

Spirent TestCenter™

OpenFlow Controller Emulation

Features

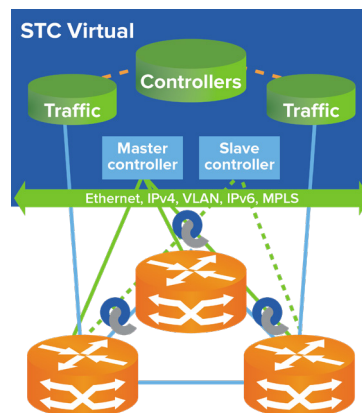
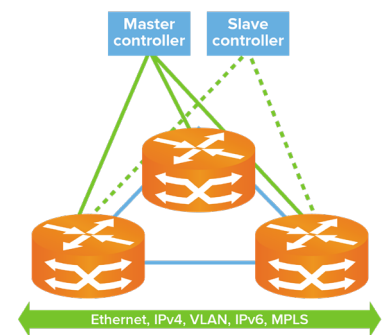
- With Spirent's high-scale of Controllers, Flows and Switches, we can test a large switch network with large amounts of flows and traffic analysis on each data path for verification
- Test all aspects of your OpenFlow 1.3 network design with our high scaled and fully featured controller including features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

Benefits

- Test your Switches' Test Flows under load. Spirent'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. Spirent'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. Spirent'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. Spirent can measure the flow-add rate and then verify the flow was added or modified with traffic defined on both sides of the switch

Spirent'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.



Spirent'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.

OpenFlow Flow/Meter/Match/Group Entries									
Select Devices: Add Group Entry Add Group Action Bucket Delete									
Flow Name	Match	Group ID	Group Type	OpenFlow Switches	Match	Switch Group	Match Port	Group Action Type	Output Port Action
GroupID1	1	1	1	1	1	1	1	1	1
GroupID2	2	2	2	2	2	2	2	2	2
GroupID3	3	3	3	3	3	3	3	3	3
GroupID4	4	4	4	4	4	4	4	4	4
GroupID5	5	5	5	5	5	5	5	5	5
GroupID6	6	6	6	6	6	6	6	6	6
GroupID7	7	7	7	7	7	7	7	7	7
GroupID8	8	8	8	8	8	8	8	8	8
GroupID9	9	9	9	9	9	9	9	9	9
GroupID10	10	10	10	10	10	10	10	10	10
GroupID11	11	11	11	11	11	11	11	11	11
GroupID12	12	12	12	12	12	12	12	12	12
GroupID13	13	13	13	13	13	13	13	13	13
GroupID14	14	14	14	14	14	14	14	14	14
GroupID15	15	15	15	15	15	15	15	15	15

Flow Name	Match	Group ID	Group Type	OpenFlow Switches	Match	Switch Group	Match Port	Group Action Type	Output Port Action
Flow1	1	1	1	1	1	1	1	1	1
Flow2	2	2	2	2	2	2	2	2	2
Flow3	3	3	3	3	3	3	3	3	3
Flow4	4	4	4	4	4	4	4	4	4
Flow5	5	5	5	5	5	5	5	5	5
Flow6	6	6	6	6	6	6	6	6	6
Flow7	7	7	7	7	7	7	7	7	7
Flow8	8	8	8	8	8	8	8	8	8
Flow9	9	9	9	9	9	9	9	9	9
Flow10	10	10	10	10	10	10	10	10	10
Flow11	11	11	11	11	11	11	11	11	11
Flow12	12	12	12	12	12	12	12	12	12
Flow13	13	13	13	13	13	13	13	13	13
Flow14	14	14	14	14	14	14	14	14	14
Flow15	15	15	15	15	15	15	15	15	15

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	<ul style="list-style-type: none">• Supported on the Spirent MX, MX2, FX, FX2, DX and DX2 Family modules• Supported on Spirent TestCenter Virtual• Supported on Spirent TestCenter C1 and C50	
Ordering information	• OpenFlow Controller Emulation	BPK-1193A
Related	• EVPN Emulation	BPK-1311A
	• FCoE/DCBX Emulation	BPK-1081A
	• LISP Emulation	BPK-1181A
	• OpenFlow Switch Emulation	BPK-1195A
	• SPB Emulation	BPK-1182A
	• TRILL Emulation	BPK-1187A
	• VXLAN Emulation	BPK-1310A

Contact Us

For more information, call your Spirent sales representative or visit us on the web at www.spirent.com/ContactSpirent.

www.spirent.com

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