

5G Delivers for Transformational Applications.



Digital transformation is driven by the capabilities and functionality of new applications that enhance the success of modern business. But those applications must perform at the speed of business—otherwise, they become bottlenecks and any advantage is lost. That makes the arrival of 5G timely. Wireless networks now have the potential to deliver the high-speed connections needed to support a wide range of new applications that require more performance than 4G can deliver.

Human-centric applications

Before the availability of the high-speed, low-latency wireless connections 5G offers, high-performance applications needed hardwired network connections. This resulted in limiting use cases to stationary devices or users. Moving beyond wired is essential, because that flexibility can support transformational applications that can exist anywhere.

To better understand how 5G can provide the performance necessary to enable new applications, it is useful to start with the perspective that 5G should deliver for both human-centric and machine-centric transformational use cases.

5G offers performance for remote use of human-centric apps—meaning the apps that people use overtly, such as those for collaboration, productivity and analytics. 5G can improve performance for these types of applications in several ways. A simple boost in wireless speed and bandwidth improves responsiveness. But with potential performance increases using 5G, mobile apps can be upgraded to be more immersive and interactive, using high-speed, near real-time data feeds and potentially including artificial intelligence and machine learning features.

In addition to the applications we use consciously, a large set of new applications will work in the background to automate mundane tasks or provide information we'll need later. The most obvious are medical monitoring solutions that track chronic or new health conditions. And, of course, a huge number of new e-marketing applications will benefit from 5G, such as helping customers locate items in stores or alerting them to a deal in the next aisle.

Perhaps the biggest impact 5G will have on human-centric applications will come from the speed and bandwidth that enables real-time interactions and engagement. This should improve collaboration, design projects and committee decision-making, among other activities. Time delays or being out of sync can create high levels of employee frustration and hamper productivity.

Commerce is another activity that demands up-to-date information. Promising to deliver a product and then discovering it is out of stock because the system that tracks inventory is hours out of date could be highly problematic for businesses.

Machine-focused applications

Machine-focused applications are often thought of as the primary point of 5G innovation. Already, initiatives such as Industry 4.0 have moved from concept to planning and implementation stages. Earlier wireless networks were limited by limited speeds and low bandwidth, which made quickly moving large amounts of data difficult. With 5G, expect to see a wave of innovative applications that take advantage of its near real-time, high-bandwidth capabilities.

Many machine-focused applications require a high level of integration and interaction between individual devices and controllers/servers. The amount of data that must be transferred and aggregated to support real-time machine applications—such as industrial automation, autonomous vehicles, smart grids, smart homes and industrial virtual reality—is enormous. As machine-focused application ecosystems evolve, it is likely that they will become even more hungry for bandwidth to deliver improved business outcomes.

Machines and devices are expected to become intelligent and connected, making them far more capable of autonomous operations. Without the need to slow down and let people manage or interact with machines, the connectivity that 5G provides will make it possible for machines to work at digital speeds, improving efficiency as output increases and potentially reducing issues associated with human error.

A holistic approach to application performance

Simply relying on the 5G wireless network to deliver the application performance needed for next-generation use cases misses the fact that the benefits of 5G can be maximized only with a holistic approach to infrastructure. The dividing line between carriers that make a commitment to 5G infrastructure and those that merely offer the network is stark. Choosing the wrong vendor will set back innovation projects and result in deployments that don't perform as expected.

There are several important technologies that carriers must provide to deliver on the 5G promise. The more a network provider delivers, the less the business must create on its own. A complete 5G ecosystem should include:



Edge infrastructure—The need for resources to be processed at the edge, close to the devices or machines, is one of the most important requirements for an effective 5G deployment. Without an edge infrastructure, even the fastest networks will require too much time to complete the round trip between devices and a centralized data center to be considered near real time.



Network virtualization—A virtualized infrastructure is the only way to provide the agility and efficiency necessary to support application performance. 5G will benefit from network function virtualization, much as wired networks have.



Security—Cybersecurity must be an intrinsic part of the 5G network, since bolting on security functions will have a negative impact on application performance. With a designed-in approach, the penalty of security overhead on application performance is reduced.



Network slicing—Network operators should use network slicing to allocate resources in parallel rather than on a serialized basis. This enables application-specific quality of service.



Dynamic Spectrum Sharing (DSS)—DSS allows the deployment of both 4G LTE and 5G NR in the same frequency band and dynamically allocates spectrum resources to be shared between the two technologies based on user or application demand.



Operational automation—Allocating resources among many different applications demands automated tools. Human intervention tends to be too slow and inconsistent for many current and nearly all future 5G applications.

Delivering outcomes that businesses demand

Perhaps the most foundational improvements that 5G brings are enhanced digital intelligence and the removal of the mobile/remote penalty. 5G will make possible a new set of intelligent applications that gather and share information, as well as advanced intelligent systems or processes that improve the speed of operations and the consistency of actions or effects. Most of those systems require real-time communication and interaction, often using very large amounts of data. Numerous problems arise if the network and associated technologies aren't sufficient. A robust 5G infrastructure, however, can help ensure performance for real-time interactions at the edge of the network, providing deep, data-informed intelligence that results in improved business outcomes.

Modern digital businesses also demand the ability to operate virtually or remotely, limiting reliance on location. 5G allows businesses to move past an office-centric view. They have more options for where work can be done, with less concern that location will erode an employee's ability to be an integral part of the whole. Even devices or employees that are constantly in motion could be incorporated.

5G could also automate finding the best network or connection type for virtual resources, ensuring that performance issues won't affect remote systems or employees. Businesses can now get closer to their customers, both physically and digitally; take advantage of specific geographic benefits; and reduce the delineation between on premises and off premises. This gives businesses more options and supports outcomes that previously weren't possible due to the mobile/remote penalty.

How Verizon 5G delivers application performance

To get the results they want from 5G, many businesses are partnering with Verizon to simplify the journey to full implementation. Verizon has a wide range of products and services that are necessary to deliver application performance.

As a leader in 5G, Verizon is focused on key building blocks and complementary components such as the 5G Edge solution. We deliver effective 5G/SD-WAN integration through virtual network services, and provide new levels of cybersecurity and operational efficiency to help businesses work more safely and efficiently. Our ability to deliver effective protection for both mobile users and the Internet of Things will be essential as businesses use 5G in mission-critical environments.

Our complete and integrated portfolio simplifies the task of ensuring application performance. Verizon products and services are designed to work together, limiting the incompatibilities or bottlenecks that can arise when using different vendors' products.

Key takeaways

5G is a critically important enabling technology for a wide range of new applications that will drive the next set of improved business outcomes. Those applications will depend on powerful processing and high bandwidth. If they perform poorly, they will fall short of the desired business outcome and could become both a reputational and operational drag on the company.

As organizations approach 5G, it is essential that they focus on solutions that are holistic and include the necessary components and capabilities needed to deliver performance in the real world. It is about much more than just the network; a company's 5G ecosystem of complementary, interconnected products and services will make the difference between success and failure.

Verizon has made the strategic commitment to deliver a full 5G offering that meets the current and future demands of digital businesses. For more information, please contact your Verizon Business Account Manager.