

400G Co-packaged Photonics for Data Centers



Overview

This article unpacks the technologies powering this leap (silicon photonics, advanced modulation, and co-packaged optics), compares deployment paradigms, and delivers a tactical upgrade roadmap that balances performance, cost, and scalability. By 2025, operators moved past 400G, with 800G becoming the mainstream, and early pilots pushing into 1. In early 2024, primary North American markets showed only 2. Switch ASICs now integrate HBM and extend fabrics up to 60 miles to. With 400G modules now the baseline, 800G adoption is surging—especially across AI and hyperscaler environments—while 1. 6T modules edge closer to reality. These solutions address the twin challenges of bandwidth scaling and power efficiency in AI back-end. Yole Group unveils its latest photonic market and technology analyses, Silicon Photonics 2025 and Co-Packaged Optics for Data Centers 2025, which explore how AI-driven demand is reshaping connectivity, from transceivers to packaging innovation. 200G/channel will become the new mainstream, enabling. Off - Chip/Chiplet/Core Interconnects A key bottleneck to the realization of next generation systems for all identified high performing applications/industries (where big-, secure-data is in) including System-in-Package and System-on-Chip, is the lack of off-chip/chiplet/core interconnects with. PITTSBURGH, Mar. 20, 2025 (GLOBE NEWSWIRE) – Coherent Corp.



Article Content

Optical Transceiver: 400G, 800G, 1.6T and the Leap to

Their massive data centers rely on metro and long-haul optical networks that demand steady bandwidth upgrades and backward-compatible

Optical Module Package Market 2025

-> Asia-Pacific dominates the market, driven by strong demand from China and Japan, while North America shows significant growth due to data center investments. What are the emerging trends? ->

Lumentum Launches 400G and 200G InP Optical Chips

Lumentum introduced new indium phosphide (InP) photonic chip technologies, including 400 Gbps-per-lane and 200 Gbps-per-lane optical links,

Co-Packaged Optics Market Hits \$2.4B by 2035; North America Leads

This blog takes a close look at the latest market study on co-packaged optics (CPO). We'll break down the growth path, leading players, technology trends, regional demand, and the

Co-Packaged Optics Market Size, Growth & Trends, 2031

Co-packaged optics market to grow from USD 161.43M in 2026 to USD 748.62M by 2031, driven by AI/ML bandwidth, hyperscale data centers, and

2026 OFC Showcase

Xscape Photonics The New Optical Compute Interconnect (OCI) Vivek Raghunathan, Co-Founder and CEO of Xscape Photonics, discusses the Optical Compute Interconnect (OCI) standardization

Coherent Demonstrates Multiple Technologies for Co

These demonstrations highlight Coherent's ability to support multiple optical architectures for co-packaged optics, leveraging its expertise across key

Co-Packaged Optics (CPO) Market Size to Hit USD

The global co-packaged optics (CPO) market size is evaluated at USD 95.04 million in 2025 and is predicted to hit around USD 1,055.11 million by

Industry insight: photonics to scale AI data centers

By analyzing their integration at the package, rack, and network levels, we highlight how photonics can overcome the limitations of traditional electronic solutions, paving the way for the next...

NVIDIA Pulls In Co-Packaged Optics by 5 Years: How Japanese Photonics ...

GPU-to-GPU optical interconnects were forecast to arrive around 2033. NVIDIA just pulled them in by five years, announcing they will ship in the 2028 Feynman GPU generation. As Co

NVIDIA's \$4B Photonics Play: Lumentum vs Coherent

NVIDIA is spending \$4 billion on silicon photonics through Lumentum and Coherent deals. Here's which partnership looks stronger heading into 2026.

Industry insight: photonics to scale AI data centers

a Co-packaged photonics integrating XPU's into servers, racks and data centers. b Network of a typical AI infrastructure of XPU clusters connected via scale up and scale out networks.

NVIDIA Announces Spectrum-X Photonics, Co

NVIDIA today unveiled NVIDIA Spectrum-X™ and NVIDIA Quantum-X silicon photonics networking switches, which enable AI factories to connect

Optical Interconnect in AI Data Centers Market

Canadian research centers and innovation hubs are actively advancing photonic integrated circuits to scale next-generation AI infrastructure. For instance, in December 2025,

Photonics for AI Data Centers

The objective is to develop a CMOS compatible underlying technology to enable next generation photonic layer within the 3D SiPs/SoCs towards converged microsystems.

Silicon photonics and co-packaged optics at the heart of

Yole Group unveils its latest photonic market and technology analyses, Silicon Photonics 2025 and Co-Packaged Optics for Data Centers

NVIDIA Debuts Silicon Photonics Switches for AI Data Centers

NVIDIA has unveiled a pair of co-packaged silicon photonics networking switches that it says will allow AI facilities to connect millions of GPUs across sites while drastically reducing energy

Coherent shows 6.4T CPO, 400G lanes at OFC 2026

Coherent (NYSE: COHR) will demonstrate multiple co-packaged optics (CPO) technologies at OFC 2026 in Los Angeles on March 17, 2026.

Co-Packaged Optics Market: \$2.4B by 2035, North America Leads

The following blog post digs into the latest market outlook for co-packaged optics (optical -cpo-modules-market-42-9-cagr-through-2031/">CPO). There's a lot happening—remarkable growth

Lumentum showcases next-gen InP chips enabling scalable AI data

"Lumentum InP technology is also enabling new co-packaged optics solutions to significantly reduce power consumption in AI data-center networks, supporting larger AI installations

Silicon Photonics Transceivers for Data Centers With

Coherent announces the launch of its 2x400G-FR4 Lite optical transceiver, a silicon photonics-based module optimized for AI-driven data

Sample Pages

Co-packaged photonics leverage this approach to increase off-package bandwidth with energy-efficient links, thereby mitigating the need to significantly increase pin count and package size.

The Evolution of Optical Modules: 400G → 800G → 1.6T - A Strategic ...

Discover the evolution from 400G to 800G and 1.6T optical modules. Learn key technologies, CPO vs pluggable, and upgrade strategies for future-ready data centers.

Yole Group

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AOI (AAOI) debuts 400mW laser for silicon photonics | AAOI Stock News

Applied Optoelectronics (NASDAQ: AAOI) on Dec 18, 2025 introduced a new 400mW narrow-linewidth pump laser targeted at silicon photonics and co-packaged optics (CPO) for AI data

Co-packaged optics: The future of data centers

Discover how co-packaged optics (CPO) is revolutionizing hyperscale data centers. Learn how Corning's cutting-edge technology boosts AI

OFC 2026 News Roundup | Business | Mar 2026

LOS ANGELES — Pilot Photonics, a provider of integrated lasers, has partnered with Finchetto, developer of fully optical passive network switches,

NewPhotonics optical IC chips for the AI scale data center

All-Optical Photonic ICs Designed for Scale Highly integrated photonic integrated circuit chips designed for transceiver pluggable and co-packaged optics. Built for

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