Tech companies push for new software to break China's 5G lead

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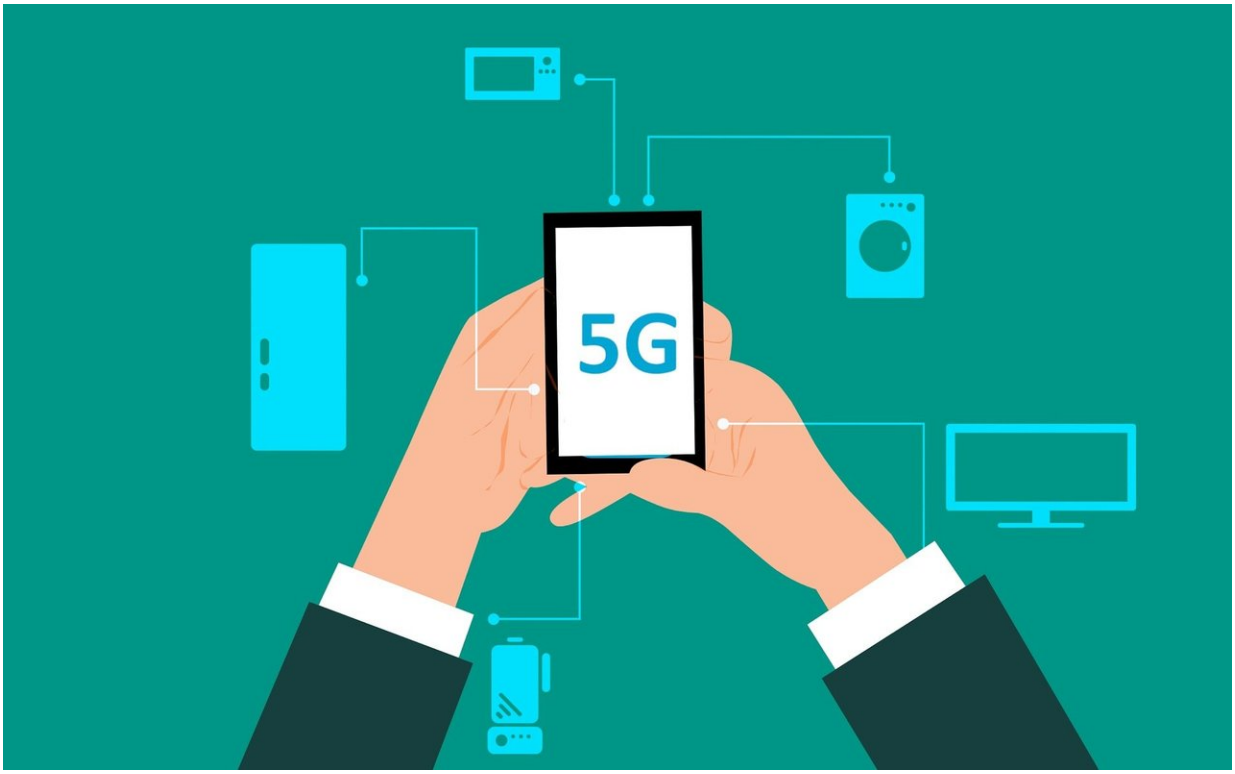

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America's top tech companies are pushing for a software-based approach to building 5G telecom networks that could help the United States and its allies get past the hardware-based leadership position that China's Huawei currently holds.

"We have a point of view which is now pervasive in the industry that the way you will ultimately build out the 5G and beyond infrastructure is not a legacy telco model," said John Roese, the chief technology officer at Dell Technologies, referring to traditional telecom companies that provide all the equipment needed to operate a network in a proprietary black box.

The new idea is to "disaggregate that infrastructure, to open it up, to software define it and run a nonstandardized hardware" to operate the open radio access networks, or RAN, that power cellular technology, Roese told CQ Roll Call in a recent interview.

Dell, AT&T, Deutsche Telekom, China Mobile, Microsoft, Cisco, Ericsson, IBM, Intel, Nokia, Qualcomm, Samsung and other top tech companies around the world are part of the O-RAN Alliance to push the United States and other governments to break away from proprietary telecom networks and embrace virtual telecom models.

The idea behind virtual telecom models is that you can develop software that takes on the functions currently delivered by proprietary hardware and therefore the new systems can be run on widely available cloud-based servers. A radio access network is an essential element of a mobile telecommunication system that connects user devices such as computers, smartphones and tablets to the core part of a network.

In modern telecom systems, the "radio" is typically a silicon chip that resides on both a user device as well as the core network. In a traditional model, the radio chip is part of proprietary hardware that is supplied by telecom providers. But that could change with the arrival of so-called open radio access networks.

The push to break the traditional telecom model comes after a yearlong effort by the Trump administration to persuade allies not to adopt

Huawei's 5G networks because of fears that Beijing could eavesdrop on network traffic.

Loss of leadership

After years of inaction, Congress, the White House and federal agencies such as the Pentagon and the Federal Communications Commission also have woken up to the fact that U.S. global telecom leadership had disappeared in a flurry of mergers and acquisitions through the 2000s, leaving it to rely on European companies or China.

But the Trump administration hasn't fully embraced the idea of backing virtual telecom networks.

While White House economic adviser Larry Kudlow has pushed for the software-based approach, Attorney General William Barr, who once worked for Verizon and was general counsel for GTE, in February dismissed the open radio access network idea as "pie in the sky." In May, Barr issued a statement saying that the technology was not an immediate solution but should be studied.

The United States is facing a multipronged problem when it comes to the next-generation telecom network, said Melanie Hart, a China specialist at the Center for American Progress.

"We have a Huawei problem, where China is using every lever of state power" to help the company achieve global dominance in 5G, Hart said. The telecom industry's oligopolistic structure poses another problem that discourages interoperability without common standards, she said. "If you want to get in on the network, the radio access network is critical, and it's a cartel."

And lastly, the United States "has not made the investments at home to

ensure that fundamental areas of technological innovation and global supply chains that lie at the nexus of telecom and national security" are being addressed, Hart said. "Now, we see Congress trying to play catch-up. That's something we have neglected at least since the early 2000s."

One of the impediments to experimenting with software-based networks is that telecom providers such as AT&T and Verizon are risk averse and unlikely to invest in new approaches without knowing if they would pay off, she said.

Pentagon help

The House's fiscal 2021 Pentagon policy bill proposes that the Defense Department demonstrate at military bases the use of a software-based 5G network using a virtualized radio access network—in other words, a network whose core functions are driven by software rather than proprietary hardware.

Working with telecom companies, the Pentagon can "ensure that this technology is a viable contender for commercial 5G network deployments," lawmakers wrote in the committee report accompanying the legislation.

The next administration could expand such experiments by seeking federal funding to help high schools and universities in rural America try out a software-based approach to 5G connectivity, Hart said. If successful, the United States could then provide international loans to help poor countries in Africa, Latin America and elsewhere adopt similar approaches, she said.

Lawmakers also have proposed bills to boost support for domestic manufacturing of semiconductor chips that would be essential to software-based telecom networks. Sens. Mark Warner, D-Va., and John

Cornyn, R-Texas, introduced their bill in June, and a companion bill in the House was proposed by Reps. Doris Matsui, D-Calif., and Michael McCaul, R-Texas.

The FCC also held a forum last month in which Roese and other tech executives called for the commission and other U.S. agencies to back a software-based approach to 5G.

The use of open radio access networks would offer multiple benefits, Sachin Katti, vice president of strategy at VM Ware, said at the FCC event.

It would lead to the creation of a virtual radio network, and "I think it'll really open the door for a tremendous amount of hardware innovation to come in" because with a virtual network one can use different hardware configurations and "run the radio network essentially as an app or a software on top of it," Katti said. VM Ware is a unit of Dell.

Open radio access networks and virtualized networks already have been proven to be effective and secure, Tareq Amin, the chief technology officer of Rakuten Mobile, an offshoot of Japan's e-commerce giant Rakuten, said at the FCC forum.

The company was set to go with Huawei's 5G equipment but changed direction and chose to adopt the open radio approach, FCC Chairman Ajit Pai said.

Amin said more than 6,000 5G base stations in Japan already were operating with Rakuten's virtual network model and the company planned to provide 5G coverage to 70 percent of the country's population by March 2021.

The open, software-based network provides "full visibility,

transparency," into not only the source of the software but also all of the hardware components, Amin said.

Although the Trump administration has focused its efforts on stopping Huawei's global reach, that is not enough, FCC Commissioner Jessica Rosenworcel said.

"Restrictions on Huawei and ZTE are a minor fix for a much larger problem," Rosenworcel said, citing the two Chinese telecom companies targeted by the Trump administration. "That's because the 5G cybersecurity challenge is much bigger than simply dealing with a few Chinese companies," and the United States must embrace the open radio approach and provide federal funds for American companies, she said.