Ericsson 5G Transport

A breadth of solutions for 5G transport to connect services everywhere
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Are you setting up your networks to bring 5G live and preparing for new transformative use cases? As a trusted partner, Ericsson delivers what our customers need, while reducing complexity and cost. As service providers are rolling out 5G networks across all markets, Ericsson is supplying future-proof, scalable solutions with 5G transport innovations that are designed for tomorrow’s demands.

The 5G evolution brings new requirements to transport

5G will have an important role to play in meeting future capacity needs in a cost-efficient way. The evolution to 5G can enable a 10 times lower cost per gigabyte than current 4G networks at the same time as it provides opportunities to reshape the marketplace. Because 5G is an evolved platform with new capabilities, it will bring new requirements to transport. Ericsson is committed to helping our customer prepare for all scenarios, and with our portfolio of 5G-ready transport solutions you can build for the future in today’s networks.

Scaling up bandwidth and capacity

More bandwidth and more capacity have been key since the first deployments of mobile networks. New NR spectrum, better utilization of available spectrum, and introduction of coordination services such as dual connectivity and carrier aggregation increase the bandwidth and coverage leading to a higher demand for capacity in the transport network.

Two main factors are driving 5G capacity needs. 5G radio technology will result in increased OTA bandwidth. This will enable increased traffic on the interfaces towards 5G core (S1). In addition, coordination of radio functions such as carrier aggregation and uplink comp requires increased capacity and lower latency intra-site.

Low latency

Low latency is critical for coordination functions over the new radio interfaces in both non-stand-alone and stand-alone 5G deployments as well as for certain 5G use cases, such as critical IoT. Transport is key in meeting the new 5G requirements for enhanced performance and for making the most efficient use of the radio access spectrum.

Add more connections and new interfaces

As we introduce RAN compute and a split radio architecture, radio functions such as packet processing and radio control are pushed higher up in the network. New packet interfaces are also introduced in the various transport domains. These new radio interfaces all have different characteristics in terms of bandwidth and latency. The transport network therefore needs to evolve in order to take full advantage of new advanced radio features and increased 5G performance. Virtualization and cloud distribution in the 5G core require the edge and core networks to handle more connection points.

Provide security end-to-end

Security needs to be distributed and scalable across the whole network. Transport networks play a key role in this: transmission secured end-to-end is crucial for many of the new services that 5G caters for. Demarcation between trusted and untrusted domains needs to be part of the security solution.

Sync support

Synchronization support in mobile backhaul is crucial to enabling TDD-based 5G radio networks and to guarantee radio performance. Backhaul routers and microwave nodes are used to distribute time, phase, and frequency sync efficiently as part of the overall sync solutions for enhanced radio coordination and 5G use cases.

Assured Quality of Service (QoS) and automated operations

The demand of guaranteeing service quality to all the various traffic types will increase. The shift from dominant mobile broadband to multiple services supported by network slicing drives the need to manage different QoS requirements and to do this dynamically.

Intelligent, automated coordination between RAN, transport, and mobile core networks is central to any robust, sustainable 5G solution. Building a service-based network with an intelligent and agile infrastructure enables service providers to take advantage of SDN-based automation.

Cost advantages

5G networks benefit from purpose-built, end-to-end transport systems that support simplicity, scalability, and flexible solutions, at any bit rate and for any protocol. To ensure flexibility and reduce implementation costs, service providers can deploy a combination of fiber and microwave transport technologies.

Potentially transformative use cases

5G will introduce a number of potentially transformative use cases that require ultra-low latency:

- Cloud-based solutions for connected cars
- High-end devices with multi-gigabit speeds
- Sensors and wearables that empower health care
- Immersive mixed reality experiences
- Next generation sporting events
- Automated and integrated industrial production
In 2024, Ericsson projects that 5G will reach 40% population coverage and 1.5 billion subscriptions.

Increased data and video usage

Increasing video usage is the main driver behind the growth in mobile data traffic. Total mobile data traffic will be five times higher by the end of 2024, with an average data consumption per smartphone at 21GB per month.¹

Want to know more about 5G, visit ericsson.com/en/5g/what-is-5g

¹ Ericsson mobility report 2018/11
What makes the Ericsson 5G Transport offering unique is the breadth of solutions that will help service providers meet the massive increase in traffic as the industry rapidly is moving to 5G. The transport network is the fabric of RAN and is a foundation for meeting higher demands with much greater data volumes and a range of new requirements.

It is an end-to-end, integrated 5G transport solution that includes fiber- and microwave-agnostic fronthaul and backhaul, as part of our Ericsson Radio System. Also, a best-in-class edge and core IP transport and network security solutions from Juniper Networks. For a highly scalable and intelligent IP over optical underlay, Ericsson has selected ECI and Ciena as partners in the optical domain.

Ubiquitous coverage is achieved by combining microwave, IP router, and integrated optical solutions. Our enhanced portfolio for 5G-ready transport delivers the capacity, latency, and L3 capability needed to build 5G networks everywhere.

Flexible and modular transport solutions for any deployment scenario

Varying network needs demand tailored solutions. This increases the demand for flexible solutions that scale without high up-front cost. Scalable, flexible, and cost-efficient fiber- and microwave-based solutions provide superior performance, supporting various RAN architectures, interfaces, and transport media.

Industry-leading performance with Ericsson Radio System

Our portfolio of transport solutions is part of the Ericsson Radio System, ensuring a smooth evolution path. Ericsson Radio System is designed to fit all site types and traffic scenarios, even as networks grow in scale and complexity, from 2G, 3G, 4G, and 5G, delivering industry-leading performance on the smallest site footprint with the lowest energy consumption.

Superior performance with integrated 5G transport from radio to core

The portfolio also offers unified management, policy-based automation, and end-to-end service provisioning and orchestration for all components, including transport, cloud, and services.

Implementing SDN-based management that uses open and standard interfaces provides a framework for policy-driven automation and end-to-end orchestration, for radio and transport, and for efficient roll-out of 5G services with network slicing.
**MINI-LINK 6000**

**Ubiquitous microwave for 5G**

With its market-leading capacities, low latency, and advanced synchronization support, MINI-LINK 6000 is ideally suited to handle the requirements of 5G networks. Superior system gain, 10Gbps in E-band, 15-25% more capacity in traditional bands, and 30% lower power consumption increase the advantages of MINI-LINK products compared to the competition.

Flexibility and cost efficiency are achieved with a mix and match equipment approach. L3 functionality and advanced sync are possible without additional equipment.

- 5G ready with high capacities, L3 capabilities and low latency
- All building practices; outdoor, indoor and split in all frequencies, 4-80GHz
- High density of 10GE interfaces

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**Fronthaul 6000**

**Serve all RAN connectivity with a superior, future proof and flexible 5G optical solution**

Ericsson’s Fronthaul 6000 is a flexible and cost-efficient fronthaul solution for ETH, CPRI and eCPRI transport, separately or together. Market-leading density, 25G capacity and no additional latency delivers leading-edge 5G radio performance, even in the densest deployment areas, where RAN centralization plays the most important role.

- Complete portfolio, passive and active, integrated with Ericsson radio solutions
- Future proof system, any bit rate (2.5/10/25G) and any protocols (ETH/CPRI/eCPRI)
- Enable high reuse of fiber for Fronthaul and Backhaul applications

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**Router 6000**

**Cost-efficient and scalable backhaul routing**

The Router 6000 series responds directly to service providers’ challenges of the capabilities 5G requires in IP backhaul/aggregation to support the exponential traffic growth, increased network connectivity, and the need for synchronization and security in a complete, scalable, and cost-efficient router portfolio.

- Indoor and outdoor variants with Ericsson Radio System building practices for flexible and simplified rollout
- Scalable solutions with up to 2.7Tbps capacity
- Advanced synchronization support with high accuracy

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**Juniper MX/PTX/SRX**

**Innovating edge, core, and security**

Juniper’s MX, PTX, and SRX products provide high-performing edge/core routing and security with agility, scalability, and advanced support for network. Depending on the choice of product, speeds range from 95Gbps all the way up to 6Tbps.

- A comprehensive, scalable, and secure portfolio of routers for edge and core transport
- MX-series offers unprecedented service versatility, high scale and compact form factor
- PTX-series offers high scale, compact form factor and power efficiency

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**ECI Telecom and Ciena**

**Optical networks with flexibility**

Ericsson will complement its end-to-end transport offering for 5G with fullfledged, flexible, and highly scalable underlay optical transport solutions serving metro and longhaul applications. The offering is based on ECI Telecom and Ciena and it targets service providers, as well as critical infrastructure customers.
Making 5G transport ubiquitous

Performance and new architectures supporting growth

New radio technologies are designed to make our customer’s current spectrum allocations more efficient and to take advantage of new 5G spectrum allocations. These features include spectrum sharing, carrier aggregation, higher modulation, massive MU-MIMO, and beamforming. Because of this, we will see RAN densification in addition to small cells and 5G radios increasingly being deployed in different locations.

This calls for a new approach to RAN architecture as well as the underlying transport network. Intelligent 4G/5G interworking, along with automated coordination between RAN, transport, and mobile core networks are central to any robust, sustainable 5G solution.

Implementing the 5G network

Differing network requirements for the urban, suburban, and rural roll-out of 5G NR will lead to increasing but varying needs for backhaul capacity. By 2025, rural requirements will be close to the demands that we currently see in urban areas. By 2022, suburban needs will eclipse the needs of today’s urban areas. To maximize the 5G network potential, a staged implementation is required.

1 Boost the transport network in dense urban areas
   - Add IP routers with high-capacity interfaces and strict sync support
   - Use E-band to boost microwave backhaul capacity
   - Build and upgrade fronthaul to support CPRI and eCPRI
   - Build for network slicing and automation

2 Build capacity in suburban areas
   - Build high-capacity interfaces, supporting network legacy evolution
   - Boost microwave capacity with 112/224 MHz channels and multi-carrier solutions

3 Evolve rural coverage and capacity
   - Use fiber for new 5G radio sites if available, or use microwave for fast time to market
   - Boost 4G performance using microwave solutions

1 Ericsson, 2018
The move to 5G will result in a set of diverse transport requirements driven by new use cases, a demand for lower costs, new RAN architectures and interfaces, and the expectation of high-capacity, low-latency, reliable, and secure communications. With Ericsson as the partner for 5G transport, service providers can establish technology leadership in new markets, prepare for fast 5G services introduction, and run the network with optimized network performance.

As a leader in 5G, Ericsson knows 5G transport
Ericsson is committed to helping service providers take full advantage of 5G with a strong transport portfolio that is developed in conjunction with the Ericsson Radio System radio portfolio to support all 5G deployment scenarios. We reduce complexity and provide market leading capacity and interface density using open and standardized interfaces to ensure full interoperability in multi-vendor networks.

Turn on 5G quicker
Ericsson’s unparalleled experience with large deployments and implementation of a wide range of services enables us to effectively help service providers move quickly and efficiently and make the transition to the next-generation 5G transport network, capturing the full value of connectivity.

Full advantage with Ericsson as your partner for 5G transport
Ericsson enables communications service providers to capture the full value of connectivity. The company’s portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency, and find new revenue streams. Ericsson’s investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York.