

Verizon, other wireless carriers vary on standards for high-speed 4G service

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There is no 4G. Much like the secret to bending spoons in "The Matrix," the next generation of wireless networks is very cool but built on a bit of misdirection.

In fact, the international standards body that determines network definitions recently ruled that true 4G requires minimum [download speeds](#) of 100 megabits per second.

No wireless company in the world is close to offering that sort of performance, but that hasn't stopped carriers from branding their next-gen networks as 4G.

"The carriers won't backtrack on their marketing efforts," said Harry Wang, director of mobile and health research at Dallas-based research firm Parks Associates. "They do want to confuse you a little bit."

The latest carrier to offer 4G is Verizon Wireless, which recently activated its 4G service in Dallas and 37 other cities nationwide.

The big three carriers that have launched 4G service are all using different technologies to reach that fourth-generation threshold.

As a result of throwing precision to the wind, there are no formal technical specifications for the performance consumers can expect when they sign up for 4G.

That said, these wireless 4G technologies rival the performance of wired options such as DSL and cable modems.

"We're going to ensure the user has a great experience," said Frank Antonacci, region president in Dallas for Verizon Wireless.

Antonacci spoke at a demo last week at the Plano offices of 4G network equipment supplier Alcatel-Lucent.

Alcatel and Ericsson AB helped Verizon build its 4G network using a standard known as LTE.

Ericsson, which has its North American headquarters in Plano, also helped prepaid carrier MetroPCS Communications Inc. build out its 4G LTE network.

While Richardson-based MetroPCS has its 4G network up and running in a handful of cities, including Dallas, the speeds are much slower right now than the 4G speeds on the bigger carriers.

During the Verizon demo, a PC connected to the carrier's 4G network flawlessly displayed multiple simultaneous streaming videos from Netflix, YouTube and other sources while streaming music in the background from online service Pandora.

Download speeds on the network peaked at nearly 20 Mbps, but Verizon says most users will see speeds ranging from five to 12 Mbps.

That's a huge increase over the 600 kilobits to 1.4 megabits per second normally seen on Verizon's existing 3G network.

So while the International Telecommunication Union might not be willing to call that 4G, the technology will clearly open up a range of

new mobile applications.

LIKE AT HOME, OFFICE

Wang at Parks Associates said video will be the most obvious beneficiary of 4G speeds.

"Right now, you try streaming Netflix on your phone during peak hours, and your experience might be disrupted," he said. "On 4G, you might not have that issue."

"It's the first wireless technology that's like the Internet you're used to at home or in the office, but in a much broader area," said Teresa Kellett, director of 4G at Sprint Nextel Corp.

Sprint launched its 4G service two years ago over a network owned by Clearwire.

Unlike Verizon's LTE-based network, Clearwire used a standard called WiMax.

Sprint already has two 4G smart phones on the market, the HTC EVO 4G and the Samsung Epic 4G, as well as modems, netbooks and mobile Wi-Fi hotspots (hockey-puck-size devices that rebroadcast a cellular signal as Wi-Fi).

Sprint's technology also fails to qualify as 4G under the recently published ITU guidelines. But the service delivers average download speeds in the range of three to six Mbps, multiple times faster than Sprint's 3G network.

The vast majority of carriers around the world are adopting LTE, though, and it's possible Sprint could eventually switch to that standard.

But the company assures its current WiMax subscribers that there's no chance of their new phones suddenly losing 4G service.

WHAT'S IN A NAME?

The third carrier to hop on the 4G train so far is T-Mobile USA Inc.

That carrier's method of reaching 4G status is potentially the most confusing to users.

T-Mobile has been steadily upgrading its 3G network over the last several years, most recently boosting download speeds by adopting a standard called HSPA+.

Dallas-based AT&T Inc. is also rolling out HSPA+ across its existing 3G footprint.

AT&T and T-Mobile initially both kept the "3G" branding for the HSPA+ service, although only a handful of 3G devices on both carriers are capable of taking full advantage of the HSPA+ speeds.

But a few months ago, T-Mobile decided that the Internet speeds it was seeing on its HSPA+ service were fast enough that it could rebrand the service as 4G.

"The experience is clearly on par or in some cases better than what's currently marketed as 4G in this country," said Mark McDiarmid, senior director in engineering and operations at T-Mobile.

"From our perspective, it really is fundamentally about the consumer experience."

While 4G is great, if you venture out of covered regions, you get

dropped back onto 3G. And it will take years and billions of dollars before 4G networks fully cover existing 3G markets.

AT&T won't launch its 4G LTE network until next year because it wants to bolster its 3G network to ensure those 4G-to-3G hand-offs don't result in drastic drops in data speeds, said spokesman Mark Siegel.

"I think the concern that we have is making sure customers have a stable and consistent experience," he said.

Eventually, though, 4G will far outpace 3G.

T-Mobile says its HSPA+ 4G network is capable of speeds as high as 21 Mbps, and it will make further upgrades next year to double that theoretical maximum.

All of the 4G services should get faster over time.

[Verizon Wireless](#) says its network is capable of eventually offering download speeds of 100 Mbps, while Sprint says it has done technical trials showing download speeds of 70 Mbps over WiMax. As those speeds accelerate, new applications become possible.

Antonacci at Verizon said everything from refrigerators to cars could soon be plugged into 4G networks, allowing your fridge to automatically order new water filters, for example, or your car to stream video to your dashboard.

And if you're not thrilled with the notion of adding a data plan for your icebox, how about getting a strong enough cell signal in your house that you can finally dump your landline phone?

Verizon says the 700 megahertz signal it's using to deliver 4G is ideally

suited for penetrating walls.

So how much will 4G cost? It varies from carrier to carrier.

Sprint has added a \$10-per-month surcharge to all its 4G smart phones compared with their 3G cousins but still allows you to download as much data as you want.

T-Mobile doesn't cap your data usage on its unlimited plans, but it does lower your download speeds when you pass a monthly quota.

And Verizon, at least on the two USB modems for sale today, offers capped plans with per-gigabyte overage charges.

But Wang at Parks Associates said carriers can't afford to raise data prices much higher than they are now if they want customers to adopt 4G.

"For the majority of consumers, probably they will be comfortable at a price plan at a similar level to what they're currently doing," he said.

A LOOK AT 4G AT THE BIG FOUR

4G networks offered by the four main carriers:

VERIZON WIRELESS

4G service available now? Yes

Technology used? LTE

Real-world speed? 5-12 megabits per second (Mbps) downloads

What 4G devices are available? Two USB modems this year; smart phones and other devices in 2011

How much does it cost? Modem prices: \$50 for five gigabytes per month or \$80 for 10 GB; \$10-per-gigabyte overage charge

Geographic coverage: 38 cities (110 million people) and more than 60 airports

SPRINT

4G service available now? Yes

Technology used? WiMax

Real-world speed? 3-6 Mbps downloads

What 4G devices are available? Smart phones, USB modems, netbooks and mobile Wi-Fi hotspots

How much does it cost? Smart phone 4G plans start at \$79 for unlimited data; other 4G devices start at \$44

Geographic coverage: 68 cities (103 million people)

T-MOBILE

4G service available now? Yes (former 3G service rebranded as 4G)

Technology used? HSPA+

Real-world speed? 5-10Mbps downloads

What 4G devices are available? Smart phones, USB modems and netbooks

How much does it cost? Smart phone 4G plans start at \$59 with limited voice and data; USB modem plans with limited data start at \$24

Geographic coverage: 100 cities (200 million people)

AT&T

4G service available now? No (service expected in 2011)

Technology used? LTE (currently offers HSPA+)

Real-world speed? To be determined

What [4G](#) devices are available? None announced, but modems and [smart phones](#) likely in 2011

How much does it cost? To be determined

Geographic coverage: 70 million to 75 million people when LTE launches in 2011

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