# Common Fiber Optic Cable Models for Computer Rooms

## Overview

Fiber-Optic Cables 101 | Wired Communications, LLC.This guide will walk you through the essentials of fiber optic selection—so you can avoid common pitfall.

## Key Takeaways

For computer rooms, the most commonly used fiber optic cables are single-mode and multimode fibers, typically in tight-buffered or distribution cable formats for indoor deployment.Core Fiber Types

1. Single-Mode Fiber (SMF)

• Features a very thin core (8–10 µm) that carries a single light mode.

• Ideal for long-distance, high-speed transmission with minimal signal loss.

• Common indoor subtypes include OS1 (tight-buffered, indoor use) and OS2 (loose-tube, suitable for longer runs or mixed indoor/outdoor paths) .

• Supports speeds up to 100 Gbps over distances of 10 km or more, making it suitable for backbone connections in large data centers . 2. Multimode Fiber (MMF)

• Has a larger core (50 µm or 62.5 µm) that carries multiple light modes simultaneously.

• Best for shorter distances within a building or campus, typically up to 550 meters depending on the fiber grade (OM1–OM5).

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• Cost-effective for connecting servers, switches, and patch panels in computer rooms .
Cable Constructions for Indoor Use

1. Tight-Buffered Cables

• Each fiber is individually coated with a protective buffer, usually 900 µm in diameter.

• Easier to handle, terminate, and install in indoor environments like telecom closets or data centers.

• Often used in distribution cables containing 12–24 fibers for horizontal runs . 2. Distribution Cables

• Bundles multiple tight-buffered fibers under a single outer jacket.

• Space-efficient and ideal for vertical risers or horizontal pathways in computer rooms . 3. Breakout Cables

• Each fiber has its own jacket, bundled together.

• Simplifies termination without requiring a breakout kit.

• Suitable for short indoor runs connecting directly to equipment .
Jacket Types and Fire Ratings
• Plenum-rated (OFNP): Required for air-handling spaces; highly fire-resistant.

• Riser-rated (OFNR): Suitable for vertical shafts between floors.

• PVC or LSZH jackets: Common for general indoor use; LSZH reduces smoke and toxic fumes in case of fire .
Specialized Indoor Options
• Ribbon Fiber Cables: Multiple fibers arranged in a flat ribbon for high-density splicing; ideal for data centers with high-capacity backbone networks .

• Armored Fiber Cables: Include a protective metal layer for environments with potential mechanical risks, though less common indoors unless extra protection is needed .
Summary

For computer rooms, the most practical choices are:

• Multimode tight-buffered distribution cables for short-distance connections between servers, switches, and patch panels.

• Single-mode cables for backbone or long-distance runs within or between buildings.

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• Ensure the jacket type complies with building codes (plenum or riser) and consider high-density ribbon or breakout cables for efficient space utilization and easier termination . Selecting the right fiber type and construction ensures high-speed, reliable, and future-proof connectivity in computer rooms.

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