



SMARTEDGE "DUAL TECHNOLOGY" LINE CARD

OC-192c/STM-64c POS / 1X10GE



Carrier-class, software configurable,
highly versatile line card for deployment in
converged IP backbone networks;

Highly efficient in direct connectivity to
long haul DWDM/OTN networks

(Does not require Transponders).

ericsson.
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SMARTEDGE 10GE / OC-192c/STM-64c POS LINE CARD

Key Benefits

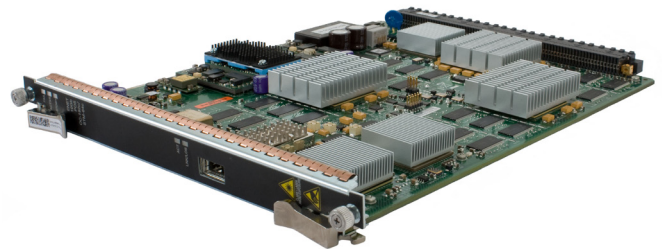
- Supported in SmartEdge 1200/800/600/400 –takes one slot in the chassis and the chassis can be completely populated by this line card
- Software configurable to operate as a 10GE or clear channel OC-192/STM-64 port
- Supports OC-192c/STM64c POS, 10GE LAN, or 10GE WAN
- XFP Optical interfaces supported: SR, LR, ER, ZR, and DWDM/OTN
- Uplink (Network) or Downlink (User) connectivity
- Supports a maximum of 10 Gbps throughput
- Managed by Ericsson's NetOp EMS and Policy Manager
- Provides Remote Fault Indication
- Hot swappable for in-service insertion and removal; In-service ASIC microcode updates
- Wire-speed, high-performance MPLS Provider and Provider Edge functionality
- Support up to 32,000 subscribers
- Lower power consumption: only 100W at wire-speed

A simpler network architecture

Ericsson SmartEdge Multi-Service Edge Router (MSER) can be deployed with this efficient, versatile line card for connectivity to IP/MPLS-based backbone networks. This carrier-class line card is capable of dual technology operation providing maximum flexibility for Ethernet or POS-based intelligent transport. Supporting 10GE LAN, 10GE WAN or OC-192c/STM64c POS, the choice of underlying transport technology is software configurable. Selecting a specific technology can also be done via inter-changeable (pluggable) XFP modules. In addition, it can be deployed using OTN XFPs for optimal network design and configuration. By selecting this XFP type, the need for transponders that connect a 10GE LAN PHY to a DWDM multiplexer is eliminated, thus ensuring a simpler, cost effective network architecture that allows longer reach via native FEC. It also enables end to end G.709 transport over a long haul DWDM transport network.

Substantial feature support

Primarily, this card is used in a SmartEdge acting as an P or a PE router in networks that require high volume of traffic with bandwidth optimization. However, this card can also be deployed for downlink connectivity to offer substantial bandwidth increase to subscribers. All of SmartEdge advanced services are available on this card, such as policing, and granular rate limiting on a per subscriber per service basis. Also available are rule-based classification engine and frame parser through layer 4, including support for IPv6. Support for subscriber management, L2/L3 VPNs (e.g., VPLS, H-VPLS, IP/VPN) and application-aware QoS management, including Layer 2 to Layer 3 QoS mapping are also available. This card supports per-VLAN policing, statistics, classification, and tagging. On a per port basis, the card has the ability to classify, queue and schedule traffic based upon VLANs/802.1p, Q in Q, MPLS labels/ EXP bits, and IP DSCP bits with 802.1p and DSCP marking



and marking down of “yellow” (medium priority) frames. For congestion avoidance, Random Early Drops (RED) or Weighted RED algorithms are supported. Any combination of strict priority or packet-weighted round robin priority scheduling is supported in this card. For scheduling, Modified Deficit Round Robin (MDRR) algorithms are supported. This high performance line card supports simultaneous line rate operation, or any distribution of traffic up to a maximum of 10Gbps.

By utilizing this line card, service providers are now able to simplify their network architecture to deliver bandwidth intensive applications and services to their subscribers.

Applications

This card is ideal for building high speed, high performance, converged networks and migration from legacy SONET/SDH to IP over Ethernet intelligent transport. It also addresses the current and near-future market demands for IP/MPLS networks in fixed/mobile convergence for full service operators.

Service delivery to the mass

This card can be deployed for delivery of services to a large population of business and residential subscribers. Services such as L2/L3 VPN services can be delivered to numerous medium to large enterprises with security and bandwidth management (e.g., P2P rate limiting). Residential services such as HD-VoD or IPTV services can be supported with a choice of underlying transport. For example for IPTV services, its designed-in intelligence enables multicast operation for delivery, replication of packets to ensure an optimized data flow within the chassis. Multicast packets are replicated and can be delivered to multiple egress cards simultaneously.

Result: a better network

The service creation capabilities of the SmartEdge platform combined with the flexibility and versatility of this card results in a Smart Broadband Network that is personalized, adaptive, and efficient.

TECHNICAL SPECIFICATIONS SE 10GE / OC-192c/ STM-64c POS LINE CARD

MODULE SPECIFICATIONS

- Packet Forwarding Engine: PPA2 programmable ASIC providing local routing and IP services in hardware.

ETHERNET FEATURES AND INTERFACES

- Media Access Control (MAC) with full-duplex operation
- 10 Gigabit Ethernet IEEE 802.3 compatible with XFP plug-in types SR, LR, ER, ZR and DWDM

HIGH AVAILABILITY AND REDUNDANCY

- H-VPLS, VRRP, RSTP, and Link Aggregation (802.3ad)
- In Service Software Upgrade

LEDS

- 3 LEDs per module for module status indication: ACTIVE (green or off), FAIL (red or off), and STDBY (yellow/amber or off)

ACTIVE LED:

- On – Normal operation (card configured and Up)

FAIL LED:

- Red – Card failure (card configured but down)

STDBY LED:

- Yellow/amber – Card works as APS standby (in OC-192/STM-64 mode of operation).
- Not used in 10GE modes of operation.

- 2 LEDs per port for port-level indications: LNK/LOS and ACT

ACT LED:

- Green blinking – Active link (port configured UP and data passing)
- Under LOS conditions, LED goes off to show that port is in DOWN with LOS state (in OC-192/STM-64 mode of operation)

LNK/LOS LED:

- In 10GE modes of operation:
 - Green – Active link (port configured and UP).
- In OC-192/STM-64 mode of operation: Yellow/amber – port is configured, but DOWN with LOS state (along with ACT LED off).

TECHNICAL SPECIFICATIONS SE 10GE / OC-192c/ STM-64c POS LINE CARD

PHYSICAL SPECIFICATIONS

- Dimensions (H x W x D): 16.0 x 1.12 x 9.97 in. (40.64 x 2.83 x 25.32 cm)
 - Weight: 5.5 lbs (2.5 kg)
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ENVIRONMENTAL SPECIFICATIONS

- Operating temperature, nominal: 41° to 104°F (5° to 40°C)
 - Operating temperature, short term: 23° to 131°F (-5° to 55°C)
 - Storage temperature: -38° to 150°F (-40° to 70°C)
 - Operating relative humidity: 5% to 90% RH
 - Storage relative humidity: 5% to 95% RH
 - Operating altitude: 60 to 4000 meters
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NEBS LEVEL III COMPLIANCE

- GR-1089-CORE : Electromagnetic Compatibility and Electrical Safety – Generic Criteria for Network Telecommunications Equipment
 - GR-63-CORE : Networks Equipment Building System (NEBS) Requirements: Physical Protection
 - SR-3580 : Network Equipment Building Systems (NEBS): Criteria Levels (Level 3-compliant)
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MANAGEMENT

- RFC 2665, and RFC 2819
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REGULATORY COMPLIANCE

SAFETY

- UL 60950-1: 2001 - Safety of information technology equipment

SAFETY (CONT'D)

- CAN/CSA-C22.2 No. 60950-1-03 1st Ed, April 1, 2003 - Safety of information technology equipment
 - EN 60950-1: 2001 + IEC 60950-1: 2001 - Safety of information technology equipment
 - IEC 60950-1
 - AS/NZS 60950-1
 - ACA TS001 - Safety Requirement for customer equipment
 - 21CRF1040, EN60825-1, EN60825-2 -Laser Safety
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EMISSION

- ETSI EN 300 386
 - FCC CFR 47 Part 15 Class A
 - ICES-003 Class A
 - EN55022 Class A
 - EN50082-1 Class A
 - CISPR 22 Class A
 - VCCI V-3/97.04: Class A
 - AS/NZS 3548: Class A
 - CNS-13438: Class A - BSMI in Taiwan
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IMMUNITY

- ETSI EN 300 386 : Electromagnetic compatibility and radio spectrum Matters (ERM); Telecommunication network equipment; electromagnetic Compatibility (EMC) requirements
- EN 50082-1
- EN61000-4-2 ESD immunity
- EN61000-4-3 Radiated RF field immunity
- EN61000-4-4 Immunity to electrical fast transients
- EN61000-4-5 Surge immunity
- EN61000-4-6 RF conducted immunity