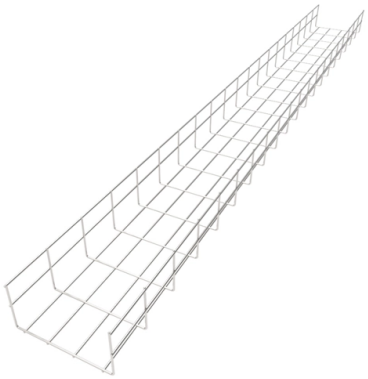
Two typical passive optical networks PON are



Overview

Passive optical networking (PON) provides Ethernet connectivity from a main data source to endpoints, using a technique called passive optical splitting.

Key Takeaways

The two most common types of passive optical networks are GPON (Gigabit PON) and EPON (Ethernet PON).

Overview of GPON and EPONGPO

N (Gigabit Passive Optical Network) is standardized by the ITU-T under the G. 984.x series. It supports high bandwidth, with data rates up to 2.

5 Gbps downstream and 1. 25 Gbps upstream, making it suitable for residential broadband, triple-play services (data, voice, video), and high-density deployments.

GPO

N uses ATM and GEM encapsulation for data transmission, allowing efficient handling of multiple service types and better bandwidth utilization.

EPO

N (Ethernet Passive Optical Network) is based on Ethernet standards and provides symmetric bandwidth, typically 1 Gbps upstream and downstream.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

EPO

N is widely used in environments where integration with existing Ethernet networks is important, such as enterprise networks or metro access networks. It uses Ethernet frames for data transmission, simplifying network management and reducing protocol overhead compared to GPON.

Key Differences

Protocol: GPON uses ATM/GEM, while EPON uses Ethernet frames. Bandwidth: GPON generally offers higher downstream speeds (up to 2. 5 Gbps) compared to EPON (1 Gbps).

Applications: GPON is common in residential FTTH deployments, whereas EPON is often preferred in enterprise or metro networks. Efficiency: GPON supports multiple service types efficiently, while EPON is simpler and easier to integrate with Ethernet-based infrastructures.

Summary

Both GPO

N and EPON are point-to-multipoint fiber-optic networks that use passive splitters to serve multiple endpoints from a single fiber, reducing infrastructure costs and improving reliability. The choice between them depends on bandwidth requirements, network architecture, and service integration needs.

Article Content

What Is Passive Optical Networking (PON)?

Passive optical networking (PON) provides Ethernet connectivity from a main data source to endpoints, using a technique called passive optical splitting.

What Is Passive Optical Networking (PON)? GPON vs. EPON

Passive Optical Network (PON) is a point-to-multipoint optical access technology. Ethernet PON (EPON) and gigabit PON (GPON) are the most common PON technologies and have the

Introduction to Passive Optical Network

The PON technology is based on the ITU-T G.984 standard. PON transmits Ethernet, Asynchronous Transfer Mode (ATM), and Time Division Multiplexing (TDM) traffic. It consists of mainly two active

The Definitive Guide to Passive Optical Network (PON): Architecture ...

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

The global PON market is primarily defined by two competing, yet fundamentally similar, standards: Gigabit Passive Optical Network (GPON) and Ethernet Passive Optical Network (EPON).

What is PON? Passive Optical Networks Explained Global

A passive optical network (PON) is a shared, fiber optic access network that uses unpowered optical splitters to connect many users to a single OLT. PONs deliver high-speed

PON for Dummies: Understanding Passive Optical Networks

PON networks, with their passive field infrastructure and battery-backed central facilities, maintain service delivery as long as the fiber plant remains intact.

Fiber Optic Splitter: How It Works & Types Guide

This guide demystifies fiber optic splitters, explaining their design, operating principles, types, key specifications, and real-world applications.

Simplex vs Duplex Fiber Optic Cables: Key Differences & Guide

Selecting between simplex and duplex fiber optic cables is a fundamental decision in modern network design. It affects not only physical cabling layers, but also transmission architecture,

How to Design Your FTTH Network Splitting Level and Ratio?

Optical splitters play an instrumental role in the Passive Optical Network (PON), enabling a single PON interface to be shared amongst multiple subscribers. The two primary types of optical

Fiber Optic Pigtail: Types, Splicing Guide, Specs & Price

Fiber optic pigtail guide : SC/APC & LC/UPC connectors, 0.9/2.0/3.0 mm buffers, single-mode and multimode types, fusion splicing steps, price ranges, specifications, and how to

Fiber Optic Splitters | PLC & FBT Optical Splitters

Overview of Fiber Optic Splitters A fiber optic splitter, also known as an optical splitter or a beam splitter, is a passive optical device that can split a single optical signal into two or more separate output

OptiTap® Fiber Connectors: 2026 Buyer''s Guide

OptiTap® Fiber Optic Connectors: 2026 Procurement & FTTH Deployment Guide As global broadband initiatives mature in 2026, the transition from traditional Gigabit PON to

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Fibre Optic Network Design Principles – Wray Castle

Fibre optic network design is a structured engineering discipline that combines architecture principles, optical physics, civil works planning, and long-term operational thinking.

IEC 61850 Fiber Optic Networks for Electrical Substations

Key Takeaway IEC 61850 imposes strict latency and timing requirements on substation communication networks that only fiber optic infrastructure can reliably meet. This article covers GOOSE message

What Is an ONT & How Is It Used in Fiber Networks?

What is an ONT in a fiber internet connection? An ONT, or Optical Network Terminal, is the device that turns the light signals carried by fiber optic cables

The FOA Reference For Fiber Optics

This drawing shows the location of the hardware used in creating a typical PON network. This drawing also defines the network jargon for cables: a "feeder"

Fiber Optic Cable Solutions in Modern Educational Networks: Practice ...

4. Blossoming Across the Board: All-Optical Networks in Diverse Educational Institutions The applicability of all-optical networks extends beyond top-tier universities, with wide-spread

Optical Modules Market Research Report 2034

Government-mandated and government-subsidized broadband expansion programs across more than 40 countries are generating significant baseline demand for passive optical network (PON)

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Contact Us

Continue your research online:

Website: https://alfa-pro.co.za
Technical inquiry: https://alfa-pro.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved