

Tellabs® Optical LAN — Optical Line Terminals

Overview

As a key component of the Tellabs® Optical LAN application, the Optical Line Terminal (OLT) operates as the Local Area Network (LAN) aggregation unit for integrating data, voice and video services into a single fiber infrastructure. Leveraging the power of fiber optics and an all IP/Ethernet architecture, Tellabs Optical LAN provides secure, scalable and high-bandwidth service delivery for military, business and campus applications.

The Tellabs Optical LAN OLT is offered in two available chassis sizes as shown in Figure 1. The Tellabs® 1150 Multiservice Access Platform (MSAP) high-density 9-rack unit chassis offers sixty-four (64) GPON interfaces and supports over 7,000 end-user Ethernet ports. The Tellabs® 1134 MSAP medium-density 4-rack unit chassis offers sixteen (16) GPON interfaces and supports over 1,800 end-user Ethernet ports. Each GPON fiber interface can reach end-users at a distance of 20km (12.4 miles) from the OLT chassis, providing centralized aggregation capability for large campus environments.

Leveraging the latest in standards-based technology, commercial carriers are successfully deploying GPON around the globe — delivering data, voice and video services to residential and business customers.

The Tellabs Optical LAN OLT operates as a Layer 2 enterprise Ethernet switch, but with the benefits of a passive optical fiber infrastructure. Providing a combination of multiple 1G Ethernet and 10G Ethernet network interfaces, a hardware-based forwarding architecture results in line-rate packet processing independent of datagram size. Strong security and authentication mechanisms offer advanced network protection at the end-user interface — before the threat enters the LAN. A full-featured quality of service mechanism offers Service Level Agreements (SLA) provisioned for multiple services on each end-user port.

A comprehensive line of GPON ONTs are available in indoor, outdoor and desktop installations. As a passive interface, GPON enables the cost-effective delivery of high-speed data, voice and video services over a converged, single-fiber infrastructure.



Figure 1. Tellabs Optical LAN chassis

Applications

The Tellabs Optical LAN OLT serves as the aggregation network element for the passive optical LAN network. In a typical deployment, the Tellabs 1150 MSAP OLT can serve over 7,000 end-user Ethernet ports using one of two deployment applications: Fiber-to-the-Desktop (FTTD) and Fiber-to-the-Communication Closet. The Tellabs 1134 MSAP OLT can serve over 1,800 end-user Ethernet ports in the same application. Figures 2 and 3 show the Tellabs Optical LAN OLT deployed in a typical campus environment.

- **Fiber-to-the-Desktop** — The OLT chassis is located in the data center or central aggregation point. It can provide service to one or multiple buildings with a GPON interface. Small form-factor desktop ONTs terminate the fiber within the end-user environment. In this deployment scenario, CommunicationClosets benefit from the elimination of active electronics, thereby recovering floor space and eliminating power dissipation.
- **Fiber-to-the-CommunicationCloset** — The OLT chassis aggregates small GPON-fed workgroup switches (ONT) back to a central location, typically located within a large building or at a central location in a large campus environment. In this deployment scenario, a multidesk ONT terminates the fiber directly in the CommunicationCloset and re-uses the existing copper infrastructure to the end-user environment.

A combination of both FTTD and Fiber-to-the-CommunicationCloset can be deployed simultaneously from a common OLT. With this flexibility, network optimization can occur based on existing and future fiber/copper infrastructure needs.

Benefits

Tellabs Optical LAN offers cost space, and power benefits when compared to currently deployed Ethernet switch solutions.

The high level of integration in the optical distribution network significantly reduces the number of network elements. This creates a much smaller footprint and saves on capital investment. The network’s passive nature uses less power and saves ongoing operation costs — while requiring a much smaller footprint. A communication room can now be completely passive with 100 percent recovery of floor space.

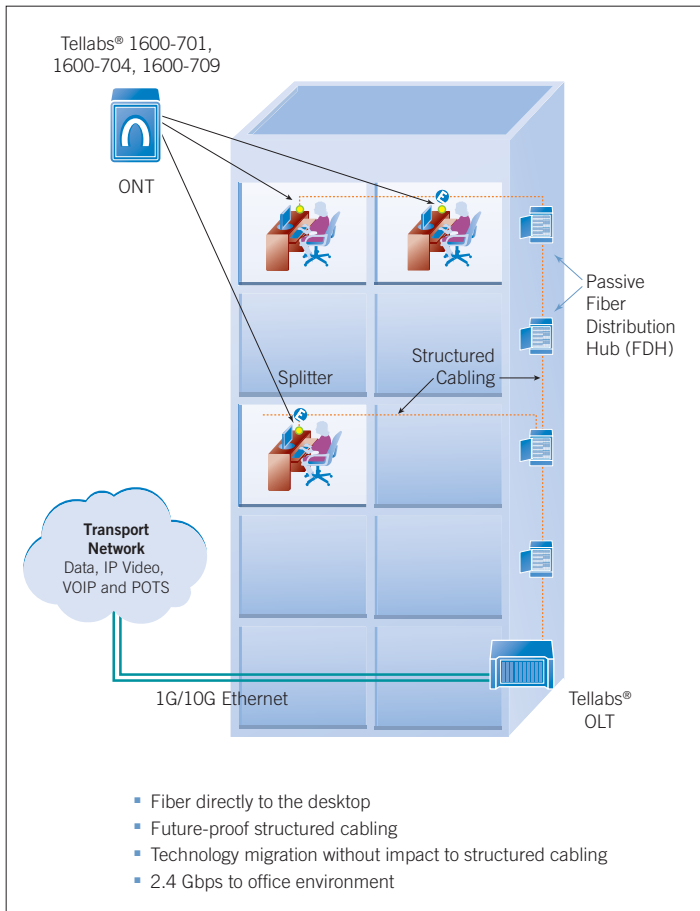


Figure 2. FTTD Application

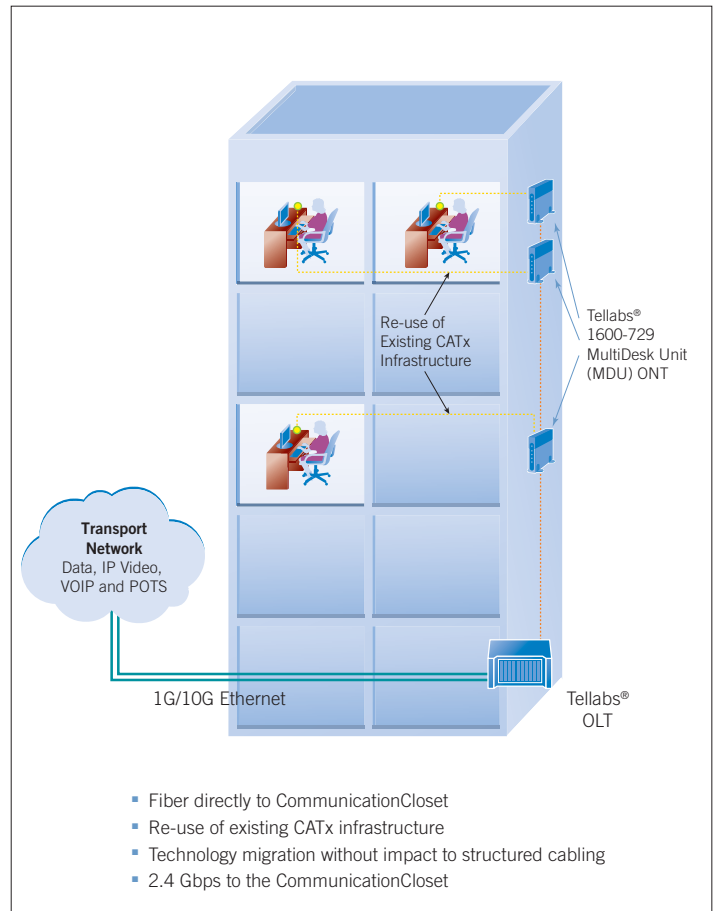


Figure 3. FTT-CommunicationCloset Application

A few functional benefits of the Tellabs Optical LAN OLT are:

- Extremely high density
- High bandwidth
- Wire-speed processing
- Advanced security
- Granular quality of service
- Integrated voice and video capabilities

As communication networks carry more sensitive information, the need for advances in security become paramount. Running fiber deep into the LAN network using GPON technology reduces or eliminates EMI emissions associated with copper cabling. Port Access Control (PAC) couples Tellabs' advanced security with industry-standard dynamic access mechanisms such as Network Access Control (NAC) and Unified Access Control (UAC).

The Tellabs Optical LAN OLT uniquely integrates the converged delivery of high-speed data, analog voice, Voice-over-IP (VoIP) and both RF and IP video services over a single fiber infrastructure — directly to the desktop or CommunicationCloset. Proper processing and delivery of these converged services are ensured by an advanced Quality of Service (QoS) architecture. Integrated Ethernet bridging enables local switching without traversing the core/edge data network. Powerful VLAN methodologies enable provisioning of VLAN groups that support trunking, termination and translation capabilities. Service segregation and service-aware QoS enable granular SLAs with guaranteed delivery of multiple services on each end-user interface. With a robust redundancy and resiliency architecture including rapid spanning tree protocol, Tellabs Optical LAN offers a true carrier-class enterprise LAN solution.

The Tellabs Optical LAN OLT offers investment protection through service convergence and an all-fiber infrastructure that will not change as technology evolves. FTTD and Fiber-to-the-CommunicationCloset both benefit from 25THz usable capacity of a fiber optic medium.

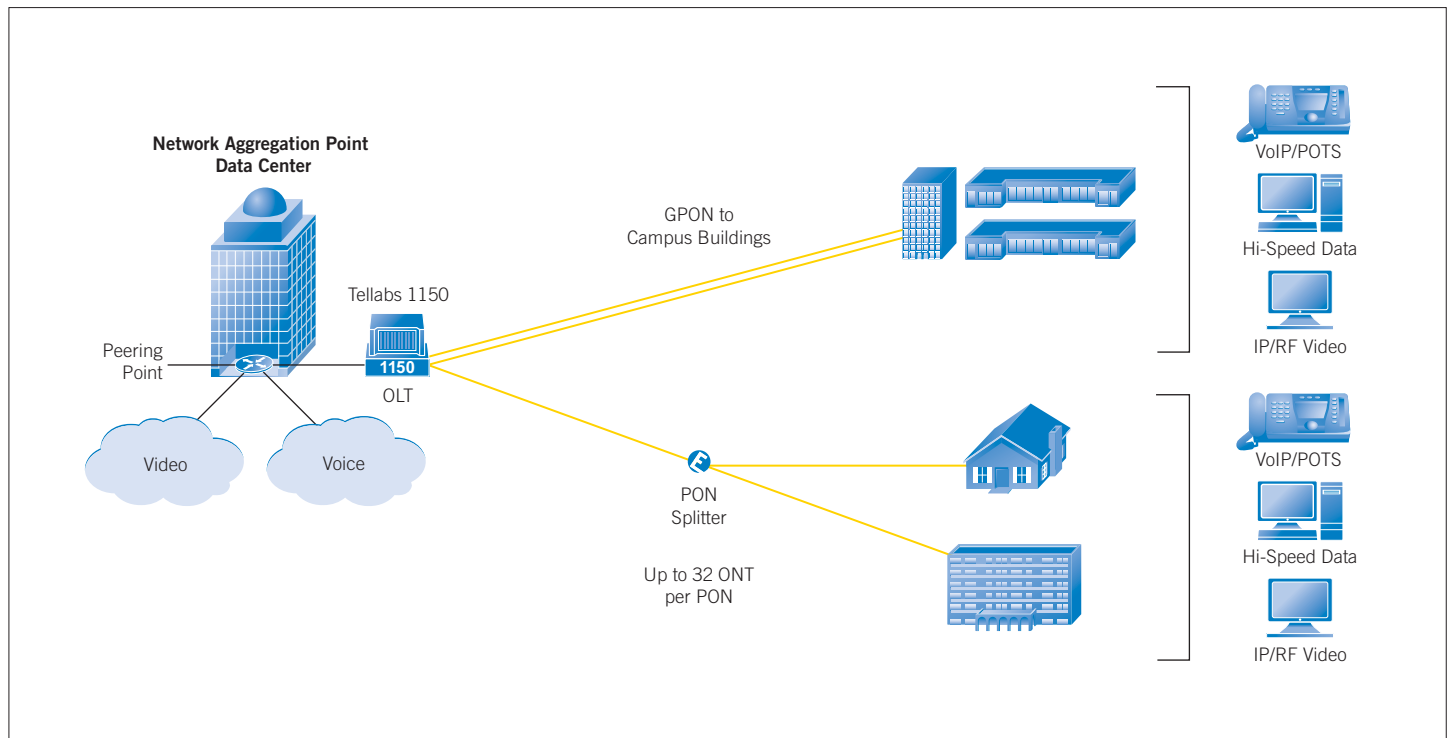


Figure 4. Enterprise/Campus Environment

Key Technical Features

Tellabs 1150 MSAP OLT Modules

- ESU11 — Ethernet Switching Unit, 24 Gbps full-duplex fabric, (4) 1 GE uplinks
- ESU2 — Ethernet Switching Unit, 224 Gbps full-duplex fabric, (2) 10 GE and (4) 1 GE uplinks
- QOIU7 — Quad GPON Interface Module
- TDU1 — Timing Distribution Unit
- AMU1 — Alarm Maintenance Unit

Tellabs 1134 MSAP OLT Modules

- ESU30 — Ethernet Switching Unit, 12 Gbps full-duplex fabric, (6) 1GE uplinks
- QOIU7 — Quad GPON Interface Module

Interfaces

Network Interfaces

- 1G and 10G Ethernet
- Standard SFP and XFP modules
- Singlemode, Multimode, Copper options

LAN Interfaces

- ITU-T G.984.x GPON interfaces
- Single mode fiber interface, multiple wavelengths
- 2.48 Gbps downstream at 1490 nm wavelength
- 1.24 Gbps upstream at 1310 nm wavelength
- Sixty-four (64) GPON interfaces (Tellabs 1150 MSAP)
- Sixteen (16) GPON interfaces (Tellabs 1134 MSAP)
- Class B+ optics (28dB)
- Forward Error Correction (downstream)
- Dynamic Bandwidth Allocation

Networking Functions

- Layer 2 and Layer 3 Ethernet Switching
- Ethernet Bridging (802.1D)
- Forced Forwarding (optional)
- VLAN Switching (802.1Q)
- Priority Queuing (802.1p)
- Ethernet Link Aggregation (802.3ad)

- Link Aggregation Control Protocol (LACP)
- Dynamic Host Control Protocol (DHCP)
- Port-Based Network Access Control (802.1x)
- DiffServ Code Point Queuing (DSCP)
- Internet Group Management Protocol (IGMPv2/v3)
- Access Control Lists (Ethernet, IP, TCP/UDP/Port)
- Port Access Control (PAC)*
- Rapid Spanning Tree Protocol (RSTP)
- Link-Level OAM (802.1ah)

Management

- Tellabs® Panorama™ Integrated Network Manager (INM)

Certifications

- UL60950
- NEC 2002
- FCC Part 15 Class A
- NEBS Level 3 certified

Physical

Tellabs 1150 MSAP OLT

- Height: 15.75"
- Depth: 12"
- Length: 23"
- Weight: 70 lbs (fully laden)

Tellabs 1134 MSAP OLT

- Height: 5.75"
- Depth: 12"
- Length: 19"
- Weight: 31 lbs (fully laden)

Environmental

- Operating Temperature: -40°F to 158°F (-40°C to 70°C)
- Relative Humidity: 5% - 95%, non-condensing

*Future availability

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