



# A closer look at Verizon 5G technology

How Verizon 5G technology delivers advanced capabilities that enhance public safety communications



Verizon 5G is arguably one of the most important breakthroughs in broadband communication and public safety technology. Behind 5G's deceptively simple name – just a number and a letter – you'll find a full array of sophisticated technology. From support personnel to first responders, Verizon 5G empowers these crucial teams with faster, better and more reliable connectivity than ever.






Verizon Frontline offers a full portfolio of 5G solutions for public safety agencies – including in-vehicle solutions that bring ubiquitous device connectivity to public safety vehicles, mobile solutions that empower all mobile public safety workers, as well as primary or backup connectivity for mission-critical facilities. These solutions make it easy for our customers from more than 35,000 agencies to bring 5G connectivity to their teams.


But there's much more to say about Verizon 5G, including its significant advances over 4G. In this white paper, we take a closer look at the exceptionally reliable technology behind Verizon 5G, the latest innovation in Verizon's 30 years of unwavering commitment to public safety. And we'll explore how Verizon 5G helps public safety groups protect communities – and save lives.



# What makes Verizon 5G different?

With the coverage of Verizon 5G Nationwide and the unprecedented performance of 5G Ultra Wideband, first responders and other public safety groups are harnessing the transformative power of 5G to help improve crisis response – and fulfill their missions. The Verizon 5G wireless network delivers four core benefits:

 **High reliability** – In public safety, nothing matters more than the reliability of team members, equipment and communications. The Verizon 5G network is significantly more reliable than previous network generations. And year-after-year investment in protecting the network ensures that the network is extremely resilient under all conditions.

 **Ultra-fast speeds** – Public safety relies on fast access to a flood of critical information – data, voice, video and more. Verizon 5G Ultra Wideband can handle higher data volumes and use

cases that require more bandwidth, such as high-definition video.




**Low latency** – Public safety can't wait. Low latency ensures lightning-fast delivery of data, video and other vital information – without delays. The lowest latency? Real-time delivery of data.




**Ability to perform in a high-density environment** – Public safety personnel are relying on more and more devices, including sensors, cameras and other IoT-based equipment. The higher bandwidth of the Verizon 5G network enables more and faster connectivity when operating in high-density environments with multiple teams and devices.

These core benefits are driven by advanced technologies integrated in the design and operation of the Verizon 5G network.



**10,000x**  
More traffic


**Up to 10 Gbps**  
Peak data rates



**Instant action**

**<10 ms**  
radio latency

**Ultra reliability**



**10 years**  
on battery

**10 – 100x**  
more devices

**High speed**  
Extreme mobile broadband

Virtual assistance	Real-time work in cloud	Immersive engagement
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**Low latency**  
Critical machine communications

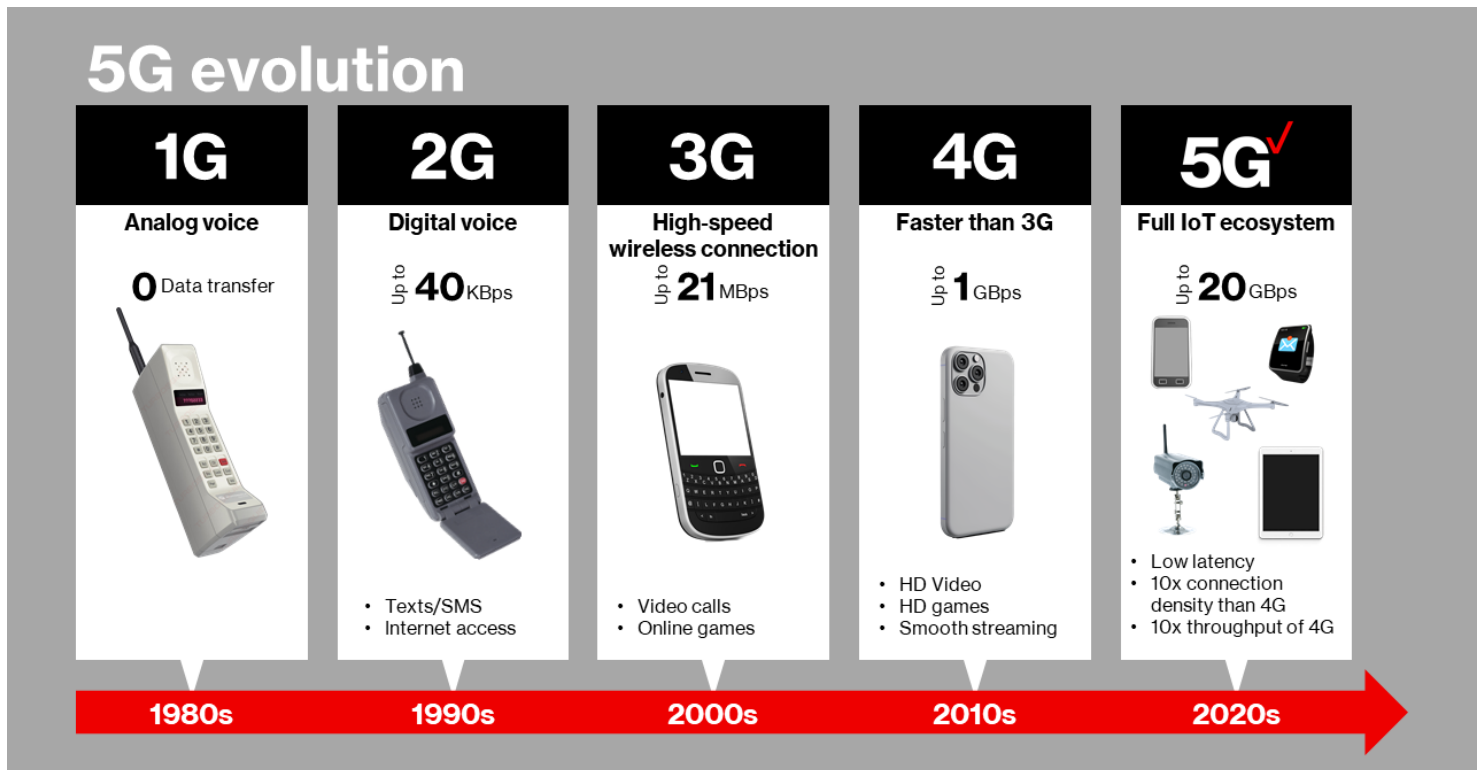
Frictionless transactions	Real-time inventory	Autonomous supply chain
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**Massive scale**  
Massive IoT communications

Smart shelves	Infrastructure management	Smart clothes
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# Exploring the advanced technology behind Verizon 5G

You don't have to be a telecommunications expert to understand the technology behind Verizon 5G. But you will encounter a handful of acronyms – including **eMBB** (Enhanced Mobile Broadband), **mMTC** (Massive Machine-Type Communications) and **URLLC** (Ultra-reliable Low-Latency Communication). It understand Verizon 5G, it helps to demystify these next-generation technologies – and see how they enhance the capabilities of public safety organizations.



## Enhanced Mobile Broadband (eMBB) Provides greater bandwidth and throughput

Think of broadband connectivity as a road, one that has become increasingly crowded as more devices share the existing broadband spectrum. Enhanced Mobile Broadband (eMBB) allows the Verizon 5G network to provide larger spectrum segments for greater capacity. This wider road allows for faster throughput of more data.

What does this mean for public safety?

Thanks to eMBB, Verizon 5G solutions can deliver faster speeds for communication and collaboration – including voice, video and other data. This capability is particularly helpful for extremely data-dense, throughput-hungry applications, such as high-definition video. As video becomes more central to public safety, there will be more cameras and more content, which needs to be delivered quickly to be useful.

In addition to providing more spectrum (e.g., a wider road), eMBB also provides multiple bands (or *lanes*, to continue the road metaphor) of spectrum that enable your organization to customize its use of Verizon 5G to meet its specific needs. For example, the low band provides wider coverage, while the mid-band provides coverage and capacity – and the high band provides the highest capacity.

## Examples of situations where eMBB makes a real difference include:

- Real-time surveillance with ultra-high definition/4K video that multiple teams receive without delays or image degradation
- Real-time communication/coordination between first responders and headquarters, including mobile and on-site workers
- Fast downloads of building plans, complex maps and other key documents for firefighters and SWAT teams



## Ultra-reliable Low-Latency Communication (URLLC)

### Reduces latency to near real-time levels

Public safety personnel don't tend to notice low latency until voice communications feel out-of-sync, maps and other key documents are slow to arrive or video takes a long time to download.

Ultra-reliable Low Latency Communication (URLLC) is a core service area within 5G that is ideal for mission-critical applications where network reliability and low latency is of the highest importance. For example, 5G's high speed and low latency can make a crucial difference in detection systems, providing the speed and bandwidth required to transmit the massive volumes of data generated by sensors and high-definition cameras.

### Examples where the low latency of URLLC matters include:

- Data – including critical documents or photos – delivered in near real-time during a public safety event, from stopping a suspicious car to downloading a map of a high school with an intruder
- Any activity that requires a data-exchange speed in the low milliseconds benefits from low latency – including robotics for bomb diffusion and other autonomous robots/drones
- Any situation where waiting – even for a few seconds – can put public safety personnel or the public in danger

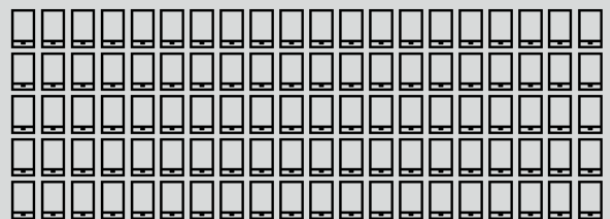
## Beyond the 5G network: Verizon delivers exceptional reliability

All aspects of the Verizon 5G network are designed for reliability – the most important criteria for public safety groups. But reliability isn't an accident, it's the result of a network that is carefully planned and architected. Beyond the technical expertise covered earlier in this white paper, Verizon provides the human insights and organizational commitment necessary to be **America's most reliable 5G network.\***

- Deep expertise in all areas of network reliability and security
- 30+ years of experience delivering mission-proven communications solutions
- Continual improvement via network enhancements
- Best practices for contingency planning and total network redundancy
- Diversity, redundancy and hardening of all components in the network for exceptional resiliency
- An extensive ecosphere of partners that add advanced devices to our solutions, from ruggedized laptops and tablets to cutting-edge sensors
- The Verizon Frontline Innovation Program, a first-of-its-kind innovation incubator dedicated to creating innovative 5G-enabled solutions for public safety



4G



5G

100X  
capacity

\*Based on more first place rankings in RootMetrics® 5G data reliability assessments of 125 metro markets, 2H 2023. Experiences may vary. Not an endorsement.

## Find out more

Find out more about [Verizon's 5G innovations for public safety](#) – and why so many public safety groups choose Verizon as their trusted partner for reliable wireless connectivity.

To hear more about the benefits of Verizon 5G technology, read *What Does Verizon 5G Mean for Public Safety?* [\[link\]](#)





