Optical Switch CPO

Overview

Co-packaged optics-based networking switches with unmatched power efficiency and resiliency. Discover how Corning is innovating optical communications for 400G and beyond. Replacing pluggable transceivers with silicon. OFC 2025 made one thing clear: The transition to Co-Packaged Optics (CPO) switches in data centres is inevitable, driven primarily by the power savings they offer. From Jensen Huang showcasing CPO switches at GTC 2025 to a wide range of vendors demonstrating optical engines integrated inside ASIC. As AI clusters push beyond 100 Tb/s per node, the gap between what silicon can generate and what traditional copper interconnects can deliver is widening fast. Adding GPUs no longer scales linearly, with power and. At the SC25 SuperComputing conference in November, NVIDIA announced that GPU computing facility operators, including Lambda and CoreWeave, as well as the Texas Advanced Data Center (TACC), will adopt its Quantum-X Photonics CPO switches. This article provides a comprehensive overview of CPO optical modules, exploring their technology, benefits, challenges, and the pivotal role they play in future data centers.

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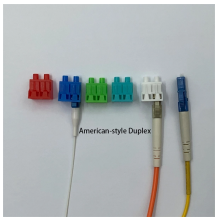
Co-packaged optics (CPO) technology, a key enabler for next-generation data center architectures, promises unprecedented bandwidth density and power efficiency by tightly integrating ...

The revolutionary CPO technology is reshaping high-bandwidth switches and distributed-computing hardware in data centers. The paper explores the design and handling practices developed over ...

CPO switches shorten the electrical signal path, reduce power consumption, and decrease the number of pluggable modules by co-packaging optical modules with switch chips, while improving link reliability.



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Near package optics (NPO) brings the optics module on the same substrate or very close to the switch package, but not inside it: It''s close enough to reduce most copper impairments. This is ...

To address the energy demand from AI, co-packaged optics (CPO) brings optical engines directly adjacent to switch ASICs, accelerators, and chiplets. By collapsing electrical distances from ...

Consider a 102 Tbps switch box with 64 x 1.6 Tbps optical modules as shown in Figure 2. Each 1.6T, 3nm DSP is estimated to consume about 15W. This means that the power for just the ...

A failure in an optical engine might require replacing an entire CPO switch line card or server board rather than just swapping a pluggable module. Developing robust testing, diagnostics, ...

Co-packaged optics-based networking switches with unmatched power efficiency and resiliency. NVIDIA''s co-packaged optics (CPO) switches with integrated silicon photonics are the world''s most ...

CPO switches offer key advantages for AI and HPC networks, including increased speed, port density, and lower latency. By reducing power needs and minimizing infrastructure costs, CPO ...

Enter Co-Packaged Optics (CPO), a transformative architecture where the optical engine moves inside the switch ASIC package. This article provides a comprehensive overview of CPO ...

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