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5G Network Slicing for Public and Non-Public Networks

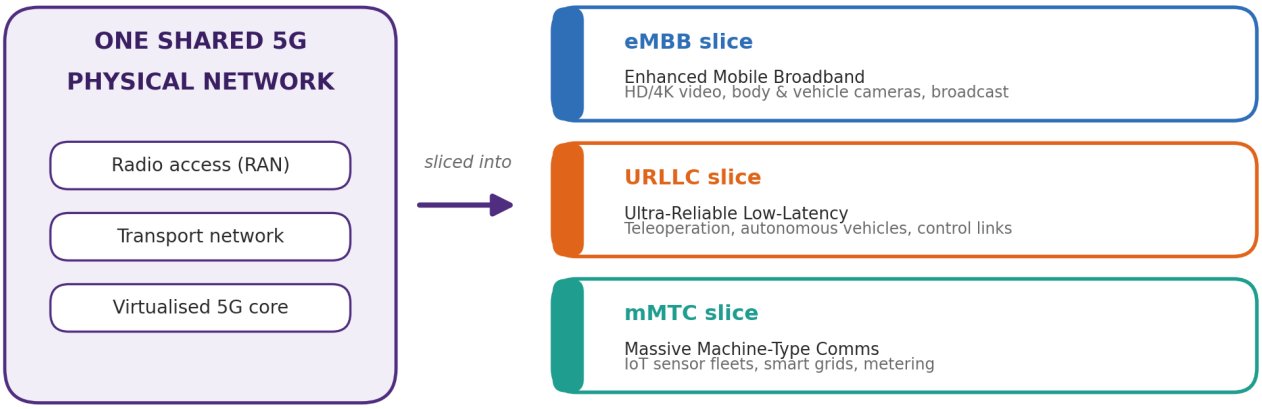
AT A GLANCE **Study 08 examines how 5G network slicing** can move mobile networks away from today's "best-effort, one-size-fits-all" model towards services with guaranteed, tailored parameters — on both public and non-public 5G networks. It explains how slicing works, maps the most promising use cases across B2B, B2G, B2C and wholesale, sets out candidate business models, and assesses the regulatory, security and operational challenges. The findings draw on in-depth interviews with technology vendors, mobile operators and the national regulator.

What network slicing is

Network slicing lets a provider run multiple independent, virtualised logical networks over one shared physical 5G infrastructure. Each slice is an isolated, **end-to-end** network tuned to a specific application — with its own performance, throughput and security profile, and its own Service Level Agreement (SLA).

Why it matters

Earlier mobile generations equated progress mainly with higher speeds. 5G instead introduces the architectural change — virtualisation and software-defined networking — that makes differentiated services possible. Previous attempts to guarantee quality (LTE QCI classes) were too coarse and could not even admit priority users to a congested network. Slicing can reserve resources for defined users **even when the network is locally congested**, while preserving nationwide coverage. The shift creates higher value for users and a potential new revenue stream for communication service providers (CSPs) — chiefly mobile operators.



Each slice is an isolated, end-to-end logical network with its own guaranteed parameters (SLA).

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Three ways to deploy

1 · Virtual private network

Slicing plus local break-out on a public 5G network.

A faster-to-deploy substitute for a private network — attractive for medium and smaller firms.

2 · Wide-area slicing

Slicing across a public network, e.g. a whole country.

Practically the only way to deliver SLA-backed mobile connectivity beyond a fixed perimeter.

3 · Slicing on a private 5G network

For large sites such as ports or transport hubs.

Combines very different needs in one place: eMBB, URLLC and mMTC slices side by side.

Where the value is

Slicing is most compelling where connectivity must be mobile or flexible yet still guaranteed. Ericsson and Arthur D. Little estimate it suits roughly a quarter to a third of 5G use cases, with about 90% of revenue concentrated in six verticals — healthcare leading the way.

25–30%
of all 5G use cases are a good fit for slicing

~90%
of slicing revenue from six leading verticals

up to 21%
of addressable revenue from healthcare alone

HIGH-POTENTIAL VERTICALS

Healthcare | Government | Transport | Energy & utilities | Manufacturing | Media

Healthcare

Remote diagnostics and HD-video consultation, connected ambulances, and patient monitoring via wearables.

Public safety (PPDR)

Dispatcher-controlled group voice (PTx), connected patrol vehicles, and body / surveillance video — replacing 1980s narrowband (TETRA / Tetrapol).

Energy & transport

Smart-grid communications, port logistics, teleoperation of cranes and autonomous vehicles, drone inspection of power lines.

Smart cities & agriculture

Nationwide municipal services, plus guaranteed connectivity for high-value, increasingly autonomous farm machinery over large areas.

Business models

There will be no single model. The study sets out candidate models for corporate (B2B / B2G), residential (B2C) and wholesale (B2B2C) customers, built around the classic logic of **creating, delivering and capturing value**. Identifying a viable model is the make-or-break factor for adoption.

Challenges to overcome

- **Regulation & net neutrality —** prioritisation must remain non-discriminatory and open to any customer on equal terms.
- **Cybersecurity —** 5G is markedly more secure than earlier generations, but the complexity of slicing adds new attack surface.
- **Operations —** OSS/BSS readiness for dynamic and open slicing is a key technical hurdle.
- **Mindset —** CSPs need a deeper understanding of each vertical and a partner ecosystem around it.

State of play & outlook

Practically all tier-1 operators plan to deploy slicing, yet live deployments remain limited to early adopters. The study reviews five case studies — smart grids and a steel campus in China, projects by Ericsson and Nokia in Europe, and a developer-focused project in the US. In Czechia, all three mobile operators have selected their 5G-core vendors (Nokia, Ericsson, Mavenir); the first static-slicing offers were expected in H1 2025, with pilots on broadcasting and payment-terminal connectivity. Advanced dynamic and open models will follow once business models justify the investment.

KEY TAKEAWAY 5G network slicing can make connectivity guaranteed, differentiated and resilient for businesses, government and citizens alike. Realising that potential depends less on the technology itself than on viable business models, supportive and non-discriminatory regulation, and a genuine shift in mindset among service providers.