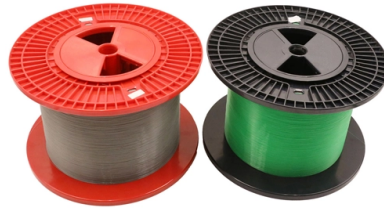


## GPU Optical Module Interconnection



### Overview

This article explores how optical modules enable GPU cluster architectures, the specific requirements of GPU interconnects, and best practices for designing high-performance AI training networks. GPU Communication Patterns in Distributed Training Understanding All-Reduce. NVIDIA ® LinkX ® Optics Ethernet transceivers are used to create high-speed, 100G-400G links supporting every configuration, reach, and speed in networks requiring detachable optical connectors. LinkX transceivers are designed to create high-speed 25G-400G optical links in Ethernet switching. By shortening the electro-optical conversion path and improving bandwidth density and energy efficiency, they are redefining the system interconnection methods for AI and HPC clusters, and laying the technological foundation for future ultra-large-scale computing platforms. Figure 1: Traditional Solution with DSP vs. The current infrastructure in data centers relies on. OFC and GTC are entangled because data center AI needs optical interconnect to keep compute fed. Optical interconnect enabled the internet with transoceanic and transcontinental high-bandwidth optical fiber connections. Mishra, "A 112Gb/s ADC-DSP-based PAM-4 transceiver for long-reach applications with >40dB channel loss in 7nm FinFET," ISSCC 2021, pp.

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Today, 800G optical transceivers are widely deployed in modern AI data centers to support high-performance GPU networking. As AI clusters continue to scale, the industry is moving ...

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