NOKIA

IP Anyhaul

Mobile transport for the AI supercycle

Mobile transport for the AI supercycle

The mobile radio access network (RAN) is undergoing a profound transformation. It is moving rapidly toward 5G-Advanced and 6G technology, driven by the powerful forces of disaggregation and virtualization and the deep integration of artificial intelligence (AI). Open, cloud-native architectures promise to make the RAN more efficient and open new avenues for monetization.

Today, we see the dawn of the AI supercycle, a decades-long period where the use of AI will become ubiquitous across all industries. Versatile compute platforms such as central processing units (CPUs), graphics processing units (GPUs) and hybrid servers will be embedded deep into the RAN as we move from centralized to distributed intelligence. These can be thought of as micro data centers that will require highly responsive and secure access and interconnection.

In this new model, transport needs to go beyond moving data and play a more active role in helping to determine where intelligence will exist. Latency must remain deterministic. Reliability must be engineered. Security and trust are inherent. Availability is intrinsic because physical systems depend on consistent outcomes.

These needs can be met with a powerful, high-performance mobile transport solution, one that is ready to move to a mesh–like fabric with dynamic, scalable, resilient, secure and trusted network connectivity.

Nokia is delivering this capability today with its IP Anyhaul mobile transport solution, which enables the transition to rapidly proliferating AI compute assets linked together in an AI grid. The IP Anyhaul solution features a set of class-leading attributes that support the business and operational goals of leading global mobile operators.

5G Efficient global deployment models

5G ADVANCED 3GPP standardization and Nokia innovation

6G 6G will be AI-native at all network layers

C-RAN O-RAN AI-RAN

IP Anyhaul

IP Anyhaul: Mobile transport for any generation, any architecture

Performance and capacity for the AI-driven paradigm shift

As the RAN evolves into distributed engines of intelligence, the rise of AI-driven services will redefine the way traffic moves, scales and interacts. Compute will be distributed at the edge, across the transport layer and deep within the radio network.

This shift will transform traffic patterns in profound ways. Uplink demand will accelerate faster than downlink demand for the first time, driven by real-time model updates, sensor-rich applications and pervasive machine learning at the edge.

Nokia IP Anyhaul portfolio

At the same time, AI workloads will weave a dense fabric of peer-to-peer communication across the network, dissolving the traditional hierarchy of traffic flowing from the RAN to the core. The result will be a dynamic, many-to-many ecosystem where data, insights and compute resources can move freely and instantly.

Nokia IP Anyhaul provides a foundation for this mobile transport transformation. Combining unmatched performance
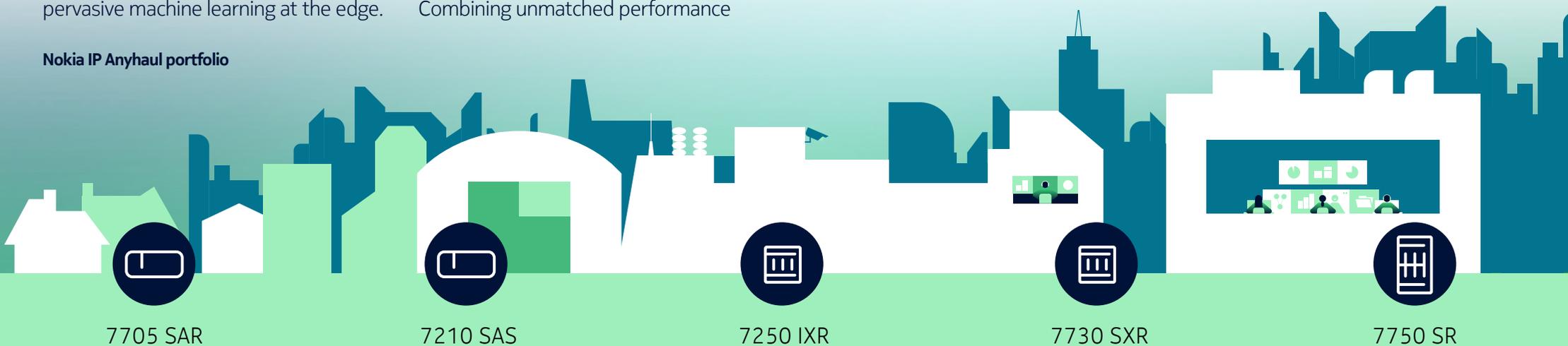
and scale with uncompromising energy efficiency and product circularity, our platforms deliver the capacity and deterministic behavior that AI-era networks demand.

Building upon our broad platform foundation, our proven Ethernet Virtual Private Network (EVPN) and segment routing capabilities provide the service framework and routing cornerstone for your mobile transport network.

From the edge to the core, our routing solutions provide the high throughput, low latency and intelligent traffic steering you need to support distributed inference and next-generation cloud architectures.

With our IP routing solutions, you can confidently embrace a network where compute and connectivity work as one.

| 7705 SAR | 7210 SAS | 7250 IXR | 7730 SXR | 7750 SR |

A new standard for secure, intelligent connectivity

Nokia Quantum-Safe Networks let you deliver secure, trusted data to AI applications so they can provide value for your customers and your business.

Our solution protects your network against quantum computing-enabled cyber threats with a defense-in-depth approach that applies cryptography at one or multiple network layers. This enables you to complement or add to application-layer cryptography depending on your business requirements and network operational model.

We provide quantum-safe networking today with a comprehensive cryptographic suite (MACsec, ANYsec, IPsec) that secures native Ethernet, MPLS and IP traffic at scale. The solution is fully compatible with established 3GPP RAN architectures, including Cloud-RAN and O-RAN. It also protects traffic for AI-RAN environments.

In addition to ensuring the integrity and confidentiality of data that traverses the network, we prioritize security and trust in the design and support of the many systems that make up the IP network. This comprehensive strategy is critical as the policy and regulatory environment continues to evolve. It is at the heart of our approach to mobile transport.

With our IP trusted systems, we expand protection from in-flight data to the very foundation of our IP network infrastructure. This protection includes rigorous system security engineering that safeguards management and control planes, blocks unauthorized access, secures routing and precisely neutralizes traffic-flooding attacks.

We reinforce platform trust through advanced integrity verification and encryption capabilities, with secure boot

and TCG-compliant TPM 2.0 keys that deliver immutable device identity and attestation. Our secure product lifecycle adopts a Design for Security (DFSEC) approach bolstered by a hardened hardware–software supply chain and a strategy of continuous prevention, detection and response. This ensures protection across every partnership and touchpoint throughout the product's life.

Our IP trusted systems empower your future with the highest levels of security and reliability.
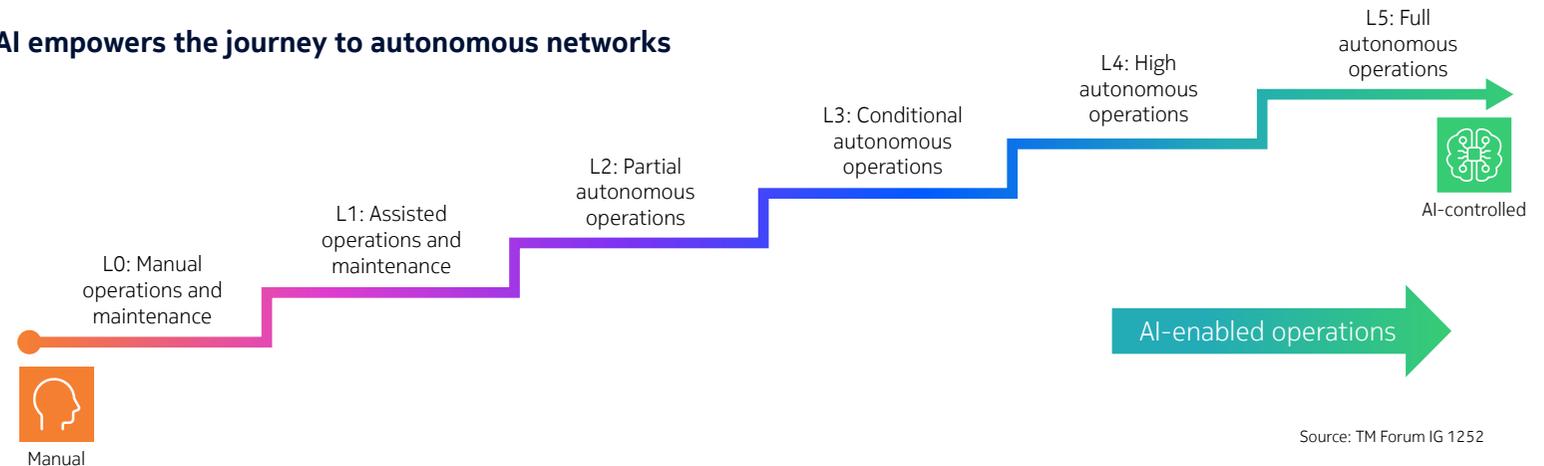
Quantum-safe networks

IP-trusted systems

Elevate your network operations

As AI applications become integral to delivering extraordinary digital experiences, the network that supports them must become more intelligent, resilient and adaptive than ever. But AI is not only a beneficiary of powerful networks—it is a catalyst for transforming the way these networks operate.

AI brings new clarity and agility to network operations. By applying machine learning to vast volumes of data, AI can recognize patterns, detect anomalies in real time and address issues before they affect users. This predictive and proactive approach lowers operating costs, improves reliability and safeguards performance across every domain.

Generative AI and agentic workflows take this transformation even further. By simplifying complex tools and streamlining operational tasks, agentic AI assistance empowers teams at all skill levels to program and operate networks with greater confidence and speed. It also

AI empowers the journey to autonomous networks

L0: Manual operations and maintenance

L1: Assisted operations and maintenance

L2: Partial autonomous operations

L3: Conditional autonomous operations

L4: High autonomous operations

L5: Full autonomous operations

AI-controlled

Manual

AI-enabled operations

Source: TM Forum IG 1252

enables faster responses to shifting customer demands and unlocks unprecedented levels of operational precision and excellence.

Nokia innovations built on agentic AI principles empower operators on their journey toward autonomous networks infused with intelligence at every layer. Our AI-enhanced approach supports rapid insight generation and informed decision-making and ensures that these

decisions are executed seamlessly in real time. The result is a network that is responsive, resilient and ready to deliver exceptional user experiences.

With AI at the core, your network becomes a force for transformation that enables you to:

- **Build an end-to-end infrastructure** that delivers the full promise of AI applications with consistency and excellence.

- **Secure your network across every layer** to ensure a trusted, resilient environment for AI-driven innovation.

- **Operate with confidence** by using AI-powered insights, decision-making and automation to support efficient, scalable operations across access, transport and core domains—elevating every customer experience.

Proven, intelligent and resilient synchronization

In today's digitally driven world, precision timing is the foundation that keeps the most critical systems running flawlessly. From telecom networks and smart grids to industrial automation and financial markets, real-time performance depends on accurate, dependable synchronization. Without it, essential services drift out of alignment, which slows innovation and puts mission-critical operations at risk.

For years, networks have relied on Global Navigation Satellite Systems (GNSS) to ensure frequency and time synchronization. But GNSS alone can no longer guarantee the resilience modern operations demand. Natural disruptions such as solar flares, severe weather and line-of-sight obstruction, combined with deliberate threats such as jamming and spoofing, expose synchronization chains

to new vulnerabilities. When timing fails, business-critical services fail with it.

We're providing a more resilient approach to network synchronization.

By extending synchronization across the packet transport network, our solotions give you a powerful secondary source of timing that increases reliability from end to end. This approach improves visibility and traceability across the entire synchronization chain, simplifying operations, administration and maintenance (OAM) and Precision Time Protocol (PTP) management while delivering the accuracy you need for next-generation services. With intelligent tools that automate synchronization functions, your operations become simpler, more efficient and more robust.

Our mobile transport solutions put you fully in command of the way synchronization is delivered throughout your network. They enable you to:

- Receive GNSS signals through dedicated receivers or SFPs.

- Distribute phase and time across the network using PTP.

- Deliver redundant timing to routers, switches and access points.

- Build layered protection that ensures continuity, even during GNSS disruptions.

The result is a synchronization architecture that provides the accuracy and resilience you need for today's demands and tomorrow's opportunities.

Realize the potential of AI with a network you can trust

As AI-powered applications become more deeply woven into every service, the need for secure, efficient and confidently connected mobile experiences has never been greater. At the heart of this shift is the mobile transport network, which carries the data, decisions and distributed compute resources that are driving the AI revolution.

We continue to strengthen our global leadership in IP Anyhaul, advancing it into a dynamic, scalable and resilient transport foundation for what comes next. With an unwavering focus on security, trust and performance, we are evolving mobile transport into a future-ready networking fabric that will help you realize the full potential of the AI supercycle.

Together, we can shape a world where networks connect and unleash intelligence.
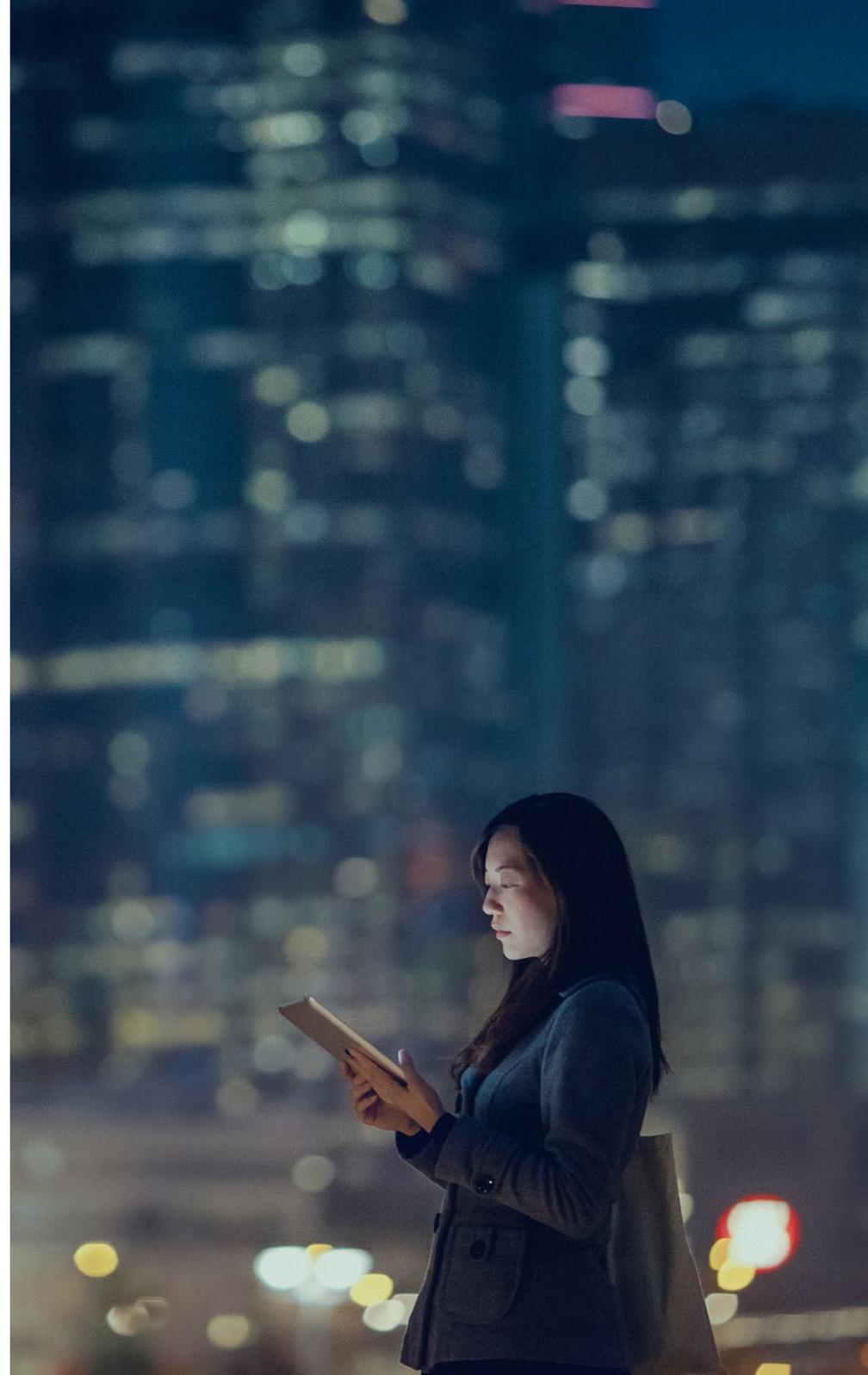
Why partner with Nokia?

Nokia has been at the forefront of mobile transport from the earliest radio generations to today's transformative architectures. We have been deeply involved in every evolution, designing, deploying and refining technologies that deliver exceptional efficiency, performance and reliability.

This longstanding commitment has given us one of the world's largest and fastest-growing mobile transport footprints. Each deployment strengthens our expertise, informs our innovation and shapes the class-leading products and practices we deliver to customers around the globe.

Our legacy is leadership.

Our momentum is innovation.

Our future is building the networks that connect intelligence.

Where can I find more information?

Your exploration doesn't have to end here. If you want to dive deeper into the innovations shaping the future of mobile transport, our IP Anyhaul resource hub is a great place to start.

For a broader look at our industry leading IP routing platforms and capabilities, visit our IP Networks page, your gateway to the technologies that will power tomorrow's intelligent, secure and sustainable networks.

You can also explore related topics that are redefining what networks can achieve:

- IP network security
- IP network automation
- Network synchronization

If you have questions or would like to explore these capabilities further, our team is here to help.
Connect with your Nokia sales representative to continue the conversation and discover how we can support your network evolution.

About Nokia

Nokia is a global leader in connectivity for the AI era. With expertise across fixed, mobile, and transport networks, we're advancing connectivity to secure a brighter world.