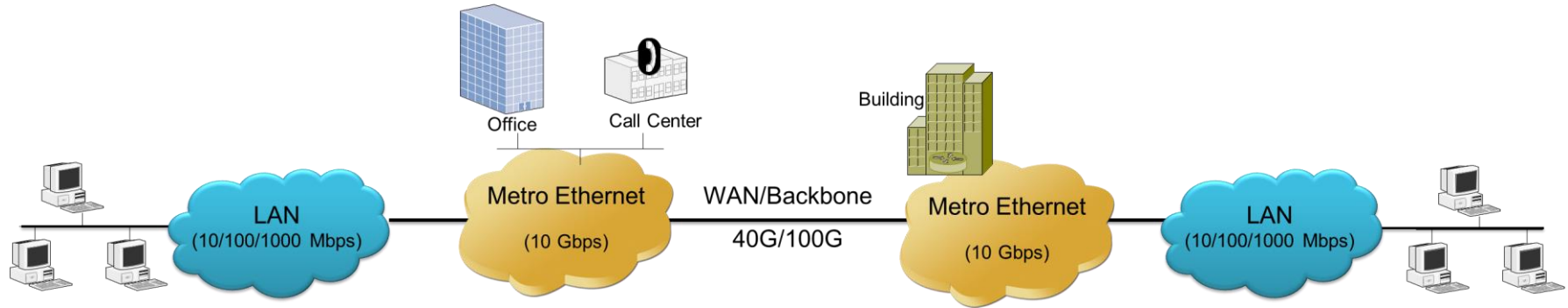

PacketExpert™ 10GX – PacketBroker™

(Wire-speed Ethernet Tap)

 **GL Communications Inc.**

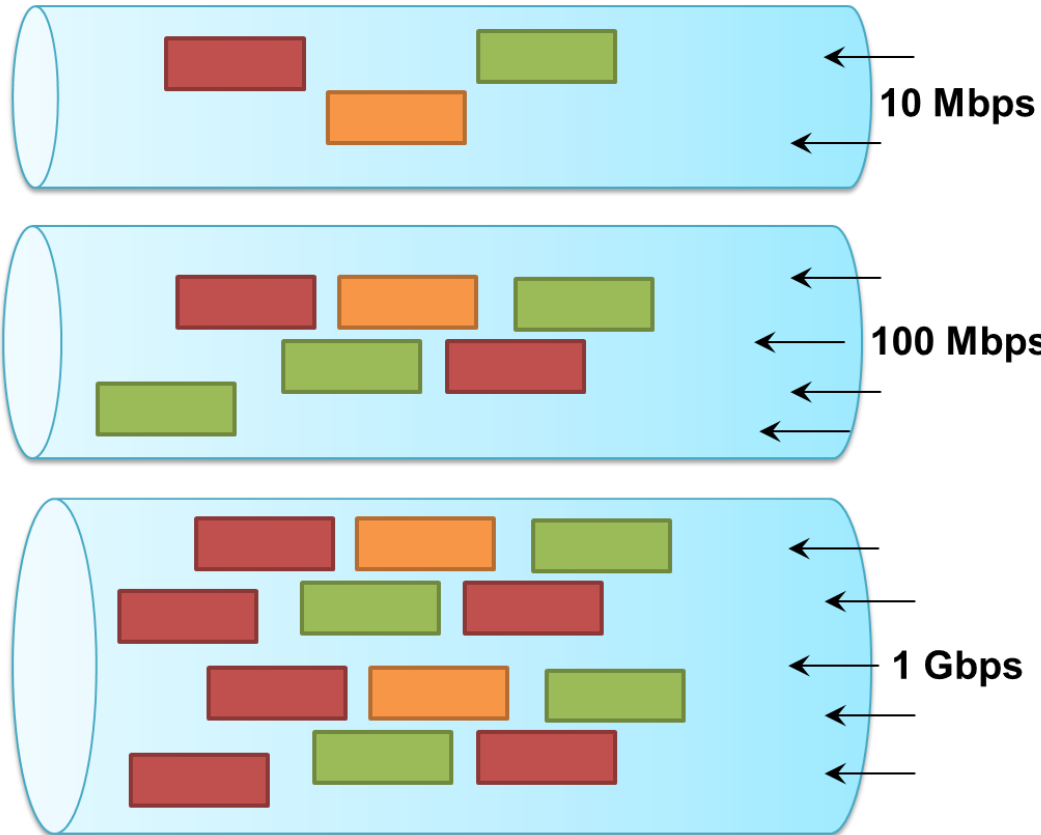
818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: info@gl.com
Website: <https://www.gl.com>

Ethernet Technology

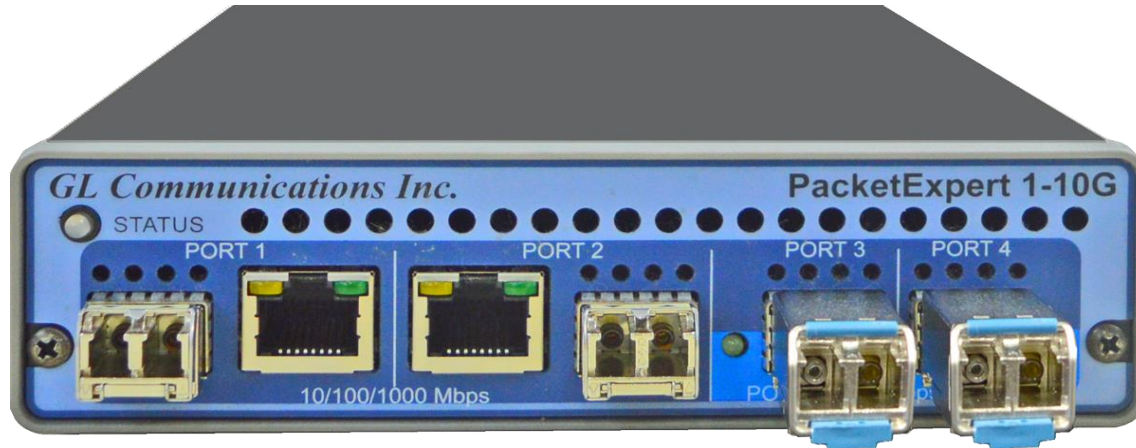


- Ethernet has become ubiquitous in both Local Area Networks and Wide Area Networks
- Network engineers require the ability to capture the traffic at different locations in the network

Just bigger Pipes, but same Ethernet Packets



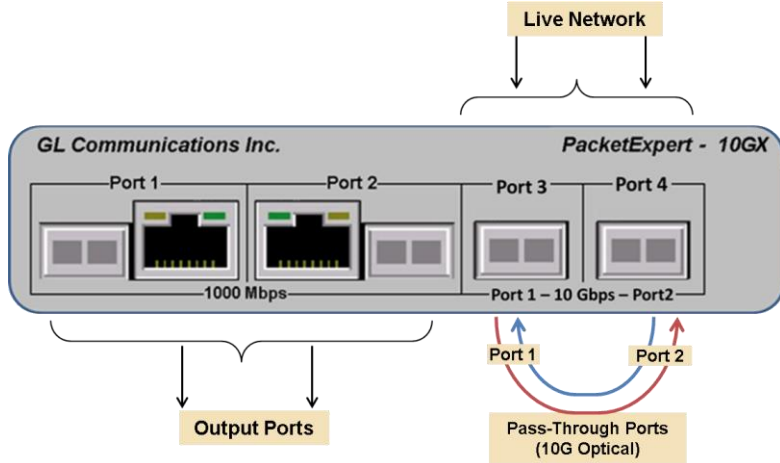
PacketExpert™ 10GX (10G/2.5G/1G)



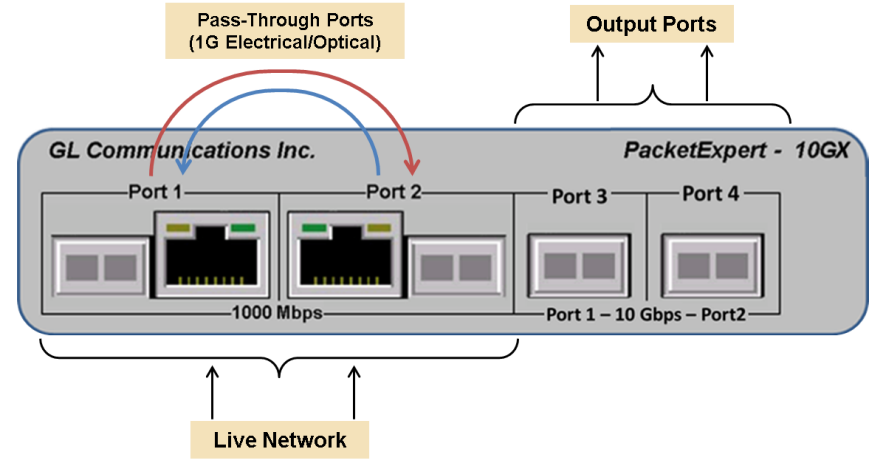
- Bit Error Rate Testing
- RFC 2544
- Smart Loopback Functionality
- ITU-T Y.1564 (Verify service level agreements)
- Wirespeed Record/Playback Capability
- Multi-Stream Traffic Generator
- **PacketBroker**
- RFC 6349 (TCP Testing)
- IP Wide Area Network Emulation

Active Network Tap

For 1G Ports

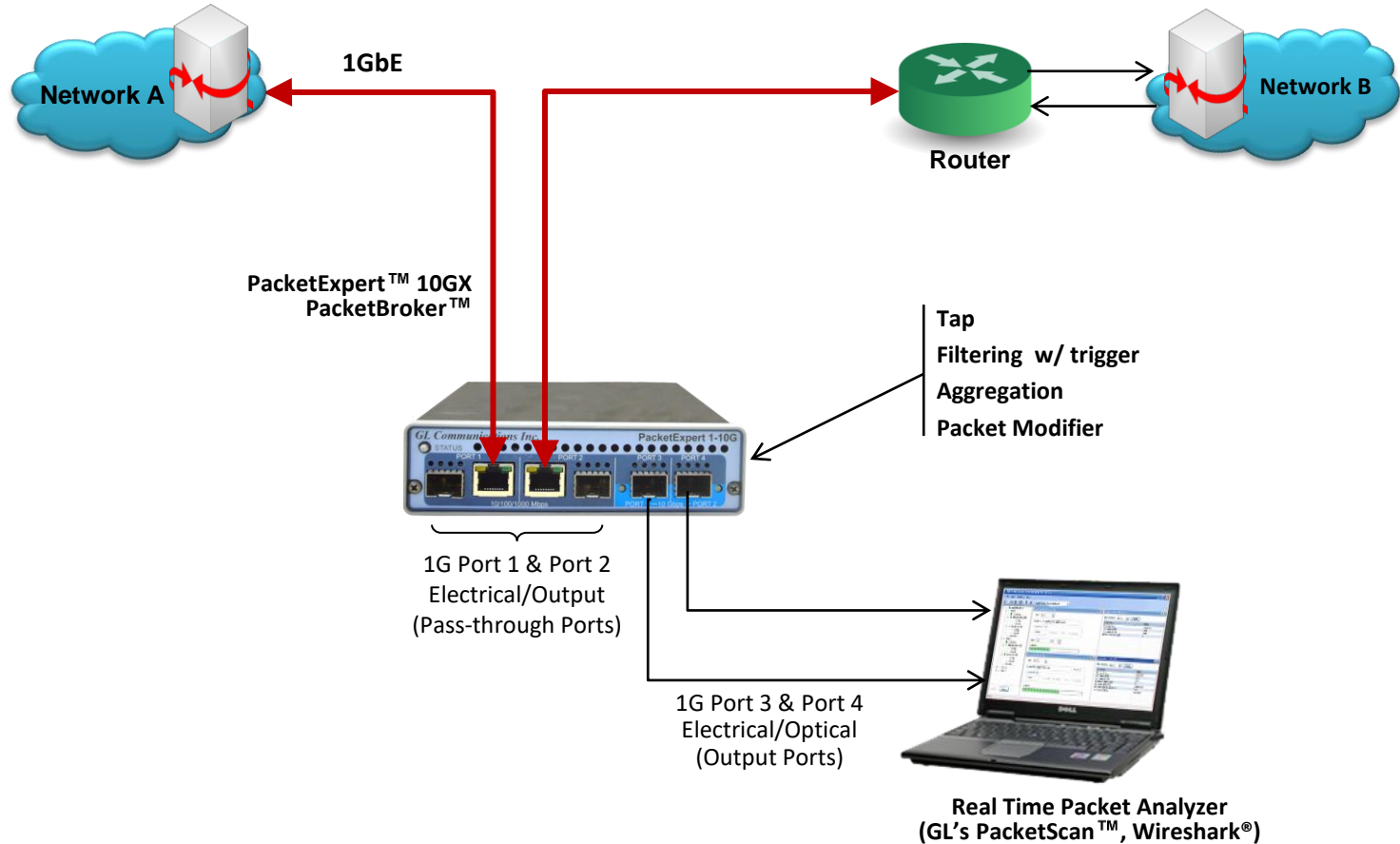


For 10G Ports

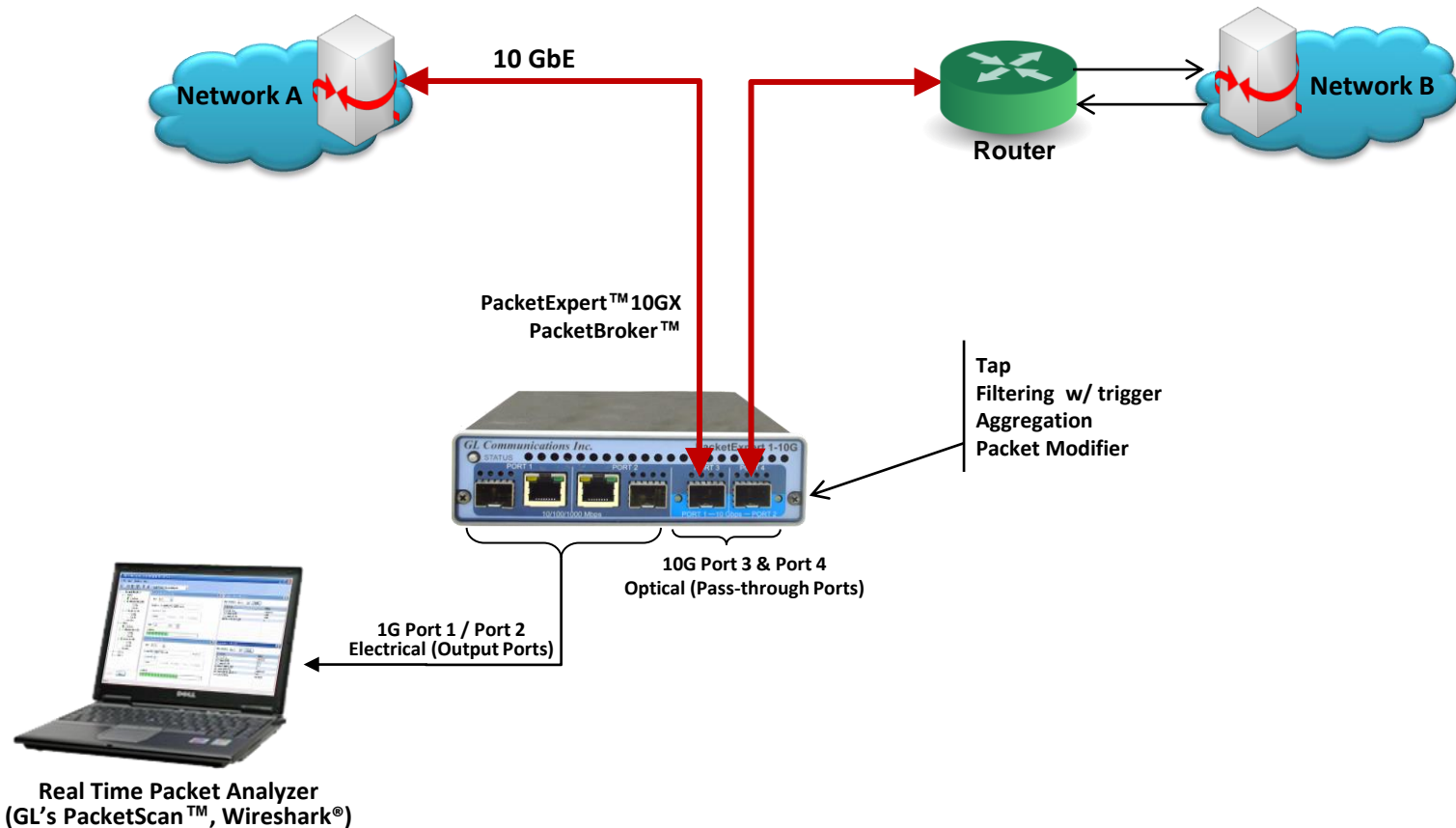


- Dedicated hardware device - FPGA based processing means full 100% wirespeed capability to pass through traffic no drops, no delays, and also to make two separate copies - Tx and Rx side
- Hardware filters means wirespeed filtering

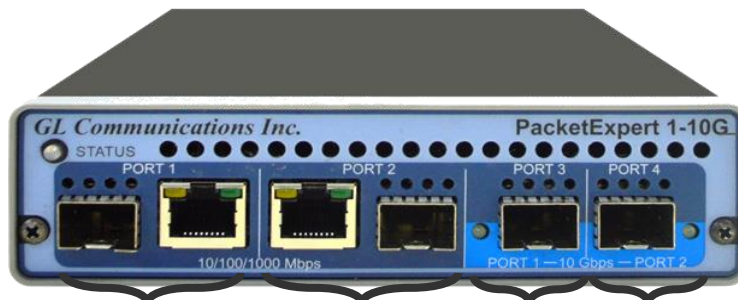
PacketBroker™ in Network (1GbE)



PacketBroker™ in Network (10GbE)



PacketExpert™ 10GX - Portable Unit (PXN100, PXN101)



RJ45/SFP

RJ45/SFP

SFP+

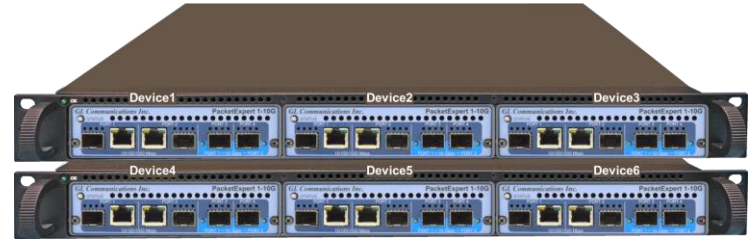
SFP+

Physical Specifications	<ul style="list-style-type: none">• Length: 8.45 in (214.63 mm)• Width: 5.55 in (140.97 mm)• Height: 1.60 in (40.64 mm)• Weight: 1.713 lbs
External Power Supply	<ul style="list-style-type: none">• +12 Volts (Medical Grade), 3 Amps (For portable units having serial number \geq 188400)• +9 Volts, 2 Amps (For portable units having serial number \geq 188400)
BUS Interface	<ul style="list-style-type: none">• USB 3.0• Optional 4-Port SMA Jack Trigger Board(TTL Input/Output)
Protocols	<ul style="list-style-type: none">• IEEE 802.3ae LAN PHY compliance• RFC 2544 compliance

MTOP™ Rack Units



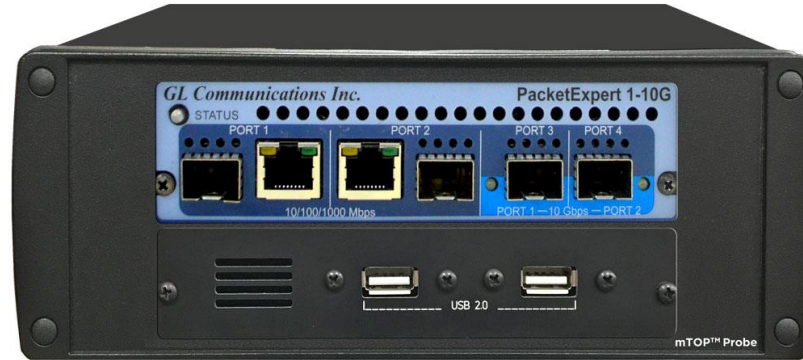
High Density 1U Rack option



Stacked High Density 1U Rack option

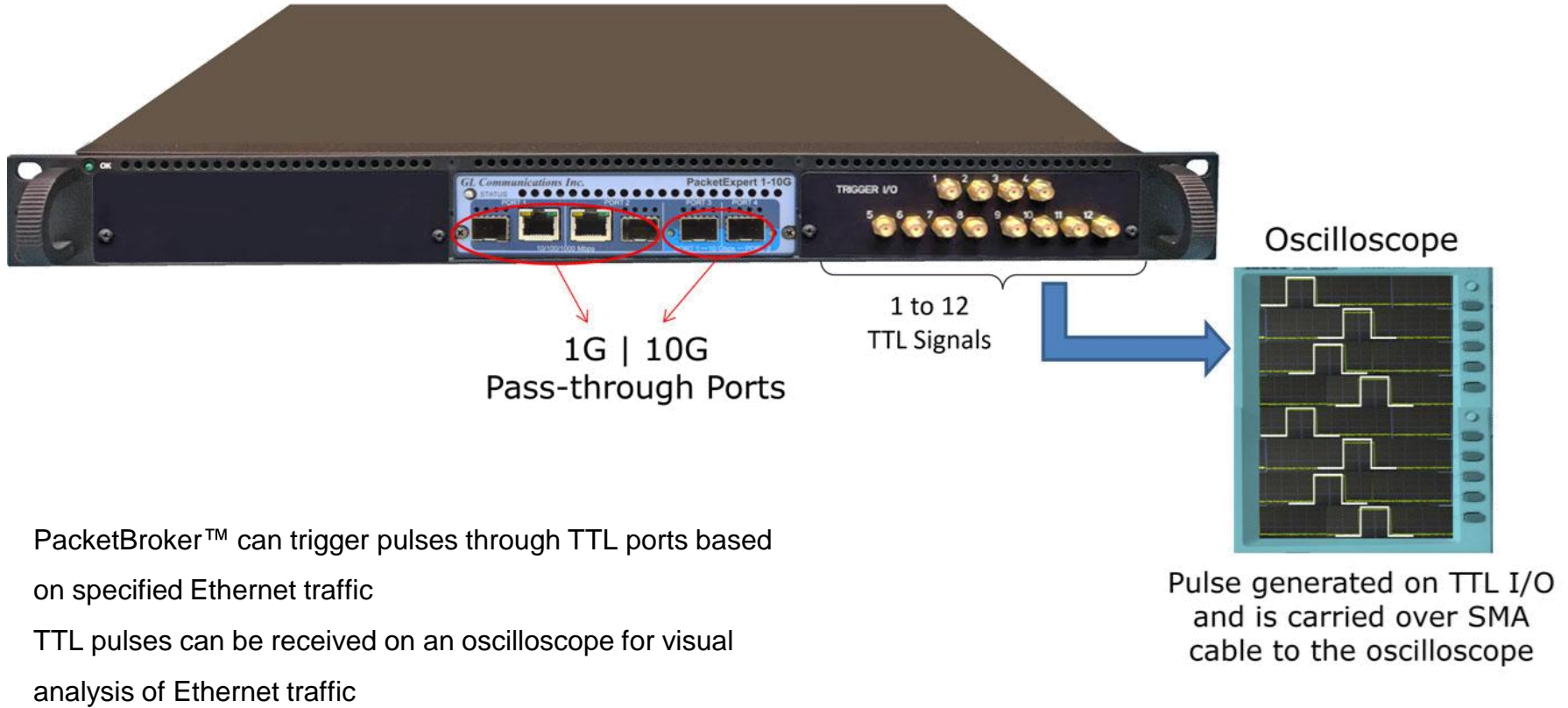
Physical Specifications	<ul style="list-style-type: none"> • Length: 16 in (406.4) • Width: 19 in (482.6) • Height: 1U / 2U
External Power Supply	<ul style="list-style-type: none"> • ATX Power Supply
BUS Interface	<ul style="list-style-type: none"> • 1U mTOP™ (MT001 + 3x PXN100) <ul style="list-style-type: none"> ➢ Rackmount Enclosure can support up to 3 PXN100s • 2U Rack Mount (with 6x PXN100) <ul style="list-style-type: none"> ➢ Rackmount Enclosure can support up to 6 PXN100s • Optional 4 to 12 Port SMA Jack Trigger Board (TTL Input/Output)
SBC Specifications	<ul style="list-style-type: none"> • Intel Core i3 or optional i7 NUC Equivalent • Windows® 11 64-bit Pro Operating System • USB 3.0 and USB 2.0 Ports • USB Type C Ports, Ethernet 2.5GigE port • 256 GB Hard drive, 8G Memory (Min) • Two HDMI ports

mTOP™ Probe with 10GX Hardware Unit + SBC



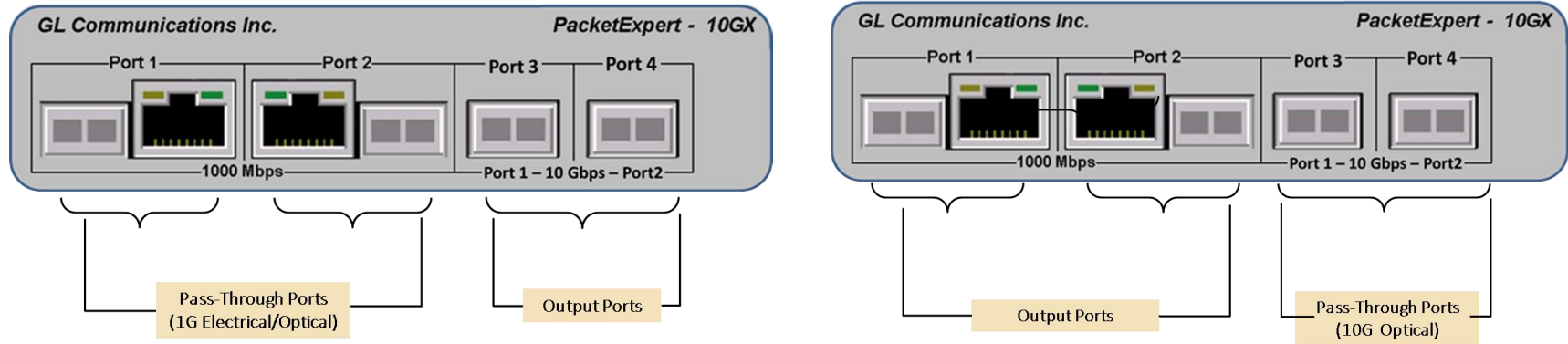
Physical Specifications	<ul style="list-style-type: none">• Length: 10.4 in. (264.16 mm)• Width: 8.4 in. (213.36 mm)• Height: 3.0 in. (76.2 mm)• Optional 4-Port SMA Jack Trigger Board (TTL Input/Output)• External USB based Wi-Fi adaptor
External Power Supply	<ul style="list-style-type: none">• +12 Volts (Medical Grade), 3 Amps
SBC Specifications	<ul style="list-style-type: none">• Intel Core i3 or optional i7 NUC Equivalent• Windows® 11 64-bit Pro Operating System• USB 3.0 and USB 2.0 Ports• USB Type C Ports, Ethernet 2.5GigE port• 256 GB Hard drive, 8G Memory (Min)• Two HDMI ports

MTOP™ PacketBroker™ Rack Unit w/ 12 TTL Triggers



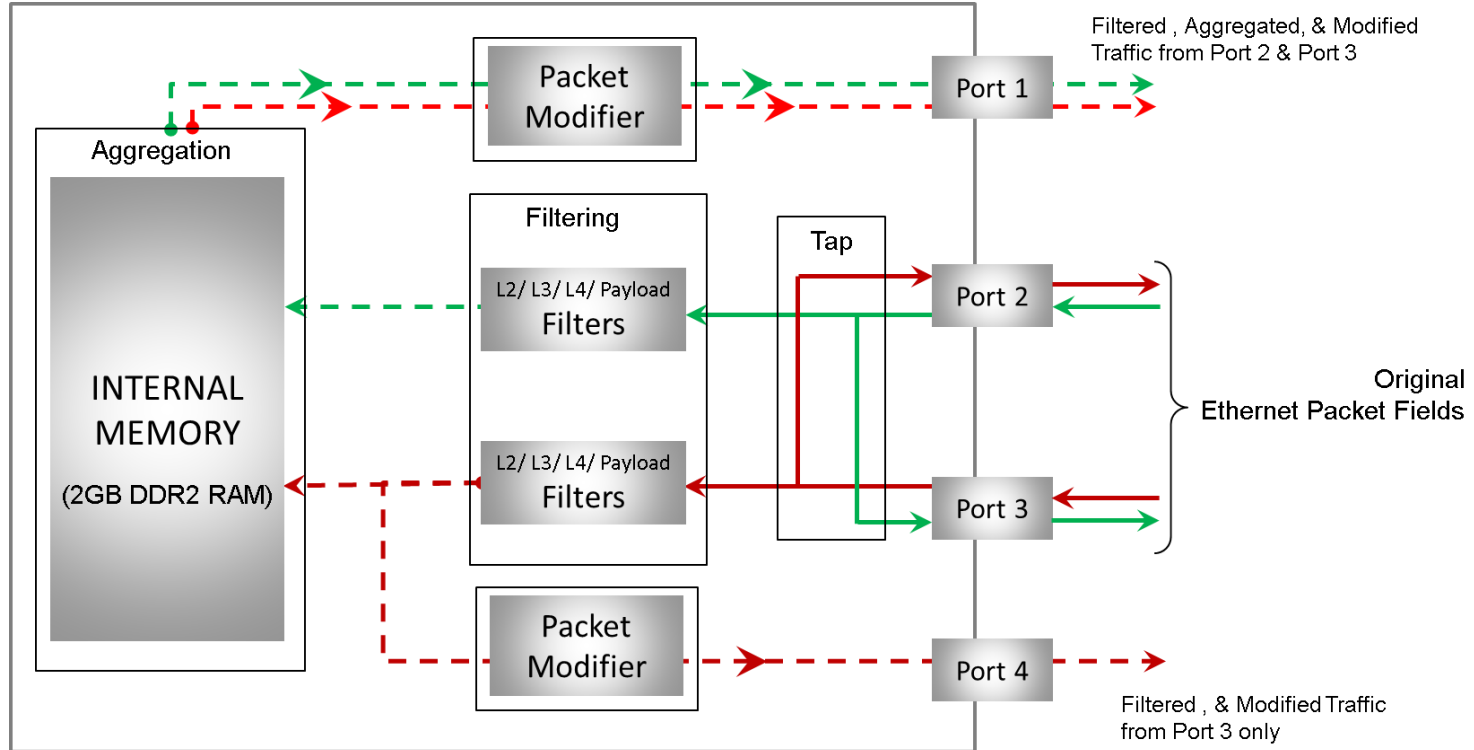
- PacketBroker™ can trigger pulses through TTL ports based on specified Ethernet traffic
- TTL pulses can be received on an oscilloscope for visual analysis of Ethernet traffic

Features

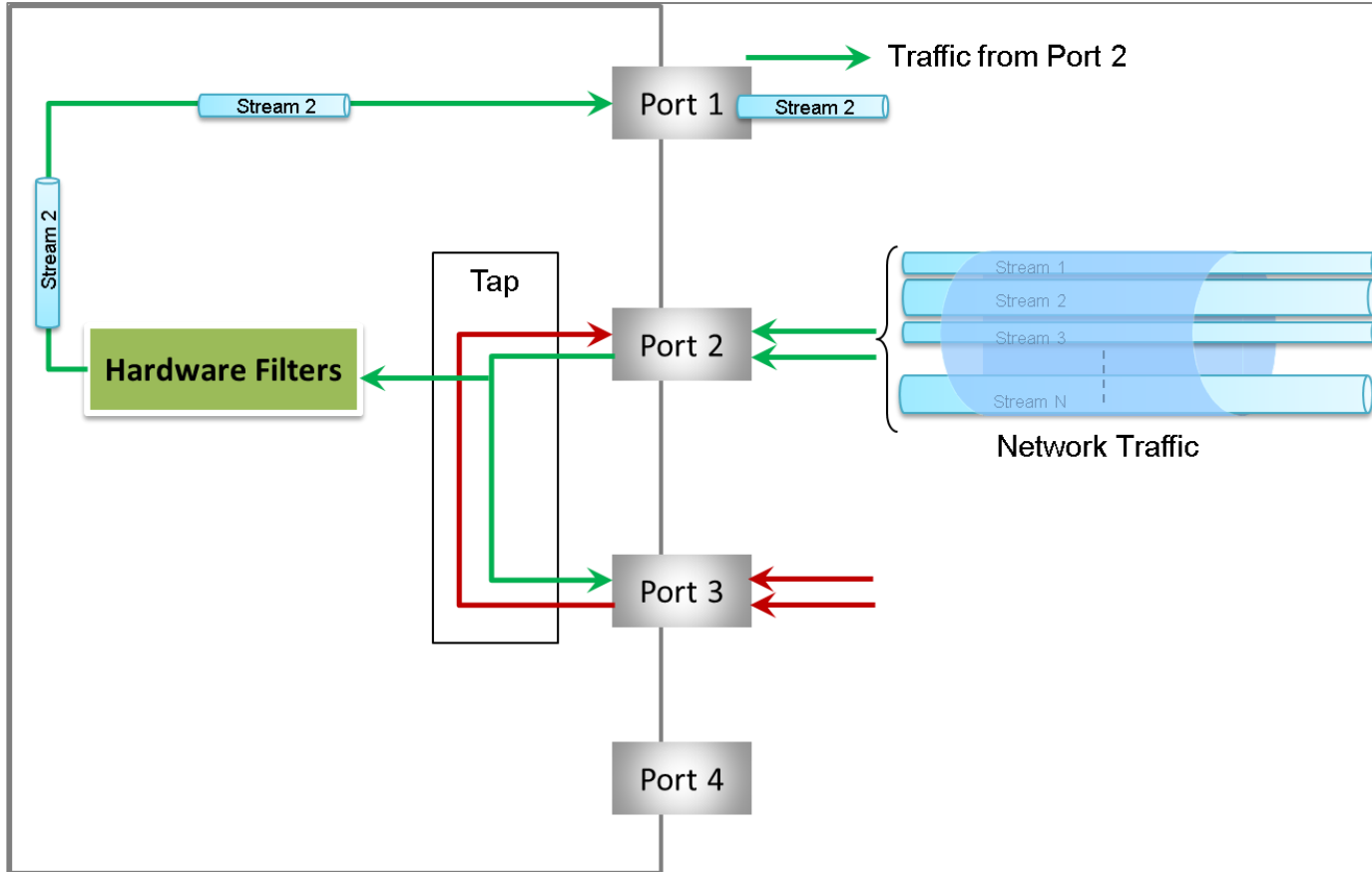


- A network tap like application, with additional advanced features like
 - Active network tap - capable of handling bidirectional 100% wirespeed traffic upto 1 Gb/s
 - Wirespeed Filtering - powerful and easy to use
 - Packet Modification to convey useful information like Timestamp inband
 - Output aggregation - both direction traffic multiplexed on the same output Based on PacketExpert™ 10GX hardware platform
- It has two 10/1 Gbps Optical ports, and two 10/100/1000 Mbps Electrical ports or 100/1000 Mbps Optical 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

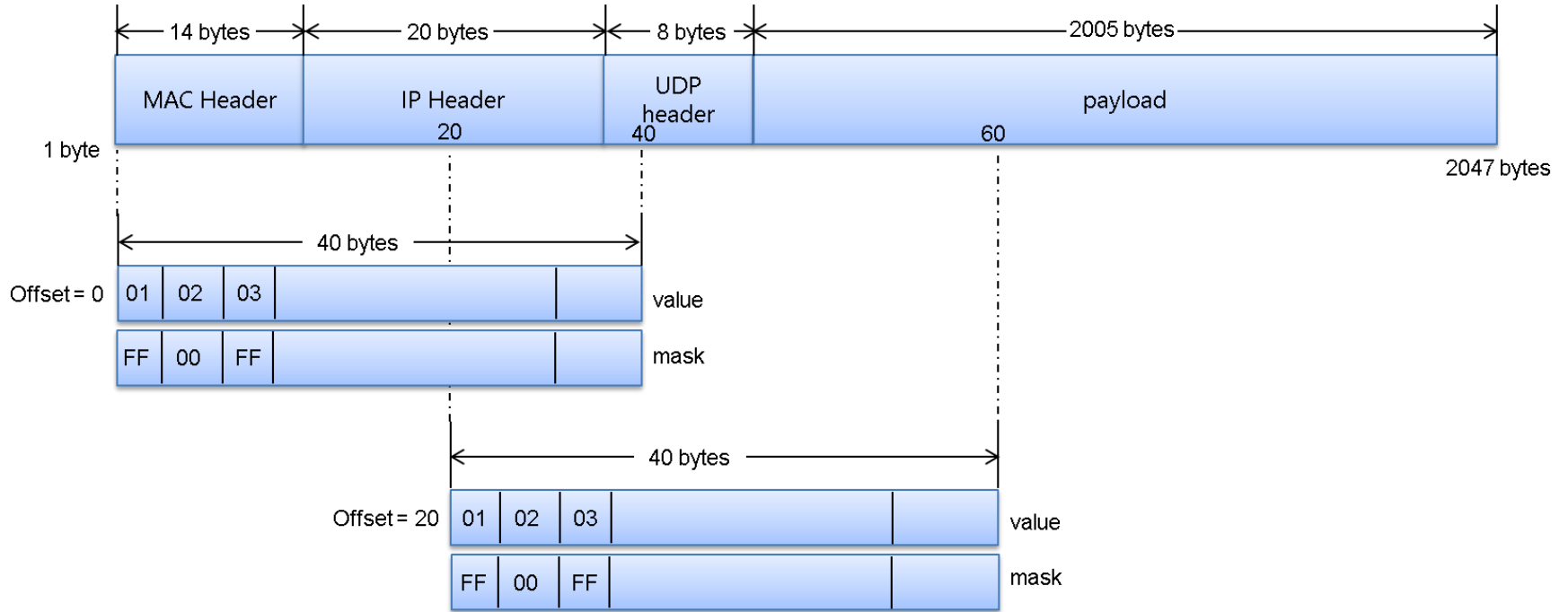
Packet Tap, Filter, Aggregation, Modification, and Output



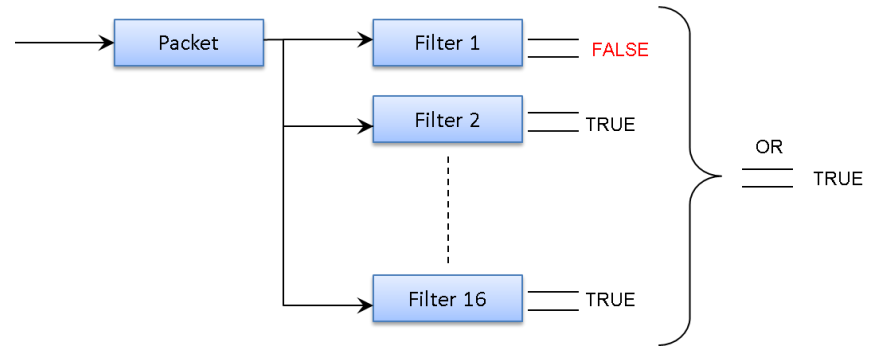
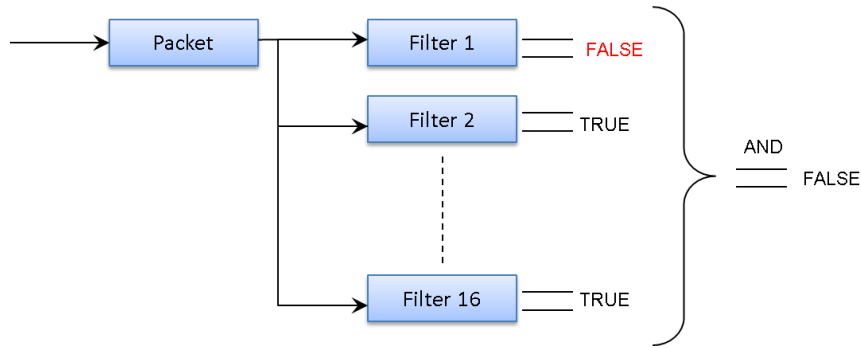
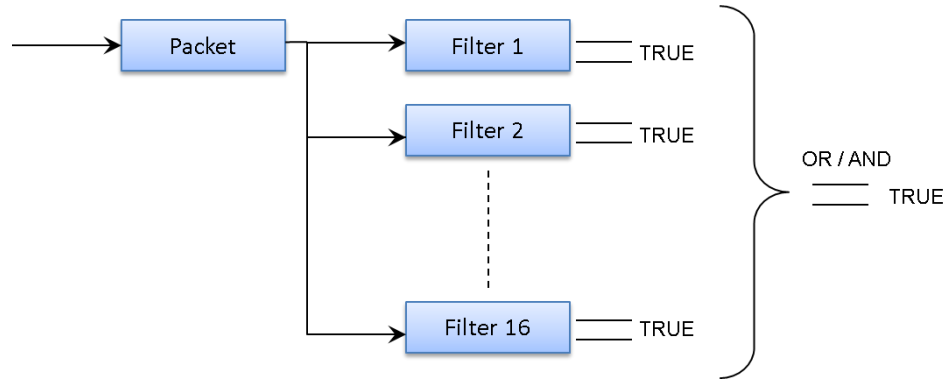
Capture Traffic of Interest



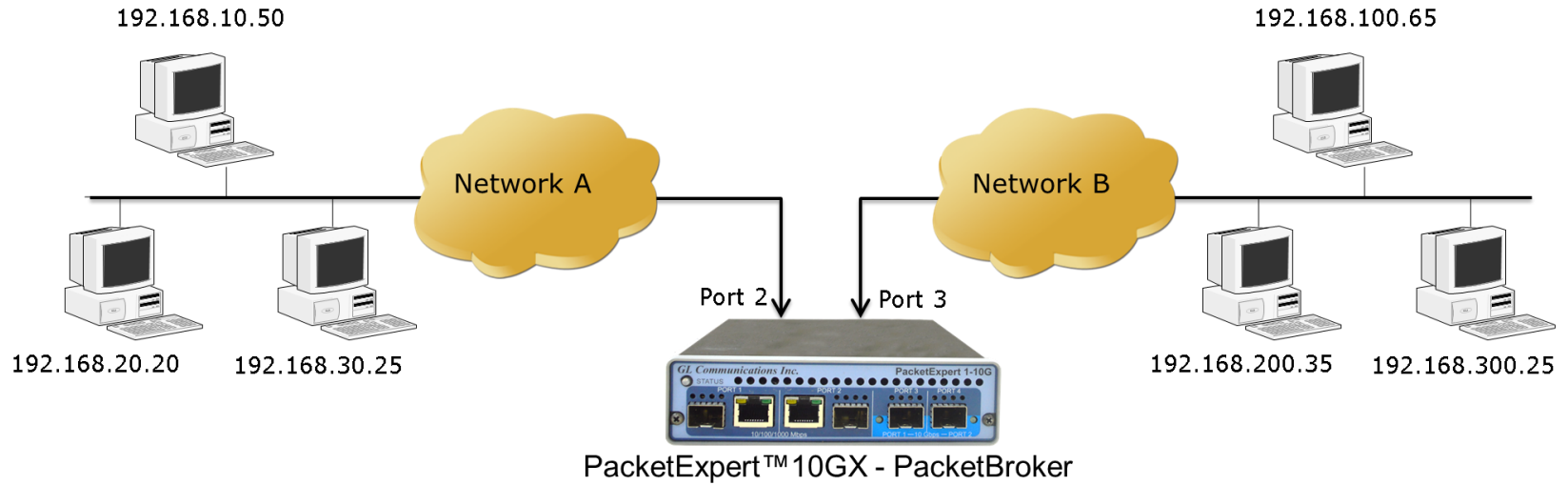
Header



Filter Combination



Filter Example



Filter Example (Contd.)

SIP and RTP between 192.168.10.50 192.168.300.25 undirectional (192.168.10.50 --> 192.168.300.25)

Filter 1

SIP traffic between 192.168.10.50 and 192.168.200.35

Ethernet Len/Type = 0x0800(IP) AND
Source IP address = 192.168.10.50 AND
Destination IP Address = 192.168.200.35 AND
IP Protocol = 17 (UDP)
Destination UDP port == 5060

OR

Filter 2

RTP traffic between 192.168.10.50 and 192.168.200.35

Ethernet Len/Type = 0x0800(IP) AND
Source IP address = 192.168.10.50 AND
Destination IP Address = 192.168.200.35 AND
IP Protocol = 17 (UDP)
Source UDP port = 1024 AND
Destination UDP port == 1024 AND
Payload first byte(43rd byte) == 0x80 (RTP valid version)

OR

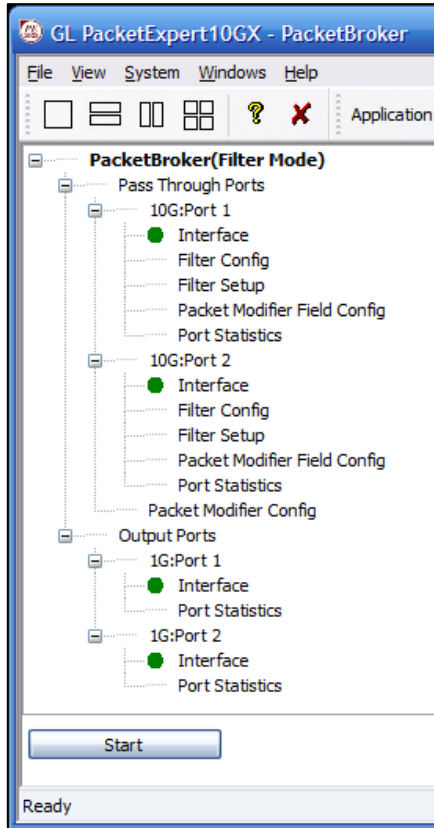
Filter 3

RTP traffic between 192.168.10.50 and 192.168.200.35

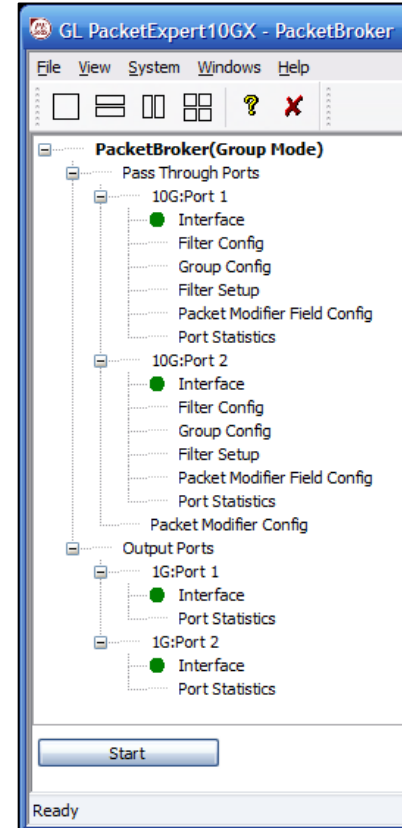
Ethernet Len/Type = 0x0800(IP) AND
Source IP address = 192.168.10.50 AND
Destination IP Address = 192.168.200.35 AND
IP Protocol = 17 (UDP)
Source UDP port = 1025 AND
Destination UDP port == 1025 AND
Payload first byte(43rd byte) == 0x80 (RTP valid version)

Filter Configuration Menu

Basic Mode Filtering



Group Mode Filtering



Filter Configuration

Raw Mode Filtering

Port Selection: 10G:Port 1

Filter List (16 Filters):

#	Filter Name
1	Filter1
2	Filter2
3	Filter3
4	Filter4
5	Filter5
6	Filter6
7	Filter7
8	Filter8
9	Filter9
10	Filter10
11	Filter11
12	Filter12
13	Filter13
14	Filter14
15	Filter15
16	Filter16

Filter Selection:

- Layers
 - MAC
 - VLAN Layer
 - MPLS Layer
 - IP
 - UDP
 - TCP
 - Framesize
 - RAW Mode**

Filters:

Enable RAW Mode

RAW Mode: Offset 0

Bytes	Value	Mask
0-7	00 00 00 00 01 02 00 00	FF FF FF FF FF FF 00 00
8-15	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
16-23	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
24-31	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
32-39	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
40-47	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
48-55	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
56-63	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
64-71	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
72-79	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00
80-87	00 00 00 00 00 00 00 00	00 00 00 00 00 00 00 00

Layer Summary:

Layer	Layer Summary
MAC	Src MAC = 00-00-00-00-01-02, Dst MAC = 00-00-00-00-01-03, Len/Type =
VLAN	VLAN Id = 12, VLAN Priority = 0 - 7
MPLS	MPLS Label = 0 - 1048575
IPv4	Src IP = 192.168.1.11, Dst IP = 192.168.1.12, TOS = 0, Protocol = X
UDP	Src UDP Port = 400 - 600, Dst UDP Port = 5500 - 6000

Offset
(0 - 15999)

120 Bytes
Raw
Data/Mask
Bytes

16 Filters

Filter Configuration (Contd.)

Packet Mode Filtering

Filter Config

Port Selection: 10G:Port 1

Packet Layers

Header fields

16 Filters

Packet Layer Summary

#	Filter Name
1	Filter 1
2	Filter 2
3	Filter 3
4	Filter 4
5	Filter 5
6	Filter 6
7	Filter 7
8	Filter 8
9	Filter 9
10	Filter 10
11	Filter 11
12	Filter 12
13	Filter 13
14	Filter 14
15	Filter 15
16	Filter 16

NOT

Filter Selection

- Layers
 - MAC
 - VLAN Layer
 - MPLS Layer
 - IP
 - UDP
 - TCP
 - TCP Source Port
 - TCP Destination Port
 - Framesize
 - RAW Mode

Filters

Enable TCP Source Port

TCP Source Port

Fixed Range

From == 2000 To 3000

Layer	Layer Summary
MAC	Src MAC = 00-00-00-00-01-02, Dst MAC = 00-00-00-00-01-03, Len/Type =
VLAN	VLAN Id = 12 , VLAN Priority = 0 - 7
MPLS	MPLS Label = 0 - 1048575
IPv4	Src IP = 192.168.1.11, Dst IP = 192.168.1.12, TOS = 0, Protocol = X
UDP	Src UDP Port = 400 - 600, Dst UDP Port = 5500 - 6000
TCP	Src TCP Port = 2000 - 3000, Dst TCP Port = 2123

Group Mode Filter Configuration

- PacketBroker™ includes an option to group the configured filters
- Any number of individual filters can be selected to form a group. Using “AND” and “OR” operators and any combination of filter groups can be created
- The multiple filter Groups created can be further grouped to form Super Groups using “AND” or “OR” operators
- The result of all the filters within the group is taken and either “OR” or “AND” and a final single Group result - TRUE or FALSE is obtained

The screenshot displays the 'Group Config' interface, which is divided into two main sections: 'Group Config' and 'Super Group Config'.

Group Config Section:

- Port Selection:** 10G:Port 1
- Group List:** A table with 16 rows, each representing a group from Group1 to Group16. Group2 is currently selected.
- Filter Selection:** A list of 16 filters (Filter1 to Filter16). Filters 1, 5, 6, 10, and 12 are checked.
- Operation:** Radio buttons for 'AND' (selected) and 'OR'.
- Summary:** (Filter 1 & Filter 5 & Filter 6 & Filter 10 & Filter 12)
- Buttons:** Add, Delete, Clear, and Hide Super Group.

Super Group Config Section:

- Enable Super Group:** A checkbox that is checked.
- Super Group List:** A table with 16 rows, each representing a super group from SuperGroup1 to SuperGroup16.
- Group Selection:** A list of 16 groups (Group1 to Group16). Groups 1, 4, 6, and 8 are checked.
- Operation:** Radio buttons for 'AND' and 'OR' (selected).
- Summary:** (Group 1 || Group 4 || Group 6 || Group 8)
- Buttons:** Add, Delete, Clear.

Dynamically Enable/Disable Filters

Filter Setup

In Ports
10G:Port 1
Filters
10G:Port 2
Filters

Aggregator
Enabled
Output 1G:Port 1

Out Ports
Aggregate Port (1G:Port 1)
Packet Modifier Enabled
Output Enabled
1G:Port 2
Packet Modifier Enabled
Output Enabled

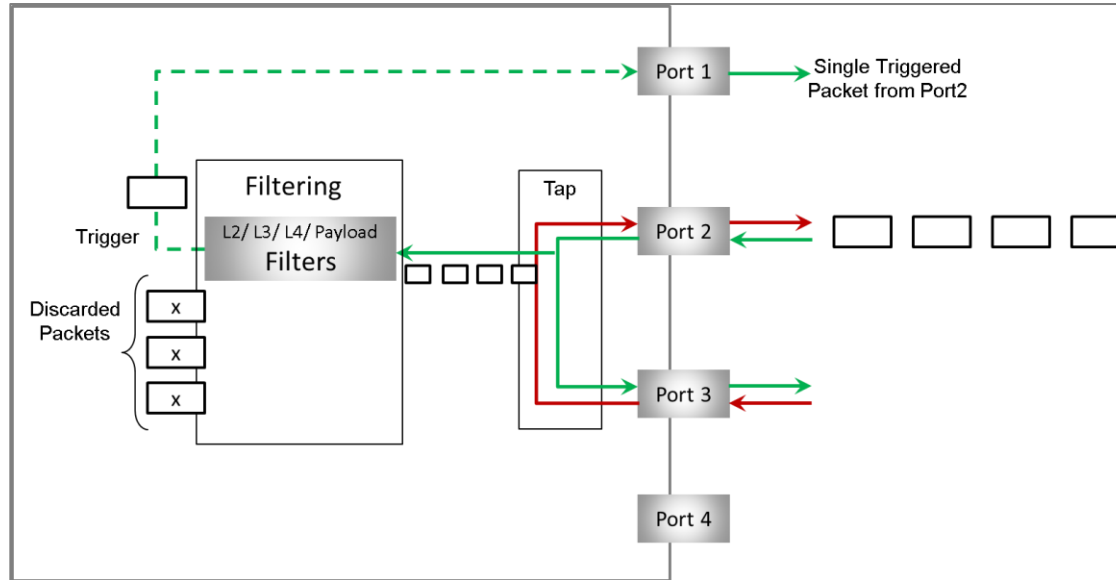
Port Selection 10G:Port 1 Reset Activate All Deactivate All Operation OR

Filter Summary
Filter1 || Filter2 || Filter5 || Filter6 || Filter7 || Filter8
|| Filter9 || Filter10 || Filter11 || Filter12 || Filter13 || Filter14 || Filter15 || Filter16

Filter No	NOT	Filter Mode	Triggered/Filtered Packets	Triggered Status	Trigger
<input checked="" type="checkbox"/> 1	<input type="checkbox"/> NOT	Continuous	0		
<input checked="" type="checkbox"/> 2	<input type="checkbox"/> NOT	Mono Trigger	0	● Idle	Set

Dynamically Enable/Disable Filters, even at run-time

Trigger Mode



- PacketBroker™ helps achieve this using the Trigger mode for filters
- In this user can start the filter in Trigger mode, where it starts to look for packet matching the user defined value
- As soon as the first packet matches the filter, the filter is set to be triggered, and stops further capture

Filter Trigger Mode (Basic)

Filter Setup

In Ports

10G:Port 1
Filters

10G:Port 2
Filters

Aggregator

Enabled v

Outport 1G:Port 2 v

Out Ports

1G:Port 1

Packet Modifier Enabled v

Output Enabled v

Aggregate Port (1G:Port 2)

Packet Modifier Enabled v


Output Enabled v

Port Selection 10G:Port 1 Reset
Activate All
Deactivate All
Operation OR v

Filter Summary

Filter1 || Filter2 || Filter3 || Filter4 || Filter5 || Filter6 || Filter7 || Filter8 ||
Filter9 || Filter10 || Filter11 || Filter12 || Filter13 || Filter14 || Filter15 || Filter16 ||

Filter No	NOT	Filter Mode	Triggered/Filtered Packets	Triggered Status	Trigger
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	3	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	1	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	3	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	1	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	1	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	2	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	3	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	1	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	1	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	5	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	1	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Mono Trigger	6	✓ Triggered Set
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Continuous	671 496	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Continuous	671 960	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Continuous	672 439	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	NOT	Continuous	672 903	



25

Filter Trigger Mode (Group mode)

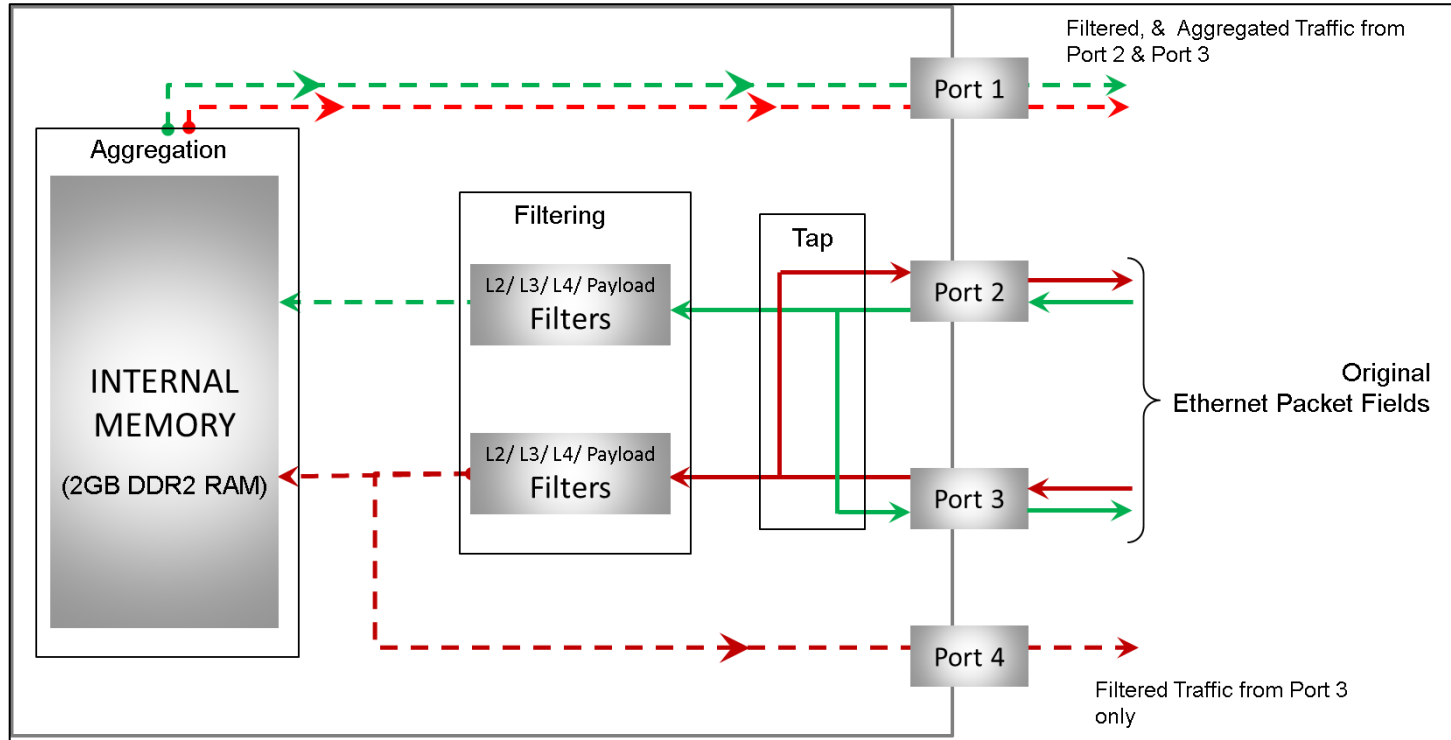
Filter Setup

Port Selection: Port 1 [Reset] [Activate All] [Deactivate All] Pulse Width: 200 msec

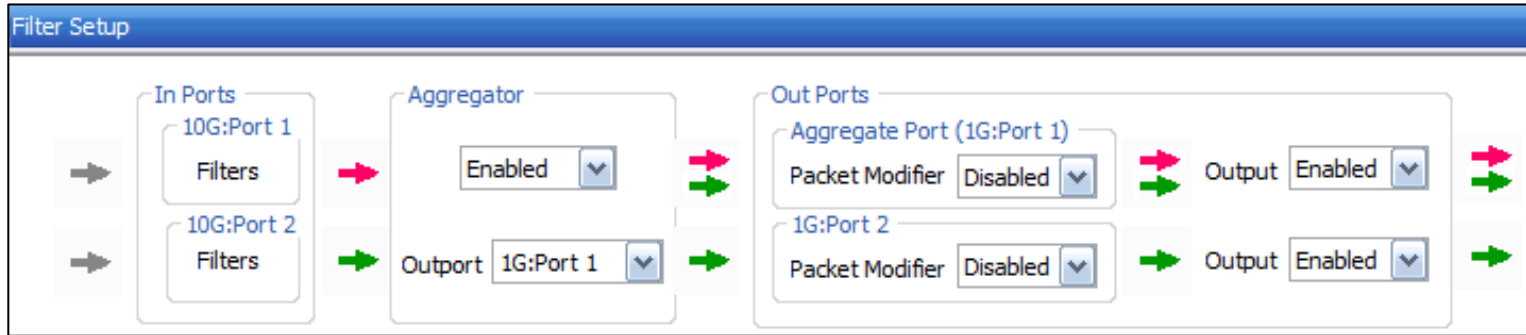
Group Summary
((!Filter7 && Filter2))!(Filter2 && Filter1 && Filter3 && Filter5) || (Filter1 && Filter4))

Group Name	Group Mode	Triggered/Filtered Packets	Triggered Status	Trigger	TTL
<input checked="" type="checkbox"/> SuperGroup1	MonoTrigger	1	✔ Triggered	Set	NONE
<input checked="" type="checkbox"/> SuperGroup2	MonoTrigger	0	● Waiting	Set	TTL1
<input checked="" type="checkbox"/> SuperGroup3	MonoTrigger	0	● Waiting	Set	TTL3
<input checked="" type="checkbox"/> SuperGroup4	MonoTrigger	1	✔ Triggered	Set	NONE
<input checked="" type="checkbox"/> SuperGroup5	MonoTrigger	1	✔ Triggered	Set	NONE
<input checked="" type="checkbox"/> SuperGroup6	MonoTrigger	0	● Waiting	Set	TTL7
<input checked="" type="checkbox"/> SuperGroup7	MonoTrigger	0	● Waiting	Set	TTL8
<input checked="" type="checkbox"/> SuperGroup8	MonoTrigger	1	✔ Triggered	Set	TTL9
<input checked="" type="checkbox"/> SuperGroup9	Continuous	665 899			NONE
<input checked="" type="checkbox"/> SuperGroup10	Continuous	666 371			NONE
<input checked="" type="checkbox"/> SuperGroup11	Continuous	666 836			NONE
<input checked="" type="checkbox"/> SuperGroup12	Continuous	667 301			NONE
<input type="checkbox"/> SuperGroup13	Continuous	0			NONE
<input type="checkbox"/> SuperGroup14	Continuous	0			NONE
<input type="checkbox"/> SuperGroup15	Continuous	0			NONE
<input type="checkbox"/> SuperGroup16	Continuous	0			NONE

Packet Aggregation

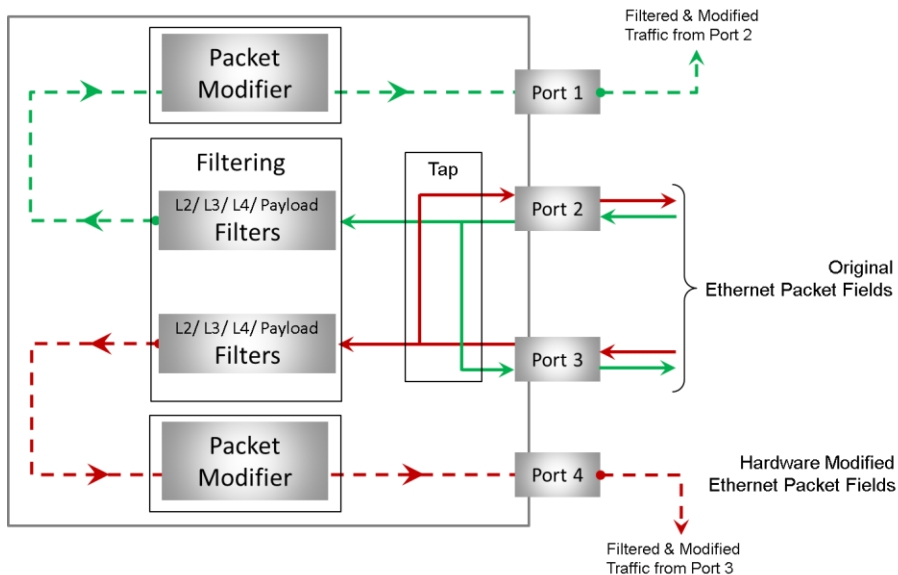


Packet Aggregation User Interface

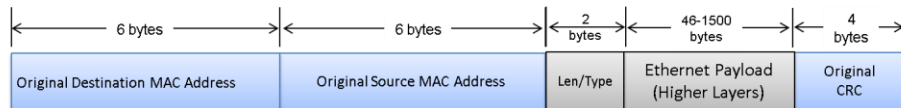


- The filtered traffic is combined and sent out through a single output port
- If the combined bandwidth exceeds the wirespeed of the output port, may cause packet loss
- Hence, the onboard memory (2 GB DR2 RAM) is used as a temporary buffer to store the traffic before sent out at wirespeed. Thus, upto 2 GB of traffic can be buffered

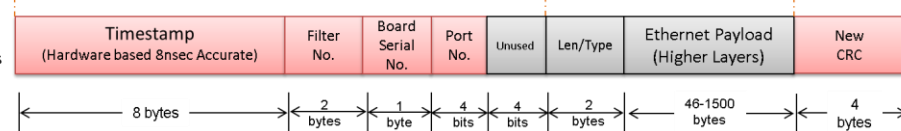
Packet Modification



Original Ethernet Packet Fields

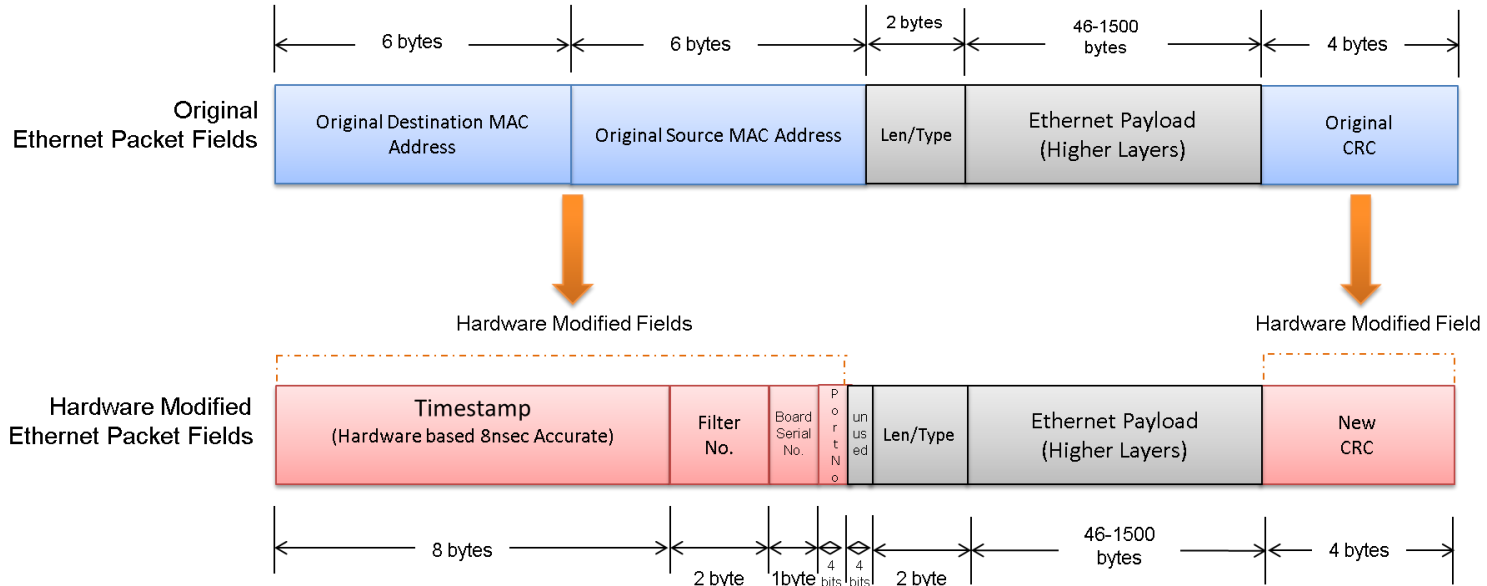


Hardware Modified Fields



- Need to convey very useful information such as the timestamp, port number, filter number etc. to the analysis tool
- May not have the flexibility to convey it outband – may need to do it inband
- PacketBroker™ provides this functionality by conveying it in the MAC header of the output packets.

Packet Modification (Contd.)



- Timestamp, Filter Number, Board Serial Number and Port Number fields are written on top of the Src MAC address and Dst MAC Address fields
- Ethernet CRC is recalculated
- Original MAC header will be lost, but many times, this may be fine if interest is only in higher layers (IP, TCP/UDP etc.)

Packet Modifier Enable/Disable

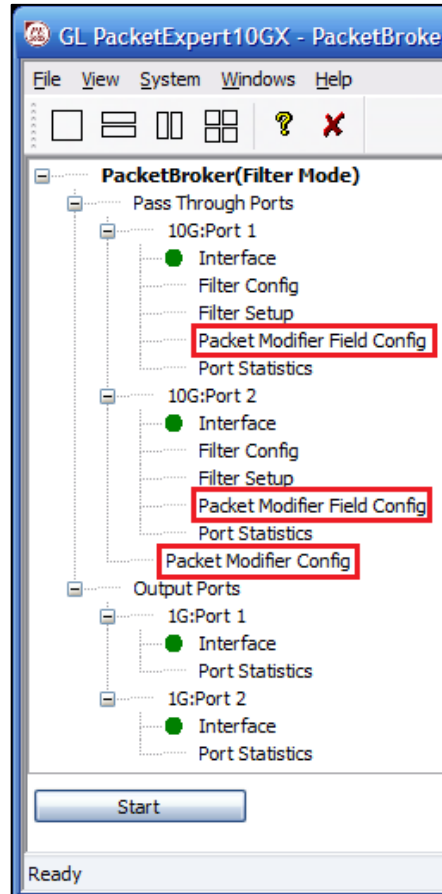
Filter Setup

The interface is divided into three main sections: In Ports, Aggregator, and Out Ports.

- In Ports:** Contains two entries: Port 2 and Port 3, each with a Filters button.
- Aggregator:** Contains an Enabled dropdown menu and an Outport 4 dropdown menu.
- Out Ports:** Contains two entries: Port 1 and Aggregate Port (P4). Each entry has a Packet Modifier dropdown menu and an Output Disabled dropdown menu. A red box highlights the Packet Modifier settings for Port 1 (Disabled) and Aggregate Port (P4) (Enabled).

At the bottom, there is a Port Selection dropdown menu set to Port 2, a Reset button, and two buttons: Activate All and Deactivate All.

Packet Modifier Field Config Menu

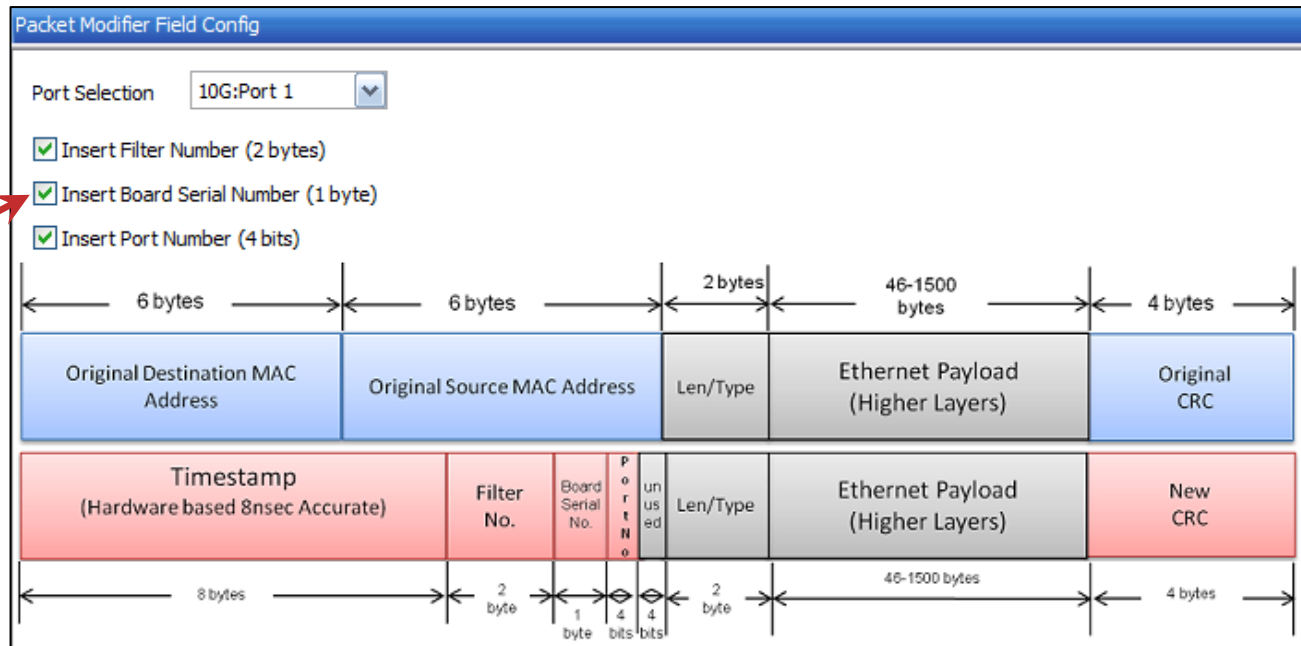


Packet Modifier Field Configuration

Packet Modifier Config

Board Serial No

Take From Hardware
 User Configured (0-255)



Packet Modifier Board Serial Number Config

Packet Modifier Config

Board Serial No

Take From Hardware

User Configured (0-255)

Device Information

Number Of Devices: 1

Device Details	Name	Serial Number	Model Number	USB Type	DDR Module Part Number
	Device1	188174	7.1	Unknown	16KTF1G64HZ-1G6E1

MAC Addresses

Port #1	Port #2	Port #3	Port #4
00-21-C2-00-25-7E	00-21-C2-00-25-81	00-21-C2-00-25-7F	00-21-C2-00-25-80

10G License

Description	Part#	License Type	Licensed Status
10G/2.5G Option For PXN100	PXN101	Optional License	✓

License Details

Application Name	Part#	License Type	Licensed Status
All Port Bert	PXN100	Basic	-NA-
RFC 2544	PXN100	Basic	-NA-
RFC 2544 (Single Port)	PXN100	Basic	-NA-
All Port Loopback	PXN100	Basic	-NA-
Bert/Loopback	PXN100	Basic	-NA-
IPLinkSim	IPN507	Optional License	✓
Record Only	PXN105	Optional License	✓
PacketBroker	PXN107	Optional License	✓
Playback Only	PXN105	Optional License	✓
Record And Playback	PXN105	Optional License	✓
ExpertsAM	PXN106	Optional License	✓
IPNetSim	IPN507	Optional License	✓
ExpertTCP	PXN108	Optional License	✓
Multi-Stream Traffic Generator & Analyzer	PXN108	Optional License	✓
Multi-Stream Traffic Generator & Analyzer (Dual Device)	PXN108	Optional License	✓

OK

Port Statistics

Port Statistics			
Port Selection: 10G:Port 1		Reset	
Description	Tx	Rx	
Total Frames	393 325 896	393 348 296	
Valid Frames	393 326 918	393 349 354	
Bad Frames	0	0	
Number of Bytes	595 498 501 138	595 533 950 190	
Link Utilisation(%)	100.000	100.000	
Data Rate(Mbps)	9669.681	9669.681	
Frame Rate(Frames/sec)	814868	814868	
Non Test Frames	0	0	
Broadcast Frames	0	0	
Multicast Frames	0	393 354 512	
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	0	0	
65-127 Byte Length Frames	0	0	
128-255 Byte Length Frames	0	0	
256-511 Byte Length Frames	0	0	
512-1023 Byte Length Frames	0	0	
1024-1518 Byte Length Frames	393 341 784	393 366 705	
Oversized Frames	0	0	
Undersized Frames	-	0	
FCS Error 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	-	393 376 953	
IPv6 Packets	-	0	

Port Statistics			
Port Selection: 1G:Port 1		Reset	
Description	Tx	Rx	
Total Frames	8 596 018	0	
Valid Frames	8 596 117	0	
Bad Frames	0	0	
Number of Bytes	13 014 675 566	0	
Link Utilisation(%)	100.000	0.000	
Data Rate(Mbps)	986.958	0.000	
Frame Rate(Frames/sec)	81486	0	
Non Test Frames	0	0	
Broadcast Frames	0	0	
Multicast Frames	8 596 585	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	0	0	
65-127 Byte Length Frames	0	0	
128-255 Byte Length Frames	0	0	
256-511 Byte Length Frames	0	0	
512-1023 Byte Length Frames	0	0	
1024-1518 Byte Length Frames	8 597 604	0	
Oversized Frames	0	0	
Undersized Frames	-	0	
FCS Error 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	-	0	
IPv6 Packets	-	0	

Thank You