

# Tellabs® 8600 Managed Edge System 1-Port STM-16/OC-48 POS Interface Module

## Overview

The Tellabs 8600® Managed Edge System consists of a range of modular IP/MPLS-based network elements and an integrated network and service management system.

The 1-port STM-16/OC-48 Packet over SDH/SONET Interface Module (IFM) is used with Tellabs 8600 system elements, including the Tellabs® 8660 Edge Switch and Tellabs® 8630 Access Switch. The module is mounted on the Interface Module Concentrator (IFC) of the Tellabs 8660/8630 switches [units].

The IFM enables the transport of IP/MPLS traffic over SDH and SONET infrastructures through a standard interface.



## Applications

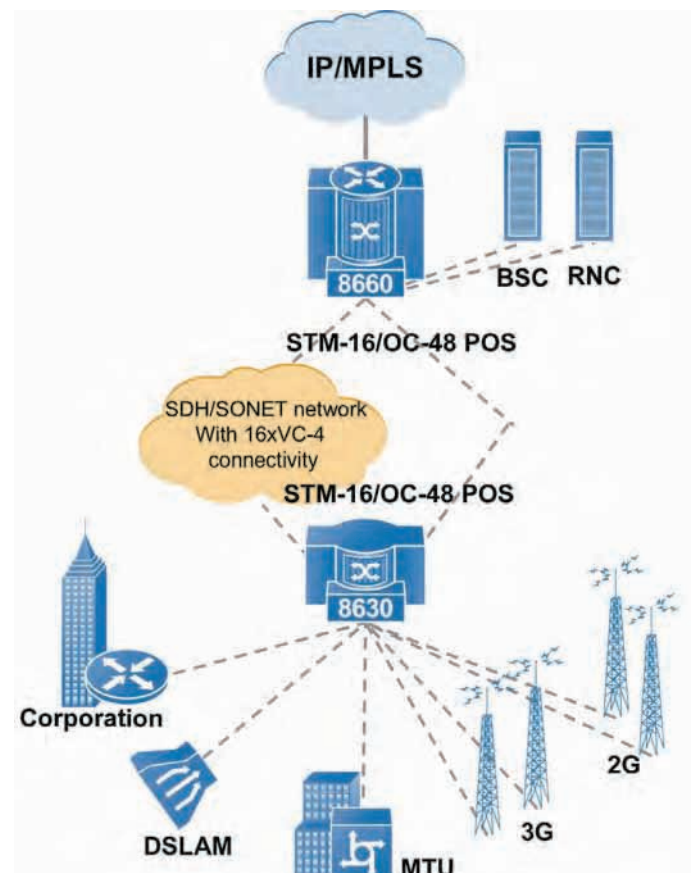
SDH and SONET transport networks were deployed widely for cost-efficient transmission of circuit-switched data and for WDM networks. Several E1 and T1 capacities, carrying payload data for various services (e.g., GSM, leased lines, Frame Relay, POTS), are multiplexed into SDH frames to form aggregate capacities of STM-1/OC-3, STM-4/OC-12, STM-16/OC-48 and STM-64/OC-192. These SDH/SONET capacities, in turn, can be multiplexed to even higher aggregates over a single fiber pair with WDM systems. The existing large-scale investment in these SDH, SONET and WDM-based transport networks needs to be utilized fully.

Because more and more services are packet- and IP-based, the operators need to find a more efficient way to transport the packet data. Cost-efficiency in packet transport is achieved by implementing IP- and MPLS-capable routing devices in the network, such as the Tellabs 8600 system. These devices statistically multiplex different packet streams, utilizing their bursty nature but at the same time providing service quality and availability.

As traditional and new services are migrated to packet networks, the initial capacities do not immediately justify new deployments of dedicated IP/MPLS capacity transport links (e.g., Gigabit Ethernet). Instead, the existing transport infrastructure can be used for interconnecting the cell/packet/IP routing devices. The STM-16/OC-48 POS IFM enables connectivity between two Tellabs 8600 system network elements through an existing SDH/SONET or WDM infrastructure. This ensures flexible and cost-efficient migration of both traditional and new wireline and wireless services to a packet network and optimized use of the existing transport bandwidth. The STM-16/OC-48 interface also provides a cost-efficient alternative to  $n \times$  GE links or 10 G links. This means having a point-to-point STM-16 link between two Tellabs 8600 system elements over dark fiber.

As shown in the figure that follows, these new wireless applications can be 2G and 3G transport using MPLS tunneling for TDM and ATM. Also, wireline business services such as Ethernet connectivity or IP VPNs, and residential best-effort-type Internet access services using various last mile technologies, can be provided. The MPLS transport enables the use of one common network for different types of services with different quality requirements.

MPLS also offers an alternative to SDH-based protection mechanisms. Protecting traffic through, for example, SDH SNC protection provides fast protection but due to the VC-4 granularity it is not efficient, since all of the traffic is protected. An MPLS-based protection mechanism can be applied for only those streams that have high resiliency requirements, with weaker resiliency for other traffic types. In this way, the bandwidth use of the network can be optimized.



## Product description

The STM-16/OC-48 POS Interface Module contains one STM-16/OC-48 interface for a connection to standard SDH equipment.

The STM-16/OC-48 POS interface supports all SDH/SONET layers, from the optical section layer up to the higher-order path layer (VC-4-16c/STS-48c). The Tellabs 8600 system implements a wide set of standard functions for fault management, signal maintenance and performance management. Among these functions are Trail Trace Identifiers, path signal labels, bit error monitoring and loopback capabilities.

The PPP-encapsulated IP/MPLS data is directly mapped into the VC-4-16c/STS-48c of the STM-16/OC-48 frame payload. Optionally, the payload may be scrambled.

STM-16/OC-48 POS interface modules are equipped with Small Form-Factor Pluggable (SFP) transceiver modules. The SFP modules are hot-swappable devices that can be replaced without switching the power off or disabling the interface in any other way. The system monitors the existence, type and availability of the installed SFP modules.

The STM-16/OC-48 POS interfaces can be protected using unidirectional and bidirectional Multiplex Section Protection 1+1 (MSP 1+1). The working and protecting links are located in different IFCs, providing protection also against line card failures.

## Network management

As part of the Tellabs 8600 system, the 1-port STM-16/OC-48 POS IFM is fully managed with the Tellabs® 8000 Network Manager. All interface and service/connection-level configuration can be done remotely through the Tellabs 8000 manager's GUI-based tools. This is the primary and easiest way to configure the unit and the network.

The Tellabs 8000 manager also provides centralized fault and performance monitoring, as well as in-built testing capabilities.

Alternatively, CLI can be used for setting up the parameters for the module. SNMP is supported for monitoring purposes (e.g., for fault and performance management for other systems).

The Tellabs 8000 manager takes care of maintaining full consistency between the network elements and the database.

## Physical Interface

### ETSI

- One STM-16 G.957 physical interface
- Replaceable SFP modules with multiple reaches and types
- Unidirectional and bidirectional MSP 1+1 protection

### ANSI \*

- One OC-48 T1.105 physical interfaces
- Replaceable SFP modules with multiple reaches and types
- Unidirectional and bidirectional APS 1+1 protection

## Encapsulations

- [RFC 1662] PPP in HDLC-like framing
- [RFC 2615] PPP over SONET/SDH
- MPLS/PPP
- IP/PPP

## Functionality

- IP VPN (RFC 2547bis)
- IP routing (IP/MPLS over PPP)

## QoS

- Strict priority and weighted fair queuing (WFQ) scheduling
- DiffServ traffic policing with two-rate three-color marker (RFC 2698)
- RED and WRED queue management
- Traffic shaping per VLAN
- DiffServ Aware MPLS Traffic Engineering (E-LSP and L-LSP)
- Traffic classification based on ingress port, 802.1Q (VLAN), 802.1P (PRI) MPLS EXP, L-LSP, DSCP or L3/L4 header fields
- RSVP-TE CAC with overbooking option

## Power Consumption

- Typical 4.8 W
- Maximum 6.8 W

## Environment

- Storage: ETS 300 019-1-1:2003-04 Class 1.1, Temperature: -5°C to + 45°C
- Transportation: ETS 300 019-1-2:2003-04 Class 2.3, Temperature: -40°C to 70°C
- Normal Operating Conditions: ETS 300 019-1-3:2003-04 Class 3.2 (non-condensing), temperature: -5° C to 45° C, relative humidity: 5% to 95%

## Regulatory

- Safety: EN 60950-1:2001
- EMC: EN 300 386:2000 and EN 300 386:2001
- Telecoms: RTTE Directive 1999/5/EC
- NEBS Level 3

## Availability

This is a general-availability product.

For more information, please contact your local Tellabs sales representative or local Tellabs sales office, or see [www.tellabs.com/](http://www.tellabs.com/).

\*) For future release

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