

RIVO MULTITRADE OPTICAL SYSTEMS

Pod core switch



Overview

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Key Takeaways

A pod core switch is a high-capacity network switch at the backbone of a pod-based data center network, responsible for routing and aggregating traffic between pods and the wider network. Overview of Pod Architecture

In modern data centers, a pod is a modular unit that combines compute, storage, and networking resources into a repeatable block for scalability and easier management . Each pod typically contains a leaf and spine network or a single access layer, depending on the design . Multiple pods are connected through a core layer, where the core switches act as the backbone, linking the spines or leaf layers of each pod .

Role of the Core Switch

A core switch is installed at the top of the network hierarchy and serves as the primary routing and switching device for high-volume traffic . Its main functions include:

- Aggregating traffic from multiple pods or spine switches.
- Routing data efficiently between pods and external networks.
- Ensuring high availability by supporting redundancy and load balancing.

- Maintaining performance under heavy traffic loads, as the network's overall throughput depends on the core switch's forwarding capacity . In a pod-based design, the core layer can be referred to as the “spine of spines” when connecting multiple spine networks from different pods, forming a scalable, tree-like topology .

Network Design Considerations

- Scalability: Pods can be added incrementally, and core switches must handle the aggregated traffic from all pods .
- Redundancy: Multiple core switches are often deployed to prevent congestion and provide failover in case of hardware failure .
- Topology: Common topologies include Clos networks or leaf-spine architectures, where each leaf switch in a pod connects to multiple spine/core switches to ensure non-blocking, low-latency paths .
- High-performance fabrics: In AI or HPC clusters, such as NVIDIA DGX SuperPODs, core switches aggregate traffic from multiple pods and spine-leaf groups, supporting extremely high bandwidth and low latency for GPU-to-GPU communication .

Summary

A pod core switch is essential for connecting modular pods in a data center, providing high-speed routing, aggregation, and redundancy. It forms the backbone of scalable, high-performance networks, enabling efficient communication between compute, storage, and external networks while supporting growth and fault tolerance .

Article Content

Point of delivery (networking)

A point of delivery (PoD) is "a module of network, compute, storage, and application components that work together to deliver

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