# 5G and Next-Generation Networks in a Time of Crisis

By: [Robert Bianco](#)

The Chinese symbol for "crisis" is the same as the Chinese symbol for "opportunity."

This curious semantic is being realized now in 2020. It's borne out in the crisis of the COVID-19 pandemic—and in the opportunities and promise afforded by 5G and next generation technologies. But a footnote: we must get to 5G swiftly but cautiously.
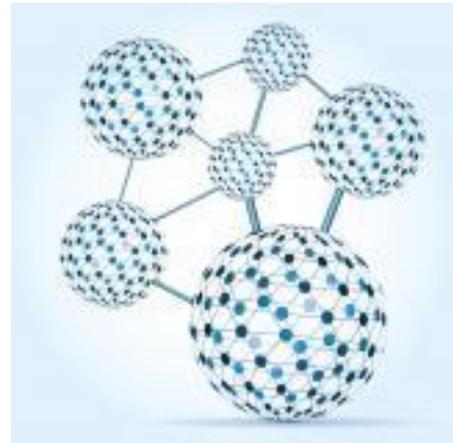
With COVID-19, we're all online, all the time. The pandemic has fueled a hunger for bigger, faster and more ubiquitous broadband services, and the movement toward next-generation networks and 5G will help sate the beast, say the carriers.

The sheer number of Americans online during the pandemic has moved the needle toward a next-generation network. At the workplace, we crave Zoom calls and webinars. At home, we binge on Netflix and our kids are addicted to gaming applications. And many of us have experienced distance learning and telemedicine for the first time.

This deluge of Americans working, studying and interacting online is creating unprecedented demand on wireless carriers and their networks, and this "firehose" in demand has, in turn, validated the wireless industry's assertions about and investment in building high-speed Internet connections. And this same wireless industry has sought relief from the Federal Communications Commission (FCC) and

other regulatory agencies to properly manage the demand and make it easier for consumers and enterprises.

Sitetracker, a company devoted to critical infrastructure deployments, surveyed a mix of companies in early March and found that 44 percent of carriers believe the coronavirus pandemic will increase demand for telecommunications infrastructure, given the rise in households living and working remotely.

Movement to next-generation networks is critical

Even at current 4G and 4GLTE standards, the pandemic has created a new awareness of the critical nature of high-speed connectivity. But it's also important to note that, even though carriers are committed to and make claims about the movement to 5G, we are, in many ways, at the beginning of the curve.

The pandemic has created stress points on the delivery of services. Over the last several months, build-out of infrastructure has been challenged by work stoppages in some places, as well as a few bottlenecks in the supply chain. Municipalities can't give work approvals, as attention has been diverted, understandably, to COVID-19 concerns.

The pandemic has also created some hiccups in momentum on the regulatory front. The FCC recently postponed a 5G airwaves auction set to start in June by one month because of the pandemic. An international standards body has also delayed creating a set of key technical standards for 5G after the virus forced the cancellation of some of its meetings.

And then there are the incorrect reasons behind the conspiracy theories that link the connection to 5G technology to contracting the coronavirus outbreak. Some seem to think that both 5G and the coronavirus are new, so they must be connected somehow. Others point to suspicious sources as evidence that the government is hiding something in this global crisis. But ultimately, most of these ideas draw on an established well of confused concern about 5G technology and longstanding fears about new cellular technologies.

For a refresher about 5G, users should be able to download a high-definition film in under a second, a task that would take 10 minutes on 4G LTE. And, aside from sheer speed, these networks will boost the development of other technologies, such as autonomous vehicles, virtual reality and the Internet of Things.

And there will be more specific, pandemic-related possibilities for 5G. Computer vision technology, for example, can determine whether retail employees are wiping down counters in order to prevent the spread of the coronavirus. It can also check whether shoppers are maintaining social distancing. And the technology can do so consistently across hundreds of thousands of locations.

For such a service to be economical and immediate, 5G and edge computing would be required. Specifically, edge computing servers could run computer vision services in geographic locations close enough to retail outlets to offer low-latency connections, but also centralized in a way that would avoid the need to install expensive servers in each retail location.

Overall, we're doing well

A recent report by [Ericsson](#) pointed out that the industry has "acquitted itself well" through the pandemic. Increased data consumption has been mainly driven by a rising usage of bidirectional remote work-related apps, such as audio, web and video conferencing, entertainment apps (streaming video and audio), social media and messaging.

The report pointed out that consumers' communication behavior has changed with the pandemic, especially among white-collar workers and seniors (60+). Previously, video calling was a rarity among these groups. But now, as many as half of such users claim to have increased their usage of video calls. According to the report, 85 percent of consumers are using video calling, making it the second most important way of contacting family and friends (after voice calls).

The study also shows that the quality of video calls with friends and family is the most important experience when consumers were asked to judge their mobile network performance during the crisis. Among seniors, 74 percent claim they now use video calls and 40 percent have increased their video usage due to social distancing. The pandemic has fundamentally changed the way we interact with technology.

But obstacles remain

Aside from the pandemic, there have been obstacles to deployment. When it comes to telecom infrastructure and the construction behind 5G deployments, it's easy to overlook what a deployment fully entails. For infrastructure providers, there are federal, state and local permitting, rights of way, application timelines

and other siting and application fees, as well as application review timelines or "shot-clocks."

For consumers, one of the key obstacles to deployment is the sheer paucity of end-user equipment. Compatible devices are gradually finding their way into retail wireless stores, but the majority of devices—phones, cars, wireless routers and smart equipment—are still not yet 5G-capable. On this front, the U.S. has lagged companies like Huawei, Nokia and Ericsson.

For businesses, a survey by Gartner shows that enterprises are interested in investing in 5G services and technology as long as those services come with enhanced mobile broadband, are ultra-reliable, and operate at low latency. Another Gartner report predicts that fewer than 45 percent of communications service providers globally will have launched a commercial 5G network by 2025.

At the enterprise level, mobile service procurement teams must develop realistic estimates or budgets to ensure that devices and connectivity modules are compatible with their carrier's 5G networks. And enterprises should look at all of the expected costs of 5G-reliant implementation, demanding service level agreements (SLAs) at all junctures.

The nitty-gritty

While traditional cell networks have come to rely on an increasing number of base stations, achieving 5G-level performance will require a more comprehensive and expansive infrastructure. And small cells will be key to densifying networks in preparation for 5G.

But one FCC report projects that it will take 800,000 small cell deployments to make 5G a reality, versus the 200,000 cell towers powering legacy 2G, 3G and 4G services combined. Distributed Antenna Systems (DAS) will fill in the gaps, but the sheer number of small cells needed to build out 5G may make it difficult in rural areas.

The FCC is busy tackling the issues of log-jammed municipalities, bandwidth-starved rural areas and streamlined approval and permitting processes. On June 9, it took a step as part of its 5G Fast Plan to accelerate the deployment of mobile broadband infrastructure at multiple levels. The declarative ruling streamlines the permitting for wireless infrastructure, including 5G. As part of the ruling, FCC Commissioner Brandan Carr noted that "all Americans will benefit from world-leading wireless service as existing towers are upgraded to 5G."

Crisis and opportunity

The excitement around the promise of 5G and carrier reinvestment in next-generation networks is understandable and warranted. *The Economist* coined the phrase "data-network effect" to describe the exponential growth of data that will take place as a result of 5G adoption. It will enable huge advances in AI, leading to the creation of bots that can do more than we ever imagined.

Against the backdrop of the pandemic, the fifth generation of cellular network technology is being rolled out in cities across the United States and around the world, and phones, devices and entire enterprises are slowly but surely becoming equipped with 5G capabilities.

As we move inexorably down the path to the next generation network, the promise and opportunity of 5G is compelling, and despite some market overhang, this path will have a sweeping impact on the entire American economy through the pandemic and beyond.