Spirent AION

Spirent TestCenter Data Center Bundle

Overview

Spirent AION is a flexible delivery platform that enables users to achieve improved deployment and provisioning for all their cloud and network testing needs. It is designed to deliver ultimate flexibility in how Spirent TestCenter platforms are purchased and utilized.

The extended platform combines a wealth of industry-leading test solutions with a flexible licensing architecture to support a wide range of next-generation solution-based domain applications.

AION offers a centralized management hub to help leverage software and hardware functionalities across all lab users and locations for a simplified management and decision-making process:

- **Flexible purchasing options** available via subscription, consumption-based, and perpetual plans, with the ability to license different bandwidth, scale, and protocol bundles.
- **Flexible deployment options** offered include cloud-delivery, on-prem, and laptop-hosted licensing services.

Enhanced user serviceability delivers always-on platform services from auto-discovery and inventory management to user and workspace administration, notifications, and log aggregation.

Data Center Bundle

Data Center Bundle is a comprehensive protocol package for Spirent TestCenter that includes Layer 2-3 overlay, multi-path high-availability, switching and storage technologies used in Data Center, enabling Network Equipment Manufacturers, Service Providers and Enterprises to quickly evaluate and troubleshoot functionality, performance, and scalability of any data center fabric. This package allows user to expose the true performance of high-speed, high-density ToR switches and routers and overall system architecture for datacenter network with ever increasing port densities and speeds under various traffic conditions.

Ethernet VPN (EVPN) enables user to connect a group of dispersed customer sites using a Layer 2 virtual bridge. As with other types of VPNs, an EVPN is comprised of customer edge (CE) devices (host, router, or switch) connected to provider edge (PE) devices. The PE devices can include an MPLS edge switch (MES) that acts at the edge of the MPLS infrastructure. EVPN Emulation supports data plane encapsulations of MPLS, MAC-in-MAC(PBB) and VXLAN.
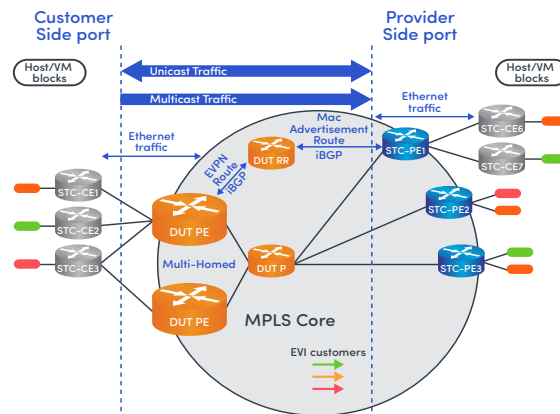
- **Data Center Interconnect Validation—**emulate vast number of VTEPs, PEs, and CEs devices and validate performance and scalability of Data Center Interconnect

- **Network/Service Reliability—**verify scale, reliability, performance of Layer 2 & 3 services including data, multicast, and video delivered over data center fabric

- **Testing Converged Fabrics—**end to end FCoE to FC performance emulating virtual machine initiators on Ethernet and storage array targets on native Fibre Channel test ports

- **Increase Productivity—**leverage wizards for quick test setup and configuration, a powerful set of customizable searching, charting, reporting and event monitoring tools dramatically improve troubleshooting experience

- **Cost-Effective Solution—**complete data center protocol emulation suite in a single, affordable package

- **Trusted Partner—**benefit from decades of testing experience with Spirent as your guide through a world of complex testing

VXLAN Overlay helps users create large private networks of virtual machines across existing Layer 2 and 3 networks. VXLAN VTEP 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 VXLAN enabled devices. VXLAN Emulation supports various ways of learning, including traditional data plane-based flood and learn, manual configuration of unicast address or flood list and advanced BGP-EVPN control plane- based learning.
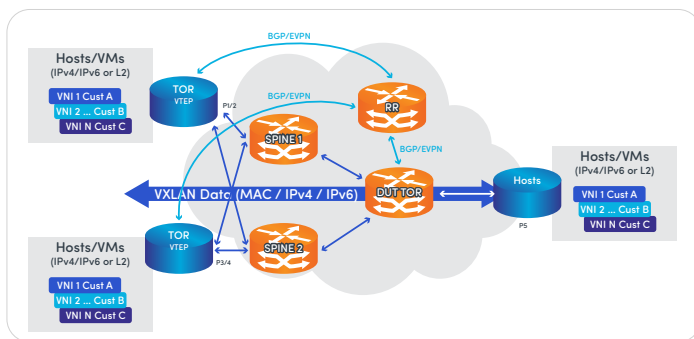
Protocols such as **Shortest Path Bridging, TRILL, VEPA** included in this package, help quickly evaluate and troubleshoot different types of Layer 2 fabric, forwarding behavior, and performance in devices and data center networks.

Storage Technologies such as Fibre Channel over Ethernet (FCoE) provides a method of transporting Fibre Channel traffic over a physical Ethernet connection. FCoE Initialization Protocol (FIP) allows the switch to discover and initialize FCoE-capable entities that are connected via Ethernet. Data Center Bridging eXchange (DCBX) protocol is an extension of the LINK Layer Discovery Protocol (LLDP). DCBX endpoints exchange request and acknowledgement messages. FCoE, FIP and DCBX are enablers of data center consolidation and LAN and SAN convergence. This package helps to test FC and FCoE interoperability scenarios.

This bundle is an integrated component of Spirent TestCenter and works with other Spirent TestCenter components to deliver easy, consistent TCL and Perl scripting API and Command Sequencer NoCode automation. The Data Center Bundle protocols can also be combined with Routing and Switching, Access or Segment Routing control-plane over VXLAN/EVPN-MPLS topology with stateful or stateless data-plane traffic.

Features and Benefits

- Support for dual-stack IPv4 and IPv6 in EVPN emulation with EVPN routes Type 1 to Type 8
- Support for dual-stack VXLAN emulation for IPv4 and IPv6 underlay
- BGP-EVPN control plane integrated with widely used VXLAN-EVPN Overlay and PBB EVPN with comprehensive support for most data plane encapsulations, namely MPLS, VXLAN and MAC-in-MAC
- Inter-subnet forwarding for EVPN and VXLAN with Integrated Routing and Bridging (IRB) Symmetric and Asymmetric
- Support for MAC Mobility in EVPN/VXLAN and measure MAC Mobility Convergence for VXLAN-EVPN overlay
- Support for EVPN services like E-TREE and E-LINE (VPWS)
- Use wizard to quickly emulate large and complex VXLAN/EVPN leaf-spine topologies running broadband access protocols, or stateful application-layer protocols from a single application interface.
- Setup and test complex Data Center Interconnect topologies and internetworking between EVPN-VXLAN, EVPN-MPLS and IP VPN
- Support for multiple extension to VXLAN-EVPN Overlay technologies like Multi-Site, Tenant Routed Multicast, Any Source Multicast Underlay
- Support for Access protocols over VXLAN and VXLAN-GPE extension
- Validate scalability and protocol functionality in the same test by running multiple protocols concurrently on each port
- Legacy data center technologies like SPB, TRILL help with testing of interoperability and staggered network upgrades
- Storage testing with Fiber Channel over Ethernet emulation support with dynamic network discovery using LLDP/DCBX
- Validate FCoE single hop vs. multi hop fabric redundancy and performance impact of possible head of line blocking (HLOB) with nanoseconds accurate data plane latency
- Verify no flooding, MAC learning and broadcasts on FCoE data plane VLANs and MAC address spoofing prevention capabilities of Fabric zones, VSANs and FIP snooping dynamic Access Control Lists (ACLs)
- Use the Command Sequencer with TCL scripts to send SNMP commands, get SNMP data, configure the device under test, run entire test and generate pass/fail results; advanced command sequencer capabilities allow users to extend Spirent TestCenter to meet their test needs

Technical Specifications

Parameter	Description
Data Center Interconnect	
EVPN	• EVPNv4/v6 • EVPN Route Types 1,2,3,4,5,6,7,8 • Inter-subnet forwarding with IRB (Symmetric and Asymmetric) • PBB-EVPN • Data Plane support for MPLS, VXLAN and MAC-in-MAC • All Active / Single Active Aliasing and Load Sharing • Split-Horizon • MAC Mobility (requires Routing and Switching Bundle)
VXLAN	VTEP Learning: • Flood and Learn (requires Routing and Switching Bundle) • Manual configuration Unicast and Flood list • EVPN Control Plane (requires Routing and Switching Bundle) • OVSDB (requires Security Bundle)
VXLAN-EVPN Overlay	• VXLANv4/v6 with EVPN Control plane • Inter-subnet forwarding with IRB (Symmetric and Asymmetric) • PIM-ASM support in underlay for BUM traffic • Border Gateway (BGW) emulation in Multisite topology • Tenant Routed Multicast • DHCP/PPPoE/IGMP/MLD control plane over VXLAN tunnel (requires Access Bundle) • MAC Mobility and MAC Mobility Convergence Measurement
VXLAN-GPE	• Generic Protocol Extension to VXLAN header • Access protocols over VXLAN-GPE (requires Access Bundle)
Storage Fabric	
FCoE	• FIP—FCoE Initialization Protocol emulation (FLOGI/FLOGO) • Server VN_Port and Fabric FCF VF_Port emulation • Automatic VLAN discovery • Multiple ENode and VN_Port emulation to FCF switch • NPIV VN_Port emulation to FCF, NPV and FIP snooping bridge switches
LLDP/DCBX	• Link Layer Discovery Protocol (LLDP) emulation • Auto-negotiation of 802.1Qbb Priority Flow Control (PFC) and 802.1Qaz Enhanced Transmission Selection (ETS)
Legacy Protocols	
TRILL	• RBridge (Routing Bridge) emulation • RBridge nickname collision resolution • Multi-VLAN support • Appointed Forwarder designation • Designated RBridge election
SPB	• 802.1aq Shortest Path Bridging MAC (SPBM) BEB or BCB emulation • 802.1ah traffic via Mac-in-Mac encapsulation
OTV	Overlay Transport Virtualization
VEPA	Virtual Ethernet Port Aggregator (IEEE 802.1QBG)
PLSB	Provider Link State Bridging

Ordering Information

Product Number	Description
AOL-DL-DC	Data Center Bundle

About Spirent Communications

Spirent Communications (LSE: SPT) is a global leader with deep expertise and decades of experience in testing, assurance, analytics and security, serving developers, service providers, and enterprise networks. We help bring clarity to increasingly complex technological and business challenges. Spirent's customers have made a promise to their customers to deliver superior performance. Spirent assures that those promises are fulfilled. For more information visit: **www.spirent.com**

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