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## JOURNAL REPORTS: TECHNOLOGY

# Carriers Look to Send 5G Data to the Cloud

One result: You'll be able to send selfies more easily from a packed stadium

By Eric Sylvers

Nov. 8, 2019 10:00 am ET

Posting a selfie to Instagram—or simply making a phone call—in the middle of a packed football stadium or in any other crowded situation could soon get easier.

Mobile networks struggle when too many users connect contemporaneously to the same cellphone tower, as social-media-posting sports fans know. It becomes impossible for many people to use data-hungry apps or sometimes to even make a call.

But now, as phone companies around the world begin the multiyear process of rolling out 5G networks, some are looking into what could be at least a partial solution to network capacity issues: moving the management of traffic on 5G networks to the cloud.

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On its own, 5G technology won't end data traffic jams.

While 5G's speed advantage over existing networks isn't in dispute, the new networks could be hamstrung by some of the same capacity problems as their 4G predecessors. So phone companies are planning to tap into the enormous computing power of the cloud—where clusters of servers accessible online are used to manage data and software—to direct in new ways the data that will flow over their 5G cellular networks.

Cloud computing has grown in recent years into a multibillion-dollar business, serving companies in a wide range of industries. But it has been used only sparingly in mobile networks because integrating 4G technology with

cloud technology has been challenging. That is changing now because 5G technology is more compatible with cloud computing, and because cloud computing itself has advanced in ways that facilitate its use in mobile networks.

The key to better service is network slicing—the ability, thanks to the computing power of the cloud, to dedicate portions of a network to different purposes. With the cloud, a huge river of data traffic can be split into several more-manageable streams.

“The cloud isn't a panacea, because the network capacity is what it is, but it definitely gives you much more flexibility to use the capacity you have in different ways,” says Gabriele Elia, who works in technology and innovation at Telecom Italia. [TIT 1.08% ▲](#) “Eventually all companies will use the cloud in their networks in some way.”

In addition to easing congestion, the integration of 5G and the cloud will allow mobile-phone companies to offer more varied types of services, some at premium prices, which will help the companies recoup more quickly the billions of dollars the networks cost to build. The cloud also will make it possible for the phone companies to update their networks more easily as they

continuously search for a competitive edge in the quality of their service.

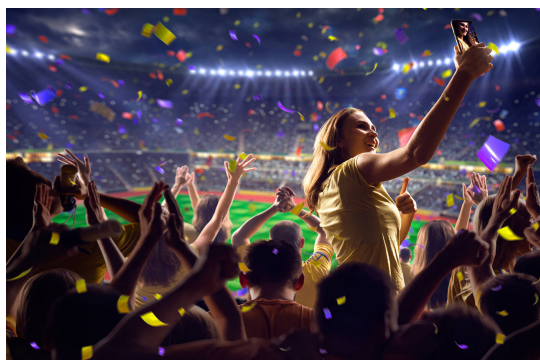
## Early adopter

Rakuten Inc., [4755 -1.81%](#) ▼ the Japanese online retailer, started offering 4G cellphone service on a trial basis last month in several Japanese cities in what it says is the world's first network to be fully in the cloud. It will add 5G services next year. The vastly larger networks of the biggest cellular-service providers won't be fully integrated with the cloud any time soon, but those companies will use the cloud as they ramp up the rollout of their 5G networks next year.

Today, companies bring in extra antennas on trucks if they want to boost a network's capacity for an expected crush of traffic. But that's costly and is usually only done in exceptional circumstances. With the cloud, one thing a company could do in such situations is decide to slow down everybody's speeds but make it so that there is enough bandwidth so everybody can at least place a call.

But the greatest potential of the cloud lies in network slicing. With slicing, the user in the crowded stadium, for example, might be able to place a phone call or even post a selfie while at the same time emergency services can be given privileged access to part of the network to ensure they can communicate.

Network slicing will allow companies not only to separate traffic in this way but also to offer different levels of service to different subscribers. Through slicing, for example, a telecom company will be able to sell service featuring very high bandwidth to one client and slower service focused on being ultrareliable to another. The company could still offer a basic level of speed and reliability to other customers.



Operators will use the cloud to better manage the continuation of service for cellphone users on the move—even if they're heading to a stadium full of 60,000 people. PHOTO: ISTOCK PHOTO

"Slicing will be one of the key differentiators between 5G and the networks that have preceded it," says Francesco Sacco, a professor at the University of Insubria in Italy and a partner in cybersecurity company S3K SpA.

## Additional benefits

The cloud also allows networks to be tweaked and improved through software updates in much the same way the operating system on a mobile phone or computer is updated. Currently, operators have to shut down part of their network to do important updates or adjustments. Coverage is guaranteed during these periods by shifting traffic to other parts of the network—usually during the middle of the night when usage dips—but that's a complex, laborious and costly process.

In addition, operators will use the cloud to better manage the continuation of service for cellphone users who are on the move and go from the coverage area of one network tower to another—even if they're heading to a stadium full of 60,000 people.

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