# What types of fiber optic interfaces are available on routers



## Overview

Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for both telecommunication and data communications applications. An SFP interface on networking hardware is a modular slot for a media-specific transceiver, such as for a fiber-optic cable or a copper cable. The advantage of using SFPs compared to fixed interfaces (e.g.

## Key Takeaways

Routers can use fiber optic interfaces through SFP/SFP+ modules and connectors such as SC, LC, ST, and FC.

SF

P and SFP+ ModulesMany modern routers support Small Form-Factor Pluggable (SFP) or SFP+ transceivers, which are hot-pluggable modules that allow fiber optic connections.

SF

P modules can support both single-mode fiber (SMF) and multi-mode fiber (MMF), with varying wavelengths (e.g., 1310 nm, 1550 nm) and distances ranging from a few meters to over 160 km depending on the module and fiber type. SFP+ modules are similar but support higher speeds, typically up to 10 Gbps.

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## Common Fiber Connector Types

Routers and SFP modules use various fiber optic connectors to interface with cables: SC (Subscriber Connector): Square-shaped, push-pull design, widely used in FTTH and data centers. SC/APC variants provide low return loss for high-performance applications.

L

C (Lucent Connector): Smaller form factor with a 1. 25 mm ferrule, ideal for high-density applications and duplex connections.

S

T (Straight Tip): Bayonet-style twist-lock connector, often used in legacy or industrial networks.

F

C (Ferrule Connector): Threaded coupling for secure connections in high-vibration environments, suitable for long-distance telecom networks.

## Connecting Fiber to Routers

To connect fiber to a router, you typically need: Fiber optic cable with the appropriate connector type (SC, LC, ST, or FC). SFP/SFP+ module compatible with the router's slot and the fiber type. Optional media converters if the router lacks native fiber ports; these convert copper Ethernet to fiber and vice versa.

Routers with SFP-based ports allow flexible deployment, enabling either fiber or copper connections depending on the installed module.

## Hot-pluggable SF

P modules make it easy to upgrade or replace fiber interfaces without powering down the router.

## Summary

In summary, fiber optic interfaces on routers are primarily implemented via SFP or SFP+ transceivers, which connect to fiber cables using SC, LC, ST, or FC connectors. The choice of connector and module depends on the fiber type (single-mode or multi-mode), distance, and network speed requirements. This setup allows routers to integrate seamlessly into fiber optic networks for high-speed, low-latency communication.

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## Article Content

Small Form-factor Pluggable

OverviewSFP typesQSFPApplicationsStandardizationMechanical dimensionsDigital diagnostics monitoring

Small Form-factor Pluggable (SFP) is a compact, hot-pluggable network interface module format used for both telecommunication and data communications applications. An SFP interface on networking hardware is a modular slot for a media-specific transceiver, such as for a fiber-optic cable or a copper cable. The advantage of using SFPs compared to fixed interfaces (e.g. modular connectors in Ethernet switches) is t

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Passive optical network

Passive optical network A fiber optic cable assembly with SC APC connectors, as commonly used to link optical network terminals to passive optical networks A

Fiber-optic cable

Different types of cable are used for fiber-optic communication in different applications, for example long-distance telecommunication or providing a high

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