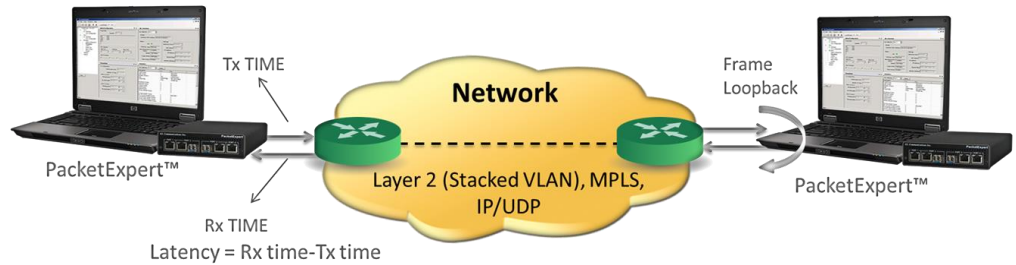


PacketExpert™ - RFC 2544 Testing

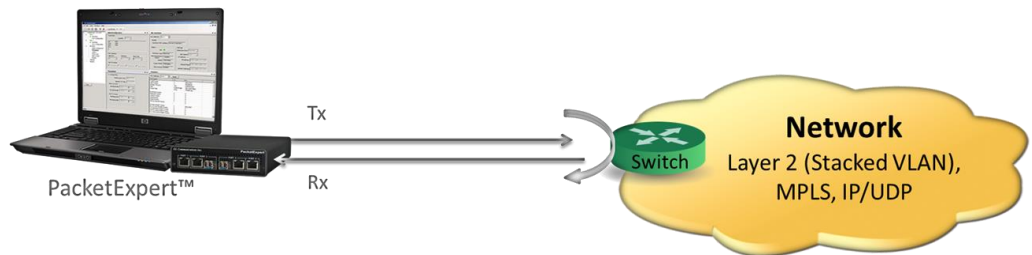
PacketExpert™ is a portable (USB based) **Quad Port** Ethernet / VLAN / MPLS / IP / UDP Tester with **4 Electrical** Ethernet ports. **2** of the 4 ports can be **Electrical or Optical** ports, enabling testing on optical fiber links as well. The **electrical ports** support **10/100/1000 Mbps**, and **optical ports** support **1000 Mbps** using SFP. Each GigE port supports testing at wire speed for applications such as [Wire speed BERT](#), [RFC 2544 \(Single and Dual Port\) Testing](#), [Smart Loopback](#), [WAN IP link Emulation](#), [Capture and Playback](#), [PacketBroker](#), and [ExpertSAM](#).

PacketExpert™ RFC 2544 supported on single (port2) or dual electrical / optical ports (port2 and port3).

PacketExpert™ RFC 2544 specific tests 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.



In Single port RFC 2544 test, the PacketExpert™ allows RFC 2544 specific tests on Port #2 only. The test is setup such that the traffic is transmitted on 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.



In Dual port RFC 2544 test, the PacketExpert™ allows RFC 2544 specific tests on Port #2 and Port #3. The test is setup such that the traffic can be generated and transmitted on either of the ports (Port #2 or Port #3) and the looped back traffic from the DUT is received on the opposite port validating the test parameters.

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

Features

- Throughput, back-to-back, latency and frame loss testing supporting uni-directional and bi-directional traffic between ports
- Supports RFC 2544 on single or dual electrical / optical ports
- 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.
- Console based CLI (TCL client) provides the capability of remote operation, and automation

 **GL Communications Inc.**

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4 Electrical (10/100/1000Mbps) & 2 Optical Ports (1000Mbps)

RFC 2544 over Layer2 through Layer4

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

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

Supports Stacked MPLS (up to 3 Levels)

User-defined VLAN ID, and MPLS Labels

Report Generation in PDF & CSV Formats

Manual and Smart Loopback

Graphical Display for Easy to Visualize Test Results

Console based, GL's WCS based, and TCL based CLI Interfaces

Global Configuration

Global configuration includes various parameter configurations such as Test Selection, Frame Sizes, 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 others.

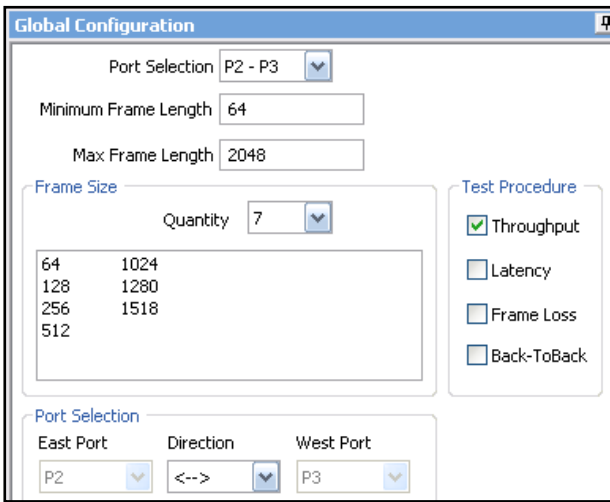


Figure: Global Configuration

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.

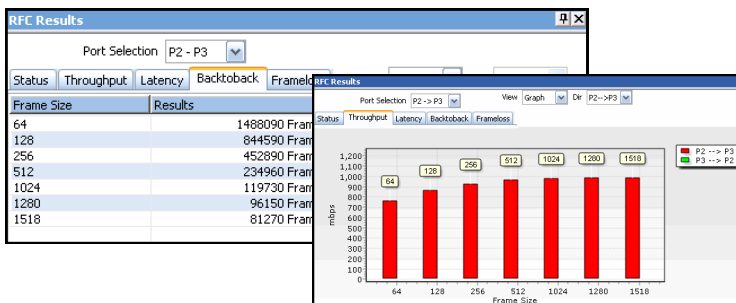


Figure: RFC 2544 Back-to-back Statistics and Graph

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	32831073	32831083
Valid Frames	32831073	32831083
Number of Bytes	8093381216	8093381860
Link Utilization(%)	0.000	0.000
Data Rate (Mbps)	0.000	0.000
Frame Rate (Frames/Sec)	0	0
Broadcast Frames	19	15
Multicast Frames	0	9
Control Frames	0	9
VLAN Frames	0	0
Pause Frames	0	9
Wrong Opcode Frames	-	0
64 Byte Length Frames	7	16
65-127 Byte Length Frames	14534910	14534911
128-255 Byte Length Frames	8445946	8445946
256-511 Byte Length Frames	4528986	4528986
512-1023 Byte Length Frames	2349624	2349624
1024-1518 Byte Length Frames	2971600	2971600
Oversized Frames	0	0
Undersized Frames	-	0
FCS Error Frames	-	0
Non Test Frames	-	0
Non Test VLAN Frames	-	0
Non Test MPLS Frames	-	0
1 Level Stacked VLAN Frames	-	0
2 Level Stacked VLAN Frames	-	0
3 Level Stacked VLAN Frames	-	0
1 Level Stacked MPLS Frames	-	0
2 Level Stacked MPLS Frames	-	0
3 Level Stacked MPLS Frames	-	0
IP Checksum Errors	-	0
IPv4 Packets	-	32831040
IPv6 Packets	-	0
IP Non Test Packet	-	0
IP in IP Packet	-	0
UDP in IP Packet	-	32831040
TCP in IP Packet	-	0
IGMP in IP Packet	-	0
IGMP in IP Packet	-	0
IGRP in IP Packet	-	0
Other Protocols in IP Packet	-	0
UDP Checksum Errors	-	0
UDP Packets	-	32831040
UDP Non Test Packets	-	0

Command Line Interface (CLI)

PacketExpert™ is enhanced to support Command Line Interface (CLI) to access all the functionalities remotely using 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, IPLinkSim™, Record Playback, ExpertSAM™ and PacketBroker.

Buyer's Guide

[PXE100](#) – PacketExpert™ 1G

[PXE104](#) - PacketExpert™ - SA (4 ports) 1G

[PXE112](#) - PacketExpert™ -SA (12 Ports) 1G

[PXE124](#) - PacketExpert™ -SA (24 Ports) 1G

[IPN110](#) - IPLinkSim™ WAN Link Emulator (1 Gbps, 2 active ports)

[PXE105](#) - Wire speed Record/Playback 1G

[PXE106](#) - ExpertSAM 1G

[PXE107](#) - PacketBroker 1G

Refer <http://www.gl.com/optical-and-ethernet-testing-packetexpert.html> webpage.



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