



MINI-LINK SP 310

MULTI-ACCESS AGGREGATION PLATFORM



MINI-LINK SP is a 120 Gbps Carrier Ethernet platform with standard 10-Gigabit Ethernet ports for the converged access and aggregation applications. It is available with industry-leading circuit emulation service, which is designed to accelerate circuit migration to all-IP networks.

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MINI-LINK SP 310

Key benefits

- High-Capacity Carrier Ethernet platform in a compact 1.5 RU.
- Designed for wire-speed and non-blocking 120 Gbps (half-duplex) switching performance.
- Lower cost alternative to the traditional SONET/SDH metro ring providing resilient backhaul of voice and mission critical data services. G.8032 (Ethernet Ring Protection) adds 50-ms path protection and E-LINE/E-LAN service restoration.
- Highly-extensible platform with 20 standard Gigabit Ethernet ports, two standard 10-Gigabit Ethernet ports and two multi-access expansion slots.
- Two optional multi-access modules include:
 - Circuit Emulation Service (CES) with eight discrete T1/E1 ports.
 - One port 10-Gigabit Ethernet
- When equipped with the optional CES module, MINI-LINK SP maintains the proven benefits of TDM Services:
 - Synchronous and deterministic transmission
 - Fast protection and restoration of service
 - Service performance assurance
 - Superior Operation Administration and Maintenance (OAM)

Key features

- All Gigabit Ethernet and 10-Gigabit Ethernet ports support standard-based provider bridging (802.1ad) and MPLS-TP for scalable Ethernet transport.
- Purpose-built with all industrial grade components designed to support extreme temperature applications.
- Support for redundant hot swappable, redundant power supply and field replaceable fan tray.
- NEBS and RoHS compliant
- Ethernet transport, resiliency and service compliance:
 - Provider bridging (802.1ad)
 - MPLS-TP
 - G.8032v2 Ethernet ring protection
 - MEF 9, 14 and 20 (UNI Type 2.1) certified
- Ethernet performance management and assurance:
 - 802.3ah OAM and 802.1ag CFM
 - Y.1731
 - SNMPv2/v3
- Ethernet timing:
 - IEEE 1588v2
 - Sync Ethernet
- TDM service:
 - T1/E1 Circuit Emulation Service

MINI-LINK SP series of multi-access aggregation platforms

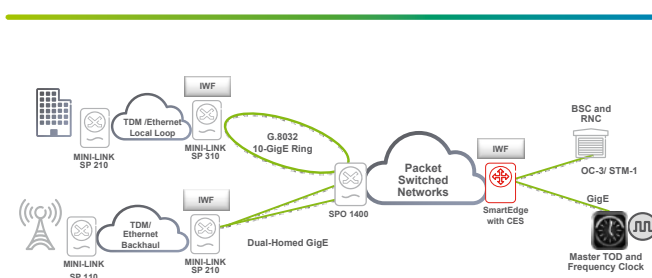
Globally, carrier networks are under tremendous pressure to expand the bandwidth capacity at the access and aggregation networks. The advancements of mobile and enterprise devices, offering high-definition video and robust real-time applications, have exposed the architectural limitations of legacy networks. Even with the recent retrofits that add Ethernet capabilities, many of these networks are running at near maximum capacity.

Well-proven in core and edge networks, Carrier Ethernet is the natural and the best replacement technology. However, access networks require a different class of architecture; a new class of Carrier Ethernet architecture that serves dual roles - to provide a seamless migration path from TDM circuit to Ethernet, and to lay an ultra-scalable foundation for next generation networks.



The MINI-LINK SP 110 is the most cost-effective and compact model. At 1 RU high, the MINI-LINK SP 110 is suitable for application where space is limited, such as, the very edge of the networks.

The MINI-LINK SP 210 and 310 share the same 1.5 RU chassis. Designed with industrial grade chipsets, both platforms are ideal for extreme temperature applications, such as cell site and building aggregations.



MINI-LINK SP 310 for the converged access and aggregation

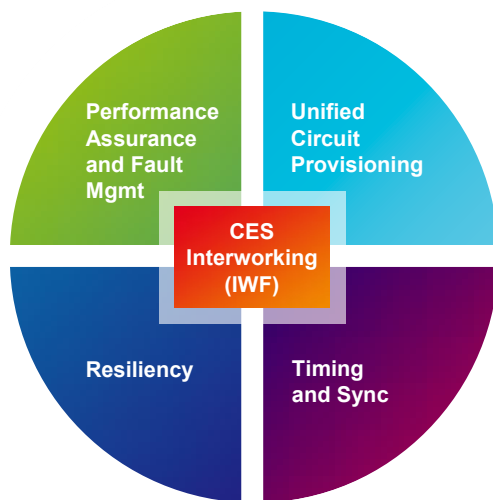
Both the MINI-LINK SP 210 and 310 support industry-largest switching capacities in its class. The MINI-LINK SP 210 supports 36 Gbps switching capacity and the MINI-LINK SP 310 can handle a massive 120 Gbps. The large switching capacity ensures that the platforms have enough future headroom to handle new innovative IP services and also protects carrier's investments.

The standard MINI-LINK SP 310 comes with 20-Gigabit Ethernet ports for high-density cell-site and building aggregation. Additionally, two standard 10-Gigabit ports can be configured as redundant rings similar to SONET/SDH in the metro ring.

G.8032 adds 50-ms of path protection and enables SONET/SDH-like restorations for E-LINE and E-LAN services.

When combined with the TDM expansion module and Circuit Emulation Service, G.8032 enables MINI-LINK SP 310 to backhaul voice and other mission critical data services. The ample backhaul capacity effectively reduces network upgrade churns and lowers operational costs.

Ericsson Circuit Emulation Service



MINI-LINK SP series supports the most advanced and industry-leading implementation of Circuit Emulation Services (CES) based on the latest CESoPSN and SAToP standards. MINI-LINK SP's CES goes beyond the simple transports of TDM services over Ethernet pseudowires. To complement the TDM timings, Ericsson integrates the 1588v2 and SyncE for flexible timing options. Carriers can also enforce Service Level Agreements (SLAs) through the Y.1731. The Y.1731 provides embedded performance assurance by monitoring frame loss, jitter and latency, allowing a fine-grain, accurate monitoring of SLAs.

Standards-based OAM and Network Management Systems

MINI-LINK SP 110, 210 and 310 are tightly integrated into the ServiceON Element Manager (EM) and NetOp Element Management System (EMS). Both management systems provide intuitive GUI interfaces for fast element configurations and full FCAPS monitoring.

Additional management modules include ServiceON ESA and NetOp Network Service Manager (NSM), which give network managers the power to easily provision end-to-end VPN services, automate provisioning workflows and monitor end-to-end circuit with point and click simplicity.

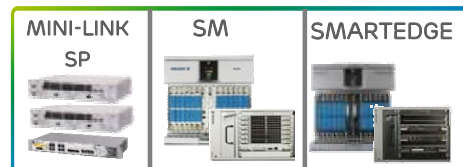
ServiceON EM/ ESA is a well-proven management system for the transport-oriented networks consisting of MINI-LINK microwave radios, and OMS/SPO platforms for PDH/ SDH transport.

For the Ethernet packet switched networks consisting of SmartEdge, SM and MINI-LINK SP, Ericsson offers NetOp. NetOp EMS/NSM is a powerful management system purpose-built for Ethernet and IP network management. With NetOp NSM, a network operator can easily provision any type of IP circuits including, L2 VLL/ VPLS, L3 BGP VPN and even site-to-site IPSec VPN with point and click simplicity.

Transport-Oriented Networks



Ethernet Switched Networks



TECHNICAL SPECIFICATIONS

MINI-LINK SP 310

CONFIGURATIONS

- Physical Dimension: Height 1.5 RU, Depth 250mm, Width 446mm
 - 2 slots for expansion modules
 - Air flow: Right to Left
 - Switching capacity: 120 Gbps (Half-Duplex)
 - Weight: 8 kg
 - USB port for file upload and download
 - One RJ-45 console port
 - One 10/100/1000 Base-T Ethernet for Out-of-Band Management
 - Two Sync ports for 1pps + TOD
 - 20 GE SFP ports
 - 8 out of the 20 GE ports are combo SFP or 10/100/1000BaseT ports
 - 2 x 10GE XFP ports
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OPTIONAL EXPANSION MODULE

- 8 port T1/E1 Circuit Emulation module
 - 16 port T1/E1 ATM IMA & ML-PPP module
 - 1 port 10-Gigabit Ethernet module
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OPERATING ENVIRONMENT

- Operating Temperature: -40 - 65°C
 - Humidity: 0 - 95% Non-condensing
 - Power: -48 VDC; 110 – 240VAC
 - NEBS Level III, UL 60 950-1, GR-63 Core, GR-1089 Core
 - ETSI EN 300 386, FCC Part 15
 - RoHS-6
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POWER CONSUMPTION

- 150 Watts
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MULTICAST

- IGMP Snooping, IGMP Proxy
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ROUTING PROTOCOLS

- OSPFv2
 - IPv4
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MPLS RELATED PROTOCOLS

- PWE3
 - Static LSP
 - MPLS-TP
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LAYER 2 PROTOCOLS

- 802.1Q Virtual LAN
 - 802.1ad Provider Bridging
 - ITU G.8032v2 Ethernet Ring Protection
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ETHERNET SERVICES (MEF)

- E-Line
 - E-LAN
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T1/ E1 CIRCUIT EMULATION SERVICE

- SAtoP (Structure Agnostic TDM over Packet); IETF RFC 4553 & MEF 8
 - CESoPSN (Circuit Emulation Service over Packet Switched Network); IETF RFC 5086 & MEF 8
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NETWORK MANAGEMENT

- RADIUS
 - SNMP v2/3
 - Syslog
 - RMON
 - TACACS+
 - Supported by NetOp EMS/ NSM R6.3
 - Supported by ServiceON EM R 10.2 and ESA R 10.3
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QOS

- MEF QoS (MEF 10.1)
 - Policing from 64kbps to 10Gbps
 - 802.1p
 - DSCP
 - MPLS EXP
 - WRED
 - ACL
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OAM

- 802.1ag Fault Management
 - Y.1731 Performance Management
 - 802.3ah Link OAM
 - BFD
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PERFORMANCE

- Linerate from 64 byte to 9600 byte MTU
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TIMING AND SYNCHRONIZATION

- IEEE 1588 V2 OC, TC and BC
 - Synchronous Ethernet
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