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.
The SPO 1400 family is designed to offer the best combination of scalability and cost without compromising on Quality of Services.

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, reliable 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.

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
ports 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 reliability 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.
GENERAL
The SPO 1400 family is designed to meet the appropriate sections of recommendations ITU-T G.703, G.704, 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 (E-PLAN, 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/2X/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
DWDMDWM
• 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