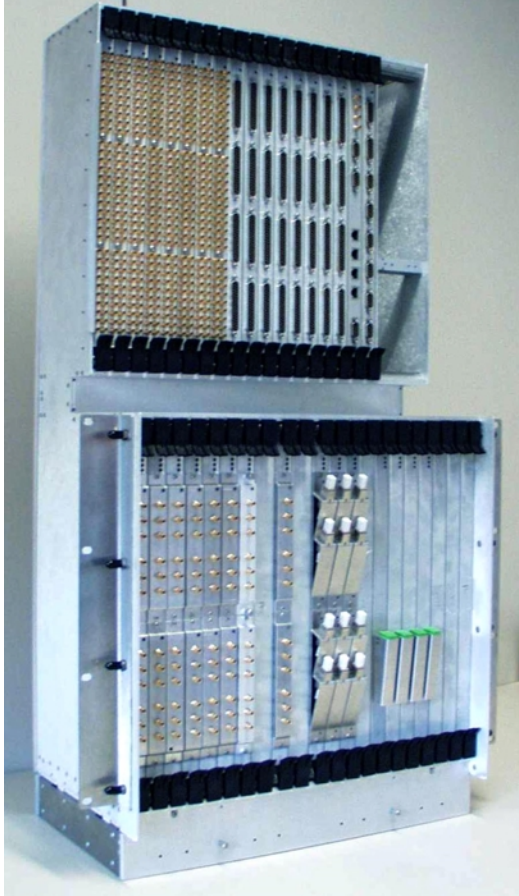


SMA16-64

Synchronous Add-Drop Multiplexer and Cross-Connect



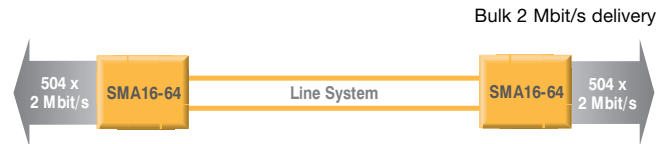
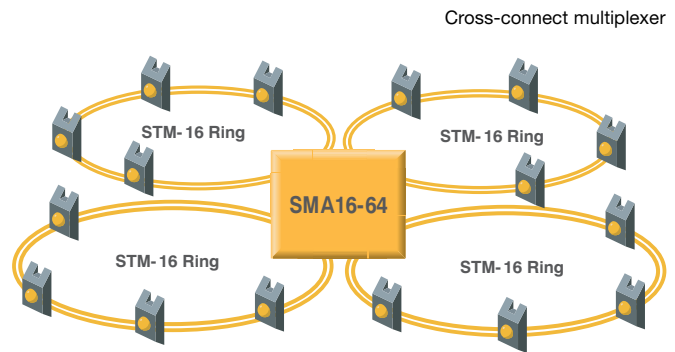
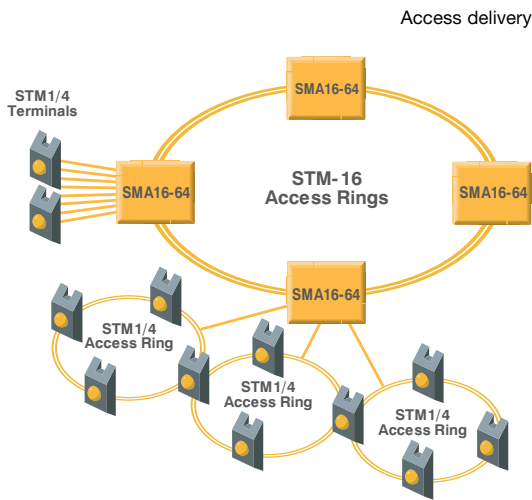
The SMA16-64 is the family of new-generation, full-feature, compact Add-Drop Multiplexer (ADM) and Digital Cross-Connect (DXC) with full, non-blocking, VC-12 cross-connection capability.

The SMA16-64 family provides an extremely flexible STM-16 and STM-64 transport solution in high-growth access, metropolitan, regional and national backbone networks. It supports the provision of data services through Gigabit Ethernet (GigE) and Fast Ethernet (FastE) cards.

Thanks to its in-service upgrade, from STM-16 to STM-64, the SMA16-64 family offers a low-cost entry solution which can be enhanced to meet future demand.

Key benefits

- Highly compact platform enables optimized solution within metro, core and access networks
- Space and power savings due to high-density traffic cards
- Flexible application due to different shelf sizes
- Minimized spares cost due to card commonality
- High-capacity, non-blocking switch with switching granularity down to VC-12
- Simplified network planning and rapid service provisioning from fully non-blocking, 20 Gbit/s and 60 Gbit/s cross-connectivity
- Investment protected with non-traffic-affecting, in-service upgrade of line rate from STM-16 to STM-64
- FastE and GigE data capability, enabling emerging procedures such as LCAS and GFP



Value-added features

- Space savings with high-density compact designs
- Increased-density tributary units
- Protection options to meet customer availability demands
- Carrier-class availability and reliability

Flexibility

- Universal traffic slots
- Commonality of all tributaries and LTUs
- Increased capacity, full tributary access (e.g. up to 504 x 2 Mbit/s, and 128 x STM-1)
- STM-1 interfaces (8 ports per card)
 - Dual STM-1 modules S1.1, L1.1, L1.2 and STM-1e
 - Any four modules per card
 - Hot-pluggable interface modules
 - Maximum flexibility
 - Phased expenditure: pay-as-you-populate
- High-density tributaries reduce cost-per-port
- Extensive range of interfaces and services
- Choice of subracks for maximum cost-effectiveness
- Fully non-blocking VC-12 switch with 20 Gbit/s and 60 Gbit/s capacity
- Terminal, add-drop, hubbing and cross-connect configurations

SMA16-64 family

The SMA16-64 family is based around a series of three variants to achieve the optimum cost,

size and tributary combinations for different applications.

The SMA16-64 is a standard-size unit with extremely high hubbing capacity. The SMA16-64c is a very compact unit that uses the same cards and offers the same functionality. For smaller networks, a reduced version of SMA16-64c is available, the SMA16-64ec.

Applications

The SMA16-64 enables you to transmit at STM-1, STM-4, STM-16 or STM-64 from a single sub-rack. With its flexible VC-12, -3 and -4 switching granularity and comprehensive tributaries, the SMA16-64 reduces network complexity, costs and space.

Access delivery

The SMA16-64 can be used as an add-drop multiplexer at STM-64, STM-16, STM-4 or STM-1, with a switching granularity of VC-12. High-density tributaries increase traffic capacity and, with the non-blocking VC-12 switch, provide valuable network hubbing.

Cross-connect multiplexer

The SMA16-64 can be used as a cross-connect multiplexer at STM-64, STM-16, STM-4 or STM-1 with a switching granularity of VC-12. The SMA16-64 can interconnect up to 8 STM-16 rings.

Bulk 2 Mbit/s delivery

The SMA16-64 can be used in line systems to deliver up to 504 x 2 Mbit/s.

Features

High-capacity flexible VC-12 switch

The full-connectivity, non-blocking 128 x VC-12 switch (or 384 x VC-12) allows grooming, consolidation and tributary-to-tributary switching to reduce the need for bandwidth-hungry backhaul.

In-service upgrade

The SMA16-64 can be configured initially with STM-16 aggregates and, later, upgraded in service to STM-64 operation. This unique STM-64 upgrade can be carried out in traffic and provides full non-blocking connectivity and VC-12 granularity. This allows single-layer access for metro networks, eliminating the need for a separate VC-4 layer, giving savings in planning and hardware. This flexible, low-first-in-cost approach provides you with a solution for today's need and flexibility for tomorrow.

Data support

Point-to-point transport of data traffic over SDH, managed under a converged management platform, is realized by FastE card and GigE card, enabling emerging procedures - LCAS and GFP.

A 16-port, 10/100Base-T Ethernet tributary card guarantees efficient throughput by means of flexible mapping into $n \times \text{VC-12/3/4}$, according to the ITU-T standards.

A two-port, GigE card supports standard optical modules as SX, LH and ZX. Gigabit Ethernet frames can be mapped (using LCAS) into a VC-4-nv (where n is 2 to 8) concatenated payload, giving efficient transparent transport of IP services over SDH.

Flexible service delivery

The SMA16-64 offer flexible service delivery through an extensive interface capability and cost-effective transport of mixed traffic types over the SDH infrastructure.

High-density tributaries

High-density tributaries deliver maximum revenue generation from minimum space occupancy.

I.421

2 Mbit/s interfaces are available with I.421 to support Primary Rate ISDN.

Protection

The SMA16-64 provides both equipment and network protection options, including MSP (1+1 and 1:N), SNCP, dual-ring interconnection and multiple 2-fibre and 4-fibre MS-SPRING at STM-16 and STM-64.

Additional duplication of the switch and power supply feeds assures the highest availability.

Tandem Connection Monitoring

TCM provides valuable performance visibility for the monitoring of connections between operator boundaries. This also offers faster location of faults through isolation of problems to particular network segments.

Management

The SMA16-64 is managed by the NEM solution (empowered by ServiceOn) that provides end-to-end integrated network management, offering network-wide performance monitoring and rapid fault identification.

System architecture

SMA16-64 universal traffic slots, in conjunction with two, fully non-blocking, VC-12 switch options, enable maximum flexibility and modularity in terms of product and network applications.

Configuration for routing and protection of the traffic paths, together with all performance, error and alarm monitoring for the SMA16-64, is available centrally via the network management system, or locally via the craft terminal.

Access and security management can be programmed to provide various levels of operator access, to prevent unauthorized use.

Embedded software can be downloaded for feature enhancement in service. In addition, the SMA16-64 can report details of their inventory status from non-volatile memory, either locally or remotely.

Technical Data

General	The equipment is designed to meet the appropriate sections of ITU-T Recommendations: G.703, G.704, G.707, G.783, G.957, G.7041 (GFP), G.7042 (LCAS), G.841 and G.842 Switches with 20 Gbit/s, 128 x STM-1 equivalent ports and 60 Gbits/s, 384 x STM-1 equivalent ports Full non-blocking VC-12 cross-connections
Interfaces	
1.5/2, 34/45, 140 Mbit/s STM-1	Electrical 8-port with hot plug-in units, providing 2 ports each - STM-1 electrical 2 port module - STM-1 optical 2 port module, S1.1, L1.1, L1.2/L1.3
STM-4	Optical 2 with single port hot plug-in units, S4.1, L4.1, L4.2/L4.3
STM-16	Optical 1 port, S16.1, L16.1, L16.2/L16.3
STM-64	Optical I64.1r, I64.2r, S64.2, L64.2b, L64.2c
Ethernet	16-port 10/100Base-T (802.3)
Gigabit Ethernet	2-port, 1000Base-SX, 1000Base-LH or 1000Base-ZX (IEEE 802.3)
Optical connectors	LC
Element manager interface	Proprietary Q interface between a gateway network element and the element manager, improving bandwidth utilization Qecc Protocol: To ITU-T Recommendation G.784 for use of DCCs.
Local terminal interface	ITU-F interface V24 to IBM-compatible PC
Synchronization	Inputs: 2048 kHz timing signal to G.703 Section 13, 2 Mbit/s HDB3 to G.703/G.704 Outputs: 2048 kHz to G.703 Section 13, 2 Mbit/s to G.703/G.704
Supply voltage	-48 V to -60 V DC nominal
Mechanical arrangement	Subrack housed in ETSI 300 119 rack
Dimensions	Full subrack - 280 mm (deep), 450 mm (wide) and 966 mm (high), (optional separate upper cable management unit 100 mm high) Compact subrack - 280 mm (deep), 450 mm (wide) and 473 mm (high)
Environment	The equipment will operate to ETS 300 019 Class 3.2 Radiated susceptibility to EN 50082-2 (10 V/m) Conducted, radiated and electrostatic discharge, susceptibility and conducted and radiated emissions to the worst-case limits of EN 300 386-2 for high-priority traffic Optical safety to EN 60825- 1& 2, ITU-T G.664/G.958 Safety to EN 60950

About Ericsson, Marconi and SMA16-64

Ericsson and Marconi have had a close relationship since 1995. As well as incorporating Marconi network elements into Ericsson's end-to-end optical networking portfolio, the two companies are co-operating in the development of high-quality, cost-effective, standardized solutions flexible enough to handle any specific customer requirements.

Ericsson AB

Transmission & Transport Networks
SE-126 25 Stockholm
Sweden
www.ericsson.com

EN/LZT 1105 144 R2

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