kontron 5G
The Power of IoT

Mission-Ready 5G Core for the Tactical Edge

SECURE AND ACCELERATED 5G CONNECTIVITY BUILT ON THE KONTRON ME1310 EDGE SERVER WITH NAPATECH SMARTNIC.

High-Speed, Secure Connectivity Wherever the Mission Goes

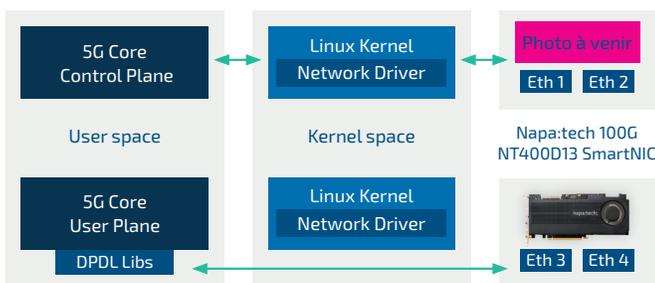Modern defense operations depend on resilient, low-latency communications that perform reliably in any environment. The Kontron 5G Core, integrated on the rugged **ME1310 Multi-Edge Server** and accelerated by Napatech SmartNIC technology, delivers high-performance 5G capabilities directly to the tactical edge.

This compact, deployable system enables real-time decision-making, seamless sensor integration, and mission-critical data exchange across air, land, sea, and space domains.

High-Performance Edge Computing

Powered by Intel® Xeon® D-2700 processors, the ME1310 delivers exceptional computing performance in a rugged 1U form factor. Its integrated 200 Gbps network switch consolidates up to 12 fiber ports (4⁄ SFP28 and 8⁄ SFP+), streamlining connectivity between sensors, radios, and compute modules.

> › Ruggedized for harsh defense conditions (−40 °C to +65 °C)
>
> › Compact, power-efficient 1U design for edge or mobile use
>
> › 10-year lifecycle support for long-term program stability

5G Core Control Plane	Linux Kernel Network Driver	Photo à venir
		Eth 1 / Eth 2
User space	Kernel space	Napa:tech 100G NT400D13 SmartNIC
5G Core User Plane	Linux Kernel Network Driver	
DPDL Libs		Eth 3 / Eth 4

Kontron ME1310 High Performance Multi-Edge Platform

Accelerated by Napatech SmartNIC

Every millisecond counts in the field. The **Napatech NT400D13-SCC SmartNIC** offloads packet processing from the CPU to deliver sustained, loss-free throughput.

> ❯ Up to 37.5 million packets per second (Mpps) using 98-byte packets
> ❯ Zero packet loss under maximum load
> ❯ Hardware acceleration for packet capture, filtering, and forwarding

Packet Size	Tx [Gbps]	Tx [Mpps]	R↙[%]
878	97.5	13.8	100.00
678	97.1	17.8	99.99
478	95.9	24.9	100.00
278	75.9	33.6	99.99
98	30.7	37.5	100.00

Benefit: Ensures uninterrupted ISR streaming, real-time situational awareness, and secure data transmission under demanding network conditions.

Flexible 5G Core Architecture

Built on a cloud-native, service-based architecture (SBA) and fully compliant with **3GPP Release 16**, Kontron's 5G Core includes all critical functions:

> ❯ Control Plane: Access & Mobility (AMF), Session Management (SMF), Policy Control (PCF), Authentication (AUSF)
> ❯ User Plane: DPDK-accelerated UPF and Edge-UPF for local traffic handling

Benefit: Enables secure, programmable, and scalable 5G networks tailored to mission needs.

Pre-Integrated and Ready to Deploy

The Kontron **5G Core on ME1310** arrives pre-installed and validated—a turnkey platform combining hardware, software, and SmartNIC acceleration.

> ❯ Deploys in hours, not weeks
> ❯ Simplifies integration and reduces setup costs
> ❯ Provides a single-vendor, fully supported solution

This modular architecture supports scalable private 5G networks, from portable tactical bubbles to enterprise-level deployments.

Built for Multi-Domain Operations

The **ME1310** is engineered to withstand extreme environments and continuous operation in defense applications:

> ❯ Shock- and vibration-resistant rugged chassis
> ❯ Flexible power input (AC 115/230 V or –48 V DC)
> ❯ Certified to UL/CSA, CE, BIS, UKCA, and VCCI standards

Benefit: Reliable performance from forward bases to airborne and naval systems.

Proven Performance at the Edge

Kontron's lab testing confirms exceptional throughput and efficiency:

> ❯ 37.5 Mpps sustained performance with zero packet loss
> ❯ DPDK-UPF acceleration for deterministic traffic and ultra-low latency
> ❯ Integrated 12-port, 200 Gbps switch for fast, secure data flow

Result: Superior edge performance for C4ISR, sensor fusion, and mission communications.

Applications Across Defense and Aerospace

Tactical Private 5G Networks	**ISR & Autonomous Systems**	**Forward Operating Bases**	**Test & Training Ranges**	**Aerospace Ground Stations**
Secure, high-bandwidth connectivity for mobile operations.	Real-time data exchange and low-latency control.	Reliable broadband in remote environments.	High-throughput telemetry and video backhaul.	Secure 5G processing for mission data and replay.

Example use cases:

› Multi-camera ISR streaming — consistent uplink performance for live surveillance feeds.

› Field-deployed broadband — high-capacity FWA-style 5G access for command posts and mobile teams.

Technical Snapshot

Component	Key Features
Kontron 5G Core	› 3GPP R15/R16 compliant › DPDK-UPF acceleration › Zero-trust security › Network slicing
ME1310 Edge Server	› Intel® Xeon® D-2700 (up to 20 cores) › 512 GB DDR4 memory › 200 Gbps integrated switch › 1U rugged form factor
Napatech SmartNIC	› Dual 200 G line rate › Nanosecond timing › GTP, NVGRE, VxLAN tunneling › Link-Capture™ software

The Kontron Advantage

› **Complete Solution:** Hardware, software, and acceleration in one validated system.

› **Mission-Proven Reliability:** Rugged, long-life design built for defense operations.

› **Scalable and Future-Ready:** Cloud-native architecture with full interoperability.

› **Trusted Partner:** Global expertise in embedded computing for defense and aerospace.

Kontron — One Step Ahead in Secure Edge Connectivity

Ready to strengthen your mission network?
Connect with our defense experts to explore how Kontron's 5G Core solutions can accelerate secure communications at the edge.

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