kontron
The Power of IoT

Kontron Transportation

4G/5G Private Network Solution

Designed for Mission-Critical Demands

5G MCx

Modern Mission-Critical Services (MCx) and Applications

High Performance Capacity to Serve Market Requirements

Compliant to 3GPP Specifications

Cybersecure and Resilient

Flexible Deployment Options to Adapt to Customer Needs

Kontron Transportation

4G/5G Private Network Solution

The 4G/5G Private Network Solution allows a fast deployment of a mission-critical network for small to medium coverage areas (ex: shunting area, level crossing, airport, port, construction site, and many more) to replace, modernize or interconnect to an existing PMR or TETRA network.

It includes a 3GPP standard based and certified MCx application framework capable of addressing security and prioritized access requirements with superior service quality and comprehensive pre-emption features required for point-to-point, emergency and group mission-critical communication.

The 4G/5G Private Network Solution finally offers the capability to interwork with legacy networks and multiple devices and is easily extensible through addition of radio access nodes to allow a larger network coverage.

Technology

The Kontron Transportation 4G/5G Private Network Solution includes different systems: network elements, terminals and applications.

Network

The Kontron Transportation access and core solution follows a software centric approach and utilizes virtualization technology to address various deployment requirements, improve operational processes and provide outstanding availability.

Terminal

Kontron Transportation offers various add-on products like ruggedized last generation smartphones, Kontron edge computing TRACe™ platform for embedded units or Industrial IoT applications leveraging the 4G/5G Private Network Solution as transport medium.

MCx Application Server

Kontron Transportation Application Server (AS) offers MCx services with specific QoS management thanks to PCRF/PCF function.

Application

In addition to the standard usage of emergency and point to point calls, the MCx platform supports also group calls(voice, data and video). Kontron Transportation offers the MCx users roaming capability as well. Additional applications like geo-location, recording, multiple telephony systems and many others are already supported by the Kontron Transportation 4G/5G Private Network Solution.

Operations

A professional provisioning system (e-RPM) as well as a network management system (e-CNMS) are helping the operator to configure, support and maintain the network by providing a friendly user interface for alarms, notifications and performance indicators.

Standardized

The current version of the platform is compliant to 3GPP Rel 16 standards and is constantly enhanced with 3GPP new contents and evolutions.

4G/5G Private Network Solution

Scalable

The Kontron Transportation 4G/5G Private Network Solution platform, built on COTS hardware, is offering an end-to-end 4G/5G Private Network Solution framework highly suitable from limited surface areas to larger deployment thanks to its scalable capacity and core geo-redundancy.

The Kontron Transportation platform is customizable and expandable depending on customer's choice of implementation and specific needs. Easily deployable either in permanent or temporary location and easy to set up in standalone configuration, it offers state of the art MCx communication services. The platform supports different frame configurations in TDD and FDD mode on the same digital unit and is designed to support 5G by a simple software upgrade.

Performance

As the transfer of large video files is more and more needed, the Kontron Transportation 4G/5G Private Network Solution is supporting all TDD frames and subframes, including the special frame TDD configuration 0, which brings maximum capacity in uplink direction.

Interoperability

The Kontron Transportation platform can operate under a large range of frequency bands and can also interconnect to other Private Networks (TETRA, GSM-R, VoIP,...) or other PLMN in order to allow hybridized communication. Kontron Transportation's 4G/5G solution offers a configurable setup that enables seamless coexistence with networks utilizing diverse frame formats.

Cybersecure

3GPP cybersecurity standards (TS 33401) in combination with IEC 62443 design principles and ENISA guidelines have been considered in order to achieve compliancy with critical national infrastructure requirements. In particular, the Kontron Transportation 4G/5G Private Network Solution platform can be interfaced with centralized authentication systems, PKIs, and SIEMs. Communication between the core network (EPC/5GC) and the radio base stations is encrypted by integrated Security Gateways (SEG).

To address network segregation needs, Kontron Transportation relies on the ANSSI-certified Secure eXchange Network (SXN) device that provides a hardware isolation and IP/TCP/UDP reframing between the 4G/5G Private Network and the customer's IT environment. The SXN acts as a hardware-based DMZ with firewalls on both sides that provides best-in-class protection against 0-day threats.

4G/5G Private Network Solution

Product Details

EPC Core Network (EPC or 5G Core)

The Core network is based on 3GPP all-IP system architecture evolution and provides a converged framework for packet-based real-time and nonreal-time services. The 4G Kontron EPC solution includes MME, S-GW, P-GW, PCRF and HSS/EIR functions on the same platform. The 5G Kontron solution includes AMF, UPF, SMF, PCF, UDM, UDR, NRF, NSSF, AUSF on the same platform

RAN (eNodeB/gNB)

The Kontron access solution consists of a Base Band Unit (BBU) or Control and Digital Unit (CU/DU) and several Remote Radio Heads (RRHs) or Remote Units (RUs) connected through CPRI/eCPRI links. The industrial computer based BBU can provide 4G/5G Private Network Solutions with mission-critical common services, which supports mission- critical communication including mission-critical push-to-talk (MCPTT), mission-critical data (MCData) and video (MCVideo).

MCx App

MCx App is a multi OS (Android, iOS, Linux) compatible next generation client application for Kontron Transportation converged FRMCS and 4G/5G Private Network Solutions with mission-critical common services.

Core IMS

Our IMS solution is based on high-performance database and network functionality compliant to the 3GPP IMS standards, which has been optimized to become a tailor-made solution to address and align perfectly with mission-critical voice and data communication requirements.

Mobiles and SIMs

Kontron Transportation cooperates with reliable best-in-class partners to complement our end-to-end solution with end user devices. The solution can include Sonim handheld terminals, an extremely ruggedized mobile handset enabling real-time voice and data collection and connectivity for workers in highly demanding and harsh environments.

MCx Application Server

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The Dispatcher application server provides Dispatcher specific features and business logic and allows an extended range of functions such as dynamic re-grouping.

Dispatcher terminals

The Dispatcher terminal units are compact and have a small footprint on the desktop. The client applications are largely hardware independent, which greatly reduces lifecycle costs. For mission-critical networks, the Dispatcher is a future-proof solution.

4G/5G Private Network Solution

Transportation

Use case 1

To replace obsolete Private Network communication network (such as TETRA) and add services: remote monitoring, preventive maintenance at specific areas such as level crossing, shunting and other localized operation fields and always with E2E security and enhanced service quality.

Use case 2

For an autonomous metro line : a complete 4G/5G Private Network Solution system to upload CCTV video footage from inside the train, to download passenger information, for the maintenance teams in stations and tunnels as well as the safety operation teams from the ministry in case of disasters. To cover the safety needs, geolocation solution based on multi-technology (BLE, GPS, LTE) and a UHD system based on Lifi can be added.

Energy (nuclear & hydraulic power plants, oil & gas) and Factories

Use case

For industrial site: A 4G/5G Private Network for site surveillance with recognition AI camera, machine monitoring, preventive maintenance, remote machine control, automated guided vehicles, assisted maintenance with augmented reality with Kontron Edge Gateway to lighten the load of your backbone, with Slicing to segregate your services (Critical, Business, Office), with Security to safeguard your goods, workers, and data.

Why Choosing Kontron Transportation?

In addition to the added value brought by the Kontron Transportation solution, our highly specialized and innovative team is offering a comprehensive set of professional services (project management, engineering, deployment, maintenance and support) as well as complete turn key project services to help our customers to reach their targets. Choosing Kontron Transportation is relying on a long term dedicated partner as well as guaranteeing that the project is delivered in time. Kontron Transportation has an unrivaled track record in successful project implementation and is always fully committed to provide the highest level of quality and support.

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About Kontron Transportation

Kontron Transportation is a leading global supplier of end-to-end communication solutions for mission-critical networks. With a longstanding focus on the railway sector, the company specializes in systems that produce, transport, and process voice, data, and video — reliably, securely, sustainably, and efficiently.

Its portfolio includes GSM-R, FRMCS (Future Railway Mobile Communication System), MCx (mission-critical services, including MCx OTT) with IWF (interworking functions), as well as enhanced radio solutions, private 4G/5G mobile networks, transmission networks, and cybersecurity solutions. Kontron Transportation also serves other mission-critical industries with tailored communication solutions and offers mobility products such as validators and fare collection systems for public transport operators.

For more than 30 years, the company has helped shape railway communications and continues to drive the evolution of broadband communication solutions for mission-critical networks, for instance as an associated member of Europe's Rail Joint Undertaking (EU-Rail), making it the perfect partner for FRMCS.

The company has more than 700 employees, operates 11 sites across Europe, and is headquartered in Vienna.

Kontron Transportation is part of the Kontron Group.

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