How will slicing augment private 5G networks?

Public network slicing is anticipated in the near future, advancing the connectivity on offer to enterprises. In this article, we explore how slicing of the public network will augment 5G connectivity across enterprise sites.

Additional to the article, more details on the topic can be found in this free report here.

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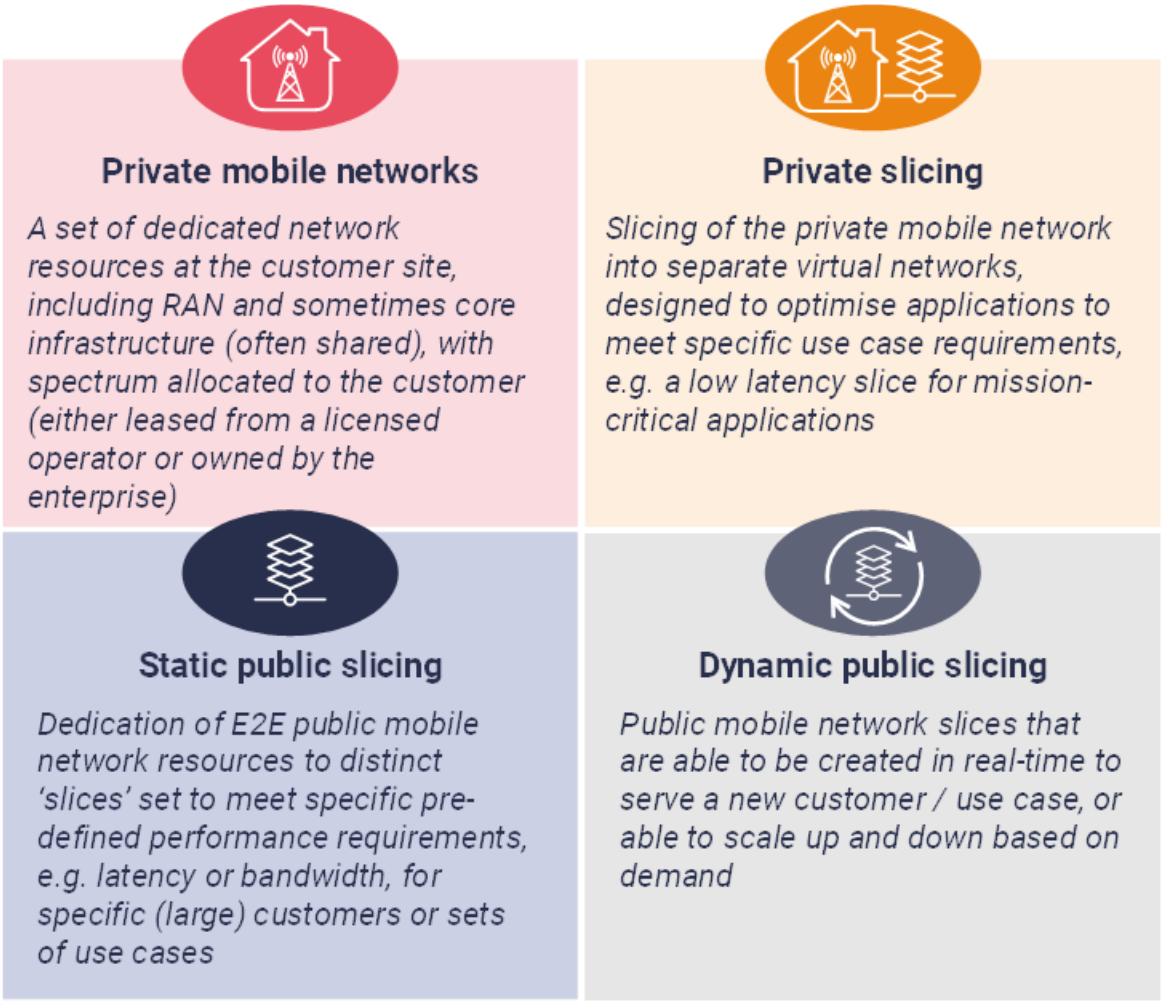
5G is a key connectivity offering for enteprises

5G offers unique features that are enabling new technologies, transformation and gains in productivity to enterprises globally. The key network benefits, including ultra-reliable low latency, extensive network capacity, reliability and availability are being leveraged across industries for varying purposes. In manufacturing for example, enterprises use 5G to enable autonomous guided vehicles, quality inspection and control via video ingest and analytics as well as for coordinating robotics used in assembly in discrete manufacturing plants.

There are multiple types of dedicated 5G services

As of late 2022, the primary model for enterprises to consume 5G services was through a private mobile network. This has largely been the case because CSPs have not completed the installation and integration of 5G standalone cores into their networks, meaning that true 5G (according to the 3GPP standards) has not been available via CSP's public networks.

Figure 1: There are different architectures for consuming dedicated 5G services



Source: STL Partners

In the figure above you can see that there are different architectures, alongside the private mobile network model, that enterprises can access for consuming dedicated 5G services.

'Private slicing' offers customisability of private mobile networks to enhance and manage operational technology at enterprise sites. 'Static public slicing' offers a level of dedicated connectivity in the public network that meets defined performance requirements and can be leveraged by enterprises regardless of there being an existing private mobile network deployment.

The final architecture, 'dynamic public slicing', is considered the most recent advancement in the service provision of 5G, with commercially available dynamic public slicing anticipated in early 2023[1].

Private 5G and dynamic public slicing offer similar but different benefits

It is conceivable that the dynamic public slicing service architecture might compete with private networks as a form of connectivity. The idea being that enterprises will have the option to deploy dynamic slices which would be cheaper than deploying a private mobile network because they do not require the scale of dedicated on-premise hardware (e.g. mobile core, RAN equipment) as in a private mobile network.

However, when we compare the features of a private mobile network and features of dynamic public slicing, we see that although they both offer 5G, there are tangible differences that mean dynamic network slicing is not simply a *replacement* for private mobile networks.

Figure 2: Private networks and slicing offer different features

Source: STL Partners

As shown in figure 2, there are different benefits from the two service architectures, which will likely lead an enterprise to prefer one over the other, without merely opting for a dynamic network slice based on lower cost. For example, the high bandwidth afforded through a private 5G network can support significantly higher numbers of devices within the network. This is important for use cases with thousands of devices, such as those in a highly automated Industry 4.0 factory with dozens of IoT sensors on each machine. In this context, where extremely high bandwidth is a fundamental requirement, the dynamic network slicing architecture would not be appropriate.

[1] Gordon, D. (2022) Slicing and private networks: Substitutes or complementary?, STL Partners. Available at: https://stlpartners.com/free_reports/slicing-and-private-networks-substitutes-or-complementary/ (Accessed: 2022).

There will be scenarios requiring both private networks and dynamic public slicing

Taking for granted that dynamic public slicing will not replace private mobile networks for the consumption of 5G services, there are circumstances in which we might expect enterprises to deploy both network architectures at once. One example of this is in a scenario where a nomadic use case is deployed leveraging a private network on site and is also required off-site and thus roams to a public slice outside of the private network coverage.

An example of such a scenario might be where a logistics company deploys 5G connected trucks which use private 5G coverage on-site and then roam to a dedicated dynamic 5G slice for their operations on-road away from the site.

To find out more about the nomadic scenario, and other scenarios in which dynamic public slicing will complement private mobile networks, you can read the free report entitled: "Slicing and private networks: Substitutes or complementary?" published by STL partners and sponsored by Netcracker, an NEC company.

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