

PON port splitter



Overview

Fiber Optic Splitters for PON Networks: 2025 GuideIn this guide, you'll learn how fiber splitters function in PON networks, the difference between Introduc.

Key Takeaways

A single PON port on an OLT can connect to multiple ONUs via a passive optical splitter, typically supporting 8 to 64 outputs depending on the split ratio and network design.

How a PON Port Connects to a Splitter

In a Passive Optical Network, the OLT port serves as the source of the optical signal, which is then fed into a passive optical splitter. The splitter divides the signal into multiple outputs, each going to an Optical Network Terminal (ONT) or Optical Network Unit (ONU) at the customer premises . This allows a single fiber from the OLT to serve multiple subscribers, reducing infrastructure costs and simplifying deployment .

Split Ratios and Capacity

The split ratio determines how many ONUs a single PON port can support. Common split ratios include 1:8, 1:16, 1:32, and 1:64, with higher ratios reducing the optical power per output but increasing the number of users served . For example, a 1:32 split means one PON port can serve 32 ONUs, while a 1:64 split serves 64 ONUs. EPON typically supports up to 1:64, and GPON can theoretically support up to 1:128, though practical deployments often use 1:32 or 1:64 to maintain stable bandwidth .

Splitter Types and Deployment

Two main types of splitters are used in PON networks:

- FBT (Fused Biconical Taper) Splitters: Low-cost, suitable for small splits like 1:2 or 1:4.
- PLC (Planar Lightwave Circuit) Splitters: Highly uniform, ideal for larger splits like 1:32 or 1:64, and preferred for scalable FTTH deployments .

Splitters can be deployed in two architectures:

- Centralized Splitting: Splitters are located at a central office or cabinet, allowing flexible assignment of ONUs via jumpers .
- Distributed Splitting: Splitters are placed closer to the end users in closures or pedestals, with fixed connections that are not easily reconfigured .

Practical Considerations

- Bandwidth Sharing: All ONUs connected to a PON port share the available bandwidth. As long as the optical power is sufficient, each ONU can operate normally .
- Power Loss: Each doubling of the split ratio reduces optical power by roughly 3 dB, so network planners must ensure the OLT and ONUs operate within their power budgets .
- Scalability: Adding new subscribers is straightforward if the splitter has available outputs, making PON networks highly scalable .

In summary, connecting a PON port to a splitter allows a single OLT port to efficiently serve multiple ONUs, with the number of users determined by the split ratio, splitter type, and deployment architecture. Proper planning ensures sufficient optical power, bandwidth, and flexibility for future expansion .

Article Content

Introduction to Passive Optical Network Splitter Architectures

A fiber broadband provider typically determines and overall split ratio for the network, such as 1x32 or 1x64, and uses combinations

Optical Splitters: Split Ratios, Splitting Architectures & PON Network ...

Learn about optical splitter split ratios (1:N, 2:N), centralized vs. cascaded architectures, and how to choose the right

Introduction to Passive Optical Network Splitter Architectures

Each splitter architecture discussed in this article has its own set of pros and cons. The choice of architecture depends on various

Optical Splitters are used in PON (Passive Optical Network

PON consists of an optical line terminal (OLT) at the service provider's central office and optical network units (ONUs) near or at the

PON for Dummies: Understanding Passive Optical Networks

A passive optical network (PON) is a point-to-multipoint fiber network architecture that uses optical splitters to deliver high-bandwidth

Home -The Fiber Optic Association

The optical splitter can be centralized - only one optical splitter on the OLT PON port which means every user had their own fiber

Deciphering the Passive Optical Splitter in PON Network

In the rapidly evolving landscape of optical networks, understanding the intricacies of Passive Optical Network (PON)

The FOA Reference For Fiber Optics

To test the loss to the second port, simply move the receive cable to the other port and read the loss from the meter. This same

Passive Optical Network

A passive optical network, or PON, is a network technology that provides broadband access through optical fiber. It uses a point-to

High-Quality PON Technology Solutions

High-performance PON fiber network solutions. Our optical transceivers, PLC splitters, and fiber patch cables support EPON, GPON,

Understanding PON Splitters

Passive Optical Networks (PON) are integral to modern fiber-optic communication, enabling efficient data distribution

What is a passive optical network (PON) and how does it work?

Depending on where the PON terminates, the system can be described as fiber to the curb, fiber to the building or fiber

What is a Passive Optical Network (PON)? | Glossary | HPE

A passive optical network (PON) uses fiber-optic technology to deliver data from a single source to multiple endpoints.

Passive Optical Network (PON)

A passive optical network (PON) is a fiber-optic network utilizing a point-to-multipoint topology and optical splitters to deliver data

PASSIVE OPTICAL SPLITTER

A Passive Optical Network (PON) is a fiber optic technology utilizing point-to-multipoint topology and optical splitters to deliver data

Cisco Catalyst PON Series Switches Hardware Installation Guide

In the upstream direction, a Cisco Catalyst PON Series ONT is connected to the optical splitter through the PON port.

Introduction to Passive Optical Network

PON transmits Ethernet, Asynchronous Transfer Mode (ATM), and Time Division Multiplexing (TDM) traffic. It consists of mainly two

PON Splitters Explained

PON splitters are a big part of our FTTH networks. Understanding what they do and how much loss they insert is an

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