

Enterprise Campus Network Design Blueprint - Official Technical Overview & Hardware Datasheet

EXECUTIVE SUMMARY

This document serves as the definitive technical reference for the Enterprise Campus Network Design Blueprint, a comprehensive hardware and systems engineering framework engineered to deliver carrier-grade resilience, multi-gigabit throughput, and seamless scalability for modern enterprise campuses. Designed to support high-density user environments, IoT proliferation, and mission-critical application delivery, this blueprint integrates advanced switching, routing, and power-over-Ethernet (PoE) capabilities within a compact, energy-efficient chassis. The following datasheet provides exhaustive technical specifications, architectural insights, and ordering information for the primary hardware components powering this solution.



ARCHITECTURE & CHASSIS DESIGN

The Enterprise Campus Network Design Blueprint is anchored by a modular, high-availability chassis architecture that supports a non-blocking switching fabric. The primary hardware platform features a 2RU form factor with up to 48x 10/100/1000BASE-T ports and 4x 10G SFP+ uplink interfaces, engineered for wire-speed forwarding across all ports simultaneously. The backplane utilizes a high-speed SerDes interconnect, providing a total switching capacity of up to 176 Gbps, ensuring that data flows are never bottlenecked. The chassis is constructed from cold-rolled steel with a robust ventilation scheme, supporting both front-to-back and back-to-front airflow configurations to accommodate diverse datacenter cooling strategies.

HARDWARE FEATURES

The platform incorporates a dual-core ARM-based network processor with built-in hardware acceleration for encryption and ACL processing. Key features include:

- IEEE 802.3at/bt Power over Ethernet Plus (PoE+) support with a total power budget of 740W, enabling the direct powering of high-wattage devices such as PTZ cameras, Wi-Fi 6 access points, and digital signage.
- Hardware-based Quality of Service (QoS) with 8 strict-priority queues per port, enabling microsecond-level latency for delay-sensitive traffic.
- Redundant, hot-swappable power supply units (PSUs) with 1+1 AC/DC capability, ensuring uninterrupted operation during PSU maintenance or failure.
- Integrated temperature and voltage monitoring sensors, coupled with variable-speed fan trays, optimize energy consumption while maintaining operational integrity under full load.

COMPLIANCE & STANDARDS

The design adheres to a comprehensive suite of industry standards to ensure interoperability and regulatory compliance. The platform is certified to meet IEEE 802.1Q (VLAN), IEEE 802.1D (STP), IEEE 802.1w (RSTP), IEEE 802.1s (MSTP), and IEEE 802.3x (Flow Control). Additionally, it complies with the following:

- EMI/EMC: FCC Part 15 Class A, EN 55032, EN 55024.
- Safety: UL 60950-1, CSA C22.2 No. 60950-1, EN 60950-1.
- Environmental: RoHS-6/6 and WEEE compliant, with energy efficiency meeting ETSI EN 300 019 standards for operational temperatures.

TECHNICAL SPECIFICATIONS

The following section delineates the absolute physical, electrical, and performance parameters governing the hardware. All specifications are measured under nominal operating conditions (25 °C ambient temperature) unless otherwise stated.

Parameter	Specification
Form Factor	2RU Rackmount Chassis
Switching Capacity	176 Gbps (Non-blocking)
Forwarding Rate	130.95 Mpps
Power Supply	1+1 Redundant, Hot-swappable (AC/DC)
Total PoE Budget	740W (up to 802.3bt Type 4)
Operating Temperature	0°C to 50°C
Storage Temperature	-40°C to 70°C

Humidity	10% to 90% (non-condensing)
MTBF	> 300,000 hours

ORDERING OPTIONS

To facilitate flexible deployment, the platform offers a comprehensive suite of field-replaceable units (FRUs) and accessory options. Primary ordering SKUs are as follows:

- CNB-CS-4804-2U: Base chassis with 48x 1G PoE+ ports and 4x 10G SFP+ ports (includes two fan trays, no PSU included).
- PWR-AC-800W: 800W AC power supply module (1+1 redundancy recommended).
- PWR-DC-800W: 800W DC power supply module for -48V DC environments.
- FAN-2U-F2B: Fan tray assembly, front-to-back airflow.
- FAN-2U-B2F: Fan tray assembly, back-to-front airflow.
- SFP-10G-SR: 10GBASE-SR SFP+ transceiver for multimode fiber (up to 300m).
- SFP-10G-LR: 10GBASE-LR SFP+ transceiver for single-mode fiber (up to 10km).

All FRUs are field-replaceable without the need for specialized tools, minimizing

service disruption. For detailed accessory compatibility and minimum software version requirements, please consult the product compatibility matrix available via the vendor support portal.

