Optical Carrier, SONET, SDH Test Platforms
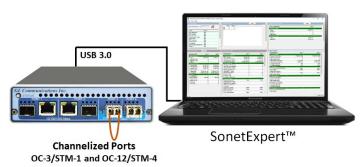
November 2024

- ## SONET & SDH OPTICAL TESTING

  - ♦ **SonetExpert™ Channelized Analyzer OC-3/12, STM-1/4 Testers**

  - ♦ **SonetExpert™ Unchannelized Analyzer OC-3 / STM-1, OC-12 / STM-4, OC-48/ STM-16 and OC-192/STM-64 Testers**

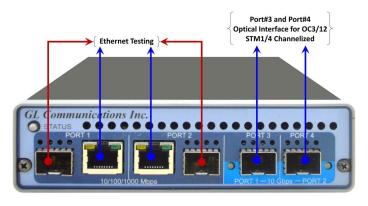 - ♦ **SonetExpert™ mTOP™ 1U Rack and SonetExpert™ mTOP™ Probe Solutions**

- ## ETHERNET/IP TESTER

  - ♦ **PacketExpert™ 1G Optical and Ethernet Tester**

  - ♦ **PacketExpert™ Next Generation 10G Ethernet/IP Tester**

  - ♦ **PacketExpert™ 1G/10G Multi-Functional Ethernet Tester**

  - ♦ **PacketExpert™ mTOP™ 10G/1G Multi-Port Ethernet Tester**

  - ♦ **PacketExpert™ mTOP™ 10G/1G Probe - Portable Tester**

For more details, refer to [SonetExpert™ Channelized (SEC) Analyzer (gl.com)](#) webpage.

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Optical Carrier, SONET, SDH Test Platforms

SonetExpert™ Channelized Analyzer

SonetExpert™ Hardware Unit

SonetExpert™ Channelized Analyzer OC-3/12, STM-1/4 Testers

GL's SonetExpert™ portable hardware and application supports SONET/SDH Emulation and Analysis:

- SonetExpert™ Channelized Emulation/Analysis for OC-3/12, STM-1/4

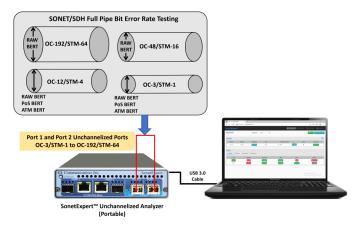- SonetExpert™ Unchannelized Emulation/Analysis for OC-3/STM-1 to OC-192/STM-64

GL's SonetExpert™ hardware platform (USB Unit) is capable of OC-3/STM-1 and OC-12/STM-4 wirespeed processing on two optical ports (Port 1 and Port 2) for channelized data carrying many independent unframed/framed T1 and E1 streams. USB 3.0 interface is used to connect with a Notebook PC for portability. The hardware is FPGA based making it easy to upgrade in the field for application versatility. A unique feature of the unit is the capability to capture, transmit and process at wirespeed to/from applications on all interfaces. Also, can save the captured traffic to the hard disk and playback.

Channelized Analyzer comprises of hardware and software. The hardware receives and transmits data using SONET/SDH traffic which transfers the traffic in to the GL's Soft T1 E1 analyzer application. The T1 E1 Analyzers application provides the same functionality as GL hardware based T1 E1 Analyzers with the difference that T1 E1 frames are multiplexed into SONET/SDH frames and transmitted over optical lines.
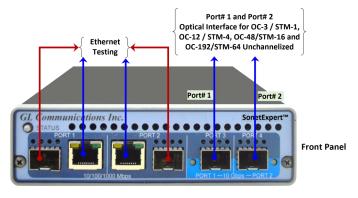
For more details, visit SonetExpert™ Channelized (SEC) Analyzer webpage.

Optical Carrier, SONET, SDH Test Platforms

SonetExpert™ Unhannelized Analyzer

SonetExpert™ Hardware Unit

SonetExpert™ Unchannelized Analyzer OC-3 / STM-1, OC-12 / STM-4, OC-48/STM-16 and OC-192/STM-64.Testers

GL's SonetExpert™ Unchannelized Analyzer supports Bit Error Rate (BER) testing, BER Traffic generation, verification of various PRBS and user defined test patterns over **OC-3 / STM-1**, **OC-12 / STM-4**, **OC-48/STM-16** and **OC-192/STM-64**. Various Error insertions like, Bit Error Insertion, B1/B2/B3 BIP Error insertion, Alarm generation etc. are supported along with BERT testing.

Three types of BERT testing is supported - **Bert over Raw SONET/SDH frames**, **BERT over ATM** and **BERT over PoS**.

GL's SonetExpert™ supports BERT testing over Raw SONET/SDH frames, ATM, and PoS, along with **Record to File** and **Playback from File** features for OC-3/STM-1 and OC-12/STM-4. These enable capture and simulation of real-world traffic at wirespeed. Captured traffic can be analyzed in real-time using the ATM Analyzer, which decodes protocols like AAL2, AAL5, UNI, and SS7 stacks, and the PoS Analyzer, which examines PPP-encapsulated IP traffic over SONET/SDH. The tool also features a Scan function that automatically detects and reports traffic structures across various interfaces, with a user-friendly web interface accessible on any device.

For more details, refer to SonetExpert™ Unchannelized Analyzer.

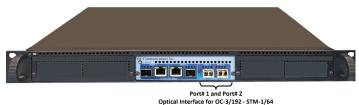# Optical Carrier, SONET, SDH Test Platforms

Figure: SonetExpert™ mTOP™ 1U rack solution (Front Panel View)

Figure: SonetExpert™ mTOP™ 1U rack solution (Back Panel View)

Figure: SonetExpert™ mTOP™ Probe

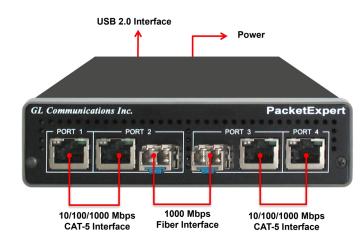**Figure: SonetExpert™ mTOP™ Probe unit (Rear Panel View)**

SonetExpert™ mTOP™ 1U Rack and mTOP™ Probe Solutions

High-Density mTOP™ 1U/2U rack mount enclosures within which multiple SonetExpert™ hardware units are stacked to provide high density form factor solution for testing multiple SONET/SDH lines. It is a perfect SONET/SDH test tool for customers who require multi-port testing but are constrained by lab space.

GL also offers stand-alone mTOP™ Probe hardware variant of SonetExpert™, where a SonetExpert™ hardware unit is coupled with a built in SBC (Single Board Computer), to make it a compact, portable toll, ideal for field testing.

Optical Carrier, SONET, SDH Test Platforms

PacketExpert™ 1G - Portable Unit

PacketExpert™ 1G Optical and Ethernet Tester

PacketExpert™ is a portable (USB based) Quad Port Ethernet / VLAN / MPLS / IP / UDP Tester with 4 Electrical Ethernet Ports (10/100/1000 Mbps) and 2 Optical Ports (1000 Mbps). The PacketExpert™ connects to a Notebook PC through a USB 2.0 interface.

Two of the 4 ports have both Electrical and Optical interfaces, enabling BERT and RFC 2544 testing on optical fiber links also. User selectable Electrical and/or Optical interface for Port 2 and Port 3 allows mixed technology testing.

Optical Ports can operate in 1000 Mbps speed line rate in Full Duplex mode only.

For more details, visit PacketExpert™ webpage.

PacketExpert™ 10GX - Portable Unit (PXN100)

PacketExpert™ 10GX (1G/10G) Multi-Functional Ethernet Tester- Portable Unit

PacketExpert™ 10GX, a multi-functional ethernet tester supports all interfaces, functionality and port capacity similar to PacketExpert™ 10G for comprehensive testing of 10 Gbps /1 Gbps wirespeed Ethernet/IP networks.

The PacketExpert™ 10GX includes two 10/1 Gbps Optical ports, and two 10/100/1000 Mbps Electrical/Optical capable ports. The 10/1 Gbps Optical ports can be down-shifted to support 1Gbps Electrical ports, thus offering 4 Electrical / 4 Optical 1 Gbps ports for ethernet testing.

For more details, visit PacketExpert™- Multi-Functional Ethernet/ IP Test Solution webpage.

Optical Carrier, SONET, SDH Test Platforms

PacketExpert™ 1G mTOP™ Probe Unit

PacketExpert™ 10GX mTOP™ Probe Unit

PacketExpert™ 1G/10GX mTOP™ Probe Unit

The sleek design of PacketExpert™ 1G USB unit and the PacketExpert™ 10GX USB unit allows them to be easily incorporated within the mTOP™ Probe box.

mTOP™ Probe unit along with the USB hardware unit includes necessary PC interface, which makes it a complete stand-alone portable solution suitable for field testing.

SBC interface of the probe unit - Intel Core i3 or optional i7 NUC Equivalent, Windows® 10 64-bit Pro Operating System, USB 2.0 or 3.0 Ports, 12V/3A Power Supply, 256 GB Hard drive, 8G Memory (Min), Two HDMI ports.

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

1U mTOP™ with 3x PXN100 USB units (MT001/MT001E + PXN100)

1U mTOP™ with single PXN100 USB unit (MT001/MT001E + PXN100)

PacketExpert™ mTOP™ 10G/1G Multi-Port Ethernet Tester

The sleek design of PacketExpert™ 10GX (PXN100) portable hardware allows to easily stack multiple USB units in a mTOP™ 1U/2U rack mount enclosure (MT001/MT001E, MT002) to provide high density GigE ports form factor solution (MT001/MT001E + PXN100) for testing GigE switches, routers and network conditions. It is perfect ethernet test tool for customers who require multi-port testing but are constrained by lab space.

It is a compact with reduced power requirements appliance for high performance and optionally can include 12-port user-configurable TTL trigger ports as an important enhancement.

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

Optical Carrier, SONET, SDH Test Platforms

PacketExpert™ 1G mTOP™ 1U Rack Solution

Stacked 1U PacketExpert™ 1G mTOP™ Rack

PacketExpert™ 1G - SA (4 ports)

PacketExpert™ mTOP™ 1G Rack Solution

Multiple PacketExpert™ 1G USB hardware units can be stacked in mTOP™ rack forming a High Density 12/24 GigE ports solution for testing multi-port switches, routers and end-to-end networks. Each of the 12/24 GigE port supports auto-negotiation and flow control. The chassis comprises of both electrical and optical (fiber) interfaces.

Each GigE port provides independent Ethernet/VLAN/MPLS/IP/UDP testing at wirespeed with applications such as BERT, Smart Loopback, BERT/Loopback, and RFC 2544. BERT is implemented for all layers. RFC 2544 is applicable for Layers 2, 2.5, and 3, and Loopback is applicable for Layers 2, 3, and 4.

Packet Analyzer hardware is capable of generating event driven triggers based on packet filters. For each packet that satisfies filter criteria that will be forwarded for timestamping and synchronizing with other equipment.

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