Spirent TestCenter™

VXLAN Emulation

VXLANs are an overlay network used to create large private networks of virtual machines across existing layer 2 and 3 networks. Spirent TestCenter VXLAN emulation provides a unique and easy to use interface that creates large multi-segment, multi –virtual machine, and multiple VTEPS to allow for validation of your VXLAN-enabled devices.

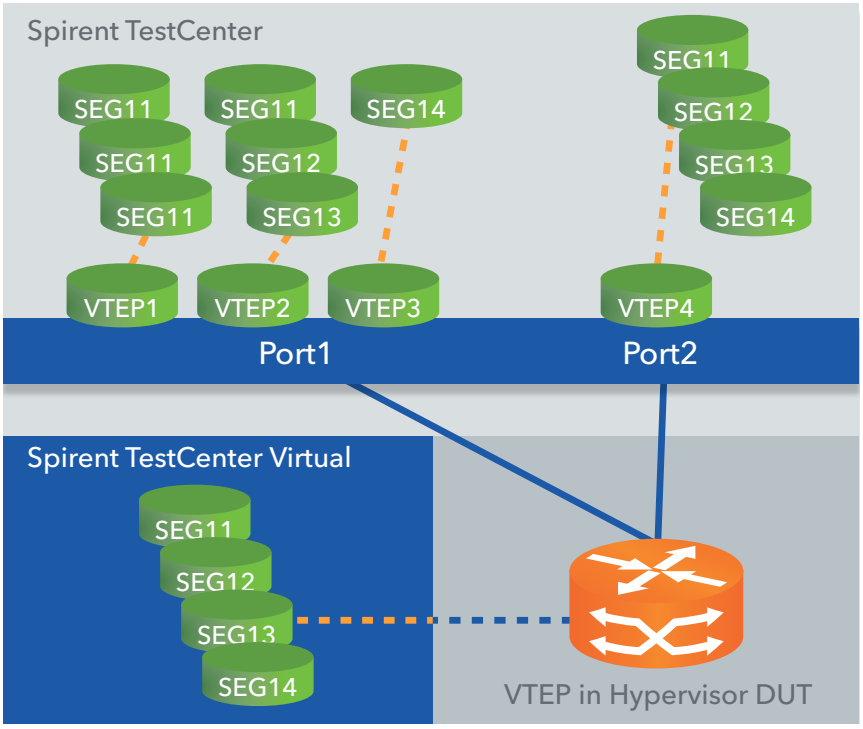
Features

- Report VTEP forwarding rate at various table capacities utilizing the Spirent benchmarking packages: RFC 2544, RFC 2889 and RFC 3918
- Test network delays and buffer capacity with nanoseconds accurate date plane latency
- Verify flooding and leakage across various VXLAN segments
- Verify thousands of VTEPs, millions of VMs with in a single segment, and VMs across multiple segments and its effect on the forwarding rate of the DUT

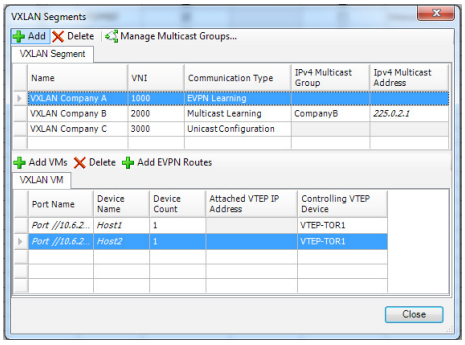
Benefits

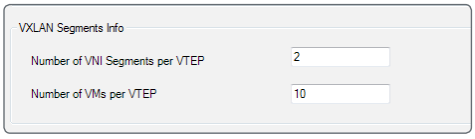
- Create high-scale, complex topologies to validate both physical and virtual VXLAN-enabled DUTs
- Validate the control plane scalability of VXLAN devices by emulating various host protocols
- Generate VXLAN encapsulated traffic to validate physical VXLAN device forwarding performance

Spirent's VXLAN emulation package allows for complete testing coverage from simple functional to complex, large-scaled data center configurations. Spirent's VXLAN emulation package supports multiple address learning methods (unicast, IGMP, PIM, EVPN) that can scale to tens of thousands of emulated virtual machines (VMs) behind thousands of emulated VTEPs.



Using Spirent's Topology Emulation, the VXLAN VTEP and VMs that are emulated have the capability of running any of Spirent TestCenter protocols (including application layer: HTTP, FTP, Video) over a fully encapsulated VXLAN segment. This will quickly find the capacity and forwarding rate of any VTEP, VTEP Gateway, switch, firewall or forwarding device supporting VXLANs.





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Applications

- VTEP segment capacity: Determine how many VNIs and Segments a single device can handle and learn
- VTEP performance: Run forwarding rate test at various capacities while monitoring traffic impurities as virtual segments increase
- Traffic convergence time: Determine the duration your device(s) take to update the VTEPs with new address destination tables for traffic to be forwarded correctly
- L2-7 traffic verification: Each emulated VM supports a fully functioning protocol stack which will allow for testing L2/3 traffic in addition to L4-7 for firewall or other application aware devices in the VXLAN overlay network
- Traffic Leakage or Flooding: Verify traffic is not inadvertently being forwarded on incorrect VXLAN segments which would produce a security and privacy risk for your customers

Technical Specifications

- Emulates 32K to 64K VMs per port
- Emulates 4000 VTEPs per port
- Each VM can have unique or same segment id (24-bit, 16 million + ids)
- Supports Layer 2 and Layer 3 encapsulation
- End-to-End L2-7 Testing
- VXLAN encapsulations: HTTP, FTP, DHCP, IGMP, BGP, etc.
- Unicast /multicast learning modes supported on a single VTEP
- IGMP and PIM supported for Multicast Learning
- VXLAN-EVPN Overlay (RFC 8365) solution
- Inter-subnet forwarding capability with EVPN Integrated Routing and Bridging (Symmetric and Asymmetric) and IP Prefix (Type 5) route
- PIM-ASM support in underlay for BUM traffic
- VXLAN-EVPN Border Gateway (BGW) emulation in Multisite topology
- VXLAN-EVPN Tenant Routed Multicast
- DHCP/PPPoE/IGMP/MLD control plane over VXLAN-EVPN Overlay tunnel
- VM Mobility between VTEPs and convergence measurement
- Wizard to create simple to complex VXLAN configurations with traffic
- Spirent's unique traffic statistics to verify inner and outer addresses, VNIs, latency, packet loss
- Spirent TestCenter IQ Result Views to quickly isolate problem areas
- Auto Select on UDP Source Port for Hashing
- Destination Port modifiable (4789)
- Dynamically start / stop VTEPs
- Flooded or VXLAN Leakage Results
- Easy to read Wireshark capture decodes

Supported platforms	• Supported on Spirent High Speed Ethernet test modules • Supported on Spirent TestCenter Virtual • Supported on Spirent TestCenter C1 and C50	
Requirements	• Standard Spirent TestCenter with Traffic Generator and Analyzer	
Ordering information	• VXLAN Emulation	BPK-1310A
	• VXLAN-EVPN Overlay Solution	SPK-1205A
	• VXLAN-EVPN Multisite	BPK-1360A
	• IGMP/MLD over VXLAN-EVPN Overlay	BPK-1350
	• PPPoE over VXLAN-EVPN Overlay	BPK-1351
	• DHCP over VXLAN-EVPN Overlay	BPK-1352
	• NG-MVPN with PIM-SSM (required for TRM)	BPK-1308A
	• NG-MVPN with Ingress Replication (required for TRM)	BPK-1323A
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
	• OpenFlow Switch Emulation	BPK-1195A
	• SPB Emulation	BPK-1182A
	• TRILL Emulation	BPK-1187A

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