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Kontron 5G All-In-One On-Premises

Fast track to 5G Mobile Private Network

Kontron Private 5G All-in-One On-Premises product is a comprehensive and integrated solution designed to provide organizations with a private 5G network in a single, compact package. The solution offers advanced security features, including **end-to-end encryption**, authentication mechanisms, ensuring the **privacy** and integrity of data transmitted over the network. Additionally, it provides unparalleled **coverage, mobility**, and flexibility as no other **wireless technology** with elasticity for deployment of feature-proved advanced use cases in the later stages. The all-in-one solution enables scalability, allowing organizations to expand their network as their needs grow. It also offers modularity in terms of, supporting both **indoor and outdoor** options enabling customers to make informed decisions about implementing a private 5G network.

The **All-in-one** setup combines a **5G radio access network (RAN)**, **5G SA Core**, with intuitive **Element Management system** into a single server on-premises setup which reducing deployments and implementation complexity. Leveraging the capabilities of 5G technology, the solution provides ultra-low latency and high bandwidth, enabling real-time communication, for **mission critical** applications, and support of a wide range of data-intensive use cases. The heart of the Kontron Private **5G All-In-one solution** is our 5G SA Core which is the

center of gravity in this complex system. Kontron 5G standalone (SA) core is a version 3GPP Release 16 compliant solution which includes all fundamental Network Functions from Control Plane and User Plane perspective. The solution is **cloud-native** which means it is hardware agnostic and can be deployed on any COTS server in our case, with dimensioned configuration for optimized performance. 5G Standalone (5G SA) ensures unprecedented levels of automation across an end-to-end network to fulfil the needs of new services and applications. The 5G

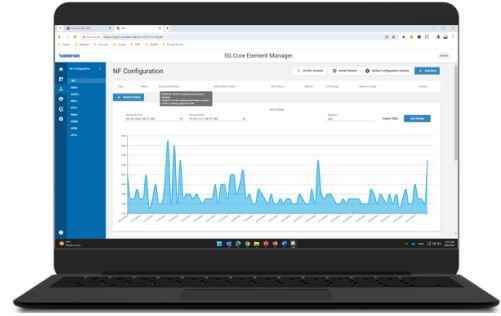


Core solution embodies flexibility, programmability, and a distributed architecture, delivering the agility needed to accelerate time-to-market while optimizing performance and efficiency. Operating on a secure Ubuntu OS, our 5G Core virtualizes all

network functions through containerization and orchestrates them using Kubernetes, ensuring a robust and agile infrastructure. The whole system lives on top on Kontron internally developed cloud platform ICP (Intelligent Cloud Platform) for

performance and seamless integration and operation. The second key component in Kontron 5G All-in-one solution is the **Radio network** which in our case is realized with Integrated 5G Small Cells or distributed system which is Kontron in-house development platform capable of handling 5G wireless network waveforms. Packed in a sealed carrier grade unit for indoor installation for wall or ceiling mount, or with an optional outdoor version the 5G Small Cells platform is at the forefront in terms of digital technology and signal processing associated to advanced architecture ideal for implementation of cellular and advanced wireless private networks. Our offering also includes **5G-enabled devices** such as routers, gateways, cameras, and sensors. Finally, **The**

Kontron 5G Core Element Manager is web-based management system designed to offer a straightforward and robust portal for managing 5G network functions and subscriber provisioning across the entire 5G system.



KEY FEATURES AND BENEFITS

- **Fast Deployment:** Pre-packed and pre-integrated solution which is designed for rapid installation.
- **Simplification:** This setup is done on a single server on-premises setup which reduced complexity
- **Backup on Oracle Cloud:** Extend the 5GC network into the Oracle Cloud with full blown backup on cloud.
- **Intuitive Management:** Benefit from centralized management and monitoring capabilities, enabling streamlined operations and efficient troubleshooting.
- **Accelerated Time-to-Market:** Rapidly deploy and test new services and applications, leveraging cloud-native capabilities, agile development methodologies, and DevOps practices.
- **End-to-End Solution:** Enjoy a complete end-to-end solution that encompasses 5G Core and 5G Radio components, reducing complexity, enhancing interoperability, and facilitating rapid deployment.

Technical Data

5G Core - Control Plane Function

- 3GPP R15/R16 Standards compliant
- Service Based Architecture (SBA): AMF, SMF, UDM, UDR, AUSF, NRF and PCF
 - AMF Access and Mobility Management Function
 - SMF Session Management Function
 - UDM Unified Data Management
 - UDR Unified Data Repository
 - AUSF Authentication Server Function
 - NRF Network Repository Function
 - PCF Policy Control Function

5G Core - User Plane Function

- UPF – general purpose User Plane Function HW agnostic
- DPDK-UPF – high performance UPF with acceleration
- Edge-UPF – distributed UPF on customer premisses

5G Core Key Functionalities

- Registration Management
 - Registration, Deregistration (UE, Network)
- Connection Management
 - UE triggered, Network triggered (Paging), AN Release
- Mobility Management
 - Xn based HO
- Security
- SBA architecture; Release 16
 - Using NRF
 - NF Service discovery and selection
- Specific use cases
 - Subscribed UE data manipulation
 - RAT restriction
 - Reregistration required
 - Subscription withdrawn
 - Framed Routing Support

5G All-In-One On-Premises Configuration

- 1 × Server
 - Processing: Intel Xeon-Silver 4310 2.1GHz 12-core
 - Memory: 64 GB
 - Network: 4 × 1 Gbps + 4 × 10 Gbps (Intel E810)
 - Storage: 2 × 960 GB SATA SSD RAID
 - Power: 2 × 230V Power Supply Kit
- 1 × Switch (optional)
 - 20 × 1 G/10 G SFP + 4 × 10 G/25 G SFP28 + 2 × 40 G QSFP+ ports available
- 5G Indoor Small Cell (Outdoor option on request)
 - FR1: n77, n78, band (others on request)
 - 2x2 MIMO (others option and Outdoor on request)
 - Bandwidth 100 MHz
 - GPS and PTP 1588v2 support
 - Different options for DL & UL-centric configurations AC/DC power adapter and PoE support
- 1 × Portable or Ruggedized case
- Num. of users: 1–1000

5G Core Element Manager

- Intuitive Web based system which provides Fault and Performance management
- Dashboard with main KPIs, statuses and statistics
- Network Function provisioning and manipulation
- Subscriber provisioning and configuration
- Network exporters and Monitoring
- Backup and Restore
- Alerting
- Logging
- SSO

Some features are hardware dependent.

Some features might not be included in dedicated software releases.



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