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Enterprise Router as Core Switch

Overview

Explore our router selector to swiftly identify and migrate to the Cisco enterprise router that best fits your needs.

Key Takeaways

An enterprise router can function as a core switch in certain scenarios, but dedicated core switches are generally preferred for high-speed, low-latency, and scalable enterprise networks.Core Switch vs Router

A core switch is designed to handle massive traffic volumes with ultra-low latency, high reliability, and advanced Layer 3 capabilities. It interconnects distribution switches, supports high-speed uplinks (10G–400G+), and provides redundancy through dual power supplies, hot-swappable modules, and protocols like HSRP or VRRP . Core switches also offer large buffers, wire-speed forwarding, and advanced security features such as ACLs and 802.1X . An enterprise router, on the other hand, primarily focuses on routing between networks, WAN connectivity, and policy-based traffic management. While modern routers can support high throughput and Layer 3 switching, they may not match the port density, low-latency switching, or modular scalability of dedicated core switches .

When a Router Can Serve as a Core

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Using a router as a core switch is feasible in smaller networks or collapsed core architectures, where the network has fewer devices and lower traffic demands. In such cases, the router can handle inter-VLAN routing, IP routing between subnets, and basic redundancy. This approach can simplify network design and reduce hardware costs . However, in large enterprise or campus networks, relying solely on a router may introduce bottlenecks, higher latency, and limited scalability. Core switches are optimized for non-blocking, high-speed switching, and can handle microbursts and high-density uplinks more efficiently than routers .

Best Practices
• Hybrid Approach: Use a core switch for high-speed backbone connectivity and routers for WAN or inter-site routing.

• Redundancy: Ensure dual power supplies, link aggregation, and failover protocols (HSRP/VRRP) are implemented if a router is used as a core.

• Performance Monitoring: Monitor throughput, latency, and CPU utilization to prevent congestion.

• Future-Proofing: Consider port speeds, PoE requirements, and expansion needs; dedicated core switches often provide better long-term scalability .
Conclusion

While an enterprise router can act as a core switch in smaller or cost-sensitive deployments, dedicated core switches are recommended for high-performance, scalable, and mission-critical enterprise networks. They provide superior throughput, low latency, redundancy, and advanced Layer 3 features essential for modern data centers and campus networks .

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Generally, no. Environments with fewer than 50 connected devices typically do not generate enough internal traffic to

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