TestCenter

L2TPv2 / L2TPv3 Base Packages

Layer 2 Tunneling Protocol (L2TP) is used to support Virtual Private Networks (VPNs) or as part of the delivery of services by ISPs. TestCenter L2TP Base Package enables Service Providers and network equipment manufacturers to quickly validate subscriber scalability. While L2TPv2 is all about PPPoE subscriber sessions being tunneled to domains, L2TPv3 is more about multi-protocol tunneling. L2TPv3 Base Package provides additional security features, improved encapsulation, and the ability to carry data links other than simply Point-to-Point Protocol (PPP) over an IP network. L2TPv3 is emerging as a core tunneling and VPN technology for next-generation networks. L2TPv3 provides the flexibility and scalability of IP with the privacy of Frame Relay and ATM. L2TPv3 will allow network services to be delivered over routed IP networks. Stability and performance of L2TP is critical to many Service Providers and data services.

VIAVI can help you address this challenge with TestCenter with its innovative design. Now you can create and execute more complex test cases in less time with the same resources—and scale tests higher while debugging problems faster. The results: lower CAPEX and OPEX, faster time to market, greater market share and higher profitability, the ability to tunnel thousands of subscribers to thousands of tunnels with authentication and verify data forwarding and receive rates per subscriber.

Increase Productivity: Get there faster with TestCenter

- Ability to emulate L2TPv2 and L2TPv3 test scenarios at high session scale
- Tunnel authentication done over entire message
- Create and customize options with the L2TP option editor
- L2TP Stability Wizard lets you configure session/tunnel stability tests within minutes
- Access over LDP VPLS and Access over BGP VPLS Wizards allow the user to easily configure complex scenarios such as L2TP over LDP VPLS or PPPoL2TP over LDP VPLS
- Set VLAN and QoS settings for subscribers
- Use IP multicast for enhanced realism
- Integrated protocol counters allow user to track protocol messaging
- Easily create large-scale tests with features such as duplicate and copy/paste
- Combine with other TestCenter Base Packages
- Real-time results and charting
- Powerful command sequencer enables realistic scenarios
- Analyze and chart detailed results in real time or export to HTML or PDF

Convergence is creating a new generation of integrated network devices and services that are much more complex than ever before. Service Providers need the ability to deploy networks quickly that get Quality of Experience (QoE) right the first time.

Key Features

- TestCenter supports emulation of LAC
- Multiple LNS per port including dual-stack LNS on a single port
- Validates 32-bit session (L2TPv3) and tunnel ID and tunnel authentication over entire message
- Generates line rate data traffic
- Emulates complex subscriber and DSLAM topologies 'behind' L2TPv3 tunnels
- Supports encoded as well as hidden AVPs
- Encoding the originating number for incoming calling number
- Access Line AVP Extensions for L2TP
- Requests (Connect Speed Update Request: CSURQ) can be setup to be sent on-demand or automatically at regular intervals
- Integrated capture feature allows users to capture and decode control plane and data plane traffic, enabling deep functional troubleshooting
- Integrated protocol counters allow user to track protocol messaging
- Supports Testing multiple tunnel types: PW, L2VPN, PPP, IPv6

Additional L2TPv3 specific features:

- Support L2TPv3 over IP and UDP
- Support for PPP over L2TPv3 over UDP/TCP
- Support Layer 2 VPN tunneling — Ethernet, VLAN and QinQ pseudowires (PW) over L2Tpv3
- Support for IPv4 or Ipv6 over Ethernet over L2TPv3
- Support for reliable delivery of control messages
- Support for Control message authentication

Benefits

- L2TP Tunnel capacity testing
- Session per tunnel testing
- Data forwarding across all L2TP tunnels
- L2TP Tunnel stability test
- Supported on 1G to 400G interfaces and Virtual
- **Detailed analysis:**
  Data plane analysis down to the subscriber, service and stream. This is essential in quickly identifying and resolving intermittent performance issues that occur in only a small number of subscribers when supporting thousands of subscribers.
- **Real World Test Scenarios:**
  TestCenter L2TP emulation provides the ability to test implementations for functional, performance and scalability by providing the ability to emulate multiple LACs and/or LNS.

Applications

TestCenter L2TP Base Package enables users to emulate thousands of L2TP sessions using different services across multiple ports:

- Users can combine it with PPPoX base package to test DSLAM type devices initiating incoming calls to the LAC
- Service Providers can emulate multiple LNS instances, one per customer and test fast scale up for optimal utilization of hardware resources
- L2TP used along with the Topology Emulation feature (DBD) allows user to easily create test scenarios such as DHCP over PPPoL2TP or PPPoL2TP, etc.
- L2TP Stability Wizard lets you quickly set up and tear down PPPoL2TP sessions while optionally running traffic over them
- With VIAVI supporting L2TP on virtual, Service Providers can test decentralized network designs offering vBNG services with vLNS and vLAC emulations

Test Results

The L2TP Base Package provides both real-time and end-of-test results using spreadsheets and graphical formats. These results can be exported in Adobe PDF file format or HTML for spreadsheet or browser-based analysis and reporting. Select from several methods for tracking data plane traffic. Tracking options include session ID, Tunnel ID, Tunnel Count and Packet Counts.

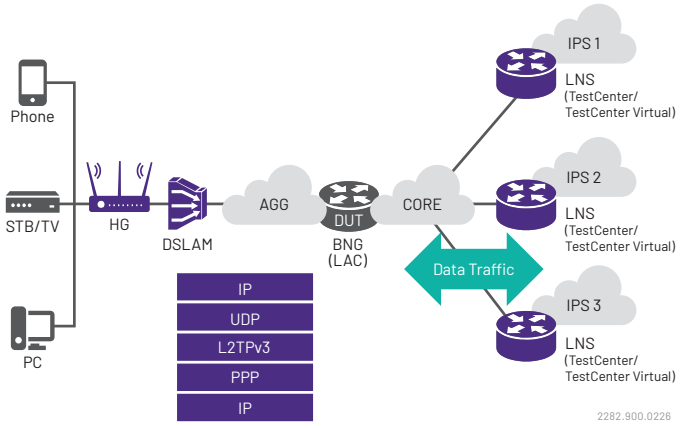

Figure 1: L2TPv3 with LNS Emulation

Technical Specifications

LNS Configurable Options	L2TP Result Counters	Interactive Actions
• Tunnel Starting ID • Session Starting ID • Hostname • Outgoing/Incoming tunnel password • Hello Enable • Hello Interval • Enable Transport Retry • Max Times to retry failed tunnels • Retry timeout, Enable Calling Number • Calling Number • LCP Proxy Mode	• L2TP Block State • Session State (L2TPv3 Only) • Sessions Up • Tunnel Setup Rate • Min Tunnel Setup Time (msec) • Max Tunnel Setup Time (msec) • Avg. Tunnel Setup Time(msec) • Session Setup Rate • Min Session Setup Time (msec) • Max Session Setup Time (msec) • Avg. Session Setup Time(msec) • TX/Rx Packets • Tx/Rx ACK Packets • Tx/Rx Hello Packets • Tx/Rx SCCRQ Packets • Tx/Rx SCCRP Packets • Tx/Rx SCCN Packets • Tx/Rx Stop CCN Packets • Tx/Rx WEN Packets • Tx/Rx SLI Packets • Tx/Rx OCRQ Packets • Tx/Rx OCRP Packets • Tx/Rx OCCN Packets • Tx/Rx ICRQ Packets • Tx/Rx ICRP Packets • Tx/Rx ICCN Packets • Tx/Rx CDN Packets • Tx/Rx CSURQ Packets • Tx/Rx CSUN Packets	• Connect L2TP Devices • Disconnect L2TP Devices • Retry Sessions • Wait for L2TP sessions to connect • Wait for L2TP sessions to disconnect • Send CSURQ • Save Node Info • Save Tunnel Info • Save Session Info • Wait for Tunnels to connect • Wait for Tunnels to disconnect
LNS Configurable Options		**Data Plane Configuration**
• Tunnel Starting ID • Session Starting ID • Hostname • Outgoing/Incoming tunnel password • Enable Connect Speed Update • Enable Auto Connect Speed Update		• Duration: Seconds, Packet Burst or Continuous • Load Options: % Bandwidth of Port, Frames Per Second, Mbps, Kbps, bps • Frame Size: Individually set, Fixed, Random, Step, Custom Step List • Load: Individually set, Fixed, Random, Step, Custom Step List
L2TPv3 Additional Options		
• Tunnel Starting ID • Session Starting ID • Hostname • Outgoing/Incoming tunnel password • Enable Connect Speed Update • Enable Auto Connect Speed Update		

RFCS Supported

- RFC 2661 Layer Two Tunneling Protocol — Version 2
- RFC 3931 Layer Two Tunneling Protocol — Version 3
- RFC 5515 L2TP Access Line Information Attribute Value Pair Extensions

Ordering Information

Part Number	Description
BPK-1012B	L2TPv2 Base Package
BPK-1330B	L2TPV3 Base Package
BPK-1332A	L2TP Access Line AVP Extensions
V-BPK-1012B-001	Virtual L2TPv2
V-BPK-1330B-001	Virtual L2TPv3
Packages that include L2TP	
SPK-1033	BRAS Test Solution
SPK-1066	Converged Access Over MPLS Test Solution
SPK-0003	Ethernet Access Concentrator Test Solution
Related TestCenter Software	
BPK-1003A	IGMP/MLD Host IP Multicast Base Package
BPK-1007B	PPPoX Base Package
BPK-1077B	DHCP Base Package
BPK-1078B	ANCP Base Package
TPK-1002B	IPTV Test Package

Contact Us: +1 844 GO VIAVI | (+1 844 468 4284). To reach the VIAVI office nearest you, visit viavisolutions.com/contact

tc-l2tpv2-v3-ds-hse-nse-ae
30194965 900 0226