

# PacketShark™

## GbE Packet Capture, Filter, & Aggregation Tap

Zero Interruptions, Zero Delay,  
Zero Packet Loss



Wirespeed Capture



Traffic & Signal Regeneration



VNC Remote Control



Captures of FCS, fragments, &  
Other Faulty Frames



Dual SFP and RJ-45 Ports



Portable, Rugged, Low-cost, &  
Battery Operated



Centralized or Distributed  
Deployment



GL's **PacketShark™** is a handheld hardware that can tap packet networks, capture Ethernet packets at wire speed, i.e., in optical or electrical interfaces up to 1 Gb/s and selectively filter the captured traffic based on specified criteria. Packets are transmitted through two ports and the packets that are traffic compliant with one of the filters is sent to a packet analyzer, such as [Wireshark](#), or GL's [PacketScan™](#) for detail packet analysis. Alternatively, the traffic can be even sent to a memory card (SD) and later analyzed offline.

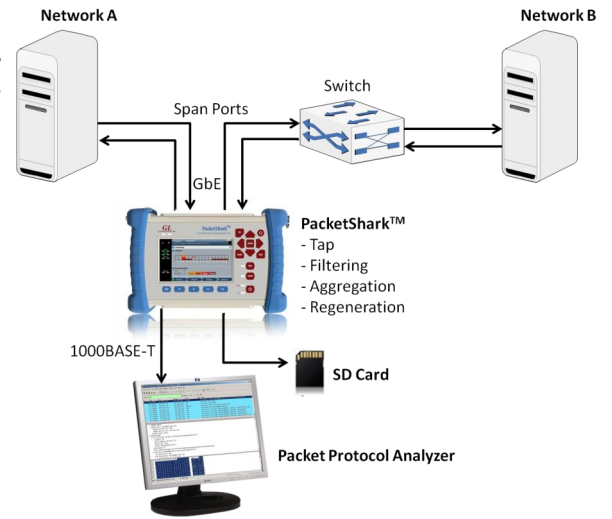
**PacketShark™** is an invaluable tool for on-field simultaneous capturing from two interfaces, analyzing 100% streams without any delays, and filtering/aggregating required packet streams at wire speed. PacketShark™ overcomes most of the limitations of the protocol analyzers running on Laptops or PCs that are too slow to capture live Full Duplex traffic at wire speed. It is also preferred over Mirrors and traditional Taps in providing aggregated traffic output and mobility.

It supports all the features of high-end taps in a small, battery operated instrument, weighing less than 1.2kg to provide mobility and storage capacity to reach any point of the network. It provides INSTANT ON features - no PC required.

For more information on **PacketShark™**, refer to <http://www.gl.com/packetshark-handheld-gigabit-ethernet-tester.html>

### Main Features

- Ability to capture packets at any point of the Network
- Wirespeed, analysis with zero loss and zero delay - Equipped with a unique Zero Delay technology that ensures every packet goes through without delay (even if power is lost)
- Capture in the field and analyze in the office - Field storage of captured data using an external storage device (SD memory card) in PCAP format.
- Matching packets are copied and forwarded to the drop LAN.
- Traffic and Signal Regeneration
- Sixteen (16) simultaneous filters can be applied to the traffic.
- Firmware filters to identify traffic MAC, IP, UDP or TCP flow.
- Centralized or distributed deployment
- Jitter-less time stamps
- Invisible when connected (Undetectable): no IP no MAC
- Improves efficiency and the performance of the protocol analyzer by adding mobility, capture filters and local storage
- Erred frames, fundamental feature for troubleshooting: FCS, runts, fragments, etc
- Remote access via VNC



# GL Communications Inc.

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

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

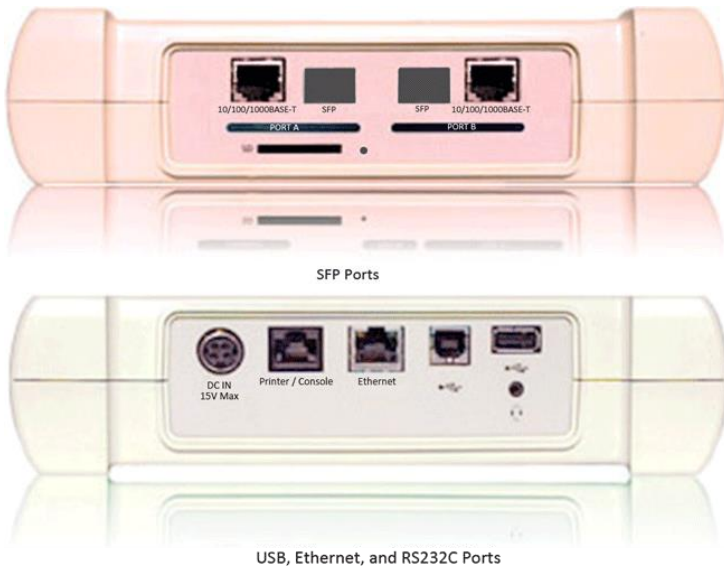
## Applications

The **PacketShark™** is equipped with two 1 Gb/s SFP ports and two 1 Gb/s RJ-45 ports. The SFP ports, or span interfaces A and B, are generally connected in through mode to the link or network to be analyzed. If used, the RJ-45 ports, or drop interfaces A and B, connect **PacketShark™** with an external storage device or a protocol analyzer.

**PacketShark™** works as an Ethernet tap or it simply selects some traffic with specific properties. The tap and the filter modes constitute two separate configuration modes in the equipment.

## Hardware Panel

- SPAN Ports (2): Dual SFPs based 1 Gb/s. The GbE SFP ports, or span interfaces A and B, are generally connected in through mode to the link or network to be analyzed.
- DROP Ports (2): Dual RJ-45 port for electrical connection 10/100/1000BASE-T. DROP Ports interfaces are used to forward captured packets to an external storage device or protocol analyzer



USB, Ethernet, and RS232C Ports

Figure: Hardware Panel

## Operation

**PacketShark™** works as an Ethernet tap or it simply selects some traffic with specific properties. The tap and the filter modes constitute two separate configuration modes in the equipment.

- Tap & Filter: Traffic is forwarded between the span ports A and B without any modification or delay. Filtered traffic is forwarded towards the drop ports or an storage device
- Filter: Traffic from the span ports is filtered and forwarded towards the drop ports or an storage device. No traffic is forwarded between span port A and span port B.

Operational features

- All frames coming to PacketShark™ are forwarded to destination without delay or lost
- Frames compliant with filtering conditions and copied to packet analyzer
- Alternatively captured frames are saved in SD card
- Operation is based on 16 filters per SFP port
- When a packet satisfies a filter is sent to the Drop Port and immediately forwarded to the output. No more filters are processed
- Each packet may modify only the statistics of one filter
- Customizable filters defined by field contents on Ethernet, IP, UDP and TCP headers
- Agnostics filters defined by 16 bits masks and user defined offset
- Lawful filter: 64 byte pattern match at any place in the frame payload

## LEDs Panel

The LEDs panel offers a quick view of the current **PacketShark™** connection and operation status. There are two hardware global summary LEDs in the equipment (one for Port A and one for Port B), three summary LEDs for each span port (**Link**, **Frame**, and **Error**), and three summary LEDs for each drop port (Link, Frame and Error).



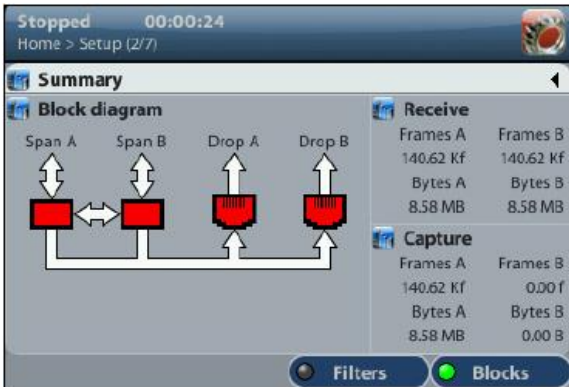
Figure: LED Panel

 **GL Communications Inc.**

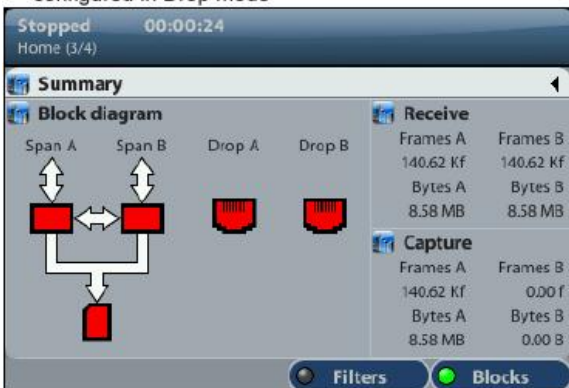
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## Capture Mode, Drop Mode

The **PacketShark™** block diagram is available through the summary (SUM) button. The block diagram summarizes the incoming and outgoing traffic flows associated to **PacketShark™**.



(a) Connectors and traffic flows when the equipment is configured in Drop mode



(b) Connector usage and traffic flows when the equipment is configured in Capture mode

### Figure: Capture Mode and Drop Mode

## Traffic Aggregation and Storage

The **PacketShark™** can break out Full-Duplex (FDX) traffic into separate streams to be dropped or can also aggregate different filtered traffic to one DROP port into a single output stream.

**PacketShark™** can be configured to aggregate traffic from the forward and backward transmission directions and present them as a single stream. This kind of stream aggregation is useful to check interactions between the communication ends like for example requests and replies in a web application.

## Extensive Analysis and Statistics

The hardware provides basic traffic statistics about Ethernet networks such as frame counts (IEEE 802.3, IEEE 802.1Q, unicast, multicast, and broadcast) and error counts (FCS errors, undersized frames, oversized frames, fragments, jabbers, collisions). To provide a detailed network statistics and protocol analysis, packets are transmitted through two ports in pass-through mode and traffic compliant with one of the filters is sent for detail packet analysis.

## Selective Capturing using Filters

**PacketShark™** is capable of processing and computing statistics over fractions of the Ethernet traffic meeting specific conditions. The process of selecting a fraction of traffic is called filtering. The result of the filtering process is one or several traffic streams.

**PacketShark™** is equipped with 16 filter types to capture traffic in real-time. The filters are customizable by Ethernet, IP, UDP, and TCP. Each filter has a priority number - If one frame is selected by any specific filter it will not be processed by any lower priority filters

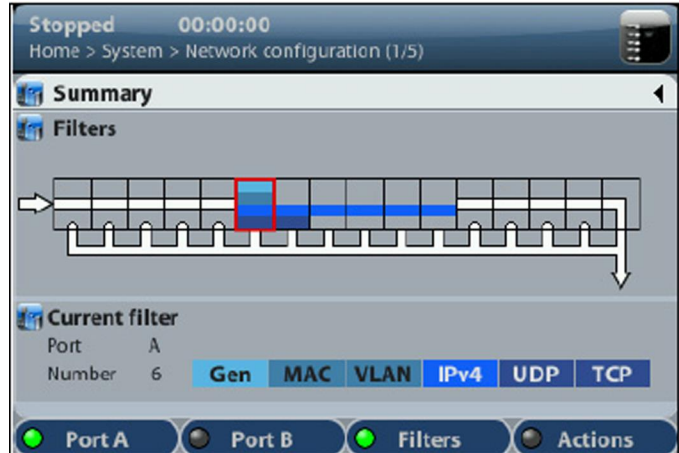


Figure: Filter Setup Panel

## Specifications

### Networking Features

#### Formats and Protocols

- 10, 100, 1000 Mbit/s Ethernet
- IP, TCP/UDP, IEEE 802.3, IEEE 802.1Q support
- Ethernet frame: IEEE 802.3, IEEE 802.1Q
- IP packet: IPv4 (IETF RFC 791)
- Jumbo frames: up to 10 kB MTU (Maximum Transmission Unit)
- Configurable MTU size
- Throughput between measurement SPAN ports: 2x1 Gbit/s or 2x1,500,000 frames/s
- Auto negotiation parameters including bit rate (10, 100, and 1000 Mbit/s) and duplex mode
- Auto negotiation Full Setup by user
- Auto negotiation Disabled by user

#### Ports and Interfaces

- SPAN Ports: Dual SFPs based 1 Gb/s
- DROP Ports: Dual RJ-45 port for electrical connection
- RJ-45 ports support 10/100/1000BASE-T
- SFP interfaces support: 10BASE-T, 100BASE-TX, 100BASE-FX, 1000BASE-T, 1000BASE-SX, 1000BASE-LX
- Local Storage: SD storage in PCAP format



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## Specifications (contd.)

### Operation

- **SPAN ports:** GbE SFP interfaces are used to connect -in pass thought- to the network Host A and Host B
- **DROP Ports:** GbE RJ45 interfaces to forward captured packets to the protocol analyzer
- **STORAGE:** captured frames saved in SD card
- All frames coming to PacketShark™ are forwarded to destination without delay or loss
- Frames compliant with filtering conditions and copied to packet analyzer
- Operation is based on 16 filters per SFP port
- Filtered frames can be aggregated in one drop port
- The Filtering process is executed sequentially
- When a packet satisfies a filter is sent to the Drop Port and immediately forwarded to the output. No more filters are processed
- Each packet may modify only the statistics of one filter
- Customizable filters defined by field contents on Ethernet, IP, UDP and TCP headers
- Agnostics filters defined by 16 bits masks and user defined offset
- Lawful filter: 64 byte pattern match at any place in the frame payload

### Ethernet Filters

- Ethernet Flow: Source and destination MAC addresses. Selection of MAC address sets with masks
- Ether type value with selection mask.
- VLAN-VID with selection mask
- VLAN-CoS value with selection mask

### IP Filters

- IPv4 address: source, destination, and source-and-destination
- IP address group: subset of addresses filtered by masks
- Protocol encapsulated in the IP packet (TCP, UDP, Telnet, FTP, etc.)
- DSCP field, single value and range
- TCP/UDP port, single value and range

### Results

- Auto-negotiation results including current bit rate, duplex mode, Ethernet interface
- SFP presence, vendor, and part number
- Traffic statistics per each of the four ports
- Statistics for both transmit and receive directions
- Frame counts: Ethernet, and IEEE 802.1Q
- Frame counts: unicast, multicast and broadcast
- Basic error analysis: FCS errors, undersized frames, oversized frames, fragments, jabbers, collisions
- Frame size counts: 64, 65–127, 128–255, 256–511, 512–1023, and 1024–1518 bytes
- Four byte counts: Port A (Tx / Rx) and Port B (Tx / Rx)
- All traffic counters follow RFC 2819
- Counters and statistics per filter (up to 16)

### Design

#### Performance

- Full Duplex operation at 1 Gbit/s or 1.5 Mframes/s
- Accuracy better than 10-6 secs. at 1 Gbit/s
- Performance and accuracy 100% independent of the line bit rate
- Jitter-less captures in SD card
- Up to 1 Mbit/s

#### GUI

- Direct configuration and management in graphical mode using the keyboard and display of the instrument
- Configuration and management on web browser
- Remote access with command line (CLI) using of either Telnet or SSH offering for configuration, management and task automation
- Remote access for configuration and management in graphical mode from remote IP site thought the Ethernet interface of the control panel
- Remote access via SNMP for configuration, management and integration
- VNC based remote control for any client supporting standard versions such as PC, iPad, iPhone, etc
- Remote connection with Password using public / private Ethernet, IP network including Internet Configuration and management on CLI thought SSH and Telnet

#### Operating System

- Linux operating system

#### Hand held Tap

#### Ergonomics

- Display 480 x 272 TFT full color screen
- Dimensions: 223 mm x 144 mm x 65 mm
- Weight: 1.2 kg (with rubber boot, one battery pack)
- USB and Ethernet ports
- Serial Port RS-232C
- Rechargeable Batteries continuous working for 5 hours. Fast recharging time
- AC Power Adapter Input: 100 ~ 240 V AC, 50/60 Hz,
- Operating Temperature 0°C ~ 50° C Storage Temperature - 20°C ~ 70°C Humidity 5% ~ 95%
- Soft LEDs All events at a glance

#### Buyer's guide

- [PKV201](#) – PacketShark™ GbE Filtering & Aggregation Tap
- [PKV202](#) – PacketShark™ Remote Option

#### Related Software

- [PKV100](#) – PacketScan™
- [IPN501](#) - IP WAN Emulator with Multi-Stream capability (1 Gbps)
- [IPN510](#) - IP WAN Emulator with Multi-Stream capability (10 Gbps)
- [IPN701](#) - IPNetSim™ Handheld Network Impairment Generator



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