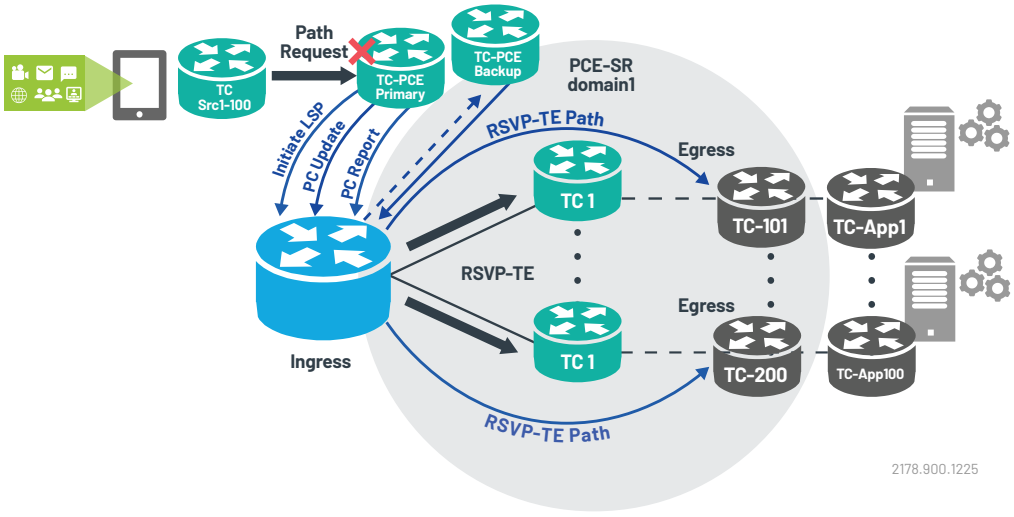
TestCenter™

PCEP Emulation

PCEP provides an evolutionary approach to provide centralized SDN functionality. The objective is to re-use as much of the topology creation, failure detection functionality that exists in the current service provider networks such that SDN capabilities can be achieved and core SP network requirements such as provisioning TE service paths, SLA maintenance, fast fail-over convergence, fault-OAM capabilities can be satisfied at the same time.

VIAVI's PCEP Emulation provides the ability to emulate PCE Controller and PCE Client (PCC) and enables functional, scalability, performance and interoperability testing of PCE protocol. VIAVI PCEP Emulation is the only test solution in the industry for testing PCEP. The solution allows the user to test complex scenarios such as high availability and failover-convergence for PCE. VIAVI PCEP Emulation is part of the SP-SDN protocol emulation test solution that consists of other SP-SDN protocols such as Segment Routing and BGP-LS. Together these protocols provide the capability to create comprehensive test scenarios for SP-SDN domain.



PCE with RSVP-TE: Testing the PCC LSP scale & PCE high availability

Scalability testing for PCC, PCE, LSP and traffic engineering database, fast fail-over convergence and high availability testing becomes important to verify if the PCEP-based network can handle the requirements of the dynamic and large service provider networks.

Features

- Support for PCEP interactive commands such as sending report messages with mandatory and optional objects, remove LSPs, delegation or revoke delegation, sending update messages with the desired objects
- Easy automation for complex test scenarios using interactive PCEP commands available in Command Sequencer
- Auto-response as well as more granular control to message response using Command Sequencer
- Support for Objects—ERO, RRO, Metric, Bandwidth, SRP, LSP and LSPA TLVs
- High Availability Support—Primary/Backup PCE, PCE Overloading and PCE not responding
- Negative testing—Unknown messages, Illegal PDUs and TLVs
- LSP Path Verification using ERO/RRO mapping
- Generate Error Conditions
- Ability to configure PCEP session parameters
- Support for Custom TLVs
- RSVP support for LSP protection and auto-bandwidth scaling
- Support for 1G, 10G and 100G interfaces
- Wireshark dissector support for PCEP messages
- SR with SR ERO and SR RRO sub-TLV
- Request/Reply message support
- Capability negotiation

Applications

- Service Providers and Enterprises can test their Segment Routing implementations and help them transition to the new paradigm of Software-Defined Networking (SDN)
- PCE-P emulation support for PCE and PCC modes
- Test PCE to PCC session scale
- Test PCC LSP scale and LSP setup time
- Test PCC Client performance
- Support for Stateful PCE and PCE Initiated LSPs
- Verify PCE path selection and path optimization within constraints and on network failure
- Support for high- availability test scenario with STC emulating primary and backup PCE Controller

Requirements

TestCenter software requirements	• BPK-1001A, Packet Generator and Analyzer Base Package May Require additional packages • BPK-1004A/B Unicast Routing • BPK-1006A/B MPLS base package
Supported Standards/ specifications	• PCE-Protocol RFC 5440 http://tools.ietf.org/html/rfc5440 • PCEP Extensions for Stateful PCE http://tools.ietf.org/html/draft-ietf-pce-stateful-pce-10 • PCEP Extensions for PCE-initiated LSP Setup in a Stateful PCE Model https://tools.ietf.org/html/draft-crabbe-pce-pce-initiated-lsp-03 • PCEP extensions for Segment Routing http://tools.ietf.org/html/draft-sivabalan-pce-segment-routing-03

Technical Specifications

Depending on whether there is hardware or software involved, the specifications listed will vary slightly.		
PCEP Parameters	PCEP session parameters • PCEP Role—PCE/PCC • IP Version—IPv4/IPv6 • Fixed RFC source port option—enable/disable • KeepAlive interval • Dead time • Enable PC results—enable/disable • Authentication type—MD5	LSP parameters • LSP count • PCE initiated LSP option – enable/disable • Symbolic name • SRP object • LSP object information • ERO object information • RRO object information • Metric object information • BW object information • LSPA object information
PCEP Session Global Options	• Max sessions outstanding • Session retry count • Session retry interval • Max LSP number per message • TCP interval • Pack LSPs to MTU option – enable/disable	

Technical Specifications cont.

PCEP Results	PCEP device results (PCC, PCE) • PCEP state • Tx open count • Rx open count • Tx KeepAlive count • Tx PC report count • Rx PC report count • Tx PC update count • Rx PC update count • Tx PC request count • Rx PC request count • Tx PC reply count • Rx PC reply count • Tx PC notification count • Rx PC notification count • Tx PC notification type • Rx PC notification type • Tx PC notification value • Rx PC notification value • Tx PC error count • Rx PC error count • Tx PC error type • Rx PC error type • Tx PC error value • Rx PC error value • Flap count • Tx PC close count • Rx PC close count	PCEP LSP results • LSP state • Action • PLSP-ID • SRP-ID • Role

Technical Specifications cont.

Ordering Information	• PCE-P PCC Emulation	• BPK-1315
	• PCE-P PCE Emulation	• BPK-1316
	• PCE-P Bundle (includes BPK-1315 PCE & BPK-1316 PCC)	• SPK-1300
	• PCE-P PCC Emulation (Virtual)	• V-BPK-1315
	• PCE-P PCE Emulation (Virtual)	• V-BPK-1316
	• PCE-P Bundle (includes V-BPK-1315 PCE & V-BPK-1316 PCC)	• V-SPK-1300
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
	• VXLAN Emulation	• BPK-1310A

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