5G Buyers' Guide: What to Consider When Selecting a 5G Solution

Exploring the options, opportunities, and outcomes of 5G adoption in enterprise business

Enterprise businesses understand the importance of integrating fast, reliable Internet connectivity to streamline operations and advance innovation. As the shift to cellular broadband adoption grows across industries, so does the exploration of 5G business value and the study of whether it is worth the investment.

5G adoption brings with it a slew of benefits, including:

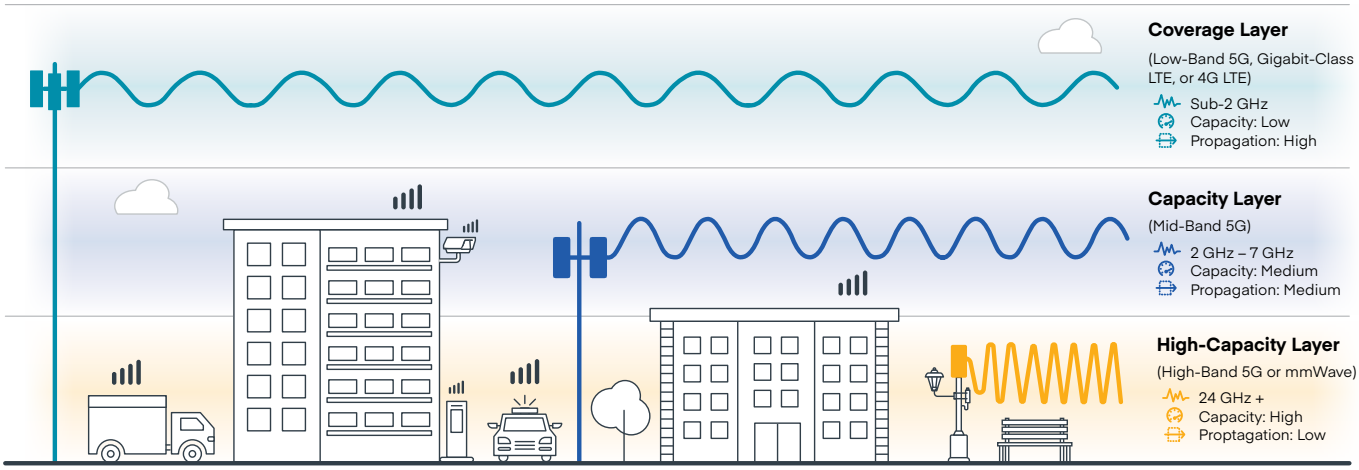
- Wire-free agility that enables business applications to be activated quickly and easily moved from one site to another.
- Increased reach for the placement of signs, videos, or temporary sites in locations where a wired connection is not feasible.
- Improved network performance when using cellular as a primary or failover connectivity solution.

With these and other benefits in mind, most organizations are considering or already deploying 5G as part of their network architecture.

Let's drill down into why 5G is different from previous cellular technologies, how it nurtures the growth and transformation of a business through high-value applications, and what questions to ask when selecting and deploying a 5G solution for enterprise business.

Types of 5G for enterprise business

The value of 5G can vary depending on available spectrum and coverage. Based on their location, enterprises may have access to one, two, or three different layers of 5G.



Coverage layer

Also known as low-band 5G, the coverage layer comprises sub-2 GHz frequencies alongside 4G LTE. Although it has a lower capacity than other 5G spectrum layers, it has the highest propagation of the bunch, meaning its signal can penetrate obstacles and travel long distances.

Capacity layer

Also known as mid-band 5G, the capacity layer includes frequencies between 2-7 GHz. This layer is characterized by medium capacity and propagation. The mid-band spectrum is most widely used because it offers a balance of performance and propagation that works with various bandwidth-intensive and latency-sensitive use cases. Low latency guarantees will be offered with 5G standalone (SA) networks.

High-capacity layer

Also known as high-band 5G or the millimeter spectrum (mmWave), the high-capacity layer can carry large amounts of data compared to low- and mid-band 5G. However, its propagation is lower than the other 5G spectrum bands. The high-capacity layer is largely limited to line-of-sight transmission and can be easily interrupted by weather, structural interference, and distance.

> **We've had great success utilizing cellular as our primary Internet connection in areas where high-speed wired broadband is scarce, and we'd like to increase our reach with 5G."**
>
> Valvoline Instant Oil Change, Henley Enterprises
> Explore Valvoline's 5G story in this **case study**.

High-value opportunities for 5G

Early business use cases for 5G are attractive to many organizations who already have or plan to implement 5G solutions for a wide range of use cases.

Fixed locations

5G solutions make it much more feasible for fixed locations to move from a wired or hybrid WAN solution to more agile cellular-only connectivity. Larger locations can also use 5G as a failover solution for all application traffic. For large locations seeking a high-performance replacement to their existing LAN architecture, a private 5G network can deliver control and security while complementing existing Wi-Fi.

Temporary sites

When a store within a store, pop-up location, or even a construction company is asked to provide its own network connectivity on site, logistics can be complicated — especially when there is a strict deadline. 5G provides organizations with a day-1 solution, allowing them to spend less time troubleshooting the network and more time getting down to business.

Vehicles

Connected vehicles can only go as far as their network, making 5G the premier choice for mobile healthcare vehicles, autonomous agriculture, fleet connectivity, and more. The bandwidth and security of a 5G network give emergency response vehicles unflinching access to life-saving applications, while public transportation vehicles capitalize on those same benefits to offer guest Wi-Fi and precise telemetry.

IoT

The unmatched capacity of 5G means more devices can be connected to the network at once — in some cases, as many as 1 million devices per square kilometer (0.386 square miles). Many of these devices require large amounts of bandwidth to perform their designated functions. This includes applications for robust smart cities, AI-enabled image recognition, immersive and interactive kiosks, real-time digital signage, and more.

> **We are ready for 5G. We need next-gen mobile networking to run our next-gen applications."**
> *– Taylor Construction*

Explore Taylor Construction's 5G story in this **case study**.

What type of 5G architecture does your enterprise require?

Indoor vs. outdoor connectivity

At fixed locations, such as stores and offices, achieving the best 5G coverage in an indoor setting — particularly in areas with low propagation — may require an external 5G adapter. Using an adapter versus an external antenna mitigates signal loss between the adapter and the router. On the other hand, in some cases, the reception will be strong enough indoors that the deployment will only require an indoor router with an embedded 5G modem or an indoor 5G adapter.

Adjunct vs. all-in-one

An adjunct solution means the 5G adapter is connected to any router with the port size and processing power to handle the higher speeds of 5G. The advantage of an adjunct solution is that there are many options for the router.

An all-in-one solution is an enterprise-class router with one or more embedded 5G modems that recognize a 5G adapter as an embedded modem, making hardware tracking and management easier.

Dual connectivity

Dual connectivity is the technology that enables a 4G and 5G connection to occur simultaneously. Through dual connectivity, the 4G LTE network acts as an anchor band supplemented by 5G. When connected to a 5G modem, it allows traffic requirements to determine whether an LTE connection is sufficient to transmit data at an acceptable rate, or if the traffic should be passed to 5G.

Regardless of your site architecture, the key to 5G adoption is to deploy with the future in mind. This means that even if you don't have your desired 5G spectrum in your area currently, buying a 5G router now will ensure you're ready to take advantage of that technology as soon as it's available — without sacrificing connectivity today.

Questions to answer before choosing a 5G solution

Your organization may be eager to start experiencing the benefits of 5G, but where do you start? Here are some steps to help you find the right 5G solution for your organization's needs.

1. In which use cases will 5G provide a competitive edge?

Examine your organization from a visionary perspective. Are there ways to improve operational efficiency, scale rapidly, or enhance customer and employee experience using 5G applications such as virtual reality, HD video streaming, interactive kiosks, immersive experiences, and more?

2. How will 5G be incorporated into your current WAN architecture?

If you've already incorporated 4G LTE into your WAN architecture, the move to 5G may just be a matter of assessing coverage in your area. If you're transitioning from wired or hybrid WAN to an all-wireless WAN architecture, be prepared to choose equipment, carriers, and rate plans that best suit your needs.

3. Which cellular operators and vendors will provide the best value?

Take the time to research and meet with carriers and vendors who understand your business goals. Do they provide 5G coverage for all your sites and fleets? Do their rate plans fit your budget? Will you have a dedicated point of contact for each site?

What about network slicing?

Network slicing gives users the ability to "slice" network architecture into independent networks. These sliced networks can then be configured to meet various application needs and service requirements. Will you need network slicing in the future? If so, you'll need a router or adapter that supports standalone 5G.

Cradlepoint 5G solutions

With different circumstances at widely distributed, diverse locations, the right type of 5G will vary from one deployment to the next. Cradlepoint 5G routers and adapters are built for scale and support the unique characteristics of all 5G spectrums while enabling secure, customizable, and easy-to-manage connectivity through Cradlepoint NetCloud Manager.

Learn more at **cradlepoint.com**