AT&T Business

AT&T 5G

Enterprise-grade 5G for businesses of all sizes

Creating the foundation for the next generation of business

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5G is here

It's poised to jumpstart the next wave of mobile innovation. Businesses of all sizes are wondering how 5G is currently being used, which use-case technologies will benefit them, and how they should build them into their growth strategies. Some businesses are even wondering if 5G is just for consumers—can it have an impact on businesses today? It is not just for consumers, and it is already having an impact on some businesses today—however it's only the beginning.

According to Jason Leigh, Senior Analyst, IDC, "5G is the gateway to an entirely new world for businesses, but it needs multiple other technologies coming together to achieve its true potential."

To thrive in this new world, businesses must prepare. In this paper, we will look at several facets of the rapidly evolving technology of 5G:

- Why 5G?
- Making sense of 5G technologies
- 5G and cybersecurity
- 5G is already transforming industry
- A look ahead

Why 5G?

Business leaders continue to ask, "Why do I need to embrace 5G?" or "What does it mean to evolve to 5G?"

With new capabilities coming online, 5G not only will enhance a growing "smart" ecosystem for businesses, but it will also enhance and complement other networking technologies.

User experience

The eventual 5G value proposition is best summed up as latency + security + reliability + speed = better user experience.

As these networks mature they will ultimately deliver up to 50x more speed, 10x less in end-to-end latency, and 1,000x more capacity than 4G/LTE[1]. Businesses will gain the ability to achieve true wireless flexibility—with a consistent performance resembling wired networks. This means being able to connect, collect, and create in new ways, enabling a new standard in the convergence of cloud, network, data, and applications.

Powering the "smart" universe

Nearly every device people use today—from phones to refrigerators to smoke detectors—has the ability to connect. Businesses can use consumer-grade sensors, but business needs are typically more rigorous and demanding than consumer needs. Businesses of all sizes should turn to enterprise-grade sensors and IoT for unique device needs like asset management trackers, robots, and personal protective equipment.

The addition of this "smart" technology can help companies gain insights into business and consumer needs in near-real time to be used to drive increased revenue, efficiencies, and productivity.

Adding 5G to existing 4G network architectures, combined with other next-generation technologies such as Internet of Things (IoT) devices and edge capabilities, enable more feature- and function-rich user experiences across the entire business. From retail to financial services, transportation to manufacturing to healthcare, and across virtually all industries and businesses, 5G is beginning to make an impact.

As global events and evolving technology move us further into a 5G world, several other drivers continue to push us forward.

- **Massive device connectivity** – IDC estimates that there will be 41.6 billion connected IoT devices generating 79.4 zettabytes (ZB) of data in 2025, which will increase the need for highly reliable bandwidth with the capacity to support up to 1 million sensors per square kilometer. You will be able to capture more data, which can reveal insights into improving operations.
- **Ultra-reliability** – As more industries embrace robotics, like healthcare and manufacturing, the 5G network will increase reliability and make use of licensed, shared, and unlicensed spectrum models to enable greater control and automation. You will be able to take fuller advantage of automation to increase business productivity.
- **Ultra-low latency** – Latency is the amount of time between when you tell your technology to do something and when it does it. This is critical for real-time applications and near-real-time decision making. The eventual industry expectation for 5G latency is less than 5 milliseconds. 5G is intended to deliver the same latency as wired networks, meaning virtually no interruption or errors in connectivity. This can allow for more proactive, data-driven decisions.
- **Better capacity** – More connection points in a smaller area, along with using radio densification and unlicensed spectrum (which could also include shared spectrum), adds more capacity. That means a better customer experience since consumers will be able to connect to your business how and where they want.

[1] https://www.intel.com/content/www/us/en/wireless-network/5g-technology/5g-vs-wifi.html

And while 5G is traditionally thought of as a mobile network, many providers are already delivering solutions that will enable businesses to innovate new use cases, even in fixed locations.

The 5G and Wi-Fi connection

5G using cellular technology has a superior range to fixed Wi-Fi and is more diverse in its spectrum types (licensed versus unlicensed, low, mid, high, and mmWave bands). But 5G is not replacing Wi-Fi. It's quite possible to solve use cases for today with Wi-Fi (or LTE for that matter) while providing a future-ready model. Enterprises should look at how these two connectivity types could live together as the cornerstone options in their environments.

Wi-Fi will coexist with 5G and be a key part of many 5G use cases. There is a potential to combine the two technologies into a single radio network backbone for campus, office, and business venues.[2] Traditionally, cellular networks are powered by wide-area technologies. Now with edge and private cellular networks, there can be common connectivity aggregation points, one similar to another functionally but be designed differently depending on the site and user type.

What does this mean for businesses? It means they can allow the type of connectivity needed to enhance the desired experiences. However, to do this in a wireless setting requires using spectrum as wisely as possible. An evolving trend is using private cellular as a local area network (LAN) technology paired with different variations of Wi-Fi. This shift may give Wi-Fi back some of its spectrum, affording customers more spectrum for today while helping to ensure the future-ready networks they need tomorrow.

Since 5G was born in the cloud, it allows for a merger of cloud, wired, and wireless connections into a unified whole. This way, no matter what type of access users need, it can be nearly the same experience for all of them.

[2] https://www.sdxcentral.com/5g/definitions/will-5g-WiFi

Making sense of 5G technologies

Wireless communication has become an essential tool for business. 5G can connect more people, more devices, and deliver more data than ever before. To do this, you need the right mobile technology built for the rigors of businesses of all sizes.

One of the ways to assess enterprise-grade 5G is to look at the different types of spectrums (radio frequencies that carry data from equipment and devices to cellular base stations to the data's endpoint). You need the right spectrum to support different business needs in different locations.

The 5G spectrum: What is it and why it matters

Spectrum is the "oil" of a wireless or cellular network. Without it, nothing happens. That's why we consider spectrum critical when evaluating criteria for a private cellular network. The spectrum for 5G includes a range of different frequencies, each with different characteristics and benefits that will help define the types of services and devices you can support. The three different bands of spectrum are:

High band or millimeter wave spectrum. This is for delivering data over very short distances with line of sight between the cell site and the device. It can provide fiber-like speeds for fixed wireless broadband in high-traffic areas and places like arenas and campuses. Spectrum for this is in the 24-47 GHz range.

- **High-band use cases:** This is better suited for fixed/stationary use cases, media, campus, and entertainment businesses and venues. It requires the user to be close to the access point with no intervening objects.

Mid-band. This delivers coverage and capacity. It's ideal for businesses looking to move large amounts of data around significant distances, typically in licensed (operator spectrum), unlicensed (Wi-Fi), and shared (i.e. CBRS) models. The spectrum used here is in the 1 GHz to 6 GHz range.

- **Mid-band use cases:** This would include IoT devices, smart cars, and smart cities where larger amounts of data need to be shared in near-real time.

Low-band. Think of this as the version that has the greatest range and propagation, but lacks the capacity of mid-band and high-band. These features make it good for voice, text, and a low-power wide-area network (IoT). The spectrum used here is in the 1 GHz to 6 GHz range, generally available unlicensed spectrum, and low-power wide-area network (LPWAN).

- **Low-band use cases:** Especially compared to mid- and high-band spectrum, this is used mostly for exchanging smaller amounts of data from a larger number of distributed devices to the network and back.

Businesses should look for providers that offer a holistic approach to spectrum and connectivity. In other words, businesses should be building networks based on use case and site type, working through that approach to get to the optimal solution types.

Licensed versus unlicensed spectrum

Spectrum can be licensed or unlicensed. In either case it can be shared. Each comes with its own set of plusses and minuses.

Licensed spectrum devices operate in the spectrum designated by the FCC to be reserved for organizations that have been granted licenses.

> **Advantage:** Since there is a sole operator, they can control how to deploy the network to manage its use. And the base stations can be spaced out to optimize the network.
>
> **Disadvantage:** You are dependent on the operator or spectrum owner for your usage of it.

Unlicensed spectrum is free of charge for all providers in an area, without any rules on access or usage.

> **Advantage:** It's free.
>
> **Disadvantage:** Since it's a free-for-all, anyone can use this spectrum and you have little say in stopping them. If several entities near you all start using the same spectrum as you, it could affect your technology and use cases. Overloaded bandwidth, channels, and capacity can lead to serious performance challenges. There could also be security issues, but the key concern here is capacity.

Shared spectrum may also be referred to as "lightly licensed," as in the case of CBRS. It creates a new option for a private LTE network—and has more uses beyond that. It comes with both licensed and unlicensed. CBRS-based services in the licensed category have characteristics similar to classic mobile services, whereas the characteristics for general available access are similar to Wi-Fi.[3]

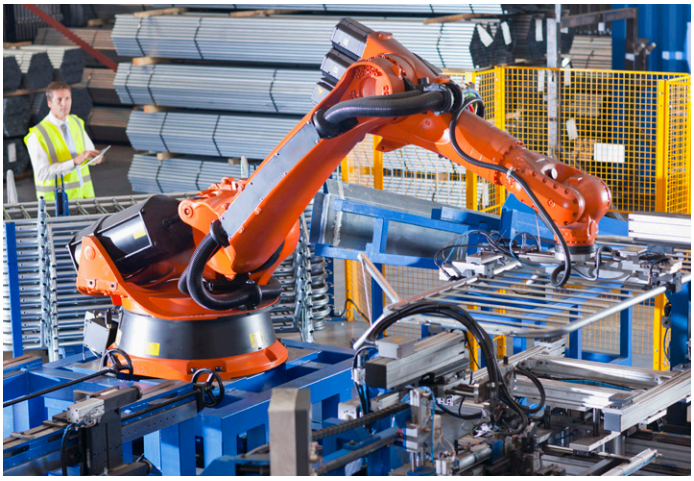
> **Advantage:** When clearing a band is not possible, this enables mobile access to additional bands in areas, and at times, when other services are not using them.
>
> **Disadvantage:** It can create very fragmented bands with no true way to monitor and control channel use and security.

Carrier aggregation is used in LTE-License Assisted Access (LAA) to increase the bandwidth, which can increase the bitrate. It uses unlicensed or shared spectrum along with licensed spectrum. These technologies serve as the runway to 5G by boosting the existing LTE network and priming it for the future of connectivity. It can enable faster speeds now and allow for upgrading to the 5G experience when a business is ready. Carrier aggregation is a benefit to the user experience when employed on the commercial network as well as in a private network. It helps to enable aggregation of unlicensed and licensed carrier frequency spectrum to increase capacity, provide higher peak speed, and improve load balancing. However, using carrier aggregation on commercial networks can potentially create challenges for private network deployments vying for the same bandwidth because this will increase system complexity.

AT&T spectrum by the numbers

AT&T continues to improve its 39 GHz spectrum position to 786 MHz, with an increase of 102%. Prior to Auction 103, AT&T acquired 379 MHz of 39 GHz spectrum when it purchased FiberTower for $207 million in early 2018. All 39 GHz licenses held by AT&T prior to the auction were exchanged for vouchers. The company spent about $2.4 billion in the auction, or $1.2 billion net of its vouchers. This is another example of AT&T investing in spectrum to support its enterprise-grade solutions.

[3] https://www.fcc.gov/wireless/bureau-divisions/mobility-division/35-ghz-band/35-ghz-band-overview



5G and the edge

Today's top companies maintain a vast web of cellular endpoints and IoT devices. Standard, public network architectures generally limit the utility of those devices inside their private and latency-sensitive environments. 5G and edge computing are set to change that.

Edge computing is a distributed IT network architecture that enables mobile computing closer to where the data is created and where it is needed. Instead of sending the data to distant cloud data centers, edge computing decentralizes processing power to locations either on premises or closer to the premises to help ensure much lower latencies—while also helping to reduce transport costs and storage requirements.

Many use cases are limited or unworkable because the applications need to be located in the traditional cloud. Current cloud structures add stress to endpoint devices with more intense requirements for compute power and latency. Using edge clouds can enable more applications and endpoint devices.

It's important to work with a provider that has an ecosystem of integrated services, partners, and dedicated experts to help you figure out what's best for your business.

IoT is a catalyst for activating the edges of your business. But it's more than just wearables and radio-frequency identification (RFID). IoT is a combination of systems, devices, networks, and software working together to provide actionable data in near-real time.

You can unlock new capabilities at the edges of your business through sensor technology, like inventory that stocks itself or machines that tell you when they need maintenance. And with a single platform, you'll be at the helm of it all.

5G at the network edge enhances IoT. It provides the ability to move workloads out of the traditional cloud, helping reduce latency and optimize bandwidth. Also, offloading workloads from the customer edge can improve device battery life, manageability, and cost. Eventually, workloads can be distributed across 3 locations: network edge, customer edge, and the traditional cloud depending on use case needs.

And when customer edge use cases employ on-premise Multi-Access Edge Computing (MEC), IoT and 5G provide the opportunity for significant improvements in productivity and employee and customer experiences.

Use MEC to gain more control of your data

An emerging, disruptive force in the world of network architecture, Multi-Access Edge Computing (MEC), is laying the groundwork for a myriad of new industry-specific use cases.

MEC is an on-premises solution that uses cellular (today using sub6 spectrum and LTE, but ultimately 5G+) to deliver a low latency, high-bandwidth solution, providing more control and flexibility at the edge. MEC enables businesses to "break out" or "peel off" designated user data and keep it local for quicker processing/computing.

This is a great solution for industries that internally handle highly secure information or large campuses/ manufacturing plants that have a dense amount of devices/IoT, and which could benefit from low latency.

In addition to being scalable, MEC delivers control at the app level. Businesses can decide what data stays local to a particular app and what app data runs the standard route.

The environment created with MEC is focused on the user experience. Keeping designated cellular traffic local reduces latency and helps increase stability, which is a great recipe for immersive, innovative tech like interactive signage, autonomous guided vehicles (AGVs), AR/VR applications, and more. There are also high-performance tools like video-as-a-sensor, where not having lower latency would affect camera recognition, impacting safety and operations. MEC specifically focuses on cellular at the edge—where latency can make a larger impact on business or operations.

MEC allows a business to move applications and data from servers in a distant cloud to a customer LAN, on-premises edge, or to an edge-cloud. This can free space (physical and digital) for critical applications that are high bandwidth and benefit from lower latency. It can also give businesses the ability to more easily and automatically spin-up virtual servers that they wouldn't normally have on-premises.

Businesses are positioned to gain the benefits of near-real-time intelligence from every corner of their network. 5G with MEC lets enterprises efficiently collect and analyze data from dispersed IoT devices across a wide area—all while significantly improving latency, depending upon the application, locations, and use cases.

MEC acts as an intelligent traffic controller and data processor. It allows the user to decide and determine the data routing policy for devices based on parameters set by their business. It's here that high-priority, mission-critical data can be processed and immediately sent back to the appropriate endpoint within the local private wireless network environment, rather than sent further down the traditional paths of the packet core, remote server locations, or the internet.

Private cellular networks benefit from 5G

Adding a layer of privacy to a commercial cellular network means businesses can extend the local enterprise network to their mobile workforce and still provide workers with highly secure access to off-premises, internet-based applications. It will also enable organizations to connect tracking equipment, point-of-sale devices, vending machines, alarm, or telemetry devices to the local area network (LAN).

Flexibility in these connections is needed for businesses to keep pace with their changing environments. Dedicated coverage solutions with the ability to selectively control specific traffic and treat it with heightened responsiveness and security are growing in demand. MEC exemplifies that approach. 5G can enhance those solutions with additional performance and different spectrum options.

CBRS has emerged as an enabler for fully private cellular network deployments. While the current standards support LTE on CBRS, the industry is in the process of extending 5G standards to CBRS spectrum. This outcome will steadily be adapted into the OEM (original equipment manufacturer) equipment supporting these network deployments.

Private cellular networks will help solve business problems for manufacturing, warehousing, transportation hubs, mining, oil, and gas industries looking to combine the operational control of a wireless LAN with the performance and security of a cellular solution using CBRS spectrum as well as licensed spectrum with MEC.

5G and cybersecurity

Emerging networking and cellular technologies create opportunities for businesses. But given the multifaceted nature of 5G and security, businesses must be proactive in anticipating the security requirements that come with this new technology. In fact, in a study conducted by AT&T Cybersecurity with 451 Research, 76% of the respondents expect wholly new security threats to emerge out of a 5G world, and the other 24% expect a volumetric increase of current threats.[4] Businesses considering 5G use cases should be aware of the inherent eventual security strengths of 5G—and what types of cybersecurity solutions they should invest in to enhance their defenses to protect the business.

Inherent strengths

Traditional cellular networks have a degree of native security strengths. On top of that, operators deploy other layers of defense on the network. These inherent security measures come with industry-standard frameworks and certifications that network operators adhere to.

Beyond that, businesses should look for providers that offer a defense-in-depth approach with layers of additional security tailored to help protect their eventual migration to a 5G network and support critical infrastructures. Other differentiators to look for include:

- **Identity and access management** (multi-factor authentication, role-based access control (RBAC), network access management, logging)
- **Security monitoring** (continuous monitoring for data exfiltration/leakage, logging)
- **Threat analytics** (data insights, Artificial Intelligence, machine learning)
- **5G edge cloud security** (virtual firewalls, secure operations, administration, and management (OAM), secure cloud infrastructure, storage encryption, security scanning, secure VPNs, access-control list (ACL))
- **Security automation and enhanced cloud security**
- **Security scanning and vulnerability management**
- **Open source code vetting and scanning security guidelines/controls**
- **Secure cloud infrastructure**
- **Encryption**
- **5G standards-based security features** (see below)

All those differentiators help protect the integrity of the network and the data it carries.

[3] https://www.business.att.com/reports/cybersecurity-insights-report-ninth-edition.html

Evolving security with 5G

Today, we don't know what the future, fully evolved 5G security standards will look like. But we do know that many of today's security capabilities will need to evolve to support highly secure use cases and devices. Below are some of today's network security capabilities and projections of how they might evolve to support the needs of 5G networks.

- **Over-the-Air Protection** – Current 128 bit encryption may need to go to 256 bit. This will necessitate innovations to deal with the potential performance issues based on packets in throughput.
- **Subscriber Identity Privacy** – There has long been encryption at the SIM card level. Adapting to future 5G network configurations will likely require subscriber identity protections that take into account shared data hand-off in the edge cloud to accommodate the sharing of authentication among multiple parties.
- **Unified Authentication Framework** – Today, we have the ability, in certain cases, to allow the SIM to authenticate WiFi access. As 5G evolves it will need to take that unified authentication beyond access to application authentication.

Other considerations

In addition to the cyber defenses mentioned already, a business can also look at other ways to support their forays into 5G, such as virtualization and deployment security.

Regarding virtualization, a 5G network that is software-defined allows cybersecurity tools to detect and respond to known threats in near-real time at the 5G Radio Access Network (RAN), core, and the edge of the network.

When talking about cybersecurity, some businesses can overlook deployment security. A provider should have mature network deployment processes. Some key elements of these processes include security controls to test and validate that their deployment is secured according to standards, policies, and regulations. This will help ensure that none of the hardware/software has been altered for malicious intent.

What cybersecurity additions to make

To successfully and efficiently fight cybercrime, organizations should lead with a security-first mindset and make cybersecurity a business imperative. Taking this approach has other benefits as well. When assessing that security-first strategy for 5G, keep these questions in mind:

- How will our business maintain a proper security posture?
- How will we extend the security policy to the new types of devices that are emerging?
- How will we implement a Zero Trust framework?
- How will we access and move these higher quantities of data?
- How will we handle bursts of workloads?

It is recommended that accurate threat intelligence be used, drawing from many sources of information in terms of the scale and diversity of data. An organization should also have the ability to launch a rapid, effective response, enabled by virtualized security controls, once an attack is spotted. There are resources for enterprises that want help anticipating and planning for security challenges arising with 5G. Businesses should look to a security partner that has a comprehensive security portfolio and that can help make it safer to innovate.

According to STL Partners, 5G will be key in unlocking nearly $1.4 trillion of benefits in 2030.[5]

5G is transforming the industry today

Adding 5G technologies to existing network architectures will not only allow businesses to modernize but also help disrupt entire industries. Many businesses are already using or experimenting with 5G technologies and network configurations to achieve better business results than before. Regardless of the industry, 5G can help customers evolve in their journey to innovate and work with their existing network technologies. Here are some examples:

Financial services

5G is poised to help banks and other finance companies deliver new, innovative services, such as wearable technology, highly secure and instant data transfer, or financial recommendation software through AI. The low latency, high data capacity, and high reliability of forthcoming networks will help create a new platform for the delivery of services—virtually wherever the customer is located. 5G could allow, for example, customers to get personalized attention via a video session without necessarily finding and traveling to their nearest branch via a remote teller.

Use case: A large financial services firm realized a need for a more configurable network with automatic failover and other advanced features that would better enable its client institutions to use technological advances.

Through a unique collaboration, they implemented a software-defined network in a wide area solution (SD-WAN) that delivered the security, agility, and management features that were needed. SD-WAN gave them and its member institutions a network-based solution that combines a hybrid infrastructure with multiple access types to enhance cost-effectiveness and application performance.

The cutting-edge infrastructure enabled them to introduce new lines of business that it expects to generate significant annual revenue. What's more, as we discussed in the cybersecurity section, SD-WAN can be enhanced with 5G allowing cybersecurity tools eventually to detect and respond to known threats in near-real time at the 5G Radio Access Network (RAN), core, and edge of the network.

Retail

Innovative trends and personalization are reshaping what many people expect when they enter a store or building, and retail companies need a network that can handle the amount of data required. Adding 5G technology to an existing network architecture can help power new offerings that many retailers are beginning to provide, such as VR and AR, futuristic dressing rooms, and personalized improvements to the hospitality industry.

Use case: One of the highest bandwidth IoT applications today is high-definition video cameras used for monitoring process quality or physical security. These high-definition cameras can generate 8K video streams, creating a significant amount of data that impacts the network, slows response time, and, in some instances, mitigates the desired benefits. Local processing of the data from the video applications via MEC helps deliver the infrastructure and intelligence necessary to achieve the intended business and operational outcomes of video services.

This could eventually allow for:

- **Immersive employee training** for complex tasks using AR goggles and video-based learning.
- **Remote automation of building/heavy equipment** using high-resolution video cameras to operate equipment more safely and precisely.
- **Real-time security camera video analytics** to help detect intruders or other anomalies and immediately alert security personnel.

[4] https://stlpartners.com/research/1-4tn-of-benefits-in-2030-5gs-impact-on-industry-verticals/

Transportation

5G technology has the potential to provide increased visibility and control over transportation systems. The lower latency, high capacity, and high reliability can enhance how goods and people travel. Once added to existing network architectures, 5G will eventually help unify network protocols, improve safety and reliability, and provide end-to-end connectivity across our cities and beyond.

Use case: A large fleet management company wanted to update its driver reporting processes to enhance the safety of its drivers and others on the road and easily comply with federal regulations. They needed to collect more detailed data from their drivers and vehicles to manage operations better.

They chose a fleet management platform that incorporated advanced IoT services with a fleet-tracking platform that records driver and vehicle data to make it easier to comply with government regulations. This solution is helping improve driver safety, avoid fines, and eliminate paper processes.

The solution uses a tablet device to electronically log all the data that they need to manage its fleet and comply with federal electronic logging device regulations. The solution also boosts efficiency, lowers fuel costs, and reduces maintenance costs.

Healthcare

As healthcare organizations innovate and digitize operations, the amount of data usage, security for that data, and transfer continues to increase. 5G will eventually help hospitals and other health providers meet these growing demands and help with the transmission of large files, the expansion of telemedicine, and the utilization of artificial intelligence (AI). 5G will also increasingly help medical professionals be able to "see" better and interact with more patients virtually due to the lower latency and highly reliable nature of evolving 5G deployments.

Use case: A Chicago-based university medical center and the system for health have brought the first mobile 5G enabled hospital trials to the United States. 5G technology exists in parts of the hospital testing various use cases.

This clinically integrated network of health care providers and hospitals in Chicago is poised to take advantage of the 5G network and Multi-Access Edge Computing (MEC), a cloud-based IT service environment, and other advanced network-related technologies as they become available. It will enable them to manage their cellular traffic over both its local network and its wide area network. This way, they will be able to better satisfy network communications and application-processing needs for its data, enhance the various use cases across its system, and help improve the patient experience.

Manufacturing

The future of smart factories will be filled with sensors, each monitoring different aspects of the working environment. They'll also feature connected tools, using information ranging from location to accelerometer data to understand where and how they're being used to guide workers accordingly. Many industrial spaces have become early adopters of this because of the need for data ownership models to scale with Industry 4.0—a term describing the technology, research, and development in automation, process industrial IT, and manufacturing technologies. 5G's high capacity, wireless flexibility, and lower-latency performance make it a good choice to support manufacturers in these environments.

Advanced manufacturing facilities use automated processes and robotic equipment throughout their production process. 5G and related technologies can help enable large-scale, near-real-time monitoring and proactive maintenance of factory automation equipment, helping to improve production. An Automated Material Handling System equipped with IoT sensors and 4K wireless cameras can demonstrate remote monitoring of factory automation equipment. With 5G, this type of automation could be equipped with a full suite of devices to collect important data on acceleration, position, temperature, humidity, and gas-flow rates.

Safety could also get a boost as 5G's lower latency could help enable critical data to get to emergency respondents with lower lag times.

Use case: A large semiconductor manufacturer utilizes a combination of multiple connectivity technologies, including 5G, LTE, and Wi-Fi.

Thanks to 5G, the manufacturer enjoys enhanced capacity, throughput, and latency at levels previously only available via wired technology. Like most manufacturing facilities, it collects data from thousands of machines. Adding 5G into the mix, particularly using mmWave spectrum, enhances how the company collects data at scale, improves process flexibility by eliminating wires, and supports processing data in near-real time.

Increased bandwidth and reduced latency support efficiency and performance on the production floor. Intelligent sensors and compute power at the edge help predict issues before they happen.

A look ahead

The true promise of 5G lies in how and where it's being used with other digital transformation technologies.

According to STL Partners, the impact of 5G on the various industries will accelerate even more after 2025 when they expect 5G to have reached maturity.[6] In the future, it's estimated that 5G using sub 6 GHz spectrum will deliver average download speeds of 400+ Mbps and further reducing latency. That means your data-intensive ops and apps can act quicker than ever before. Separate networks and solutions may converge into a unified whole. And it can help give businesses of all sizes the enterprise-grade bandwidth, latency, and compute power to use a variety of emerging technologies to their full potential.

Projections in just two industries give a glimpse of how 5G can eventually fundamentally change the playing field for businesses. According to STL Partners, 5G is poised to unlock $740 billion of value in 2030 for manufacturing[7] and provide 1 billion patients with improved access for healthcare.[8]

Why AT&T

Business mobility was born at AT&T. This experience allows us to provide a unique mix of innovation leadership and business expertise to champion a different standard in true enterprise-grade mobility. Our solutions are built for the rigors of business. We can provide you with the solution choice, connectivity strength, and security expertise to continuously move your businesses forward. We can help you develop virtually infinite possibilities in a single mobility partnership that's always moving quickly from idea to outcome.

The AT&T 5G network is now available nationwide (FN8), and our 5G+ network is live in parts of 35 cities, including Atlanta, Austin, Baltimore, Charlotte, Cleveland, Dallas, Detroit, Houston, Indianapolis, Jacksonville, King of Prussia, Las Vegas, Los Angeles, Louisville, Menlo Park, Miami, Miami Gardens, Nashville, New Orleans, New York City, Oakland, Ocean City (MD), Oklahoma City, Orlando, Phoenix, Philadelphia, Raleigh, Redwood City, San Antonio, San Bruno, San Diego, San Francisco, San Jose, Waco, and West Hollywood. See att.com/5Gforyou for 5G coverage details.[9]

Sports and entertainment

Broadcasters need more freedom. With a private cellular network, broadcasters can help their camera operators to move around more and get the unique shots and footage that can drive better fan engagement. A private cellular network will transform broadcasting and media coverage with 5G+ enabled smartphones and cameras being able to provide a new level of flexibility for both indoor and outdoor venues that brings:

- Live-streaming video, mixed reality experiences, and near-real-time access to game stats, reinventing how fans connect and participate
- More freedom for the camera operator to move and capture the best content
- The speed and low latency of 5G support wireless high-definition video for live streaming
- A private network dedicated only to the venues' devices, so there is no shared bandwidth with fans or other attendees
- Savings in time and money on setup and infrastructure costs by eliminating fiber cabling for some of the cameras

[6] https://stlpartners.com/wp-content/documents/5G_impact_on_industry_webinar_deck.pdf
[7] https://stlpartners.com/research/5gs-impact-on-manufacturing-740bn-of-benefits-in-2030/
[8] https://stlpartners.com/research/5gs-healthcare-impact-1-billion-patients-with-improved-access-in-2030/
[9] Req's compatible plan. 5G may not be in your area. See att.com/5Gforyou for 5G coverage details.

For more information, contact an AT&T representative or visit att.com/5GforBiz.

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