

Rebranded Network Security Equipment LPO



Overview

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.

Key Takeaways

Linear Pluggable Optics (LPO) are low-power, DSP-free optical modules that can be rebranded in network equipment, but U.S. regulations restrict high-risk foreign-sourced devices for national security purposes. What is LPO?

Linear Pluggable Optics (LPO) are optical modules designed to provide high-speed, low-power, and low-latency connectivity in data centers and enterprise networks. Unlike traditional pluggable modules, LPOs do not include a digital signal processor (DSP); instead, they rely on the capabilities of modern ASICs in switches or Network Interface Cards (NICs) to handle signal equalization and compensation, creating a linear end-to-end signal path. This design reduces power consumption, cost, and latency while maintaining interoperability across multiple vendors' equipment. LPO modules can operate in various architectures, including LPO-to-LPO links, LPO-to-retimed links, and half-linear setups like Linear Receive Optics (LRO), .

Rebranding and Security Considerations

Rebranded network equipment refers to devices originally manufactured by one company but sold under another brand. This practice is common in the networking industry, including for LPO modules. While rebranding itself is not inherently unsafe, U.S. regulatory authorities have identified certain foreign manufacturers as national security risks. The FCC maintains a Covered List of equipment and services deemed unsafe, including products from Huawei, ZTE, Hikvision, Dahua, and Hytera, and has expanded restrictions to include older and rebranded models used in public safety, government, and critical infrastructure networks. These rules prohibit the import, marketing, or use of such equipment in sensitive applications, even if the modules are rebranded under a different vendor.

Practical Implications

- **Network Planning:** Organizations deploying LPO modules should verify the source and certification of the optics to ensure compliance with U.S. security regulations.
- **Interoperability:** LPO modules are designed to be multi-vendor compatible under the LPO MSA, allowing gradual deployment and integration with existing switches and NICs.
- **Security Risk Mitigation:** Avoid using LPO modules or network equipment sourced from manufacturers on the FCC Covered List in sensitive environments. Even rebranded devices may fall under these restrictions if the original manufacturer is listed.
- **Performance Benefits:** Properly sourced LPO modules provide high-speed connectivity (100 Gb/s per lane and above), lower power consumption, and reduced latency, making them suitable for modern data center and enterprise networks. In summary, LPO technology offers significant technical advantages, but organizations must carefully evaluate the origin and compliance status of rebranded network equipment to mitigate national security risks and adhere to FCC regulations.

Article Content

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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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LPO differs from traditional optical modules by using linear drive and pluggable design, supporting hot-swappability to

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As global networks push toward faster, more energy-efficient transmission, technologies like DSP Digital Signal

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