

# Pluribus Freedom 9372-X Switch

High-Performance Open Network Switch with Advanced Network Services for Leaf and Top of Rack Deployments with 48x 10 Gigabit Ethernet SFP+ Interfaces and 6x 40 Gigabit Ethernet QSFP+ Interfaces

## Highlights

- Compact 1RU standards-based open network switch built on ONIE
- Optimized to support Netvisor OS advanced services
- Deployment-proven Broadcom Trident II+ switching ASIC
- Intel Rangeley CPU supports integrated network services
- Sustained performance and throughput for all configurations
- VXLAN supported in hardware
- Redundant power and fans to support high-availability operations
- Minimal power consumption with up to 93% power efficiency reduces operating costs
- Reversible airflow supports hot-aisle and cold-aisle placement
- Low heat dissipation minimizes cooling requirements



## Product Overview

The Pluribus Freedom™ 9372-X switch is a best-in-class, programmable open network switch that provides standards-based networking to meet the stringent requirements of high-performance enterprise and cloud data centers. Built on the deployment-proven Broadcom StrataXGS® Trident II+ switching ASIC, the Pluribus Freedom 9372-X switch is optimized to deliver the advanced networking and service capabilities of the Pluribus Netvisor® ONE Operating System (OS). The Pluribus Freedom 9372-X switch 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 networking requirements.

The Pluribus Freedom 9372-X switch delivers wire-speed Layer 2 and Layer 3 switching and routing with sustained packet forwarding performance of 720 gigabits per second (Gb/s) and 1 billion packets per second (Bp/s) throughput with all network services enabled. The switch provides high-density and low-latency 10G and 40G, ports making it an ideal leaf/top of rack (ToR) switch. The Pluribus Freedom 9372-X switch provides 48 SFP+ server-facing ports that each support either 10G or 1G connections and 6 QSFP+ FlexPorts that can each be configured as 1x 40G or 4x 10G uplink connections.

The platform is built for high availability environments with redundant and hot-swappable power and fan units. The switch is highly power efficient and offers airflow flexibility to support hot- or cold-aisle deployments. The compact design of the Pluribus Freedom 9372-X switch minimizes its deployment footprint, requires less power and lowers cooling requirements, which reduce the cost of network operations.

## System Highlights

- Wire-speed full-duplex across all ports, Layer 2 and Layer 3 forwarding up to 720 Gb/s and 1 Bp/s
- 48 SFP+ ports of 1/10G and 6 QSFP+ FlexPorts configurable as 1x 40G or 4x 10G
- Each port supports single-mode fibers, multi-mode fibers and copper transceivers or cables.
- Broadcom Trident II+ switching ASIC
- VXLAN services supported in hardware at wire speed
- 12 Mb shared packet buffer
- All ports on front; PSUs and fans accessible from rear
- Dual redundant, load-sharing, hot-swappable PSUs
- 282 watt maximum power consumption with efficiency of up to 93%
- 4+1 redundant, hot-swappable fan modules
- Configurable hot-/cold-aisle with port-to-power and power-to-port airflow
- 1RU compact form factor mountable in either a standard 19" or 21" rack

## Meet Growing Data Center Capacity Requirements

The Pluribus Freedom 9372-X switch is an optimal leaf switch that enables building highly flexible ToR architectures. Its interface flexibility enables cost-effective horizontal capacity scale to support the server interface requirements for a broad range of next-generation applications and highly virtualized servers.

This agility allows the efficient leveraging of network infrastructure investments with the flexibility to quickly reconfigure the network as capacity and speed requirements change, reducing the cost of sparring and lowering the total cost of operations.

### Deployment Examples

- Deploy the Freedom 9372-X as the leaf/ToR switch with 10G to servers and 40G uplinks to a Freedom 9532-C or Freedom 9232-Q Spine switch
- Deploy Freedom 9372-X as Leaf/ToR switch into existing networks with 10G to server and 40G uplinks to other vendor switches

## Adaptive Cloud Fabric

The Pluribus Adaptive Cloud Fabric (ACF) empowers organizations to speed up their transition to a completely automated network that supports software defined data center and cloud automation principles with a simpler non disruptive and more transparent architecture that makes it easier to deliver, manage and secure service delivery. The ACF can be deployed across a single data center, or geographically distributed to seamlessly interconnect multiple data centers or aggregate the campus edge over existing core WAN infrastructure.

## Netvisor ONE Operating System

Enabling simple, plug-and-play deployments, the Pluribus Freedom 9372-X switch is delivered as an integrated, turnkey solution that is shipped pre-configured with the Pluribus Netvisor ONE OS installed on the ONIE foundation.

Pluribus Netvisor ONE is a Linux-based, containerized network operating system (NOS) that provides a best-in-class Layer 2 and Layer 3 networking foundation, Netvisor also offers the optionally licensed advanced network fabric overlay services of the Adaptive Cloud Fabric™ with embedded SDN-automation for underlay and overlay networking along with network performance monitoring telemetry.

### Netvisor ONE Licensing Options

- **Netvisor Enterprise** — included with the switch. It supports Layer 2 and Layer 3 switching and routing functionality with all standard networking protocols and high-availability features.
- **Netvisor Fabric** — It adds VXLAN, telemetry, Adaptive Cloud Fabric and security and segmentation capabilities (not included with the switch).
- **vNET License** — It 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+™ License** — It includes Fabric license and enables VirtualWire capabilities (not included with the switch).
- **VirtualWire™ License** — It enables VirtualWire capabilities in standalone L1 VirtualWire mode (not included with the switch).

## Warranty

The Pluribus Freedom 9372-X switch is backed by a 12-month limited hardware warranty. Multiple extended support options, including advanced replacement and 24x7 on-demand support services, are available. Contact Pluribus Networks or a Pluribus Networks authorized reseller for complete details.

# Specifications

## Pluribus Freedom 9372-X Switch

### Switching Engine

- Broadcom Trident II+ (BCM56854) ASIC

### Onboard CPU/NFV Engine

- Intel Atom (Rangeley) C2538 quad-core 2.4 Ghz processor
- 8 GB RAM, 32 GB SSD SO-DIMM DDR3 RAM with ECC

### Software

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

### Interface Ports

#### Network Interfaces

- 48x SFP+ — each supporting 1x 10G or 1G
- 6x QSFP+ — each supporting 1x 40G or 4x 10G

#### Management Ports

- 1x RJ45 serial console
- 1x RJ-45 100/1000BASE-T management
- 1x USB Type A Storage

### Performance

- Wire-speed L2 and L3 packet forwarding
- Switching capacity: 720 Gb/s
- Forwarding rate: 1 Bp/s
- Supports jumbo frames up to 9216 Bytes
- 12 MB pooled packet buffer
- Latency (RFC2544) 720 ns

### Hardware Capacity

- VXLAN supported in hardware
- SmartTable and SmartBuffer technologies
- 288K MAC addresses
- 16K IPv4 and 8K IPv6 host routes
- 16K IPv4 routes
- 8K IPv6 routes
- 4K IGMP/MLD Groups
- 4K VLAN IDs
- 1K VXLAN Tunnels
- 8K ACL TCAM

### Operational

- 2x redundant, load-sharing, hot-swappable PSUs
- Input voltage 90 to 264 VAC at 50-60 Hz
- PSU efficiency up to 93%
- 282 watt maximum power without pluggable optics
- Hot-swappable 4+1 redundant fan modules
- Supports both hot-aisle and cold-aisle placement with reversible airflow

### Physical and Environmental

- 1RU, mountable in either 19" or 21" racks
- Dimension: (WxDxH) 44.3 x 47.23 x 4.34cm (17.4 x 18.6 x 1.7 in)
- Weight: 8.5 kg (18.74 lbs) with two PSU modules installed
- Storage Temperature: -40°C to 70°C (-40°F to 158°F)
- Operating Temperature: 0°C to 40°C (32°F to 104°F)
- Operating Humidity: 5% to 95% non-condensing
- Operating Altitude: 0 to 3,048 meters (0 to 10,000 feet)

### LEDs

- 10G SFP+: status, activity, rate
- 40G QSFP+ (40G): status, activity
- 40G QSFP+ breakout (4 per QSFP port): status, activity
- Ethernet management port: status, activity
- Console port: status
- System: PSU1, PSU2, diagnostic, locator, fan status

### Regulatory

#### EMI

- CE Mark
- EN55022 Class A
- EN55024
- EN6100-3-2
- EN6100-3-3

#### FCC Part 15 Subpart B Class A

#### VCCI Class A

#### Safety

- CB
- UL/CUL

#### Environmental

- Temperature: IEC 68-2-14
- Vibration: IEC 68-2-36, IEC 68-2-6
- Shock: IEC 68-2-29
- Drop: ISTA 2A
- Acoustic Level: 62Db@ 27°C

#### RoHS-6 compliant

