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# PacketExpert™ 10GX – PacketBroker™

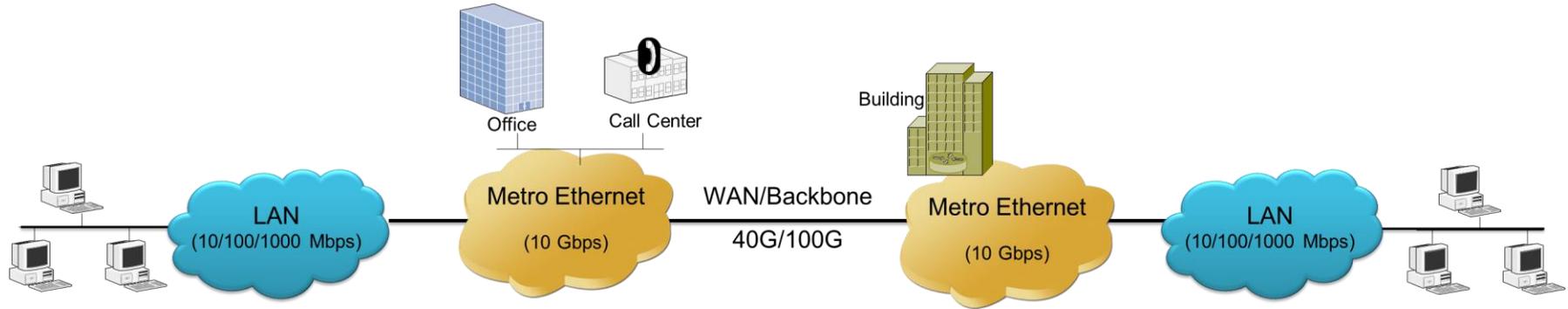
(Wire-speed Ethernet Tap)

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 **GL Communications Inc.**

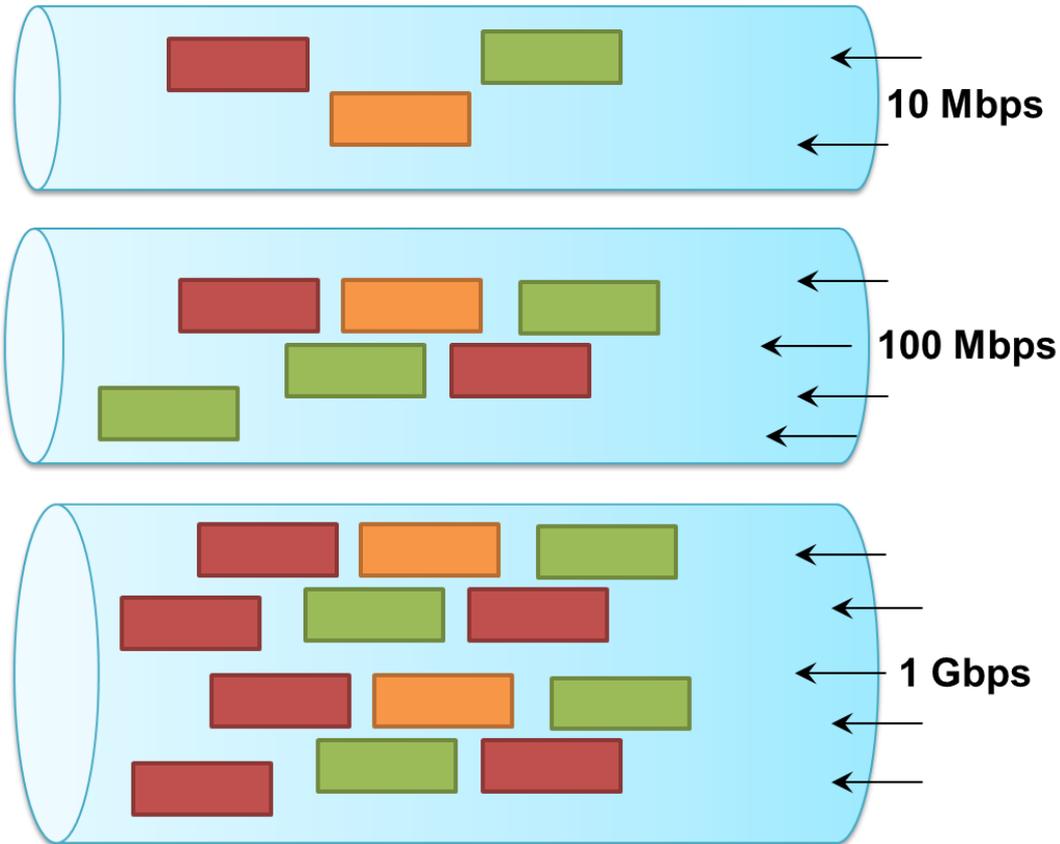
818 West Diamond Avenue - Third Floor, Gaithersburg, MD 20878  
Phone: (301) 670-4784 Fax: (301) 670-9187 Email: [info@gl.com](mailto:info@gl.com)  
Website: <https://www.gl.com>

# Ethernet Technology

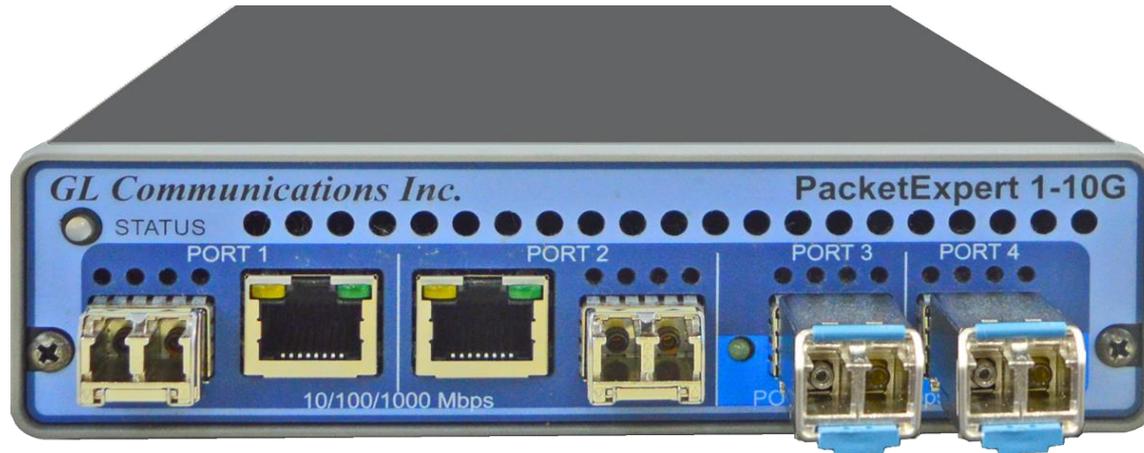


- Ethernet has become ubiquitous in both Local Area Networks and Wide Area Networks
- Network engineers require the ability to capture the traffic at different locations in the network

# Just bigger Pipes, but same Ethernet Packets



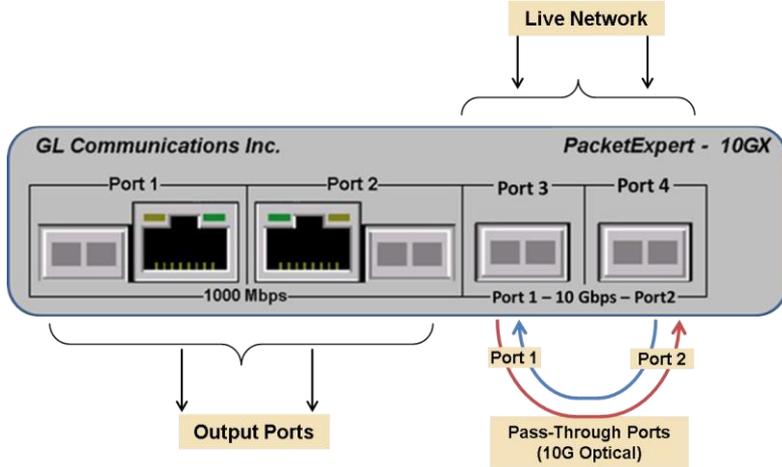
# PacketExpert™ 10GX (10G/2.5G/1G)



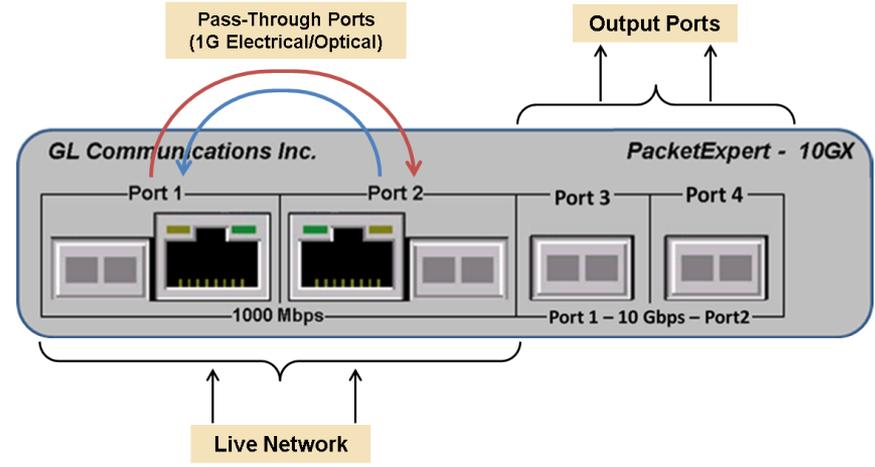
- Bit Error Rate Testing
- RFC 2544
- Smart Loopback Functionality
- ITU-T Y.1564 (Verify service level agreements)
- Wirespeed Record/Playback Capability
- Multi-Stream Traffic Generator
- PacketBroker
- RFC 6349 (TCP Testing)
- IP Wide Area Network Emulation

# Active Network Tap

## For 1G Ports

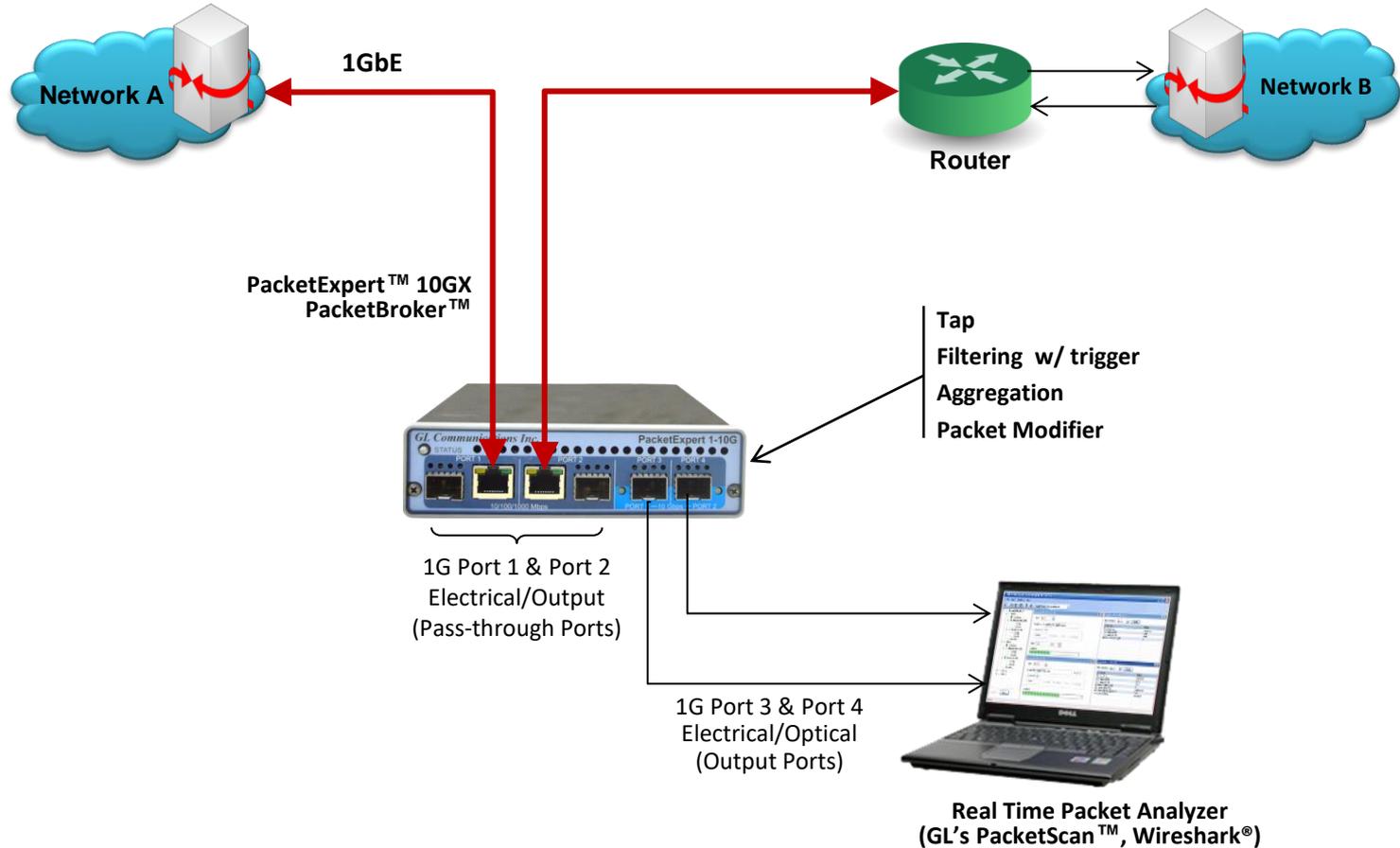


## For 10G Ports

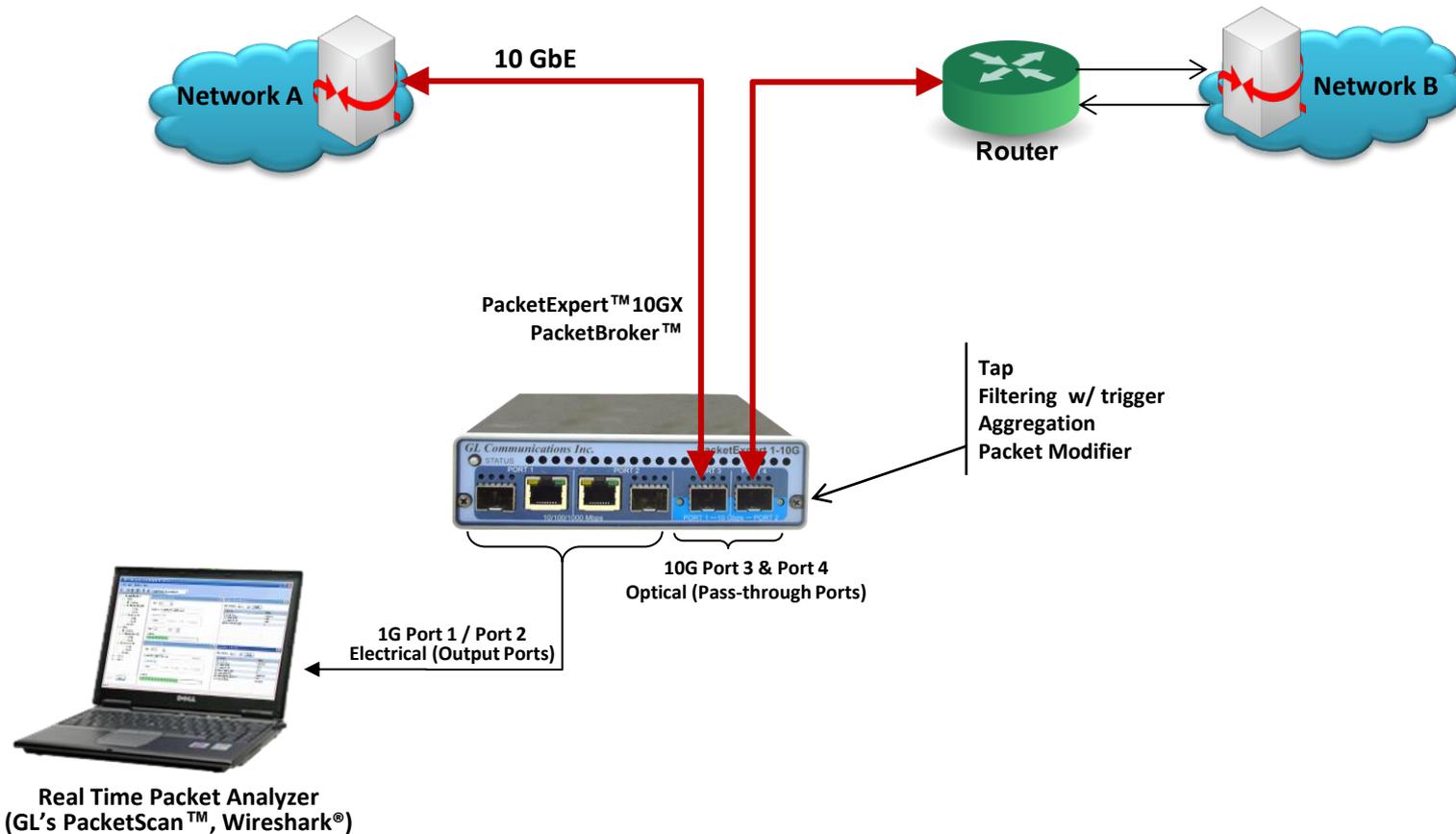


- Dedicated hardware device - FPGA based processing means full 100% wirespeed capability to pass through traffic no drops, no delays, and also to make two separate copies - Tx and Rx side
- Hardware filters means wirespeed filtering

# PacketBroker™ in Network (1GbE)



# PacketBroker™ in Network (10GbE)



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



RJ45/SFP

RJ45/SFP

SFP+

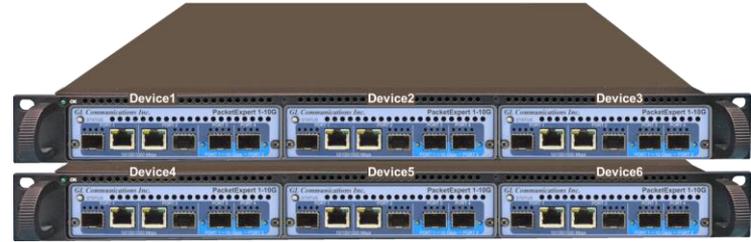
SFP+

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

# MTOP™ Rack Units



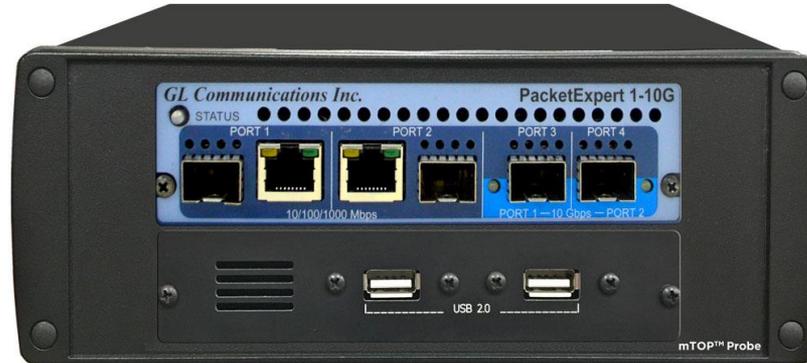
**High Density 1U Rack option**



**Stacked High Density 1U Rack option**

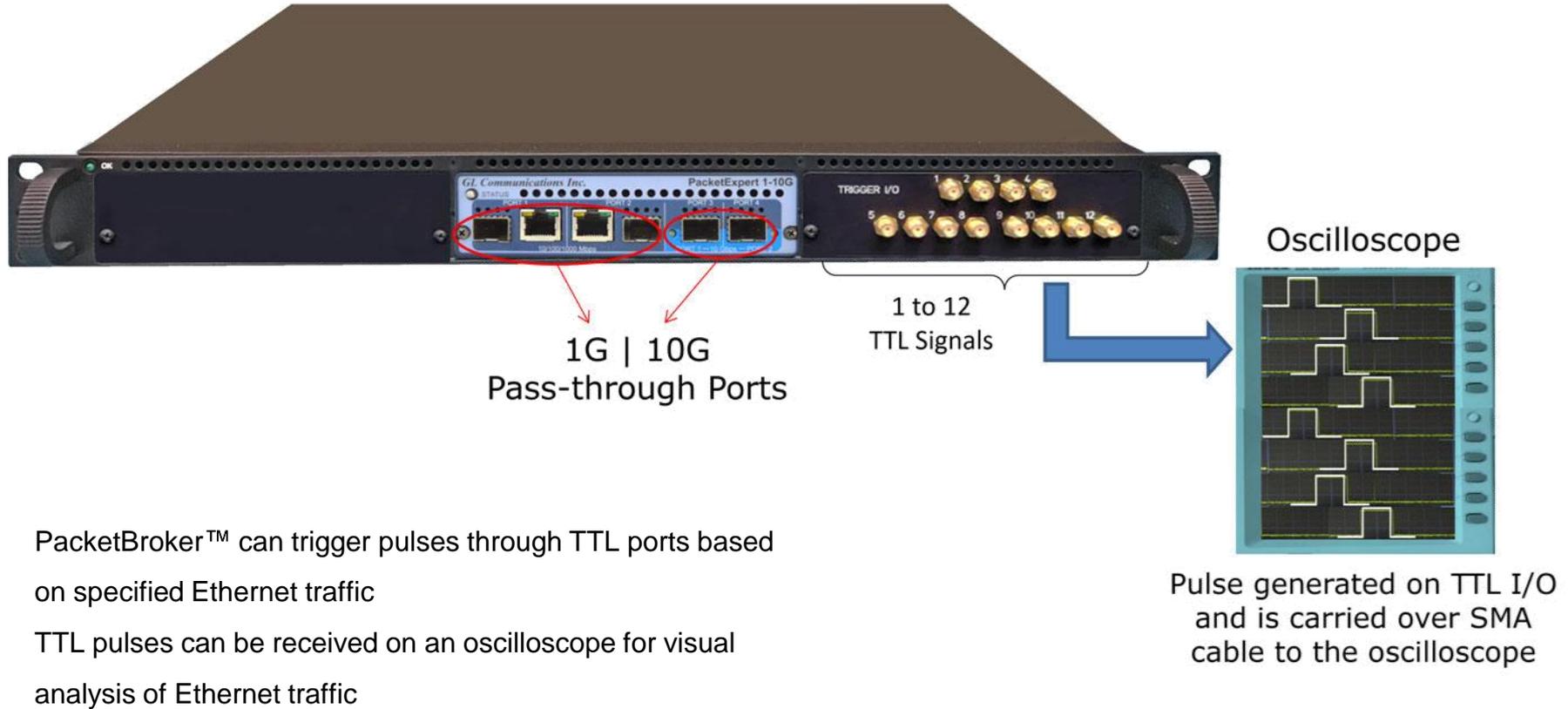
Physical Specifications	<ul style="list-style-type: none"> <li>• Length: 16 in (406.4)</li> <li>• Width: 19 in (482.6)</li> <li>• Height: 1U / 2U</li> </ul>
External Power Supply	<ul style="list-style-type: none"> <li>• ATX Power Supply</li> </ul>
BUS Interface	<ul style="list-style-type: none"> <li>•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

# mTOP™ Probe with 10GX Hardware Unit + SBC

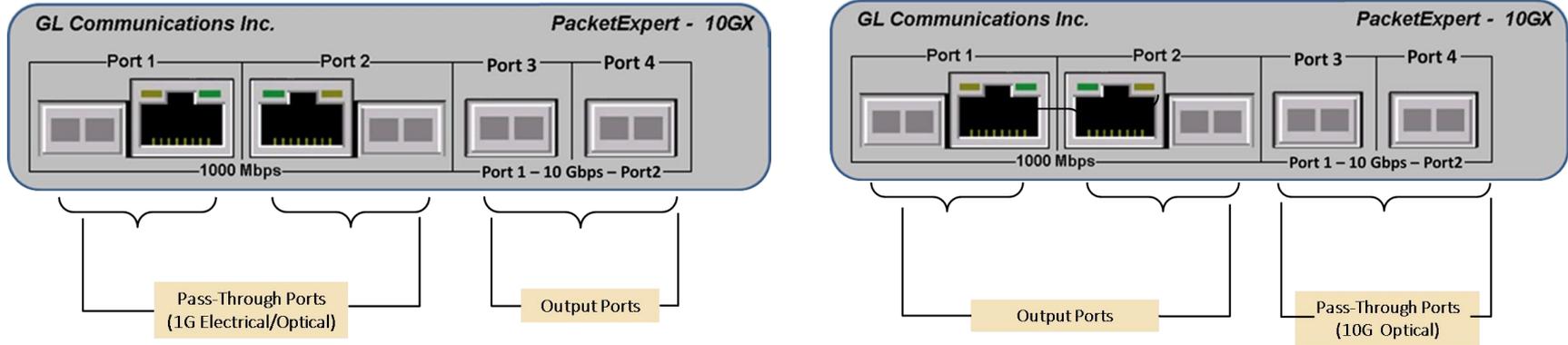


Physical Specifications	<ul style="list-style-type: none"><li>• Length: 10.4 in. (264.16 mm)</li><li>• Width: 8.4 in. (213.36 mm)</li><li>• Height: 3.0 in. (76.2 mm)</li><li>• Optional 4-Port SMA Jack Trigger Board (TTL Input/Output)</li><li>• External USB based Wi-Fi adaptor</li></ul>
External Power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

# MTOP™ PacketBroker™ Rack Unit w/ 12 TTL Triggers

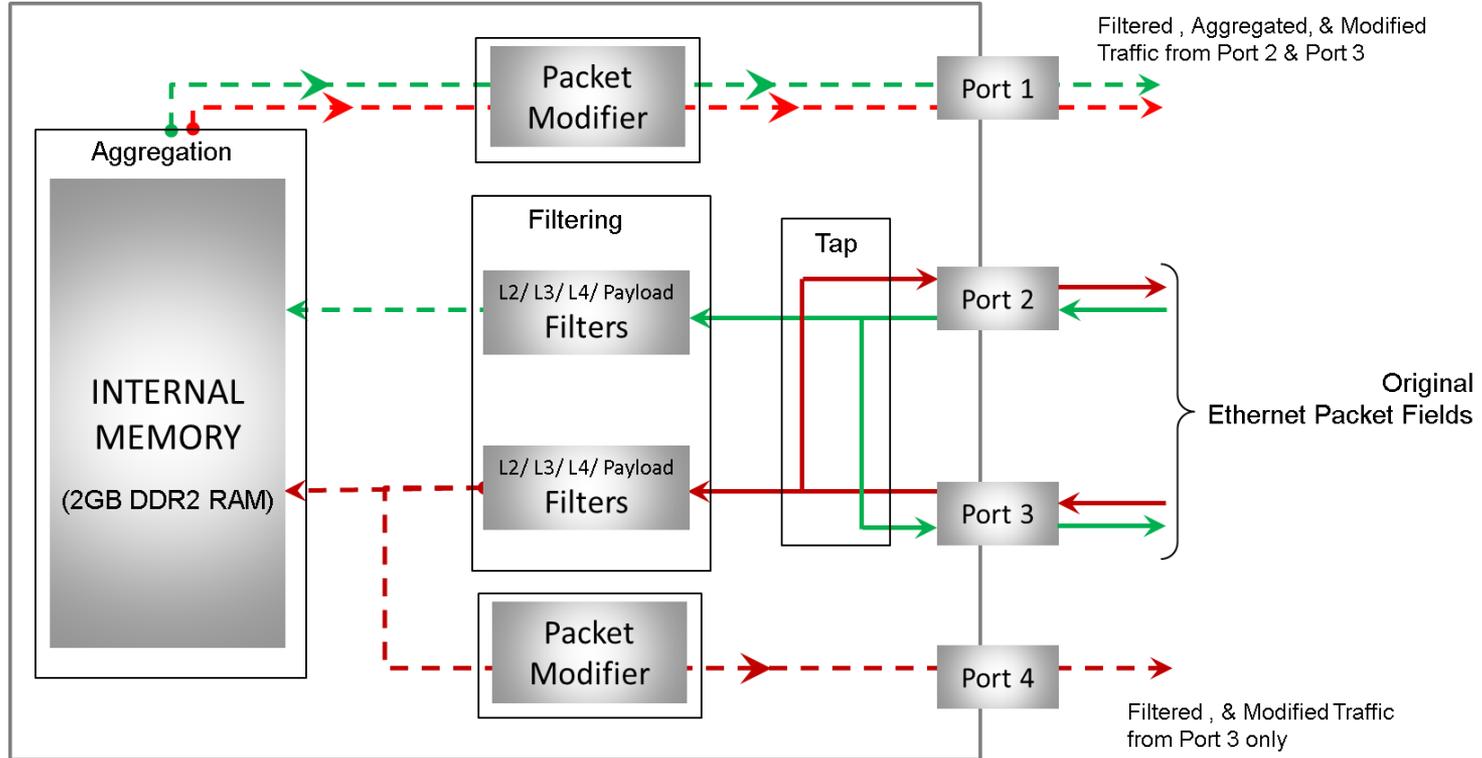


# Features

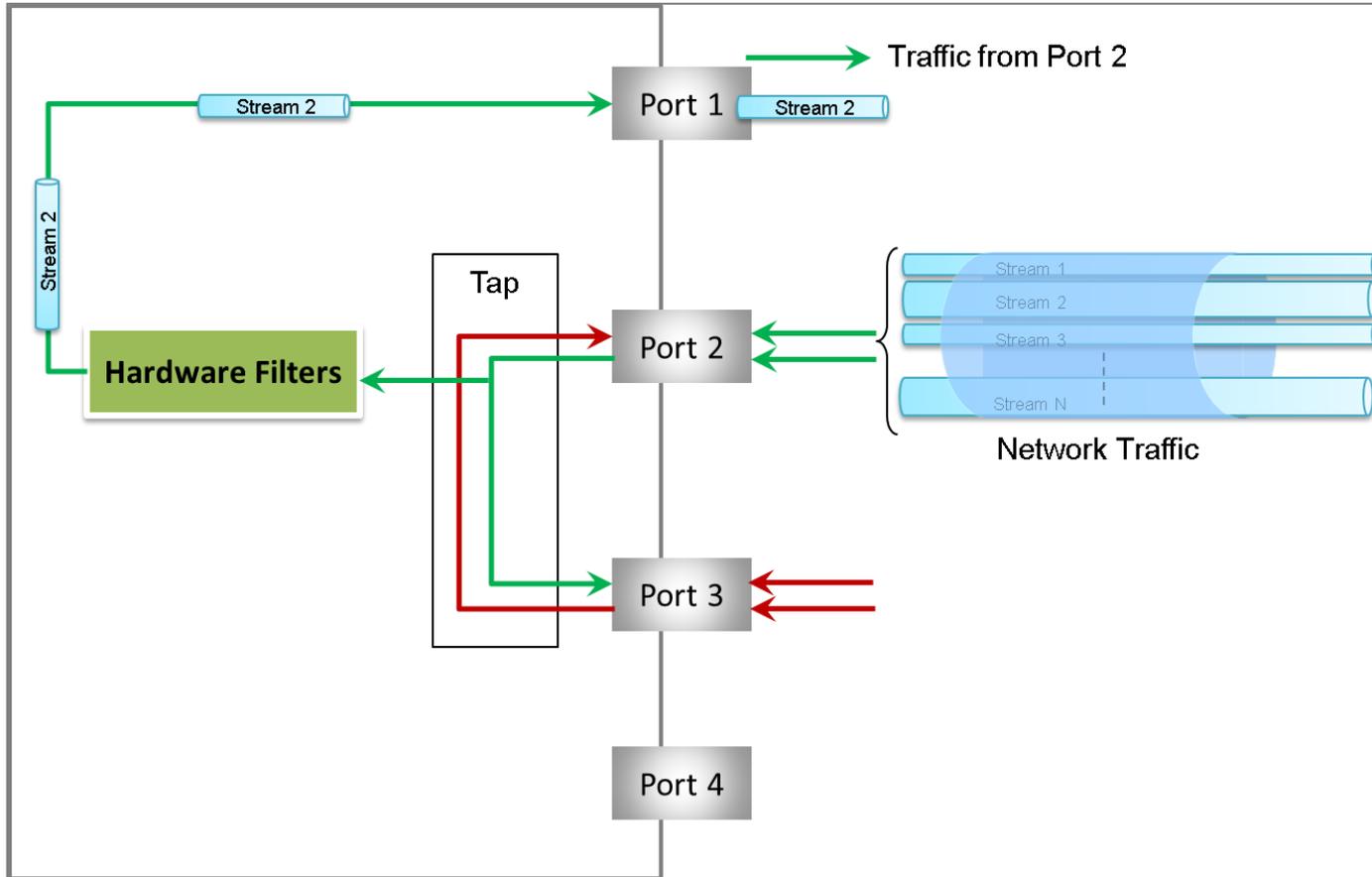


- A network tap like application, with additional advanced features like
  - Active network tap - capable of handling bidirectional 100% wirespeed traffic upto 1 Gb/s
  - Wirespeed Filtering - powerful and easy to use
  - Packet Modification to convey useful information like Timestamp inband
  - Output aggregation - both direction traffic multiplexed on the same output Based on PacketExpert™ 10GX hardware platform
- It has two 10/2.5/1 Gbps Optical/Electrical ports, and two 10/100/1000 Mbps Electrical ports or 100/1000 Mbps Optical ports. The 10 Gbps ports can be down-shifted to support 1Gbps Electrical ports, thus offering 4 Electrical/Optical 1 Gbps ports

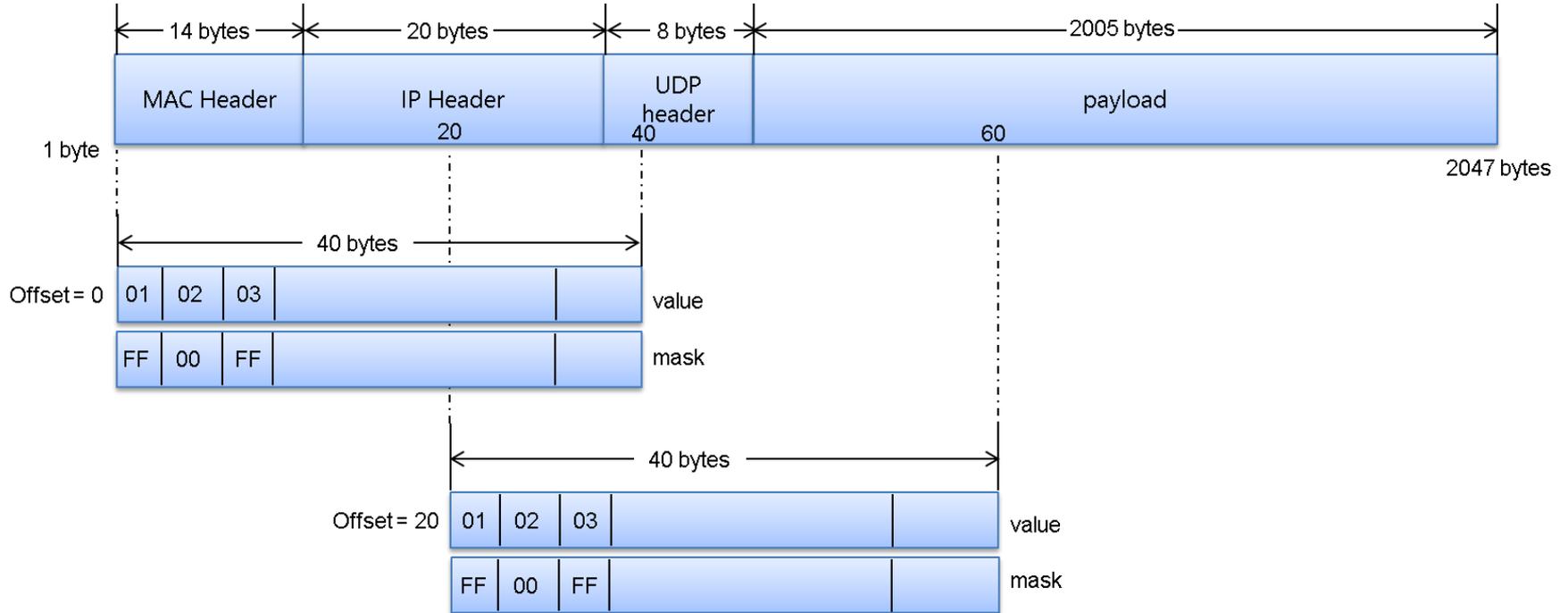
# Packet Tap, Filter, Aggregation, Modification, and Output



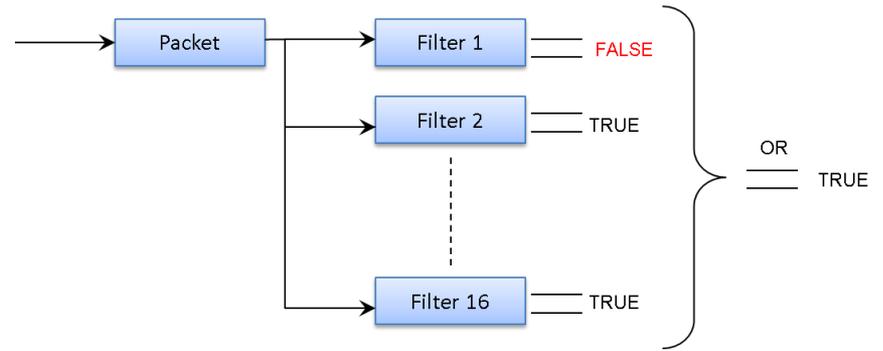
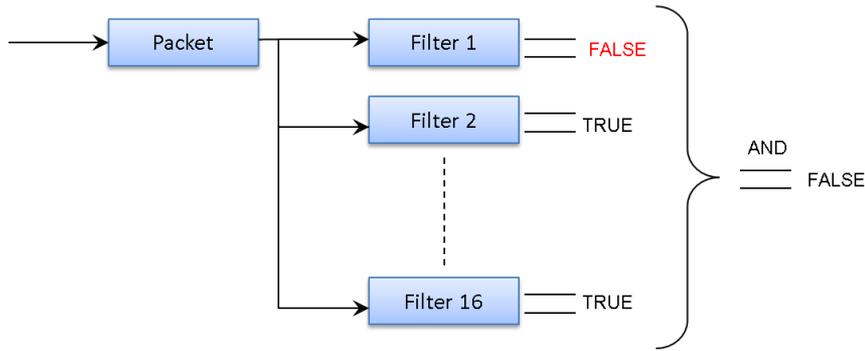
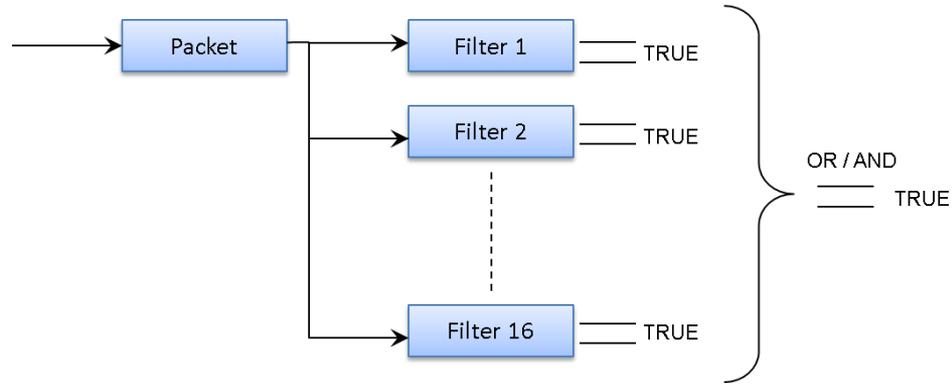
# Capture Traffic of Interest



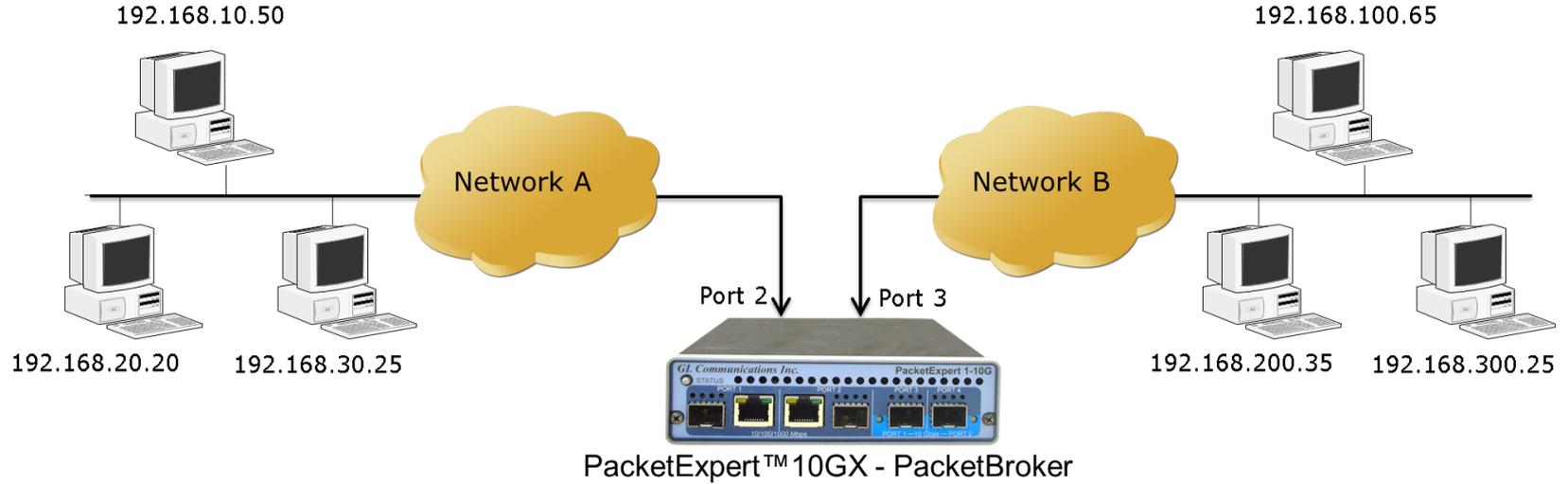
# Header



# 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

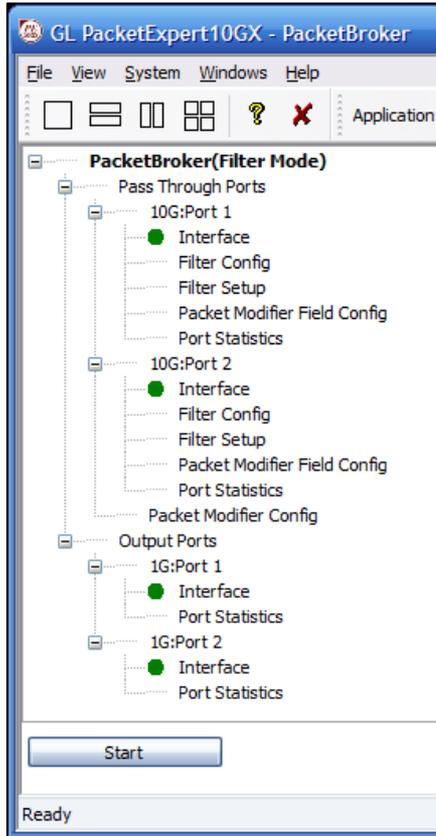
## Filter 3

RTP traffic between 192.168.10.50 and 192.168.200.35

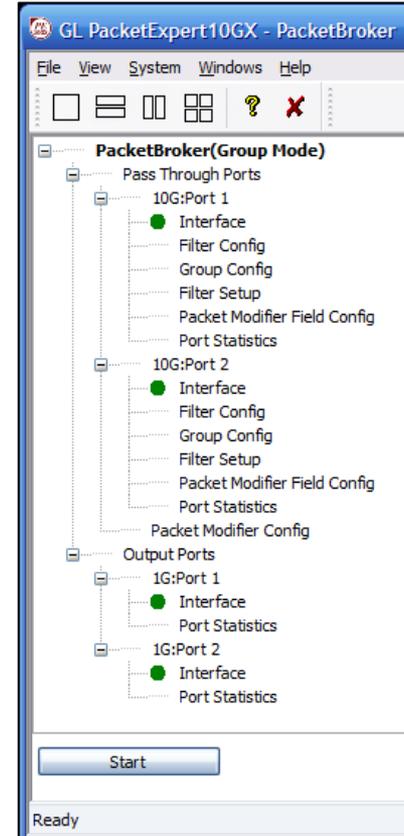
Ethernet Len/Type = 0x0800(IP) AND  
Source IP address = 192.168.10.50 AND  
Destination IP Address = 192.168.200.35 AND  
IP Protocol = 17 (UDP)  
Source UDP port = 1025 AND  
Destination UDP port == 1025 AND  
Payload first byte(43rd byte) == 0x80 (RTP valid version)

# Filter Configuration Menu

## Basic Mode Filtering



## Group Mode Filtering



# Filter Configuration

## Raw Mode Filtering

The screenshot displays the 'Filter Config' window with the following components:

- Port Selection:** 10G:Port 1
- Filter List:** A list of 16 filters (Filter 1 to Filter 16) is shown on the left. A red bracket groups all 16 filters, with the text '16 Filters' below it.
- Filter Selection:** A tree view shows various layers. The 'RAW Mode' layer is selected and highlighted with a red box.
- Filters Panel:** The 'Enable RAW Mode' checkbox is checked. The 'RAW Mode' section includes an 'Offset' field set to 0, with a red arrow pointing to it and the text 'Offset (0 - 15999)' above it.
- Raw Data/Mask Table:** A table with columns 'Bytes', 'Value', and 'Mask'. The 'Bytes' column ranges from 0-7 to 80-87. A red bracket on the right side of the table indicates that the first 120 bytes (from 0-7 to 80-87) are used for raw data/masking, with the text '120 Bytes Raw Data/Mask Bytes' next to it.
- Layer Summary:** A table at the bottom provides details for the selected layers: MAC, VLAN, MPLS, IPv4, and UDP.

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	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

# Filter Configuration (Contd.)

## Packet Mode Filtering

Filter Config

Port Selection 10G:Port 1

**Packet Layers**

**Header fields**

**16 Filters**

**Packet Layer Summary**

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

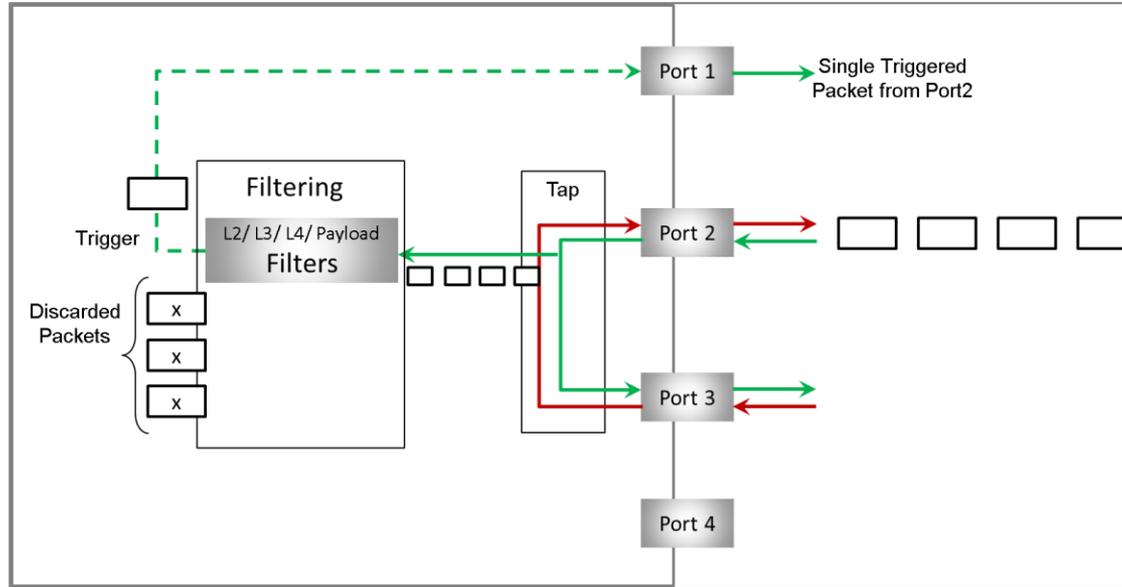
Port Selection 10G:Port 1 Reset Activate All Deactivate All Operation OR

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

The diagram shows the flow of traffic through the filter setup. It starts with 'In Ports' (10G:Port 1 and 10G:Port 2) leading to an 'Aggregator' (Enabled, Outport: 1G:Port 2), which then leads to 'Out Ports' (1G:Port 1 and 1G:Port 2). Each Out Port has a 'Packet Modifier' (Enabled) and an 'Output' (Enabled) option.

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

**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		

# Filter Trigger Mode (Group mode)

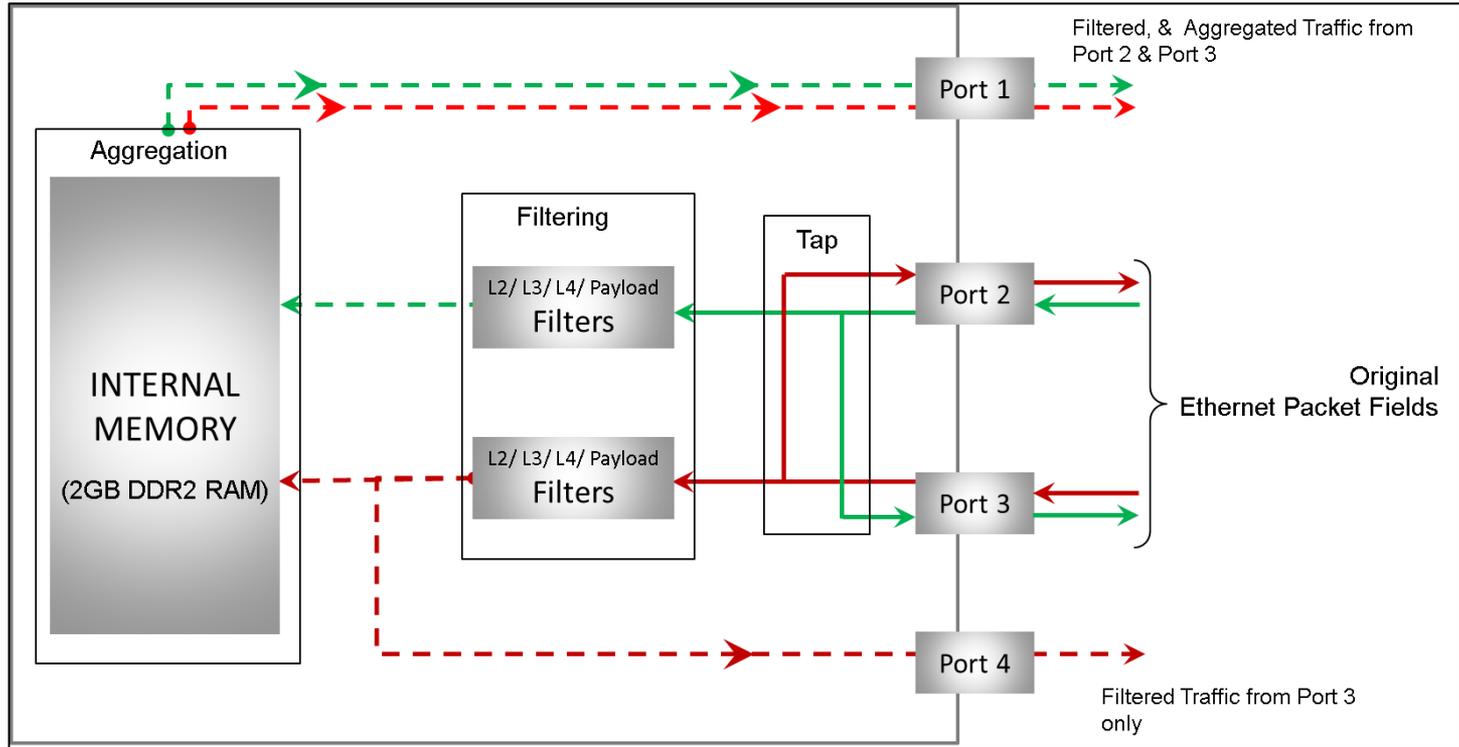
Filter Setup

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

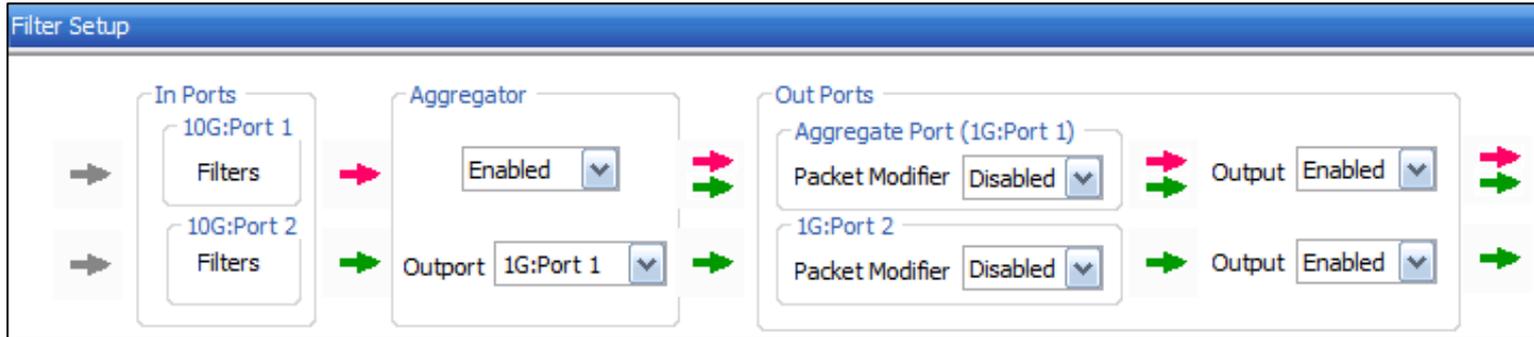
Group Summary  
**((!Filter7 && Filter2))!(Filter2 && Filter1 && Filter3 && Filter5) || (Filter1 && Filter4))**

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

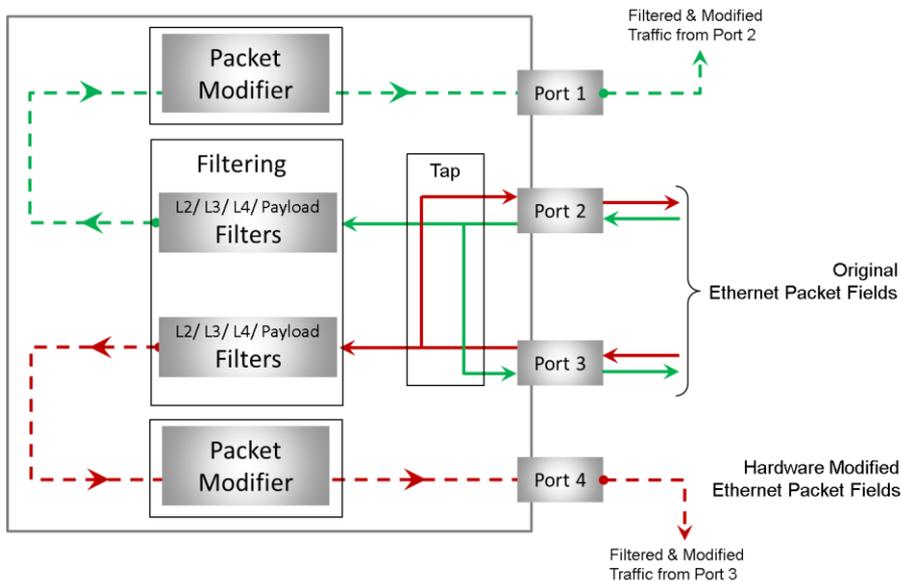


# Packet Aggregation User Interface



- 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

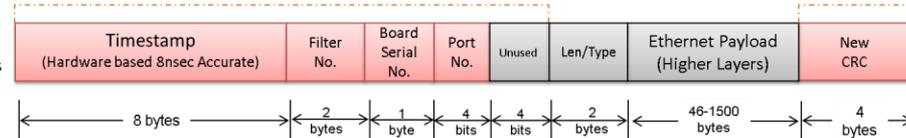
# Packet Modification



Original Ethernet Packet Fields

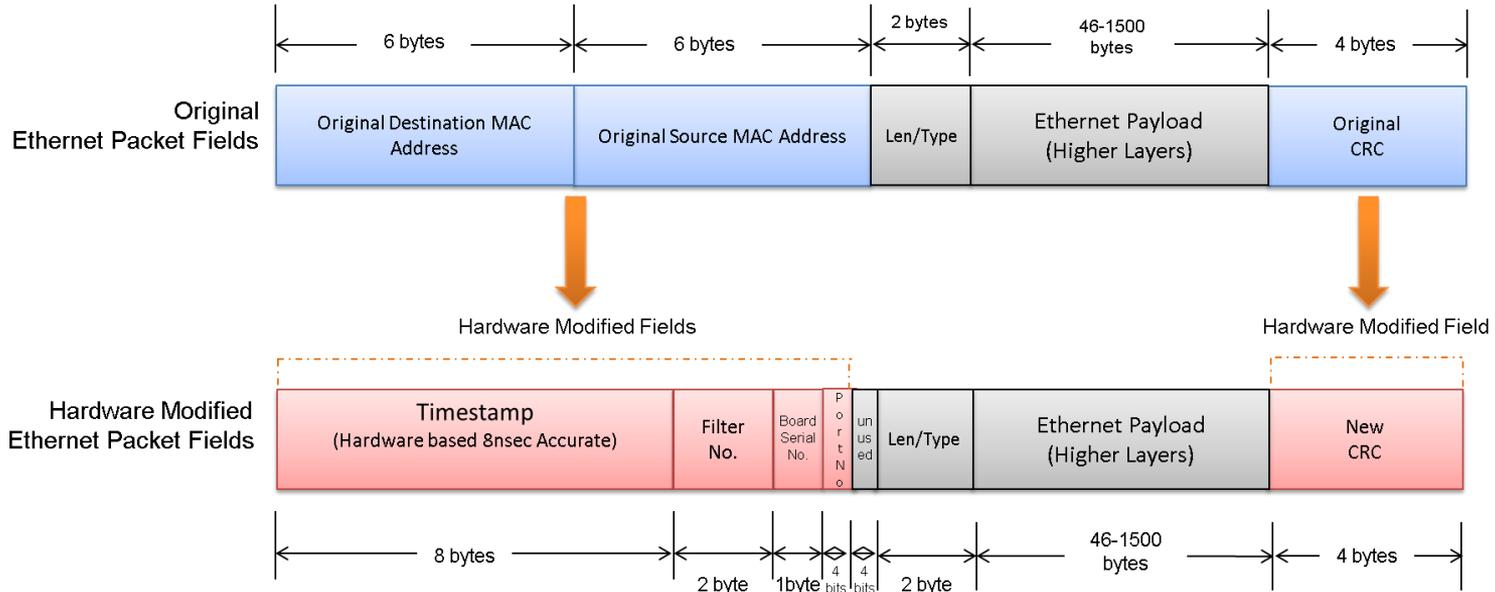


Hardware Modified Fields



- 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.)

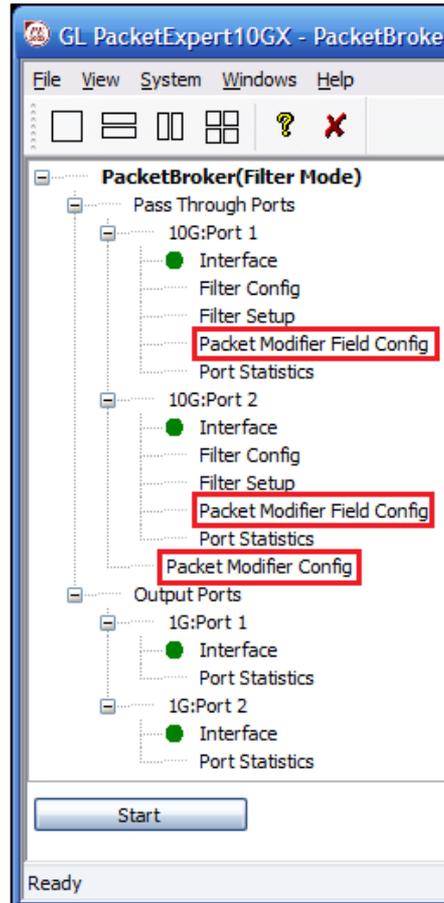
# Packet Modifier Enable/Disable

Filter Setup

The screenshot displays the 'Filter Setup' configuration window. It is organized into three main sections: 'In Ports', 'Aggregator', and 'Out Ports'.  
- **In Ports:** Contains 'Port 2' and 'Port 3', each with a 'Filters' dropdown menu.  
- **Aggregator:** Features a 'Enabled' dropdown menu and an 'Outport' dropdown menu set to '4'.  
- **Out Ports:** Contains 'Port 1' and 'Aggregate Port (P4)'. Each has a 'Packet Modifier' dropdown menu and an 'Output' dropdown menu set to 'Disabled'. A red box highlights the 'Packet Modifier' dropdowns for both 'Port 1' and 'Aggregate Port (P4)'.  
- **Bottom Controls:** Includes a 'Port Selection' dropdown set to 'Port 2', a 'Reset' button, and 'Activate All' and 'Deactivate All' buttons.

Section	Item	Packet Modifier	Output	Status
Out Ports	Port 1	Disabled	Disabled	✗
	Aggregate Port (P4)	Enabled	Disabled	✗

# Packet Modifier Field Config Menu



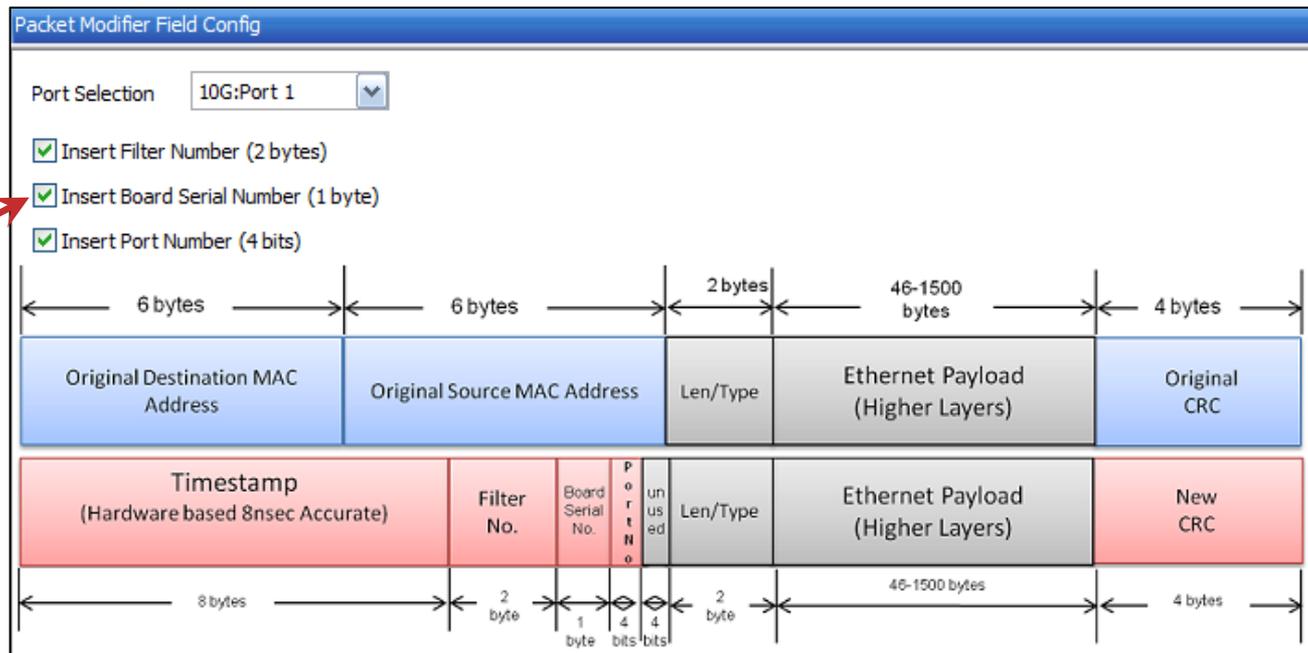
# Packet Modifier Field Configuration

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 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 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**