Maximum network speed supported by the optical splitter

AI Overview

Optical splitters themselves do not limit network speed; the maximum speed is determined by the PON standard, such as GPON (2.5 Gbps), XGS-PON (10 Gbps), or 10G-PON, with splitters passively distributing the signal to multiple users.

Role of Optical Splitters in PON Networks

Optical splitters are passive devices that divide a single optical signal from an Optical Line Terminal (OLT) into multiple outputs for Optical Network Terminals (ONTs) at subscribers' premises . They do not contain active electronics and require no power, meaning they do not inherently limit the data rate. Instead, splitters share the available bandwidth of the PON among multiple users, so the effective bandwidth per user decreases as the split ratio increases .

Split Ratios and Bandwidth Sharing

Split ratios define how many outputs a splitter has, such as 1:2, 1:4, 1:8, 1:16, 1:32, or 1:64 . For example:

• A 1:32 splitter in a GPON network allows 32 ONTs to share the 2.5 Gbps downstream bandwidth.
• A 1:64 splitter in an XGS-PON network allows 64 ONTs to share 10 Gbps downstream bandwidth. While the splitter does not reduce the maximum network speed, higher split ratios reduce the bandwidth available per subscriber, which can...

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The distributed splitter configuration involves placing splitters throughout the network rather than centralizing them (see Figure 3).

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