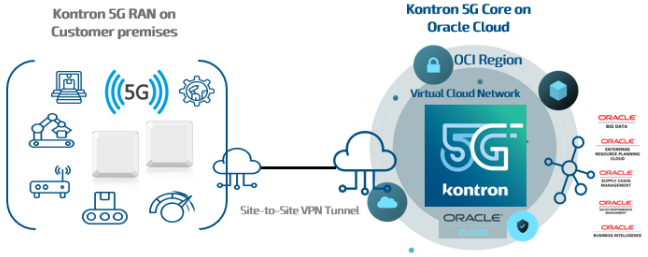
kontron

Kontron 5G Core on OCI

Best of Both Worlds 5G & Cloud

Welcome to the world of next-generation connectivity with Kontron cutting-edge 5G Core deployed on Oracle Cloud Infrastructure and complemented by 5G Radio on customer premises. Our comprehensive solution combines the power of cloud computing and advanced networking technologies to deliver unmatched performance, scalability, and flexibility. With OCI we leverage the power of Oracle's robust and secure cloud infrastructure, providing a highly available, scalable, and reliable platform for hosting Kontron 5G Core. Benefit from extensive network virtualization capabilities, enabling efficient resource utilization and dynamic scaling based on demand. Deployment of 5G Radio small cell solution at customer premises, enables localized coverage and simplified implementations, delivering high-quality connectivity for a wide range of devices and use cases.

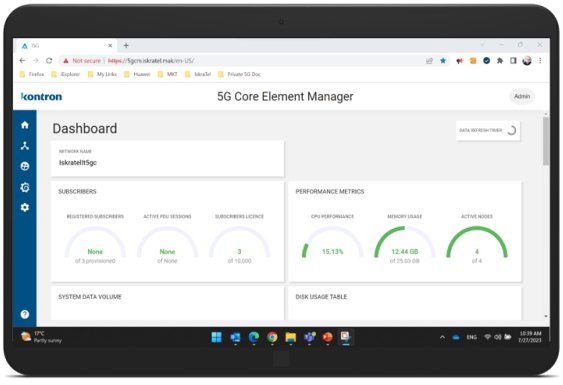
The brain of our Kontron 5G Mobile Private Network solution lies within our 5G Standalone (SA) Core. This SA Core acts as the central element in our system, adhering to the 3GPP Release 16 standard. It encompasses critical Network Functions from both Control and User Plane viewpoints. As a cloud-native solution, it offers hardware-agnostic flexibility, enabling effortless integration and deployment on OCI.



The 5G Core solution is flexible, programmable, and distributed, ensuring it delivers the agility needed to accelerate time-to-market and achieve optimal performance and. This advanced 5G Core operates on an efficiency security-hardened Ubuntu OS and leverages container-based virtualization, orchestrated by Oracle Kubernetes Engine. The Kontron 5G SA Core is seamlessly deployed on Virtual Cloud Network (VCN) a customizable private network OCI. Similar to a traditional datacentre network, a VCN offers complete control over the entire network environment.

Oracle Cloud Infrastructure Container Engine for Kubernetes (OKE) is a managed Kubernetes service that designed to streamline the management of enterprise-grade Kubernetes deployments at scale. It reduces the time, cost, and effort needed to manage the complexities of the Kubernetes infrastructure. In order to achieve multi-interface support Kontron 5G Core on Oracle Cloud utilizes Multus CNI plugin, which acts as an additional layer within the container network. This plugin facilitates the attachment of multiple network interfaces to pods in Kubernetes.

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. This dashboard offers a clear overview of the network devices, operating status, types, and functionality.



Kontron is comprehensive end-to-end solution provider, a distinctive blend of service integrator with predominate internally developed solutions.

Within the framework of the Kontron 5G ecosystem we have robust 5G RAN portfolio encompassing both integrated and disengaged small cells solutions for indoor and outdoor coverage and as well as macro-cell solutions designed to cover extensive distances and wide geographical areas. Furthermore, our portfolio extends to encompass 5G-enabled devices, rigorously tested, and verified for deployment in mobile private networks. These devices span a wide range of applications, including routers, gateways, cameras, and sensors. As an addon integration with other services from the Oracle Marketplace domain is an option such as ERP system or other application with AI/ML functionalities in the edge which will bring additional value.

KEY FEATURES AND BENEFITS

- Fast and Scalable: Rapid deployment with preconfigured setups, easily scale resources on-demand to accommodate changing requirements, ensuring optimal performance and efficient resource utilization.
- Cost Efficiency: Leverage the power of cloud infrastructure to reduce capital and operational expenditures,
- Seamless Integration: Integrate with existing Oracle systems and applications, allowing for smooth migration and interoperability, maximizing your investments, and minimizing disruptions.
- Simplified Management: Benefit from centralized management and monitoring capabilities, enabling streamlined operations, efficient troubleshooting, and proactive maintenance.
- Accelerated Time-to-Market: Rapidly deploy and test new services and applications.
- End-to-End Solution: Enjoy a complete turnkey 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
- High Availability
- Specific use cases
  - Subscribed UE data manipulation
  - RAT restriction
  - Reregistration required
  - Subscription withdrawn
  - Framed Routing Support

Oracle Cloud Resources Requirement

- Processing: 4–16 cores
- Memory: 20–64 GB
- Storage: 60–480 GB
- Num. of users: 1–10000

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

5G RAN

- 5G Indoor/Outdoor Small Cell
  - FR1: n77, n78, band (others on request)
  - 2×2 MIMO and higher combination for Outdoor variant
  - Bandwidth 100 MHz
  - GPS and PTP 1588v2 support
  - Different option for DL and UP Centric configurations
  - AC/DC power adapter and PoE support
- Macro Option for wide area coverage

Some features are hardware dependent.
Some features might not be included in dedicated software releases.

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