

Global Co-Packaged Optics Optical Engine Market 2026 by Manufacturers, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global Co-Packaged Optics Optical Engine market size was valued at US\$ 483 million in 2025 and is forecast to a readjusted size of US\$ 1047 million by 2032 with a CAGR of 9.1% during review period.

Co-packaged optics optical engines are high-density optical-electrical conversion components designed for AI computing clusters, high-speed switch chips, accelerator chips, and data center networking equipment. Their core function is to complete high-speed conversion between electrical and optical signals near the chip package. By using silicon photonics, external continuous-wave lasers, optical I/O chiplets, driver amplification, photodetection, fiber-array coupling, and advanced packaging technologies, these products move part of the interconnect functions traditionally handled by front-panel pluggable optical modules closer to the chip. This helps reduce high-speed electrical channel loss, shorten board-level trace distances, increase bandwidth density, and improve system energy efficiency. These products are typically delivered as CPO optical engines, NPO optical engines, optical I/O chiplets, external light source modules, fiber-coupling components, or subassemblies of complete switching systems. Typical applications include 51.2T and higher-speed switches, AI server clusters, GPU and XPU interconnects, high-performance computing networks, cloud data center scale-up interconnects, and scale-out interconnects. Their main customers include switch chip vendors, AI chip vendors, cloud service operators, optical communication equipment vendors, and advanced packaging system integrators. Commercialization priorities focus on power consumption, thermal management, reliability, serviceability, packaging yield, and ecosystem standardization.

The industrial value of co-packaged optics optical engines is evolving from a single

optical communication component into a system-level solution for bottlenecks in AI computing infrastructure. As AI training and inference clusters expand, switches, GPUs, XPU, and accelerators require higher-density, lower-power, and lower-latency data transmission. Traditional board-level high-speed electrical connections are approaching practical limits in distance, loss, thermal performance, and power consumption. Optical engines move electrical-to-optical conversion from front-panel pluggable modules to the vicinity of chip packages, allowing high-speed signals to be converted over shorter electrical paths and then transmitted over optical fibers for longer-distance, high-bandwidth connectivity. This can materially improve system-level energy efficiency and interconnect density. The commercialization of this technology is not merely a replacement for optical modules, but a restructuring of the relationship among switch chips, photonic chips, external light sources, packaging structures, and system thermal design. It is therefore well positioned as a key direction for AI data center networking upgrades and chip-to-chip interconnect upgrades.

From the perspective of the value chain, co-packaged optics optical engines feature parallel technology routes and multi-party collaboration. Silicon photonics platforms integrate modulators, waveguides, photodetectors, and coupling structures into compact chips. External continuous-wave laser sources provide stable optical power. Driver ICs and transimpedance amplifiers handle high-speed electrical signal processing, while advanced packaging addresses thermal management, precision assembly, fiber coupling, and reliability validation. Companies enter the market from different positions, with some focusing on switch chips and systems, some on optical I/O chiplets, some on external light sources, and others on fiber arrays and packaging components. Because CPO products must simultaneously meet requirements for bandwidth, power consumption, thermal performance, yield, serviceability, and standards compatibility, no single segment can easily form a complete commercial closed loop on its own. Competition will increasingly be defined by platform ecosystems, customer qualification capabilities, and cross-domain engineering integration.

In the coming years, the growth of co-packaged optics optical engines will be driven primarily by AI infrastructure investment, switch chip bandwidth upgrades, and data center energy-efficiency requirements. Near-term adoption is most likely in high-end switches, AI training clusters, and hyperscale cloud data centers, while medium-term expansion may extend to AI accelerator packages, chip-to-chip interconnects, GPU pooling, and high-performance computing networks. The market still faces challenges in cost, reliability, packaging yield, field serviceability, and standards convergence, but these challenges will also accelerate the evolution of external light sources, socketed optical engines, 3D optical I/O, and high-precision passive coupling components.

Production capacity will concentrate in countries and regions with strengths in silicon photonics design, lasers, optical components, advanced packaging, and system integration, while demand will concentrate in markets with active cloud computing, AI server, and high-performance networking deployment. Overall, this segment is in an early phase of transition from technology validation to scaled deployment, and its long-term growth potential will depend on the pace of AI network architecture upgrades and the maturity of the CPO ecosystem.

This report is a detailed and comprehensive analysis for global Co-Packaged Optics Optical Engine market. Both quantitative and qualitative analyses are presented by manufacturers, by region & country, by Transmission Capacity and by Application. As the market is constantly changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global Co-Packaged Optics Optical Engine market size and forecasts, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2021-2032

Global Co-Packaged Optics Optical Engine market size and forecasts by region and country, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2021-2032

Global Co-Packaged Optics Optical Engine market size and forecasts, by Transmission Capacity and by Application, in consumption value (\$ Million), sales quantity (Units), and average selling prices (K US\$/Unit), 2021-2032

Global Co-Packaged Optics Optical Engine market shares of main players, shipments in revenue (\$ Million), sales quantity (Units), and ASP (K US\$/Unit), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for Co-Packaged Optics Optical Engine

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

This report profiles key players in the global Co-Packaged Optics Optical Engine market based on the following parameters - company overview, sales quantity, revenue, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Broadcom Inc., NVIDIA Corporation, Marvell Technology, Inc., Ayar Labs, Inc., Ranovus Inc., Ciena Corporation, Coherent Corp., Lumentum Holdings Inc., Lightmatter, Inc., Credo Technology Group Inc., etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Market Segmentation

Co-Packaged Optics Optical Engine market is split by Transmission Capacity and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for consumption value by Transmission Capacity, and by Application in terms of volume and value. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Transmission Capacity

100G

400G

800G

1.6T

3.2T

6.4T and Above

32T and Above

Market segment by Light Source Configuration

Integrated Laser

External Laser Source

Without Light Source

Market segment by Integration Position

In-Package Integration

Package-Edge Mounting

Front-Panel External

Others

Market segment by Application

Switch Chip Interconnect

Compute Chip Interconnect

Optical Module Interconnect

External Light Source Supply

Others

Major players covered

Broadcom Inc.

NVIDIA Corporation

Marvell Technology, Inc.

Ayar Labs, Inc.

Ranovus Inc.

Ciena Corporation

Coherent Corp.

Lumentum Holdings Inc.

Lightmatter, Inc.

Credo Technology Group Inc.

POET Technologies Inc.

Furukawa Electric Co., Ltd.

LIPAC Co., Ltd.

Suzhou TFC Optical Communication Co., Ltd.

Accelink Technologies Co., Ltd.

Market segment by region, regional analysis covers

North America (United States, Canada, and Mexico)

Europe (Germany, France, United Kingdom, Russia, Italy, and Rest of Europe)

Asia-Pacific (China, Japan, Korea, India, Southeast Asia, and Australia)

South America (Brazil, Argentina, Colombia, and Rest of South America)

Middle East & Africa (Saudi Arabia, UAE, Egypt, South Africa, and Rest of Middle East & Africa)

The content of the study subjects, includes a total of 15 chapters:

Chapter 1, to describe Co-Packaged Optics Optical Engine product scope, market overview, market estimation caveats and base year.

Chapter 2, to profile the top manufacturers of Co-Packaged Optics Optical Engine, with price, sales quantity, revenue, and global market share of Co-Packaged Optics Optical Engine from 2021 to 2026.

Chapter 3, the Co-Packaged Optics Optical Engine competitive situation, sales quantity, revenue, and global market share of top manufacturers are analyzed emphatically by landscape contrast.

Chapter 4, the Co-Packaged Optics Optical Engine breakdown data are shown at the regional level, to show the sales quantity, consumption value, and growth by regions, from 2021 to 2032.

Chapter 5 and 6, to segment the sales by Transmission Capacity and by Application, with sales market share and growth rate by Transmission Capacity, by Application, from 2021 to 2032.

Chapter 7, 8, 9, 10 and 11, to break the sales data at the country level, with sales quantity, consumption value, and market share for key countries in the world, from 2021 to 2026. and Co-Packaged Optics Optical Engine market forecast, by regions, by Transmission Capacity, and by Application, with sales and revenue, from 2027 to 2032.

Chapter 12, market dynamics, drivers, restraints, trends, and Porters Five Forces analysis.

Chapter 13, the key raw materials and key suppliers, and industry chain of Co-Packaged Optics Optical Engine.

Chapter 14 and 15, to describe Co-Packaged Optics Optical Engine sales channel, distributors, customers, research findings and conclusion.

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