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ERICSSON SPO 1400 FAMILY

PACKET OPTICAL TRANSPORT-ETSI

Ericsson SPO 1400 family provides scalable, modular and flexible node architecture with the right traffic mix of Ethernet, SDH, and WDM connectivity. An optimized carrier-class converged transport enabling network transformation with lowest total cost of ownership for SDH evolution, Mobile backhauling and for building packet networks.

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SPO 1400 FAMILY
PACKET OPTICAL TRANSPORT

General
The Ericsson SPO 1400 family is a range of compact energy efficient multiservice and packet optical transport elements. Optimized for use in Access and Metro networks they provide carrier class Ethernet and TDM services interworking with Edge, Metro and Core Networks based on SDH, Ethernet or WDM. The SPO 1400 product family is ideal for applications ranging from high capacity customer sites, fixed or mobile backhaul/Radio Access Network (RAN) aggregation and transport. They provide an ideal migration path to a fixed and mobile broadband converged network. The SPO 1400 family consists of the compact 6 slot SPO 1410 and the larger 16 slot SPO 1460 that share a common set of inter-changeable traffic modules providing redundant aggregation and switching.

Key features and benefits for SPO 1400 family:
- Enables smooth migration to all optical packet transport
- High density compact 2RU shelf for Mobile backhauling and space restricted applications. Larger 8RU shelf for metro aggregation applications
- Optimized power efficient design
- High number of GE interfaces
- Common interface across the Ethernet family and module options
- In-service flexibility to upgrade capacity and service mix
- Broadband service support, including MEF E-LINE, E-LAN and E-TREE
- Support for MPLS-TP based L2VPNs and Circuit Emulation services
- TDM Services E1, E3, STM-1/4/16/64
- Common network management for OPEX efficiency

APPLICATIONS

Multi service delivery
The SPO 1400 family feature a resilient packet switch and interface options enable the economical delivery of a variety of services. SPO 1400 products can be configured for pure TDM, pure Ethernet optical transport solution or a combination, with WDM connectivity. The SPO 1400 family enables network transformation, ideal for fixed Mobile convergence (FMC), IP transformation and Mobile backhauling (MBH).

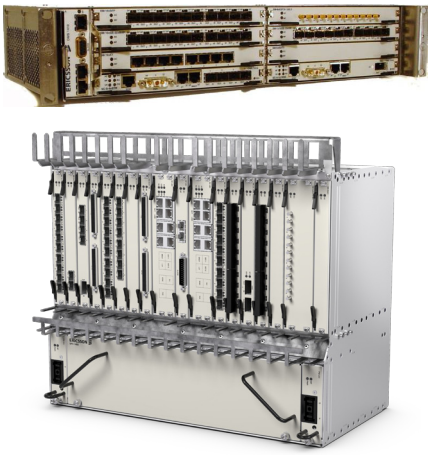
IP Network transformation
The SPO 1400 family is the ideal platform for IP network transformation: efficient SDH evolution, low cost packet networks, resilient mobile backhauling, and converged metro transport.

Best technology for SDH evolution
SDH technology has a proven track record for “carrier-class” voice service delivery. SDH is still required for low cost services while adding Ethernet for data services.

The SPO 1400 family enable existing TDM networks to efficiently transport Ethernet services using GFP, LCAS and VCAT to flexible mange the network bandwidth.

Innovative Packet Transport
Packet Transport capabilities to build scalable, realiable network transport with right IP services enabling reduction in CAPEX and OPEX. The SPO 1400 family feature a scalable packet switch design enabling transport of connection oriented services with SDH performance levels.

Interoperability with WDM technology
The WDM interface options maximizes fiber utilization and flexibility of metro aggregation network.

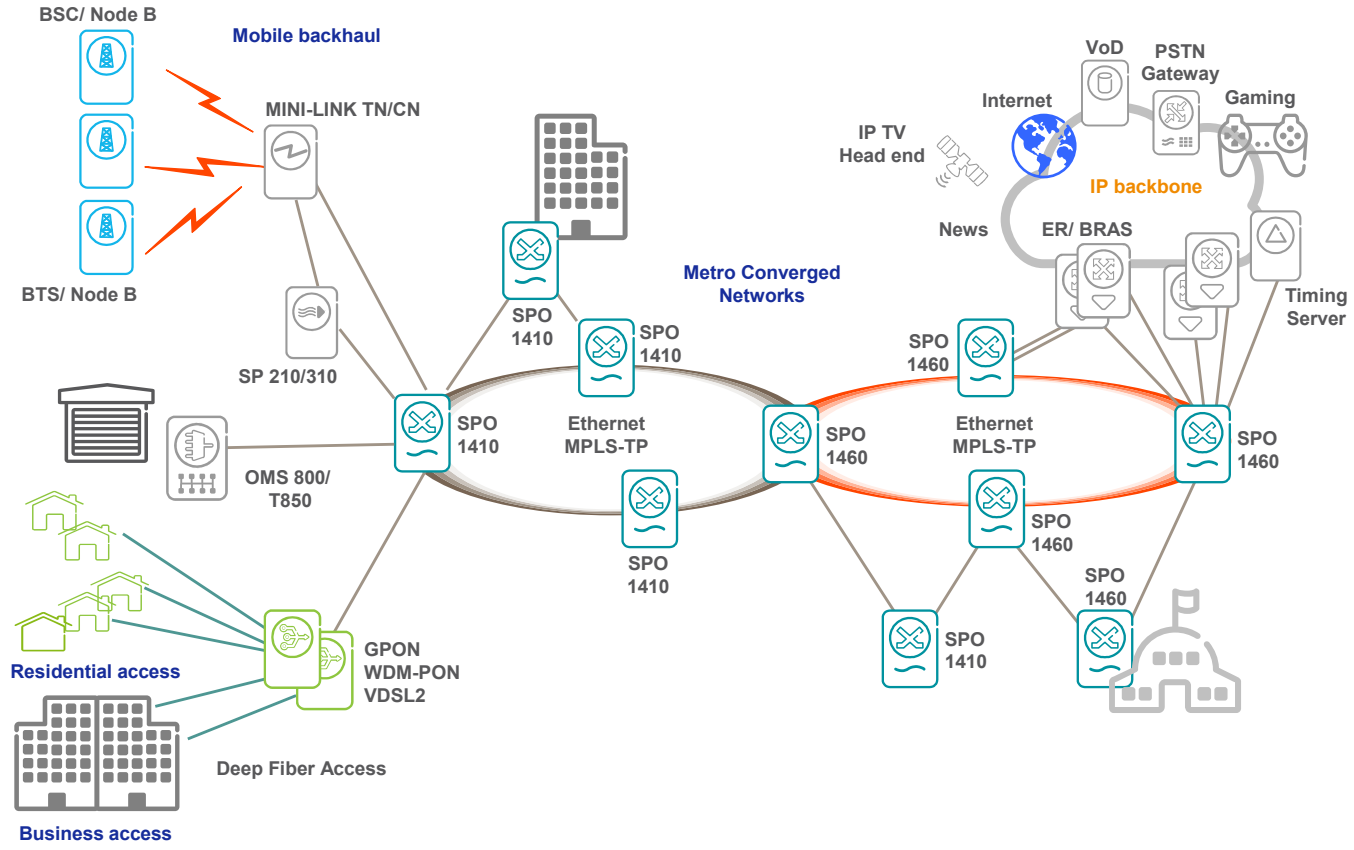


THE SPO 1400 FAMILY IS DESIGNED TO OFFER THE BEST COMBINATION OF SCALABILITY AND COST WITHOUT COMPROMISING ON QUALITY OF SERVICES.

Ethernet Services in focus
The Ethernet Layer 2 switch is based on the latest IEEE standards for Provider Bridging (PB) supporting E-Line, E-LAN and E-Tree services (MEF 9 and 14 certified). MPLS-TP functionality will enable support for VPWS and VPLS services. The SPO 1400 family supports any synchronisation: Synchronous Ethernet and IEEE 1588v2 packet synchronization, LTE proved.

Flexible deployment options
The SPO 1410 supports aggregate speeds ranging up to STM-16 and 10GE, while the larger SPO 1460 additionally supports STM-64 all with SFP/XFP based interfaces. Suitable for star, ring or point to point networks, the SPO 1400 family are ideal

SPO 1400 FAMILY APPLICATION DIAGRAM



for hubbing, core or high capacity customer premises applications.

Mobile backhauling

In fixed and mobile radio access networks, SPO 1400 family ensures economical backhaul solutions, using the ultra-compact (2U) shelf with options for 2Mbit/s TDM, Circuit Emulation Services (CES) (for 1.5 and 2Mbit/s traffic) and Ethernet interfaces MEF 22 certified.

KEY ADVANTAGES

Efficient Resilience with ERP

Ethernet Ring Protection (G.8032v2) and MPLS-TP protection, with its associated OAM functionality, offers operators the traffic management and sub 50 ms network protection features necessary to guarantee any SLAs.

SPO 1460 provides enhanced support for 10GE client traffic with the 2x10GE traffic module. All of FE/ GE Ethernet ports are wireline capable, while Circuit Emulation (CES) enables transport of E1 and T1, channelized STM-1 and channelized OC-3 traffic. The Layer 2 switch supports all features needed providing network scalability, resilience and customer service transparency.

MPLS-Transport Profile

First to market with MPLS-TP for Ethernet aggregation, it combines the realiability of SDH to guarantee QoS, the flexibility of a connection oriented protocol and the simplicity by removing the control plane, and complexity of MPLS protocol. The Traffic profile makes the protocol fully compatible with IP/MPLS. The MPLS-TP extends the MPLS with additional mechanisms to ensure scalability, reliability and quality of transport with optimal total cost of ownership (TCO).

Scalability and flexibility in design

The SPO 1400 family is designed to offer the best combination of scalability and flexibility without compromising on performances. The compact chassis houses a fully non-blocking VC-12 SDH cross-connect and a scalable full duplex high capacity Ethernet / MPLS packet switch, each of the module slots support a high density interface mix and aggregate rates of up to 10Gbit/s (STM-64) or 2x10GE.

Lowest power consumption

SPO 1400 family are designed for efficiency and with sustainability in mind: the compact SPO 1410 is highly energy efficient using 350W with 60xGE and 2x10GE ports providing 4 - 5W per delivered GigE services.

Carrier Grade reliability and availability

Customer traffic security is handled through strict control of incoming traffic, i.e. Customer VLAN (C-VLAN) is differentiated from Service VLAN (S-VLAN). SPO 1400 provide compact multiservices with high density of GigaEthernet interfaces.

Management

Ericsson's ServiceOn ETOS solution manages the full Ericsson Broadband Network (Optical, Wireless and Access) product range, delivering end-to-end, best-in-class, service oriented management with seamless OSS integration.

TECHNICAL SPECIFICATIONS SPO 1400 FAMILY

GENERAL

The SPO 1400 family is designed to meet the appropriate sections of recommendations ITU-T G.703, G.704, G.707, G.783, G.957, G.7041, G.7042, G.841, G.842, G.694.2, G.813, G.8261, Y.1731, G8032, ISDN PRA, IEEE 802.1D, 802.1Q (ad, ag, ah, Qay), 802.3, 802.3 ah, MEF 3, 8, 10.1, 11 and 22, RFC 2328, 2474, 3147, 3916, 4553, 4664, 4665. The SPO 1400 family is certified to MEF 9 and 14.

ETHERNET SERVICE FEATURES

- E-Line (EPL, EVPL) E-LAN (EP-LAN, EVP-LAN) and E-Tree support
- Service classification per port, VLAN, PRI or VLAN+PRI
- Bundling and multiplexing: all to one, one to one
- Rate limiting per service(MEF 10.1)
- QOS remapping from C-VLAN, DSCP, EXP/TC to S-VLAN for Ethernet or from C-VLAN, S-VLAN or DSCP to EXP/TC for MPLS-TP
- Tunneling Q in Q with L2CPT, PB, MPLS-TP
- 802.1p priority
- Broadcast, Multicast and unknown Unicast storm protection per service
- Support for 4K services, 4K VLANs, 9K MTU
- E,FE,GE interfaces (with Auto negotiation / Auto crossover) and 10GE
- Flow control / Backpressure
- Automatic learning and ageing
- 256K MAC address table with up to 8K static MAC entries
- MAC Multicast / IGMP snooping
- DoS, ACL and Port mirroring
- MPLS-TP
- Synchronous Ethernet (ITU-T 826.x)
- IEEE 1588v2
- Full duplex packet switch size
  - SPO 1410 : 80G
  - SPO 1460 : 320G
- Non blocking TDM switch size (VC-12/3/4)
  - SPO 1410 : 15G
  - SPO 1460 : 60G

ETHERNET PERFORMANCE FEATURES

- PM per service with red, yellow and green bytes/frame counters
- Y.1731 FD, FDV, FLR, RDI, AIS Loopback and link trace functions
- RMON, Ethernet Link OAM and End to end Ethernet OAM based on 802.1ag

ELECTRICAL INTERFACES

Ethernet 10/100 Base-TX and 1000 Base-T

- Connector: RJ45

T1 (1.5Mbit/s)

- Connector: LFH for 32xT1 Impedance: 100 ohm balanced external patch panel

E1 (2Mbit/s)

- Connector: RJ45 or LFH for 63xE1 Impedance: 120 ohm balanced, 75 ohm by external patch panel

E3/T3 (34/45 Mbit/s)

- Connector: 1.0/2.3 Impedance: 75 ohm

STM-1e (155Mbit/s)

- Connector: 1.0/2.3 Impedance: 75 ohm

OPTICAL INTERFACES

Ethernet/LAN

- 100 Base-FX/X10/BX
- 1000 Base-SX/LX/ZX/BX
- 10GE Base-SR/ER/LR

STM-1

- 1310 nm and 1550 nm options to S-1.1, L-1.1, L-1.2

STM-4

- 1310 nm and 1550 nm options to S-4.1, L-4.1, L-4.2

STM-16

- 1310 nm and 1550 nm options to S-16.1, L-16.1, L-16.2

STM-64

- 1310 nm and 1550 nm options to I-64.1, S-64.2B, L-64.2

CWDM

- 8 wavelengths, multirate
- Connector for all – SFP with LC

DWDM

- 40 wavelengths, multirate
- SFP and XFP versions with LC connector

ROADM

- 2 direction ROADM

SYNCHRONIZATION

Sources

- STM-N (T1), E1 (T2) and 2Mbit/s or 2MHz (T3)

Output

- 2Mbit/s or 2MHz (T4)

Feature

- SSM support

MANAGEMENT

- XML/HTTP
- SDH DCC

POWER

DC

- -48VDC (±15%) or -60VDC (±15%)

Dissipation

SPO 1410

- 430 W (Max)
- 150-350 W (Typical)

SPO 1460

- 1500 W (Max)
- 400-800 W (Typical)

EMC/SAFETY/TEMPERATURE

EMC

- EN 300 386

Safety

- EN 60950 and EN 60825

Operating temp

- -5°C to + 45°C according to ETS 300 019-2-3, class 3.2

MECHANICS

Dimensions (HxWxD)

- SPO 1410 - 88 x 445 x 240 mm
- SPO 1460 - 355 x 449 x 300mm
- NEBS Compliant Chassis option

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