RFC-2544 with VLAN Network Device Benchmark Test Package

Product Overview

The RFC-2544 with VLAN Network Device Benchmark Test Package is an essential tool enabling network testers to measure the performance of Layer 2 and Layer 3 switches and the networks on which they will be deployed. A component of the Spirent TestCenter, the test package provides a framework to test modern routing features within the guidelines of well-established standards.

This product provides pre-programmed tests per the IETF RFC-2544, Benchmarking Methodology for Network Interconnect Devices, which is the standard for initial performance testing of L2/L3 switches. With this test package you can quickly obtain baselines of behavior on existing network devices and reveal the effects of newer technologies as they are incrementally introduced. The product's capabilities extend beyond RFC-2544, supporting the latest technologies, all within a unique framework for better troubleshooting and customization of controls than found in legacy solutions.
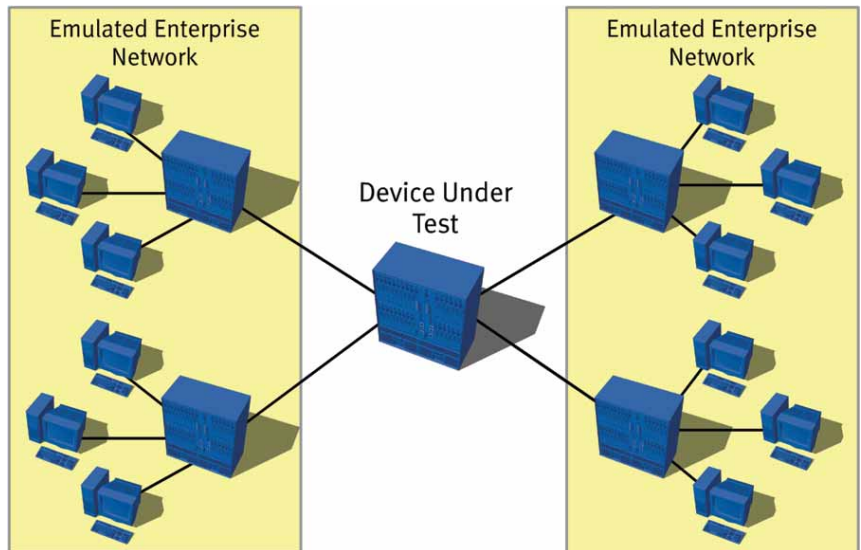
Applications

This test package helps Spirent TestCenter customers to evaluate key performance parameters of L2/L3 switches under typical or extreme traffic load conditions for minutes, hours, and days. It can emulate unicast traffic across a device or network under test, performing tasks such as regression testing following firmware changes and comparative analysis of switches and routers. It can perform standards-based tests with a large number of uniquely trackable traffic streams to verify scalability before a network goes live.

In preparation for using VLANs, DiffServ, jumbo frames or IPv6, the RFC-2544 with VLAN Network Device Benchmark Test Package can assess network performance impact, and it can make measurements on data plane traffic with combined control plane activity such as BGP and Multicast. The product goes beyond the level of analysis described in RFC-2544.

Benefits

- Ensure that test results baseline according to the RFC and see the effects of newer technologies as they are incrementally introduced
- Run RFC-2544 tests over VLAN-based topologies

Emulated Enterprise Network — **Device Under Test** — **Emulated Enterprise Network**

- Test with jumbo frames to verify whether or not the bulk transfer capacity of a network is truly low-latency and wire-rate. These constraints are particularly important for cluster computing
- Evaluate the effectiveness of QoS algorithms
- Automate testing on multiple operating systems

GET IT DONE FASTER WITH
Spirent TestCenter

- Integrated RFC test methodology
- Transmit 32,767 unique streams per port
- Introduce VLANs, jumbo frames, QoS, and IPv6 into test scenario for comparison to IPv4 test baselines
- Wizards for large and complex traffic creation
- Finite control of traffic streams
- Enhanced results with complete per-stream results analysis
- Integrated automation

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SPIRENT
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Analyze | Assure | Accelerate™

Spirent
TestCenter™
Component

- Improve understanding between developer and QA performance tester by using standard benchmarks
- Obtain a rich set of results that provide significant insight into performance degradation—in real-time and after the test has completed
- Test large switches in a small, cost-effective footprint
- Reduce time-to-test by making tests easier to configure, faster to run, more interoperable, and easier to interpret
- Facilitates testing of IPv6 transition scenarios with native IPv6 support
- Uncover potential issues with realistic traffic configuration, integrated capture, decode, and statistics
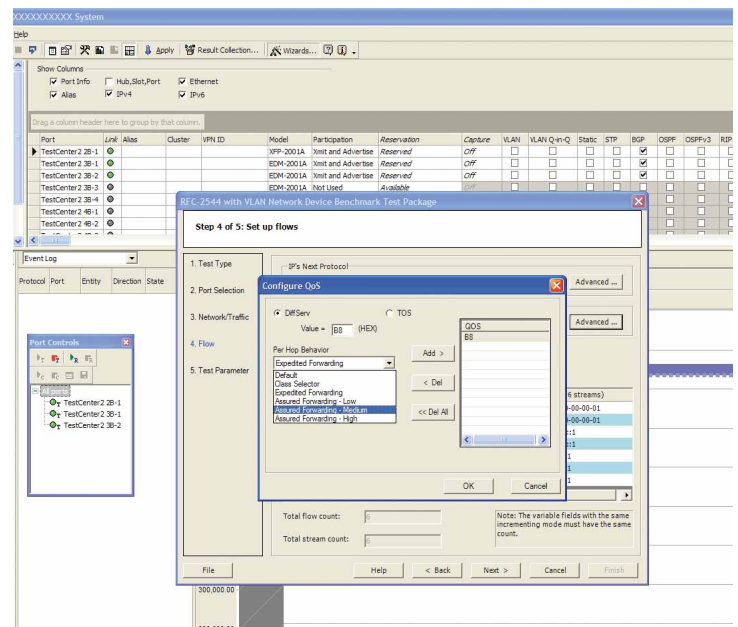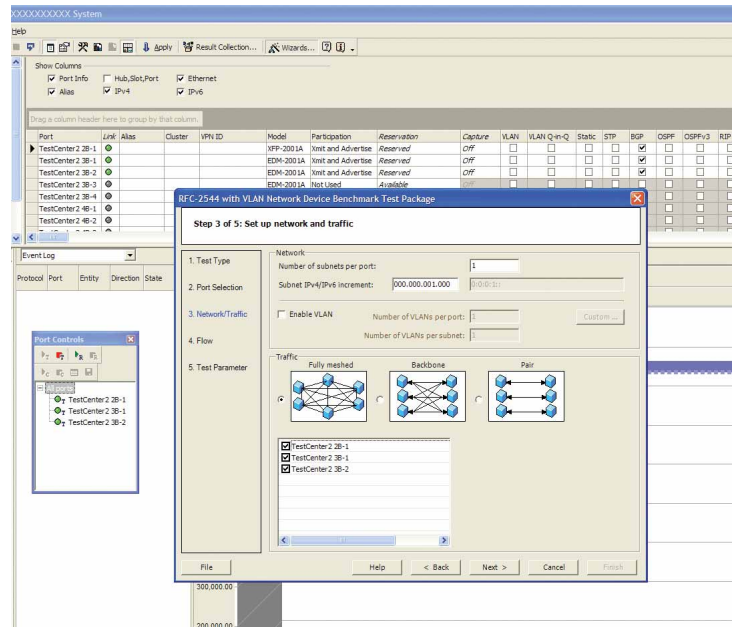
Key Features

- RFC testing of L2/L3 devices per RFC-2544
- Support for technologies beyond the RFC: VLANs, DiffServ, jumbo frames and IPv6
- Key metrics beyond the RFC, such as per-stream statistics
- A single user interface for RFC testing combined with bridging and routing protocols
- Wizards provide easy test setup of IPv4 and IPv4 traffic for complex test configurations
- Finite control of frame content via the Spirent Packet Generator and Analyzer
- Large number of streams allows simulation of thousands of logical network users

Test Results

The RFC-2544 with VLAN Network Device Benchmark Test Package provides both real-time results and final test results using spreadsheets and graphical formats. These results can be exported in comma separated value (.CSV) file format or HTML for spreadsheet or browser-based analysis and reporting.

- The test package provides enhanced results with complete per stream results analysis. Post-test results are provided on a port and on an individual stream level
- Integrated real time counters help identify gross failure conditions as they happen, such as packets lost and misdirected, ARP failures, and intermittent frame check sequence errors
- Integrated capture feature allows capturing of data as the primary test executes
- Test results reported in terms of fps, Mbps, Kbps, bps and % of line rate for easy comparison to the same units used in the transmit configuration

Technical Specifications

Key Tests

- Throughput
- Latency
- Frame loss
- Back-to-back frames

Traffic Control

- Ports, MAC, and IP addresses can vary with step value
- Ethernet II frame support
- IP Next Protocol setting
- TTL (time to live) setting
- TCP/UDP source and destination port numbers
- DiffServ Code Point (DSCP) with Class Selector and Assured/Expedited Forwarding controls
- Multiple 802.1p,Q VLANs per port or subnet
- Customization of editable streams after using the wizard
- Optionally enable or disable streams

Test Control

- Stagger start
- Delay after transmission
- Traffic start delay
- Duration in seconds or by frame burst

Learning Parameters

- L2 Learning (Ethernet sourcing)
  - Learning rate
  - Repeat count
  - Frame sizes same as stream or user-defined
- L3 Learning (ARP-IPv4, Neighbor Discovery-IPv6)
  - ARP rate via gap setting
  - Cyclic flow ARP requests
  - Retry count
- Delay before learning
- Per test, per trial, and per frame size learning
- Learning verification

Test Configuration

- Traffic wizards configure thousands of traffic streams with personalized control
- Traffic loads configured in terms of fps, Mbps, Kbps, bps and % of line rate (excludes Throughput test)
- Loads: fixed or stepped
- Frame sizes: fixed, stepped, or random and custom with minimum/maximum
- Burst size in frames
- Easily set unidirectional or bi-directional flows

Supported Modules

Module	Description
CPR-1001A	10/100/1000 copper RJ-45, 8 port
EDM-1001A	10/100/1000 dual media, 4 port
FBR-1001A	1G fiber SFP, 8 port
XFP-1001A	10G XFP, 1 port
CPR-2001A	10/100/1000 copper RJ-45, 8 port
EDM-2001A	10/100/1000 dual media, 4 port
FBR-2001A	1G fiber SFP, 8 port
CPR-2002A	10/100 copper RJ-45, 8 port
XFP-2001A	10G XFP, 1 port

Requirements

- An SPT-2000A Spirent 2U chassis and controller or SPT-5000A Spirent 5U chassis and controller with the appropriate hardware modules
- Pentium™ or greater PC running Windows® 2000 SP4 or XP SP1/1A/2 with mouse/color monitor required for GUI operation

Ordering Information

TPK-1000	RFC-2889 with VLAN Network Device Benchmark Test Package

Other related Spirent TestCenter software

BPK-1001A	Packet Generator and Analyzer Base Package[1]
TPK-1001	RFC-2889 with VLAN Network Device Benchmark Test Package

Spirent Global 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 website at www.spirentcom.com/gs or contact your Spirent sales representative.

[1] *Required for complete functionality described herein.*

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