

# Spirent TestCenter

## OpenFlow Switch Emulation

### Features

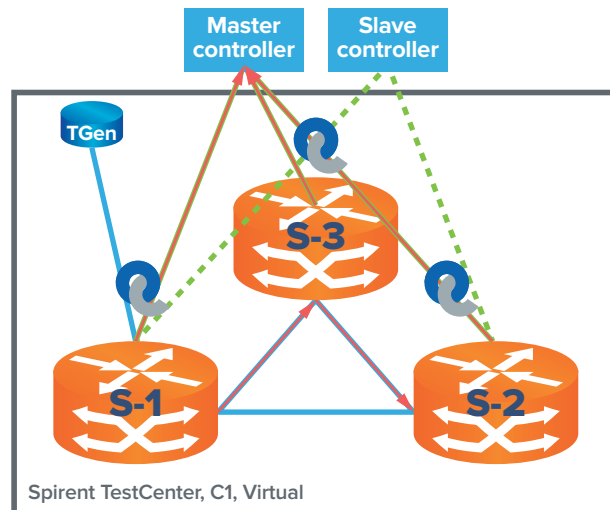
- Test thousands of real OpenFlow Switches at high scale – number of Switches in network, number of networks, number of Packet-Ins
- Test various topologies, Packet-In stability and Flow validation
- Supported on virtual and hardware for 1G to 100G Ethernet
- View all Flows on all Switches and save them to a file
- Packet-In Test at a fixed rated to test controller stability over time at high-packet rates from a large number of switches
- Results for every Switch and Controller connected with additional views for not connected devices

### Benefits

- Accelerate OpenFlow SDN Controller testing at scale by defining millions of flows and exercising them with traffic patterns and behavior
- Reduced CapEx with no physical Switches needed and lower OpEx with quick setup time of the testbed
- Easy to setup tests at any scale with realistic test environments

Spirent's OpenFlow switch emulation helps overcome many testing challenges for OpenFlow Controller testing at scale. Large-scale testing can be difficult because of the need to assemble many switches, activate and interconnect many virtual Switches. OpenFlow switch emulation stress-tests the Controller by emulating various topologies, real Switches with real links.

With OpenFlow switch emulation you can quickly and easily setup one to thousands of Switches. Once you create your network, Spirent OpenFlow switch emulation will display all the Flows on all Switches and save them to a file. It can also generate OpenFlow "Packet-Ins" from every Switch to the OpenFlow Controller to validate that it can maintain all its connections to all Switches while processing a high rate of Packet-Ins.

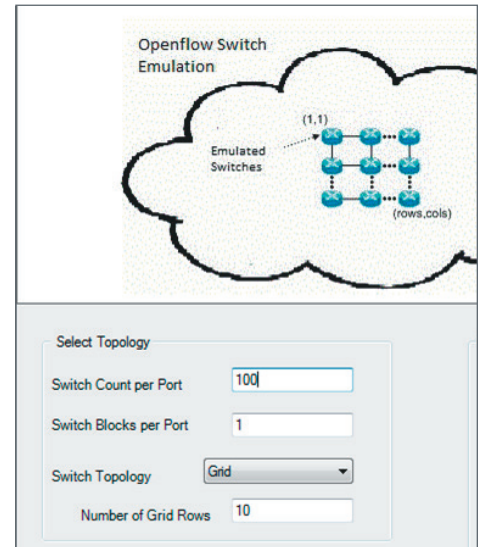


### Applications

- Validate if your OpenFlow Controller can maintain connection to its network under heavy load at large scale, understand what happens when scale is exceeded
- Perform Packet-In test from every switch to the Controller at a fixed rated to test your Controller stability over time at high-packet rates from a large number of switches
- Find the limits of the OpenFlow Controller before release. Understand how many packets per second your Controller can handle while still maintaining OpenFlow channels to each and every switch

## Technical specifications

- Support for OpenFlow v1.3 and v1.0
- Emulate 500 to 2000 Switches per port
- Connect to multiple Controllers
- Configure fixed topologies such as Grid, Linear, or Ring
- Configure independent topologies
- Topology discovery through LLDP
- For each Switch configuration includes:
  - DPID
  - Number of ports
  - For each port: port name, mac address and port type
  - Number of hosts: MAC and IP addresses
- Packet definition:
  - Send from all hosts
  - Send to any host
  - Packet type: MAC, VLAN, IP, ARP and PING
  - Packet size
  - Packet rate or burst size
- View all Flows on all Switches and save them to a file
- Packet-In Test – Sends packets from every switch to the controller at a fixed rated to test controller stability over time at high-packet rates from a large number of switches
- Results Per Switch (Additional view for not connected): Name, State, Controller Connection Count, DPID, OF Ver, Port Count, Flow Count, IP address
- Results Per Connected Controller (Additional view for Switches not connected): Name, State, DPID, IP address, Role,
  - Flow Mod count (add, mod, delete, rate) · Packet-Out count & rate
  - Group ModPort · Mod count
  - Dropped connections · Table Mod count
  - Packet-In count & rate · Automation support – save to script – REST API – Command Sequencer
- Virtual Support



### Supported platforms

- Supported on the Spirent TestCenter MX, MX2, FX, and FX2 family modules for 1G to 100G interface support
- Supported on Spirent TestCenter Virtual
- Supported on Spirent TestCenter C1 and C50

### Ordering information

- OpenFlow Switch Emulation      BPK-1195A

### Related

- EVPN Emulation      BPK-1311A
- FCoE/DCBX Emulation      BPK-1081A
- LISP Emulation      BPK-1181A
- OpenFlow Compliance Test Suite      VCS-KIT-01-1Y
- OpenFlow Controller Emulation      BPK-1193A
- SPB Emulation      BPK-1182A
- TRILL Emulation      BPK-1187A
- VXLAN Emulation      BPK-1310A

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