

# Pluribus Virtual Wire

## Virtual Patch Panel Switch

### Wire Once and Never Re-Cable Again

Today's lab environment is composed of various devices such as routers, switches, servers and NAS storage. An estimated 30% of all lab testing time is spent planning and re-cabling the Layer 1 physical topology before any testing even occurs. With Pluribus Virtual Wire, you can quickly build new topologies in software in a matter of minutes. The Pluribus Virtual Wire offers a non-blocking, line rate, any-protocol, any-speed, any medium cross-connect based on merchant silicon switches rather than expensive L1 switch solutions that are based on custom hardware.

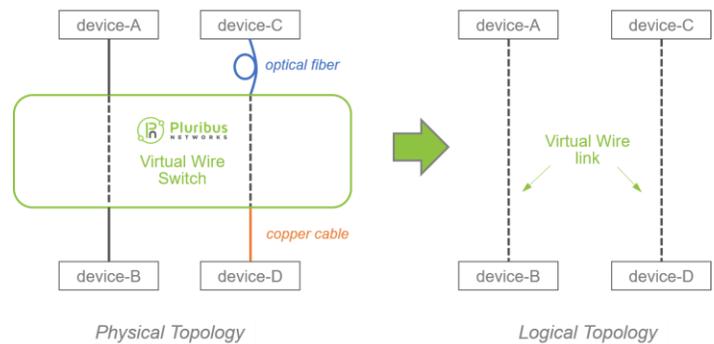
Pluribus Virtual Wire switches allow you to greatly simplify the cumbersome process of monitoring the health of your infrastructure as well as drastically reduce the time to troubleshoot application and connectivity issues. Pluribus Virtual Wire is fully integrated with the Pluribus VCFcenter™ suite of analytics applications to let you tap into any packets, any flow or any link layer issue without a separate monitoring infrastructure.

### Pluribus Virtual Wire

The Pluribus Virtual Wire switch is highly flexible, highly-scalable physical layer non-blocking switching matrix powered by the Pluribus Netvisor® OS. It is designed to build dynamic, high-performance lab connectivity with packet/application/link layer visibility. Pluribus Virtual Wire, based upon merchant silicon switches, greatly reduces Capex and Opex compared to pure Layer 1 solutions in the market.

Virtual Wire enables an engineer to conserve time, maximize productivity, reduce costs and eliminate errors associated with manual patching. Virtual Wire also allows user to store well known physical configurations and reproduce the configurations at will for subsequent testing. Virtual Wire also offers a powerful RESTful API to integrate with a customer's own management and orchestration tools.

Users can add switches when they are needed and expand up to 3,744 end ports. Virtual Wire is built upon the Pluribus Virtualization-Centric Fabric (VCF™) architecture enabling users to access the network fabric with a single CLI/API connection significantly decreasing user configuration efforts.



### Benefits

- After initial wiring, Virtual Wire acts as a virtual patch panel
- Scalability - add switches in the Virtual Wire fabric as needed
- Efficient sharing of expensive test tools (e.g. traffic generators), which can be dynamically moved across test environments with a software command.
- Save cable configuration for future re-use
- Fabric-wide flow, packet, link-layer visibility to accelerate troubleshooting of physical layer issues as well as applications
- Significant CapEx savings versus traditional Layer 1 switches
- Highly programmable – CLI, Python, RESTful API and C-based APIs facilitate rapid development
- Media conversion copper<->fiber

### Features

- Virtual Wire 1:1 and 1:n port association
- Transparency to Ethernet frame and L2 protocols (CRC, Error frame, LLDP, FEX, Instant Access etc)
- Media/Speed conversion with low latency
- Link status tracking across Virtual Wire fabric
- Fabric management can be done via single switch via CLI and/or API
- Time Machine to replay TCP flows
- Hardware based packet filtering, packet capture in PCAP format and packet analysis with VCFcenter.
- sFlow, IPFIX support

## Product Requirements and Information

The Virtual Wire is delivered and deployed as a HW platform from:

- Pluribus: E28Q-L or E68M
- Edge-core: 5712-54X or 6712-32X

The VCFcenter analytics application platform is delivered and deployed as a VMware ESXi virtual machine compatible with vSphere 5.5 or later.

The minimum virtual machine configuration is:

- 64GB of RAM
- 400 GB SSD
- 16 server class virtual CPUs

There are two instances of VCF-IA VMs:

- 100M flows/30 days of historical records
- 10M flow/7 days of historical records

## Features and benefits

Feature	Benefits
1:1 port association	Non-blocking any-port to any-port switching architecture that internally cross-connects front-panel ports to form an internal virtual cable. Virtual Wire link can be configured as two single unidirectional virtual wires or one bidirectional virtual wire.
1:n port association	Line rate generation of multiple copies of packets transmitted over a virtual wire link. Allows multiple monitoring tools to receive a real-time copy of the traffic in either one or both directions. Allows traffic generators to fan-out synthetic traffic to multiple devices under test in parallel at line rate.
Transparency to Ethernet Frame and L2 protocols	Ethernet frames are transparently bridged over the virtual cable at wire speed without any processing or manipulation, providing a low latency dedicated wire between two external devices. (ex: LLDP, FEX, Instant Access, IEEE 802.1ad, CRC/Error frames, undersized packets)
Media/Speed conversion	Netvisor Ethernet switches support a variety of copper and optical transceivers at 1Gbps/10Gbps/40Gbps, enabling the Virtual Wire to operate as media and speed converter.
Link status tracking across fabric	A device must recognize a port down event on the other side. If a port goes down, the other side will go down. The link tracking feature also works across fabric.
VCFcenter™ (Built-in analytics)	<ul style="list-style-type: none"><li>• Netvisor stores metadata of TCP flows and provide analytics GUI to check flow status. User can easily narrow down any issue with few clicks.</li><li>• Packet level capture and analysis for user defined application flows. Filtering happens at terabit speed leveraging Broadcom silicon switch.</li></ul>
Fabric management via CLI/API	Virtual Wire switch can be controlled using the external management interface using the Command Line Interface (CLI), RESTful Application Programmable Interface (REST API) or Netvisor Operating System Application Programmable Interface (nvOS API). Switches can be provisioned and monitored either individually or collectively using Netvisor management fabric.
Time Machine	VCF-IA stores TCP flow data and user can easily verify TCP connection status in the past by defining time slot.

## About Pluribus Networks

Pluribus Networks provides fabric networking and analytics solutions that transform existing network infrastructures from being rigid, costly and complex, into a foundation for modern digital-centric businesses. Our Virtualization-Centric Fabric (VCF™) provides unprecedented insight, agility and security to create the industry's only combined SDN and Network Performance Monitoring (NPM) offering.

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