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

PacketExpert™ SA PXE112 comprises of 3 devices, PacketExpert™ SA PXE124 comprises of 6 devices, and PacketExpert™ SA PXE104 comprises of 1 device. Each device comprises of 4 x1 Gbps ports. For PacketExpert™ functional verification, basic "All Port BERT" test can be performed on all devices simultaneously.

"All Port BERT" *test scenario can be demonstrated by directly connecting* ***Port 1 to 4*** *and* ***Port 2 to 3*** *on each Device through* ***Ethernet cable (for Electrical Interface test)*** *OR connecting* ***Port2 to 3*** *through* ***SFP and Optical cable (for Optical interface test).***

Step 1: Connect the cables

Perform Test on Electrical Interface

On each Device, cross-connect Port 2 to 3 and Port 1 to 4 using Ethernet cable as shown in the figure below.

PacketExpert™ SA PXE104 (Electrical)

PacketExpert™ SA PXE112 (Electrical)

PacketExpert™ SA PXE124 (Electrical)

Perform Test on Optical Interface

Note: Optical Interface Test is possible only between Ports 2 and 3 on each device.

- For Optical Interface Type, plug-in SFP Transceivers to the optical ports and connect LC optical cable to ports 2 & 3 on each device, (refer to figure).
- **Note:** Make sure SFP is properly locked and the optical cable is properly plugged-in securely.

PacketExpert™ SA PXE112 (Optical)

Step 2: Launch PacketExpert Application

- Right click on the PacketExpert shortcut icon 

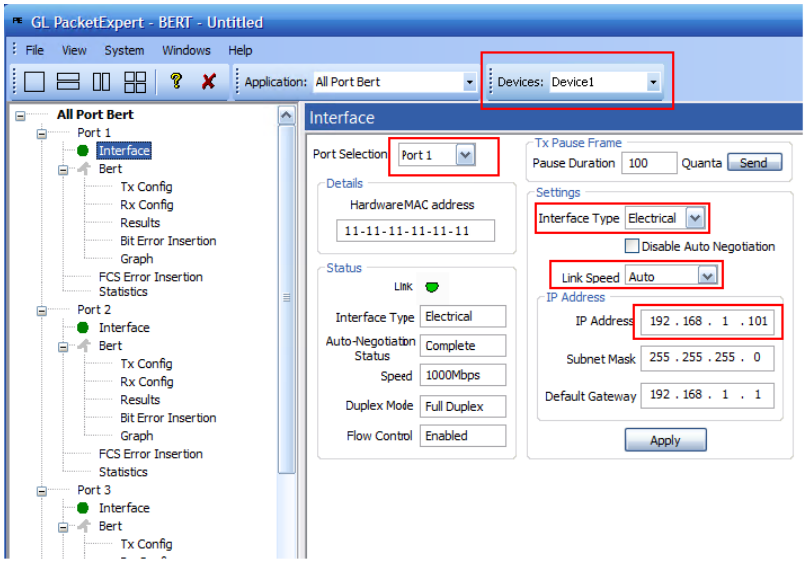
created on the desktop and select "**Run as Administrator**" to launch PacketExpert application.

Note: The application may take some time to get started due to hardware and software initializations.

On launch, a default configuration file automatically loads **All Port Bert** application on each device.

For Device1, Electrical connections,

On the RHS side, select the **Device1** from the top **Devices** drop-down list and verify the following settings for each port.



- In the **Interface** pane, verify **Interface** Type = **Electrical**
- **Link Speed** = **Auto** (automatic detection and adjustment of link speed),
- Leave the Disable Auto Negotiation unchecked
- Select the ports from the drop-down menu, and verify the IP Addresses for Ports 1 to 4 on **Device1** are configured as listed below:
  - Port1: 192.168.1.101
  - Port2: 192.168.1.102
  - Port3: 192.168.1.103
  - Port4: 192.168.1.104

Note: For Device 1, Optical connections,

On the RHS side, in the **Interface** pane, select the ports from the drop-down list and do the following for each port:

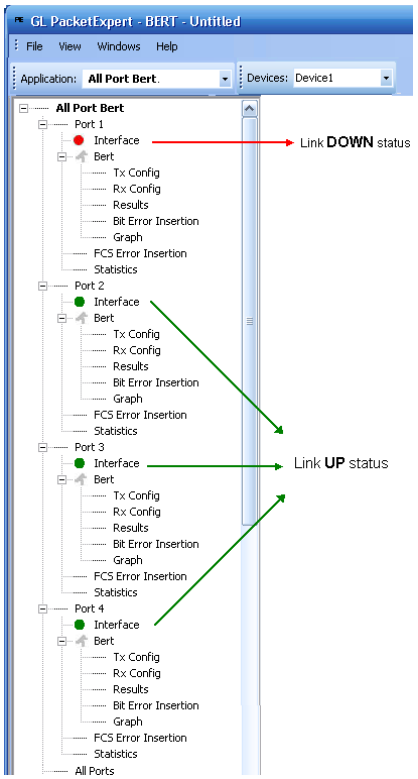
- Select **Interface Type** = **Optical**
- Leave the Disable Auto Negotiation unchecked
- Select the ports from the drop-down menu, and verify IP Addresses for **Ports 2 & 3** on **Device1** are configured as listed below:
  - Port2: 192.168.1.102
  - Port3: 192.168.1.103

- Click on the **Apply** button (this will set the Interface Type to Optical in the hardware)

To verify PacketExpert basic functionality, we will run the **BERT** test between:

- Either between Ports 1 and 4 on **Device1** using the Electrical Ethernet cables (this means the destination for Port1 is Port4 and vice versa)
- (OR) between Ports 2 and 3 on **Device1** using the SFP and Optical cables (this means the destination for Port2 is Port3 and vice versa)

Step 3: Verify Links



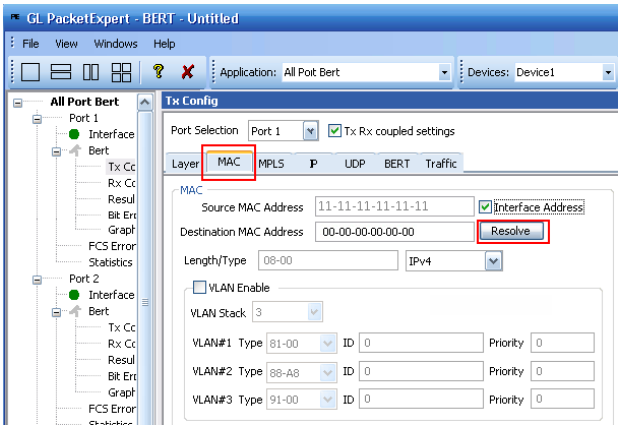
- Verify that the Links are UP. On launch, the LHS tree should display all ports with green LEDs link status (refer to figure). If the LED shows red (refer to the figure), then link is down.

- Refer to the following troubleshoot steps to get the links UP:

  - Check if the Electrical / Optical cable is connected to the correct ports (i.e. Ports 1 and 4 are connected or Ports 2 and 3 are connected) across all the devices - refer to the figure above.
  - Check if there are any loose connections and secure the cables properly
  - If still link is not UP, double click **"Interface"** under the port in the LHS tree to launch the **"Interface"** dialog in one of the RHS panes. Click the **"Apply"** button. This will reinitialize the port and will force it to go through the auto negotiation cycle again.
  - Perform these on all the devices by selecting the devices from the drop-down list
  - The above steps should get the link up. If problem still persists, contact GL Communications Inc.

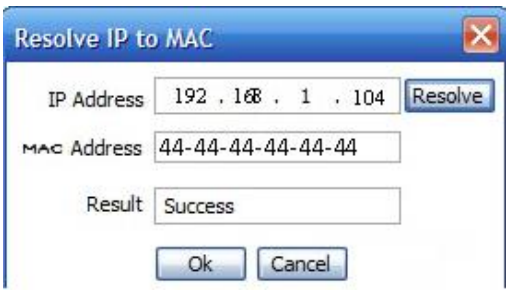
Step 4: Configure MAC Addresses

Each port should have the destination MAC addresses configured correctly. Follow the steps below to configure destination MAC addresses correctly:



For **Device1**, **Electrical connections,**

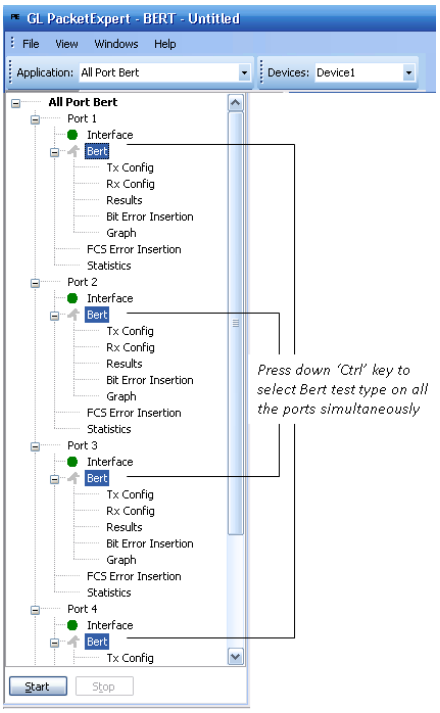
- In the LHS tree, under **Port1→Bert**, click **Tx Config**. The Tx Config window opens up in one of the RHS panes
- Go to **MAC** tab
- Click **"Resolve"** button next to Destination MAC address. (refer to figure)
- Enter the Destination IP Addresses for Port1 as:
  - 192.168.1.104 (IP address of Port4)
- Click **Resolve** again
- It will run ARP and returns the MAC Address of the destination port, with Result displayed as **"Success"** (refer to figure)
- Click **OK**, this will configure destination MAC address
- **Note:** Select other ports from the Port Selection drop down and repeat the above steps to configure the appropriate Destination IP addresses for each port on Device1 as listed above.
- The Destination IP Addresses for other ports on Device1 are as below:
  - For Port2: 192.168.1.103 (IP address of Port3)
  - For Port3: 192.168.1.102 (IP address of Port2)
  - For Port4: 192.168.1.101 (IP address of Port1)



Similarly, for **Optical Connections**, perform the steps above and configure the correct Destination MAC address for Port 2 and Port 3.

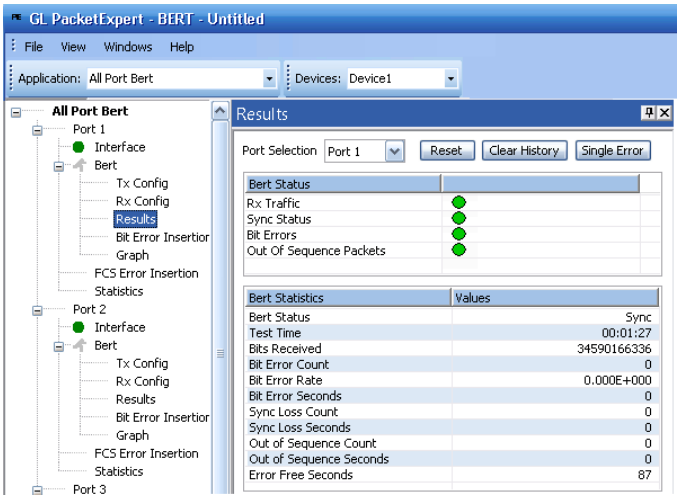
Step 5: Start test

- From the LHS tree, hold the keyboard **Control** key and in the GUI select **Bert** using mouse under Port1, Port2, Port3 and Port4 tree simultaneously on Device1.
- Click **Start** (refer to figure)



Step 6: Verify Results

- While the test is running, verify the **Results** in the RHS pane.
- For Port1 on Device1, from LHS tree, click **Results** under **Port1 → Bert**, the Results pane opens up in one of the 4 RHS panes
- Under Bert Status pane, verify these LEDs → Sync Status LED = Green, Bit Errors LED = Green, Out of Sequence Packets LED = Green
- Under Bert Statistics pane, verify these values:
  - Bert Status = Sync
  - Bit Error Count = 0
  - Bit Error Rate = 0.000E+000
  - Bit Error Seconds = 0
  - Sync Loss Count = 0
  - Sync Loss Seconds = 0
  - Out of Sequence Count = 0
  - Out of Sequence seconds = 0



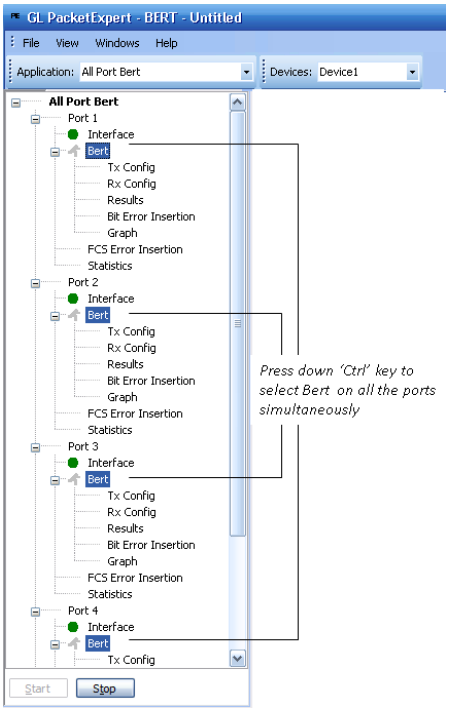
Repeat this step for all 4 ports for Device1 and verify correct results for all 4 ports. If any port shows errors, contact GL Communications Inc.

Step 7: Perform BERT on all devices by repeating step 2 to 6

- Perform BERT on all devices by repeating Step 2 to 6
  - PXE112 has 3 devices
  - PXE124 has 6 Devices

Step 8: Stop test

- To stop the test after verifying the results, again hold the keyboard **Control** key and select **Bert** using mouse from the LHS tree under Port1, Port2, Port3 and Port4 on Device
- Click **Stop** (refer to figure)



- If you are performing the BERT on all the devices and ports connected using Electrical/Optical cable as shown in the figure above, then perform all the steps above on all the Devices to conduct test.
- Use the following IP addresses for Step2: Verifying IP Addresses and Step4: Configure MAC Addresses.

Electrical Interface (Port#1 to Port#4):			**Optical Interface (Port#2 and Port#3):**		
	IP Address	**MAC Address**		**IP Address**	**MAC Address**
Device #1	Port#1: 192.168.1.101 Port#2: 192.168.1.102 Port#3: 192.168.1.103 Port#4: 192.168.1.104	MAC#1: 11-11-11-11-11-11 MAC#2: 22-22-22-22-22-22 MAC#3: 33-33-33-33-33-33 MAC#4: 44-44-44-44-44-44	Device #1	Port#2: 192.168.1.102 Port#3: 192.168.1.103	MAC#2: 22-22-22-22-22-22 MAC#3: 33-33-33-33-33-33
Device #2	Port#1: 192.168.1.105 Port#2: 192.168.1.106 Port#3: 192.168.1.107 Port#4: 192.168.1.108	MAC#1: 55-55-55-55-55-55 MAC#2: 66-66-66-66-66-66 MAC#3: 77-77-77-77-77-77 MAC#4: 88-88-88-88-88-88	Device #2	Port#2: 192.168.1.106 Port#3: 192.168.1.107	MAC#2: 66-66-66-66-66-66 MAC#3: 77-77-77-77-77-77
Device #3	Port#1: 192.168.1.109 Port#2: 192.168.1.110 Port#3: 192.168.1.111 Port#4: 192.168.1.112	MAC#1: 99-99-99-99-99-99 MAC#2: 10-10-10-10-10-10 MAC#3: 10-11-11-11-11-11 MAC#4: 12-12-12-12-12-12	Device #3	Port#2: 192.168.1.110 Port#3: 192.168.1.111	MAC#2: 10-10-10-10-10-10 MAC#3: 10-11-11-11-11-11
Device #4	Port#1: 192.168.1.113 Port#2: 192.168.1.114 Port#3: 192.168.1.115 Port#4: 192.168.1.116	MAC#1: 13-13-13-13-13-13 MAC#2: 14-14-14-14-14-14 MAC#3: 15-15-15-15-15-15 MAC#4: 16-16-16-16-16-16	Device #4	Port#2: 192.168.1.114 Port#3: 192.168.1.115	MAC#2: 14-14-14-14-14-14 MAC#3: 15-15-15-15-15-15
Device #5	Port#1: 192.168.1.117 Port#2: 192.168.1.118 Port#3: 192.168.1.119 Port#4: 192.168.1.120	MAC#1: 17-17-17-17-17-17 MAC#2: 18-18-18-18-18-18 MAC#3: 19-19-19-19-19-19 MAC#4: 20-20-20-20-20-20	Device #5	Port#2: 192.168.1.118 Port#3: 192.168.1.119	MAC#2: 18-18-18-18-18-18 MAC#3: 19-19-19-19-19-19
Device #6	Port#1: 192.168.1.121 Port#2: 192.168.1.122 Port#3: 192.168.1.123 Port#4: 192.168.1.124	MAC#1: 21-21-21-21-21-21 MAC#2: 20-22-22-22-22-22 MAC#3: 23-23-23-23-23-23 MAC#4: 24-24-24-24-24-24	Device #6	Port#2: 192.168.1.122 Port#3: 192.168.1.123	MAC#2: 20-22-22-22-22-22 MAC#3: 23-23-23-23-23-23