Enterprise Core Systems Engineering Reference Manual: Modular Architecture Switch Price

PRODUCT IDENTIFICATION

The MODULAR ARCHITECTURE SWITCH PRICE (hereafter referred to as the Platform) represents a paradigm shift in carrier-grade and enterprise core networking. Engineered for the modern disaggregated datacenter and high-availability campus backbone, this modular chassis system decouples control plane integrity from forwarding plane elasticity. The Platform is identified by its unique ability to scale linearly with port density while maintaining deterministic sub-microsecond latency. It serves as the cornerstone for Software-Defined Networking (SDN) readiness and Network Functions Virtualization (NFV) integration.



CORE INTERNAL TOPOLOGY

The Platform leverages a mid-plane connector architecture utilizing orthogonal direct-attach technology, eliminating the PCB trace length limitations of traditional backplanes. The fabric modules operate on a cell-based Clos arbitration logic. Key topological features include:

- Fabric Redundancy: N+1 fabric module redundancy with hitless failover
- Packet Forwarding Engine: Distributed ASIC architecture with shared packet buffer of up to 32GB
- Control Plane: 1+1 hot-standby supervisor modules with independent CPU complex and 64GB DRAM
- Flow Tables: Ternary Content-Addressable Memory (TCAM) supporting up to 2 million IPv4 routes

SWITCHING CAPABILITIES

All forwarding decisions are handled by the ingress line cards. The system guarantees non-blocking performance across all slots simultaneously. The fabric utilizes a lossless priority-based flow control mechanism, ensuring zero packet drop during micro-burst events typical of East-West traffic in leaf-spine topologies.

OPERATIONAL ADVANTAGES

- Linear Cost Scalability: Pay-as-you-grow pricing model for port activation

- Operational Efficiency: Telemetry streaming via gRPC and Model-Driven Programmability

- Energy Proportionality: Intelligent port disabling and variable-speed fan zones reduce OPEX by up to 40% at low utilization

- Investment Protection: Backward compatibility with SFP, SFP+, QSFP, and QSFP-DD optics via a universal port license scheme

SPECIFICATION MATRIX

Parameter	**Specification**
Form Factor	Modular Chassis (7RU / 10RU / 13RU options)
Switching Capacity	Up to 25.6 Tbps (non-blocking, full duplex)
Forwarding Rate	Up to 8.4 Bpps (billion packets per second)
Slot Bandwidth	800 Gbps per slot (full-duplex)
Power Supply	Dual-hot-swappable, 2200W AC/DC

	(2+2 or N+N redundancy)
Operating Temperature	0°C to 45°C (Long term); -5°C to 55°C (Short term)

REGULATORY COMPLIANCE

Safety Compliance: UL 62368-1, IEC 60950-1, EN 60825-1 (Laser Safety). EMC Compliance: FCC Part 15 (Class A), EN 55032, VCCI-Class A. Environmental Compliance: RoHS-3, REACH SVHC, WEEE. NEBS Level 3 compliance for temperature, humidity, and seismic requirements is optional via the NEBS-A upgrade SKU.

