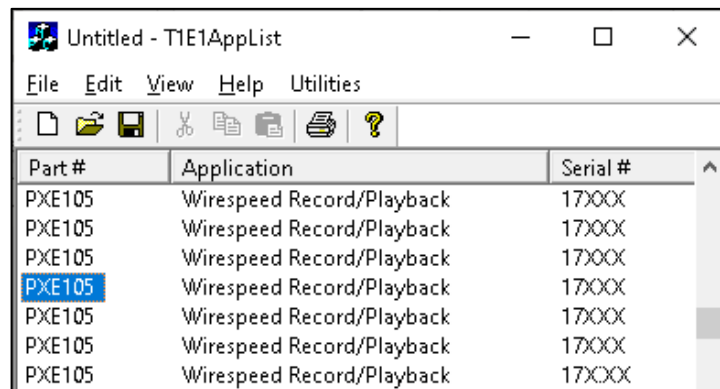If this is the first time use of PacketExpert™ 1G unit, then it is recommended to follow all the steps explained in PacketExpert-1G-Quick-Install-Guide before proceeding with the steps below.

Normal Instructions – Follow these precisely

**REFER TO PACKETEXPERT™ 1G QUICK INSTALL GUIDE FOR SOFTWARE AND HARDWARE INSTALLATION PROCEDURE.**

- '**Record Only**', '**Playback Only** 'are optional applications 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\GL Communications Inc\GL Hardware License Installer (or C:\Program Files\GL Communications Inc\GL Hardware License Installer) directory and confirm that the purchased **Wirespeed Record / Playback** licenses (**PXE105**) is listed against the hardware purchased.

> 📄 **Note**:
> - When the application is located, if the following '**License Error'** is prompted, then you may have not installed the **Hardware licenses**. You can do so as explained in the above section at any time after installing the software.
> - Ensure that warranty license (**GLSupportWarrantyLicenseInstaller.exe**) is installed and also confirm that **Wirespeed Record / Playback (PXE105)** is listed in **Warranty Application List**. Refer to *PacketExpert-1G-Quick-Install-Guide.*
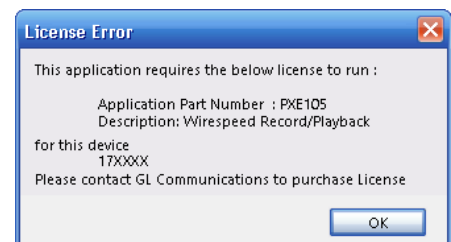

Quick Verification

The following verification is performed in 3 steps: first, we will verify 'Record Only', by capturing Ping traffic to a file. Secondly, we will use the same captured file to verify 'Playback Only', by playing back the same file and capturing using Wireshark.

*For '**Record Only', 'Playback Only'** functional verification, self-test can be performed using a single PacketExpert™ 1G unit. The test setup requires 2 PCs/laptops which are connected through **1G ports - Port 2** and **Port 3** of the PacketExpert™ 1G hardware unit using **Ethernet cables** (for Electrical Interface test). Here, PC1 is connected to Port2 and PC2 is connected to Port3 of the hardware unit, as shown below. First, we will conduct a simple Ping test between PC1 and PC2 and verify the 'Record Only' functionality.*

*The following test requires PacketExpert 1G application (PXE100) and **'Record Playback'** application (PXE105) licenses to be installed on PC1. It also requires Wireshark to be installed on both PC1 and PC2. If you do not have Wireshark, please download from here – https://www.wireshark.org/download.html. After successful Software installation, plug in the PacketExpert 1G Hardware unit to USB port of PC1. Connect Port 2 to Ethernet interface of PC1 and Port3 to Ethernet interface of PC2 as indicated in the figure below:*
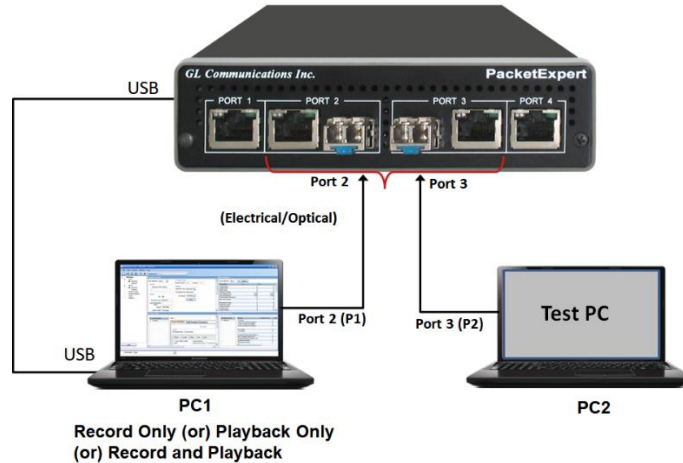
Note: *For Optical Interface test, use SFP Transceivers, LC optical cables and media converters. In this case test also requires NIC cards with optical ports on the PC.*

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 – 192.168.1.60
> ➤ PC2 – 192.168.1.65

Note: Make sure that the PC-1 and PC-2 IP address are in the same subnet series.

Step 2: Connect the cables

Perform Test on Port 2 and Port 3 (Electrical or Optical Interface)

- For Electrical Interface type, connect Port 2 to PC1 using Ethernet cable as shown in the figure.
- Similarly, connect Port 3 to PC2 using Ethernet cable
- For Optical Interface type, plug-in SFP Transceivers to the optical ports and connect LC optical cable between Port 2 and PC1, (refer to figure). Similarly, connect Port 3 and PC2.

Note: Make sure SFP is properly locked, and the optical cable is properly plugged-in.
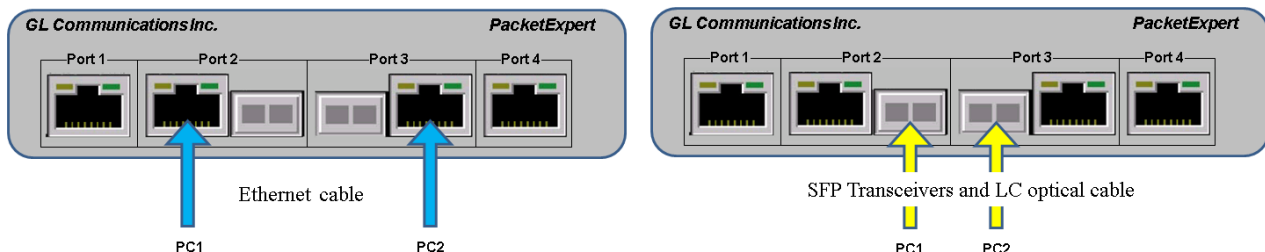
Step 3: Launch PacketExpert 1G Application

- In PC1, right-click on the PacketExpert 1G shortcut icon

  on the desktop and select "**Run as administrator**" to launch PacketExpert 1G application.
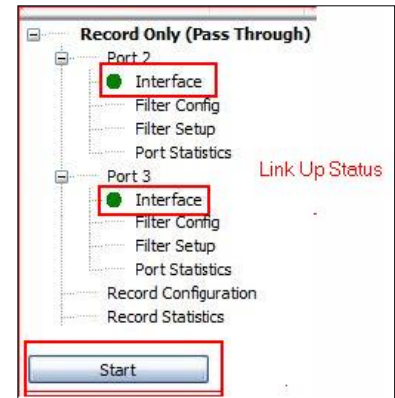
  Note: The application may take some time to get started due to hardware and software initializations.

- By default, the PacketExpert is invoked displaying **All Port Bert** application. Load **Record Only** from the **Applications** drop-down list as shown in the figure.
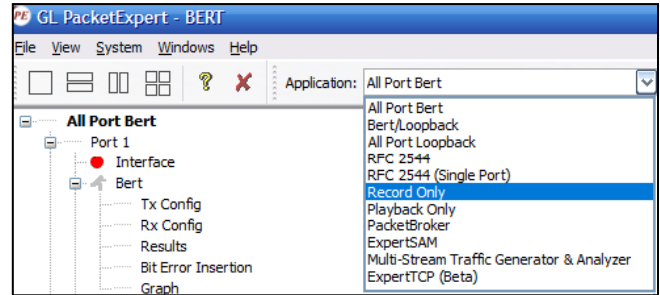
- Verify that the Link Status is **UP** on both ports, that is, the function tree should display Port 2 and Port 3 with green LEDs link status (refer to figure).

  Note: If the LED shows red, then link is down. Refer to PacketExpert-1G-Quick-Install-Guide for **Troubleshooting** steps to get the links **UP**.
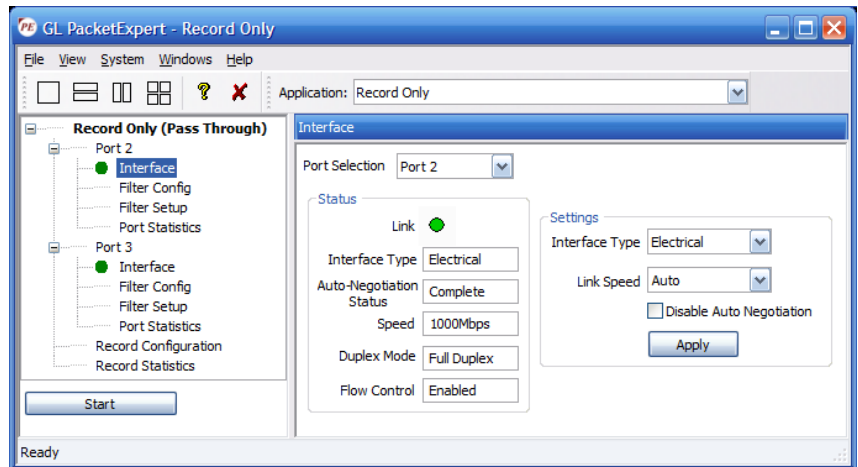
Step 4: Configure Interface parameters

For 1G Electrical or Optical connections,

On the function tree, double click on Interface, from the **Interface** window select the ports from the **Port Selection** drop-down list and do the following for port 2 and port3:

- 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)

- Similarly, repeat the above procedure for **Port 3**

Step 5: Start 'Record Only' (without Filters)

- From function tree, double click on **Filter config** under Port 3 to see the filters. Initially <u>Filters are not set</u>, and the screen appears as shown below.
- Similarly check it for Port 2, by selecting Port 2 from the **Port Selection** drop down.
- Click **Start** to start the 'Record Only' application.
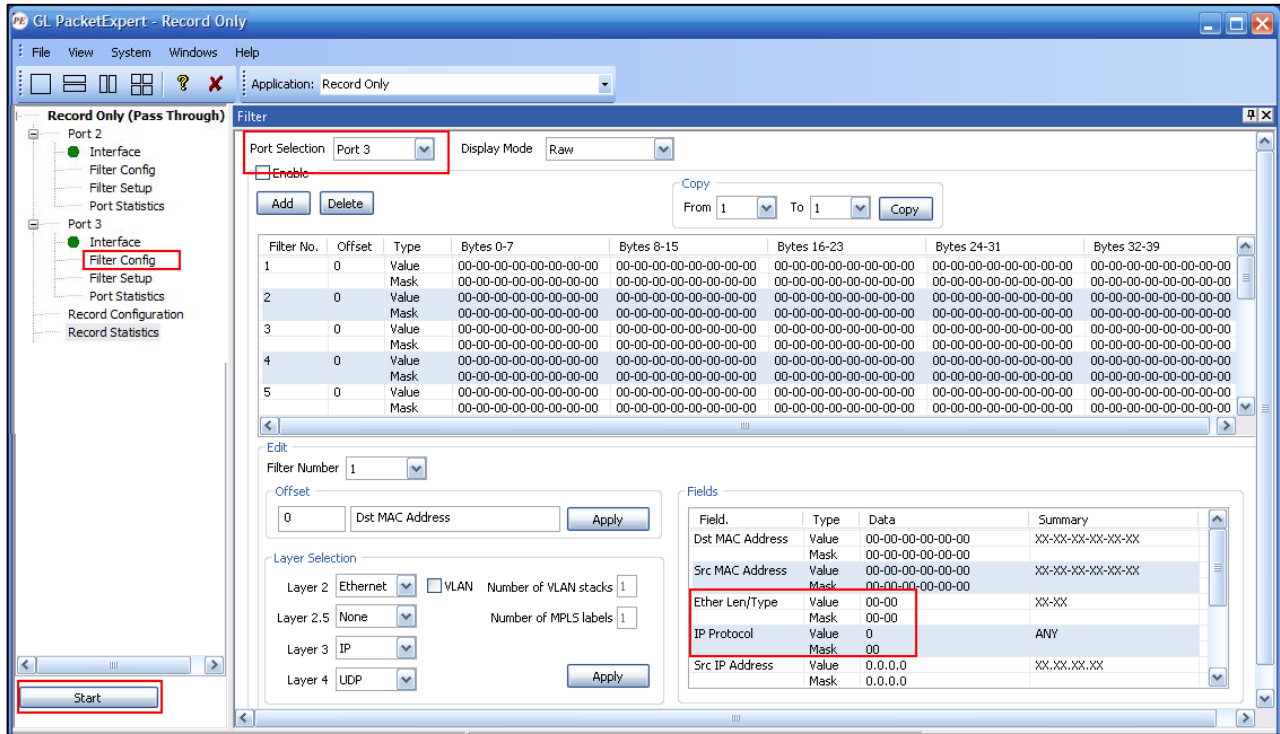
Step 6: Conduct Ping Test (without Filters)

- On PC1, invoke the command prompt, and Ping PC2's 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.
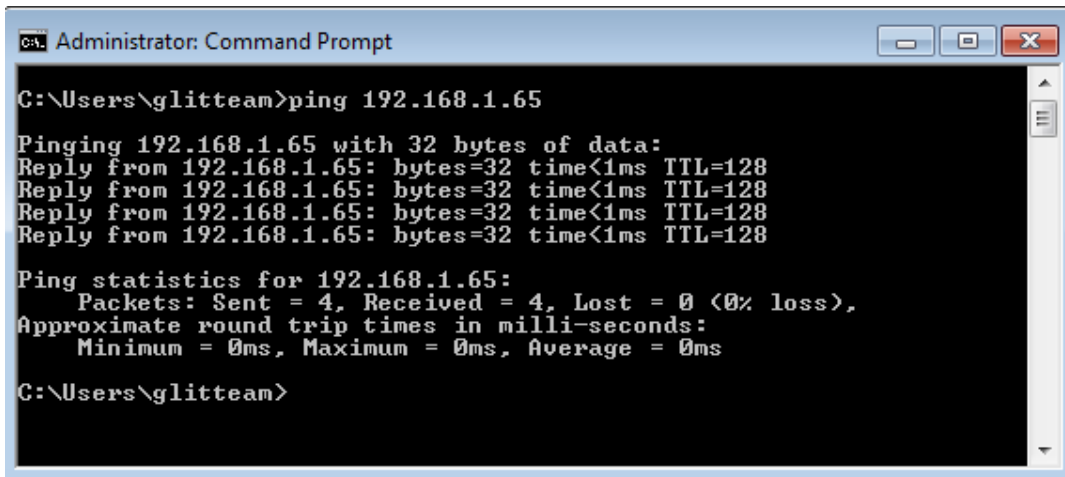
Step 7: Configure Filters

- Stop **'Record Only'** application by clicking on the **Stop** button.

- Record Only Filter and Capture features allows you to conduct the Ping test (both directions) with filtering. Follow the steps below:

  - From **File** → select **Load PacketExpert Configuration File** option.

 - Navigate to the PacketExpert Installation folder, and within that folder go to MAPS\PacketExpert\Profiles folder,
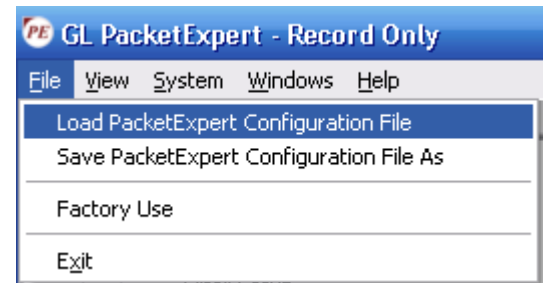
    Eg: "C:\Program Files\GL Communications Inc\PacketExpert\MAPS\PacketExpert\Profiles" folder.

  - From \Profiles folder, select **"RecordPingPackets.pex.RecordOnly.xml"** file.
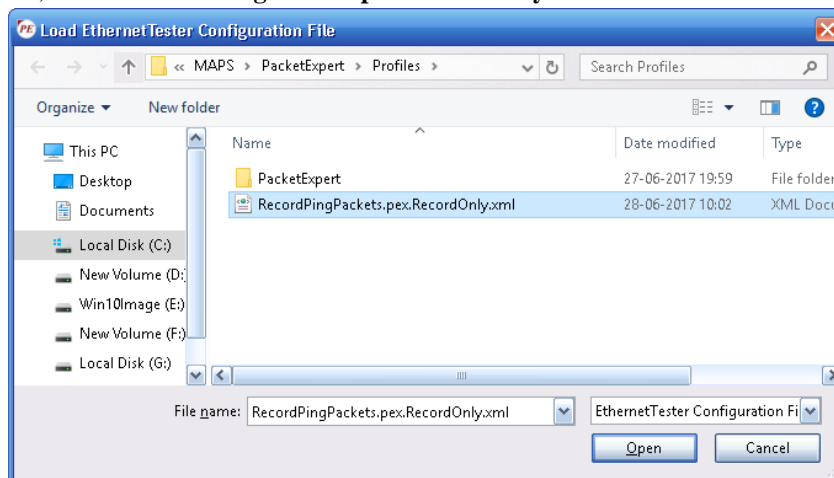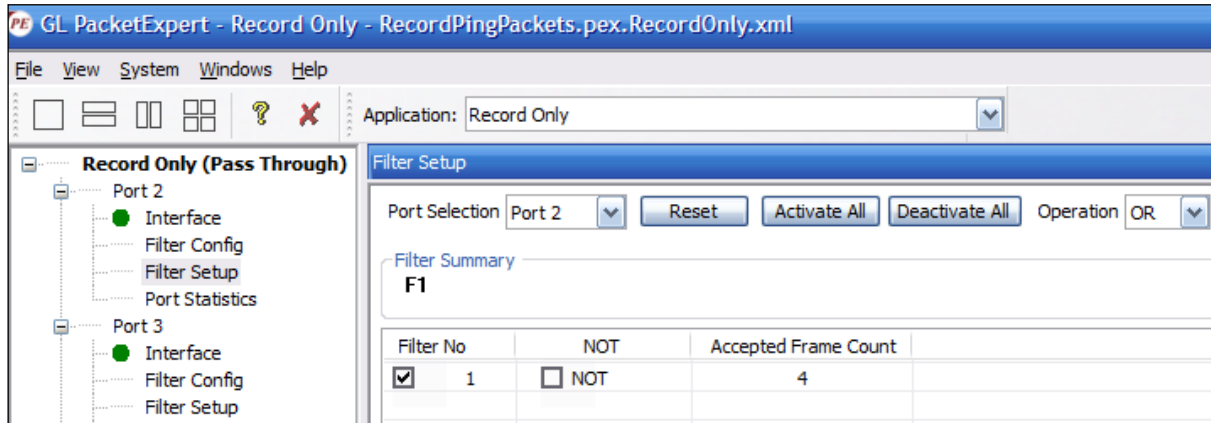
- In the function tree, under Port2, double click on "**Filter Config"** to open in one of the RHS panes. The filters within this file have been setup to filter on **ICMP Request** (Ping Request) packets flowing from PC1 to PC2:

  Filter ICMP packets (EthernetLen/Type=0x08-00) and **Filter IP Protocol Type** field=0x01(ICMP).
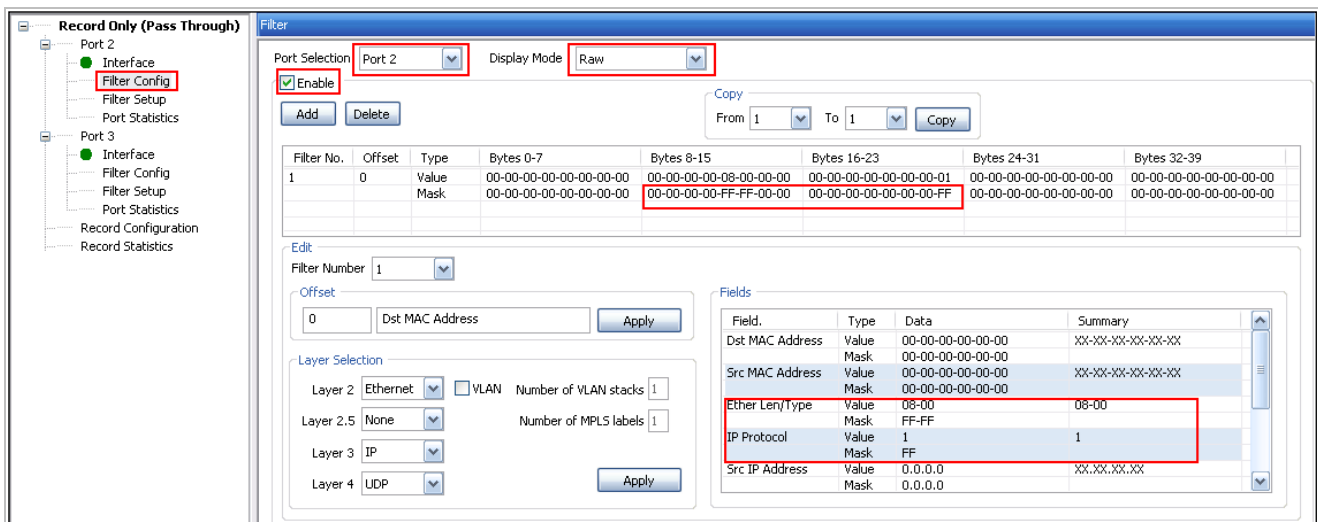
- Similarly, Port3 is also configured to filter ICMP packets. This will capture **ICMP Reply** (Ping Reply) packets flowing from PC2 to PC1. This can be verified opening the "Filter Config" dialog for Port3.

- Double click on the "Filter Setup" and verify that filter is enabled as shown in the figure for both Port 2 & Port 3.


- In the function tree, double click **"Record Configuration"** to open the dialog in one of the RHS panes:

- Verify that the number of frames set to be captured is set to 8 (on both Port2 and Port3) - 4 Ping Request and 4 Ping Reply.

- Select file type as "**NGPCAP**". Click on browse and save capture file name as "**PingCapture.ntar**" in the PacketExpert installation folder path. Refer to the below screenshots.
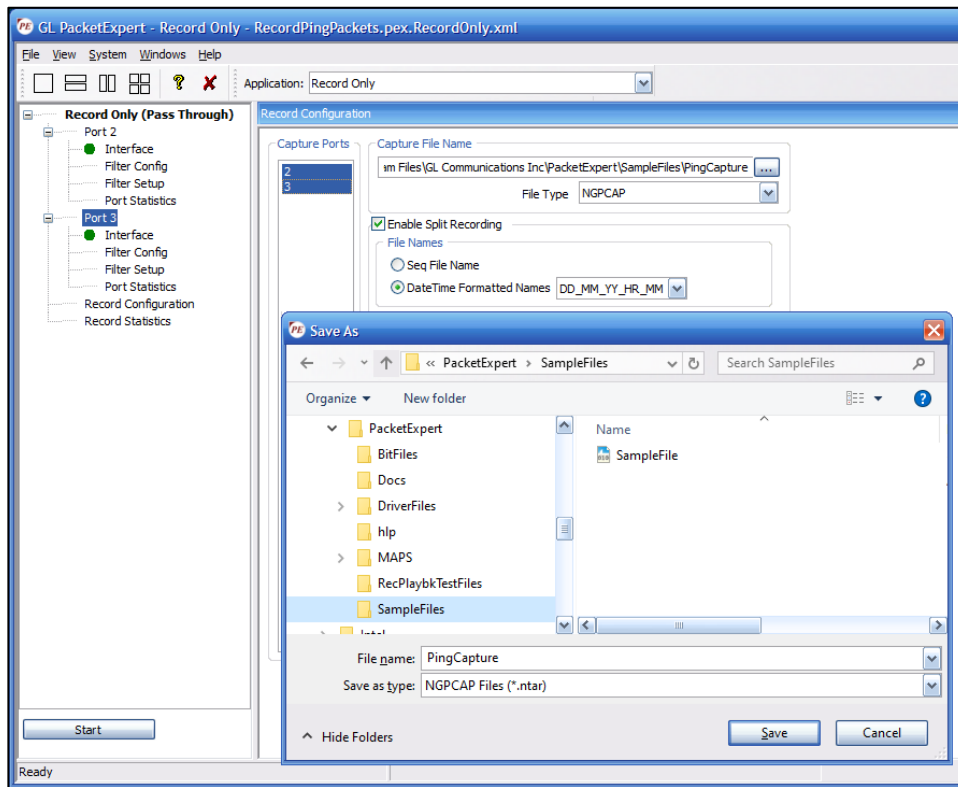
- Start 'Record Only' application by clicking on **Start** button.

Step 8: Conduct Ping Test (with Filters)

- On PC1, invoke the command prompt, and Ping PC2's IP Address, as shown in the figure below.
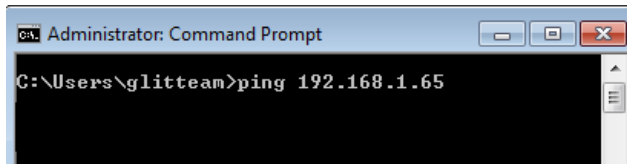
- In the 'Record Only' application, from the function tree, click on **"Record Statistics"** and the Statistics dialog opens in one of the RHS panes as shown in the figure below:

- Verify that the **"Transferred Frames"** count is **4** for Port2, **4** for Port3 Aggregated to **8.**

- Record Only function will automatically stop after capturing 8 frames.

- Go to the PacketExpert installation directory and find the "PingCapture_DD_MM_YY_HR_MM.ntar" captured file created in the folder.

- Open the "PingCapture_DD_MM_YY_HR_MM.ntar" file in Wireshark, which will be displayed as shown in the figure below.

- Verify that the file has 8 frames, 4 ICMP Request and 4 ICMP Reply.

- This concludes **'Record Only'** verification. Now, we will proceed to **'Playback Only'** verification.

Step 9: Launch 'Playback Only' Application

- Load **Playback Only** from the **Applications** drop-down list as shown in the figure.
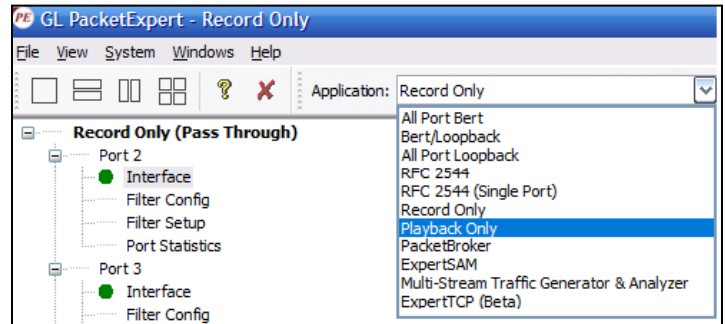
- Verify that the Link Status is **UP** on both ports, that is, the function tree should display Port 2 and Port 3 with green LEDs link status (refer to figure).

    Note: If the LED shows red, then link is down. Refer to PacketExpert 1G Quick Install Guide for Troubleshooting steps to get the links UP.
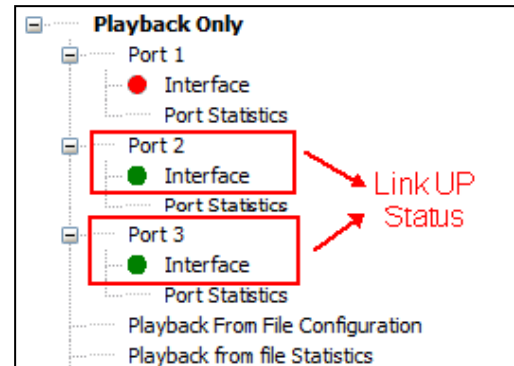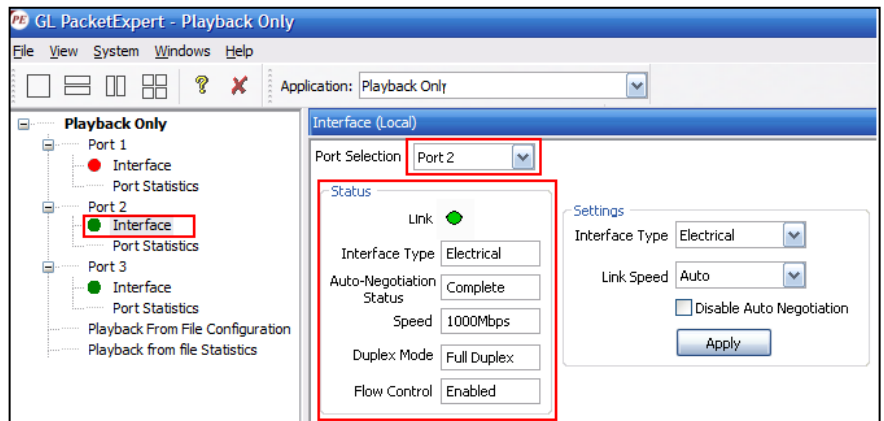

Step 10: Configure Interface parameters

For 1G Electrical or Optical connections,

On the function tree, double click on Interface, from the **Interface** window select the ports from the **Port Selection** drop-down list and do the following for port 2 and port3:

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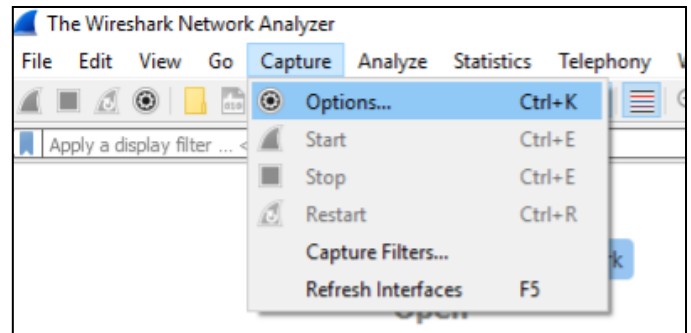
    Auto-Negotiation status = Complete, Speed = 1000 Mbps (if the connected NIC card is configured for 1000 Mbps. Else, it should show 100 Mbps or 10 Mbps depending on the NIC card's speed)

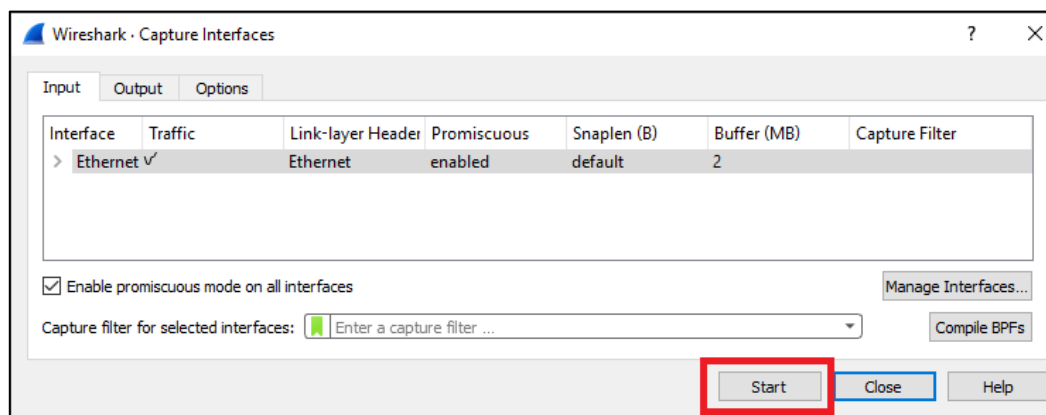- Similarly, repeat the above procedure for **Port 3**

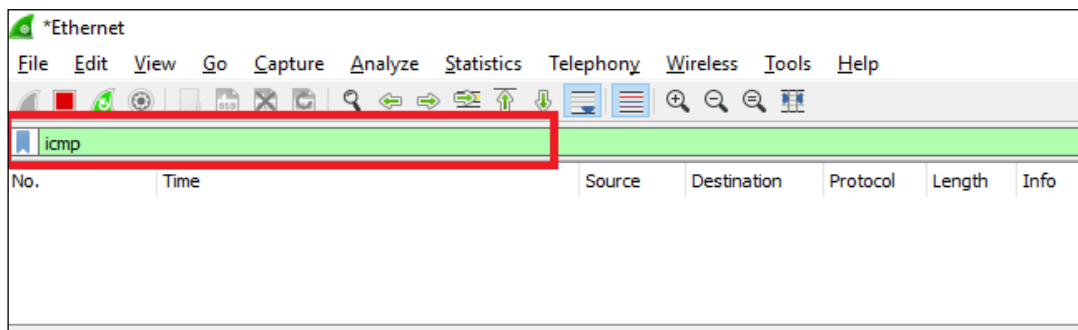## Step 11: Start Wireshark capture on PC1 and PC2

- On PC1 & PC2, open **Wireshark**, from main menu, select **Capture → Options**

- Select the Interface connected to Port2 and click **Start**

- Enter **"icmp"** in the Filter box and press **Enter** – this will make Wireshark to filter only ICMP (Ping) packets.


- Repeat the above steps on PC2 also, so that PC2 also captures ICMP packets only.

## Step 12: Start 'Playback Only' (with the previously captured file)

- On PC1, from PacketExpert **File** menu → select **Load Record Only Configuration File** option.

- Navigate to the PacketExpert Installation folder, and within that folder go to **MAPS\PacketExpert\Profiles** folder,

  Eg: "C:\Program Files\GL Communications Inc\PacketExpert\MAPS\PacketExpert\Profiles" folder.
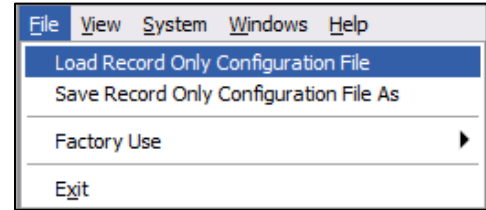
- From \Profiles folder, select **"PlaybackPingCapture.pex.PlaybackOnly.xml"** file

- In the function tree, double click on "**Playback From File Configuration**" to open in one of the RHS panes:

- In the **Playback File Name** path, browse to PacketExpert installation folder change the file extension to '**.ntar**' and select **"PingCapture_DD_MM_YY_HH-MM.ntar"**' (this file is same as the previously captured file)

- Verify that Playback Ports is **"As per File"** so that traffic is sent out on both Port2 and Port3, just like how it was captured.

- Verify that Playback Size is "**EOF**" (or "End of File") so that all 8 packets in the file are transmitted just once.
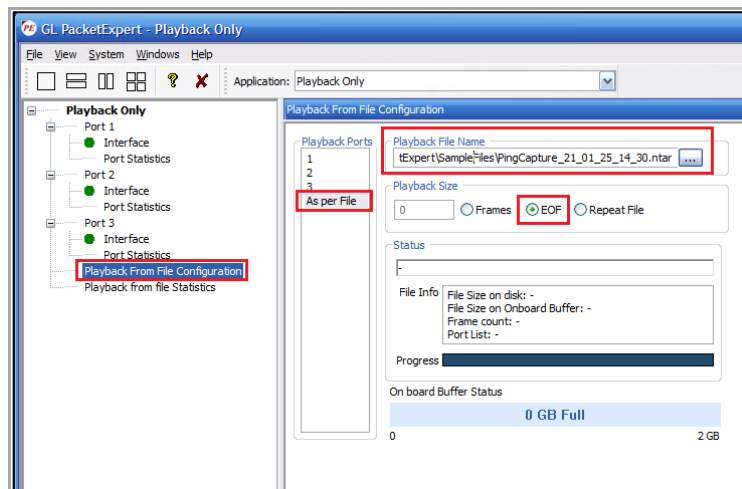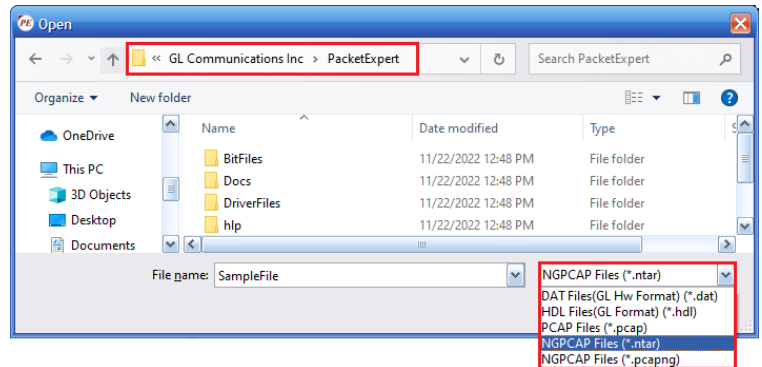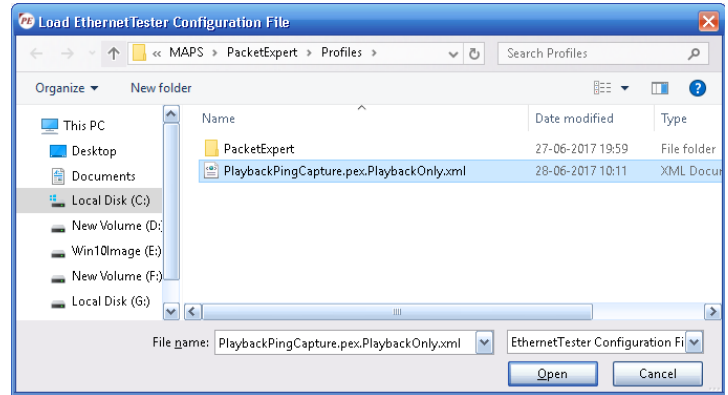
- Click **Start** to start Playback. Wait till playback is over. After playback is done, verify that the **"Playback from File Configuration"** screen looks as shown in the screenshot:
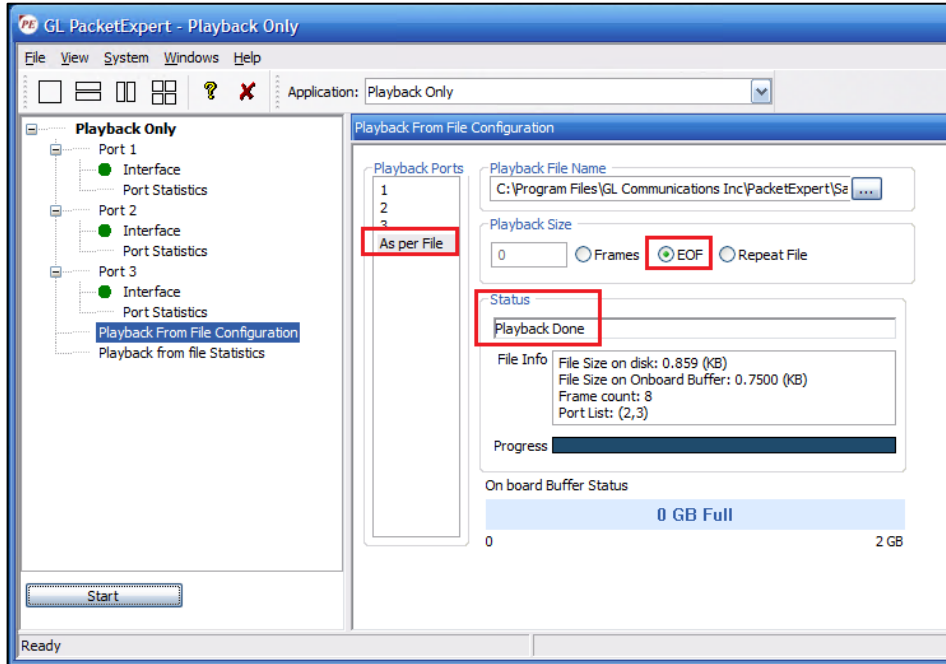
- In the LHS tree, double click **"Playback from File Statistics"** to open the Statistics window in one of the RHS panes.
- Verify that each Port – Port2 and Port3 have transmitted 4 frames each, totalling to 8 frames aggregate.
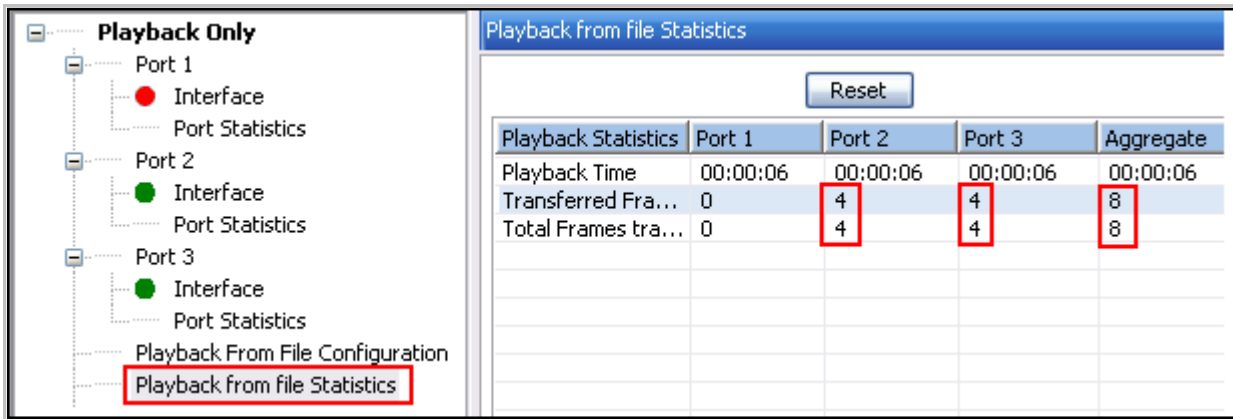
Step 13: Verify Wireshark capture files

- On PC1, stop capture, and verify that 4 Ping requests are captured as shown below:

No.	Time	Source	Destination	Protocol	Length	Info
6	1.917	192.168.1.60	192.168.1.65	ICMP	74	Echo (ping) request id=0x0001, seq=33/8448, ttl=128 (no response found!)
8	0.917	192.168.1.60	192.168.1.65	ICMP	74	Echo (ping) request id=0x0001, seq=34/8704, ttl=128 (no response found!)
11	0.605	192.168.1.60	192.168.1.65	ICMP	74	Echo (ping) request id=0x0001, seq=35/8960, ttl=128 (no response found!)
16	0.091	192.168.1.60	192.168.1.65	ICMP	74	Echo (ping) request id=0x0001, seq=36/9216, ttl=128 (no response found!)

- Similarly, on PC2, stop capture and verify that 4 Ping reply messages are captured as shown below:

No.	Time	Source	Destination	Protocol	Length	Info
16	12.850923	192.168.1.65	192.168.1.60	ICMP	74	Echo (ping) reply id=0x0001, seq=33/8448, ttl=128
22	13.863542	192.168.1.65	192.168.1.60	ICMP	74	Echo (ping) reply id=0x0001, seq=34/8704, ttl=128
26	14.877623	192.168.1.65	192.168.1.60	ICMP	74	Echo (ping) reply id=0x0001, seq=35/8960, ttl=128
29	15.891461	192.168.1.65	192.168.1.60	ICMP	74	Echo (ping) reply id=0x0001, seq=36/9216, ttl=128

This concludes 'Playback Only verification'.

For technical issues contact GL Communications Inc at info@gl.com.