

Ericsson Router 6000

**Purpose-built for superior
RAN performance**



ERICSSON

Purpose-built routers for radio networks

The transport infrastructure is key to securing the best performance for all those 200+ foreseen use cases enabled by 5G. Add to that the introduction of Cloud RAN and the significance of building a superior transport network becomes vital.

The evolution of radios, interfaces, and deployment architectures, all drive the need for increased capacity and connectivity, lower latency, and support of increased traffic volumes in 5G transport networks.

Time and phase synchronization are crucial for high-performing radio traffic. At the same time, capabilities such as security, advanced quality of service (QoS), and segment routing are key technologies to enable new functionality such as network slicing. Agility, programmability, and software-defined networking (SDN) enable a high degree of automation across the transport domain, reducing overall complexity and operational expenses.

As mobile networks move toward cloud and centralization, this also brings new benefits and challenges in the transport domain. More operators see the need to build packet-based fronthaul networks. Packet Fronthaul uses standard technologies that lower transport deployment and maintenance costs and is a pre-requisite when adding Ericsson Cloud RAN.

Combined with RAN, our extensive transport portfolio and pre-verified solutions let you design, build, upgrade, and maintain a transport network that supports the evolution of your mobile network and the potential introduction of Cloud RAN; in a cost-efficient way with minimal risk.



High density of high capacity, radio-near interfaces

Densification of radio sites and new radio interfaces drive the need for higher port density in backhaul routers to handle the new connections. The increased radio capacity in 5G along with the RAN coordination functions will require higher speed for these router ports.

No one size that fits all. Routers and configurations need to be tailored to the individual sites. Some sites may only require a few high-capacity interfaces (like 10GE). Other sites may need a much higher density of 25GE or even 100GE interfaces. To match all these needs, the Router 6000 portfolio includes a variety of products.

Advanced synchronization

Seamless synchronization is fundamental to unlock the full potential of 5G. 5G time-division duplexing (TDD) requires tight time and phase synchronization. GNSS receivers are sensitive to disturbances, which can result in degraded 5G performance or even an outage. Synchronization support in the transport network enables a more fault-tolerant architecture and eventually higher radio performance at a lower cost.

The Router 6000 series offers cost-optimized and complete time, phase, and frequency synchronization support. By providing more freedom for Grandmaster placement and requiring fewer GNSS receivers, the 5G network becomes more robust, fault-tolerant, and cost-efficient.

Distributed security

We foresee a threefold increase in the number of radio sites. The main driver of this change is network densification caused by small-cell deployment. And that exposes the network to more points of attack.

A security-hardened design makes the Router 6000 products ideal in untrusted domains, while its hardware-accelerated distributed security gateway function offers IPSec-based connectivity with no compromise in network performance. End-to-end security enforcement across the entire network is crucial for isolating and securing network slices.

Simplified underlay and overlay

The ability to run one physical network with performance and flexibility for every use case with a policy-based overlay and a service-aware underlay unlocks business potential.

Automated end-to-end provisioning of traffic-engineered paths, seamlessly spanning multiple SDN domains, translates into end-to-end optimization to avoid constraints and guarantee KPIs and SLAs. For example, automated provisioning enables end-to-end VPNs where endpoints can be dynamically provisioned from the access to the core and data centers; without setting up a VPN for each domain.

Segment routing (SR-MPLS and SRv6) has attributes that facilitate making the network more programmable. That enables efficient network slicing and makes it easier

to adjust to the evolving demands of 5G networks.

Automation to reduce complexity and costs

5G networks require increased connectivity, virtualization, and disaggregation. There is a need to adapt to the dynamic nature of service handling as well as to provide a greater number of connection points.

The Router 6000 portfolio is fully integrated with the Ericsson Network Management (ENM) platform and supports auto-integration with a seamless setup for the RAN transport network. That enables automatic discovery of Router 6000 nodes and automatic download of their predefined configuration. Each configuration is kept in sync with ENM for fast and simple operation and maintenance. Advanced SDN functionality enables automatic traffic engineering, network optimization, and advanced network-connectivity management; end-to-end.

Efficient fronthaul networks utilize packet technologies

The transport infrastructure is also vital to mitigate the otherwise explosive bandwidth requirements on the digital fronthaul interface in Centralized RAN deployments (C-RAN). And here, packet-based technologies come into play. Evolved CPRI (eCPRI) uses packet technology that enables the fronthaul network to carry other types of traffic, such as enterprise.

To support the need for an all-packet network, we introduced a unique packet-fronthaul gateway that enables:

- Utilization of an existing installed base of CPRI radios
- Bandwidth savings totaling 60–80% can be achieved using conversion
- Both C-RAN deployments and distributed RAN (D-RAN)
- Cloud RAN deployments, serving as Cloud RAN gateways

The Router 6673 is a powerful fronthaul gateway, and a multi-service router with embedded RAN compute functionality leveraging the unique Ericsson Silicon. The router enables efficient conversion to eCPRI for our NR-ready CPRI radios but can also be used in RoE-mode (Radio over Ethernet).

Transport for Cloud RAN

Ericsson Cloud RAN supports both D- and C- RAN architectures and uses generic hardware instead of purpose-built. It does this by using virtualization for parts of L1

and all of the L2 radio processing. With the introduction of Cloud RAN, establishing a superior transport network is fundamental, and it requires a Cloud/Fronthaul Gateway to convert CPRI from existing CPRI radios to eCPRI.

Router 6673 with Cloud RAN and ERS basebands allows for seamless transport of existing 4G and 5G traffic, and future Cloud RAN deployments. That gives the flexibility to deploy, manage and migrate to future RAN technologies while efficiently transporting existing traffic.

1. Access for 4G/5G

- Mid-band and mmWave drive 10GE deployment
- Local radio co-ordination traffic on 10GE
- Time and phase synchronization

2. All outdoor access

- Rail mount building practice
- High capacity



3. Centralized RAN hubs

- High port density 10GE / 25GE / 100GE
- Low latency (μ s range)
- QoS and buffer size

4. Converged aggregation

- 10GE / 25GE / 100GE density
- Latency (ms range)
- Form factor

5. Packet fronthaul

- Conversion and RoE-modes
- Class C-sync
- Support Cloud RAN

5G requires superior
transport — start your
network evolution
with transport.

Products and offering

Our Router 6000 family is designed to cater to the diverse, challenging demands of modern backhaul and fronthaul networks. The series holds the industry's highest performance 5G routers; each designed as part of our radio system to enable superior RAN performance with 5G features not found in any other router today.

Router 6000 portfolio can be used in backhaul, fronthaul and Cloud RAN, to build superior transport networks that connect 5G services everywhere.

Router 6000 family



Cost-efficient RAN routing

The Router 6000 series responds directly to the 5G challenges concerning IP backhaul/packet fronthaul/aggregation to support

exponential traffic growth, increased network connectivity, and the need for synchronization and security with a complete, scalable, and cost-efficient router portfolio.

This product family contains purpose-built routers with optimized throughputs and high 10/25/100G port densities to meet the needs of 5G ready transport networks.

Router 6000 products



Router 6371

- IP65 hardened compact access router for small cells and all-outdoor deployments
- Advanced synchronization and IPSec support
- Distributed security GW (SeGW) support for small cells
- ERS building practice for rail, wall, pole, or strand mount



Router 6471

- Compact access router for suburban sites, emerging markets, and small cells
- Advanced synchronization and IPSec support
- Distributed security GW (SeGW) support for small cells
- Pay as you grow TDM support with TDM 1001



Router 6672

- Advanced 4G/5G access router and pre-aggregation router with 100Gbps forwarding capacity
- Advanced synchronization and IPSec support
- Sealed design preventing dust from contacting the PCB, removing the need for fan filter deployment and site visits



Router 6675

- 5G combined access and E-RAN switch with 100GE interfaces and 320Gbps forwarding capacity
- Advanced synchronization and IPSec support
- Programmability and SDN support



Router 6673

- 1.5 RU 800 Gbps Fronthaul gateway and multiservice node
- RoE and Ericsson CPRI to eCPRI conversion using Ericsson Silicon.
- Advanced synchronization (Class C)



Router 6273

- Modular pre-aggregation, and aggregation router
- High 10/25/100G port density with 320Gbps to 800Gbps full-duplex forwarding capacity in only 3 U height
- Designed to lower CAPEX and OPEX



Router 6274

- Modular and redundant aggregation router with high 10/25/100G port density
- 2.7Tb full-duplex forwarding capacity
- Integrated 100Gbps IPoWDM optical solution for longer reach

Management, orchestration, and transport

Building a superior transport network also requires efficient management and orchestration of its services. With the introduction of Cloud RAN, edge compute, container-based architectures, and network slicing, the management and orchestration systems have become a vital component to capture the booming market potential of 5G.



Advanced management of transport services

Router 6000 products are part of Ericsson Radio System and utilize the common management system Ericsson Network Manager (ENM). That enables alarm consolidation between RAN and transport elements for improved fault isolation, end-to-end visualization, and coordinated self-healing functions.

For example, cell degradation can be caused by issues in the transport domain or the air interface. By combining a set of KPIs from RAN and transport (like packet loss, air interface performance, and connection

status), the root cause can be clearly visualized. Complemented with consolidated alarms, either rule-based or by AI/machine learning, the issue can be pinpointed regardless of whether it is in the RAN or transport domains.

ENM includes a solution for automatic provisioning of transport services, on top of a routed underlay with an evolution path to offer automated end-to-end provisioning for RAN services. That includes the setup of the transport infrastructure and, by those, simplifying reconfigurations and deployments.

This solution is today provided as part of our ENM offering and can be used as an integrated solution in ENM, or through the supported northbound interfaces for integration with other management systems and tools, including Ericsson Intelligent Automation Platform.

Our Intelligent Automation Platform is a new service management and orchestration entity. A cloud-native automation platform for purpose-built and Open RAN comprising Non-RT RIC for running rApps as part of intelligent RAN automation.

Evolve your network to support 5G and beyond

Future-proof the IP network to support the RAN evolution.

Digital services of the future will demand new capabilities in 5G and beyond. That includes an appropriate end-to-end QoS in throughput, latency, device density, availability, and reliability. The key to all is the transport network. As the first wave of 5G deployments has begun, the race to secure 5G-ready transport infrastructures is on.

Future-proof network products require high capacity, a compact and modular building practice, advanced packet functionality, and features that are aligned and backward compatible across different network nodes. Flexibility and modularity are essential, and the utilization of software upgrades to existing hardware makes the rollout of new RAN services faster and cheaper.

Modularity and flexibility for any medium and deployment scenario

Our diverse router portfolio offers a variety of products that can be used in all RAN use cases. From small sites to significant aggregation, the portfolio's modularity and flexibility support any network size, even when the scale of the network grows.

It also supports any installation need, indoors as well as outdoors. And the port-

folio's mix and match approach allows your network to grow organically, also when it grows in scale and complexity.

Our transport products support the network evolution, from 4G to 5G. By investing when and where necessary, excessive spending and high up-front costs are avoided without over dimensioning.

Network slicing

Also, network slicing is a key component in a 5G network architecture. By splitting the physical network into multiple virtual ones, it can separate and handle different 5G use cases according to their characteristic needs. Our components are designed for efficient network slicing to enable traffic engineering for optimal transport path selections based on bandwidth and latency.

QoS is tailored to support different types of customers and services by allocating speed, coverage, and capacity into logical slices..

Datacenter gateway

Ericsson Router 6274 can also be used as Datacenter Gateway as part of Ericsson NFVI solution. Ericsson NFVI enables operators to deploy virtual network functions (VNFs) or cloud native functions (CNFs) from multiple vendors, as well as OSS and BSS applications, with speed while keeping total cost of ownership low. Router 6274 has the capacity, scalability and redundancy protocols that are required for the performance and stability as a datacenter gateway. The solution is system-verified which means significantly simplifying deployment, operations and upgrades.



About Ericsson

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.