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Network slicing: A go-to-market guide to capture the high revenue potential

Based on a study with
Ericsson and Arthur D. Little



5G and the rising interest in network slicing

Network slicing provides an enormous business potential for communication service providers, which opens up many different opportunities and possible go-to-market roles – especially in the enterprise segment.



Technological advances across large industries are increasing the demand for high-performance, flexible communications services. Network slicing is emerging as a critical way to address the service gap between “good-enough” public networks that cannot meet these demands and specialized private networks, which requires a higher investment and equipment on-prem. We now see a clear business potential for network slicing of USD200 billion in 2030 with strong CAGR.

The study came about the acknowledgement that there is a gap in the industry in truly understanding the potential of slicing. While there are several reports out there, few, if any has, the breadth and scope to answer the questions a CSP would ask when considering investing into, deploying and monetizing network slicing.

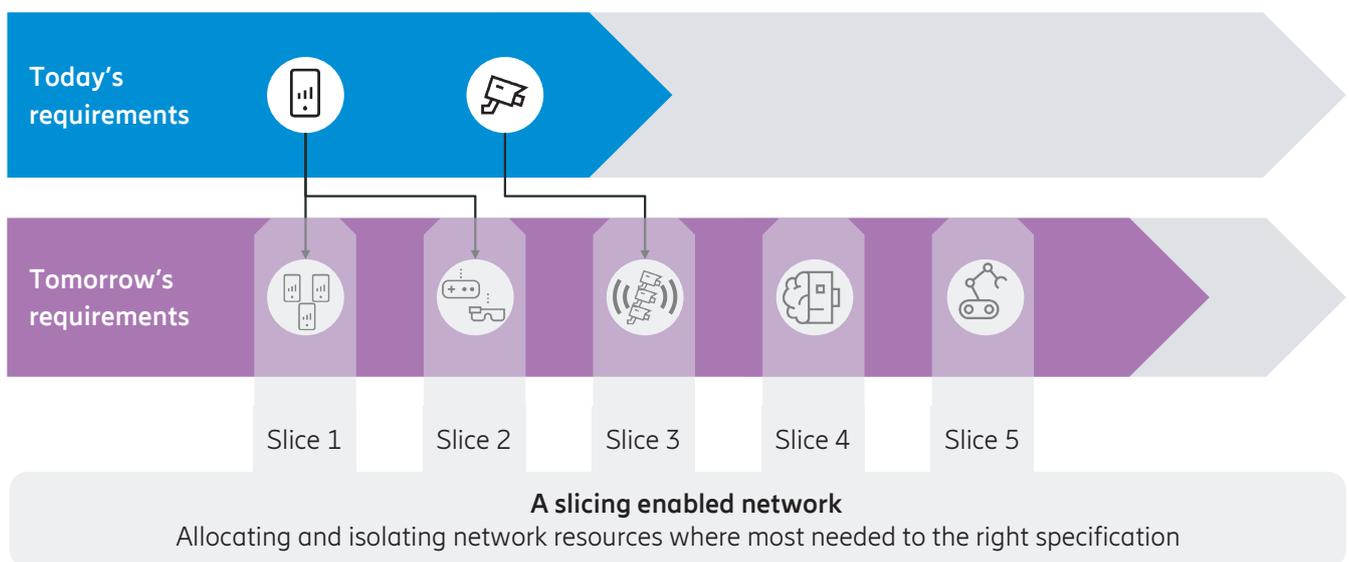
- What is the revenue potential of network slicing for CSPs.
- What is the potential across industries and segments and link specific use cases that are stronger cases for slicing

Ericsson partnered with Arthur D. Little to conduct market research on network slicing to determine future market opportunities. This report focuses on the macro value of network slicing and the opportunities for communications service providers (CSPs). This is the first report of four. In the second, we discuss the [top 10 industry segments and selected use cases](#). In the third, we cover the [end-to-end solutions for network slicing](#) and in the fourth we outline the [network slicing deployment journey](#) for the CSPs.

The need for network slicing and the current challenges

5G comes with a promise to open up new revenue streams from IoT and enterprise services. Network slicing is the key technology in 5G to address the full potential.

Figure 1: Network slices enable fit-for-purpose independent virtual networks



When it comes to wireless cellular data, one shared public network has been the norm. Businesses have relied on this network for most non-critical work such as conference calls, booking systems, backup security cameras, digital payments, Intranet and video on demand.

However, it's clear that the one shared public network cannot meet the needs of emerging and advanced mobile connectivity use cases, which have a diverse array of technical operations and security requirements. Growth in the Internet of Things (IoT), enhanced mobile broadband and critical machine-type communications are opening up new revenue streams, business partnerships and use cases. These use cases have higher requirements on network performance, and if these are not achievable, the use cases will not function.

The diversity of requirements will only grow more disparate between use cases — the one-size-fits all approach to wireless connectivity will no longer suffice.

Deploying new physical networks for all services and locations or reconfiguring existing ones for specific use cases is not a viable solution to this challenge. Doing so would be prohibitively expensive and it limits flexibility for new services or use cases — essentially, this would just create the exact same problem five years in the future, while simultaneously hindering innovation with an inflexible network.

Taking a closer look at current public networks, the current level of network resources cannot match the increasing diversity of demands over time. And while these networks are expanding, such as with the current 5G rollout, even

then, expansion won't fully satisfy every use case with the ultra-high reliability, security, ultra-low latency and other demands that many use cases will require.

Standalone private 5G networks may be an attractive option for CSPs to sell or provide as a managed service to some enterprises, because they provide more granular configuration and specification. But it's not feasible for organizations who lack the time required to deploy a standalone network, the necessary capital investment and the capabilities to manage it. Additionally, standalone private networks won't provide wide area coverage without integrating them into the public network, in which case, the organization will only see the benefits of their private standalone network locally.

The essence of network slicing

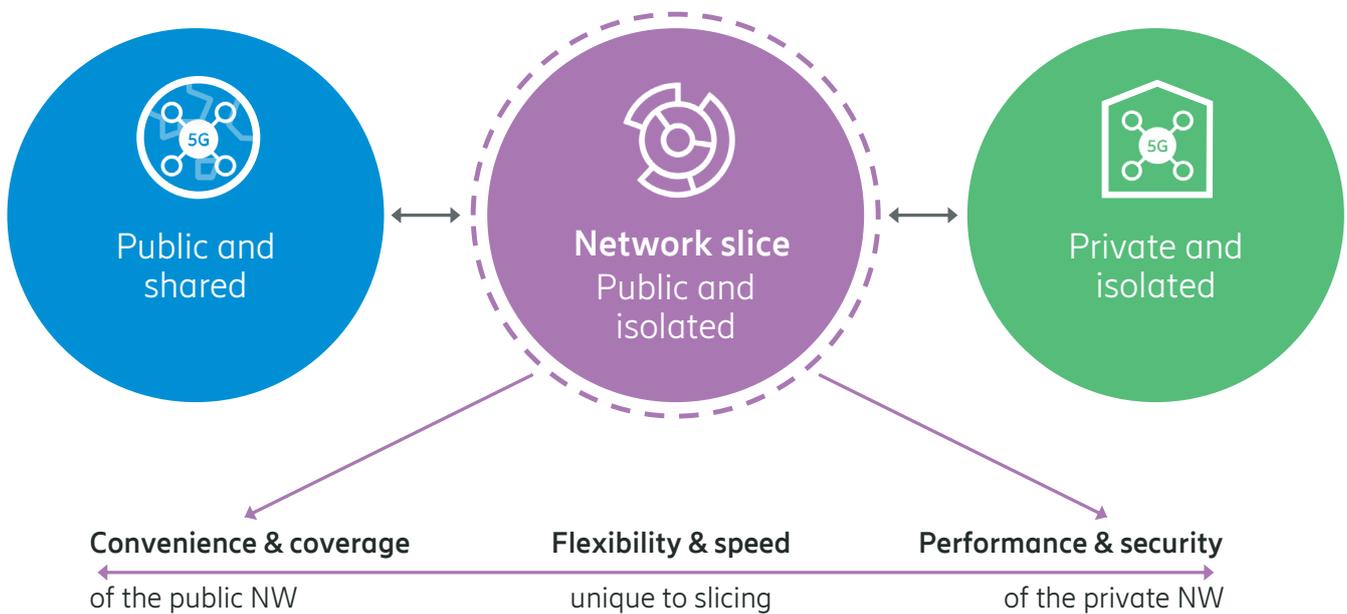
Network slicing is a paradigm where CSPs create logical networks or partitions with the appropriate isolations, resources and optimized topology to provide a service to meet the unique requirements of a specific use case. It conserves precious network resources from non-critical use cases and activities, so they can be deployed where needed and where someone is willing to pay for it. As a result, slicing provides

the benefits of both public and private standalone networks, along with some unique characteristics of its own.

Like a public network, slicing provides the coverage and convenience of a typical public 4G or 5G subscription, and it's easy to purchase and install. Like a private network, it enables traffic isolation, a high degree of customization and comparable

performance and security. But unique to network slicing, it's more flexible than either public or private standalone networks, and can be rapidly deployed, configured, modified and taken down as needed at a considerably lower cost for the enterprise customer. And it can do all this while also providing wide-area coverage.

Figure 2: The private network slice gives wide-area coverage for dedicated services



Isolation bring functional benefits

Apart from the benefits of dedicated service characteristics also including granular monetization, the isolation enabled by independent slices has many other benefits for customers and CSPs. First, it increases robustness, because faults or outages in one slice have no effect on other slices. Additionally, time to market can be shorter because there are fewer dependencies on other network functions and organizational teams during the integration and testing phase.

But it may have even larger benefits for security, which can be customized per slice to meet unique security requirements. Additionally, if an attack is successful, it will be contained within the slice and will be unable to move laterally across the entire network. And when exposure evolves, data isolation between slice customers is much easier to maintain.

There are two main archetypes of public slicing. The first is a public network slice, which is described above. The other is a

hybrid mobile private network, where the enterprise would have certain resources and functions dedicated closer to their premises, but also leverages a public slice to ensure a strong connection for needs that stretch beyond the premises.

With either archetype, slicing enables CSPs to manage costs internally through better utilization of network resources and customize network resources to meet specific needs.

Challenges to implementing network slicing

Network slicing is an emerging service, so there are some challenges to network slicing that CSPs will need to overcome.

Slicing will enable tailored pricing. Slicing enables customers to have flexibility, security, simplicity and network performance tailored to specific and demanding use case requirements, so pricing and business models will need to be adapted to both articulate and capitalize on the value of network slicing.

This deep level of customization will also require new sales and service deployment processes. Offerings based on network slicing can't easily be categorized in a few tiers or buckets.

They will also require CSPs to gain vertical customer domain understanding. With one public network for all, CSPs could provide services without having to go deeply into their customers' businesses. But with slicing, these resources will be customized for specific use cases, requiring specific knowledge of the vertical to be successful. To gain this vertical expertise and successfully go to market, CSPs will need to forge strong partnerships and take part in developing ecosystems to support slicing.

This reinforces the need to have an enterprise market strategy in place, because the choice of industry segments

to target will determine the types of use cases to support, which, in turn, will determine the technical capability deployment journey for the CSP.

There are technical considerations, as well. CSPs will need to establish cross-domain coordination, enable performance guarantees and network isolation, conduct slicing management and end-to-end orchestration, and make sure they possess the necessary slicing resources and requirements.

There are also regulatory considerations. Net neutrality may prevent CSPs from providing different tiers of service optimization in some circumstances. Since slicing isolates data traffic in its logical partition, there is traffic discrimination on commercial grounds, which may conflict with net neutrality rules and could limit a CSP's ability to monetize and optimize the slicing opportunity.

As 5G and slicing become widespread, and service providers are sharing network resources, the complexity of the landscape increases, which may in turn challenge regulations that govern specific customers' verticals, especially for mission-critical use cases.

Also, while CSPs are generally not liable for illegal content that third parties have

Challenges:

- Tailored pricing
- New sales & deployment processes
- Industry vertical expertise
- Enterprise market strategy
- Technical considerations
- Regulatory considerations
- Privacy rules

on their networks, there are rules and procedures such as take-down processes that must be followed when illegal content is reported to the CSPs. These issues will also need to be addressed for slicing, and they may need to be dynamic to each slice implementation.

Finally, the global economy increasingly depends on cross-border data transfers. International frameworks such as APEC Cross-Border Privacy Rules have helped create some international regulatory standardization, they may be challenged by local rules, such as those around data localization and data sovereignty.



Business models and go-to-market roles

Network slicing opens up for new business models as the network becomes a platform for other businesses. This will result in new partnerships and go-to-market models.



Network slicing provides an enormous amount of flexibility and potential for customization. As a consequence, there are many different opportunities and possible go-to-market roles for CSPs.

CSPs will play a different role in relation to the end-customer depending on the domain:



B2C: In the business-to-consumer domain, the CSP charges a premium directly to the consumer for higher quality or dedicated access to content that is delivered by slicing.

Examples:

- A customer buys access to low latency mobile gaming on their smartphone or gaming device.
- The CSP offers fixed wireless access (FWA) based on a dedicated network slice.



B2B/B2G: In the business-to-business or government (B2B/B2G), the “slice buyer” is the end customer, typically a government entity or business that uses the slice to realize a use case for internal operations.

Example:

- A manufacturer buys a service that is based on a network slice to realize a robotics use case on a production line.



B2B2(B2)X: Here, the slice buyer is using the slice to realize a use case for a customer. The chain could be long with the second customer selling slice-enabled services to yet another entity.

Example:

- A cloud service provider buys a slice to provide dedicated, high-throughput wireless connectivity for a gaming platform company who then uses the combined package to power a premium, high-performance game subscription for consumers.

Big revenue potential with slicing

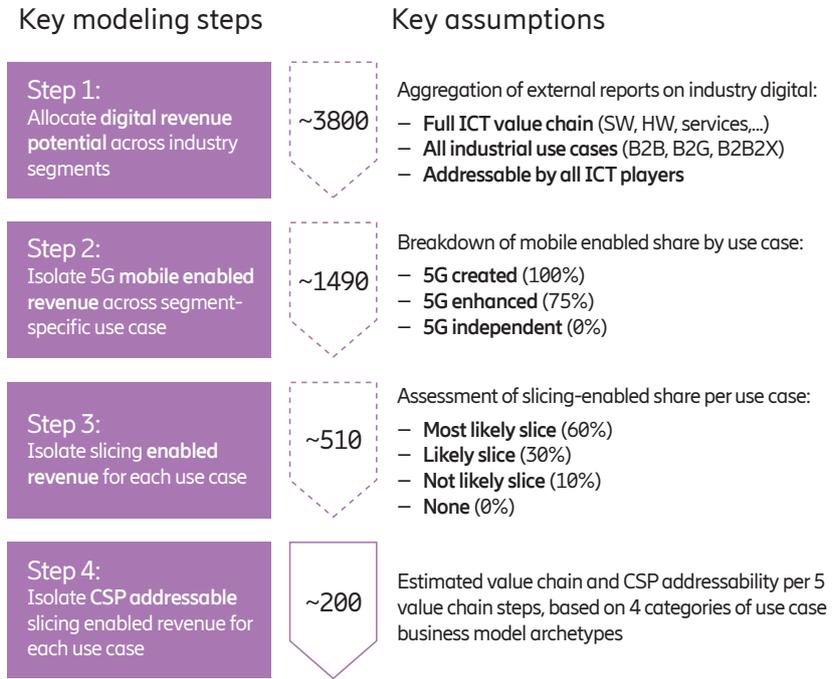
Industrial digital revenues offer growth opportunities for CSPs. The current CSP business will have a 0.75% CAGR, compared to 12% for digital industrial. Looking at the total digitalization revenues, Mobile enabled revenues will also grow faster with a 20% CAGR compared to 9% for the total.

Cellular connectivity becomes increasingly relevant for industries with the growth of IoT and connected objects. Arthur D. Little (ADL) estimated the total digital revenue potential for industries and allocated that revenue across industry segments. It comes to about USD 3.8 trillion for the total revenue potential for all information and communications technologies (ICT) companies for the adoption and integration of digital technologies to enable new digital use cases. ADL then isolated the mobile-enabled revenue from a 2030 perspective, which is essentially 5G-enabled revenue for three categories:

- 5G created: Required for deployment
- 5G enhanced: 5G is preferred, but not required
- 5G independent: 5G is one of many possible solutions for connectivity

ADL analyzed more than 400 5G use cases, which generated a USD 1.490 billion figure, roughly 40% of the total revenue. From there, ADL isolated the slicing-enabled revenue from the mobile-enabled revenue, which is roughly USD

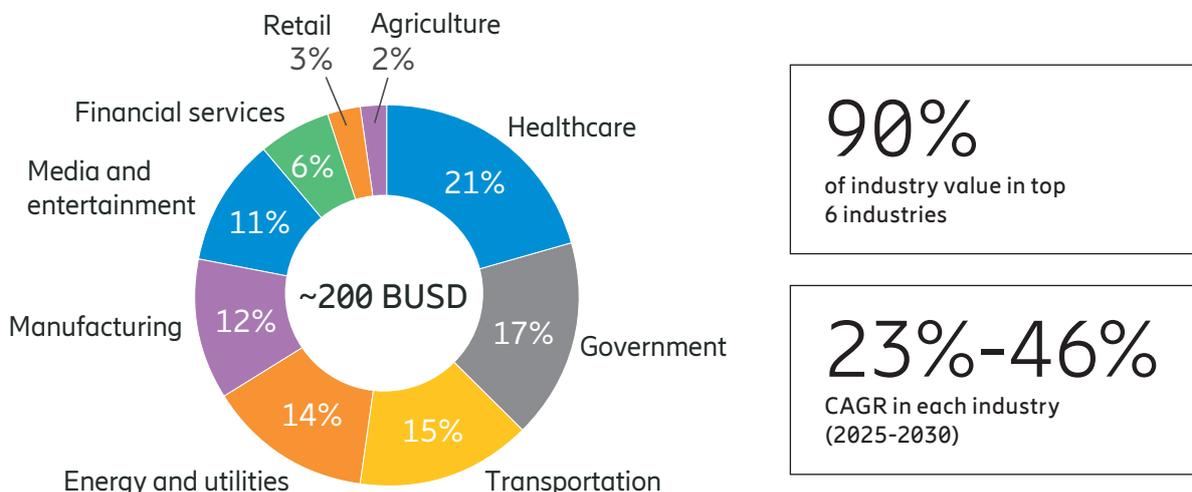
Figure 3: A USD 200 billion USD opportunity for CSP network slicing can be derived from the total global digitalization revenues



510 billion, or 30% of the mobile-enabled revenue. The subset of slicing-enabled revenue that CSPs could address comes to roughly USD 200 billion. In 2025, the same figure is estimated to be 45 BUSD, which implies an annual growth rate of 36% for slicing enabled use cases addressable by CSPs. Network slicing will power roughly 30% of 5G revenues for CSPs.

The addressable opportunity for CSPs with network slicing is USD 200 billion. When split by industry, it shows that the top 6 industries account for 90% of the revenue potential. Healthcare is the largest followed by government and transportation. The CAGR for the top industries ranges from 23-46% during the period 2025 – 2030 which is substantial. See figure 4.

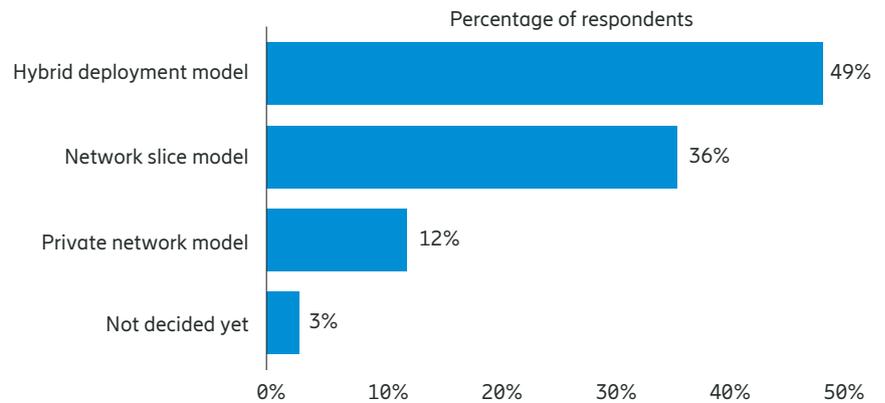
Figure 4: The industries with the highest revenue potential for network slicing for CSPs.



30% of 5G use cases need network slicing

A lot has been written about 5G use cases. It's important to state that not all use cases will require slicing. That said, we estimate that 25-30% of the potential 5G use cases will need slicing as an enabler as derived from figure 3. Many use cases will also have the potential for early deployment, including mobile cloud gaming, mission-critical push-to-talk, remote broadcast, software over-the-air updates, and predictive maintenance of rail tracks and powerlines. We explore these use cases in depth in our second report, which focuses on industry segments and use cases.

Figure 5: A combination of slice and private network is the most popular.



Three ways that network slicing drives CSP revenues

First, slicing can bring in new customers, who, for example, may be interested in the capabilities of 5G. In recent years many enterprises have expressed their interest to Ericsson in using 5G as a connectivity technology as a public network slice, as a private 5G network or as a combination of both. Below are some findings from a recent study of 200 enterprises from Analysys Mason in collaboration with Ericsson.

Second, new services can enable CSPs to capture larger parts of the value chain. In patient services, for instance, CSPs can not only use network slicing to provide isolated, low-latency and high-throughput connectivity for video streaming and assessment of patient conditions in an emergency vehicle, but they could also partner with software and hardware developers to sell a complete solution.

Finally, slicing can drive revenue by enabling premium pricing and new business models. Demanding use cases require tailored services, after all, which can command a larger fee. A network slice to a logistics company might provide additional bandwidth and network isolation to enable high-quality, secure monitoring for valuable goods that require a strict cold chain. That service will command a higher price than ordinary wireless connectivity from the LTE or 5G network.

Figure 6: Enterprises show high preference for 5G as a connectivity technology

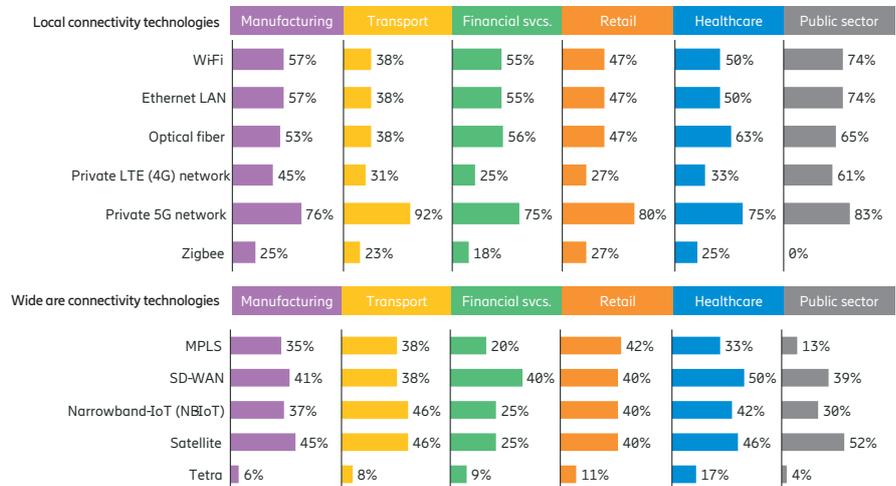
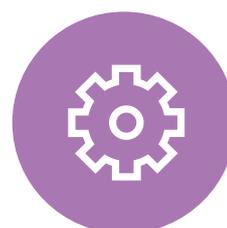


Figure 7: Drivers of slicing revenues for CSPs



New customers
Increasing adoption of 5G among enterprises – the “5G hype”



New services
Possibility to capture larger part of the value chain

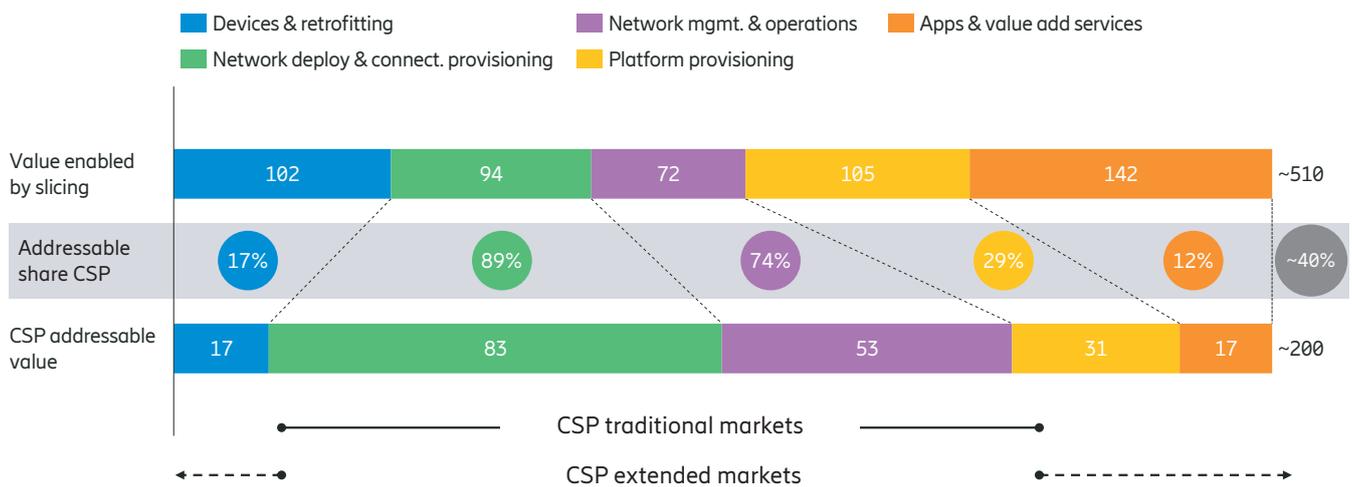


Premium pricing and new business models
Demanding use cases require tailored services and pricing

The CSPs role in the network slicing value chain

The traditional role for CSPs are in the network connectivity, management and operations domains. There is a good opportunity to capture 43% more by addressing the whole value chain and take the role as service creator.

Figure 8: The distribution of the 200 BUSD CSP slicing revenue potential



When it comes to where CSPs can capture part of the value chain, that depends on the footprint, vertical domain expertise and scope of services that the CSP possesses. In network slicing, the basic value chain is as follows:

- 1. Devices and retrofitting:** Examples: Retrofitting trains and cars, positioning of robots, drones, VR/AR glasses, smart meters
- 2. Network deployment and connectivity provisioning:** Network slice deployment and configuration, testing, installation of additional hardware
- 3. Network management and operations:** Ongoing network slice configuration, user and device management, security management and support
- 4. Platform provisioning:** Provisioning of platforms such as IoT, streaming, gaming, AR/VR and remote work.
- 5. Application and value-added services:** Enterprise and consumer infotainment and entertainment applications; data monetization

The core services for CSPs would typically be in the network connectivity, deployment

and management parts of the value chain, where they are likely able to capture a large share of the revenues. In total, this potential for the network developer role would be smaller at USD 140 billion. Acting as a service creator adds an additional 40%, but they must provide additional services such as reselling devices, provisioning of platforms such as IoT, and packaging and providing on-top services. Competition for these additional services will be high, and CSPs will face a wide array of ICT players, including hyper scalers, application developers and software developers.

Strategies to succeed

Working within the ecosystem that encompasses the targeted use cases is critical for CSP success with network slicing. The slicing market is still in the early stages of maturity, so CSPs should begin by working closely with current enterprise customers and partners to better understand their business and their needs. Why existing customers and partners? Because it's far easier to make that initial sale of a network slice to customers in an industry with which you already have some familiarity and with whom you have already built at least some degree of trust.

When selecting industry sub-segments to target, use the segment's attractiveness and your ability to win as criteria for consideration. Attractiveness includes the strategic fit or alignment with enterprise strategy, its overall market potential from revenue or demand, and the market

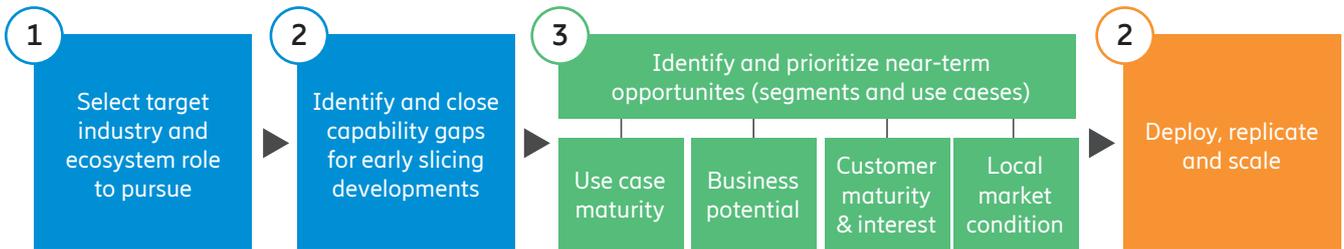
relevance to 5G network slicing. Your ability to win depends on those existing customer relationships and reputation, the complexity of the deployment and integration, as well as synergies with existing capabilities and ecosystem partnerships. With the knowledge you gain about the kinds of use cases they are interested in pursuing, identify those that could benefit from a network slice and determine the requirements.

Each industry use case will have a unique ecosystem that contains a variety of different players, each of which plays a role within the value chain. For example, in broadcasting there are equipment providers, content creators, content distributors, broadcasters and network services providers. CSPs must determine the role they can play within the ecosystem and identify partners for whom network slicing will add value to their own offerings.

Determine end-customer demand for the use case from early slicing trials, test and pilots, actual tenders on slicing, and CSP surveys or statements. Are there ecosystem partners for whom network slices would make their own products and services more appealing to their customers? Are there ICTs who could help with go-to-market plans and have customers who would derive value from a network slice?

Assess the regulatory environment. Are there regulatory barriers or enablers for the use case or within its industry segment, such as data privacy, security and liability? Regulations don't have to be a barrier. There could be policies and government programs in place that could help increase adoption of the use case.

Figure 9: The overall strategy and deployment journey for network slicing



Build commercial and technical capabilities

New processes and operational roles will need to be defined, given the commercial requirements on slicing enablement, service design, service deployment, assignment and operations. Roles will be needed for slice design based on templates and use-case design to make up a service model that can be life cycle managed. Later slice-based services will be possible to self manage by enterprise

users. Slice-based services will require new pricing models based on value.

Technical capabilities will be built on the foundation of NFVI and VNFs/ CNFs like 5G Core and network resource management.

The deployment of network slices is a journey over several years and the buildup will take place in a few waves.

The network slicing enablement consists of three main blocks:

1. The network slicing enablement consists of three main blocks: Network slice management and orchestration
2. Management of services, revenue, customer and partners, resources, etc.
3. Market storefront, customer channel and journey, sales and marketing.

The network slicing deployment journey

The deployment of network slices is a journey over several years and the buildup will take place in a few waves.

Near-term, slices will be basic and limited in number. Costs will be high; slices will be fairly static and most use cases will include shared and isolated traffic. Customization will be limited to derivations of the generic slice types and use case requirements will not be especially demanding. Slicing will initially appeal to large customers with big budgets who are in most need of slicing capabilities to solve immediate pain points.

Once CSPs have identified one or more use cases with requirements that a

simple, fairly static slice can satisfy, the organization must identify ecosystem partners and a go-to-market strategy, and then learn as you grow. Build a plan for the ecosystem to pursue, depending on the competitive landscape. Will the CSP act as a network developer, a service creator or a hybrid of the two? What capabilities does the organization possess, and what roles will need to be filled by partners?

Over time, slices will become more dynamic and the cost of operating them will decline. Slices will become much more customized and completely isolated from one another, with the ability to meet

extremely demanding requirements. But those days are yet to come. Right now, CSPs need to focus on enabling the very first, basic proof-of-concept slices to gain the market and technical experience required to lay the foundation for more advanced slices.

Long-term, however, the slicing market will change dramatically. Over time, prices will fall, while the slices themselves become dynamic, with a high degree of resource allocation and isolation. Many cases will include very demanding requirements, and slices will be adapted for niche segments with smaller customers that have specific needs.

 <p>Wave 1 Basic slicing functionalities</p>	<ul style="list-style-type: none"> – Enable basic slicing functionality in the CSP networks – Focus on network slicing manager, template management, domain orchestration and repositories – Deploy few static slices only (<20) with basic level of automation or manual for simple connectivity centric use-cases
 <p>Wave 2 End-to-end slicing automation and scale</p>	<ul style="list-style-type: none"> – Development of slicing automation across network domains – Deploy E2E orchestration, resource-, product and revenue management – Scale to deploy hundreds of slices within the network
 <p>Wave 3 Advanced slicing business models</p>	<ul style="list-style-type: none"> – Enhance CSP capabilities by business- and customer enablement functions – Focus on channel- and partner management, sales- and marketing and a marketplace – CSPs to deploy hundreds of dynamic slices with back-end system functionalities to enable advanced slicing use-cases

Conclusion

To capture the USD 200 billion market potential for CSP it will be key to establish an enterprise go-to-market strategy and to build out commercial and technical capabilities.

Identifying scalable, replicable use cases and develop relationships with strong ecosystem partners who can help bring the solutions to market will be the keys to success.

Network slicing will provide substantial opportunities for CSP growth over the next decade, and to take advantage of this opportunity as the market and technology matures, the journey needs to start now.

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.

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