



Inquiry about 100G enterprise-grade optical router

Article Overview

100G enterprise-grade optical routers deliver high-speed, low-latency connectivity for data centers, HPC, AI, and cloud infrastructures using QSFP28 or InfiniBand EDR modules.

Overview

100G optical routers are designed to handle high-bandwidth, low-latency traffic in enterprise and data center networks. They are commonly deployed in leaf-spine architectures, connecting top-of-rack (ToR) switches to aggregation or core layers, and are essential for AI workloads, cloud services, and high-performance computing (HPC) environments . These routers support subnet isolation, compute-to-storage connectivity, and can scale efficiently while reducing operational costs .

Key Technologies

- o QSFP28 Modules: The Quad Small Form-factor Pluggable 28 (QSFP28) is the dominant 100G transceiver form factor. It uses four 25 Gbps lanes to achieve 100 Gbps throughput, offering high port density, low power consumption, and a compact footprint . QSFP28 modules support various link distances, from 100 meters over multimode fiber (SR4) to 10 km over single-mode fiber (LR4), and are hot-pluggable for easy upgrades .
- o InfiniBand EDR Routers: Models like SB7780 and SB7880 provide 36 fully-flexible 100Gb/s ports, enabling multiple subnets and high-performance interconnects. They leverage SHARP in-network computing acceleration for improved application performance and scalability, while maintaining low power consumption and high availability . These routers are ideal for data-intensive workloads requiring extremely low latency.

Applications

- o Data Centers: Aggregating traffic between racks and spine switches, supporting leaf-spine topologies.
- o High-Performance Computing (HPC): Low-latency, high-throughput interconnects for AI and scientific computing.
- o Cloud and Enterprise Networks: Core and distribution layers requiring scalable 100G Ethernet or InfiniBand connectivity.
- o Data Center Interconnect (DCI): Metro or regional links using 100G optical transceivers for high-speed uplinks .

Advantages

- o High Bandwidth: 100G throughput per port supports modern enterprise workloads.
- o Low Latency: Critical for HPC, AI, and real-time applications.



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- o Scalability: Modular design allows network expansion without major hardware changes.
- o Energy Efficiency: Modern routers and QSFP28 modules consume less power than older CFP/CFP2/CFP4 solutions .
- o Interoperability: QSFP28 modules are MSA-compliant, ensuring compatibility across vendors .

Deployment Considerations

- o Fiber Type: Choose multimode (OM3/OM4) for short distances or single-mode for long-haul links.
- o Port Density: QSFP28 modules allow higher density in the same rack space.
- o Redundancy and Power: Enterprise-grade routers often include dual power supplies and hot-swappable components for high availability .
- o Monitoring: Digital Diagnostics Monitoring (DDM) provides real-time status of optical links . In summary, 100G enterprise-grade optical routers equipped with QSFP28 or InfiniBand EDR modules provide a high-performance, scalable, and energy-efficient solution for modern data centers, HPC clusters, and enterprise networks, supporting both Ethernet and InfiniBand protocols with flexible deployment options .

This article delves into the features, applications, and advantages of the 100G QSFP28 CWDM4 optical transceiver,

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