

# 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.

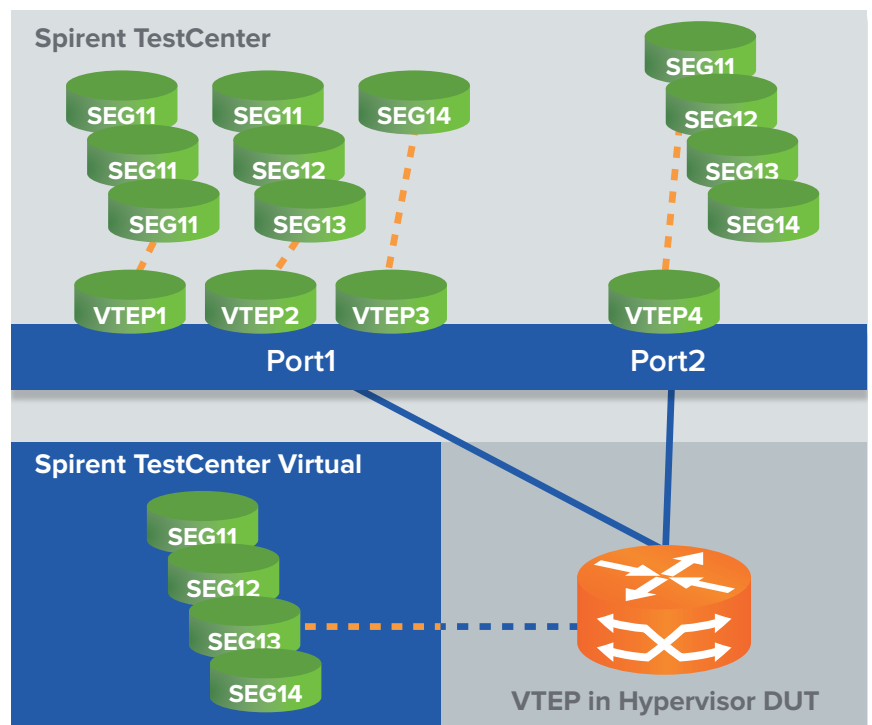
### Features

- 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 data 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.

VXLAN Segments				
Add   Delete   Manage Multicast Groups...				
VXLAN Segment				
Name	VNI	Communication Type	IPv4 Multicast Group	IPv4 Multicast Address
VXLAN Company A	1000	EVPN Learning		
VXLAN Company B	2000	Multicast Learning	CompanyB	225.0.2.1
VXLAN Company C	3000	Unicast Configuration		

Add VMs   Delete   Add EVPN Routes				
VXLAN VM				
Port Name	Device Name	Device Count	Attached VTEP IP Address	Controlling VTEP Device
Port //10.6.2	Host1	1		VTEP-TOR1
Port //10.6.2	Host2	1		VTEP-TOR1

VXLAN Segments Info

Number of VNI Segments per VTEP:

Number of VMs per VTEP:

## 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
- EVPN (RFC 7432) Control Plane Learning Mode
- IGMP and PIM supported for multicast Learning
- VM Mobility between VTEPs
- 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
- Dynamic 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

<b>Supported platforms</b>	<ul style="list-style-type: none"> <li>■ Supported on the Spirent MX, MX2, FX, FX2, DX and DX2 family modules</li> <li>■ Supported on HyperMetrics CV modules</li> <li>■ Supported on HyperMetrics neXt modules</li> <li>■ Supported on Spirent TestCenter Virtual</li> <li>■ Supported on Spirent TestCenter C1 and C50</li> </ul>
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<b>Requirements</b>	<ul style="list-style-type: none"> <li>■ Standard Spirent TestCenter with Traffic Generator and Analyzer</li> </ul>
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<b>Ordering information</b>	<ul style="list-style-type: none"> <li>■ VXLAN Emulation</li> </ul>	BPK-1310A
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<b>Related</b>	<ul style="list-style-type: none"> <li>■ EVPN Emulation</li> <li>■ FCoE/DCBX Emulation</li> <li>■ LISP Emulation</li> <li>■ OpenFlow Compliance Test Suite</li> <li>■ OpenFlow Controller Emulation</li> <li>■ OpenFlow Switch Emulation</li> <li>■ SPB Emulation</li> <li>■ TRILL Emulation</li> </ul>	<p>BPK-1311A</p> <p>BPK-1081A</p> <p>BPK-1181A</p> <p>VCS-KIT-01-1Y</p> <p>BPK-1193A</p> <p>BPK-1195A</p> <p>BPK-1182A</p> <p>BPK-1187A</p>
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