

## The Enea 5G MicroCore for Private 5G Networks

*With Private 5G networks fueling a dramatic growth in Industry 4.0 and related initiatives, the demand for 5G core solutions with smaller footprint, faster deployment and proven track-record has never been greater.*

# Industry gears up for a 5G future

5G is redrawing the telecoms map, with Private 5G steering many enterprises into uncharted territories. There are innovative use cases emerging to support Industry 4.0 initiatives and this is paving the way for new commercial opportunities across all verticals including utilities, manufacturing, logistics, and healthcare. The APAC region has already shown an insatiable appetite for 5G private networks as governments release private 5G licenses, and as the region begins to emerge from the pandemic ahead of most other countries. [ABI Research estimates](#) that the Asia-Pacific region will account for more than 65% of global private network revenues by 2025. Enterprise networks in Australia, China, Japan, New Zealand, South Korea, and Singapore alone will be worth almost US\$7 billion.

Private 5G networks can also support low latency and high bandwidth service requirements through edge compute. This opens the door to new network management and operational business models that telcos and enterprises are eager to engage across verticals. However, as millions, if not billions, of devices and applications exchange information and bridge the world of Private 5G, enterprise IT and Internet of Things (IoT), they inevitably generate vast amounts of data. This in turn makes investment in the underlying data management infrastructure even more critical.

## The “old ways” will no longer suffice

Such unprecedented volumes of data raises vital questions and challenges:

- *How do we guarantee the privacy and security of data?*
- *How do we avoid vendor-lock in?*
- *Can we ensure interoperability?*
- *Can we create value from data?*

New thinking is needed to address the data management dilemma. Traditional network technology suppliers to telecom operators focus on large scale deployments, and their large-scale operations do not have the right network economics nor the operational elasticity to cater for the evolving needs of smaller enterprise businesses.

It is this new thinking which the Enea 5G MicroCore addresses.

Enea is a trusted world-leading specialist for all aspects of subscriber data management. The Enea 5G MicroCore is containerized, built to be cloud-ready from the ground up, and perfect even for very small scale deployments. Enea is laser focused on the architecture and development of a universal data management approach that delivers telco-grade safety and security in a minimal footprint.

Enea’s solutions provide telecom operators and enterprises with a high degree of automation and a low total cost of ownership that match the technical requirements and meet business targets. Businesses will find new and more efficient ways of managing, processing and monetizing data and enabling rapid access to authorized applications.

## Data management requirements for Private 5G networks

Telecom operators and enterprises (such as System Integrators (SI) and vendors) need future-proof data management technology that can be leveraged for all verticals. The need for a best-in breed trusted data management partner has never been greater. Enea has a strong track record of helping its customers monetize and maximize their 5G investments.

Data management requirements for Private 5G networks:

- **Zero-touch automation** without human oversight to prevent automated errors. Storing, managing, and handling subscriber and network data is an extremely sensitive task. **There is no room for error.**
- The solution must **replicate data as required, easing the creation of 5G slices and stateless core services**, while also delivering data at the edge for performance-sensitive, ultra-reliable low latency applications.
- Resource sharing between **telcos and enterprises demands a healthy strategy** to ensure proper isolation of data.
- A **5G cloud-native solution that maximizes revenues and minimizes risk**; especially as analyzing vast quantities of data can offer a number of benefits for 5G Private use cases.
- A **trusted partner** with a solid track record to manage and secure sensitive subscriber information.

Enea brings decades of experience delivering subscriber applications to Tier 1 and Tier 2 network operators across the world. We completely embrace the openness principles and integrate with third party vendors - including competitors - on all levels. This allows operators to mix and match vendors and permanently break the cycle of vendor lock-ins, making all network and subscriber data universally accessible by all authorized network elements and applications. This provides operators with freedom and flexibility while making it impossible for large legacy vendors to claim ownership of the operator's subscriber data – or data models – now or in the future.

## The Enea 5G MicroCore

Subscriber data management is at the heart of the 5G Core, communicating constantly and sharing data with different network layers and functions. Enterprises now have an opportunity to leverage their data as a valuable asset with best-in-breed technologies. Enea's 5G MicroCore is a unique solution that comes complete and ready for deployment. It has subscriber integration, subscription provisioning and SIM card enablement built-in for faster time to market. Put simply, it is shrink-wrapped, out-of-the-box and ready for business across all verticals.

The MicroCore portfolio includes **Unified Data Repository (UDR)**, **Unified Data Management (UDM)**, **Authentication Server Function (AUSF)** and **Mini-Home Subscriber Server (HSS)**. These products are flexible and proven communication solutions.

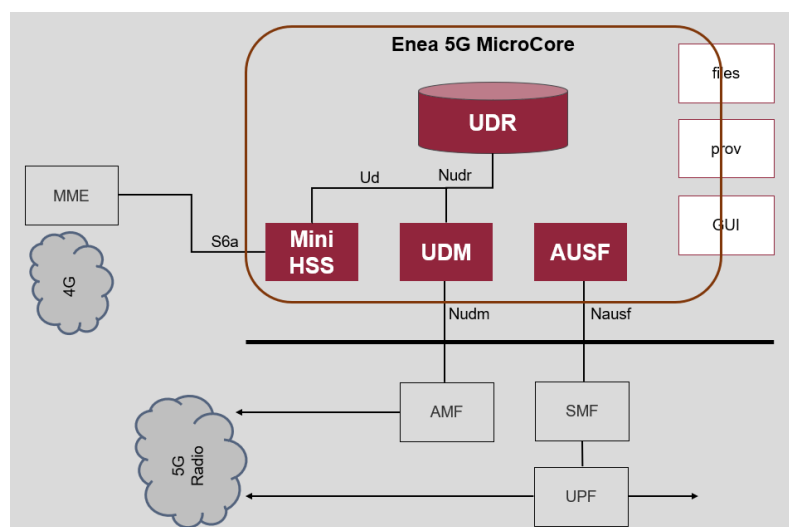


Figure 1. Enea's 5G MicroCore Solution for Private 5G Networks

Enea 5G MicroCore consists of:

- **Enea Unified Data Repository (UDR).** This stores information about subscribers, application-specific data, and policy data. Enea's UDR is open, cloud native and simplified. It enables operators to securely store and access data from the core to the edge for any application and data type. Enea UDR was built from the ground up to enable any application to store data reliably and cost effectively. Crucially, it solves the problem of vendor lock-in by collapsing multiple vendor data silos into one common Network Data Layer (NDL). Moreover, it enables the data to be written and updated once and read anywhere - from the core to the edge seamlessly and instantly.
- **Enea Unified Data Management (UDM).** A cloud-native network function for 5G data management, it is the 5G successor of HSS/HLR. It generates authentication vectors to be used by AUSF and is in general responsible for all user identification handling, access authorization and subscription management in 5G. The software is a critical component in multi-vendor and multi-generation network architectures and enables seamless services for converged consumer broadband, IoT applications and private networks. The solution supports from 1 to 10 billion data entries at a rate of 1 to 500,000 transactions per second and eases network transition thanks to effective interworking with 5G and 4G functions.
- **Enea Authentication Server Function (AUSF)** which provides the authentication and authorization on cloud scale for all system generations and access networks. It implements the extensible authentication protocol (EAP) authentication server and stores keys. AUSF keeps a key for reuse, derived after EAP/5G AKA authentication, in case of simultaneous registration of a UE in different access network technologies, ie, 3GPP access networks and non-3GPP access networks such as IEEE 802.11 Wireless Local Area Network (WLAN).
- **Enea Mini-Home Subscriber Server (Mini-HSS).** This is a key element of LTE and IMS core networks that supports interworking functionality designed to ease the transition from 4G to 5G while reducing the massive costs linked with operating dual-core networks. The role of the Mini-HSS is to communicate with the network and provide subscriber profile and authentication information (data centric). The Mini-HSS relays this information to the network using Diameter protocol, communicating with the Mobility Management Entity (MME) via the S6a interface. The Mini-HSS can also be used in 5G NSA and is essential for businesses that have deployed Private LTE and are transforming to Private 5G.

#### **Key benefits as to why Enea is the right fit for your business:**

**Business Oriented:** Our products have zero-touch operations using self-management features, allowing quick adaptation of business logic. This includes a simplified configuration management via a GUI interface and single point for OAM for all component products.

**Comprehensive agility:** Enterprises can benefit from a complete solution that leverages Enea's data and traffic management capabilities. It includes subscriber integration, provisioning and handling with added SIM card functionality. The solution is agile and is remarkably easy to manage thanks to self-testing and resetting, making it ideal for IT teams in any enterprise setting.

**Automated Deployment:** These are shrink-wrapped out of the box solutions with minimum footprint deployed as a single image to Enterprise and partner System Integrators (SIs) for all SDM components.

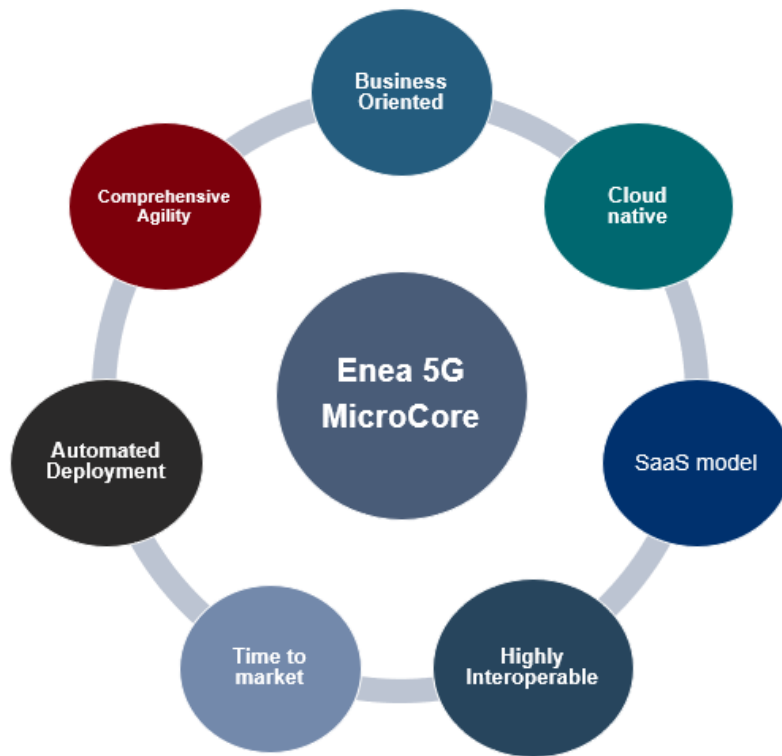


Figure 2. A snapshot showing key benefits of Enea's 5G MicroCore

**SaaS pricing:** The solution is designed and developed to cater for all Industry 4.0 use cases, to make a viable edge 5G entity through improved network economics. It is fully supportive of subscription or SaaS price models to better fit contemporary business practices.

**Interoperable:** The solution is combined with our interoperability program where Enea has demonstrated that the modular architecture interworks with many of the largest and smallest players in the industry.

**Containerized and Cloud Native:** The 5G MicroCore utilizes a containerized / modularized architecture designed to integrate seamlessly into enterprise edge architectures. It is software only and is cloud ready from the ground up – making it perfect for very small-scale deployment. The solution has proven ability to work on hybrid clouds - private clouds and public clouds including Cisco, UnityCloud, Azure, AWS and others.




**Experience and Global Footprint:** Enea has a proven track record in subscriber data management, delivering software components (UDR, UDM, AUSF) to Tier 1 and Tier 2 network operators worldwide.

**Authentic 5G Solution:** By embracing principles of openness, operators or SIs can mix and match vendors and permanently break the cycle of vendor lock-ins. Enea's experience in this area will help you to build a 5G ecosystem with strategic cooperation that appeals to multiple B2B and B2B2C verticals.

## Uses cases across all verticals

Industries across sectors are increasingly realizing that 5G is more than just a technological leap for the network of the future, more than “just another G”. 5G networks are unleashing super-fast mobile broadband, ultra-low latency (ULL), network slicing and the power to connect billions of devices and things that provide great significance for “smart factories” and in support of Industry 4.0 initiatives.

Businesses across a range of verticals are embracing the benefits from Private 5G network deployments across sectors such as industrial hubs, medical campuses or hospitals, mining, construction sites, ports, university campuses, agriculture and beyond.

Smart Manufacturing / Industrial Hubs	Campus Networks	Smart Utilities
		
<p>Use cases include Smart Factories, Automotive</p>	<p>Use cases such as Universities, Hospitals, Ports, Airports</p>	<p>Use cases such as Manufacturing and Logistics</p>

### Summary

Given their service-oriented, cloud-native nature, 5G core networks for Private 5G require a new approach to data management. Enea’s 5G MicroCore portfolio stores and manages data across all 5G core and edge functions, supporting 4G/5G interworking and proven in multiple commercial deployments globally. Giving business a unified view of their data allows all applications for network and business operations to securely store and access data through open APIs.

To learn more about how Enea’s 5G MicroCore solutions can help businesses contact us at: [5gdata@enea.com](mailto:5gdata@enea.com)



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