

## Article Overview

GPON supports a maximum downstream speed of 2.5 Gbps and an upstream speed of 1.25 Gbps, with options for asymmetric or symmetric configurations.

## Maximum Speeds

GPON (Gigabit Passive Optical Network) is designed to provide high-speed fiber access for residential and business users. Its maximum downstream speed is 2.5 Gbps, while the maximum upstream speed is 1.25 Gbps. These speeds can be configured asymmetrically, meaning the downstream can be higher than the upstream, or symmetrically, with both directions at 1.25 Gbps or 622 Mbps depending on network requirements ( ).

## Comparison with EPON

Unlike GPON, EPON provides fixed uplink and downlink speeds of 1.25 Gbps, with an actual throughput of about 1 Gbps due to line coding overhead. GPON's higher downstream capacity makes it more suitable for bandwidth-intensive applications such as video streaming, cloud services, and large-scale enterprise deployments ( ).

## Bandwidth Allocation and Split Ratios

GPON uses Time Division Multiple Access (TDMA) for upstream traffic, allowing multiple users to share the same fiber efficiently. The downstream is broadcast to all ONUs/ONTs, with each device filtering the data intended for it. Typical split ratios are 1:32, 1:64, or 1:128, which affects the effective bandwidth per user. Higher split ratios reduce the per-user bandwidth but allow more users to share a single optical line ( ).

## Practical Considerations

- o Asymmetric speeds: Downstream-heavy configurations are common because most user traffic is download-intensive.
- o Distance limitations: GPON can reach up to 60 km, but optical losses and split ratios may reduce effective speeds.
- o Quality of Service (QoS): GPON supports multiple service types (Fixed, Assured, Non-Assured, Best Effort) and dynamic bandwidth allocation to prioritize traffic ( ). In summary, GPON provides flexible, high-speed fiber connectivity with a maximum of 2.5 Gbps downstream and 1.25 Gbps upstream, supporting both symmetric and asymmetric configurations, making it a robust choice for modern broadband networks.



# GPON device uplink and downlink speeds

GPON systems require precise timing and clock synchronization to ensure collision-avoidance in upstream transmission in the

How GPON Works A GPON network is capable of transmitting ethernet, TDM (Time Division Multiplexing) as well as ATM traffic. A

16x downlink GPON ports 2x GE/10GE uplink ports ITU-T G.984.x & ITU-T G.988 standards compliant. Meets all requirements for

This document describes the Gigabit Passive Optical Network (GPON) technology and how it functions.

Learn how GPON OLT works, its features, and how to choose the right device for efficient fiber network deployment.

About GPON System Parameters How to Configure GPON System Parameters Configuration Examples for GPON

Increased bandwidth, reduced latency and symmetric downlink and uplink capacity are among the key drivers for Next

Working Wavelength EPON operates at working wavelengths of 1490nm and 1310nm, mirroring GPON. These

CGP-OLT products are compact and high-density network aggregation devices, meeting the requirements of ITU-T

High bandwidth: GPON can provide transmission rates of up to 2.5 Gbps (uplink) and 1.25 Gbps (downlink), which

Technical Differences Analysis (1) Data Rate and Symmetry GPON: Asymmetric bandwidth (Downlink 2.5G / Uplink

GPON GEAPON COMPREHENSIVE COMPARISON TABLE Comparison GPON GEAPON GPON GEAPON Basics ITU Standard G.984

Typical GPON downlink speeds are 2.5 Gbps and uplink speeds are 1.25 Gbps. This means that data is transferred

# GPON device uplink and downlink speeds

rate EPON provides fixed uplink and downlink 1.25 Gbps, uses 8b/10b line encoding, and the actual rate is 1Gbps.

10G-PON (also known as XG-PON or G.987) is a 2010 computer networking standard for data links, capable of delivering shared

Passive Optical Network (PON) technology delivers high-speed, reliable, and cost-effective broadband access. Among

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