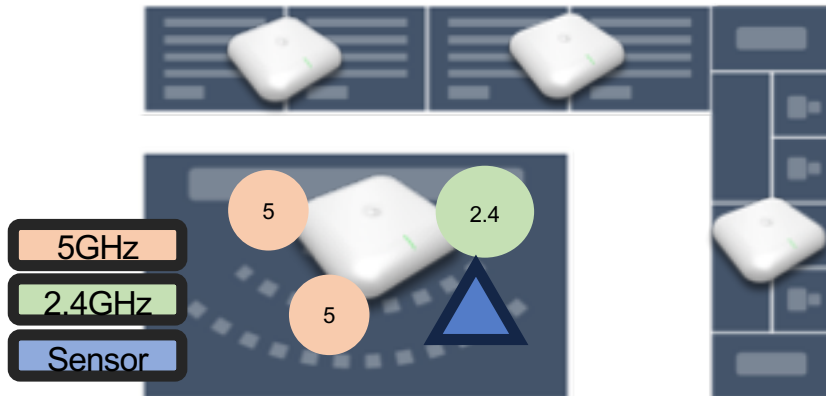
Internet of Things



4K/8K Video



Let teachers teach, not support IT



Prioritize Education Applications

1. Prioritize online learning applications and testing apps
2. School managed logon with Google G-suite and Office365 integration

Higher Density Networks

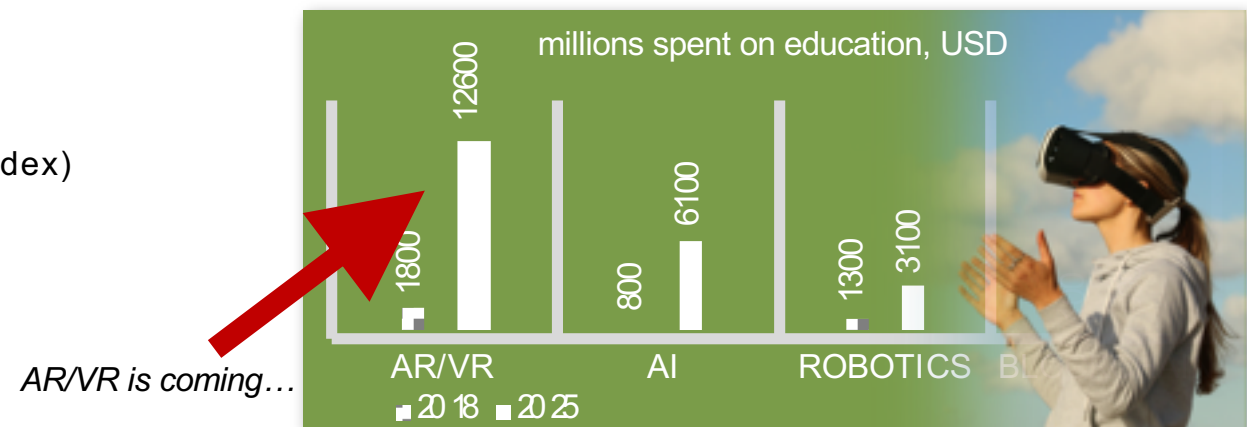
1. More devices, multiple devices per student, same small classroom
2. IOT devices for security, environmental monitoring, and biometric attendance

Augmented Reality Will Require:

1. Significant school bandwidth upgrade
2. Low packet latency and high RFQI (RF quality index)

School Networks Will:

1. Transition to Enterprise network architecture
2. Deliver an application Service Level (SLA)



Source: HolonIQ, Smart Estimates™ January 2019

Wi-Fi 6 Meets the Education Market Challenge



More efficient signaling and control protocols

MU-OFDMA for efficiently use spectrum for low to medium bitrate applications

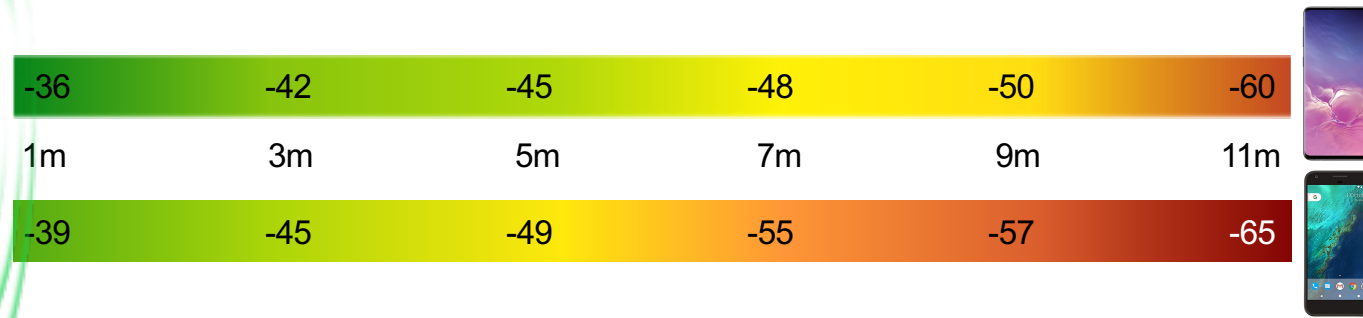
MU-MIMO, bi-directional transmissions ideal for high bitrate AR/VR and EDU games

Dynamic scheduler chooses MU-OFDMA / MIMO by the application, clients, interference

Wi-Fi 6E opens up a new band with a total of 1200 MHz of spectrum

Q2.20	Q3.20	Q4.20	Q1.21	Q2.21	Q3.21	Q4.21
US-FCC votes to open 6GHz	First generation chipsets available for system designers		Possible Intel client radio	First laptops? First smartphones?	?	?

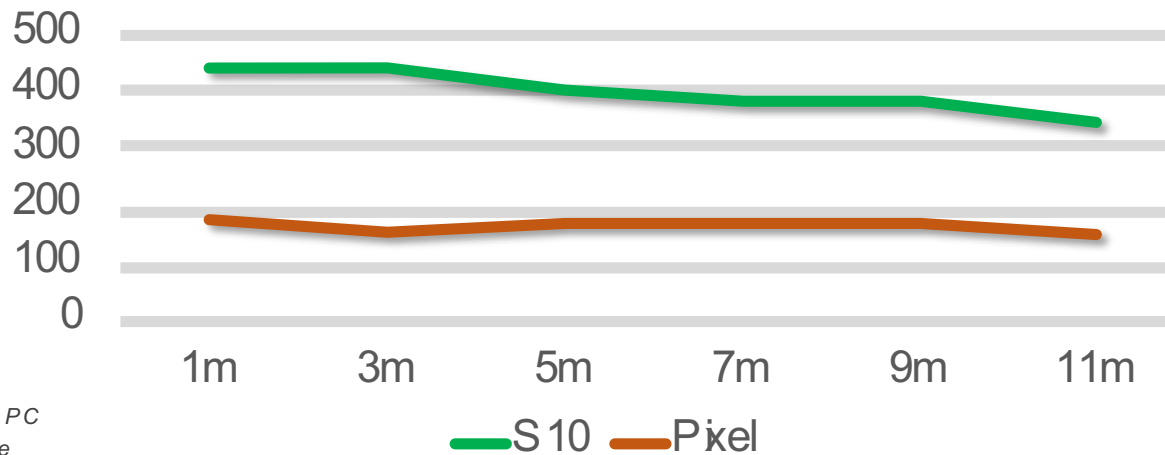
Real-world Test Results



Samsung S10 2x2 11ax

Pixel 2x2 11ac wave2

TCP Throughput: Wi-Fi 5 vs Wi-Fi 6

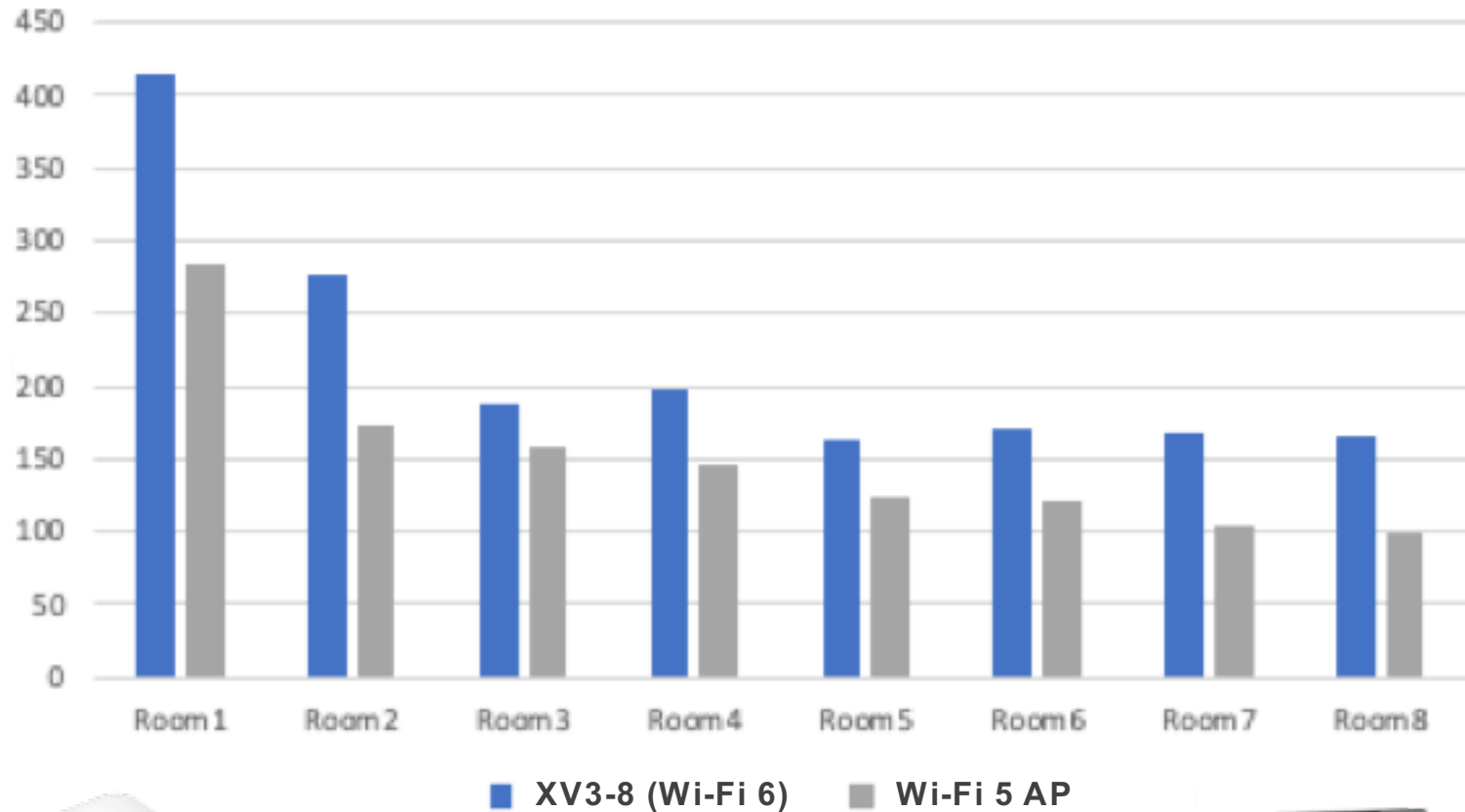


What is happening here?

- 8x8 antennas improve effective power and receiver accuracy
- More efficient signaling protocols
- Improved client CPU
- Improved 256 QAM modulation

Test Details
 iPerf3 client on Windows 10 PC
 iPerf3 server on smart phone
 iperf3 -c <ip> -i 10 -t 10 -P 6
 40Mhz channel, 44/48, short guard

5GHz Throughput vs Room (Mbps)



What is happening here?

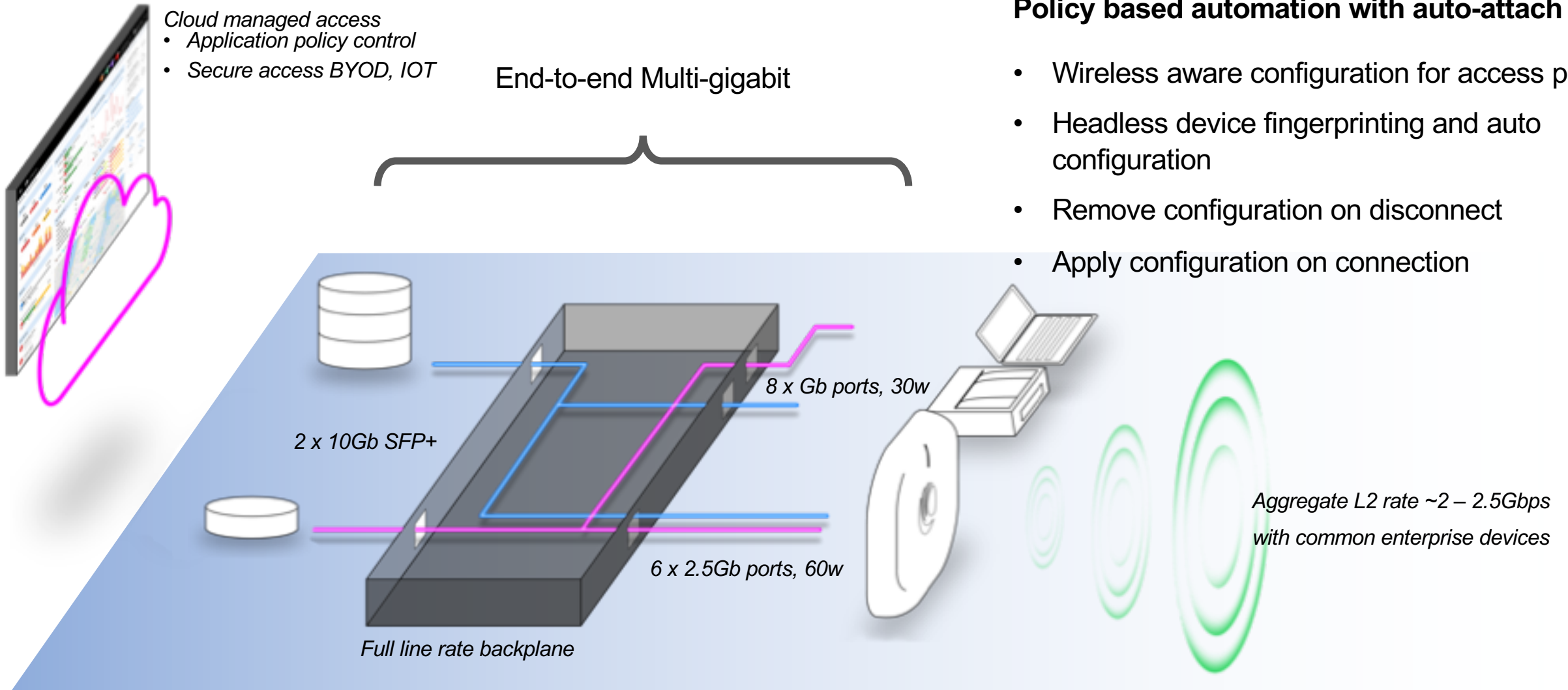
- 8x8 antennas provide better receive sensitivity and signal integrity
- Improved radio driver and offload
- 1024QAM is 25% more bits/Hz

Test Details

AP located outside of Room 1
Increasing distance from AP to Rooms on the right of graph
Throughput measured to single Macbook 3x3 11ac client

- Cloud managed access
- Application policy control
 - Secure access BYOD, IOT

End-to-end Multi-gigabit



Policy based automation with auto-attach

- Wireless aware configuration for access point
- Headless device fingerprinting and auto configuration
- Remove configuration on disconnect
- Apply configuration on connection