Why is PON called a passive optical network

Article Overview

A PON is called a passive optical network because it uses unpowered (passive) optical components, such as splitters, to distribute signals from a central office to multiple end users without requiring active electronics in the field.

Explanation

The term "passive" in PON refers to the fact that the network relies on unpowered optical devices to transmit and split signals. Unlike active optical networks, which use powered switches, amplifiers, or repeaters to manage signal distribution, a PON uses optical splitters that do not consume electricity to divide a single optical signal into multiple branches for delivery to end users . This passive approach reduces operational costs, simplifies maintenance, and increases reliability because there are fewer points of failure in the field .

Network Structure

A typical PON consists of three main components:

• Optical Line Terminal (OLT): Located at the service provider's central office, it generates and manages the optical signals.
• Passive Optical Splitters: These devices split the optical signal from the OLT into multiple fibers, allowing a single fiber to serve many users without requiring power.
• Optical Network Units (ONUs) or Optical Network Terminals (ONTs): Located near t...

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