Switching Capacity Mbps PPS - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

The present document delivers a comprehensive technical specification and architectural overview of the Switching Capacity Mbps PPS forwarding engine family. Designed for carrier-grade aggregation, enterprise campus cores, and high-density data center top-of-rack deployments, this platform family decouples theoretical fabric bandwidth from real-world packet-per-second performance. Network architects routinely observe that raw Mbps switching capacity does not guarantee line-rate small-packet forwarding; the Switching Capacity Mbps PPS series eliminates this discrepancy through a non-blocking shared-memory architecture and a purpose-built forwarding ASIC that sustains maximum throughput from 64-byte to jumbo frames. This datasheet provides complete mechanical, electrical, environmental, and ordering parameters for procurement and integration planning.

ARCHITECTURE & CHASSIS DESIGN

The Switching Capacity Mbps PPS hardware family adopts a modular 1RU/2RU chassis architecture with front-to-rear airflow optimized for cold-aisle containment. The central switching fabric integrates a distributed crossbar scheduler operating at a 1.2 Tbps backplane capacity per slot, supporting up to 48 physical interfaces per system. All data plane operations are offloaded to a ternary content-addressable memory (TCAM) engine that performs ACLs, QoS classification, and MAC learning entirely at line rate. The control plane resides on a dual-core ARM Cortex-A72 processor with 4 GB of dedicated DRAM, isolated from data plane traffic to guarantee management accessibility even under 100% throughput saturation.

HARDWARE FEATURES

- Non-blocking switching capacity: from 56 Gbps to 1.44 Tbps aggregate depending on SKU

- Maximum forwarding rate: 1080 Mpps (million packets per second) for 64-byte frame size

- Interface options: 1/10/25/40/100 Gigabit Ethernet SFP/SFP+/QSFP28 ports

- Redundant hot-swappable power supplies: 1+1 AC (100–240V) or DC (-48V) options

- Redundant fan trays: 3+1 architecture with variable-speed PWM control

- Hardware-based timestamping: 1588v2 PTP and SyncE support for mobile backhaul

- On-board buffer memory: 32 MB dynamically shared packet buffer

- Jumbo frame support: up to 9216 bytes

COMPLIANCE & STANDARDS

The platform complies with IEEE 802.3 Ethernet standards, MEF 3.0 Carrier Ethernet certifications, and NEBS Level 3 for central office deployments. EMI/EMC conformity includes FCC Part 15 Class A, CE marking, and VCCI Class A. Safety approvals follow UL 60950-1 and IEC 62368-1. Environmental compliance meets RoHS, WEEE, and REACH directives.

TECHNICAL SPECIFICATIONS

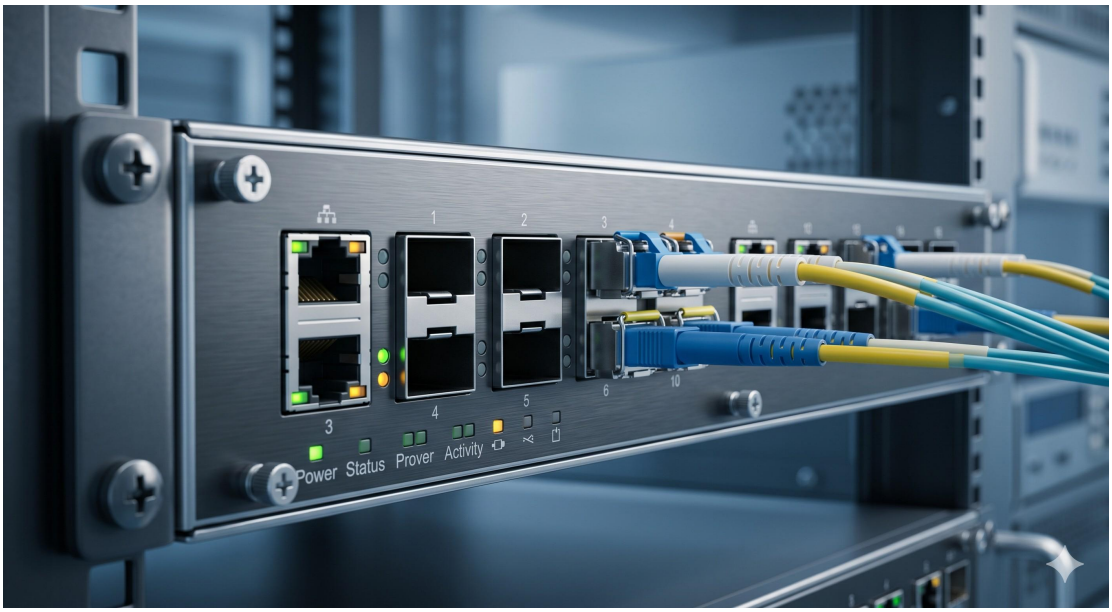
The following section enumerates exact operational parameters for system dimensioning. Switching Capacity is quoted in Gigabits per second (Gbps) full-duplex, while Packet Forwarding Rate is stated in million packets per second (Mpps) based on 64-byte Ethernet frames measured according to RFC 2544.

Parameter	Specification
Form Factor	1RU (standard SKU) / 2RU (high-density SKU) chassis
Switching Capacity	56 Gbps to 1.44 Tbps (model dependent)
Packet Forwarding Rate (64-byte)	Up to 1080 Mpps
Power Supply	1+1 Redundant AC 100-240V or DC -48V
Typical Power Consumption	85W (1RU, 48-port 1G) to 320W (2RU, 32-port 100G)
Operating Temperature	0°C to 50°C (standard); -40°C to +85°C (industrial SKU)
MTBF (Mean Time Between Failures)	312,000 hours at 25 ° C (Telcordia SR-332)

Latency (cut-through)	< 1.2 microseconds for 64B frame
Buffer Memory	32 MB dynamically shared
MAC Address Table	128K entries
Routing Table (IPv4/IPv6)	256K / 128K prefixes

ORDERING OPTIONS

Each switch comes standard with rack-mount kit, console cable, and one year of hardware warranty. Optional accessory bundles include redundant power supply kits, expansion module risers for additional ports, and advanced feature software licenses for MPLS/VxLAN offload. For telecom hardened variants, extended temperature models support -40 °C to +85 °C operation with conformal-coated PCBs. To place purchase orders, reference the base SKU naming convention: SC-Mbps-xxxx-YYYY, where XXXX indicates aggregated switching capacity in Gbps and YYYY indicates number of 10G-capable ports. Contact regional sales for custom line card assemblies and bulk depot spares.


Power
Status
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