

SDN (Software-Defined Networking) Switch Transition - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document provides a comprehensive technical overview and hardware datasheet for the Next-Generation SDN (Software-Defined Networking) Switch Transition Platform. Designed to bridge legacy network infrastructure with fully programmable, software-driven architectures, this hardware series represents a paradigm shift in network agility, operational efficiency, and scalability. The platform delivers a high-performance, carrier-grade switching foundation that enables seamless integration with centralized SDN controllers, facilitating automated provisioning, granular traffic engineering, and real-time network telemetry. By decoupling the control plane from the data plane, this solution empowers network operators to achieve unprecedented flexibility while maintaining the robust, deterministic performance expected from top-tier telecom hardware.



ARCHITECTURE & CHASSIS DESIGN

The platform is architected around a high-throughput, non-blocking switching fabric engineered to handle the dynamic traffic patterns inherent in SDN environments. The modular chassis design supports a range of port densities and interface types, accommodating future growth and evolving network demands.

- High-Speed Backplane: A redundant, high-bandwidth backplane provides up to [Specific Bandwidth, e.g., 6.4 Tbps] of switching capacity, ensuring line-rate performance across all active ports. The fabric utilizes a cell-based switching architecture optimized for low-latency and jitter, critical for time-sensitive SDN applications.
- Control Plane Redundancy: The system features a 1+1 redundant control

plane architecture. Each supervisor module runs an independent instance of the network operating system (NOS), providing stateful failover to ensure uninterrupted operation even in the event of a primary module failure.

- **Modular Front Panel:** The front panel is designed for flexible I/O configurations, supporting a mix of SFP, SFP+, QSFP, and QSFP-DD transceivers for 1GE, 10GE, 25GE, 40GE, 100GE, and 400GE connectivity. This versatility allows for targeted, cost-effective deployment across access, aggregation, and core network layers.

- **Advanced Thermal Management:** A variable-speed, redundant fan-tray system provides front-to-back airflow, optimizing cooling efficiency while minimizing acoustic noise. The chassis design includes thermal sensors strategically positioned to monitor and adjust cooling based on real-time load conditions.

HARDWARE FEATURES

The SDN Switch Transition is engineered with a purpose-built hardware pipeline that leverages merchant silicon and custom FPGA logic for deep programmability and high-performance packet processing.

- **Programmable Pipeline:** At the core is a highly programmable ASIC/FPGA complex that enables full protocol decoupling. This allows the data plane to be

reconfigured on the fly, supporting new protocols and functions without requiring a hardware change. The pipeline can parse, modify, and forward packets based on complex, user-defined match-action entries, enabling advanced telemetry and in-band network telemetry (INT).

- SDN Controller Integration: The platform is validated for seamless interoperability with a broad ecosystem of leading SDN controllers. It supports a comprehensive suite of Southbound APIs, including OpenFlow, gRPC, and NETCONF/YANG, enabling automated configuration and provisioning via standard controller interfaces.

- Enhanced Telemetry Capabilities: Integrated hardware support for advanced telemetry functions provides real-time, detailed visibility into network traffic. Features include support for sFlow, IPFIX, and in-band network telemetry, allowing for microsecond-level packet tracing and latency analysis.

- Precision Timing: Integrated support for IEEE 1588v2 (Precision Time Protocol) and SyncE ensures precise synchronization, a critical requirement for 5G backhaul, mobile edge computing, and other latency-sensitive applications.

- Security & Access Control: The hardware includes a dedicated security co-processor that accelerates line-rate encryption and decryption, supporting MACsec (IEEE 802.1AE) for link-layer security across all port types.

COMPLIANCE & STANDARDS

The SDN Switch Transition Platform is meticulously designed and verified to meet a wide range of industry standards, ensuring interoperability, safety, and electromagnetic compatibility.

- Safety: UL/CSA 60950-1, IEC/EN 60950-1, IEC/EN 62368-1, and CB Scheme.
- EMC: FCC Part 15 (Class A), EN 55032 (Class A), EN 55024, EN 61000-3-2, EN 61000-3-3.
- Environmental: NEBS GR-63-CORE and GR-1089-CORE (Level 3 compliant).
- RoHS & WEEE: Compliant with the latest European Union directives.
- Network & Interoperability: IEEE 802.1Q, 802.1ad, 802.3ae, 802.3by, 802.3ba, 802.3bs, and RFC-compliant with key routing and management protocols (e.g., BGP, OSPF, ISIS) as supported by the NOS.

TECHNICAL SPECIFICATIONS

Parameter	Specification
Form Factor	4RU Modular Chassis
Switching Capacity	6.4 Tbps (Full-Duplex)
Forwarding Rate	Up to 4.2 Bpps (Billion Packets Per Second)
Control Plane	1+1 Redundant Supervisor Modules
Management Ports	1 x RJ45 Console, 1 x USB, 1 x 1G RJ45

	Management, 1 x 10/25G SFP+ Management
Port Configurations	Up to 48 x 10/25GE SFP+ and 4 x 100GE QSFP28; or 32 x 40/100GE QSFP28
Power Supply	Dual, Hot-Swappable, 1+1 Redundant AC/DC (2000W)
Cooling	4+1 Redundant, Hot-Swappable Fan Trays, Front-to-Back Airflow
Operating Temperature	0°C to 45°C (Short-term: -5°C to 55°C)
Operating Humidity	5% to 95%, Non-Condensing
MTBF	> 250,000 Hours

ORDERING OPTIONS

The SDN Switch Transition Platform offers a flexible set of ordering SKUs to meet diverse deployment requirements. The following table details the primary ordering options available. For complete ordering information, including specific transceiver models and accessory kits, please refer to the official price list or consult your local sales representative.

| SKU Code | Description |

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| SDN-S-4804C | SDN Transition Chassis, 4RU, 48 x 10/25GE SFP+ & 4 x 100GE QSFP28 Ports, Dual AC Power Supply |

| SDN-S-3204C | SDN Transition Chassis, 4RU, 32 x 40/100GE QSFP28 Ports, Dual AC Power Supply |

| SDN-S-4804C-DC | SDN Transition Chassis, 4RU, 48 x 10/25GE SFP+ & 4 x 100GE QSFP28 Ports, Dual DC Power Supply |

| SDN-S-3204C-DC | SDN Transition Chassis, 4RU, 32 x 40/100GE QSFP28 Ports, Dual DC Power Supply |

| SDN-FAN-T | Redundant Fan Tray Module for SDN-S Series |

| SDN-PWR-AC-2K | 2000W AC Power Supply Module for SDN-S Series |

| SDN-PWR-DC-2K | 2000W DC Power Supply Module for SDN-S Series |

| SDN-SFP-10G-SR | 10GE SFP+ Short Range Optical Transceiver |

| SDN-SFP-10G-LR | 10GE SFP+ Long Range Optical Transceiver |

| SDN-QSFP-40G-SR4 | 40GE QSFP+ Short Range Optical Transceiver |

| SDN-QSFP-100G-SR4 | 100GE QSFP28 Short Range Optical Transceiver |

| SDN-SW-ENT | Enterprise Network Operating System License |

| SDN-SW-SDN | SDN Suite License (OpenFlow, gRPC, Telemetry) |

