

RIVO MULTITRADE OPTICAL SYSTEMS

Vietnam FOB Active Optical Module LPO



Overview

On the right-hand side, a retimed optical module is illustrated consisting out of a DSP and an optical engine.

Key Takeaways

Linear Pluggable Optics (LPO) modules are high-performance, low-latency optical transceivers deployed in Vietnam to enhance telecom network speed, efficiency, and scalability. Overview of LPO Technology

Linear Pluggable Optics (LPO) are optical transceiver modules designed to remove the digital signal processor (DSP) from the module, replacing it with high-linearity analog components such as transimpedance amplifiers (TIA), driver chips, lasers, and photodiodes. The host device, such as a switch or NIC, handles the digital signal processing tasks that would normally occur inside the module. This architecture results in lower power consumption, reduced latency, and simpler module design compared to traditional DSP-based optics, making LPO ideal for modern data centers and high-speed networks .

Advantages of LPO Modules

- **Power Efficiency:** By eliminating the DSP, LPO modules consume significantly less power, which is critical for large-scale deployments in data centers and backbone networks .
- **Low Latency:** Signal processing is shifted to the host ASIC, reducing the delay introduced by in-module DSP processing .

- **Pluggable Flexibility:** LPO retains a standard pluggable form factor, allowing hot swapping, easy servicing, and interoperability across network equipment .
- **Optimized for Short to Medium Distances:** LPO modules are best suited for high-quality links where signal integrity is maintained, though they may have limitations in long-haul transmission due to reduced DSP compensation .

Deployment in Vietnam

Vietnam Telecom (Viettel) has adopted LPO modules through a partnership with LINK-PP, a global supplier of optical transceivers. This collaboration addresses Vietnam's growing demand for high-speed internet, 5G networks, and cloud services by upgrading core network capacity and modernizing data centers . Key deployment benefits include:

- **Upgrading Core Network Speeds:** Transitioning from 10G/40G links to 100G and 400G to handle exponential traffic growth.
- **Data Center Modernization:** Supporting virtualization, cloud migration, and high-density server deployments.
- **Enhanced Network Resilience:** Minimizing downtime and ensuring reliable service for millions of users.
- **Cost and Energy Optimization:** LPO modules reduce operational costs and energy consumption while maintaining high performance .

Considerations

While LPO modules offer power and latency advantages, they rely heavily on the SerDes capabilities of the host switch ASIC for signal integrity. This makes them more suitable for short-distance, high-quality links rather than long-haul deployments. Careful planning, training, and network design are essential to maximize the benefits of LPO in Vietnam's telecom infrastructure .

Conclusion

Vietnam's adoption of FOB LPO modules represents a strategic move to enhance network speed, efficiency, and scalability. By leveraging LINK-PP's high-quality optical transceivers, Vietnam Telecom can meet the demands of next-generation networks while optimizing energy use and operational costs, positioning the country at the forefront of Southeast Asia's digital transformation .

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Linear Drive Pluggable Optics

On the right-hand side, a retimed optical module is illustrated consisting out of a DSP and an optical engine. The DSP inside the

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Comparison to CPO g the need for a standalone module. Although CPO is becoming increasingly popular, LPO is seen as a natural

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Transceiver implementers have made good progress in demonstrating technical feasibility of LPO Active optical cables and network

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The Host SerDes performance needs to cover the electrical trace loss from the Host ASIC to the optical module, the E/O and O/E

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The specification defines the necessary optical and electrical requirements for a robust ecosystem of LPO-compatible

Introducing Linear Pluggable Optics (LPO)

Linear Pluggable Optics (LPO) are a new optical transceiver technology. The idea is simple: instead of a DSP (digital

Linear Pluggable Optics

Linear Pluggable Optics (LPO) is an optical transceiver that features low power consumption, low latency, and low heat generation.

Exploring LPO Linear-Drive Optical Modules: A Modern Solution for

The advancement of LPO technology marks a significant breakthrough in optical module technology. Addressing key

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LPO technology represents a critical evolution in optical transceiver design, directly tackling the core challenges of the

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Exploring optical interconnects for AI data centers: LPO for low-power, short-distance links, NPO for high-density,

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