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Co-Packaged Optics Market Forecasts to 2034 – Global Analysis By Component (Optical Engines, Photonic Integrated Circuits (PICs), Laser Sources, Optical Fibers & Connectors, Optical I/O Interfaces, Switch ASICs, Packaging Substrates, and Other Components), Technology, Data Rate, Packaging Type, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Co-Packaged Optics Market is accounted for $0.6 billion in 2026 and is expected to reach $8.1 billion by 2034, growing at a CAGR of 38.7% during the forecast period. Co-packaged optics refers to an advanced packaging technology that integrates optical components and electronic switch ASICs in a single package, enabling higher bandwidth density, lower power consumption, and improved signal integrity compared to traditional pluggable optical modules. This technology encompasses optical engines, photonic integrated circuits, laser sources, optical fibers and connectors, optical I/O interfaces, switch ASICs, packaging substrates, and thermal management components. Co-packaged optics leverages silicon photonics, indium phosphide photonics, coherent optics, direct-detect optics, wavelength division multiplexing, and pluggable-to-CPO hybrid architectures across various data rates from up to 400G to above 1.6T.

Market Dynamics:

Driver:

Exponential growth in data center traffic and AI workloads

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The exponential growth in data center traffic and the rapid expansion of AI workloads serve as primary catalysts for the co-packaged optics market. AI training and inference require massive bandwidth and low-latency connectivity between compute nodes, pushing the limits of conventional optical interconnect solutions. Data center traffic continues to grow at unprecedented rates, driven by cloud computing, video streaming, and digital services. Co-packaged optics enables the high bandwidth density and power efficiency necessary to support these demanding applications. As AI models continue to grow in complexity and data center traffic expands, the demand for co-packaged optics solutions continues to accelerate.

Restraint:

High development costs and manufacturing complexity

The co-packaged optics market faces significant challenges from high development costs and manufacturing complexity that can limit commercialization and adoption. Developing CPO solutions requires substantial investment in research, design, and testing to achieve reliable performance and yield. The integration of optical and electronic components in a single package involves complex assembly processes and advanced packaging technologies. Additionally, the lack of established manufacturing infrastructure for CPO creates capacity constraints and cost challenges. These development and manufacturing challenges can slow commercialization and increase product costs.

Opportunity:

Growth of AI infrastructure and hyperscale data centers

The rapid expansion of AI infrastructure and hyperscale data centers presents significant opportunities for co-packaged optics providers. AI clusters require extremely high bandwidth connectivity with low latency and power consumption, making CPO an ideal solution. Hyperscale data center operators seek to optimize power efficiency and bandwidth density, driving adoption of advanced optical interconnect technologies. The increasing demand for high-speed networking in AI training clusters creates substantial market opportunities for CPO solutions. As AI infrastructure investment continues to grow, the demand for co-packaged optics solutions continues to expand.

Threat:

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Competition from pluggable optics and emerging interconnect technologies

The co-packaged optics market faces threats from competition from pluggable optics and emerging interconnect technologies that could limit adoption. Pluggable optics continue to improve in performance and power efficiency, narrowing the gap with CPO solutions in some applications. The development of alternative optical interconnect technologies could provide competitive options. Additionally, the established ecosystem and supply chain for pluggable optics create barriers to CPO adoption. These competitive pressures require CPO providers to demonstrate clear advantages in bandwidth density, power efficiency, and total cost of ownership.

Covid-19 Impact:

The COVID-19 pandemic significantly impacted the co-packaged optics market by accelerating demand for data center infrastructure and cloud services while disrupting supply chains and product development schedules. The shift toward remote work and digital services increased demand for data center capacity and networking equipment, driving interest in advanced optical interconnect technologies. Supply chain disruptions affected specialized component availability and development timelines. The semiconductor industry's focus on AI and data center infrastructure continued despite pandemic challenges. As digital transformation accelerated, the focus on high-bandwidth, power-efficient optical interconnect solutions intensified.

The optical engines segment is expected to be the largest during the forecast period

The optical engines segment is expected to account for the largest market share during the forecast period, driven by their essential role as the core optical transceiver component in co-packaged optics, integrating lasers, modulators, and detectors on a single chip to enable high-speed optical transmission. Optical engines provide the optical-to-electrical and electrical-to-optical conversion functionality critical for CPO solutions. As CPO deployment expands, the demand for high-performance optical engines remains the largest segment in the co-packaged optics market.

The 1.6T segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the 1.6T segment is predicted to witness the highest growth rate, driven by the increasing demand for ultra-high-bandwidth optical interconnects in AI training clusters and hyperscale data centers, where CPO enables the compact, power-efficient connectivity required for next-generation networking. The scaling of AI

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models and data center networks requires increasing data rates to support growing traffic demands. As data center operators upgrade networks to support AI workloads, the adoption of 1.6T CPO solutions continues to accelerate.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest market share, driven by the presence of leading cloud service providers, hyperscale data center operators, and technology companies pioneering AI infrastructure development and early adoption of advanced optical interconnect technologies. The region's dominance in cloud computing and AI development supports CPO adoption. Additionally, a mature technology ecosystem, substantial research and development investments, and the concentration of data center operators contribute to the region's largest market share.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR, fueled by rapid data center expansion, increasing AI infrastructure investment, growing cloud service adoption, and strong telecommunications infrastructure development across countries like China, India, Japan, South Korea, and Singapore. The region's large population and growing digital economy drive demand for connectivity infrastructure. The rapid growth of cloud service providers and AI development across the region accelerates CPO adoption at the fastest pace.

Key players in the market

Some of the key players in Co-Packaged Optics Market include Broadcom Inc., NVIDIA Corporation, Intel Corporation, Cisco Systems Inc., Marvell Technology Inc., Coherent Corp., Lumentum Holdings Inc., Ayar Labs Inc., Ranovus Inc., Celestial AI Inc., Infinera Corporation, TeraHop Pte. Ltd., DustPhotonics Ltd., TE Connectivity Ltd., and Molex LLC.

Key Developments:

In March 2025, Broadcom Inc. announced its next-generation co-packaged optics solution featuring integrated optical engines for high-bandwidth data center and AI applications. The solution enables improved bandwidth density and power efficiency for demanding networking applications.

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In February 2025, NVIDIA Corporation introduced a new co-packaged optics platform for AI cluster connectivity, delivering high-bandwidth, low-latency optical interconnects for distributed AI training systems. The platform supports scaling of AI infrastructure with improved efficiency.

Components Covered:

- Optical Engines
- Photonic Integrated Circuits (PICs)
- Laser Sources
- Optical Fibers & Connectors
- Optical I/O Interfaces
- Switch ASICs
- Packaging Substrates
- Thermal Management Components
- Other Components

Technologies Covered:

- Silicon Photonics
- Indium Phosphide (InP) Photonics
- Coherent Optics
- Direct-Detect Optics
- Wavelength Division Multiplexing (WDM)

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Pluggable-to-CPO Hybrid Architectures

Data Rates Covered:

Up to 400G

800G

1.6T

Above 1.6T

Packaging Types Covered:

On-Board Optics (OBO)

Co-Packaged Optics (CPO)

Near-Packaged Optics (NPO)

Applications Covered:

Data Center Networking

AI & HPC Clusters

Cloud Computing Infrastructure

Ethernet Switching

Telecommunications Networks

5G & 6G Infrastructure

Enterprise Networking

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- Edge Computing
- Government & Defense Networks

End Users Covered:

- Cloud Service Providers
- Hyperscale Data Center Operators
- Telecommunications Service Providers
- Enterprise Data Centers
- Government & Defense Organizations
- Research Institutions

Regions Covered:

- North America
  - United States
  - Canada
  - Mexico
- Europe
  - United Kingdom
  - Germany
  - France
  - Italy

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- Spain
- Netherlands
- Belgium
- Sweden
- Switzerland
- Poland
- Rest of Europe

Asia Pacific

- China
- Japan
- India
- South Korea
- Australia
- Indonesia
- Thailand
- Malaysia
- Singapore
- Vietnam
- Rest of Asia Pacific

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South America

Brazil

Argentina

Colombia

Chile

Peru

Rest of South America

Rest of the World (RoW)

Middle East

Saudi Arabia

United Arab Emirates

Qatar

Israel

Rest of Middle East

Africa

South Africa

Egypt

Morocco

Rest of Africa

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What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2023, 2024, 2025, 2026, 2027, 2028, 2030, 2032 and 2034
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

- Company Profiling
  - Comprehensive profiling of additional market players (up to 3)
  - SWOT Analysis of key players (up to 3)
- Regional Segmentation
  - Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)
- Competitive Benchmarking

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Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Rest of the World (RoW) are also represented in the same manner as above.

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