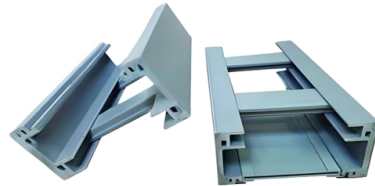


New Zealand Optical Network Switch LPO



Overview

Revolutionizing Data Centers with a Linear Pluggable Optic (LPO). One of the most groundbreaking network innovations driving transformations of data center.

Key Takeaways

Linear Pluggable Optics (LPO) enable high-speed, low-latency, and energy-efficient optical networking, and are supported by modern switches like Dell PowerSwitch and MikroTik netFiber 9 in New Zealand. What is LPO? Linear Pluggable Optics (LPO) are optical transceivers designed without a digital signal processor (DSP), shifting signal processing to the host device such as a switch or NIC.

This architecture reduces power consumption by 30–50%, lowers latency, and decreases module cost by eliminating the DSP chip, while maintaining high-speed connectivity for data centers and AI/ML clusters.

LP

O modules use high-linearity drivers and transimpedance amplifiers (TIA) to handle optical signals, making them ideal for short-reach, high-density connections where efficiency and low latency are critical.

LP

O is particularly advantageous in leaf-spine networks, GPU fabrics, and hyperscale data centers, where host ASICs manage signal conditioning. However, DSP-based optics may still be preferred for longer or less predictable links due to their built-in error correction and equalization.

LPO Standards and Interoperability

The LPO Multi-

Source Agreement (MSA) defines interoperability requirements for modules and network equipment, ensuring multi-vendor compatibility starting at 100 Gb/s per lane.

LP

O modules are gradually being adopted in both single-mode and multi-mode fiber networks, with certifications like DSPLPO indicating compatibility with remote LPO endpoints.

Available Optical Network Switches in New Zealand

Dell Power

Switch Z9864F-ON / Z9664F-ON / Z9432F-ON Supports 800G-O112-2DR4-LPO and 400G-Q112-DR4-LPO optics Designed for high-performance data centers with end-to-end LPO solutions Compatible with Broadcom Thor 2 NICs for server-to-switch LPO connectivity Offers incremental deployment options for flexible scaling MikroTik netFiber 9 Outdoor Optical Network Switch Available in New Zealand via PB Tech Supports SFP/SFP+ ports for 10G optical networking Features ARM v7 CPU, 256 MB RAM, 4x 10G SFP+ ports, and PoE support Rugged outdoor design with heatsink and mounting options for poles or walls Suitable for smaller-scale or outdoor optical networks, including light routing and gigabit management

Key Benefits of LPO Switches

- Lower Power Consumption:** Removing DSP reduces energy usage significantly
- Reduced Latency:** Analog signal path eliminates DSP processing delays
- Cost Efficiency:** Lower BOM cost by eliminating expensive DSP chips
- High-Density Deployment:** Ideal for hyperscale and AI/ML clusters
- Flexible Scaling:** Incremental LPO deployment allows gradual network upgrades

Considerations

LPO modules rely on host-side signal processing, so compatibility depends on the switch or NIC implementation Best suited for short-reach, high-density environments; longer links may still require DSP-based optics Multi-vendor interoperability is still maturing, so closed-system deployments are currently more reliable

In New Zealand, organizations can leverage Dell PowerSwitch LPO solutions for high-performance data centers or MikroTik netFiber 9 for outdoor optical networks, depending on scale, reach, and deployment environment.

Article Content

Revolutionizing Data Centers with a Linear Pluggable Optic (LPO) ...

One of the most groundbreaking network innovations driving transformations of data centers in 2025 is Linear Pluggable Optics (LPO)—a Digital Signal Processor (DSP)-free optical solution designed to

Introducing Linear Pluggable Optics (LPO)

This article gives a short insight into how LPO technology works, how it differs from DSP-based optics, the scenarios where it offers the most advantages, and the standards that enable its

Optical Interconnect Technology Analysis: LPO, NPO, CPO

Exploring optical interconnects for AI data centers: LPO for low-power, short-distance links, NPO for high-density, near-package connections, and CPO for ultra-high-bandwidth co

LPO vs LRO vs CPO vs NPO Optics: Understanding The Difference

Learn about LPO vs LRO vs NPO vs CPO optics. Understand their architectures, DSP design, deployment challenges, and future applications.

1.6T Switch Era: Choosing Between CPO, NPO, and LPO for Next

At Asterfusion, we remain rooted in engineering pragmatism, actively advancing our next-generation 1.6T open switching platform powered by Marvell® Teralynx® T100 and Enterprise

400G, 800G, and Terabit Pluggable Optics:

High-Speed Interconnects: Backend network requires high speed 100G/200G or 800G optics to connect servers and network switches. These high bandwidth connections are essential for handling the data

LPO & Low-Power Optics Guide 2025 | Data Center Power Efficiency

Complete guide to Linear Pluggable Optics (LPO) for data centers. Learn how LPO reduces power in 400G/800G networks for AI/ML workloads.

LRO, LPO, and Silicon Photonics: Reducing Power Consumption in

Linear Receive Optics (LRO) and Linear Pluggable Optics (LPO) are 2 key solutions that engineers building AI infrastructure are exploring to reduce the power from network equipment.

Optical Interconnect Technology Analysis: LPO, NPO, CPO

As mainstream speeds transition from 112G to 224G, existing LPO architectures face new limitations in signal bandwidth and noise control.

Optimizing Connectivity in the Data Center

The focus? A new innovation for networking: Linear Pluggable Optics (LPO). Listen in on Dell's innovative approach to redefining data center connectivity through Linear Pluggable Optics

Semtech to showcase new linear pluggable optical links for AI and ML ...

Semtech announced the demonstration of 100Gbps/lane linear pluggable optical links featuring Semtech's PAM4 PMDs from its FiberEdge product line and from its new DirectEdge brand,

Why HPC Chip Designers Are Turning to Linear Pluggable Optics

To address these challenges, chip designers and network architects are exploring new approaches to data transmission. One technology gaining traction is Linear Pluggable Optics

CPO vs LPO: Choosing the Right Path for Next-Gen Data Center Optical ...

CPO vs LPO: Compare key differences, benefits, power savings, and best use cases for data centers to choose the right optical technology for your needs.

Arista Networks Surges on Optical Networking

Arista Networks' recent developments highlight its focus on advancing optical networking technologies, specifically through innovations in Co

LPO vs. CPO: Which Data Center Optical Interconnect Will Be the

This article will introduce CPO and LPO two next-generation data center interconnections, these two silicon photonics modules have good performance in terms of energy consumption and

Optimizing Connectivity in the Data Center, Server-to-NIC Using LPO ...

LPO vs. CPO: What's the future of data center optics? ☐☐ At Dell Tech World 2025, hosts Patrick Moorhead and Daniel Newman speak with James Wynia, Director Product Management Networking

Cisco: LPO not a panacea but plays strategic role in AI networks

Cisco has committed to developing Linear Pluggable Optics (LPO) options for its Silicon One family to address the growing need for lower power, high-throughput networking for AI. Cisco recently ...

LPO vs CPO: Which Will Dominate the Data Center Optical

In the rapidly evolving landscape of data center optical interconnects, the competition between LPO (Laser Phased-locked Oscillator) and CPO (Coherent Phased-locked Oscillator) is

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