

8665 Smart Router

Cost-Efficient, Scalable High Speed Ethernet Aggregator and IP/MPLS Router for Packet Networks

The Coriant® 8665 Smart Router is a cost-efficient IP/MPLS router for pure packet networks providing Ethernet interfaces from 1 to 100 Gbps. Offering 1.2 Tbps full duplex switching capacity with 780 Gbps redundant capacity, the platform is designed to be deployed in medium-sized aggregation and large mobile macro sites as well as controller and S-GW sites in technically advanced all-IP networks. The 8665 Smart Router provides the flexibility and capabilities to serve all-IP mobile and fixed networks including applications such as traditional consumer, enterprise, machine-to-machine connectivity, and cloud networking needs. While maintaining high quality for low latency voice traffic, the 8665 Smart Router offers the interface density, throughput, and cost effectiveness to meet the needs of fast growing data services.

ENABLING FLEXIBLE LTE NETWORK ARCHITECTURES

The 8665 Smart Router provides ideal capabilities to implement flexible LTE network architectures. The platform provides IP routing and Ethernet switching to support the X2 interface between eNodeBs and S1 and S1-Flex interfaces between eNodeBs and LTE network core elements. The 8665 Smart Router supports both fixed and mobile transport enabling mobile operators to extend their service offering to include, for example, fixed business services. The synchronization capabilities of the 8665 Smart Router are essential for LTE networks.

SUPPORTING ALL-IP AND FIXED NETWORKS

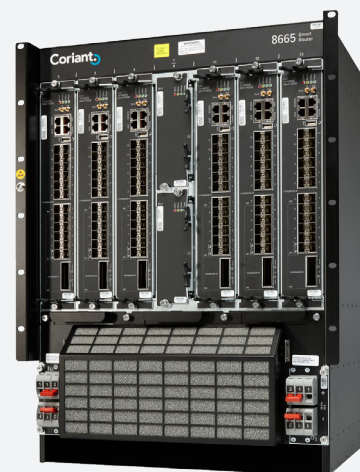
The 8665 Smart Router is an optimal solution for mobile and fixed networks that deploy Ethernet technology as the underlying transport media. The platform contains IP routing as well as MPLS and Ethernet switching tables that provide the flexibility needed to serve evolving network architectures and applications. The 8665 Smart Router supports a mix of IP and Ethernet services, such as IP VPNs, VPLS and Ethernet pseudowires, and significant buffering capacity for bursty data applications as well as advanced traffic management features with hierarchical QoS support for flexible end user service definition. The 8665 Smart Router multicast capabilities enable applications such as IPTV and company town hall sessions.

OFFERING A RANGE OF SYNCHRONIZATION OPTIONS

The 8665 Smart Router supports a wide range of synchronization features, such as Synchronous Ethernet, Synchronization Status Message (SSM) over Ethernet, and IEEE 1588v2 Boundary Clock, which is required for LTE Time-Division Duplex (LTE-TDD) and LTE Advanced (LTE-A). In addition to frequency synchronization, the 8665 Smart Router supports 1588 phase synchronization that is required by LTE-A and LTE-TDD along with 5G applications in the future. Phase synchronization can be provided using the innovative Coriant® Integrated GPS (SNSS) SFP receiver supported by the 8665 Smart Router. The integrated features of the 8665 Smart Router also enable simple migration to phase synchronization. The 8665 Smart Router multicast capabilities support applications such as eMBMS broadcast delivery.

BENEFITS OF THE CORIANT® 8665 SMART ROUTER

- **Support all-IP mobile and fixed networks** with a 1.2 Tbps full duplex IP/MPLS router
- **Enable flexible LTE network architectures**
- **Offer ideal platform for large aggregation and RNC/S-GW sites**
- **Provide dense 10G/1G aggregation with 100G connectivity**
- **Deploy a range of synchronization options**
- **Reduce operational expenses** with intelligent network management
- **Leverage a high density, compact form factor**



The Coriant® Smart Router Series

The Smart Router series offers versatile and scalable solutions for mobile backhaul from small aggregation sites to controller and gateway sites. In addition, Smart Routers serve fixed and mobile convergence and cloud computing networking needs. These solutions are designed to meet the ever-growing requirements of data hungry mobile and enterprise users. All of the Smart Routers are LTE-ready and provide an extensive Ethernet and IP/MPLS feature set. Simultaneous support for multiservice applications in access and aggregation networks protects earlier network investments. The Smart Router product family is supported by the 8000 INM, which is an easy to use end-to-end network management solution. The 8000 INM minimizes operational and maintenance costs and scales up to tens of thousands of network elements.

REDUCING OPERATING EXPENSES WITH INTELLIGENT NETWORK MANAGEMENT

The 8665 Smart Router is fully managed with the Coriant® 8000 Intelligent Network Manager (INM). The platform also seamlessly integrates into any existing Smart Router backhaul network, network expansion, or greenfield deployment. The 8000 INM supports the operator throughout the network lifecycle from planning and deployment phases all the way to optimization and maintenance while automating many routine network management tasks and helping to reduce operational expenses.

IMPLEMENTING AN OPEN, PROGRAMMABLE, AUTOMATED SDN SOLUTION

The 8665 Smart Router is fully supported by the Coriant Transcend™ SDN Packet Controller. The Packet Controller is an integral component of the overall Coriant Transcend™ SDN Solution suite, a modular SDN software suite that combines the benefits of open, programmable, and automated multi-layer (Layer 0-3) SDN architecture and a proven portfolio of IP/MPLS edge routing and packet optical transport solutions to enable dynamic, end-to-end network control.

LEVERAGE HIGH INTERFACE DENSITY, COMPACT FORM FACTOR

The 8665 Smart Router is designed to offer high speed packet aggregation capabilities in a 15RU design with low power consumption and full redundancy of forwarding, control and management plane, synchronization, power, and fan modules. The 8665 Smart Router supports a flexible pay-as-you-grow Line Unit design with multiple interface configuration options including a mix of 100 Gbps, 10 Gbps, and 1 Gbps Ethernet support. The 8665 Smart Router supports up to six Line Units providing 1.2 Tbps of total throughput. The Line Units support hot swap deployment to flexibly increase throughput without service interruption. Line Unit interconnectivity is implemented with two Switch Units. Advanced traffic management features include hierarchical policing and shaping with Strict Priority and WFQ Scheduling. The 8665 Smart Router supports a similar IP and Ethernet feature set as the ELC1 line card in the Coriant® 8660 Smart Router and Coriant® 8630 Smart Router.

TECHNICAL SPECIFICATIONS

Physical Dimensions

- 15RU high
- 420 mm / 16.5 in deep
- 19-inch rack mounting

Power and Cooling

- -48 Vdc, redundant power supply
- Two user changeable power modules with optional protection
- Maximum power consumption 1600 W
- Forced cooling with three fan modules

Forwarding Plane

- IPv4 and IPv6 routing
- IPv4 and IPv6 multicast
- MPLS switching (LSR and LER)
- Ethernet MAC switching

Functionality

- IP VPN (RFC 4364)
- IP VPN multicast
- VPLS and H-VPLS
- Integrated Routing and Bridging
- 6vPE support
- Ethernet/VLAN pseudowires
- Single and multi-segment pseudowires
- 802.1ad QinQ
- Seamless MPLS
- Two Way Active Measurement Protocol (TWAMP)
- Y.1731 frame loss, frame delay, and frame delay variation measurement
- IEEE 802.1ag Ethernet OAM loopback, continuity check, ping, and link trace
- BFD (Static, OSPF, ISIS, RSVP-TE)

Forwarding Capacity

- 1.2 Tbps full duplex forwarding capacity with two operational Switch Units
- 780 Gbps full duplex forwarding capacity with one operational Switch Unit

Chassis Configuration

- Two slots for Switch Units
- Two Power Input Modules
- Six slots for Line Units
- Three Fan Modules

Line Units

- 1 x 100GBASE-R (CFP2) + 24 x 10GBASE-R with two operating modes:
 - 1 x 100GBASE-R (CFP2) + 14 x 10GBASE-R
 - 24 x 10GBASE-R

TECHNICAL SPECIFICATIONS

Resiliency and Load Balancing

- 1+1 Control plane protection
- Non-stop forwarding with control plane redundancy and graceful restart
- Power input protection
- Ethernet Link Protection
- Ethernet Link Aggregation
- 1:1 RSVP-TE LSP protection
- Fast Reroute (FRR)
- Ethernet pseudowire redundancy
- VRRP
- IP load balancing (Equal Cost Multipath [ECMP])
- BGP multipath for load balancing
- IPv4 and IP VPN load balancing to RSVP-TE tunnels

Common Interfaces

- Station Clock Input/Output (SCI/SCO)
- Pulse-per-Second (PPS) clock input and output
- Time-of-Day (ToD) input
- External Alarms
- Console

Security

- L3/L4 Access Control Lists
- Denial of service protection
- Radius and TACACS+ authentication and accounting
- SSH-2 for FTP and Telnet
- MD5, SHA-1 authentication

Synchronization

- ITU-T [G.8262]
- Station Clock Input and Output ports
- Pulse-per-Second (PPS) input and output
- Time-of-Day input
- Synchronous Ethernet
- SSM over Ethernet [G.8264]
- IEEE 1588v2 Boundary Clock for phase sync
- SyncE assist
- Support for the Integrated GPS (GNSS) SFP receiver

Routing and MPLS Label Distribution

Protocols

- OSPF-TE, ISIS-TE, BGP, and MP-BGP
- LDP, RSVP-TE
- PIM-SM and PIM-SSM

Traffic Management

- DiffServ support for up to 7 traffic classes
- DiffServ aware MPLS Traffic Engineering (DS-TE)
- IEEE 802.1P/Q mapping to IP or MPLS
- Policing: port, VLAN, hierarchical
- Shaping: port, VLAN, hierarchical
- RED/WRED queue management
- Strict Priority and WFQ scheduling
- Access Control Lists (ACL)

Management

- CLI with SSH2, FTP with SSH2
- SNMPv1 and SNMPv2 monitoring
- Coriant® 8000 Intelligent Network Manager (INM)
- Coriant Transcend™ SDN Packet Controller
- Radius and TACACS+ authentication and accounting

Environmental Conditions

- Operating temperature: -5°C to +45°C

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