

# Pluribus Freedom 9664-C Switch

High-Performance Spine Switch Supporting Advanced Network Services with 64xQSFP28 Ports, Each Supporting 1x100GbE or 1x40GbE, or via Breakout Cables, 4x25GbE or 4x10GbE

## Highlights

- Compact 2RU standards-based open network switch built on ONIE
- Optimized to support Netvisor ONE OS advanced cloud services
- Deployment-proven Broadcom Tomahawk2 switching ASIC
- Intel Xeon D-1518 quad-core 2.2GH processor
- Sustained performance predictability for all configurations
- Large-scale VXLAN configurations supported in hardware
- Architected for high-availability operations
- Reversible airflow supports hot-aisle and cold-aisle placement



## Product Overview

The Pluribus Freedom™ 9664-C switch is an advanced best-in-class, programmable open network platform that provides high-capacity, standards-based networking to stay ahead of evolving service demands driven by cloud requirements for enterprise and service provider data centers. Built on the deployment-proven Broadcom StrataXGS® Tomahawk switching ASIC, the Pluribus Freedom 9664-C is optimized to deliver the comprehensive advanced services of the Pluribus Netvisor® ONE Operating System (OS). The Pluribus Freedom 9664-C is Open Compute Project (OCP) compliant and is built with the Open Network Install Environment (ONIE) to support any compatible network operating system for maximum flexibility and adaptability to meet future data center networking requirements.

The platform delivers wire-speed Layer 2 and Layer 3 switching and routing with sustained packet forwarding performance of 12.8Tbps full duplex and 4.2Bpps throughput, even when complex, process-intensive services are enabled. The switch provides 64 ultra-low-latency QSFP28 FlexPorts that can support high-density 100, 40, 25 and 10 Gigabit Ethernet connections. The platform is highly power efficient and is architected for high-availability environments with redundant and hot-swappable power and fan units. To meet diverse environmental requirements, the Pluribus Freedom 9664-C switch offers airflow flexibility to support hot- or cold-aisle deployments.

The powerful next-generation switch can be deployed as a top-of-rack (ToR) or as a spine, enabling scale-out architectures and eliminating the need for costly, oversized chassis switches in the data center. Its simplicity empowers network operators to build a highly flexible architecture that can scale capacity horizontally to optimize performance and enhance agility to support growing application traffic on a pay-as-you-grow basis. The compact design of the Pluribus Freedom 9664-C switch dramatically reduces deployment footprint and requires less power and lower cooling, which immediately reduces the cost of data center network operations.

## System Highlights

- Wire-speed, full-duplex across all ports, Layer 2 and Layer 3 forwarding up to 12.8Tbps full duplex and 9.5Bpps
- 64 QSFP28 ports, including 16 FlexPorts capable of supporting 1x100/40G, or 4x25/10G ports for a total of 112 ports
- Each port supports single-mode and multi-mode fibers (duplex or MPO/MTP), as well as copper transceivers or cables
- Broadcom Tomahawk2 switching ASIC
- Intel Xeon D-1518 quad-core 2.2GHz processor
- 42MB shared packet buffer
- VXLAN services supported in hardware at wire speed
- All ports on front; PSUs and fans accessible from rear
- Dual redundant, load-sharing, hot-swappable 850W PSUs
- 3+1 redundant, hot-swappable fan modules
- Configurable hot-/cold-aisle with port-to-power and power-to-port airflow
- 2RU compact form factor mountable in either a standard 19" or 21" rack

## Unified Cloud Fabric™

The Unified Cloud Fabric (UCF) delivers the benefits of hyperscale agility, simplicity and availability to data centers, unified cloud networks and many other networking applications. The UCF unites networks across multiple dimensions: switches and servers, overlay and underlay networks, and distributed clouds. Powered by the Linux-based Netvisor® ONE operating system, the UCF solution features fabric-wide provisioning from any single switch in the fabric, resulting in massive service delivery speed-up and error reduction. This automation is achieved in a distributed, controller-less fashion, without the need for costly and complex software-defined networking appliances. The UCF solution offers a rich set of Layer 2 and Layer 3 overlay services to allow network architects and engineers to solve virtually any networking problem with agility in the overlay while maintaining a highly stable and scalable underlay. When deployed in servers with data processing units (DPUs), the fabric provides even finger-grained microsegmentation with distributed firewalls at the individual application level.

## Netvisor ONE Operating System

Enabling simple, plug-and-play deployments, the Pluribus Freedom 9372-T switch is delivered as an integrated, turnkey solution that is shipped pre-configured with the Pluribus Netvisor ONE OS installed on the Open Network Install Environment foundation. Pluribus Netvisor ONE is a virtualized network operating system (NOS) that provides a best-in-class Layer 2 and Layer 3 networking foundation and optionally licensed advanced network services such as VXLAN, the distributed Unified Cloud Fabric™ architecture and embedded network performance monitoring telemetry.

## Netvisor ONE Licensing Options

- **Netvisor ONE Enterprise Edition** — This license supports Layer 2 and Layer 3 switching and routing functionality with all standard networking protocols and high-availability features.
- **Netvisor ONE Fabric Edition** — This license supports VXLAN, telemetry, Unified Cloud Fabric and security and segmentation capabilities (not included with the switch).
- **vNET** — This license supports multi-tenant and network/traffic segmentation requirements. Licensed one per switch. vNET Manager capabilities require Virtual Netvisor (vNV) to be deployed (not included with the switch).
- **VirtualWire+™** — This license includes the Fabric license and enables VirtualWire capabilities (not included with the switch).
- **VirtualWire™** — This license enables VirtualWire capabilities in standalone Layer 1 VirtualWire mode (not included with the switch).

## Warranty

The Pluribus Netvisor® ONE OS and Pluribus Freedom™ Open Networking Switches are backed by a 90-Day limited warranty and access to technical support. Pluribus FreedomCare™ extended support options provide for extended support coverage, which includes advanced product replacements, software updates and upgrades and access to 24x7 technical support. Contact Pluribus Networks or a Pluribus Networks authorized reseller for details on advanced support options.

# Specifications

## Pluribus Freedom 9664-C Switch

### Switching Engine

- Broadcom BCM56970 Tomahawk2 ASIC

### Onboard CPU Engine

- Intel Xeon D-1518 quad-core 2.2GHz
- 8GBx2 2133MHz with ECC (DDR4 SO-DIMM)
- 16MBx2 SPI Flash (Boot)
- m.2 SSD: 32GB iSLC
- mSATA connector

### Software

- Switch is loaded with Open Network Install Environment (ONIE) software installer
- Pluribus Netvisor ONE OS - based upon options ordered

### Interface Ports

#### Network Interfaces

- 64xQSFP28 100GbE

#### Management Ports

- 1xRJ-45 serial console
- 1xRJ-45 1000BASE-T management
- 1xUSB Type A storage

### Performance

- Switching capability: 12.8Tbps full duplex
- Forwarding rate: 4.2Bpps
- Jumbo frames support up to 9398 bytes
- Packet buffer size: 42MB integrated packet buffer

### Hardware Capacity

- Please refer to the Pluribus Netvisor® ONE OS data sheet

### Operational

- PSUs: 2 redundant, load-sharing, hot-swappable AC or -48 VDC
- Input voltage: 100-240 VAC, 50-60 Hz
- Maximum power: 850 Watts
- Typical power: 690 Watts
- Hot-swappable 3 +1 redundant fan modules
- Supports both hot-aisle and cold-aisle placement with reversible airflow

### Physical and Environmental

- Dimensions (WxDxH): 43.8 x 58.0 x 8.8 cm (17.2 x 22.8 x 3.5 in)
- Weight: 14.11 kg (31.1 lb.)
- Fans: Hot-swappable 3 + 1 redundant fans
- Operating temperature: 0°C ~ 45°C (32°F ~ 113°F)
- Operating humidity: 5% ~ 95% non-condensing

### QSFP 28 LEDs

- LED1: Blue (100 G), Orange (40 G), White (25 G), Green (10 G)
- LED2~LED4: White (25 G), Green (10 G)
- Management Port LED: Green: (10 M/100 M/1 G), Flashing: Activity
- System LEDs: PSU1, PSU2, Fan, Diag, and Loc
- Reset button

### Regulatory

#### EMI

- CE Mark E
- N 55032
- AS/NZS CISPR 32
- EN 55024 EN 61000 3-2
- EN 61000 3-3
- CISPR 32

#### FCC Part 15 Subpart B Class A

#### VCCI Class A

#### Safety

- CB
- UL

#### Environmental

- GR63-CORE (Pre-test)

#### RoHS-6 Compliant

