

PacketExpert™ - RFC 2544 Testing

Quad Port—4x 1G Electrical or Optical + 2x 10G Optical Ports

Single Port and Dual Port RFC2544 Tests

Throughput, Latency, Frame Loss Rate, & Back-to-Back Measurements - RFC 2544

RFC 2544 over Layer2 through Layer4

Supports Stacked VLAN (Q-in-Q) up to 3 Levels

Supports Stacked MPLS (up to 3 Levels)

Jumbo Frame 16000 Bytes

User-defined VLAN ID, and MPLS Labels

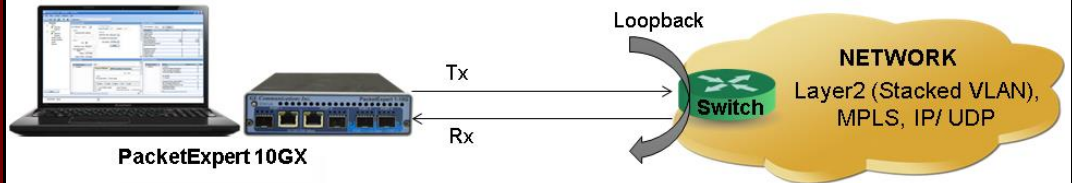
Report Generation in PDF & CSV Formats

Graphical Display for Easy to Visualize Test Results

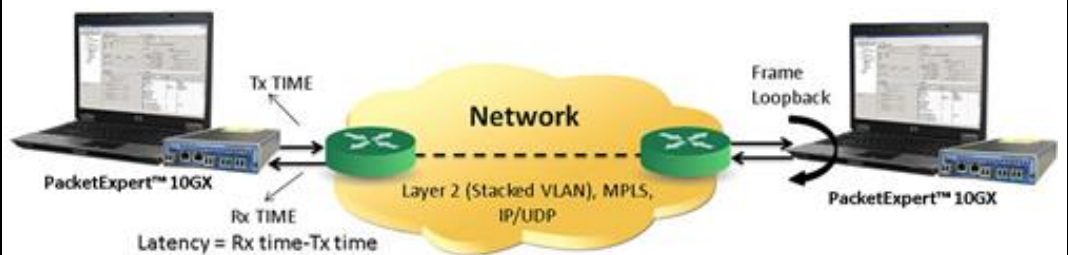
Test Automation using TCL, C#, Python APIs and CLI Server

The **RFC2544** application is designed to perform a test which includes Throughput, Latency, Frame Loss, and Back-to-Back. Similar to BERT, RFC 2544 can be done over Framed Ethernet (Layer2), Stacked VLAN (Q-in- Q), Stacked MPLS, IP and UDP. The application is available with PacketExpert™ 10G/1G hardware, a **Quad Port** Ethernet / VLAN / MPLS / IP / UDP Tester.

- 2x Electrical (10/100/1000 Mbps) or Optical 1G ports using SFP
- 2x 10G/1G optical only interface, which can be downshifted to support 1G (Electrical or Optical) or to support 2.5 Gbps Electrical interface using appropriate SFPs.



In Dual port RFC 2544 test, the PacketExpert™ allows RFC 2544 specific tests on Port #1 and Port #2. The test is setup such that the traffic can be generated and transmitted on either of the ports (Port #1 or Port #2) and the looped back traffic from the DUT is received on the opposite port validating the test parameters.



In Single port RFC 2544 test, the PacketExpert™ allows RFC 2544 specific tests on Port #1 or Port #2. The test is setup such that the traffic is transmitted on Port #1 or Port #2 and the PacketExpert™ at the DUT end can be configured to loop the traffic back on the same port measuring the Tx and Rx time thus calculating the latency. The RFC 2544 test can be run on either Port #1 or Port #2 at a time.

For detailed information on PacketExpert™, visit <https://www.gl.com/packetexpert-rfc-2544-ber-loopback-testing.html#rfc2544testing>

Features

- Benchmarking Service Level Agreement (SLA) RFC2544 tests - Ethernet Throughput, Latency, Frame Loss, and Back-to-Back performance tests.
- RFC2544 tests supporting uni-directional and bi-directional traffic between ports
- Supports RFC 2544 on 1G Electrical/Optical and 10G optical ports
- Support for frame lengths from 64 bytes to Jumbo frames (up to 16000 bytes)
- Single port and Dual ports RFC 2544 test modes
- Includes various parameter configurations such as Test Selection, Frame Sizes selection, Unidirectional/Bidirectional, Number of trials, Trial Duration, and many more.
- User-defined options to configure various packet header parameters, like MAC addresses, IP addresses, UDP ports, VLAN ID, MPLS Labels, and more.
- Results are displayed in both tabular as well as graphical format for both the directions.
- Capability of remote operation, and test automation with TCL, C# and Python API clients and MAPS CLI server, client-server based architecture.

 **GL Communications Inc.**

818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A

(Web) <https://www.gl.com/> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) info@gl.com

Global and Test Configurations

Global configuration includes various parameter configurations that are common to all the 4 tests - Throughput, Latency, Back-to-Back, Frame Loss. option to configure with the minimum frame length required. RFC 2544 recommends 20 different frame sizes for Ethernet.

Test configurations includes Minimum and Maximum Bandwidth parameter settings for Throughput/Latency/Frameless tests, and Burst size and no. of bursts settings for Back-to-back test for both the directions.

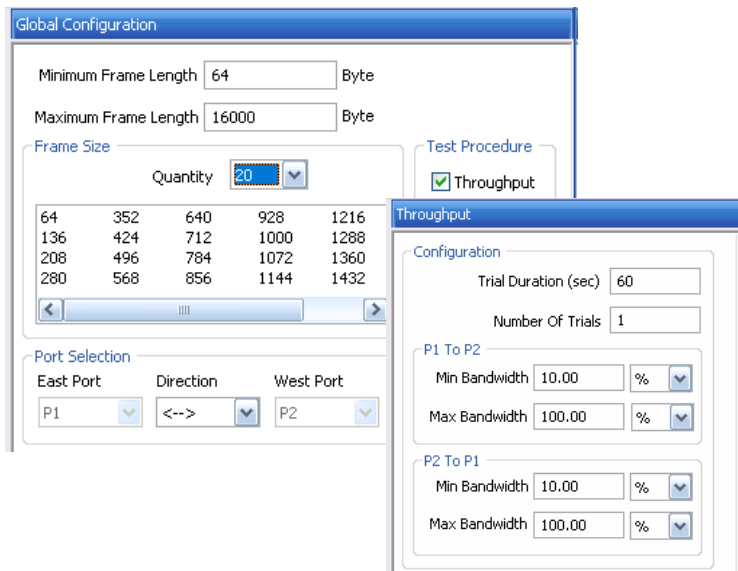


Figure: Global and Test Configurations

Port Level Statistics

Detailed statistics per port are provided. In addition to statistics like Frame Count, Frame Rate, Link Utilization, others are provided based on various categories like Frame Type (Unicast/Broadcast/Multicast, VLAN), Frame Lengths (64, 65-127, 1024-1518, Oversized, Undersized), Protocol Type (IPv4, IPv6, UDP, TCP, ICMP, IGRP, etc). VLAN Statistics (per Stack position), MPLS Statistics (per stack position) are also displayed for the configured stacks.

Description	Tx	Rx
Total Frames	1 473 103 825	1 473 247 505
Valid Frames	1 473 103 825	1 473 247 505
Bad Frames	0	0
Number of Bytes	282 168 936 466	282 223 640 594
Link Utilisation(%)	0.000	0.000
Data Rate(Mbps)	0.000	0.000
Frame Rate(Frames/sec)	0	0
Non Test Frames	0	1 157 743 204
Broadcast Frames	2	2
Multicast Frames	0	0
Control Frames	0	0
VLAN Frames	0	0
Pause Frames	0	0
Wrong Opcode Frames	0	0
Out of Bound Frames	0	0
Length Type Out of Range Frames	0	0
64 Byte Length Frames	777 807 198	777 807 198
65-127 Byte Length Frames	0	0
128-255 Byte Length Frames	368 003 181	368 003 181
256-511 Byte Length Frames	167 615 997	167 689 669
512-1023 Byte Length Frames	74 754 466	74 824 474
1024-1518 Byte Length Frames	84 922 983	84 922 983
Oversized Frames	0	0
Undersized Frames	-	0

Figure: Per Port Statistics

RFC 2544 Test Results

Results are displayed in both tabular as well as graph format. Supports test report generation in both PDF and CSV formats.

Status – displays test status such as In Progress, Completed, and Aborted. In addition, it displays status of learning frames and test frames for the current trial along with Bandwidth, Frame Size, and Frame Count.

Throughput – Throughput results are displayed in terms of bandwidth (both in percentage as well as Mbps) for each frame size. Graphically, it is plotted as throughput vs frame size.

Latency – Latency values are displayed in terms of microseconds for each frame size. Graphically, the latency value is plotted against frame size.

Back-to-Back – Back-to-Back values are displayed in terms of the burst size (in milliseconds) for each frame size. Graphically, the burst size is plotted against frame size.

Frame Loss – Frame Loss results are displayed in terms of the throughput (in percentage) measured over the range of input rates (in percentage) for each frame size. Graphically, for each frame size, the throughput is plotted against the test rate.

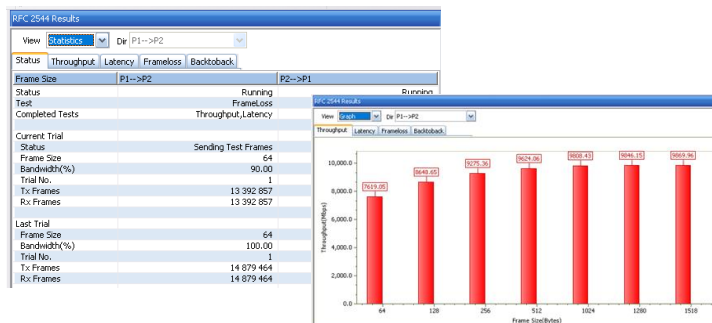


Figure: RFC 2544 Throughput Test Statistics and Graph

Command Line Interface (CLI)

PacketExpert™ is enhanced to support Command Line Interface (CLI) to access all the functionalities remotely using C#, TCL or Python clients and MAPS™ CLI Server/Client architecture. The CLI supports all the PacketExpert™ test modules including - All Port Bert, Bert Loopback, All Port Loopback, RFC 2544, Record Playback, ExpertSAM™, Multistream Traffic Generation and Analysis, ExpertTCP™, PacketBroker and IP WAN Emulation.

Buyer's Guide

[PXN100](#) - PacketExpert™ 10GX

[PXN101](#) - 10G option for PXN100

[CXN100](#) - CLI Server for PXN100

[PXG100](#) - PacketExpert™ 10G/1G

[CXG100](#) - CLI Server for PXG100

[PXE100](#) - PacketExpert™ 1G

[CXE100](#) - CLI Server for PXE100

Refer <https://www.gl.com/ip-ethernet-testers-packetexpert-platforms.html> webpage.



818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A

(Web) <https://www.gl.com/> - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) info@gl.com