Business-Defined Networking for your Data Center

Your business is running faster than it ever has before and consequently your data center must be able to deliver the required services in minutes rather than months. You need networking that supports your digital-transformation. In short, you want your data center networking to be a nimble and strategic weapon and not merely a sunk cost of older, rigid approaches.

Traditional data center networking is complex to manage and troubleshoot: too many boxes, too many protocols with too many conflicting needs. It is expensive to monitor and completely ignores the concept of virtualized services which traverse the data center. Plus, it is difficult to virtualize and the use of overlay technologies simply masks the complexity by increasing the overhead and the number of operators that must be involved.

There should be a way to leverage your existing investments in networking gear while allowing you to begin building highly responsive modern data center networks. There should be an easy way of enabling new applications and your move to a software-defined data center or private cloud.

Pluribus helps these Business Solutions
- Big Data - time sensitive application optimization
- VDI - Virtual Desktop Infrastructure network visibility
- Storage - Network-path automation for storage pooling
- Security - enabling network multi-tenancy via segmentation
- Auditing & Compliance - visibility of network flow and endpoints

Pluribus SDN Products

Thankfully, Pluribus Networks, the leader in data center network virtualization, has a straightforward portfolio of products that allows you to cost effectively make your data center IT environment much more agile with greater insight and enhanced security. Pluribus invented its patented Virtualization-Centric Fabric (VCF™) technology to work with what you have already allow you to easily begin your digital transformation journey. Pluribus is getting networking to join the same virtualization wave that compute and storage have been riding for the past decade.

The Pluribus Virtualization-Centric Fabric

The Pluribus Virtualization-Centric Fabric (VCF™) is a distributed architecture, based on a collection of clustering techniques which presents an open, standards-based Ethernet fabric as one logical entity, enabling unprecedented agility, insight and security of the network fabric. Built on the VCF architecture, Pluribus Netvisor powered switches form a logical switching fabric which can be allocated to new applications.

Agility
- Accelerate business alignment
- Save time via auto configuration and programmatic control
- Ensure high availability

Insight
- Allow global view at any scale to “see” the Network
- Conduct rapid troubleshooting
- Expedited application performance monitoring

Security
- Usage security via Connection Visibility
- Modify Flow through Session control
- Conduct Audits with Reporting

The Pluribus VCF is not a replacement of standards-based network protocols, but rather it is a complementary architecture to augment those networks’ capabilities above and beyond L2/L3 connectivity. VCF is a proven networking approach that understands business, rapidly responds to its changing needs while providing the visibility needed to secure your data.
Netvisor®

A Networking Operating System for modern data centers

Pluribus Networks advances software-defined networking (SDN) through Netvisor®, the industry’s most programmable, open source-based network operating system. Netvisor is based on a highly available, scalable, and controller-less Virtualization-Centric Fabric architecture.

Pluribus Netvisor® is designed to run your Layer 2 and Layer 3 networking both more efficiently and at a lower cost than traditional switching infrastructure. It provides unparalleled agility, insight and security for your datacenter networking using a distributed controller fabric that eliminates the need for tap or broker infrastructure.

Feature Capabilities include:

Fabric Automation – Agility and simplification via an extensible, open, distributed controller fabric

Fabric Visibility – tap-free, flow-level monitoring and analysis with a network DVR “time machine”

Fabric Virtualization – Virtual network provisioning and Segmentation; support for multi-tenancy; vRouters

Extensibility – Programmability via Ansible, RESTful, Java and C APIs

L2/L3 – Compatible with all existing Layer-2/3 infrastructures

CLI Management – manage network switch hardware, resource pools and network configurations; high availability environment

Monitoring – including SNMP, sFlow, Traceroute and logging


QoS – CoS, DSCP, Strict Priority Queuing, Tos mapping

Audit – system, event and audit logging

Fabric Visibility Features

- vFlow - filtering fabric-wide data center switching traffic on a granular flow level and applying security/QoS actions or forwarding decisions on each defined flow.
- vPort - tracking endpoints/VMs on a global, fabric-wide endpoint table.

Fabric Automation Benefits

- Simplified management assures fabric integrity
- Based on proven Layer-2 and Layer-3 protocols and server clustering technology
- Fully connected resilient mesh allows scale to large application pods
- Works with existing spine, aggregation or core infrastructure and allows easy service insertion

Fabric Virtualization

Improve your datacenter network security with powerful macro- and micro-network segmentation, multi-tenancy and role-based access plus virtualized Layer 3 through Layer 7 network services. Leverage a single network for multiple purposes, all of which can be safely walled off from each other. Enables rapid provisioning and workload mobility.

Benefits of Fabric Virtualization

- Lower downtime risk by overcoming network complexity via virtualization
- Lower Capex by sharing capacity across applications
- Lower Opex by scaling your existing infrastructure, providing a single point of management without increasing complexity
- Lower Opex by easily and rapidly provision and segment networks for specific business needs, uses and user groups
- Save time by having applications automatically address the fabric to request their required service levels

API Layer

Virtualization-Centric Fabric

distributed, clustered controllers

L2/L3 stack

L2/L3 stack

L2/L3 stack

Pluribus Virtualization-Centric Fabric Architecture for Netvisor
Pluribus Deployment Options

Switches running Pluribus Netvisor operating system provide the industry’s most comprehensive fabric-based networking layer available today, along with complete visibility to the information that flows across it.

New Data Center Deployments

In a new environment where agility and visibility are key requirements to support new business initiatives, Pluribus-based switches can be deployed at the aggregation layer (spine) and at the top-of-rack (leaf). By doing so, the Pluribus Virtualization-Centric Fabric (VCF) delivered by these switches extends to all points within the entire network to provide a fully elastic mesh that can respond in an instant to new business requirements. All devices connected to Pluribus-power switches participate equally in this fabric.

The Pluribus distributed controller fabric works for L2/L3 topologies, either as a spine or leaf.

Existing Data Center Use

In established data centers with large deployments of existing aggregation-layer and dense switching topologies, switches powered by Pluribus Netvisor are the perfect choice for the top-of-rack switching function to enable all devices in each rack to receive the benefits of a true fabric with advanced visibility. All devices in each rack when connected to switches powered by Pluribus Netvisor will participate in the Pluribus VCF fabric, even though there may be intermediary connections that are provided by other switches.

In an existing data center, a common deployment model would include dense backbone spine switches, which are intended to be connected to a top-of-rack (ToR) switch in each rack. Pluribus-powered switches are an excellent choice for that ToR switch to realize the benefits of elastic fabric and deep visibility of the information that flows between applications.

Netvisor powered switches support all of the most common L2 and L3 protocols, which enables these switches to work perfectly in any multi-vendor topology by interoperating with existing infrastructure.

VCF™ Insight Analytics

Business Intelligence from your Data Center Networking Infrastructure

Easily and cost effectively get business insights from your data center networking infrastructure for:

- Application performance monitoring
- East-west security posture
- Auditable flow data
- Network capacity planning
- Troubleshooting/forensic analysis

Dashboard

An easy-to-use, drillable dashboard to visualize key application flow metrics, with extensive filtering, trending and correlation capabilities.

Dashboard – click any aspect to filter and drill-down, intuitively

Search

A powerful search engine UI with a simple query syntax designed to isolate and filter specific flows among millions - in a fraction of a second.

Search – enter command line instructions for rapid filtering

Report

A standardized view reporting high-level flow statistics over the past 7 days.
**Freedom® Series Spine Switch**

**TOR Aggregation Switch running Netvisor®**

Get network fabric automation, virtualization and visibility at commodity pricing. Break away from expensive, inflexible networking switch choices for a new deployment or simply switch out existing, aging switches in an existing third party scenario.

Our spine switch come with Pluribus Netvisor, the industry’s most programmable, open source-based network operating system and are powered by the Broadcom Trident.

**Freedom E28Q-L**

- 40G optimized
- Spine switching / Microserver TOR aggregation
- 3rd party VMs/services

**Network Performance**

- 28x40GbE (Up to 80x10GbE) (Broadcom Trident 2)
- Up to 2.24 Tbps
- 1,680 million packets per second
- Wire speed L3 and L3 forwarding
- Latency ~500 nanoseconds
- Network processor with 150 Mpps (100G) 64K queues, shaping, 2GB packet buffer

**Open Networking**

Open Netvisor® Linux is OCP-compliant

Pluribus Open Netvisor Linux runs on OCP/ONIE-compatible hardware switches so you can choose your hardware while still getting all of the great benefits of the Pluribus Virtualization-Centric Fabric insight, agility and security with dramatic cost savings.

Open Networking via our Open Software on Open Hardware has the following benefits:

- Hypervisor agnostic
- Overlay agnostic
- Hardware agnostic
- Orchestration agnostic
- No hypervisor prerequisite

**Freedom® Series Leaf Switch**

**Top-of-rack Switch running Netvisor® OS**

Get network fabric automation, virtualization and visibility at commodity pricing. Break away from expensive, inflexible networking switch choices for a new deployment or simply switch out existing, aging switches in an existing third party scenario.

Our leaf switch come with Pluribus Netvisor, the industry’s most programmable, open source-based network operating system and are powered by the Broadcom Trident.

**Freedom E68-M**

- Optimized for economics
- Most scalable switch control plane in the industry
- Network Virtualization “Client” Mode
- Top-of-rack (leaf) switching / 10Gbe Aggregation

**Network Performance**

- 44x10GbE + 6x40GbE (Broadcom Trident 2)
- Up to 1.36 Tbps
- 1,020 million packets per second
- Wire speed L3 and L3 forwarding
- Latency ~500 nanoseconds

Examples of OCP/ONIE-compliant switches include those from Dell Open Networking Group, their S4048 and S6000 Switches.

**About Pluribus Networks**

Pluribus Networks provides data center solutions that allow your business to run unconstrained. Our software-defined, open networking, fabric-based solutions transform existing network infrastructures into flexible and strategic assets fully aligned with today’s digital business needs. Our Virtualization-Centric Fabric (VCF™) architecture provides unprecedented insight, agility and security to customers seeking to simplify operations, run more cost effectively and bring new applications online faster.

Learn more at [www.pluribusnetworks.com](http://www.pluribusnetworks.com) and [@pluribusnet](https://twitter.com/pluribusnet).