100M fiber optic router speed



Overview

Choose the right 100M optical transceiver by checking compatibility, fiber type, wavelength, distance, data rate, connector, and reliability.

Key Takeaways

A 100M fiber optic router transmits data at 100 Mbps (Fast Ethernet speed) over fiber optic cables, supporting full-duplex communication and distances up to 2 km for multimode fiber or longer for single-mode fiber. Overview of 100M Fiber Optic TransmissionA 100M fiber optic router operates using the Fast Ethernet standard (100BASE-FX), which provides a nominal data rate of 100 megabits per second. This is achieved by converting electrical Ethernet signals into optical signals via SFP (Small Form-factor Pluggable) transceivers, allowing data to travel over fiber optic cables.

Unlike copper Ethernet, fiber offers longer reach, immunity to electromagnetic interference, and enhanced security.

Fiber Types and Distance

Multimode Fiber (MMF): Typically used for short-range links up to 2 km, such as within a data center or campus buildings. Multimode fiber uses a larger core, allowing multiple light paths, but modal dispersion limits distance and bandwidth. Single-mode Fiber (SMF): Suitable for longer distances exceeding 2 km, offering lower signal attenuation and higher bandwidth potential.

Single-mode fiber is ideal for inter-building or metropolitan links.

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Duplex and Connectivity

Most 100M fiber optic connections use dual-fiber (duplex) transceivers, with one fiber for transmitting (Tx) and one for receiving (Rx) data. Full-duplex operation allows simultaneous sending and receiving at 100 Mbps in each direction, effectively doubling the throughput compared to half-duplex links.

Practical Considerations

Wavelength: 100BASE-FX SFP modules typically operate at 1310 nm for multimode fiber. Compatibility: Ensure the transceiver matches the router or switch port and the fiber type in your network. Distance Limitations: Multimode fiber is limited to ~2 km, while single-mode fiber can extend tens of kilometers depending on the transceiver and link budget.

Applications: 100M fiber is still widely used in industrial networks, legacy systems, surveillance, and campus backbones where Gigabit speeds are unnecessary. In summary, a 100M fiber optic router provides stable 100 Mbps transmission, with the actual reach and performance determined by fiber type, transceiver choice, and network design. Proper selection ensures reliable, interference-free communication over distances far exceeding copper Ethernet limits.

Article Content

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Choose the right 100M optical transceiver by checking compatibility, fiber type, wavelength, distance, data rate, connector, and reliability.

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Fiber Optic Single Mode → up to 30 km Multimode → up to 550 m Immune to EMI, hence more secure (but expensive). □□ UTP Cable Pin Usage 10/100 Base-T (2 pairs, 4 wires) PC/Router/Firewall ...

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How Fibre Optic Communication Works – Wray Castle

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