

Private 5G deployment: Your questions answered.



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As a senior IT professional for over 20 years, Gary has been at the forefront of leveraging new and innovative technology to bring new products, solutions and services to market. His extensive experience in strategy development has enabled him to help businesses from all sectors across the globe with their transformation goals.

There are many benefits of starting to explore 5G now. The list of compelling use cases is long. But as you start to think about taking your first steps with 5G, you've probably got questions. In this article, we'll cover seven of the most commonly asked questions and the advice that we give to companies like yours.

1 Where is private 5G available?

Private 5G is available in many places where public 5G hasn't reached yet, and may not reach for years. As long as the country in question has made spectrum available, you can deploy private 5G. Germany was the first country to make spectrum available for private 5G in November 2019. Many countries around the world – including the UK, France, Japan, Australia and the U.S. – have followed suit. And the list is growing, along with the number of companies showing interest. In its first year of licence availability, Germany issued 88 to the likes of Base, BMW, Lufthansa and Volkswagen. We expect applications to grow quickly.

It's also technically possible to run private 5G on unlicensed spectrum – in a similar way to how Wi-Fi operates – but this doesn't afford the same level of reliability and control. It also depends on the relevant regulator allocating spectrum for this use – just as 2.4 MHz and 5.0 MHz are globally allocated to unlicensed Wi-Fi.

2 How many licences will I need and how do I get them?

The number of licences you need will depend on your region, the area you want to cover, how many access points you need, and the frequency band(s) you want to use.

Fortunately the process for acquiring 5G licences is generally neither particularly complex nor expensive. In most countries the application is quite simple and the fees nominal.

Private 5G built right.

Verizon has a reputation for engineering excellence and technical expertise.

We've built mobile networks that span diverse landscapes – from densely populated cities, to vast open spaces like mountain ranges and plains. This experience translates directly to building private networks that deliver seamless enterprise mobility and connectivity no matter how complex your environment.

While 5G provides a whole new experience, it leverages security measures that were developed in the 4G environment. As the owner and operator of the one of the world's largest 4G LTE networks, we have a massive headstart on getting the most from these features.

3 How many access points will I need?

5G isn't a single technology. It's a whole host of standards covering everything from the underlying radio technology to the latest security features. Some of these standards are mandatory, others are optional – whether they are implemented or not depends on the operator.

Some of these, like MIMO (multiple-input and multiple-output) and beamforming, build on features within the latest 4G LTE networks. Many of the standards relate to improving coverage and throughput, and supporting more connections than 4G.

How many access points you'll need will depend on a range of factors, including the environment (indoors or outdoors and what obstacles there are), the frequency you're using, and the number of devices you want to support. The demands of a sea port are very different from those of a warehouse or hospital, even before you add in the complexity of frequency constraints and the needs of different applications.

As a general rule, you'll need fewer access points than with 4G or Wi-Fi for equivalent 5G coverage. In a Q&A session during our [5G Ready: Built Right for Business](#) online event, the CTO for Nokia Enterprise UK pointed out that when Nokia's Finnish factory installed a new private 5G network, it took around eight times fewer access points than was required with their existing Wi-Fi network.

As with any wireless technology, the positioning of access points is key. Whereas the odd "hotspot" in your Wi-Fi network would be annoying for roaming users, a gap in 5G coverage could be a much bigger problem for your automated guided vehicles (AGVs).

4 Do I need to worry about interference?

5G is specifically designed to support a huge number of devices – often referred to as Massive IoT. It has the potential to support up to a million devices per square kilometre.

Because you have your own dedicated licensed spectrum, interference from other devices shouldn't be an issue. Public cellular networks and Wi-Fi devices will operate in a completely different range of the spectrum. However there can occasionally be interference from other equipment. Some 5G bands are quite close to the "C band" used for satellite communications, but lots of work has been put into reducing the risk of this causing problems.

5 Does 5G introduce new security risks?

It's reasonable to expect that, besides facing threats similar to those already seen in 4G networks, 5G networks will be the target of new threats designed to exploit their new capabilities. Data-rich applications that call for more automated machine-to-machine interactions present a larger attack surface through their many connected devices, and the data that they generate will also be a tempting target.

5G has been developed with security in mind. It has many features that make it harder for cybercriminals to spoof networks or eavesdrop on communications. But no network is invulnerable and you'll always need to build security into your solutions. This includes physically hardening devices, implementing device authentication, encrypting data in transit, patching, and testing for vulnerabilities.

To find out more, read our paper on [securing 5G](#) >

Get started with a 5G virtual workshop.

Our consultants will work with you to understand how private 5G and multi-access edge computing can address your business challenges, and build the business case. This could accelerate your efforts and help you get more from your investment.

[Find out more >](#)

6 What's involved in integration?

Depending on what you plan to do with 5G, you could face new integration challenges. If you're looking at using artificial intelligence (AI), such as real-time intelligent video analysis or AVG applications, you'll want to consider integrating with [multi-access edge computing](#).

5G is also driving the convergence of IT and operational technology (OT). While the benefits of this convergence could be enormous, it will likely also throw up novel challenges for both teams.

7 Can we do this ourselves?

Absolutely. You could buy the hardware directly from an equipment provider, apply for licences from each of the relevant national regulators, plug everything in and away you go. But as we've discussed in this article, success is not necessarily quite that simple.

Partners can help you accelerate and de-risk the adoption of 5G – and also get more from it. They could help you explore 5G capabilities such as [network slicing](#) to prioritise traffic and allocate network resources efficiently to different applications. They could also bring to the table expertise in related fields such as [multi-access edge computing](#). This could help you cut time to value and improve the ROI of your projects.

Ask yourself what you want to do yourself and where a partner could make a real difference.

The companies most clearly associated with 5G are the mobile network operators (MNOs), making them an obvious first thought when it comes to considering who to approach for help. But the 5G business of MNOs is dominated by their public consumer 5G offering (unless, like Verizon, 'MNO' is just one part of their business). Pure MNOs aren't set up to help you explore potential use cases or design a 5G network that departs from the 'vanilla'. They can't help you integrate 5G and its applications with your existing network infrastructure and applications, or take you through the hybrid positions you might need on your way to full 5G rollout.

It's the systems integrator or enterprise IT specialist that will dig in to understand what you're trying to achieve and help you design and deploy the right solution. Just make sure that the partner you choose has made, and is continuing to make, the right investments in 5G expertise and capabilities. At Verizon, for example, our [5G Labs](#) reflect our commitment to everything 5G, and are at the heart of our work in building a 5G-powered world together with tech startups, academia, and enterprises like yours.

Next steps

Verizon can help you at every stage of your 5G journey: from deciding what connectivity is right for each site, through architecture design and acquiring licences, to deployment and ongoing management. We can also help you deploy edge computing and storage as needed and manage the whole infrastructure.

[Find out more >](#)

