

Optical Connectivity for Every Application

Tellabs Broadband products provide multiple optical transport options for every application. Whether the application carries voice and data from business parks or residential areas, traffic for switch collapse programs or mobile backhaul from mobile base stations, Tellabs has the right transport interface, including ATM/SONET OC-3, OC-3c and OC-12c optical interfaces, plus 1 and 10 Gigabit Ethernet optical interfaces.

The Tellabs 1000 Multiservice Access Platform (MSAP) maximizes broadband capabilities in access networks with Ethernet uplinks, Ethernet interterminal transport and Ethernet service delivery while continuing to support revenue-generating Time-Division Multiplexing (TDM) and Asynchronous Transfer Mode (ATM) services and transport. This rare combination makes the Tellabs 1000 MSAP the best low-cost choice for the migration of ATM and TDM to IP/Ethernet. With simple in-service upgrades, service providers get the technology, capacity and Quality of Service (QoS) required to support all of their service offerings and broadband initiatives.

Support for Backhaul, Interoffice and Interterminal Transport

Tellabs Broadband products provide a variety of optical products to support mobile backhaul, interoffice and inter-terminal transport. This includes ATM over SONET interfaces at OC-3 and OC-12 rates, and provides higher bit rates with 1G and 10G Gigabit Ethernet and aggregated LAG Gigabit Ethernet ports.

The Tellabs 1000 MSAP provides optical transport as an uplink toward the core network (Figure. 1). It has optional transport in the interterminal connections within a system between the LET and RSTs, and between an RST and other RSTs in chain and tree/branch topologies. The Tellabs 1000 MSAP also supports subscriber services carried over optical transport

Tellabs 1000 MSAP Products

The Tellabs 1000 MSAP product line offers a variety of optical transceivers, all of which can be used on the same system at the same time. Capacities and technologies can be applied to fit the network operators' applications.

OC-3c

The Optical Carrier Level 3 concatenated Transceiver (OC-3c-XCVR) plug-in card supports multiple user-provisionable functions. It serves as a 155 Mbps ATM uplink to an ATM network, a point-to-point transport between Tellabs 1000 MSAP terminals and an ATM service drop or a termination and conversion device for TDM-over-ATM (ToA) traffic.

Uplink: As an uplink to an ATM data network, the OC-3c-XCVR plug-in card interfaces to any UNI 3.1- and UNI 4.0-compliant ATM switch or router. When provisioned as an uplink, the system supports up to seven OC-3c-XCVR cards per terminal.

Transport: As an interterminal transport, the OC-3c-XCVR plug-in card provides termination for fiber optic transport spans between Tellabs 1000 MSAP terminals. The card carries all traffic (ATM, TDM and Ethernet) between the terminals. There is no need for multiple spans to support different technologies.

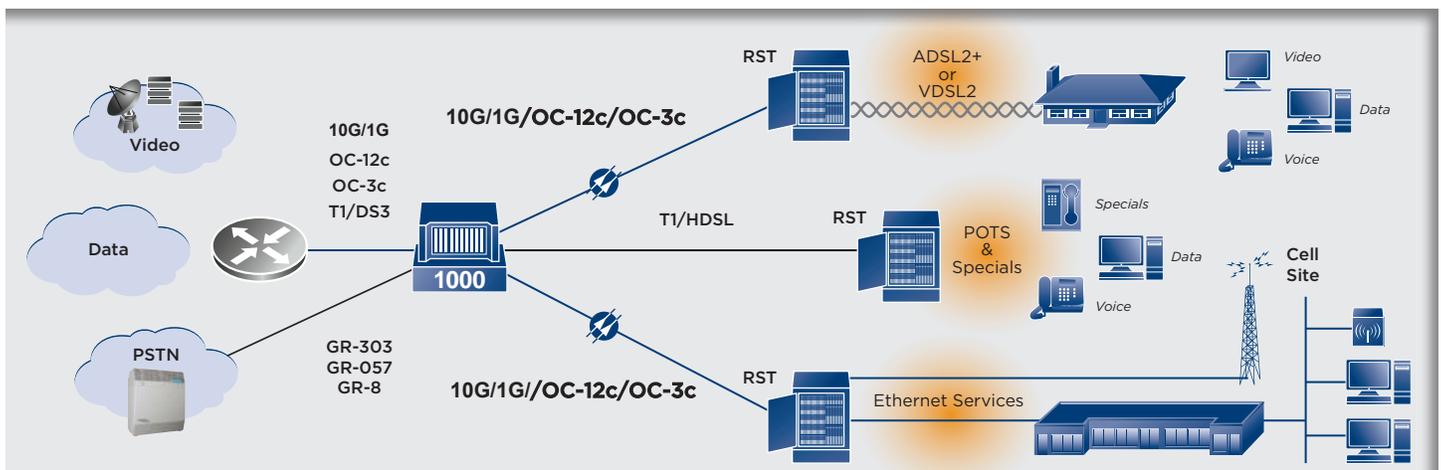


Figure 1. An optical transport uplink from the Tellabs 1000 MSAP leads to the core network to support multiple types of services.

Service: As an ATM service drop, the OC-3c-XCVR plug-in card enables aggregation of individual Tellabs 1000 MSAP LET systems. A “Master” LET can aggregate multiple OC-3c-XCVR links (from subtended LETs), allowing a single uplink to an ATM switch.

OC-3

The Optical Carrier Level 3 Transceiver (OC-3-XCVR) plug-in card optimizes bandwidth efficiency for interterminal transport of Tellabs 1000 MSAP traffic carried over a SONET ring. The OC-3-XCVR supports STS-1 channelized OC-3 traffic or STS-3c concatenated OC-3 traffic, between Tellabs 1000 MSAP terminals over a SONET ring.

The OC-3-XCVR card minimizes excess bandwidth usage on SONET rings while providing GR-253-CORE-compliant SONET 1+1 APS functionality and interoperability with SONET ADMs. The Tellabs 1000 supports point-to-point, 5-wide star, and drop-and-insert topologies over a SONET ring using the OC-3-XCVR card to provide interterminal transport.

OC-12c

The Optical Carrier Level 12 (concatenated) Transceiver (OC-12c-XCVR) plug-in card provides two functions for the Tellabs 1000 MSAP. It serves as a 622.08 Mbps uplink to an ATM network, and provides a point-to-point SONET optical transport between Tellabs 1000 MSAP terminals.

ATM Uplink: As an uplink to an ATM data network, the OC-12c-XCVR card interfaces to any UNI 3.0-, UNI 3.1-, or UNI 4.0- compliant ATM switch or router.

Transport: As an interterminal transport, the OC-12c-XCVR card provides termination for fiber-optic transport spans between the Tellabs 1000 MSAP terminals. The card carries all traffic (ATM, TDM and Ethernet) between the terminals. The OC-12c-XCVR plug-in card is equipped with SC/PC-type optical connectors for terminating fiber optic cables. The card uses a PIN receiver and a single-mode laser operating at 1310 nm, providing a 622.08 Mbps interface using intermediate range optics. The OC-12c-XCVR card installs into any general purpose slot in the CBA.

10/100 Ethernet

The ES10/100 plug-in card enables Ethernet service to be delivered directly to subscribers from any shelf. Each ES10/100 provides up to 100 Mbps of bidirectional traffic per port. Each card provides two independent ports. The GbE uplink is used to support cross-connects (Ethernet-to-Ethernet connections, or EECs) with this card. If the GbE uplink is in a different shelf from the ES10/100, subscriber traffic can be transported to the GbE uplink via OC-3c, OC-12c or GbE transport links.

The card can be placed in any general purpose slot of any broadband-capable Tellabs 1000 CBA. This card is compatible with CBAs provisioned for generic shelf mode and for enhanced BDLC shelf mode. The ES10/100 supports upstream per flow rate limiting based on the provisioned Upstream Packet Traffic Descriptor. Each port also supports receive flow control per 802.3x.

The ES10/100 supports both fiber-based and copper-based small form-factor pluggable (SFP) modules, which can be mixed or matched on the card. The card supports three SFP module types:

- Short Range Fiber: 100BASE-FX optics compliant with 802.3u
- Long Range Fiber: 100BASE-LX10 optics compliant with 802.3u
- Copper: 100BASE-T

Gigabit Ethernet

1G Ethernet

The GbE222 card enables the Tellabs 1000 MSAP system to evolve with networks moving from circuit switched/connection-based to packet/connectionless-based. The Gigabit Ethernet 222 (GbE222) transceiver supports packet-based Ethernet services in a Tellabs 1000 CBA in these modes:

- Ethernet uplink to the service provider’s network
- Interterminal transport

The GbE222 interfaces with Ethernet-based core networks. It carries video-on-demand (VOD) and high-speed Internet (HSI). It encapsulates the Tellabs 1000 MSAP upstream TDM and ATM traffic into Ethernet frames when functioning as a transport interface. The GbE222 card is equipped with SFP optics. The card supports the following SFP module types:

- 1000Base-SX, compliant with 802.3z
- 1000Base-LX, compliant with 802.3z
- 1000Base-ZX
- Bidirectional (BiDi), compliant with 802.3

The GbE222 card is a high-bandwidth, cost-effective uplink from the Tellabs 1000 MSAP toward the core network. The GbE222 uplink supports IGMP snooping in an IPTV application. The GbE uplink can interwork individual AECs from ATM to Ethernet to pass to an upstream Ethernet-based broadband remote access server (BRAS), enabling the service provider to migrate seamlessly to Ethernet-based protocols. In this capacity, the GigE uplink is a client to the BRAS. In a network where ATM-based ADSL modems are predominate, a service provider can migrate to Ethernet-based Internet services without replacing or reconfiguring the modem, using the GigE uplink to interwork the PPPoA from the modem to PPPoE to the router. This interworking function can be enabled on a per AEC basis.

The GbE222 provides high-bandwidth interterminal transport between LET and RST and between RSTs. All terminal traffic is encapsulated in Ethernet frames for transport between terminals. The GbE222 transport group supports Synchronous Ethernet timing (Sync-E) and can provide timing to remote terminals. The GbE222 supports a 64 kHz BITS output clock through the TDM backplane; therefore, the GbE222 can be placed in any shelf of the terminal (LET or RST), and its 64 kHz BITS clock can be cabled to the composite BITS input in the primary shelf.

Additional bandwidth and/or redundancy are supported by the link aggregation (LAG) capability. The Tellabs 1000 GbE222 supports LAG per 802.3-2005 making it possible to combine two Ethernet ports into a single Ethernet port. The Tellabs 1000 supports LAG between the two ports on a single GbE222 card and between two ports on two GbE222 cards in the same protection group (for uplink only).

New 10G Ethernet

Tellabs continues to invest R&D into the Tellabs 1000 MSAP (Figure 2). The Tellabs 10 Gigabit Ethernet 226 (GbE226) helps our long-standing customers maximize the Tellabs 1000 MSAP systems, and service capacity, while minimizing fiber uplink requirements. The 10G GbE226 marks yet another significant R&D deliverable from Tellabs that can eliminate the ever-growing bandwidth bottlenecks in today's access networks. It installs into new and existing systems with no cabinet augmentations required. You can continue to use any Tellabs 1000 MSAP transport interface and it can be managed using Tellabs Panorama Element Management Systems (EMS).

Summary

Whatever the application, Tellabs Broadband products provide multiple options for optical transport interface to enable every type of application, including system aggregation, mobile backhaul and central office consolidation.



Figure 2. The new Tellabs 10 Gigabit Ethernet 226 (GbE226)

Take the next step. Contact Tellabs today.



+1 972 588 7000
www.tellabs.com

18583 North Dallas Parkway, Suite 200
Dallas, Texas 75287 U.S.A.



1810vA