SPIRENT TESTCENTER

FCOE, FIP AND DCBX TESTING PACKAGE

Fibre Channel over Ethernet (FCoE), the FCoE Initialization Protocol (FIP) and Data Center Bridging eXchange (DCBX) are the enablers of data center consolidation and LAN and SAN convergence. For every server Converged Network Adapter (CNA) to 10G Ethernet top of rack switch port there will be an active DCBX instance on the data center fabric. For every Virtual Machine there will be FIP control plane and FCoE data plane traffic on the data center fabric. High performance, availability, security and scale (PASS) cloud infrastructures can be verified with the Spirent TestCenter FCoE, FIP and DCBX testing package.

SOLUTION OVERVIEW

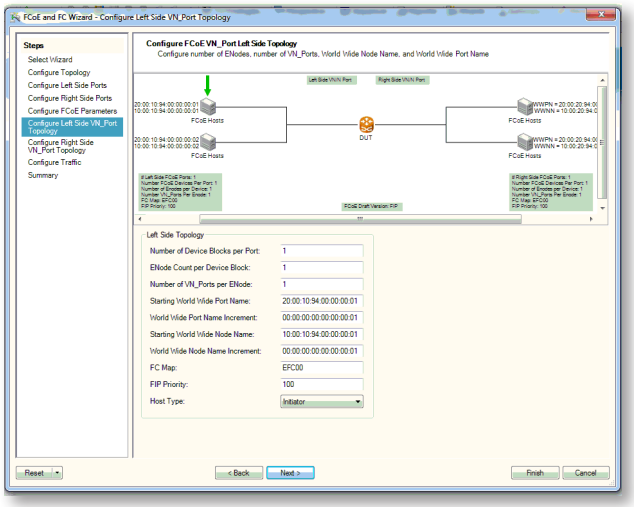
With the FCoE, FIP and DCBX testing package hundreds to thousands of virtual machines can be emulated with Spirent TestCenter to test data center fabrics. First Spirent TestCenter ports emulate data center bridging capabilities such as 802.1Qbb Priority Flow Control (PFC) and 802.1Qaz enhanced transmission selection (ETS). Second each port emulates virtual machine or storage array FCoE/FIP initiators and targets emulating stateful Enode and VN_ports with PLOGI and FDISC control plane messaging. Third Spirent TestCenter 10G, 40G and 100G Ethernet ports can generate line rate FCoE traffic measuring Queueput and nanosecond accurate latency.

APPLICATIONS

- Testing Converged Fabrics – test end to end FCoE to FC performance emulating virtual machine initiators on Ethernet and storage array targets on native Fibre Channel test ports
- Testing High Speed Ethernet FCoE Fibre Channel Forwarder (FCF) switches – test Enode and VN_port control plane scale and combined LAN/SAN queueput
- Testing FIP Snooping and N-Port Virtualization (NPV) bridge switches - test top of rack switch FCoE pass-through capabilities by emulating server VN_ports as well as fabric FCF VF ports.

FEATURES & BENEFITS

- Test Performance, Availability, Security and Scale (PASS) of FCoE, FIP and DCBX with full integration of the package with other Spirent TestCenter features
- **Performance:** Report FCoE Queueput per latest IETF draft specification together with unicast and multicast LAN traffic utilizing the Spirent TestCenter data center bridging benchmarking package
- **Availability:** Test FCoE single-hop vs. multi-hop fabric redundancy and performance impact of possible head of line blocking (HLOB) with nanoseconds accurate data plane latency
- **Security:** 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)
- **Scale:** Verify fabric support for 1000s of Vmware, Hyper-V, KVM, Citrix/Xen Virtual Machine LAN MAC addresses as well as SAN NPIV FCIDs including line-rate traffic



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TECHNICAL SPECIFICATIONS

DCBX emulation features

- Full Link Layer Discovery Protocol (LLDP) emulation
- Auto-negotiation of 802.1Qbb Priority Flow Control (PFC) and 802.1Qaz Enhanced Transmission Selection (ETS)
- LLDP & DCBX port summary results with exchanged priority map
- Detailed DCBX feature results with 25+ metrics including PFC, FCoE Priority and Bandwidth allocation
- 20+ LLDP and DCBX TLVs with default or configurable parameters
- Customizable TLVs
- Push or pull link configuration options thru DCBX TLV willingness settings
- Bring logical link up and down
- Automatic start and stop with FCoE emulation
- Configurable Tx interval, multiplier and delays

FCoE emulation features

- FIP – FCoE Initialization Protocol emulation (FLOGI/FLOGO)
- FCoE data plane protocol traffic generation
- Automatic VLAN discovery
- ENodes discovery of of VF_Port capable FCF-MACs
- Login and out of FC Fabric (FCF)
- Multiple ENode and VN_Port emulation to FCF switch
- NPIV VN_Port emulation to FCF, NPV and FIP snooping bridge switches
- N-Port Virtualization (NPV) VNP_Port emulation to FCF switch
- VF_Port emulation to NPV and FIP Snooping bridge switches
- FCoE port summary results with VN_port count
- Detailed FCoE feature results with 15+ metrics including FIP counters, assigned FCID and granted MAC address
- FIP Initiator and Target settings
- FC Checksum
- Server and Fabric Assigned MAC address (SPMA/FPMA)
- Static WWN assignment (Port WWN)
- Automatic traffic binding of FCID and assigned MAC

SUPPORTED MODULES & PLATFORMS

- Supported on HyperMetrics CV modules
- Supported on HyperMetrics neXt modules
- Supported on all Spirent TestCenter Chassis

REQUIREMENTS

- Standard Spirent TestCenter

ORDERING INFORMATION

Description	Part Number
Packet Generator And Analyzer Base Package	BPK-1001
FCOE DCBX Base Package A	BPK-1081A
Data Center Bridging Benchmarking Test Package	TPK-1059

SPIRENT SERVICES

Spirent Global Services provides a variety of professional services, support services and education services—all focused on helping customers meet their complex testing and service assurance requirements. For more information, visit the Global Services' Web site at www.spirentcom.com/gs or contact your Spirent sales representative.

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