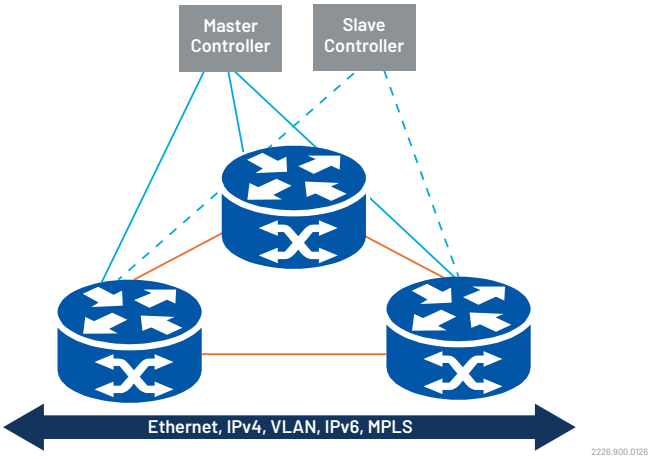
TestCenter

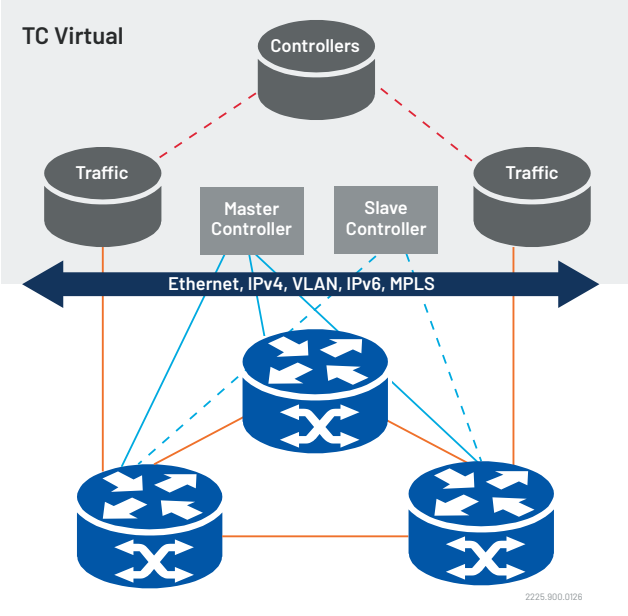
OpenFlow Controller Emulation

VIAVI's OpenFlow controller emulation is an industry-leading solution that allows companies to benchmark flow scalability and forwarding performance of High-Speed Ethernet in addition to virtual OpenFlow network devices. OpenFlow controller emulation solution delivers the required empirical data to determine if OpenFlow compatible network devices and Software-Defined Networking (SDN) applications can deliver business benefits without degrading the user experience.

As networks evolve to being software-defined, OpenFlow devices must co-exist with traditional Ethernet switches running VLANs, MPLS, and routing protocols like BGP, OSPF, and IS-IS. OpenFlow network devices must also prove scalability and performance across multi-site data centers, virtualized cloud computing and big data networks.

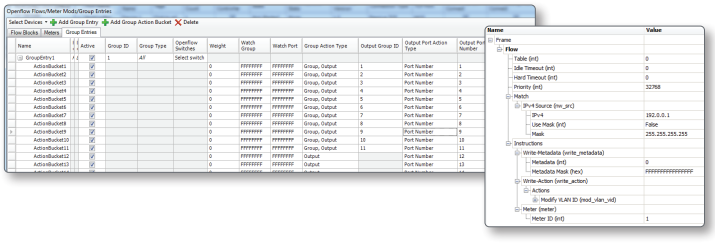


OpenFlow Test Topology



OpenFlow Test Topology with TestCenter Virtual

VIAVI's OpenFlow controller emulation is able to stress-test OpenFlow network switches, providing insight into the throughput and capacity under load. It measures performance, availability, security and scalability of OpenFlow network devices and end-to-end SDN application scale by defining millions of flows and exercising them with traffic patterns and behavior.



Test Results

Features

- With VIAVI's high-scale of Controllers, Flows and Switches, we can test a large switch network with large amounts of flows and traffic analysis on each data path for verification
- Test all aspects of your OpenFlow 1.3 network design with our high scaled and fully featured controller including features such as: Multi-Table, Group Table, Metering, Main & Subordinate
- Validate all type of Flows including IPv4, IPv6, VLAN, MPLS, ARP with VIAVI's comprehensive traffic generation and routing support
- Test in a secure network environment under heavy load with VIAVI's support of TLS 1.2 secure OpenFlow Channel

Benefits

- Test your Switches' Test Flows under load. VIAVI's OpenFlow Controller Emulation works independently of the data ports but with full knowledge of what is defined
- Test your large Switch network in both directions. VIAVI's Bound Flow Editor combined with the Switch Topology Discovery automatically sets up Flows on all switches in both directions
- Test Controller failover with OpenFlow's main-subordinate function. VIAVI's Command Sequencer can take multiple Controllers defined with specific roles, change the roles and bring the controllers up and down over time
- Test Flow add rate and validate. VIAVI can measure the flow-add rate and then verify the flow was added or modified with traffic defined on both sides of the switch

Applications

- High-Speed Ethernet networks: Test end-to-end performance and scale of OpenFlow networks by populating multi- device forwarding tables, physical and virtual, with several thousands of flows combined with end-to-end traffic benchmarking.
- Hybrid Ethernet switches: Test switch ability to process OpenFlow flow traffic in combination with Spanning Tree, BGP, MPLS-TP and other protocols and determine hybrid environment throughput and latency.
- Virtual switches: Test OpenFlow capable virtual switch for flow scale and data plane throughput performance.

Technical Specifications

- Open Networking Foundation OpenFlow 1.0 /1.3 specifications
- Push 1 million + flows to switches
- Emulate up to 20 controllers per port running v1.3 or v1.0
- Control up to 1000+ switches with a single controller
- Proactive mode controller support
- Data path verification of switch flow tables
- Test hybrid switches supporting traditional and OpenFlow forwarding planes
- Run multiple protocols concurrently on each OpenFlow traffic port to test scalability and protocol functionality
- Comprehensive results for analysis including Flow Add rates
- Add Flows using traffic already defined, Text Editor, or Graphical Flow Creation
- Support for IPv4, IPv6, VLAN, MPLS, VXLAN Flows
- Switch Topology Discover using LLDP
- Multiple Table Support with Metadata
- Flow Metering Support
- Main / Subordinate support for all controllers
- Group Table Support for types: All, Select, Indirect, and Fast-FailOver
- Secure OpenFlow Channel Support with TLS v1.2

Supported Platforms	• Supported on current TestCenter platforms

Ordering Information

Product Number	Description
BPK-1193A	OpenFlow Controller Emulation
Related	
BPK-1311A	EVPN Emulation
BPK-1081A	FCoE/DCBX Emulation
BPK-1181A	LISP Emulation
BPK-1195A	OpenFlow Switch Emulation
BPK-1182A	SPB Emulation
BPK-1187A	TRILL Emulation
BPK-1310A	VXLAN Emulation

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