

# OCS Optical Switch Applications



## Overview

OCS enables transparent transmission of optical signals and supports the exchange of optical signals at any rate, modulation format, or communication wavelength in optical fibers. It boasts features such as zero clock jitter, no delay, no data reading, and no leakage risk. Optical Circuit Switching (OCS) is the perfect candidate to meet these needs within data centers and AI clusters. To accelerate its adoption and ensure seamless integration into modern Networking Project. This subproject is dedicated to developing guiding principles, open standards, and a fully. Optical Circuit Switching (OCS) represents a significant advancement in telecommunications, promising enhanced performance and efficiency for high-bandwidth networks. Unlike traditional electronic circuit-switched systems, OCS uses optical signals to establish direct communication paths between. The rapid advancement of Artificial Intelligence (AI) and Machine Learning (ML) technologies has led to a surge in demand for High Performance Computing (HPC) and extensive data processing capabilities. GPU interconnect ports have rapidly upgraded to 800G (2x400G) and are expected to reach 1.6T. Circuit Design for Scalable and Fast Optical Circuit Switching By Erik Francis Anderson A dissertation submitted in partial satisfaction of the requirements for the degree of Doctor of Philosophy in Engineering - Electrical Engineering and Computer Science in the Graduate Division of the University. This 4Q25 report is a continuation of and update to Cignal AI's previous OCS reports. Since the report's last publication in January 2025, and the webinar Optical Circuit Switching for AI Scaling and Datacenter Automation in July 2025, the OCS forecast has been updated based on newer information. Valencia, Spain – March 31, 2025 – iPronics, a leader in software-defined photonics, today launched its Optical Networking Engine, ONE-32, the world's first Optical Circuit Switch (OCS) product based on silicon photonics.

## Article Content

OCS market to exceed US\$1 billion by 2028

There is widespread interest in Optical Circuit Switching (OCS) components for AI applications as new deployments by hyperscale operators

Wavelength Selective Switches (WSS) / Optical Circuit

This allows for a greater number of optical channels and higher data transmission bandwidth within the same footprint, while ensuring high-precision light guidance

Circuit Design for Scalable and Fast Optical Circuit Switching

The following sections introduce the concept of optical circuit switching and identify the target application and key technology for the designs presented in Chapters 2 and 3.

OCS Solution, Polatis, optical switching technology

These switches find extensive application in various scenarios, including AI computing centers with full optical switching, quantum internet, and automated

Coherent Announces Optical Circuit Switch for Data Centers

--Coherent Corp., a global leader in optical communications materials, components, and subsystems, announced today the introduction of a new optical circuit switch based on the company"

High-Radix Optical Circuit Switch (OCS) Platform | Molex

Optical network architects need more efficient connectivity for AI training and inferencing at scale. The High-Radix Optical Circuit Switch Platform from Molex

The Evolution of Optical Modules: Powering the Future

The Role of Optical Modules in Modern Computing Optical modules are the unsung heroes of data communication. These devices bridge electrical

What is OCS (Optical Circuit Switching)?

Optical Circuit Switching (OCS) is a cutting-edge technology that optimizes optical networks by dynamically reconfiguring light paths. Learn about its working

Optical Circuit Switching » Open Compute Project

The mission of the OCS Subproject is to standardize and advance Optical Circuit Switching as an open, scalable, and efficient solution for next-generation networking.

When Light Replaces Copper: Lumentum (LITE) — The Optical Heart

OCS — redefining the switching fabric The first two paths focus on keeping existing Ethernet/InfiniBand logic while swapping copper for optics and moving optics to better locations.

The Optical Circuit Switching Market

The Optical Circuit Switching Market - 4Q25 In this update to our OCS report we cover more vendors and technologies, investigate additional

Google's TPU-Powered "Google Chain" Leads Market

The full-stack value chain looks like this: Compute (Custom TPU architecture)+Interconnect (OCS optical switch systems)+Model: (Gemini 3

Molex Accelerates AI Cluster Deployment with One-Stop Optical ...

Molex unveils a full optical stack including serviceable CPO solution, detachable fibertochip interfaces and a High Radix Optical Circuit Switch platform to accelerate AI cluster

Lumentum Announces R64 Optical Circuit Switch for AI Data Centers

Flexible Optical Design: The R64 platform allows scaling to 72x72 ports, uni- or bi-directional operation, and full any-to-any fiber connectivity which removes typical OCS connectivity

In-Depth Analysis of OCS: Optical-Layer Direct-Connect Switching ...

In-depth analysis of OCS (Optical Circuit Switching) in AI training and high-performance computing (HPC) data centers, exploring its optical-layer direct-connect architecture, low-latency and

Optical Circuit Switch (OCS) Guide for AI Data Center | FiberMall

The optical circuit switch (OCS) is rapidly becoming the most important new building block in hyperscale and AI data center architecture. As GPU clusters scale to tens of thousands of

If you invest in photonics, please read this. I spent this weekend ...

Gaetano (@crux\_capital\_). 198 likes 17 replies. If you invest in photonics, please read this. I spent this weekend researching the OCS supply chain. Quick lesson: > OCS = Optical Circuit

Optical Circuit Switch Explained: Benefits, Use Cases, and LINK-PP ...

Applications such as weather modeling, genomic sequencing, and physics simulations rely on predictable interconnect performance. Ultra-low latency pathways provide competitive

Optical Communications Giant Lumentum Posts Strong Results but

However, CEO Hurlston made it clear that growth engines CPO (Co-Packaged Optics) and OCS (Optical Circuit Switches) are driving long-term variables, stating that "these components

iPronics Unveils World's First Silicon Photonics Optical

iPronics, a leader in software-defined photonics, today launched its Optical Networking Engine, ONE-32, the world's first Optical Circuit Switch (OCS)

Lumentum Announces R64 Optical Circuit Switch for AI Data Centers

Lumentum Holdings Inc. ("Lumentum"), a global leader in optical and photonic technology, today announced the expansion of its Optical Circuit Switch (OCS) product line with the

Open Compute Project launches Optical Circuit

The Open Compute Project Foundation (OCP) has announced the formation of a new Optical Circuit Switching (OCS) subproject.

Do You Really Know Optical Circuit Switching?

Let's discover what Optical Circuit Switching (OCS) really is, how it works, and why it matters for modern networks. Learn its benefits, use cases, and

AI Data Center Interconnect 2026: CPO, Optical Interconnect and ...

Explore AI data center interconnect trends in 2026, including CPO, optical interconnect, OCS, and the real challenges slowing large-scale deployment.

## Contact Us

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