

# The Year Ahead in Telecom

5G may continue to grab headlines in 2021, but the telecom industry will be dominated by the edge and by automation, enabling service provider networks to adapt to shifting traffic and usage patterns.

By Steve Alexander / *Ciena*

**T**he year 2020 was like no other, bringing untold disruption to everyone's way of life. The telecom industry held up remarkably well to the unprecedented level of strain on networks and consumer services as workers became remote, video content consumption soared, and "Zoombombing" became a well-known word.

Behind the scenes, and despite the sometimes-literal roadblocks COVID-19 threw in their paths, global service providers continued to roll out 5G, explore innovative automation technologies, and push the boundaries of network performance. As dependence on networks shows no signs of slowing, what does the next year have in store for the industry?

## TAKING INVESTMENT TO THE EDGE IN 2021

5G networks are primed to deliver faster web browsing and video streaming with reduced latency, both very appealing for consumers. But 5G can do so much more once networks have matured. Advanced 5G services such as rich augmented reality (AR) and virtual reality (VR), cloud gaming, telemedicine and Industry 4.0 (the connected manufacturing revolution) all require reliable networks that can deliver low latency and high bandwidth – and also high levels of intelligence.

Networks must continue to get faster, closer and smarter, utilizing automation intelligence and software to deliver on the hype of these exciting services. A part of building faster, closer

and smarter networks is to build out the edge, where up to five times more data centers are needed than are available today.

There is already heavy investment in building out edge data-center sites to bring the cloud closer to users, and this investment will continue at pace in 2021. Carriers know they need to continue to focus on building out their edge infrastructure in these smaller data-center sites, leveraging edge cloud capabilities. This will mean that services can be processed closer to users, improving user experience and delivering on the bold promises of 5G.

## MEETING NEW NETWORK REQUIREMENTS WILL BECOME AUTOMATIC

Carriers know that the demands consumers place on networks show no signs of slowing as lives become more digital and distributed. That means network rollout will continue at pace, but networks must now be built to adapt on their own. Carriers have already taken steps to make this happen, but in 2021, there will be even more use of software and analytics to improve the way optical networks function.

Advanced software capabilities will redefine how network providers engineer, operate and monetize their optical networks. These software solutions were originally focused on extracting more value from existing network assets. In 2021, consumers will see these software solutions play a key role in *new* network builds, giving service providers the ability to fine-tune,

control and dynamically adjust optical connectivity and capacity.

Software will offer greater visibility into the health of networks via real-time link performance metrics and increased, end-to-end photonic layer automation. By utilizing the latest advanced software solutions, providers can monitor and mine all available network assets to be able to instantly respond to new and unexpected bandwidth demands and allocate capacity across any path in real time – a function that will become increasingly important year on year.

### **DIGITAL INCLUSION KEY TO CONTINUED REMOTE WORKING**

COVID-19 demonstrated how important connectivity is for people to stay in touch, shop and work remotely to keep the economy moving. It also proved crucial to the continued education of students. There is a growing desire to maintain this flexibility even once pandemic restrictions are lifted, but this is possible only through connectivity and capacity.

In 2021, rural connectivity and digital inclusion initiatives will move higher up the political agenda, and solutions such as low-Earth-orbit satellite connectivity will come to greater prominence. The solution that maximizes ultimate capacity is still scaling fiber-based broadband, but this can be a challenge in rural areas and will require a nudge from policymakers to get things moving.

Countries that want to stay at the forefront of the digital economy must break down the barriers to rural connectivity and invest in fixing the last-mile problem. They must also continue supporting digital inclusion programs that grant students access to technology and tools. Government incentives and initiatives and ongoing review to ensure that networks use the most effective equipment suppliers are certainly ways to help.

### **ENHANCED REALITY FIRST KILLER USE CASE FOR 5G**

Almost as soon as talk of 5G networks first started, so too did questions

## **Networks must continue to get faster, closer and smarter, utilizing automation intelligence and software to deliver on the hype of exciting services such as rich AR and VR, cloud gaming, telemedicine and Industry 4.0.**

about what the killer app for the new standard will be. This year might not be the year that question will be answered definitively, but it will be the year that enhanced reality (AR and VR) applications take a step forward. However, consumer-centric services may not light the path – enterprise use cases could lead the way.

I think it's safe to say that many people have grown weary of online team meetings this year, and "Zoom fatigue" has become a very real thing. In 2021, I predict, we will see more instances of AR and VR being used as collaboration tools, helping remote teams regain some of the "live" element of working together. These services will initially need to run over combinations of home broadband, in-building Wi-Fi and 4G and 5G networks. They ultimately will open the door to more commercial AR and VR services over 5G networks and Wi-Fi 6 further down the road. The quality of those networks will take enhanced-reality applications beyond fun, short-term gimmicks into being viable and valuable service offerings.

### **IMPROVING THE CLOUD EXPERIENCE**

One of the biggest trends of 2020 was the partnerships forged between telecom carriers and some hyperscalers. No doubt this will continue and grow well beyond 2021, but as networks become increasingly more software-centric, there is an opportunity to improve the delivery of new services and applications to users.

From the perspective of a webscale operator, service provider networks often appear to be a patchwork quilt of various vendors and technologies.

The suite of internet protocols allows this complexity to be abstracted up to a set of globally uniform IP addresses, which has served people fantastically well. At the same time, service provider networks look largely opaque to the cloud – consequently, it is hard to guarantee the cloud experience that users desire. To deliver next-generation service, more collaboration between cloud and network is required. Making the network adaptive using intelligent software allows coordination between service provider networks and the cloud and will enable a generation of AR- and VR-based immersive services and applications.

Last year, the telecom industry proved to be extremely resilient to levels of disruption few would have imagined just 12 months earlier. But it also showed just how dependent people are on connectivity and how much more needs to be done to ensure the benefits of next-generation networks reach all corners of society.

Fifth-generation networks may well continue to dominate headlines in the national press in 2021 as excitement over what they can offer continues to simmer, but a peek behind the curtain will reveal a year dominated by the edge and by automation. By building out the network edge and continuing to invest in intelligent software that enables networks to adapt, we can continue to push the boundaries of networks, begin to unlock the potential of 5G and reap the rewards of robust connectivity. ❖

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