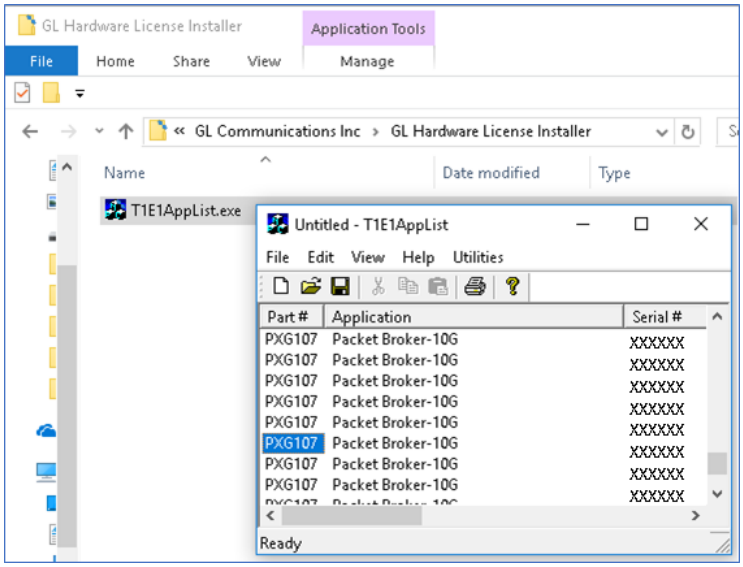
If this is your First-Time-Use of PacketExpert™ 10G unit, then we recommend you follow all the steps explained in PacketExpert-10G-Quick-Install-Guide before proceeding with the steps below.

Normal Instructions – Follow these precisely

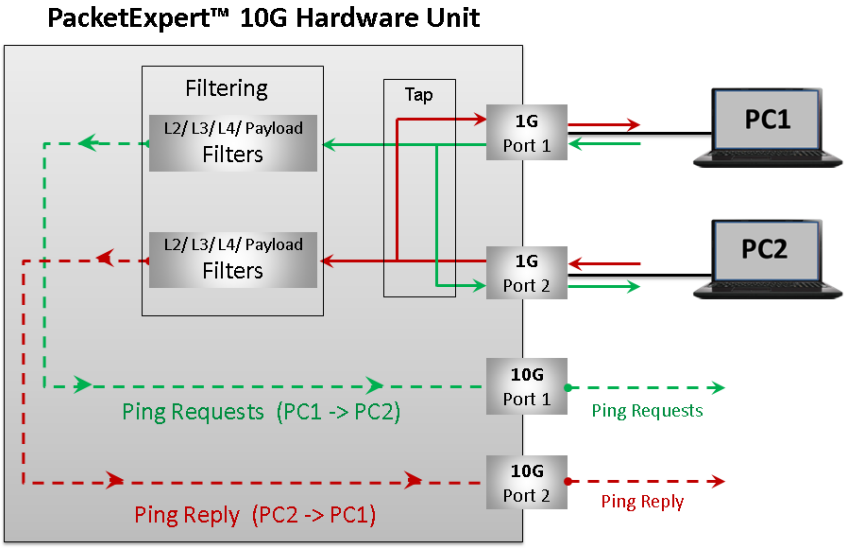
- '**PacketBroker**' is an optional application and requires purchased licenses to be installed.
- Plug-in the USB installation stick (pen drive) provided with the shipment package by GL Communications.
- Execute **GLHWLicenseInstaller.exe** from the USB Installation Stick to install the optional application licenses.
- Follow onscreen instructions, the license for the purchased optional application will be installed.
- Run **T1E1AppList.exe** available in the **C:\Program Files (x86)\GL Communications Inc\GL Hardware License Installer** (or C:\Program Files\GL Communications Inc\GL Hardware License Installer) directory and confirm that the purchased **PacketBroker** licenses **(PXG107)** is listed against the hardware purchased.



Note: When the application is started, if the following 'License Error' is prompted, then you may have not installed the Hardware licenses. You can do so as explained in section above at any time after installing the software.

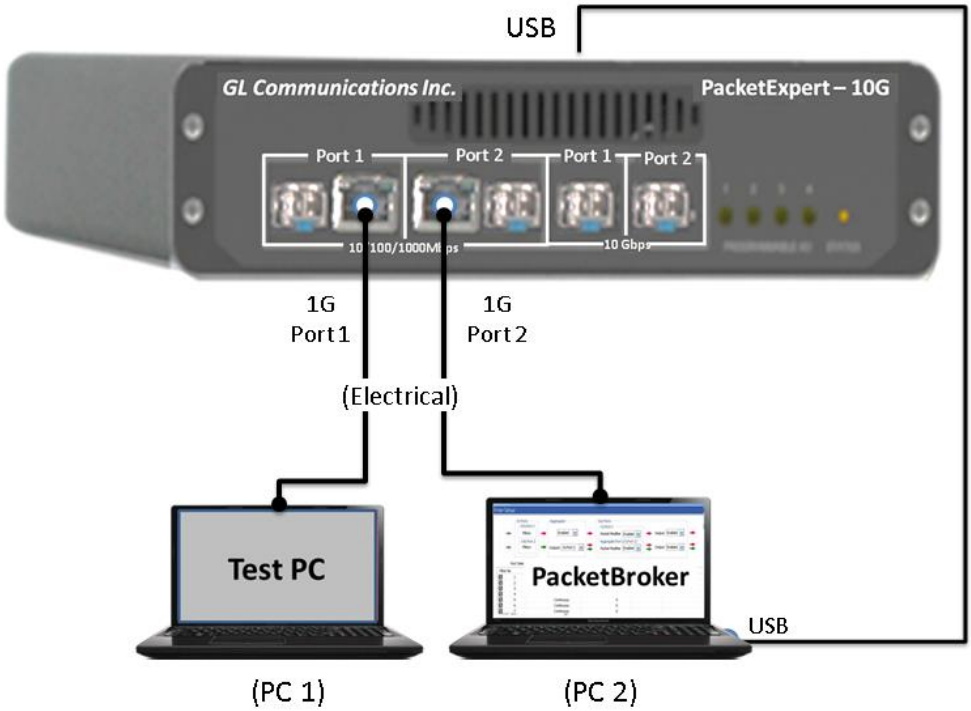
Quick Verification

For 'PacketBroker' functional verification, self-test can be performed using a single PacketExpert™ 10G unit. *The test setup requires 2 PCs/laptops. The 2 PCs/laptops are connected to the two* ***1G ports (or In Ports)*** *of the PacketExpert™ 10G hardware unit, using* ***Ethernet cables*** *(for Electrical Interface test). PC1 and PC2 act as traffic generators, generating Ping traffic between them. Since they are connected to the two 1G 'In Ports', the Ping traffic passes through the 1G ports. Using 'PacketBroker' functionality, we will filter this Ping traffic between 1G:Port1 and 1G:Port2, and direct traffic in each direction to a different 'Out Port' i.e. we will direct 1G:Port1 → 1G:Port2 traffic to Output 10G:Port1 and 1G:Port2 → 1G:Port1 traffic to Output 10G:Port2, as shown in the figure below.*



Here, PC1 is connected to 1G:Port1 of hardware unit, and PC2 is connected to 1G:Port2 of hardware unit. We will conduct a simple Ping test between PC1 and PC2 and verify the 'PacketBroker' functionality. Ping Requests flow from 1G:Port1 → 1G:Port2, and are filtered and sent out on 10G:Port1. Similarly, Ping reply packets that flow from 1G:Port2 → 1G:Port1, are filtered and are sent out on 10G:Port2, as shown in the above figure.

Note: *The following test requires PacketExpert™ 10G application (PXG100) and **'PacketBroker'** application (PXG107) licenses to be installed on PC2. After successful Software installation, plug in the PacketExpert™ 10G Hardware unit to USB port of PC2. Connect Ethernet interface of PC1 to the 1G:Port1 and Ethernet interface of PC2 to the 1G:Port2 of the hardware unit, as indicated in the figure:*



Note: *For Optical Interface test, use SFP Transceivers and LC optical cables between 1G:Port1/Port2 to PC1/PC2. In this case test also requires NIC cards with optical ports on the PC.*

Step 1: Note down the IP Addresses

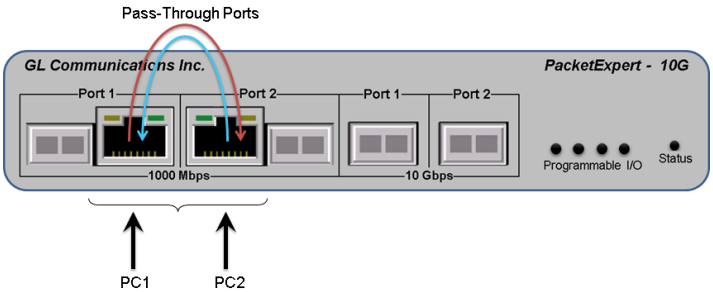
We need IP addresses of PC1 and PC2 to conduct Ping test. Note down the IP addresses of both the PCs. Ensure the IP address of PCs and PacketExpert™ unit are on the same subnet. In this example, the IP Addresses used are:

- PC1 – 192.168.1.127
- PC2 – 192.168.1.43

Step 2: Connect the cables

- Connect 1G: Port1 to PC1 using Ethernet cable as shown in the figure
- Similarly, connect 1G: Port2 to PC2 using Ethernet cable.

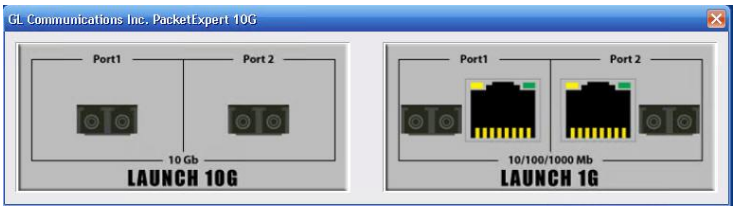
Note: For optical interface test, make sure SFP is properly locked and the optical cable is properly plugged-in.



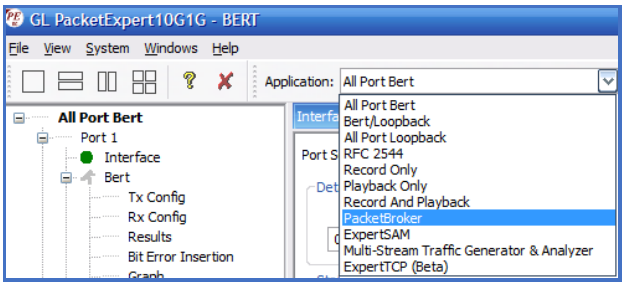
Step 3: Launch PacketExpert™ 10G Application

- Right click on the PacketExpert 10G shortcut icon  on the desktop and select "**Run as administrator**" to launch PacketExpert 10G application.

- Click on **Launch 1G** option, to invoke the application with 1G ports.
  Note: The application may take some time to get started due to hardware and software initializations.

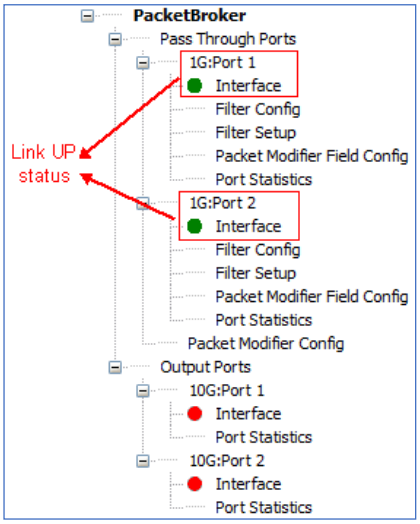


- By default, the PacketExpert is invoked displaying **All Port Bert** application.
- Load **PacketBroker** from the **Application** drop-down list as shown in the figure.



- Verify that the Link Status is **UP** on both the 1G ports, that is, the function tree should display 1G:Port1, and 1G:Port2, with green LEDs link status (refer to figure).

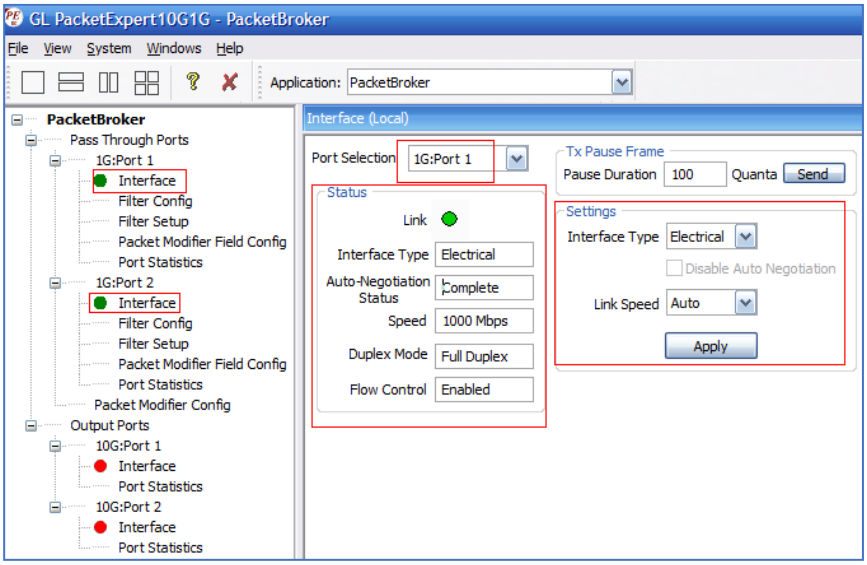
Note: If the LED shows red, then link is down. Refer to the next section on how to get the links up.



Step 4: Configure Interface parameters

For 1G Electrical or Optical connections,

- On the RHS side, in the **Interface** pane, select the ports from the **Port Selection** drop-down list and do the following for 1G: Port1:
  - Interface Type = **Electrical** (or) **Optical** (depending on the ports connected)
  - Link Speed = **Auto**
  - Click on the **Apply** button (this will set the Interface Type in the hardware)



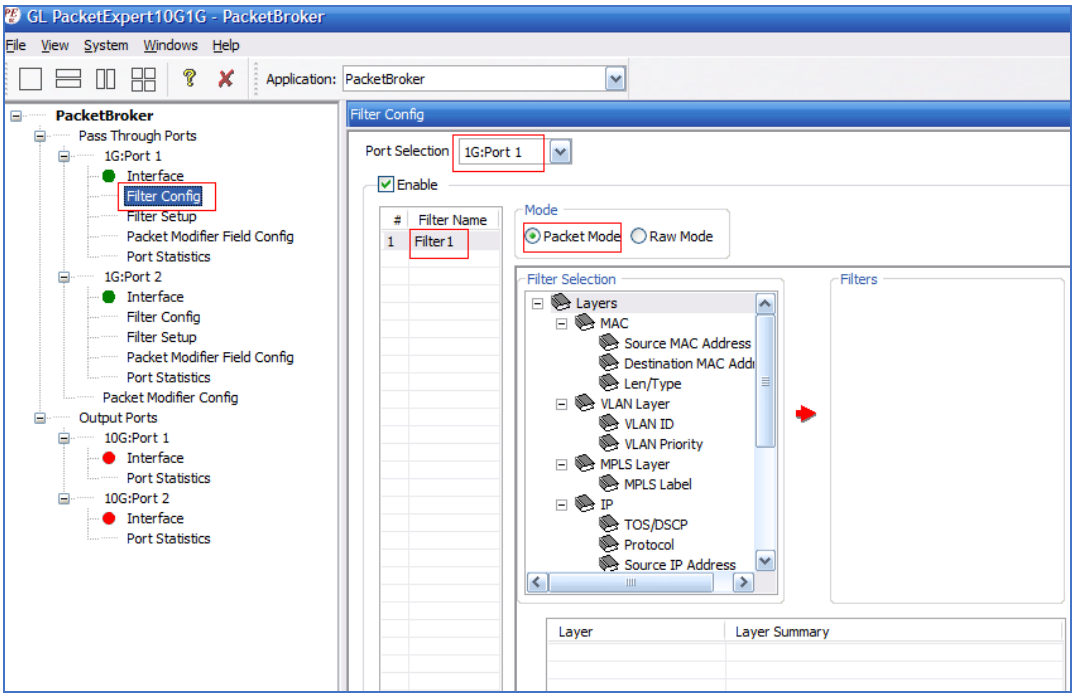
- Wait for some time as the port auto-negotiates with its link partner. Verify the following:

  Auto-Negotiation status = Complete, Speed = 1000 Mbps (if the connected NIC card is configured for 1000 Mbps. Else, it should show 100 Mbps or 10 Mbps depending on the NIC card's speed)

  Note: If the link LED still shows red, then link is down. Refer to PacketExpert 10G Quick Install Guide for **Troubleshooting** steps to get the links UP.

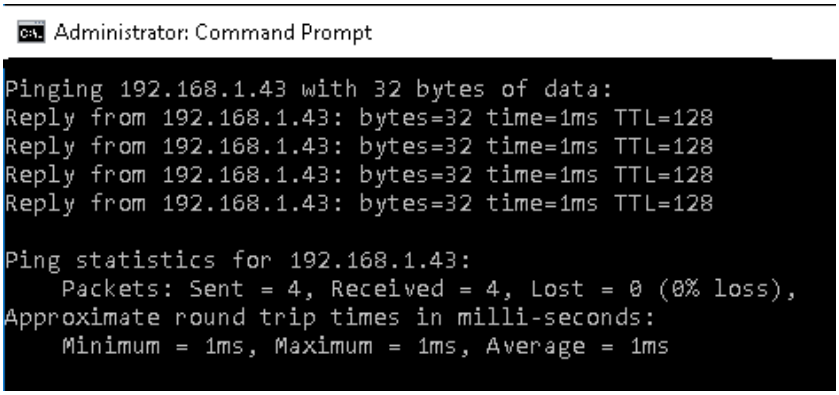
Step 5: Start 'PacketBroker' (without Filters)

- From function tree, double click on **Filter Config** under 1G:Port1 to see the filters. Initially Filters are not set, and the screen appears as shown below.
- Similarly, check for Port2, by selecting **1G:Port2** from the Port Selection drop down.
- Click **Start** to start the 'PacketBroker' application.



Step 6: Conduct Ping Test (without Filters)

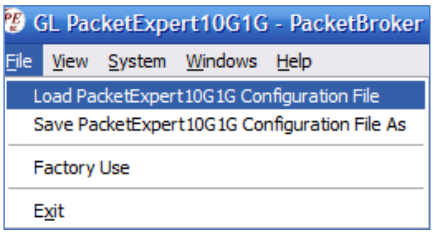
- On PC1 (Test PC), invoke the command prompt, and Ping PC2's (PacketBroker PC) IP Address, as shown in the figure below.
- Verify that Ping works fine. Observe that all 4 Ping trials have succeeded, with no frame loss.



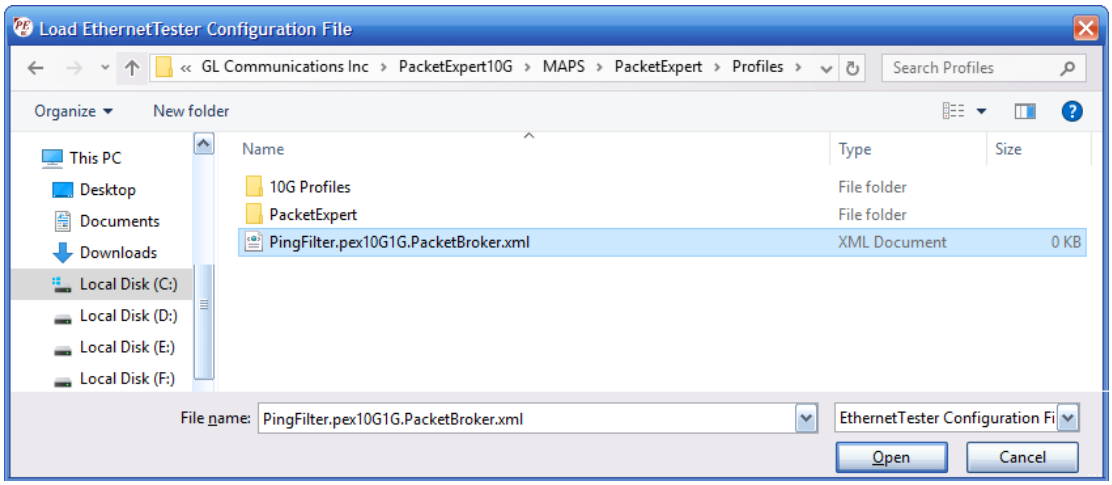
Step 7: Configure Filters

- Stop **'PacketBroker'** application by clicking on the **Stop** button.

- To conduct the Ping test along with filtering, follow the steps below:
  - From **File Menu** → select **Load PacketExpert10G1G Configuration File** option



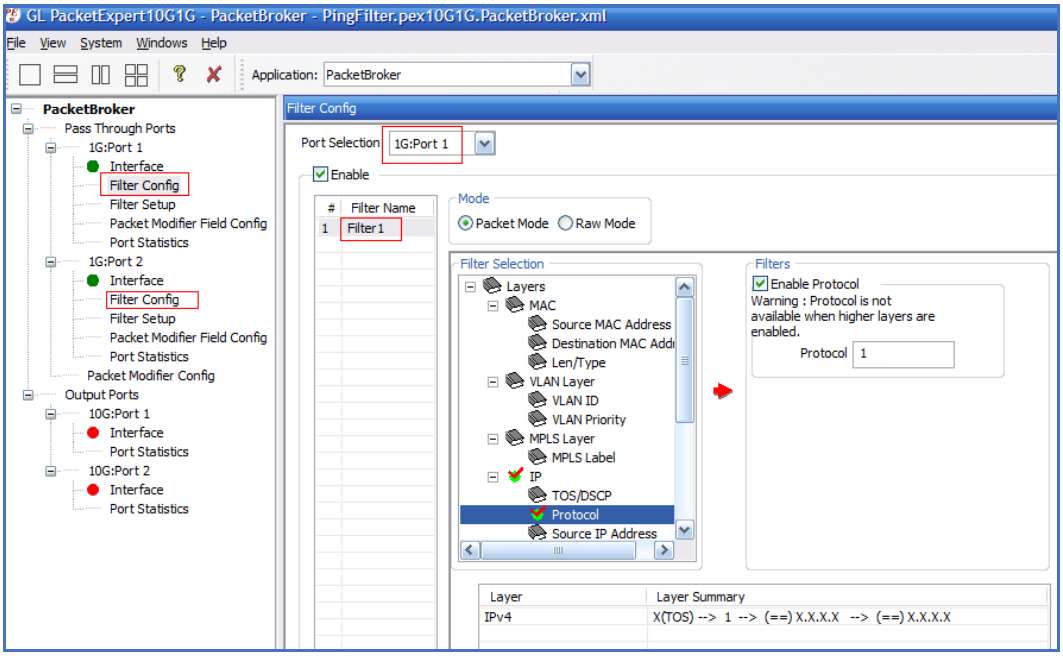
  - Navigate to the PacketExpert Installation folder, and within that folder go to MAPS\PacketExpert\Profiles folder,
    Eg: "C:\Program Files (x86)\GL Communications Inc\PacketExpert10G\MAPS\PacketExpert\Profiles" folder.
  - From \Profiles folder, select **"PingFilter.pex10G1G.PacketBroker"** file.



- In the function tree, under **1G: Port 1**, double click "**Filter Config**" to open in one of the RHS panes. The filters within this file have been setup to capture **ICMP Request** (Ping Request) packets flowing from PC1 to PC2.

  Filter is set to **Filter IP Protocol Type field=0x01(ICMP).**

- By default, **Protocol 1** is enabled to filter ICMP Packets for Port1 and Port 2

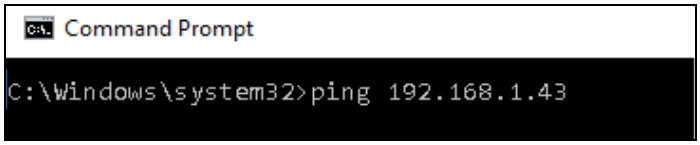


- Similarly, **1G: Port 2** is also configured to filter **ICMP** packets. This will capture **ICMP Reply** (Ping Reply) packets flowing from PC2 to PC1. This can be verified by opening the "Filter Config" dialog for 1G:Port2.

- On PC2, start 'PacketBroker' application by clicking on **Start** button.

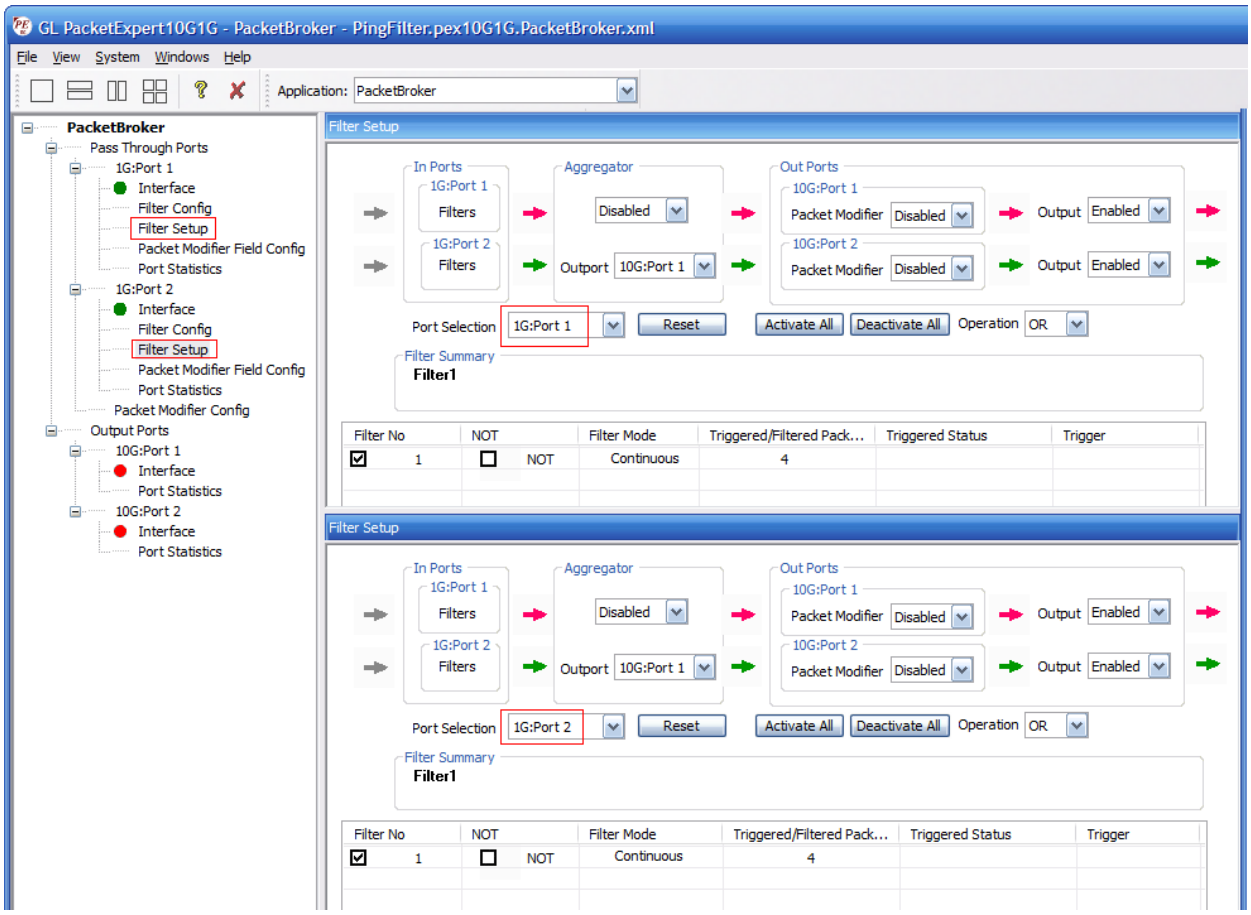
Step 8: Conduct Ping Test (with Filters) and Capture PC1 → PC2 traffic (Ping Requests)

- On PC1 (Test PC), invoke the command prompt, and Ping PC2's (PacketBroker PC) IP Address, as shown in the figure below.

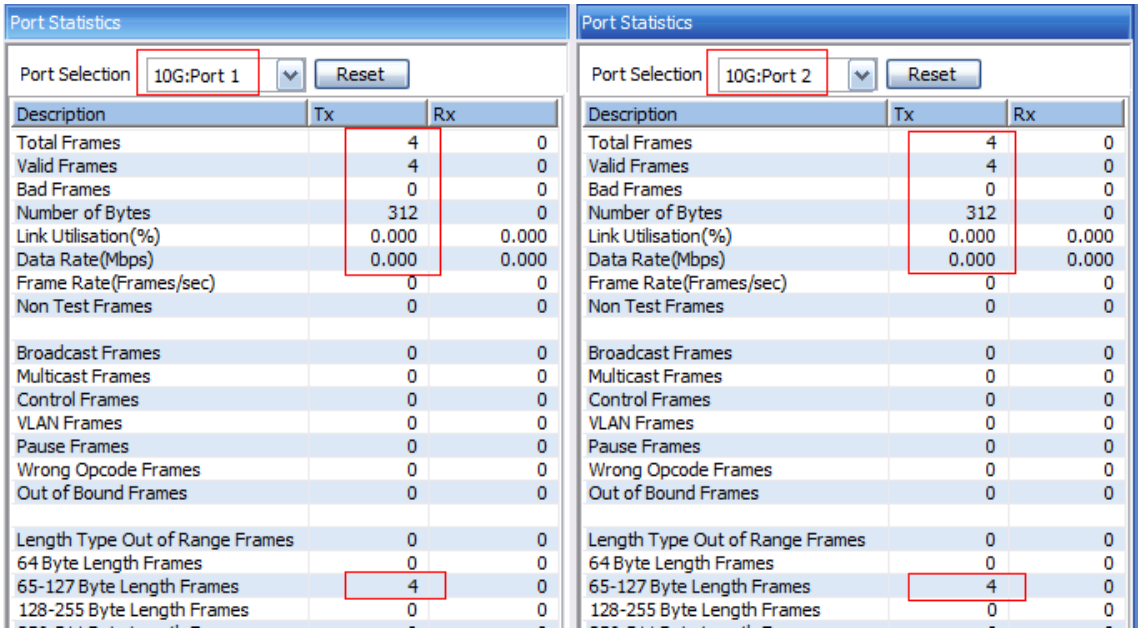


- In the function tree, double click on **"Filter Setup"** to open in one of the RHS panes as shown in the figure below:

- Verify that 4 packets (which are actually 4 Ping Request packets) are filtered on **1G: Port1** and 4 packets are filtered on 1**G: Port2** (which are actually 4 Ping reply packets).



- From **Function** tree → under **Output Ports** → click on **Port Statistics** to open in RHS pane
- Verify **10G: Port1** is forwarding request packets and **10G: Port2** is forwarding reply packets as shown in the Port Statistics figure below. Verify that:
  - 10G:Port1 Tx Statistics, Total Frames = 4, 65-127 Byte Length Frames = 4
  - 10G:Port2 Tx Statistics, Total Frames = 4, 65-127 Byte Length Frames = 4



Port Statistics — Port Selection 10G:Port 1 — Reset

Description	Tx	Rx
Total Frames	4	0
Valid Frames	4	0
Bad Frames	0	0
Number of Bytes	312	0
Link Utilisation(%)	0.000	0.000
Data Rate(Mbps)	0.000	0.000
Frame Rate(Frames/sec)	0	0
Non Test Frames	0	0
Broadcast Frames	0	0
Multicast Frames	0	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	4	0
128-255 Byte Length Frames	0	0

Port Statistics — Port Selection 10G:Port 2 — Reset

Description	Tx	Rx
Total Frames	4	0
Valid Frames	4	0
Bad Frames	0	0
Number of Bytes	312	0
Link Utilisation(%)	0.000	0.000
Data Rate(Mbps)	0.000	0.000
Frame Rate(Frames/sec)	0	0
Non Test Frames	0	0
Broadcast Frames	0	0
Multicast Frames	0	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	4	0
128-255 Byte Length Frames	0	0