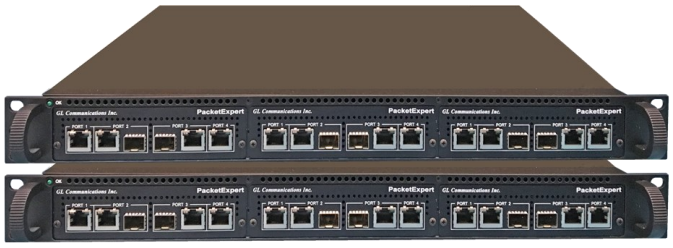
PacketExpert™ 1G Ethernet/IP Tester

(mTOP™ Rack and Probe Platforms)

PacketExpert™ 1G mTOP™ Probe
(Front view)

1U mTOP™ Rackmount
PacketExpert™ 1G

PacketExpert™ 1G mTOP™ Probe
(Rear View)



Two Stacked 1U mTOP™ Rackmount
PacketExpert™ 1G

Overview

GL offers multi-interface test appliance in two variants - mTOP™ 1U rack enclosure and mTOP™ Probe unit.

- The **mTOP™ 1U rack enclosure** can be stacked with multiple PacketExpert™ USB units to provide high density GigE ports form factor solution for testing GigE switches, routers and network conditions
- The **mTOP™ Probe** variant is an all-in-one self-contained test instrument, which includes single PacketExpert™ USB units along with necessary PC hardware in a single box. The comprehensive mTOP™ Probe is designed for easier portability and convenient for drive testing

Both the mTOP™ platforms can contain PacketExpert™ 1G USB units. PacketExpert™ 1G - includes 4x 1Gbps ports, out of which 2 ports support Electrical/Optical interfaces, and the other 2 ports are support only Electrical interface.

Both mTOP™ variants include additional USB 2.0 and USB 3.0 ports (with support for mouse/keyboard), 2 GB Ethernet ports, in-built PC with solid-state hard drive (up to 256 GB), standard 8 GB memory, and HDMI Interface , Windows® 11 64-bit OS. There are no moving parts with the unit, so reliability and longevity are integral.

PacketExpert™ provides the important functionalities such as Wire speed BERT, RFC 2544 Testing, Smart Loopback, ExpertSAM, Record and Playback, PacketBroker, Multi Stream Traffic Generator and Analyzer, ExpertTCP and WAN IP link Emulation.

With additional licensing (CXE100) remote controlling of PacketExpert™ through multiple command-line based clients is available. The Command line Interface (CLI) feature allows the users to access all the aforementioned functionalities remotely via C#, Python clients and MAPS™ CLI Server.

For more information, visit Multi-Port GigE Ethernet/IP Tester webpage.

GL Communications Inc.

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

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

Main Features

- High density Ethernet Ports with 12 (1G) ports on 1U mTOP™ rack. Stack multiple mTOP™ PacketExpert™ units to increase scalability of the solution and handle large number of ports
- mTOP™ Probe unit for portability and convenient drive testing
- Flexibility in running multiple interface tests from a single mTOP™ test unit
- Selective-Port and Smart Loopback
- Wire-speed BERT, RFC 2544, ExpertSAM, Record Playback, PacketBroker, Multi Stream Traffic Generator and Analyzer, ExpertTCP, and WAN Link Emulation
- Layer 1, Framed Ethernet (Layer 2), Stacked MPLS (Layer 2.5), IP (Layer 3), and UDP (Layer 4)
- User selectable Electrical and/or Optical interface allows mixed technology testing
- Generate and capture Ethernet traffic on Electrical/Optical (up to 10/100/1000 Mbps) and Optical only (10 Gbps) interfaces.
- All interfaces can run simultaneously and independently
- Detailed frame statistics in tabular format for all the ports
- Command line Interface (CLI) support requires CXE100 licenses to access all the functionalities remotely using Python, C# clients and MAPS™ CLI Client/Server architecture
- Real-time results are presented per port and all-port basis in both tabular as well as graphical formats
- Consolidated detailed test result reports for all the ports on all the devices in PDF and CSV file formats

Multi-Device Capability

Applications	1U mTOP™ PacketExpert™ (12 ports)	1U Stacked mTOP™ PacketExpert™ (24 ports)
All Port BERT (Ports 1G: #1, #2, #3, #4 in each Device)	1G: 12 ports	1G: 24 ports
BERT/Loopback (1G: BERT on Ports #1 & #3; Loopback on ports #2 & #4 in each Device)	1G: 6 ports Bert, 6 ports Loopback	12 ports Bert, 12 ports Loopback
RFC 2544 (1G: Ports #1 & #2 in 1G Device)	6 ports	12 ports
IPLinkSim™ (1G: Ports #1 & #2 in 1G Device)	6 ports	12 ports
IPNetSim™ (1G: Ports #1, & #2 in 1G Device)	6 ports	12 ports
ExpertSAM™ (1G: Port #1 in 1G Device)	3 ports	6 ports
Record and Playback (1G: Ports #1, #2 in 1G Device) Record Only and Playback Only (1G: Ports #1, #2, #3, #4 in 1G Device)	6 ports 1G: 12 ports	12 ports 1G: 24 ports
PacketBroker (Ports #1, #2, #3, #4 in in 1G Device)	12 ports	24 ports
Multi Stream Traffic Generator and Analyzer (1G: Port #1; Loopback on Port #2 in 1G Device)	3 ports MTGA, 3 ports Loopback	6 ports MTGA, 6 ports Loopback

Wire Speed BER Testing

Wire speed BERT measures Bit Error Rate on Framed Ethernet (Layer2), MPLS (Layer2.5), IP and UDP layers. Supports various PRBS patterns such as 2^9-1, 2^11-1, 2^15-1, 2^20-1, 2^23-1, 2^29-1, and 2^31-1 including constant patterns such as All Ones, All Zeroes, Alternate Ones-Zeroes and user-defined test patterns ranging from 1 bit to 32 bits.

The screen below displays the supporting PacketExpert™ software, which can easily control multiple hardware units from a single GUI, multiplying the number of ports available per system.

Users can configure the 4 ports individually available on each of the devices. HD-PacketExpert™ (12 Ports) includes 3 devices configurations and HD-PacketExpert™ (24 Ports) includes 6 devices configurations.

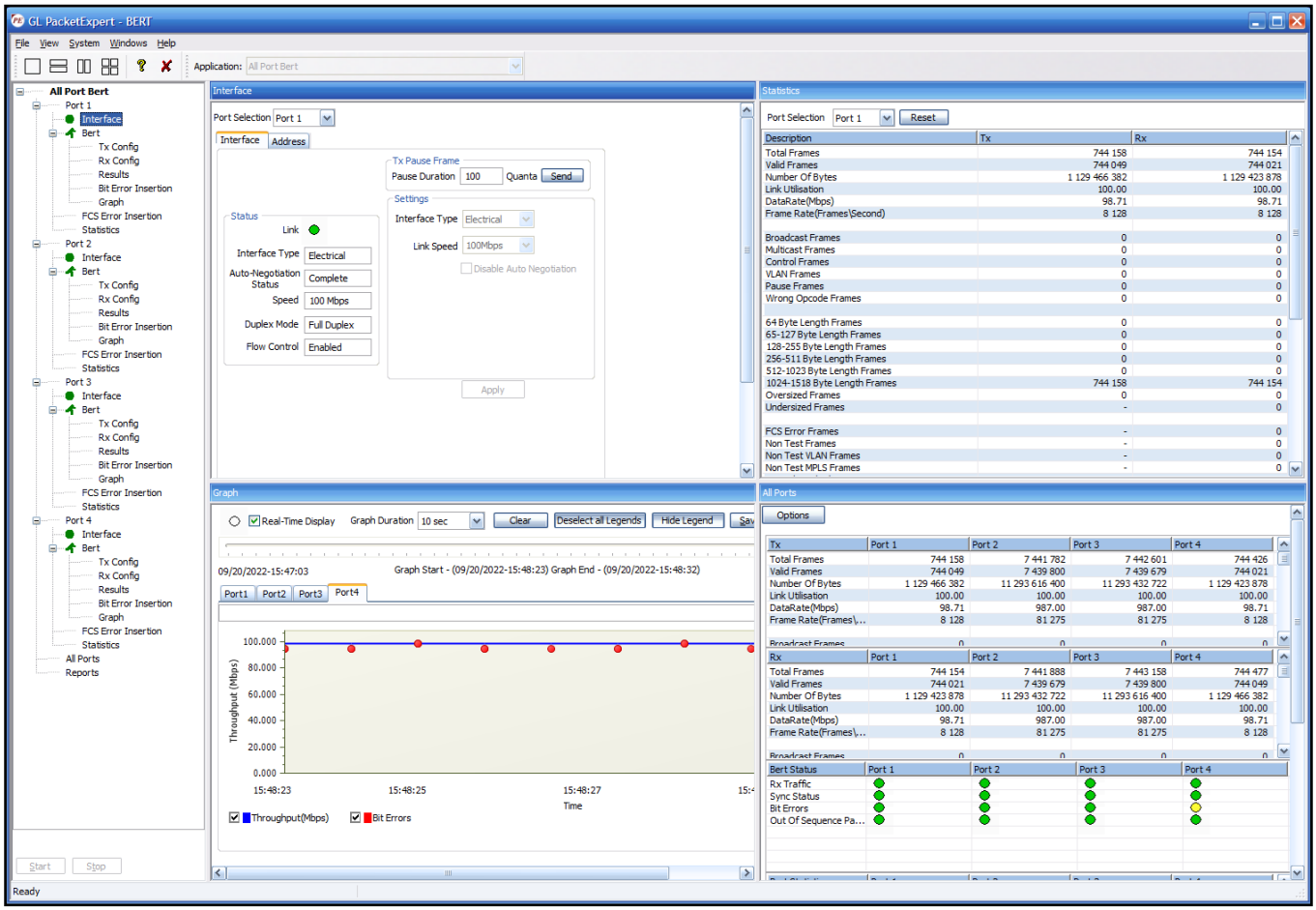


Figure: HD-PacketExpert™ GUI Depicting Multiport BERT Testing Support

RFC 2544 Testing

PacketExpert™ supports Throughput, Latency, Frame Loss and Back to Back tests as specified in RFC 2544. Similar to BERT, RFC 2544 can be done over Framed Ethernet (Layer2), Stacked VLAN (Q-in-Q), Stacked MPLS, IP or UDP.

RFC 2544 allows the test frame to be configured with Stacked VLAN and Stacked MPLS. This way, end to end RFC 2544 test can be conducted across a Carrier Ethernet/MPLS network.

Users can configure the 4 ports individually available on each of the devices. HD-PacketExpert™ (12 Ports) includes 3 devices configurations and HD-PacketExpert™ (24 Ports) includes 6 devices configurations.

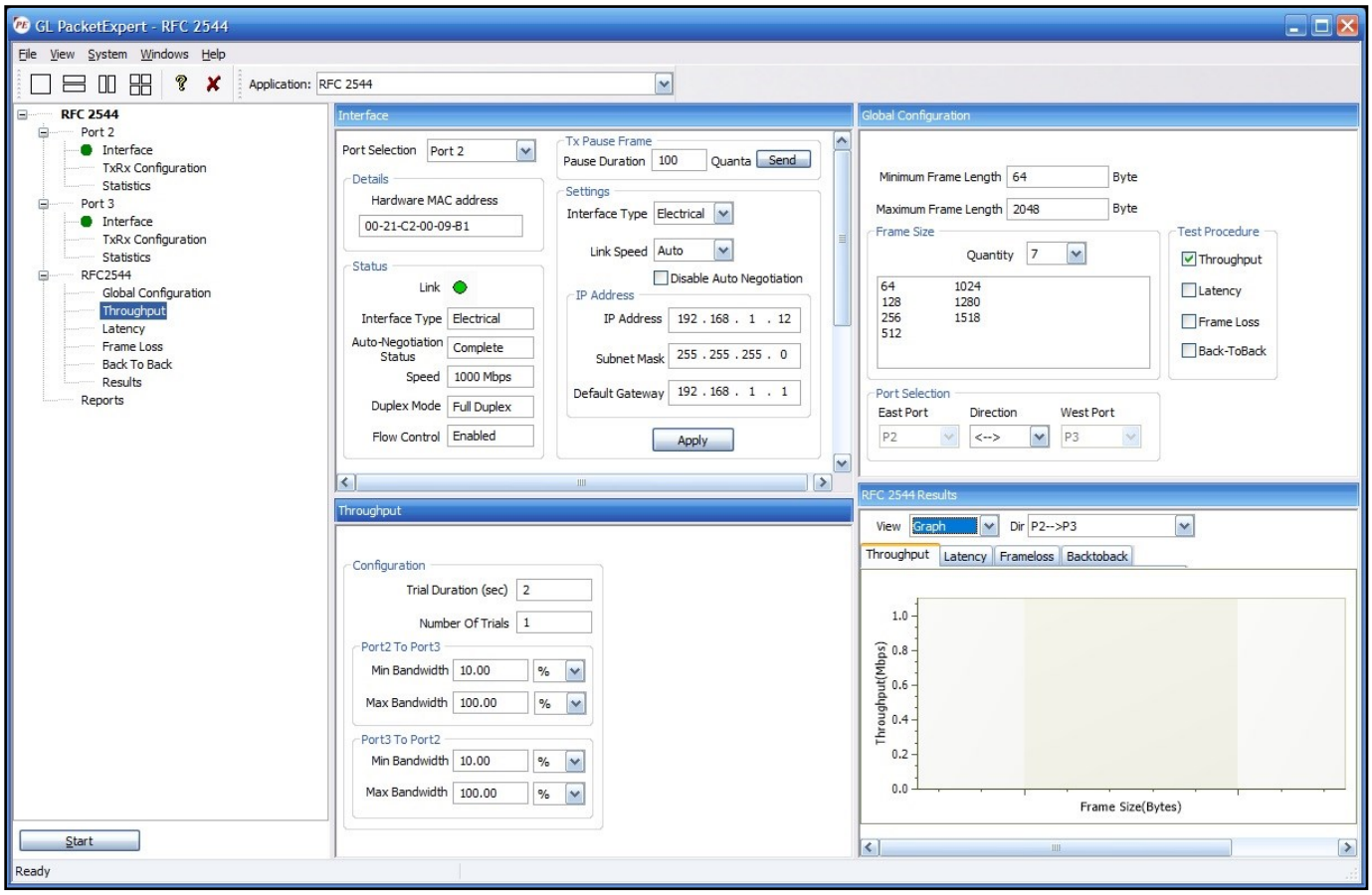


Figure: HD-PacketExpert™ GUI Depicting Multiport RFC2544 Testing Support

Report Generation

HD-PacketExpert™ includes report generation option to generate consolidated CSV and PDF file format reports for all the 12 (1G) ports. The following sample CSV and PDF reports generated for 'All ports BERT' test includes Interface, BERT Statistics, Tx/Rx Statistics, Tx Configuration, and Rx Configuration details for each of the 12 (1G) ports.

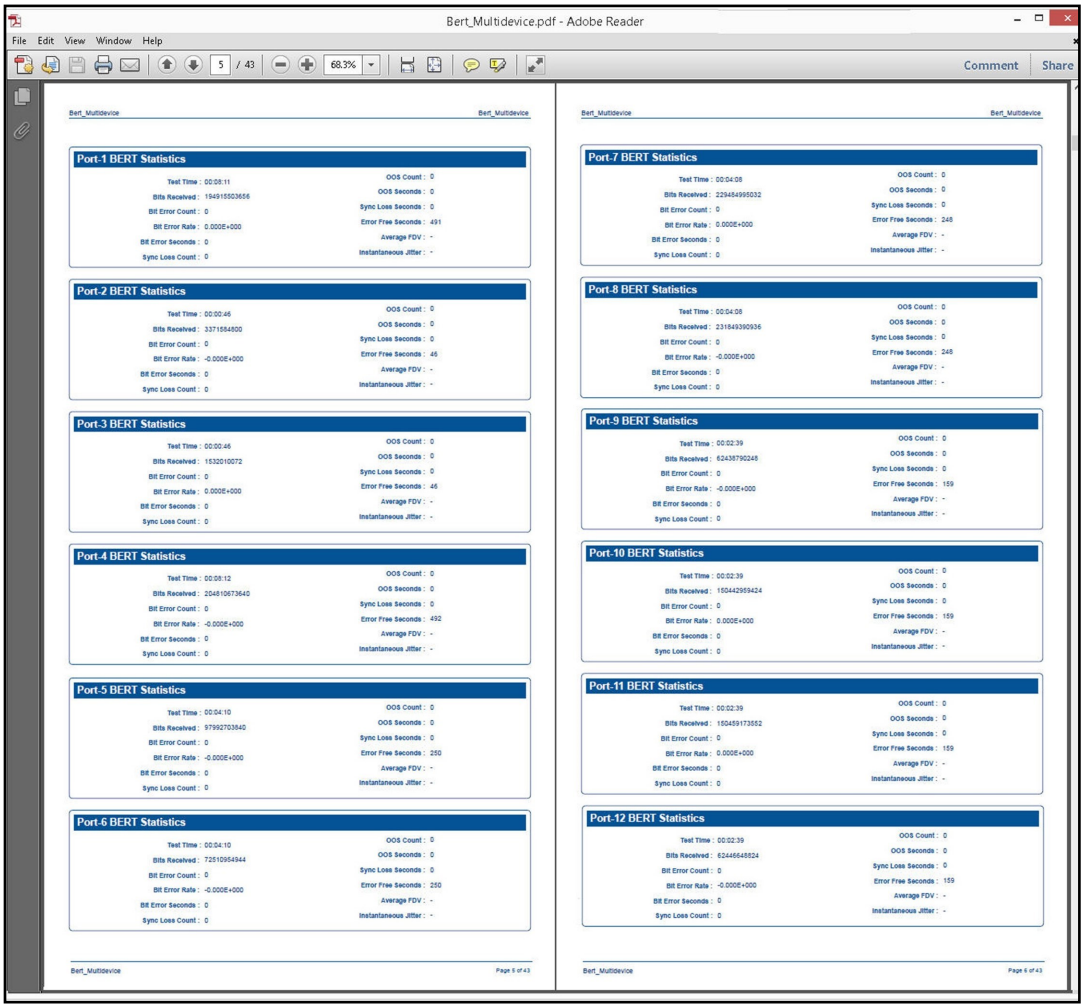
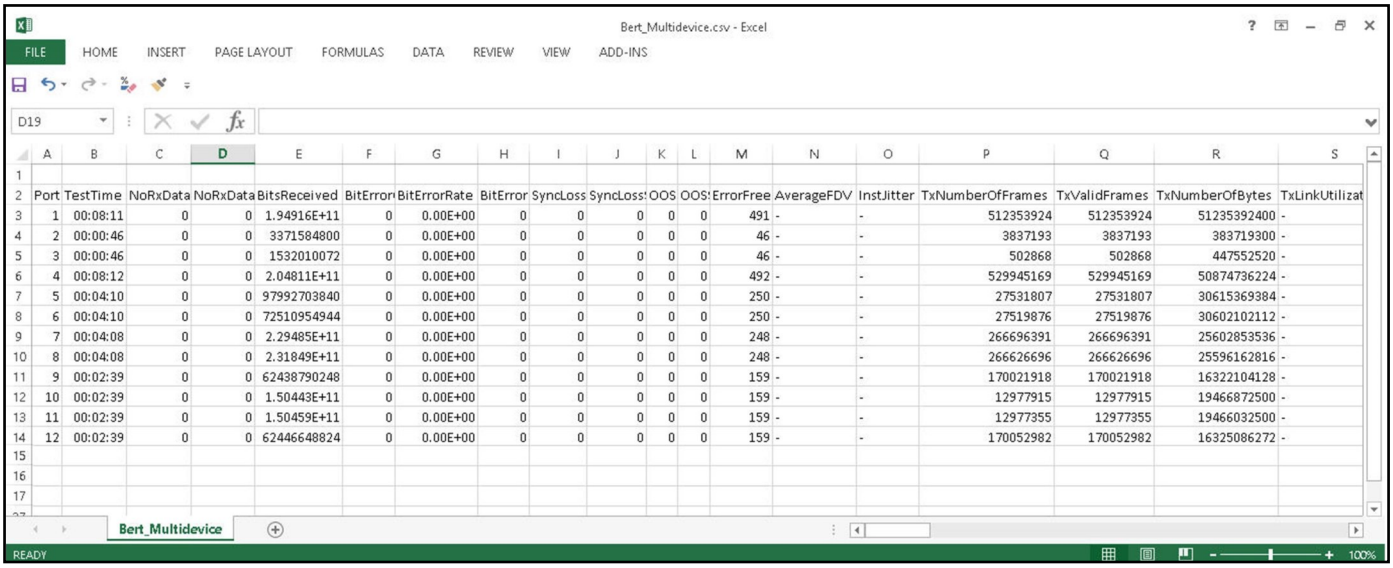


Figure: BERT Multi-device PDF Report



Port	TestTime	NoRxData	NoRxData	BitsReceived	BitError	BitErrorRate	BitError	SyncLoss	SyncLoss	OOS	OOS	ErrorFree	AverageFDV	InstJitter	TxNumberOfFrames	TxValidFrames	TxNumberOfBytes	TxLinkUtilizat
1	00:08:11	0	0	1.94916E+11	0	0.00E+00	0	0	0	0	0	491	-	-	512353924	512353924	51235392400	-
2	00:00:46	0	0	3371584800	0	0.00E+00	0	0	0	0	0	46	-	-	3837193	3837193	383719300	-
3	00:00:46	0	0	1532010072	0	0.00E+00	0	0	0	0	0	46	-	-	502868	502868	447552520	-
4	00:08:12	0	0	2.04811E+11	0	0.00E+00	0	0	0	0	0	492	-	-	529945169	529945169	50874736224	-
5	00:04:10	0	0	97992703840	0	0.00E+00	0	0	0	0	0	250	-	-	27531807	27531807	30615369384	-
6	00:04:10	0	0	72510954944	0	0.00E+00	0	0	0	0	0	250	-	-	27519876	27519876	30602102112	-
7	00:04:08	0	0	2.29485E+11	0	0.00E+00	0	0	0	0	0	248	-	-	266696391	266696391	25602853536	-
8	00:04:08	0	0	2.31849E+11	0	0.00E+00	0	0	0	0	0	248	-	-	266626696	266626696	25596162816	-
9	00:02:39	0	0	62438790248	0	0.00E+00	0	0	0	0	0	159	-	-	170021918	170021918	16322104128	-
10	00:02:39	0	0	1.50443E+11	0	0.00E+00	0	0	0	0	0	159	-	-	12977915	12977915	19466872500	-
11	00:02:39	0	0	1.50459E+11	0	0.00E+00	0	0	0	0	0	159	-	-	12977355	12977355	19466032500	-
12	00:02:39	0	0	62446648824	0	0.00E+00	0	0	0	0	0	159	-	-	170052982	170052982	16325086272	-

Figure: BERT Multi-device CSV Report

Remote Control

PacketExpert™ supports Command Line Interface (CLI) requires additional CXN100 licensing to remotely access all functionalities such as All Port Bert, All Port Loopback, Bert Loopback, RFC 2544, IP WAN Emulator, Record Playback, ExpertSAM™, and PacketBroker using Python, C# clients MAPS™ CLI Server/Client architecture.

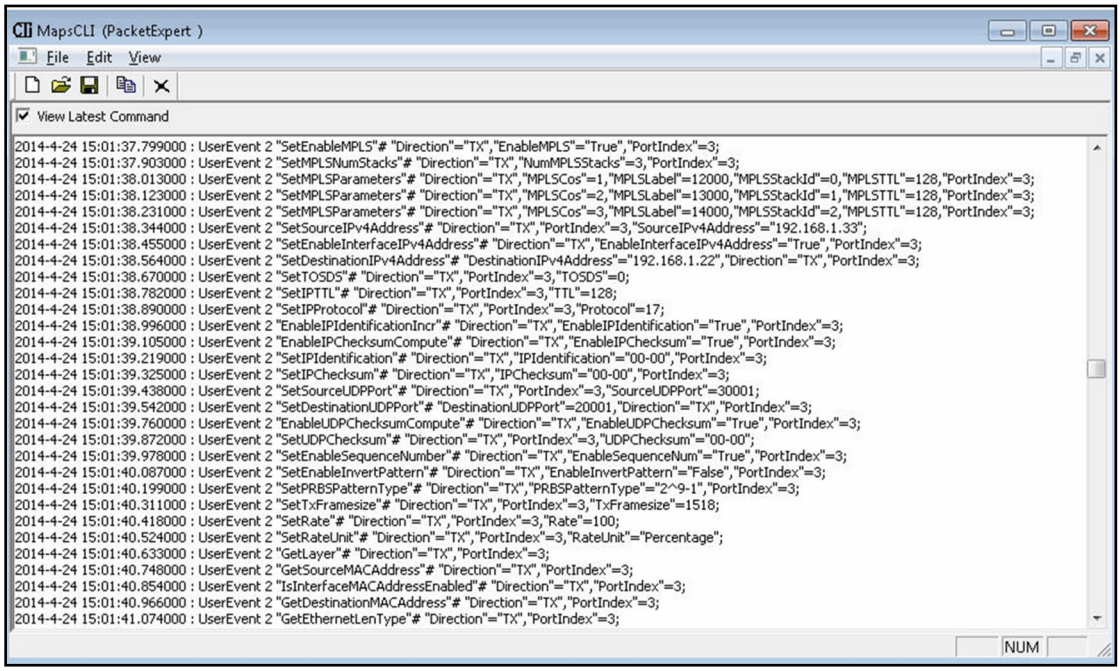


Figure: MAPS™ CLI Server for PacketExpert™

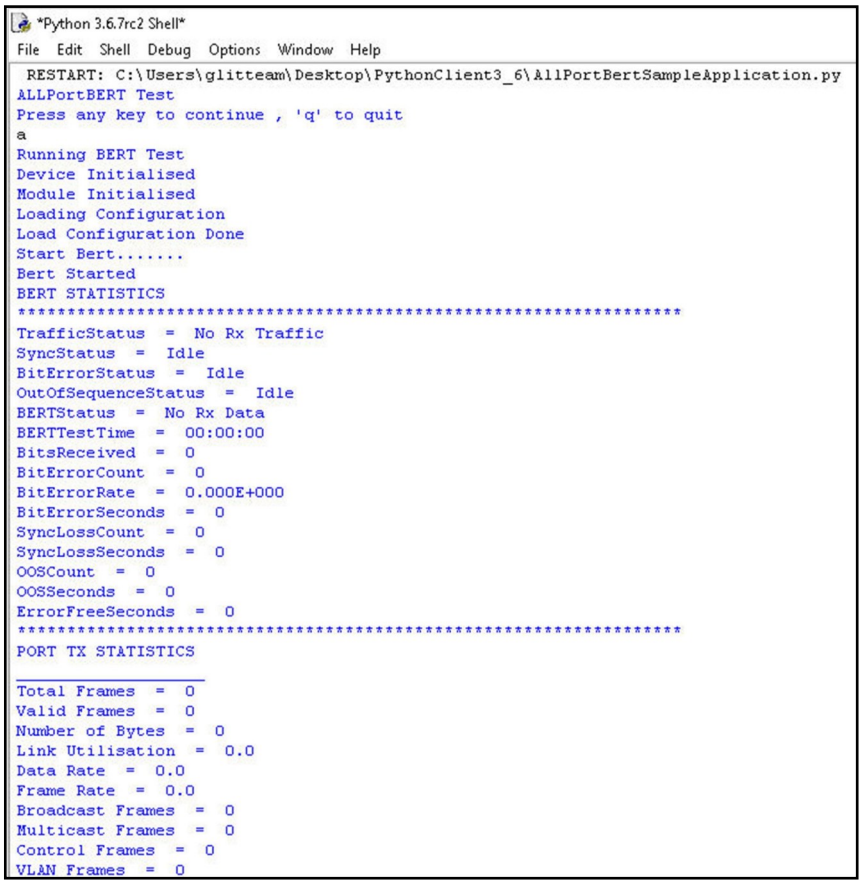


Figure: Sample Python Client Script

mTOP™ PacketExpert™ 1G Rack Specification

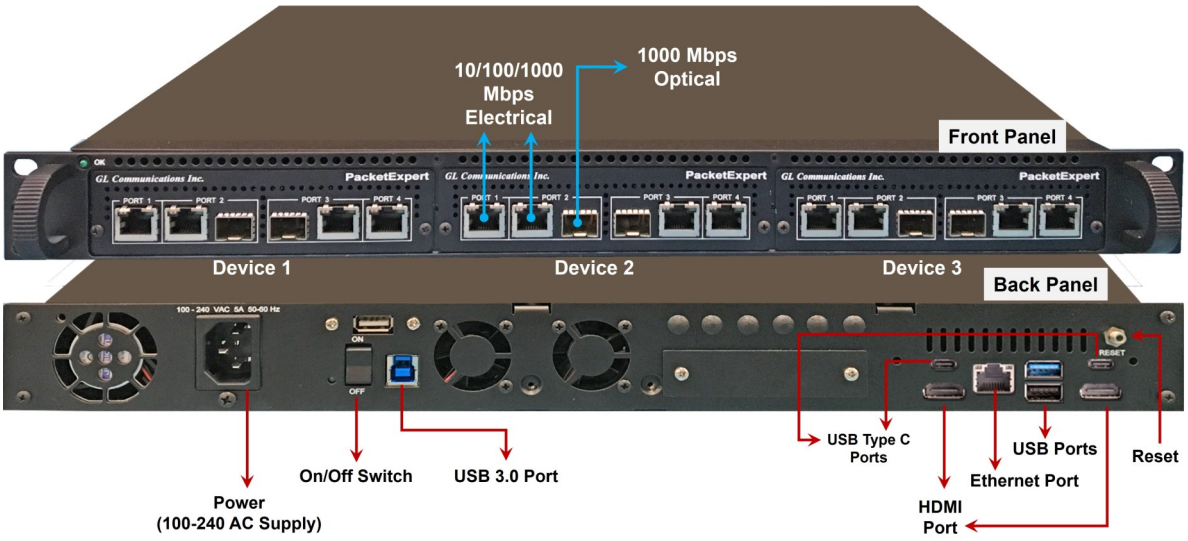


Figure: 1U mTOP™ Rack Based 1G Hardware Unit (3 PXE100s)

12 Total Ethernet Ports (HD-PacketExpert-12)

- mTOP™ System (embedded SBC, 3x PXE100)
- PacketExpert™ 1G (PXE100) interfaces -
  - 6x 1000 Base-X Optical OR 10/100/1000 Base-T Electrical
  - 6x (10/100/1000) Base-T Electrical

24 Total Ethernet Ports (HD-PacketExpert-24)

- mTOP™ System (embedded SBC, 6x PXE100)
- PacketExpert™ 1G (PXE100) interfaces -
  - 12x 1000 Base-X Optical OR 10/100/1000 Base-T Electrical
  - 12x (10/100/1000) Base-T Electrical

SBC Specifications

- Intel Core i3 or optional i7 NUC Equivalent, Windows® 11 64-bit Pro Operating System
- USB 2.0 or and USB 3.0 Ports, ATX Power Supply
- USB Type C ports, Ethernet 2.5GigE port
- 256 GB Hard drive, 8G Memory (Min)
- Two HDMI ports for display

External Dimensions

- Length: 16 Inches
- Width: 19 Inches
- Height: 2x 1U mTOP™ (HD-PacketExpert-24) or 1U mTOP™ (HD-PacketExpert-12)

Power Supply

- ATX Power Supply

Order information

- PXE100 - PacketExpert™ Options
- MT001/MT001E (1U)
- MT001+MT002/ MT001E+MT002 (Stacked 1U)

mTOP™ 1G Probe Specifications

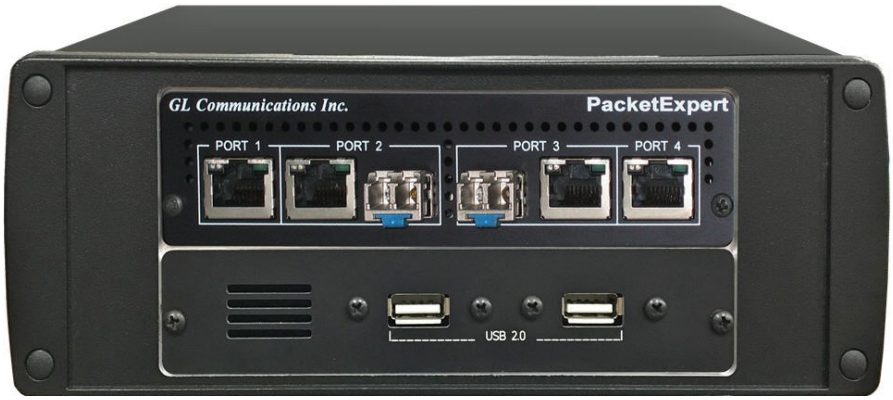


Figure: mTOP™ Probe with 1G Hardware Unit (Front View)

Interfaces

- 4x Total Ethernet ports
- 2x 10/100/1000 Base-T Electrical only
- 2x 1000 Base-X Optical OR 10/100/1000 Base-T Electrical
- Single Mode or Multi Mode Fiber SFP support with LC connector

SBC Specifications

- Intel Core i3 or optional i7 NUC Equivalent, Windows® 11 64-bit Pro Operating System
- USB 2.0 or and USB 3.0 Ports, 12V/ 3A Amps Power Supply
- USB Type C ports, Ethernet 2.5GigE port
- 256 GB Hard drive, 8G Memory (Min)
- Two HDMI ports for display

External Dimensions

- Length: 10.4 inches
- Height: 3 inches
- Width: 8.4 inches

Power Supply

- 12 Volts (Medical Grade), 3 Amps

Order information

- PXE100
- MT005/MT005E

Buyer's Guide

Item No	Product Description
PXE100	PacketExpert™ 1G
CXE100	CLI Server for PXE100

Item No	Related Hardware
PXE112	PacketExpert™ 1G – SA (12-Port)
PXE124	PacketExpert™ 1G – SA (24-Port)
MT001	mTOP™ 1U Rack Mount Enclosure w/SBC (Intel i3 Core)
MT001E	mTOP™ 1U Rack Mount Enclosure w/SBC (Intel i7 Core)
MT002	mTOP™ 1U Rack Mount Enclosure w/o SBC
MT005	mTOP™ Probe with Intel i3 Core
MT005E	mTOP™ Probe with Intel i7 Core
MT005E	mTOP™ Probe with Intel i7 Core

Note: PCs which include GL hardware/software require Intel or AMD processors for compliance.

For more information, visit Multi-Port GigE Ethernet/IP Tester webpage.

GL Communications Inc.
818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878, U.S.A
(Web) www.gl.com - (V) +1-301-670-4784 (F) +1-301-670-9187 - (E-Mail) info@gl.com