Cisco Nexus 93180YC-EX Switch Buffer Size and Packet Forwarding Datasheet - Official Technical Overview & Hardware Datasheet

PRODUCT OVERVIEW

The Cisco Nexus 93180YC-EX (N9K-C93180YC-EX) is a high-performance, 1-Rack-Unit (1RU) data center switch, architected to deliver exceptional bandwidth and ultra-low latency for modern enterprise and cloud-scale networks. Powered by the Cisco Cloud Scale Leaf and Spine Engine (LSE) ASIC, this platform is designed to support the most demanding application environments, providing wire-rate Layer 2 and 3 switching on all ports .



FORWARDING ENGINE & PACKET BUFFER ARCHITECTURE

At the heart of the Nexus 93180YC-EX lies the purpose-built Cloud Scale LSE

ASIC, codenamed "Sugarbowl," a pioneering 16 nm network processor that sets the foundation for its packet forwarding capabilities .

SHARED PACKET BUFFER DYNAMICS

- **System Buffer Size**: The switch is equipped with a substantial 40 MB of on-chip shared packet buffer memory, integral to the LSE ASIC .
- **Architectural Partitioning**: The 40 MB buffer is intelligently partitioned into two cores, with each core managing half (20 MB) of the total memory. This design enables efficient, balanced handling of traffic flows across the switch's data plane .
- **Buffer Allocation Model**: The buffer operates on a cell (or particle) basis for memory allocation. This system maximizes frame storage efficiency; the maximum potential waste per frame is capped at 207 bytes, which only occurs when the final cell of a packet contains a single byte .
- **Intelligent Management**: The LSE ASIC employs advanced buffer management techniques, including approximate fair detection and dynamic packet prioritization. These features ensure that the 40 MB buffer is used optimally, preventing head-of-line blocking and maintaining predictable performance under congestion .

LINE-RATE FORWARDING PERFORMANCE

The Nexus 93180YC-EX is engineered for non-blocking, line-rate performance,

making it ideal for leaf-spine architectures and high-frequency trading environments.

- **Switching Capacity**: The platform delivers a total of 3.6 Terabits per second (Tbps) of switching bandwidth .
- **Packet Forwarding Rate**: It supports a forwarding rate in excess of 2.8 billion packets per second (bpps), ensuring that even the smallest packets are processed without performance degradation .
- **Ultra-Low Latency**: The switch boasts a latency of less than 1 microsecond, a critical specification for latency-sensitive applications such as financial services and database clustering .

HARDWARE ARCHITECTURE & PROCESSING SUBSYSTEM

CONTROL PLANE & MANAGEMENT

The switch's control plane is powered by a robust computing subsystem to handle complex network protocols and management tasks.

- **CPU**: Equipped with a quad-core Intel Ivy Bridge Gladden processor, providing ample compute capacity for control plane functions .
- **System Memory**: 24 GB of system memory supports extensive routing tables and concurrent protocol operations .

- **Storage**: A 64 GB mSATA Solid State Drive (SSD) is integrated for local storage of the operating system and log files .

INTERFACE CONFIGURATION & FLEXIBILITY

The Nexus 93180YC-EX offers a high degree of port flexibility, enabling seamless migration from 10G to 25G and from 40G to 100G infrastructures.

- **Downlink Ports**: 48 x 1/10/25-Gbps SFP+ fiber ports. These ports can be individually configured to operate at 1, 10, or 25 Gbps, offering investment protection and deployment versatility .
- **Uplink Ports**: 6 x 40/100-Gbps QSFP28 ports. The uplinks support multiple speeds, including 10, 25, 40, 50, and 100 Gbps, providing flexible migration options to higher-speed core networks .
- **Management Ports**: Features dual-media management ports (1 x RJ-45 and 1 x SFP+) for out-of-band network management, with automatic failover and copper interface priority .
- **Console & USB**: Includes one RS-232 serial console port and one USB 2.0 port for local management and file transfers .

KEY CAPABILITIES & PROTOCOL SUPPORT

- **VXLAN Routing**: Provides native, line-rate VXLAN routing, enabling 大规模 overlay network segmentation and workload mobility across the data center .

- **High Availability**: Supports features such as Virtual PortChannel (vPC), In-Service Software Upgrade (ISSU), and N+1 redundant, hot-swappable power supplies and fans to ensure continuous operations .

- **Comprehensive Programmability**: Fully programmable through Cisco NX-OS and supports modern DevOps workflows with automation tools.

- **Advanced Telemetry**: Delivers comprehensive Cisco Tetration Analytics™ telemetry information at line rate across all ports, providing deep visibility without impacting switch performance .

- **Security**: Integrates advanced security features, including MACsec encryption, Control Plane Policing (CoPP), and Secure Boot to protect the infrastructure from threats .

Parameter	**Specification**
Form Factor	1-Rack-Unit (1RU), Rack-mountable
Port Configuration	48 x 1/10/25-Gbps SFP+ and 6 x 40/100-Gbps QSFP28
Switching Capacity	3.6 Tbps
Forwarding Rate	> 2.8 Billion packets per second (bpps)
Latency	< 1 Microsecond
System Packet Buffer	40 MB (on-chip, shared)

CPU	Quad-core Intel Ivy Bridge Gladden
System Memory (RAM)	24 GB
Storage	64 GB mSATA SSD
MAC Address Table	256K to 512K entries
VLANs	4096
Power Supply	Dual Redundant, Hot-swappable (650W AC, 930W DC, or 1200W HVAC/HVDC)
Typical / Max Power Consumption	210 W / 470 W
Dimensions (H x W x D)	1.72 x 17.3 x 22.5 in. (4.4 x 43.9 x 57.1 cm)
Weight	17.2 lb (7.8 kg) (Chassis only)
MTBF	390,330 Hours



COMPLIANCE & REGULATORY STANDARDS

The Cisco Nexus 93180YC-EX is designed to meet a broad spectrum of international regulatory and environmental standards, ensuring compliance for global deployments.

- **Emissions**: CISPR 22 Class A, CISPR 24, EN 55022 Class A, ICES-003 Class A, VCCI Class A, KN22 Class A, CNS 13438 Class A .
- **Immunity**: EN 55024, EN 300 386, KN 61000-4 .
- **Safety**: UL 60950-1 Second Edition, CAN/CSA C22.2 No. 60950-1 Second Edition, EN 60950-1 Second Edition, IEC 60950-1 Second Edition, AS/NZS 60950-1, GB 4943 .
- **Environmental**: RoHS compliant .