

# Infographic: The Impact Of 5G On Digital Experiences For Customers

TREND REPORT

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## An Overview Of The State Of The 5G Ecosystem In The United States

### Summary

Wireless services providers are inundating consumers with the promise of 5G or faster cellular networks. Samsung shipped more than 6.7 million Galaxy 5G devices in 2019 and launched its flagship S20 with 5G in 2020. Meanwhile, Apple continues to wait. This infographic helps digital business pros understand what 5G is and its impact on digital experiences for consumers.

**Figure 1****5G's Impact On Consumer Digital Experience Is Limited Today**

# The impact of 5G on digital experiences for consumers

At its fastest, 5G will enable services that depend on cable — or fiber-optic — broadband to become wireless. 5G can even be an alternative to cable-based technologies for home broadband. 5G is faster than 4G, offers lower latency, and supports more devices. The combination of low latency and high data speeds will also enable services that depend on crunching mass amounts of data quickly. Consumers will have less visibility into how 5G plays a role, but they will benefit just the same.

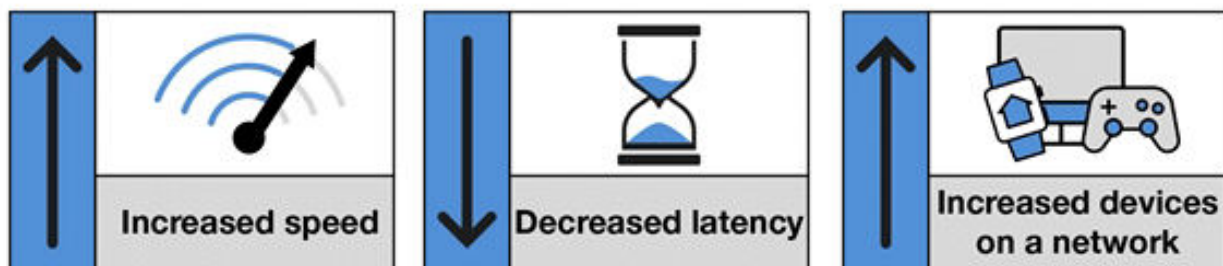
## 5G coverage in the United States is not ubiquitous

Major wireless carriers in the United States continue to roll out 5G and sell a strong 5G story. As of May 2020, AT&T claimed coverage of 327 markets, Sprint had built 5G networks in nine major cities (premerger), T-Mobile offered 5G to 200 million consumers in almost 6,000 cities, and Verizon rolled out to 35 markets.<sup>1</sup>

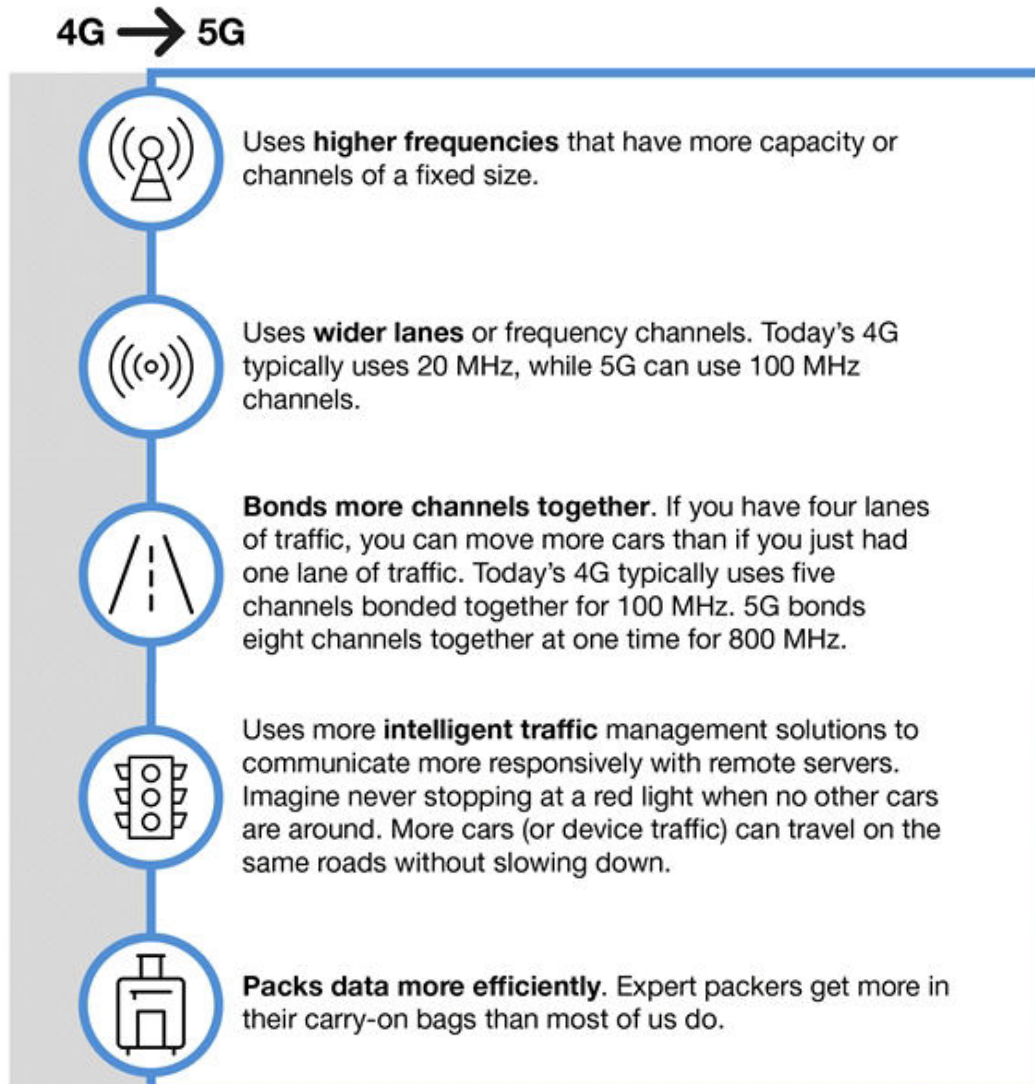
Carrier	Low band	Mid band	High band
AT&T <sup>2</sup>	327 markets		35 cities
T-Mobile	Almost 6,000 cities	2 cities	7 cities
Verizon <sup>3</sup>			35 markets

» Sprint and T-Mobile completed their merger on April 1, 2020.


## 5G will accelerate digital services





## 5G has structural advantages over 4G





## 5G faces challenges in the United States

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**Few devices, especially smartphones, currently have 5G capabilities.** New cellular radios such as 5G initially demand physical space, processing power, and batteries that smartphone manufacturers must find. They will when the time is right.<sup>4</sup>
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**Few digital experiences depend on 5G.** Most mass-market consumer services such as video don't demand 5G speeds — yet.
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**Coverage of transformative speeds is limited.** The rollout of the fastest 5G is very limited. AT&T and Verizon each claim to have deployed in 35 locations so far.
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**5G faces commercial hurdles.** The proposed early opportunities lie in enabling the fastest 5G in specific locations, such as stadiums or convention centers, but the pandemic will negate the revenue opportunities in the near term.
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**5G is magical, but it can't break the laws of physics.** Higher-frequency waves don't travel as far (800 feet vs. miles). Moreover, walls, heat, and other obstacles impede their paths more than lower-frequency waves. Cities also have smaller networks in place due to density, but their effectiveness will be hindered by physical impediments.

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## Few consumer services demand 5G speed

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Few consumer applications demand 5G speeds today. However, once the ecosystem is in place, innovative services will take advantage.

Video streaming <sup>5</sup>	Virtual reality <sup>6</sup>	Smart home system <sup>7</sup>
<b>HD (1080p)</b> 3-6 Mbps	<b>Low resolution</b> 25 Mbps	<b>Without video streaming</b> 5 Mbps
<b>Ultra HD (4K)</b> 11-25 Mbps	<b>Retinal 360-degree resolution</b> 600 Mbps	<b>With video streaming</b> 10 Mbps
<b>8K</b> 51 Mbps		

» The average 5G speed will reach 575 Mbps by 2023, 13 times higher than the average mobile connection.<sup>8</sup>

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## Existing 5G networks don't offer the promised breakthrough speeds

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The 5G story is not what it seems. There are three different implementations of 5G networks. The broad population coverage cited by carriers is an implementation of the slowest of the three 5G flavors.



## 5G Frequencies

Type	Frequency (Hz)	Coverage	Speed
Low band	600-700 MHz	Hundreds of square miles	30 to 250 Mbps
Mid band	2.5/3.5 GHz	Radius of several miles	100 to 900 Mbps
High band	24-39 GHz	Radius of 1 mile or less	1 to 3 gigabits per second (Gbps)

As speed increases, coverage decreases.

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## Notes and sources

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1. Source: "Un-carrier 5G Fact Sheet," T-Mobile, May 2020
2. Source: Mo Katibeh, "What's Your Favorite Flavor of 5G? Good News - AT&T Has Both!" AT&T Technology Blog, February 12, 2020
3. Source: "Explore Verizon 5G Ultra Wideband coverage," Verizon
4. Source: "Samsung Brings 5G to World by Shipping More than 6.7 Million Galaxy 5G Devices in 2019," Samsung press release, January 2, 2020
5. Source: Currys, "How fast does my internet need to be to stream 4K movies?" TechTalk, February 4, 2020
6. Source: "Bandwidth requirements for Virtual Reality (VR) and Augmented Reality (AR)," Mushroom Networks, 2017
7. Source: John Dilley, "How Much Internet Speed Does Your Smart Home Need?" Digitized House, February 23, 2019
8. Source: "Cisco Annual Internet Report (2018-2023) White Paper," Cisco, March 9, 2020