

Article Overview

The cost of server optical modules ranges from \$600 for 400G short-reach modules to over \$10,000 for long-haul OEM modules, with 800G modules typically priced between \$700 and \$1,900 depending on type and volume.

Typical Pricing by Module Type

- o 400G QSFP-DD: \$600-\$800 for standard short-reach modules; SR8 modules for in-rack connections cost \$1,400-\$1,800 from third-party vendors, while long-haul coherent ZR+ modules can exceed \$130,000 from OEMs .
- o 800G OSFP and QSFP-DD:
 - o OSFP-DR8: \$1,100-\$1,400 (volume pricing for 1,000+ units)
 - o QSFP-DD-DR8: \$1,000-\$1,300 (volume pricing)
 - o OSFP-FR4 (longer reach): \$1,500-\$1,900
 - o Linear Pluggable Optics (LPO, no DSP): \$700-\$900 .

Factors Affecting Cost

- o Vendor Tier: OEM modules (Cisco, Arista) often carry a 30-50% premium over third-party compatible modules .
- o Volume Discounts: Orders over 1,000 units may receive 10-20% discounts; orders over 5,000 units can see 20-30% reductions .
- o Technology Maturity: Early-generation modules cost 40-60% more than mature products .
- o Customization: Special wavelengths, extended temperature ranges, or additional testing can add 15-30% to the base price .
- o Supply Chain and Market Dynamics: Component shortages, logistics, and geopolitical factors can temporarily increase prices by 20-40% .
- o Associated Infrastructure Costs: Cabling, transceivers, and network interface cards contribute to total deployment costs .

Cost Optimization Strategies

- o Use Third-Party Compatible Modules: High-quality third-party modules can reduce upfront costs while maintaining reliability .
- o Standardize Inventory: Limiting the number of module types reduces CapEx and operational complexity .
- o Leverage DAC and AOC for Short Links: Direct Attach Copper (DAC) and Active Optical Cables (AOC) can replace traditional transceivers for short distances, lowering costs .
- o Focus on Total Cost of Ownership (TCO): Consider maintenance, downtime, and energy efficiency, not just unit price .



Server optical module supply cost

o Partner with Reliable Suppliers: Trusted vendors help avoid costly mistakes and ensure consistent supply .

Summary

Server optical module costs vary widely based on speed, reach, vendor, and volume. For large-scale deployments, 800G modules typically cost \$700-\$1,900, while 400G modules range from \$600-\$1,800 for standard data center use. Long-haul OEM modules can be significantly more expensive. Effective procurement requires balancing unit cost, TCO, and operational reliability while leveraging volume discounts and third-party options to optimize overall expenditure .

Compare SFP module prices, OEM vs third-party costs, and total cost of ownership (TCO). Learn what drives SFP pricing and how

In today's rapidly evolving network environments, reducing operational costs is a top priority for data centers, telecom

Those who are familiar with servers know this, and those who are not will learn from this article: unlike switches,

O'Reilly & Associates, Inc. 103A Morris St. Sebastopol, CA United States

Optical Modules Market Outlook 2025-2034 The global optical modules market was valued at \$14.8 billion in 2025 and is projected to

Tariff Impact: Navigating Policy-Driven Sourcing and Cost Allocation Through 2025, cumulative tariff actions and trade policy shifts

Relevance: NVIDIA's core supplier, deeply tied to North American cloud giants (Meta, Microsoft), and involved in the

Active Optical Module market valued at \$10.7 billion in 2025, projected to reach \$35.6 billion by 2034 at 14.2% CAGR, driven by data

The optical module chip market faces significant headwinds from global supply chain disruptions. The highly specialized

What is Optical Transceiver Modules/SFP? Optical Transceiver Modules/SFP, also called fiber optic transceiver or optical



Server optical module supply cost

OPTICAL MODULES FIRST If AI is the brain, optical modules are the nerves -- converting electrical signals to light and

What Is an Optical Module and Its FAQs (V200) Describes what an optical module is and FAQs, including the fundamentals,

Data transmission rates in optical communication field are on a constant rise. This paper describes the ever-increasing demand for

Complete guide to 800G optical module costs and TCO optimization for AI data centers. Includes pricing analysis,

These advantages make optical communication indispensable for AI infrastructure, driving the growth of 800Gbps and

This guide delivers clear, accurate pricing data. It breaks down the current costs for 400G and 800G modules,

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