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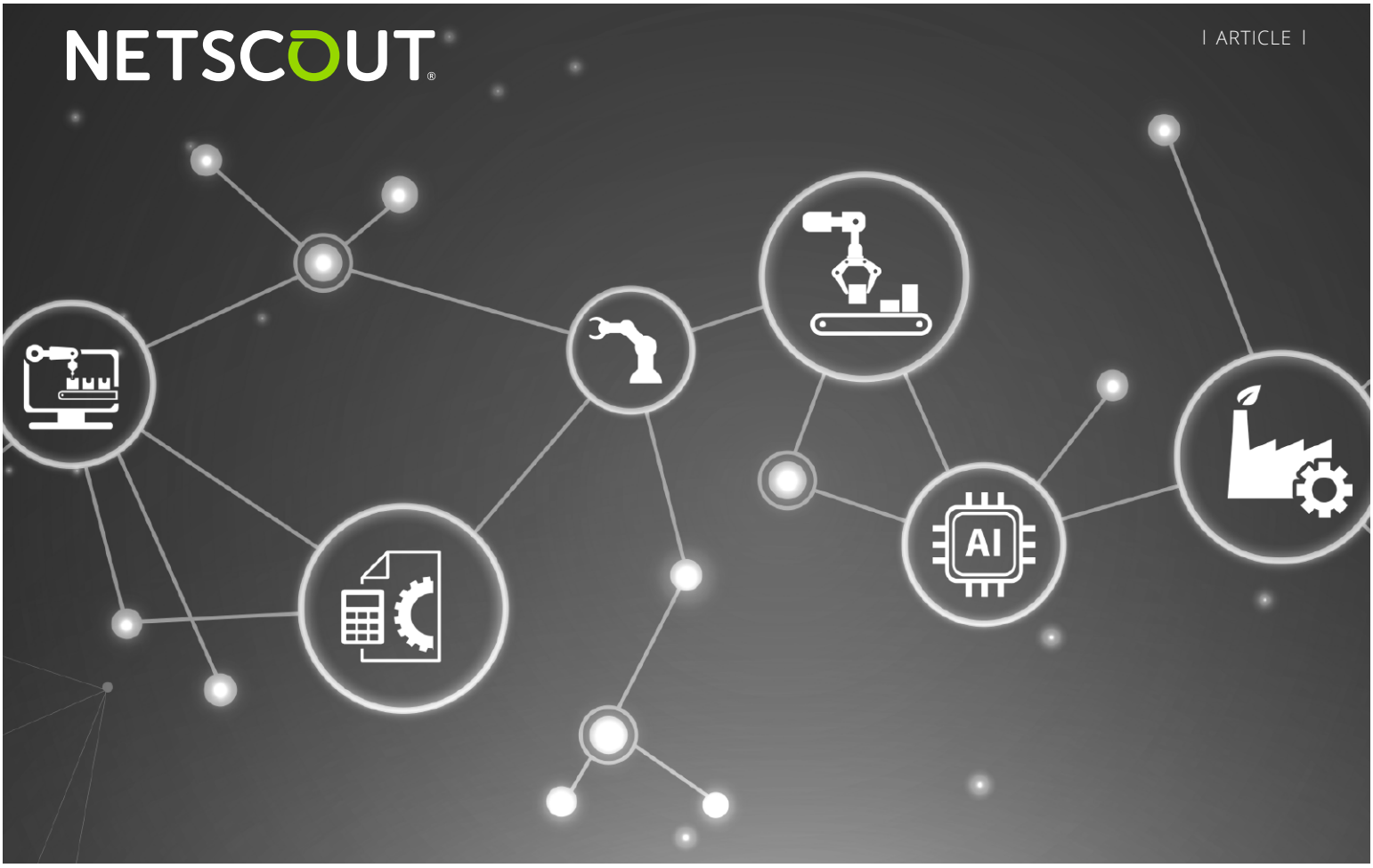

5 Questions to Ask When Creating Private 5G Networks

Considerations for CSPs and Enterprises Exploring Private 5G

SERVICE PROVIDER

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Introduction

Before we talk about private 5G networks, let's review what a private network is. In a private mobile network, only devices explicitly permitted by the owner, i.e., the communications service provider (CSP) or enterprise can gain access and be used on the network. Because use of the network is limited in both access and volume, network performance is predictable. Private networks can also be set up to cover precisely targeted areas in a way that public networks cannot. For example, outdoor arenas, entire college campuses, or dedicated manufacturing facilities can all use private networks for reliable, secure data transmission. Speaking of security, a private network allows you to deploy specialized security protocols based on exactly the sorts of data, applications, or use cases on your network. With a private 5G network, CSPs can also offer enterprises their own networks through network slicing. This saves the enterprise the cost of installing and maintaining an on-premises infrastructure.

A recent report from NTT Ltd. and Economist Impact, Private 5G here and now, showed significant interest worldwide in private 5G networks. 90% of CIOs and executive decision-makers expect private 5G to become the new standard for networks. 51% of these companies planning to deploy a private 5G network will do so by year-end 2024. 30% of respondents have already deployed or are in the process of deploying a private 5G network.

And why not? A private 5G network is flexible and allows devices to be deployed, fine-tuned, and moved without the complications and costs of wired, hardware-based networks. Additionally, secure and reliable private 5G networks can be created even in areas where wired connectivity is difficult, unsuitable, or even unavailable. When exploring private 5G, CSPs and enterprises should ask the following five questions to decide the best path forward.

Private Wireless is Here

Rollouts are in progress...

84+

Countries with 5G commercially deployed

656+

Private 4G / 5G networks and growing rapidly

$9.8 Billion

Cumulative spending by 2026

$2.3 Trillion

Added to global GDP by 2035

4x

More spectrum available for flexible use

15x

More unlicensed spectrum available

10%

Private spend as a % of public spend over 5 yrs

20,000

Small / medium private networks by 2026

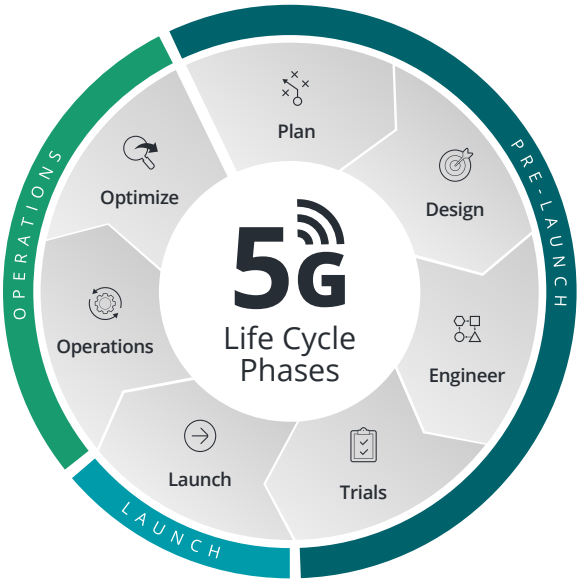
Is There a Cost-Benefit?

Implementing a private 5G network requires a significant capital expenditure (CapEx). Before building an entirely 5G-capable infrastructure and purchasing the new wireless equipment required to take advantage of the network, you should anticipate your return on investment (ROI). It is vital to match the budget to the application and ensure that a private 5G network is both necessary and cost-effective. Enterprises can certainly reduce their CapEx and possibly their operational expenditures (OpEx) by partnering with a traditional CSP or non-traditional cloud service provider. CSPs can offset their CapEx investments with new offerings for enterprises, like network slicing and customized service level agreements (SLAs).

A private 5G network allows CSPs to offer and enterprises to leverage 5G's high bandwidth and low latency (less than 10 milliseconds). Add 5G's edge computing capabilities, which significantly reduce transmission latency while keeping enterprise systems' devices communicating at the most local level, and you can enjoy 'near real-time' responsiveness. 5G also offers a wider access radius for enhanced mobile broadband (eMBB), massive machine-type communications (mMTC), and ultra-reliable low-latency communications (URLLC) all without ever having to install another wired line.

You will also want to consider your current network's infrastructure and spectrum/frequency reuse potential. Large enterprises using high-performance applications, especially those dedicated to education, transportation, healthcare, utilities, government, and manufacturing can benefit from the safe, reliable performance of a private 5G network to make their operations more agile.

Once you've decided to move ahead with a private 5G network, baseline your current environment. You will need to deploy an application visibility solution to gain insight into your network's performance while you complete your digital transformation and so that you can compare your new network environment to the old. You may want to consult the 5G life cycle as a starting point to help plan your private 5G rollout.



Does Your IT Team Have the Expertise to Operate the Network?

As with private 4G networks, private 5G networks require a vastly different skillset from a Wi-Fi network, and a private 5G network has new and complex security challenges as well. The responsibility for deploying and maintaining the critical infrastructure is in the hands of enterprise network operations.

The good news is that a recent survey by TECHnalysis Research, of over 600 US-based information technology (IT) professionals from medium and large enterprises, showed that there's real and growing interest in deploying private 5G networks at their sites. 53% of respondents noted that they believe their companies will be using private 5G networks in the future. Additionally, they were open to networks installed by their own companies, run by a CSP, or some other partnership agreement.

Prioritizing employee development as part of your digital transformation plan can ensure that you have sufficiently skilled staff available to manage all use cases and their challenges. Likewise, your team must have visibility to the entire network – end-through-end visibility – to assure the high-quality delivery and security of your applications and services. A network assurance solution that uses Smart Data provides both granular and service-level views into the network. With a seamless and proactive view of the network, your network operations team can rapidly identify, triage, and isolate issues that impact services from degradation to outages.

What Are the Security Implications?

5G requires a greater focus on security and protection from threats because its expanded bandwidth enables more users and devices to be connected. It is also software-based, without the built-in 'choke points' of previous centralized hardware-based networks. Conversely, security concerns are accelerating private 5G adoption. With ransomware on the rise, CIO and CISOs are looking for ways to shore up their defenses against increasingly sophisticated attacks, and when compared with technologies such as Wi-Fi, 4G, and public 5G, private 5G networks provide significantly more security capabilities. With private 5G, enterprises can also design and control their security policies, either internally or with a customized SLA from a partner CSP while also benefitting from 5G's 256-bit encryption, a significant improvement from 4G's 128-bit encryption. You will also want to consider private 5G's edge monitoring capabilities to bound and shield your sensitive enterprise traffic. Most importantly, you will need full network visibility for complete network security. Your entire IT organization–network and security operations–will need to work more closely and efficiently than they may have before to realize all the benefits of a private 5G network.

Is Site Specific 5G Required?

Enterprise 5G can be established inside structures where 5G is not yet available from carriers, making fast connectivity available where it's needed. For instance, NETSCOUT® can work with CSPs to provide a complete 5G private network solution to deliver 5G speeds and ultra-low latency in a discrete setting, such as a factory floor where real-time control of robots is necessary or a hospital campus where augmented reality (AR) is being used for interaction with surgical machines.

A private, in-house 5G network is not just fast, it's private. High-security sites like airports and government offices worldwide can benefit from their own 5G networks.

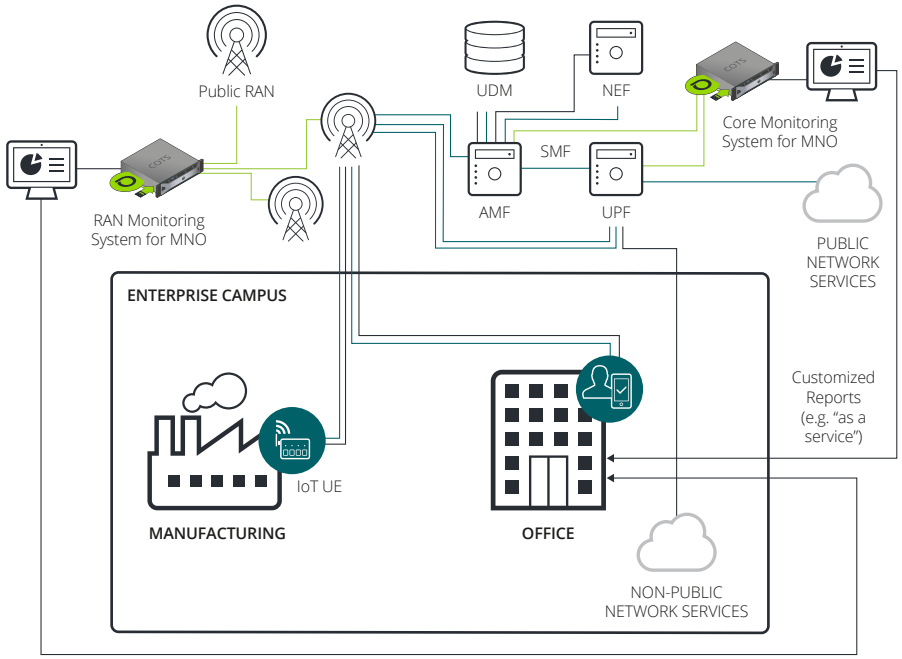


Figure 1: Non-Public Network in Public Network.

What Is Your Spectrum Strategy?

Private 5G requires enterprises to gain access to bandwidth on a sanctioned 5G spectrum. This can be done by partnering with a CSP to use their spectrum, or it can be accomplished by purchasing a government license. You may also consider Citizens Broadband Radio Service (CBRS), a lightly licensed option suitable for private 5G networks and available to CSPs and enterprise organizations alike. It's important to understand the pros and cons of each option to determine the best path for establishing your private 5G network.

BONUS QUESTION

Which Private 5G Network is Best?

One of the benefits of private 5G networks is that enterprises enjoy more freedom of choice than ever before. Previously, enterprises were reliant on the local CSP's network offerings and development schedules. Now, enterprises can choose to build and operate an in-house network themselves, through a systems integrator, by partnering with a preferred CSP, which allows them to leverage the CSP's entire network, or with a non-traditional cloud service provider like Amazon Web Services or Microsoft Azure.

Summary

There is no one, right answer, but the bottom line is: enterprises have always benefited from better connectivity, and a private 5G network offers a fast, dedicated, secure, and almost infinitely flexible network based on your specific challenges and needs. A private 5G network can grow and adapt agilely for future use as well. With all that in mind, should your CSP be offering private 5G services? Is private 5G right for your enterprise?

LEARN MORE

For more information, see:

- 5G Monitoring for Service Providers | NETSCOUT
- Enterprise Private 4G/5G Networks | NETSCOUT
- Enterprise 5G Network Performance Monitoring | NETSCOUT

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