GPON device capacity expansion by 100 Mbps

Article Overview

GPON device capacity can be increased by adjusting bandwidth allocation, upgrading OLT/ONT hardware, or migrating to higher-capacity PON standards.

Understanding GPON Bandwidth

GPON (Gigabit Passive Optical Network) supports shared downstream rates up to 2.4 Gbps and upstream rates up to 1.2 Gbps, distributed among multiple ONTs using time-division multiple access (TDMA) . Each ONT receives a portion of the total bandwidth, dynamically allocated by the OLT through Dynamic Bandwidth Allocation (DBA) mechanisms . Expanding capacity by 100 Mbps can be achieved by increasing the bandwidth assigned to a specific ONT or service profile, provided the total shared bandwidth is not exceeded.

Methods to Expand Capacity
o OLT Configuration Adjustments
o Most GPON OLTs allow administrators to modify service profiles or T-CONT allocations to increase the guaranteed or maximum bandwidth for a subscriber .
o For example, increasing a T-CONT from 200 Mbps to 300 Mbps effectively adds 100 Mbps to that ONT's capacity, assuming the OLT has sufficient unused bandwidth.

o Hardware Upgrades
o If the OLT or ONT is already near its maximum capacity, expanding by 100 Mbps may require upgrading to higher-capacity OLT ports or adding additional PON ports .
o Modern GPON OLTs often support multiple ONTs per port (e.g., 32-128), and adding more ports or using higher-class optics can increase total network throughput.

o Migration to Higher-Capacity PON Standards
o For sustained higher bandwidth needs, operators may migrate to XGS-PON (10 Gbps symmetric) or NG-PON2, which provide significantly more capacity per PON segment .
o This approach ensures future scalability beyond incremental 100 Mbps increases.

Practical Considerations

o Shared Bandwidth: GPON bandwidth is shared among all ONTs on a PON port. Expanding one ONT's allocation may reduce bandwidth available to others unless total capacity is increased.
o Optical Budget: Ensure that the optical power budget supports additional traffic without signal degradation, especially if split ratios are high .

o Service-Level Agreements (SLAs): Adjusting bandwidth may require updating SLAs to reflect guaranteed speeds.
o Network Monitoring: Use OLT management tools to monitor traffic and confirm that the 100 Mbps increase does not cause congestion or packet loss .

Summary

Expanding a GPON device's capacity by 100 Mbps can be achieved through OLT configuration changes, hardware upgrades, or migration to higher-capacity PON standards. Administrators must consider shared bandwidth limits, optical budget, and network monitoring to ensure reliable service delivery while increasing throughput. Proper planning ensures that the expansion benefits the intended ONTs without negatively impacting other subscribers.

Here are the reasons why GPON (Gigabit Passive Optical Network) has become a preferred choice for many service providers and

In the world of fiber-optic broadband, one of the most critical questions for network architects and service providers is the capacity of

Connecting to a GPON network requires understanding its technology, selecting suitable equipment, and configuring

Open ONU for fiber optic network design and FTTH, XGS-PON, FWA, 25GS-PON, 50G-PON, 100G-PON deployment is explored in

How does GPON Work? With a grasp of GPON"s fundamentals, delving into its functioning is a logical step. Central to

· Optical network unit (ONU)--Customer-side device in a GPON system. An ONU connects to user PCs, set-top boxes, and

GPON is a great example. You may have heard this term before but would welcome a little clarification as to what it actually means.

GPON vs. XG-PON vs. XGS-PON, what"s the difference and which one is suitable for your network? This article will

They are fiber to copper media converters that offer RJ11, RJ45, and F-Series connectors to any device. These

devices are available

Requirements such as high bandwidth and capacity for high speed internet, High Definition Television "HDTV" and

Compare fixed OLT chassis, line-card based scaling, and transceiver-led uplink design to choose the right capacity strategy for your

The choice between GPON (ITU-T G.984), XG-PON (G.987), and XGS-PON (G.9807) determines not only current

GPON (Gigabit Passive Optical Networks) is an Optical System for the Access Networks, based on ITU-T specifications G.984

ITU-T Standards: The technical specifications of GPON are defined by the International Telecommunication Union

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

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

Web: https://millstraining.co.za