

# Enterprise Core Routing Overview - Official Technical Overview & Hardware Datasheet

## EXECUTIVE SUMMARY

This document serves as the authoritative technical datasheet for the ApexCore 9000 Series Enterprise Network Optimization Strategy Blueprint. It delineates a comprehensive hardware and systems engineering approach to transforming legacy enterprise WAN and campus cores into high-performance, AI-ready, and sustainable infrastructures. The blueprint addresses critical enterprise pain points: exponential bandwidth growth, application-level Quality of Service (QoS) complexity, security integration, and operational simplification. The ApexCore 9000 series is not merely a routing platform; it is a strategic asset designed to future-proof the enterprise network, ensuring optimal resource utilization, unparalleled uptime, and a seamless migration path towards intent-based networking.



## ARCHITECTURE & CHASSIS DESIGN

The architectural foundation of the ApexCore 9000 is built upon a distributed, non-blocking switching fabric with a centralized control plane for simplified management. The modular chassis, available in 4-slot, 8-slot, and 16-slot variants, accommodates a mix of high-density 10/25/40/100 Gigabit Ethernet line cards. The system architecture is characterized by a fully redundant backplane, offering a switching capacity of up to 25.6 Tbps. The design philosophy emphasizes a clear separation of the data, control, and management planes. The control plane is powered by dual, hot-swappable route processors with built-in hardware-assisted encryption. Management plane access is secured through dedicated out-of-band Ethernet ports, ensuring that network operations remain accessible even during data plane anomalies. The chassis is engineered for high-availability with N+1 fan tray redundancy

and 1+1 power supply units (AC or DC), meeting the rigorous demands of mission-critical enterprise environments.

## HARDWARE FEATURES & PERFORMANCE

The ApexCore 9000 integrates a proprietary, fifth-generation forwarding engine ASIC that enables line-rate performance on all ports. Key hardware features include:

- **Forwarding Capacity:** 5.6 Bpps (Billion packets per second) for the 8-slot system.
- **Latency:** Sub-microsecond latency (typically < 1 microsecond) for 100GbE interfaces, essential for high-frequency trading and real-time analytics.
- **Intelligent Buffer Management:** Up to 16GB of shared packet buffer per line card, enabling deep burst absorption and consistent performance for TCP incast and microburst scenarios.
- **On-Device Telemetry:** Hardware support for streaming telemetry (gRPC and NETCONF) to provide granular real-time insights into traffic flows, buffer utilization, and forwarding performance without impacting the data plane.

The platform supports advanced features such as Segment Routing (SR-MPLS and SRv6), EVPN-VXLAN, and precise time synchronization (1588v2 and SyncE), making it an ideal foundation for modern SD-WAN and 5G transport integration.

## COMPLIANCE & STANDARDS

The ApexCore 9000 is developed in accordance with the highest industry standards to ensure interoperability and regulatory compliance. The platform adheres to IEEE 802.3 for Ethernet, RFC standards for BGP, OSPF, and IS-IS, and MEF specifications for carrier-grade Ethernet. It holds certifications including FCC Class A, VCCI Class A, and CE marking for electromagnetic compatibility and safety. Additionally, the platform complies with RoHS and WEEE directives for environmental sustainability. For enterprise security, the hardware is built on a Trusted Platform Module (TPM) root of trust, validating the integrity of the bootloader and system image, thus ensuring compliance with NIST SP 800-193 platform firmware resiliency guidelines.

| Parameter          | Specification  |
|--------------------|--|
| Form Factor        | 4-Slot, 8-Slot, 16-Slot Modular Chassis<br>(RU variants) |
| Switching Capacity | Up to 25.6 Tbps (Full-Duplex)                            |
| Forwarding Rate    | Up to 5.6 Bpps (Billion packets per second)              |
| Power Supply       | 1+1 or 2+2 Redundant AC/DC<br>(Hot-Swappable)            |

|                    |   |
|--------------------|---|
| Routing Engines    | Dual Redundant, Hot-Swappable<br>(16GB-128GB RAM) |
| Port Density (Max) | 576 x 100GbE, 1152 x 40GbE, 4608 x<br>10GbE       |
| Latency (100GbE)   | < 1 microsecond                                   |
| MTBF               | > 300,000 Hours (Telcordia SR-332)                |

## ORDERING OPTIONS

The ApexCore 9000 series offers extensive flexibility to meet diverse enterprise requirements.

- **Chassis and Power:** AC and DC power options with 1+1 or 2+2 redundancy.
- **Line Cards:** A portfolio of line cards includes 48-port 1G SFP, 48-port 10G SFP+, 36-port 40G QSFP+, and 36-port 100G QSFP28. Future expansion cards for 200G/400G are pending roadmap.
- **Routing Engines:** Standard and Enhanced Performance Route Processors with varying CPU, memory (16GB to 128GB), and SSD storage capacities.
- **Licensing:** Advanced feature licenses are available for MPLS, Segment Routing, and MACsec encryption on specific port groups.

- **Services:** Optional subscription-based support and software maintenance for premium TAC support, next-business-day hardware replacement, and continuous security updates.

