

Tellabs® Fiber Optic-based LAN Solution for the Enterprise Market

A better way to deliver converged voice, video and data services to employees.

Overview

The Tellabs® Fiber Optic-based LAN solution offers next generation technology in a passive optical network (PON) architecture, based on IT standards, and engineered to reduce capital costs, space requirements and conserve energy. When you consider the challenges of designing a network solution to last beyond the next generation, a fiber optic based system offers assurances that copper can only dream about.

As a key component of the Tellabs system, 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, the Tellabs enterprise GPON solution provides secure, scalable and high-bandwidth service delivery for business and campus network applications.

The Tellabs® 1150 Multiservice Access Platform high-density 9-rack unit chassis offers 64 GPON interfaces and supports over 7,000 user Ethernet ports. The Tellabs® 1134 Multiservice Access Platform medium-density 4-rack unit chassis offers 16 GPON interfaces and supports over 1,800 user Ethernet ports. The single mode fiber provides the capability of extending your network beyond common lengths — up to 18 miles from your data center. This is done without the need for signal boosting technology typical in copper systems.

The Tellabs chassis operates as a Layer 2 enterprise Ethernet switch, albeit 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 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 user port.

A series of cost-effective Optical Network Terminals (ONT) provide connectivity to user devices over standard CAT copper cabling. The ONTs are offered in both desktop and communication closet models and provide connectivity to computers, VoIP desktop phones, analog voice ports, along with WiFi access points, IP security cameras, and other environmental and access control systems. Remote powering of VoIP desktop phones is provided via standard Power-over-Ethernet (PoE) compliant with 802.3at.



Tellabs® 1150 OLT
(64) GPON ports



Tellabs® 1134 OLT
(16) GPON ports



Tellabs® 709GP ONT
(4) GigE PoE Ports



Tellabs® 1600-709G ONT
(4) GigE Ports



Tellabs® 1600-704G ONT
(4) GigE Ports + (2) POTS Ports



Analog voice ports benefit from integrated Analog Terminal Adapter (ATA) functionality within the ONT. They also possess integrated Analog Terminal Adapters so that both SIP-based and traditional analog phones/fax machines can be used in a VOIP environment.

Applications

- **Fiber-to-the-Desktop** — The 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 units terminate the fiber at the user location. In this deployment scenario, communication closets benefit from the elimination of active electronics, thereby recovering floor space and eliminating power dissipation.
- **Fiber-to-the-CommunicationCloset** — The chassis aggregates small GPON-fed workgroup switches 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 unit terminates the fiber directly in the communication closet and re-uses the existing copper infrastructure to the user.

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



Benefits

The Tellabs Enterprise GPON OLT offers a more robust Total Cost of Ownership when compared to currently deployed Ethernet switch solutions.

The high level of integration in an optical distribution network significantly reduces the number of network elements compared to a copper-based one. This results a simpler design and saves on capital investment. The network’s passive nature utilizes less power and saves ongoing operation costs — while requiring a much smaller footprint. A communication room can now be completely passive with 100% recovery of floor space.

Network Efficiency

The high level of integration in an optical network significantly reduces the number of network elements compared to a copper based network. This results in a simpler design and saves on capital investment.

Capital Savings

By eliminating traditional Layer 2 switches and other electronics, and with the density of the Tellabs system, your business not only realizes space savings and smaller hardware footprint but also initial cost savings by needing less equipment.

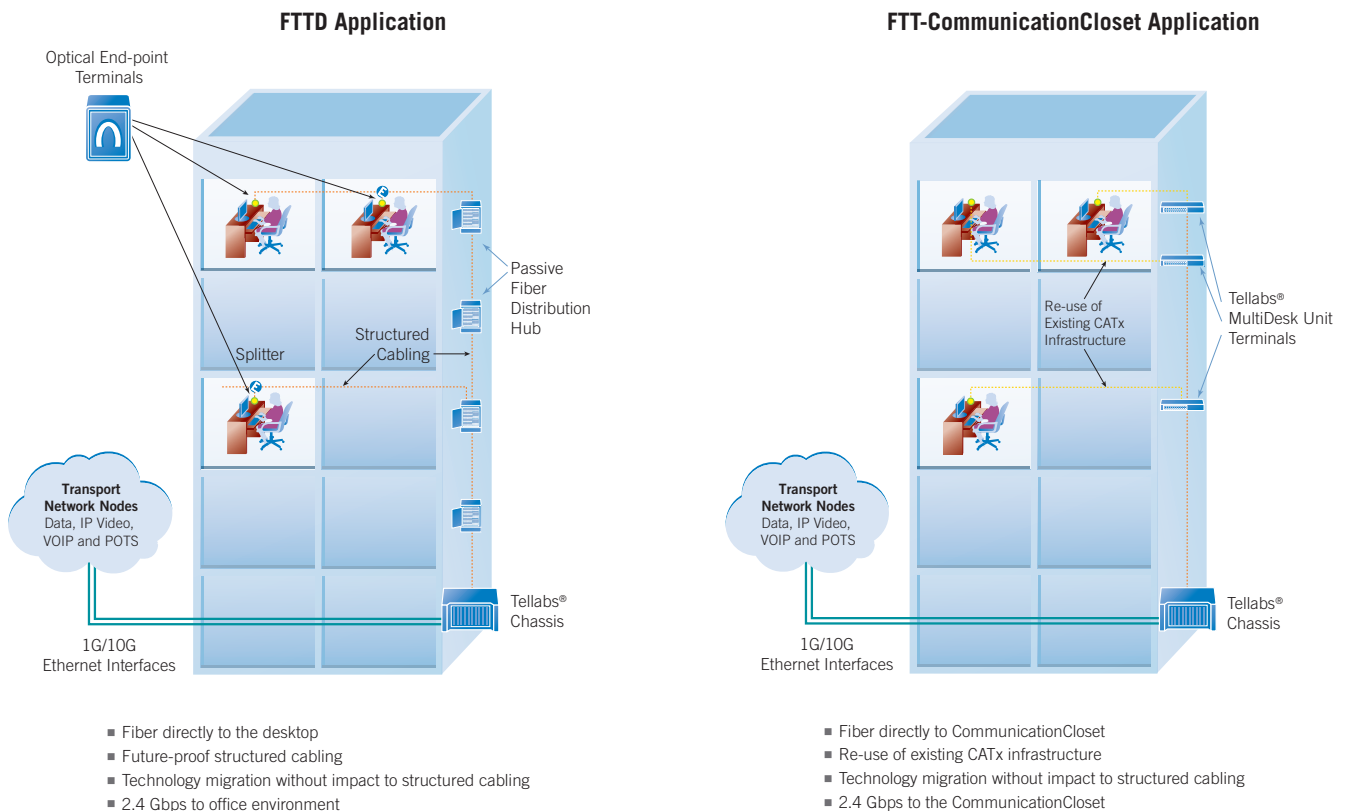
Conserve Energy

Tellabs systems offer power savings up to 80%, in part because it requires no power within the optical distribution. In addition, there is a positive compound effect on energy savings including building power distribution, power conversion and cooling systems.

A few functional benefits of the Tellabs system are:

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

Tellabs optical LAN system deployed in a typical campus environment.



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 couples Tellabs' advanced security with industry-standard dynamic access mechanisms such as Network Access Control and Unified Access Control.

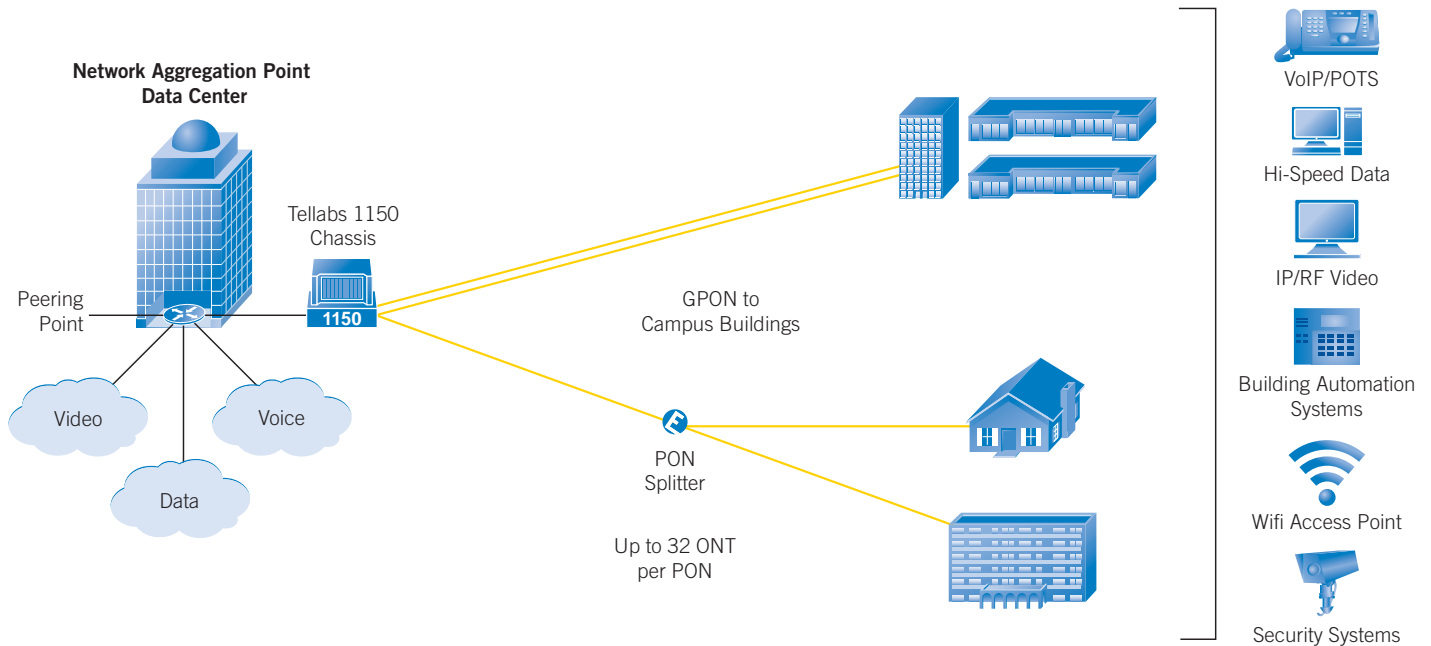
Additional Benefits

The Tellabs system uniquely integrates the converged delivery of high-speed data, analog voice, Voice-over-IP (VoIP) and both RF and IP video over a single fiber infrastructure — directly to the desktop or communication closet. 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 allow provisioning of VLAN groups that support trunking, termination and translation capabilities. Service segregation and service-aware QoS allow granular SLAs with guaranteed delivery of multiple services on each user interface. With a robust redundancy and resiliency architecture including rapid spanning tree protocol, the Tellabs optical LAN solution offers a true carrier-class enterprise solution.

The Tellabs solution offers investment protection through service convergence and fiber infrastructure that will not change as technology evolves. Fiber-to-the-Desktop and Fiber-to-the-CommunicationCloset both benefit from 69Tbps+ usable capacity of a fiber optic medium.

Enterprise/Campus Environment



Key Technical Features

Tellabs 1150 Chassis

- 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 Chassis

- 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

GPON 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
- 64 GPON interfaces (Tellabs 1150)
- 16 GPON interfaces (Tellabs 1134)
- Class B+ optics (28dB)
- Forward Error Correction (downstream)
- Dynamic Bandwidth Allocation

LAN Interfaces

- 10/100/1000Base-T Ethernet via RJ-45
- Power-over-Ethernet (PoE)
- Analog POTS via RJ-11
- RF Video via coax

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)
- Network Access Control (NAC)*
- 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

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

Tellabs 1134

- 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

North America

Tellabs
One Tellabs Center
1415 West Diehl Road
Naperville, IL 60563
U.S.A.
+1 630 798 8800
Fax: +1 630 798 2000

Asia Pacific

Tellabs
3 Anson Road
#14-01 Springleaf Tower
Singapore 079909
Republic of Singapore
+65 6215 6411
Fax: +65 6215 6422

Europe, Middle East & Africa

Tellabs
Abbey Place
24–28 Easton Street
High Wycombe, Bucks
HP11 1NT
United Kingdom
+44 871 574 7000
Fax: +44 871 574 7151

Latin America & Caribbean

Tellabs
Rua James Joule No. 92
EDIFÍCIO PLAZA I
São Paulo – SP
04576-080
Brasil
+55 11 3572 6200
Fax: +55 11 3572 6225