Does supernode technology use optical modules

Overview

CloudMatrix 384 super-node uses 6912 x 400G OSFP silicon photonic (SiPh) Linear Drive Pluggable Optics (LPO) optical modules and 3168 fibers, connecting 384 Ascend 910C computing chips through a complete mesh interconnection architecture. Large AI models involve both scale-up and scale-out networks, and AI computing supernode technology aims to integrate hundreds of GPUs/NPUs to form high-density computing units, such as the NVIDIA GB200 NVL72, Huawei CM384, and ODCC ETH-X. As the number of GPUs multiplies, bandwidth demands exceed TB/s, and rack power density climbs to over 40kW. Based on Xizhi Technology's world-first distributed optical switching technology, this supernode utilizes silicon photonics-based optical interconnect and optical switching chips, BiRen Technology's proprietary high-computing general-purpose GPU liquid cooling module, and a new carrier board. This article analyzes Panjiu AL128 supernode AI servers and their interconnect architecture, explaining what supernodes are, how GPUs connect, and how they advance AI computing. At the Apsara Conference 2025, Alibaba Cloud unveiled its new-generation Panjiu AI Infra 2. 2% failures stem from optics & how QSFPTEK cuts costs by 69. On May 14, 2025, the

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"2025 Chip and Optical Forum" hosted by HiSilicon and organized by. While the industry-standard OSFP (Octal Small Form-Factor Pluggable) module has successfully enabled 400Gbps, 800Gbps, and 1. 6Tbps optical pluggable modules, it is limited to 32 modules per Rack Unit (RU), typically requiring 2 RUs to achieve 102.

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	Optical interconnection supports multiple types of modules, including CPO, NPO, and LPO modules. The differences between these types of modules are not discussed in this article. ...
	The XPO pluggable module preserves the advantages of field pluggability, enabling quick replacement or upgrades of optical modules without servicing the entire switch and minimizing downtime. It also ...
	This supernode is based on the world''s first distributed optical switching technology developed by Xizhi Technology, utilizing optical interconnect optical switching chips based on silicon ...
	CloudMatrix 384 super-node uses 6912 x 400G OSFP silicon photonic (SiPh) Linear Drive Pluggable Optics (LPO) optical modules and 3168 fibers, connecting 384 Ascend 910C ...
	With Gen5 optical cables, clients will no longer be constrained to deploying only in data centers without power and cooling limitations, as longer optical cables now allow for connecting ...

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	Based on Xizhi Technology''s world-first distributed optical switching technology, this supernode utilizes silicon photonics-based optical interconnect and optical switching chips, BiRen Technology''s ...
	This technology co-packages optical engines with ASICs/GPUs, addressing electrical interconnect bandwidth bottlenecks and energy consumption issues. For example, NVIDIA''s ...
	High-end optical modules (especially 800G/1.6T class) and many near-term CPO roadmaps still rely heavily on electro-absorption modulated lasers (EMLs) because EMLs integrate ...
	In an AI data center, 800G OSFP optics carry very high aggregate bandwidth across short to moderate distances, often between top-of-rack (ToR), spine, and supernode switches. Most ...
	The Driver chip drives the optical modulator to complete the electro-optical conversion, and the optical signal is transmitted via optical fiber.

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