Optical module as a software router

AI Overview

An optical module can act as a software-defined router by integrating routing functions directly into a pluggable transceiver, enabling cost-efficient, scalable, and disaggregated optical networks.Concept OverviewModern optical modules, such as Cisco's Routed PON SFP+ or QSFP transceivers, can replace traditional OLT chassis by embedding routing capabilities within the module itself. These modules plug directly into high-speed router ports (10G, 25G, or higher) and manage the optical span to connected ONTs or ONUs, effectively functioning as a software-controlled router in a compact form factor . This approach allows the router to handle both IP routing and optical transport without requiring separate hardware for the OLT.Key Features and BenefitsPluggable and Hot-Swappable: Optical modules can be inserted or replaced without powering down the host router, providing flexibility and minimal downtime .Disaggregated Control: Advanced modules decouple the optical transceiver control from the host software, enabling faster deployment of new features and easier integration with SDN controllers .Scalability: Networks can scale port-by-port without adding full OLT chassis, supporting future upgrades from 10G to 25G or higher while maintaining cost efficiency .Reduced Footprint and Power Consumption: By eliminating the need for a full OLT chassis, these modules reduce physical space requirements and power usage in access networks .Standards Compliance: Modules support OMCI and other industry standards, ensuring compatibility with a wide range of ONTs and optical network devices .ApplicationsRouted Passive Optical Networks (R-PON): Optical modules act as pluggable OLTs, enabling routers to directly manage subscriber connections and IP routing simultaneously .High-Speed SFP+/QSFP WAN Interfaces: Modules can connect routers directly to fiber networks, replacing traditional fiber modems and providing high-speed WAN connectivity .Routed Optical Networking (RON): In aggregation and metro networks, software-enabled optical m...

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Cisco Routed Optical Networking | Design | XRdocs

Routed Optical Networking by definition is a disaggregated optical solution, creating efficiency by moving coherent endpoints in the router. The

Optical networks

An optical transport network is a high-speed communication system that sends light signals over fiber-optic cables to move large amounts of data across long

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