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# PacketCheck™ – Software Ethernet Tester

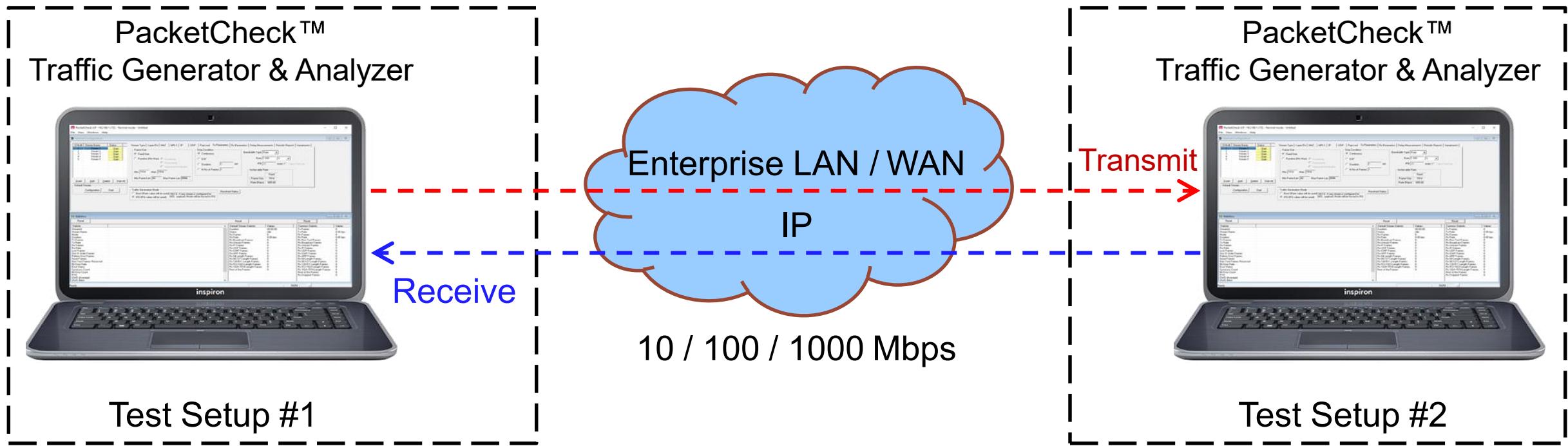
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*GL Communications Inc.*

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>

# PacketCheck™- Ethernet / IP Test Tool

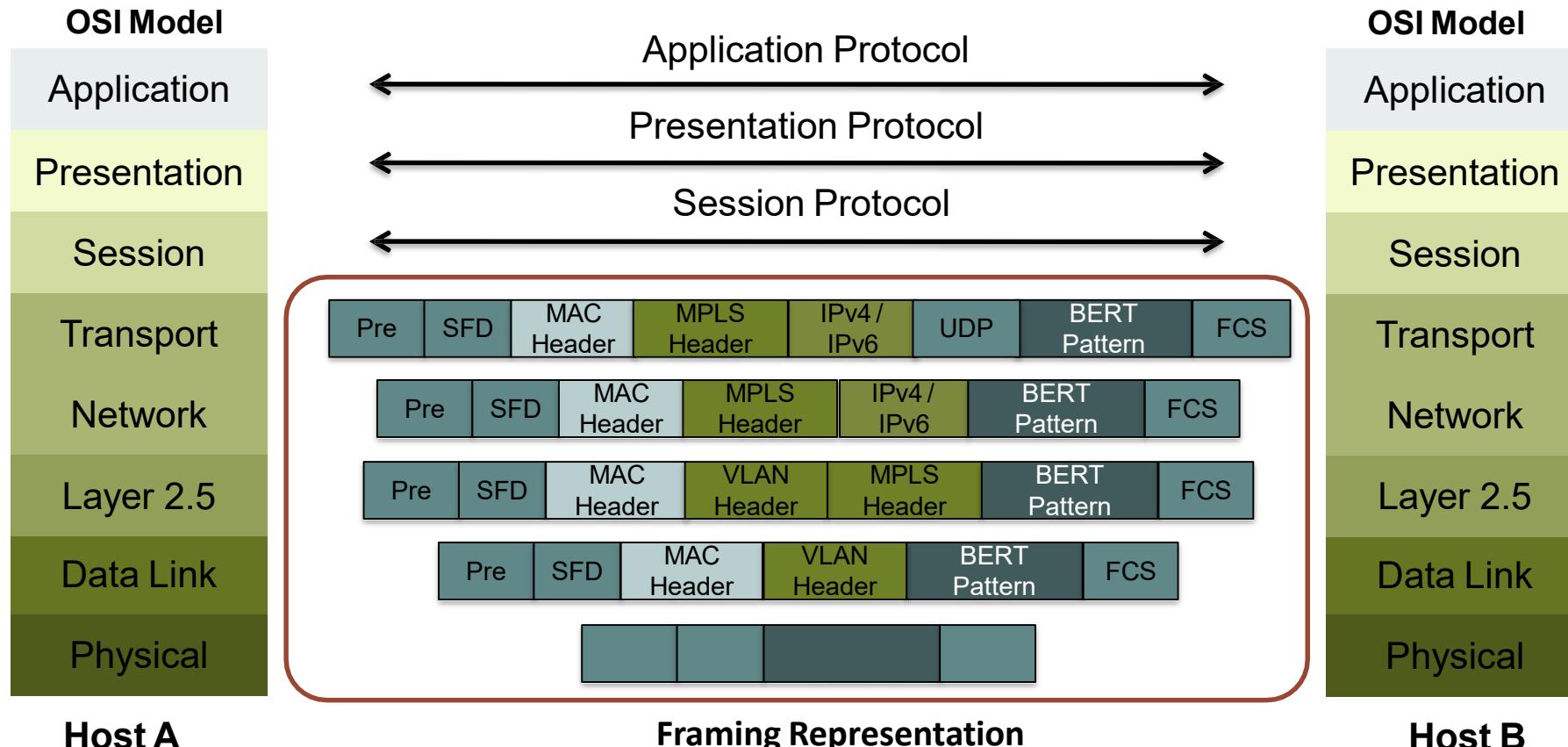


- PacketCheck™ uses the PC's network interface card to transmit and receive Ethernet or IP packets
- Bit Error Rates (BER) and throughputs and Delay, Impairment (up to 500 Mbps) can be easily tested
- Generates multi-stream Ethernet / IP / UDP traffic as well single-stream physical layer traffic
- Measures end to end performance such as bit error rate, total packets, packet loss, out of sequence packets, errored packets, Round Trip Delay, and One Way Delay (within the same PC)

# Applications

- What is the maximum IP bandwidth between your branch offices?
- What is the round-trip delay between two IP addresses with microsecond accuracy?  
Between two Ethernet MAC addresses?
- Is your LAN switch dropping packets? Introducing errors? Blocking traffic because it's overloaded?
- Is your CAT 5 or CAT 6 wiring deteriorating? Introducing errors?
- Need to find out your bandwidth between enterprise locations? Traffic overload?  
Throughput? Error rates? Delay?

# Testing at Layer 1, 2, 3, & 4 of OSI Model



# Main Features

- Capability to test Ethernet traffic of up to 500 Mbps bandwidth. Supports minimum line rate of 64 Bps
- Generate full duplex traffic at any of the four layers (Layer1, Layer2 (Ethernet) with stacked VLAN/ MPLS, Layer3 (IPv4), Layer4 (UDP)) with on-demand bandwidth
- Create multiple streams of traffic for network testing from layer 2, 3, or 4
- Bit Error Rate Testing for checking networks for dropped packets, out-of-order, non-test frames, and so on. Write packet errors to an error log
- Determine Round Trip Delay (RTD) between two IP addresses or two Ethernet MAC addresses with microsecond accuracy
- Determine One Way Delay (OWD) between two NIC cards on the test PC with microseconds accuracy
- Record test traffic in binary and/or PCAPNG or NTAR file format
- Playback PCAPNG files for test traffic generation. Either recorded from test BERT traffic or recorded traffic of interest
- Record non-test packets to a PCAPNG file. i.e. Non-BERT traffic related packets
- Provides options to record unidentified network traffic which does not belongs to any user defined stream into a PCAP or HDL file format and analyze the recorded traffic in Wireshark® or PacketScan™ application
- Generate and verify PRBS patterns such as QRSS,  $2^6$ -1,  $2^9$ -1,  $2^{11}$ -1,  $2^{15}$ -1,  $2^{20}$ -1, &  $2^{23}$ -1
- Measures bit error rate, synchronization status, throughput, packet loss, out of order packets, round trip delay, etc.
- Impair traffic such as inserting, deleting or changing bytes
- Supports jumbo frames in addition to all normal frame sizes from 64 bytes to 1518 bytes

# Main Features (Contd.)

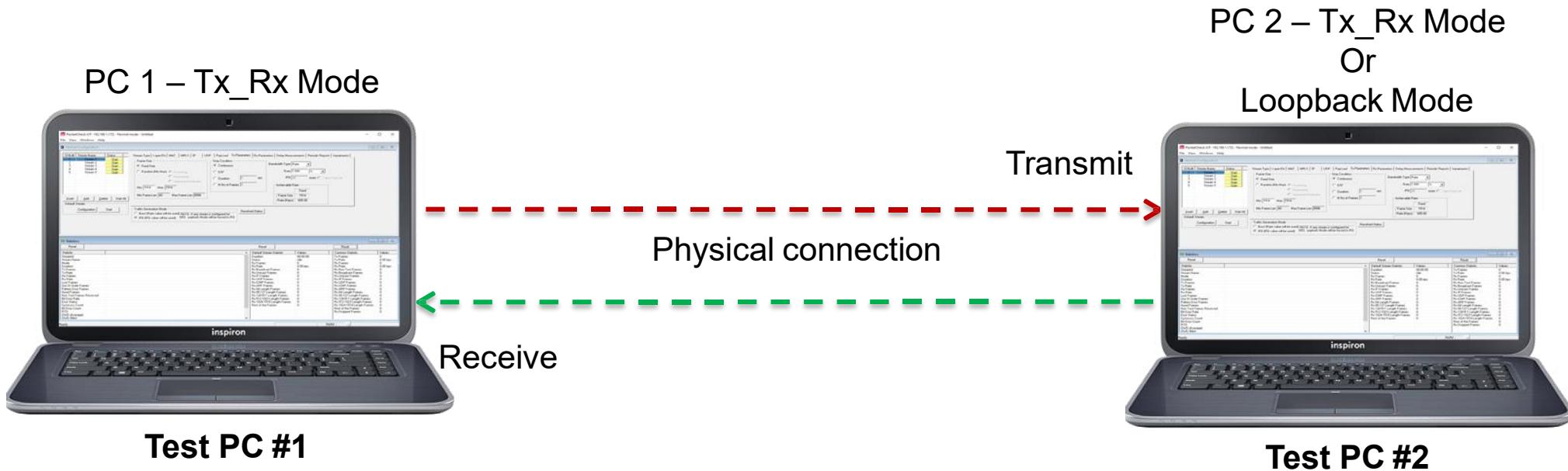
- Ability to append Zero-Padding bytes to outgoing frames to test router interoperability with packet sizes less than 60 bytes, ensuring that routers handle small packets correctly.
- Customizable protocol headers like MAC source / destination address, EtherType field, IP source / destination address, and UDP source / destination port
- Create multiple full-duplex streams per PacketCheck™ easily
- Each stream can be configured as Transmit Only, Receive Only, or Transmit and Receive
- Ability to copy from one stream to another (both one-to-one copy and one-to-many copy) to quickly configure multiple streams
- Ability to resolve IP Address to MAC address (based on Address Resolution Protocol (ARP)) for all streams with a single click, so that all streams are configured properly before starting the test
- Populate switch/router MAC tables and routing tables using the Resolve all streams feature before the starting the test to avoid unnecessary flooding
- Independently define each stream to operate as Layer2 (Ethernet) or Layer3 (IP) or Layer4 (UDP)
- For Layer3 or Layer4 streams, analyzes the received payload based on the IP or UDP length and ignore any MAC padded bytes added in transit
- Define the frame size/rate to be generated for each stream Independently
- Jumbo frames also supported (depending on the NIC card support for Jumbo frames)

# Main Features (Contd.)

- Up to 500 Mbps total combined rate (all streams combined) is possible
- The transmission rate can be configured to operate in 2 modes – Burst mode or Inter Frame Gap (IFG) mode
- In Burst mode, each stream's rate can be set in Mbps, Kbps, etc.
- In IFG mode, the Inter Frame gap in milliseconds can be configured. The estimated rate achievable based on the IFG and the frame size is displayed for user convenience
- Burst mode tries to generate traffic with the configured rate, but also as smoothly and evenly distributed so that the Device Under Test (DUT) node buffers do not overflow due to a temporary spike in the peak traffic
- Frame sizes from 22 bytes up to 1518 supported
- Use a full-featured version or a loopback only version (with address swapping) at node endpoints
- Capability to generate/respond to ARP requests, making it easy to work with Routers
- Provides user configurable Packet Length for OWD and RTD
- Generate test reports in CSV or PDF formats
- Support to configure IP Protocol Type from 0 to 255
- Multiple Instances – run multiple instances on a single PC to utilize all available NIC cards

# BER Test Setup at Layer 1

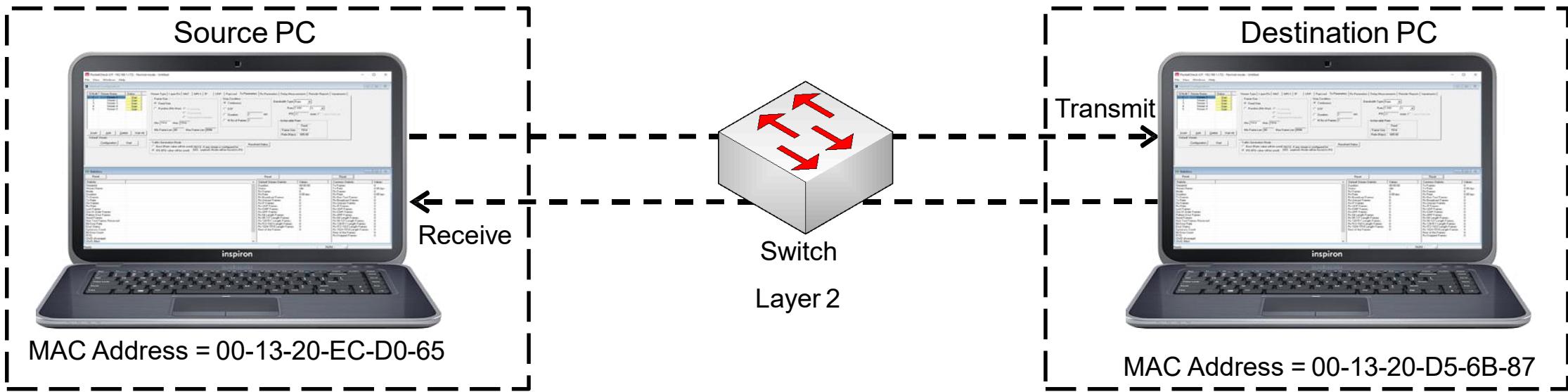
## Scenario 1: Source & destination PCs connected using Ethernet cable



- The PCs are connected using an Ethernet cable. The payload includes PRBS and fixed patterns

# BER Test Setup at Layer 2

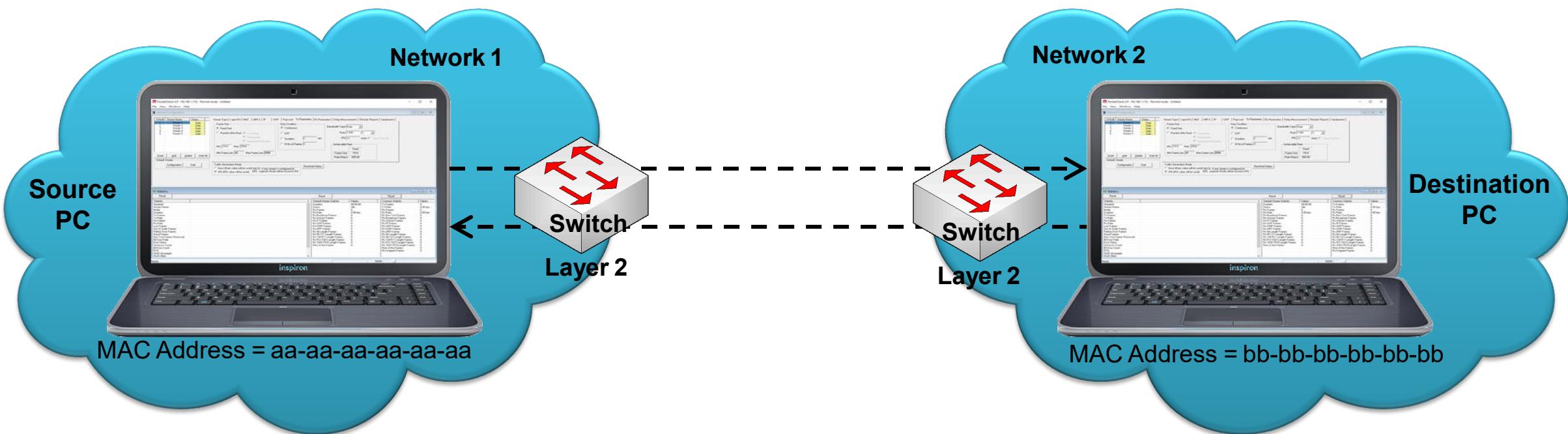
**Scenario 2: Source & destination PCs on the same LAN, connected by a switch**



- The PCs are connected through a switch, which routes the packets based on the MAC address

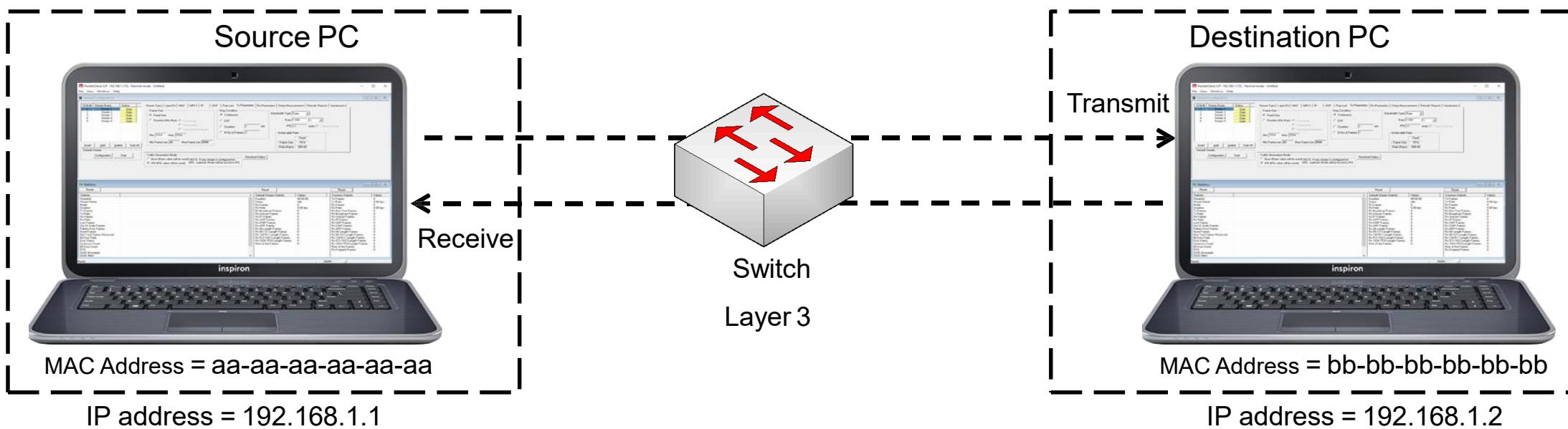
# BER Test Setup at Layer 2

**Scenario 3: Source & destination PCs located in different LANs connected through multiple switches**



# BER Test Setup at Layer 3 / 4

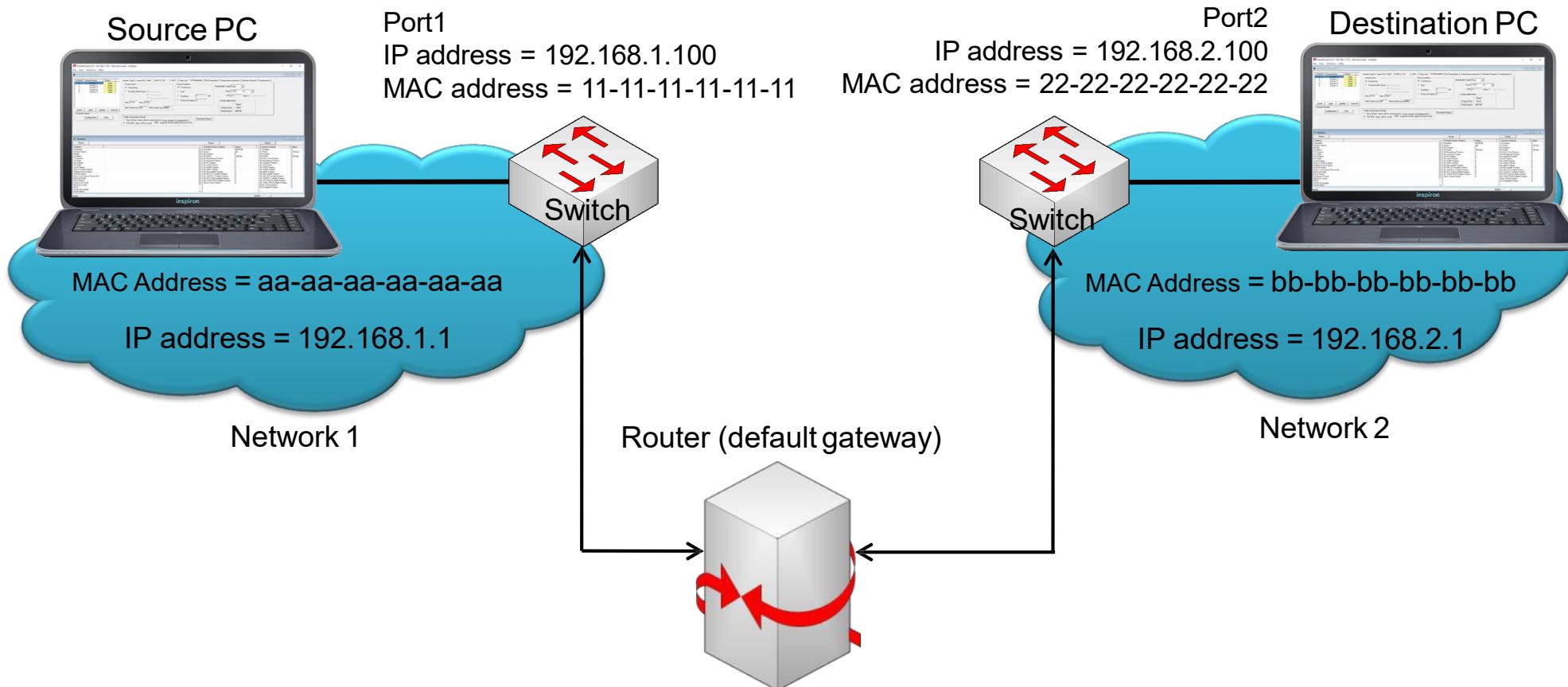
**Scenario 4: Source & destination PCs are located within the same IP Network**



- Packets route between the source and destination PCs based on both the IP address and MAC address

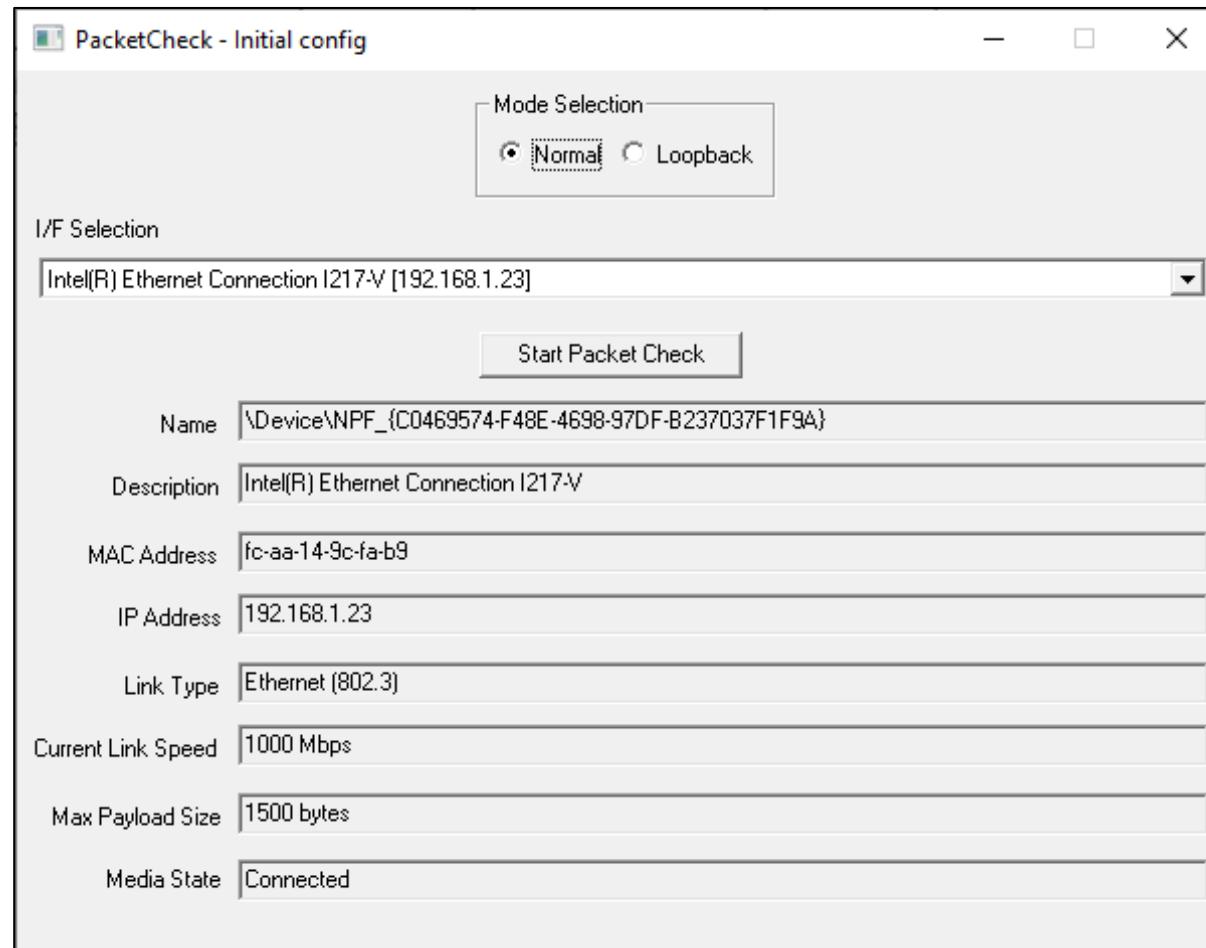
# BER Test Setup at Layer 3 / 4

## Scenario 5 : Source & destination PCs located on different IP Networks



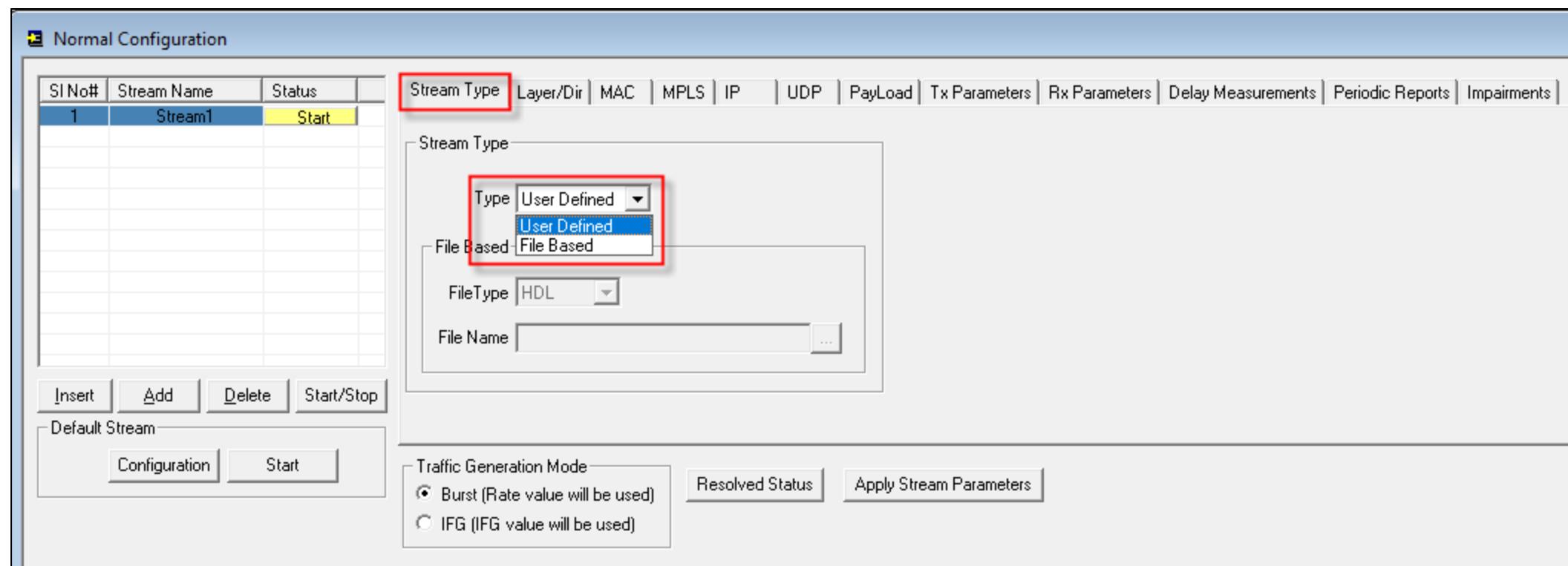
- Source and destination PCs are located in different IP networks connected via routers

# Initialization Configuration



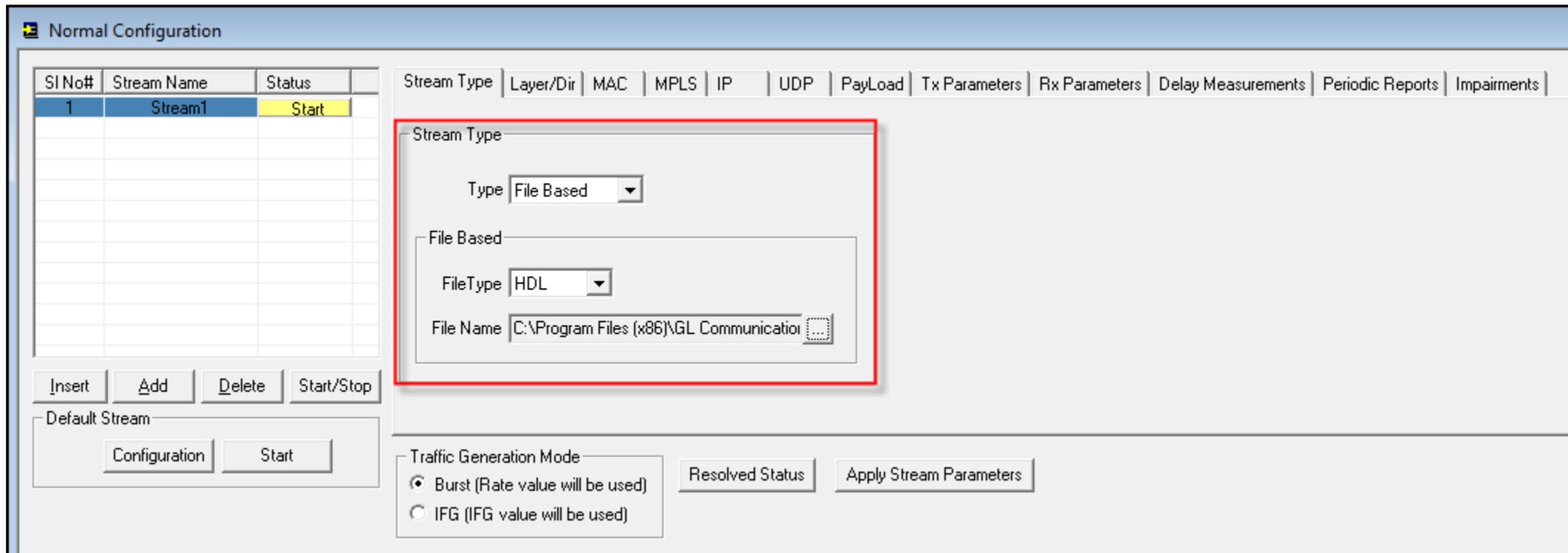
- PacketCheck™ operates in normal and loopback mode
- Verify interface, IP and MAC address
- PacketCheck™ PC configuration file is automatically generated containing initial configuration parameters displayed in the GUI

# Stream Types Selection



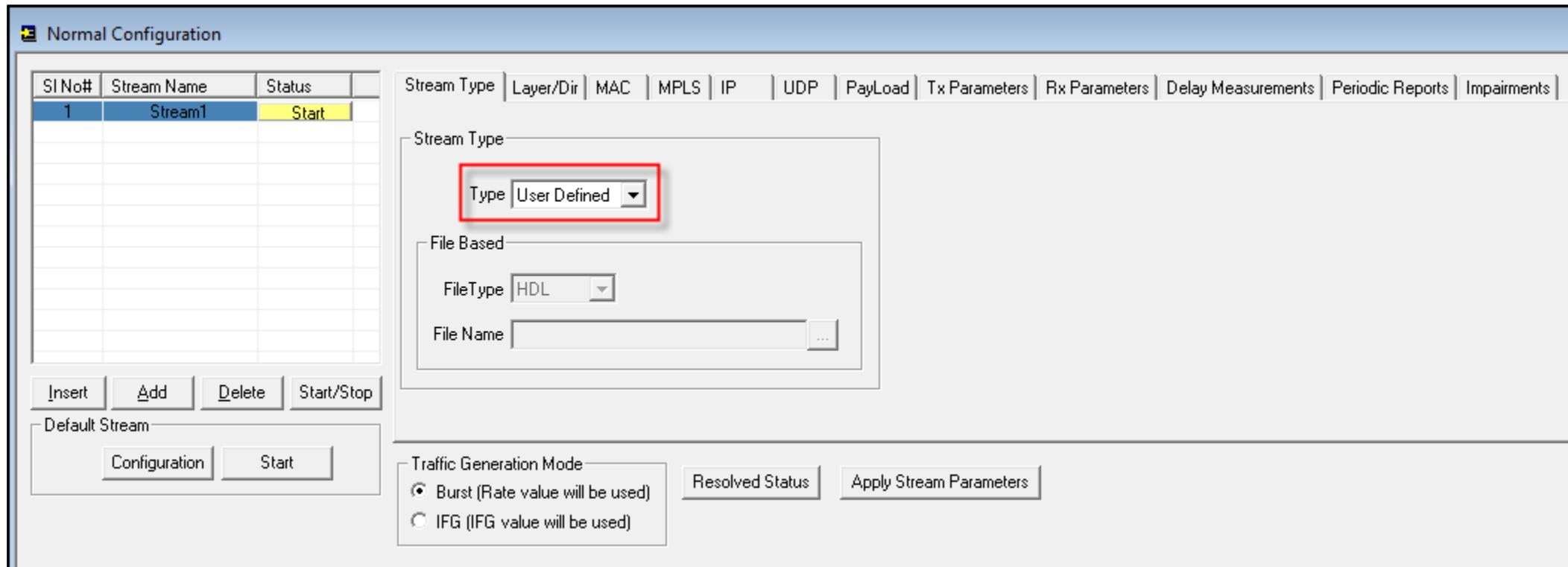
# File Based Stream Type

- Allows to specify a source file for the stream, this source file can be PCAP or HDL file format
- In File Based option the default mode is set to Tx and all the other configurations will be disabled as it is not required in File Based option



# User Defined Stream Type

- Allows to define the stream parameters such as Layer, Ethernet/IP/UDP Headers, Frame Size, Rate, Payload etc. and the PacketCheck™ generates/analyzes the stream traffic as per these parameters.



# Layer 1 Single-stream Generation

PacketCheck (I/F - 192.168.1.223) - Normal mode - 1.233

File View Report Windows Help

**Normal Configuration**

SI No#	Stream Name	Status
1	Stream 1	Stop

Stream Type: Layer/Dir | MAC | MPLS | IP | UDP | PayLoad | Tx Parameters | Rx Parameters | Delay Measurements | Periodic Reports | Impairments

Layer  
Dir: Tx\_Rx  
Layer 2: Ethernet  
Layer 2.5: None  
Layer 3: None  
Layer 4: None

**Single Stream Selection**

**Layer 2.5, 3, 4 are set to None**

Default Stream  
Configuration | Stop

Traffic Generation Mode  
 Burst (Rate value will be used)  
 IFG (IFG value will be used)

**Resolved Status** | **Apply Stream Parameters**

**Default Stream Statistics**

**Cumulative Statistics**

**Test Statistics**

Reset | Show Default Stream

Statistics	Stream 1
StreamId	1
Stream Name	Stream 1
Mode	TX_RX
Duration	00:02:34
Tx Total Frames	12627
Tx BERT Frames	12627
Tx Rate	986.28 Kbps
Tx RTD Frames	0
Tx OWD Frames	0
Rx Total Frames	12626
Rx BERT Frames	12626
Rx Rate	986.21 Kbps
Rx RTD Frames	0
Rx OWD Frames	0
Lost Frames	0
Out Of Order Frames	0
Pattern Error Frames	0
Good Frames	0
Non Test Frames Received	0
Bit Error Rate	0.00E+00
Error Status	SYNC
SyncLoss Count	0
Bit Error Count	0
RTD	-NA-
OWD (Average)	-NA-
OWD (Min)	-NA-
OWD (Max)	-NA-
IP Checksum Error Frames	0
UDP Checksum Error Frames	0
Zero UDP Checksum Frames	0
HDL/PCAP File Recording ...	Idle
Binary File Recording Status	Idle

PacketCheck Reset | NIC Reset | Other Reset

Default Stream Statistics	PacketCheck Tx	PacketCheck Rx	NIC Tx	NIC Rx
Total Frames	0	0	283	2137
Rate	0.00 bps	0.00 bps	842.05...	9.85 Kbps
Non Test Frames	-NA-	-NA-	-NA-	-NA-
IP Frames	0	0	271	1563
UDP Frames	0	0	51	980
TCP Frames	0	0	220	249
ICMP Frames	0	0	0	0
IGMP Frames	0	0	0	334
Other L4 Protocol Frames	0	0	0	0
ARP Request Frames	0	0	3	9
ARP Response Frames	0	0	9	3
Other Frames	0	0	0	562
Broadcast Frames	0	0	1	547
Unicast Frames	0	0	282	316
Multicast Frames	0	0	0	1274
64 Length Frames	0	0	125	616
65_127 Length Frames	0	0	69	1138
128_255 Length Frames	0	0	45	151
256_511 Length Frames	0	0	11	135
512_1023 Length Frames	0	0	6	77
1024_1518 Length Fra...	0	0	27	20
> 1518 Length Frames	0	0	0	0
Status	Running	-	Running	-
Duration	00:02:24	-	00:02:24	-
File Recording Status	Idle	-	Idle	-

Cumulative Statistics	Tx	Rx
Total Frames	12910	18611
Rate	990.79 Kbps	1.01 Mbps
Non Test Frames	0	0
IP Frames	271	1563
UDP Frames	51	980
TCP Frames	220	249
ICMP Frames	0	0
IGMP Frames	0	334
Other L4 Protocol Frames	0	0
ARP Request Frames	3	3845
ARP Response Frames	9	15
Other Frames	12627	13188
Broadcast Frames	1	4395
Unicast Frames	12909	12942
Multicast Frames	0	1274
64 Length Frames	125	4464
65_127 Length Frames	69	1138
128_255 Length Frames	45	151
256_511 Length Frames	11	135
512_1023 Length Frames	6	77
1024_1518 Length Frames	12654	12646
> 1518 Length Frames	0	0

Ready NUM

# Layer 2 / 3 / 4 Multi-stream Generation

**PacketCheck (I/F - 192.168.1.223) - Normal mode - 1.233**

**Normal Configuration**

SI No#	Stream Name	Status
1	Stream 1	Stop
2	Stream 2	Stop
3	Stream 3	Stop

**Multi Stream Selection**

**Default Stream**

**Traffic Generation Mode**

Burst (Rate value will be used)

IFG (IFG value will be used)

**Statistics**

Show Default Stream

Statistics	Stream 1	Stream 2	Stream 3
StreamId	1	2	3
Stream Name	Stream 1	Stream 2	Stream 3
Mode	TX_RX	TX_RX	TX_RX
Duration	00:00:22	00:00:22	00:00:21
Tx Total Frames	1776	1825	1739
Tx BERT Frames	1776	1825	1739
Tx Rate	966.87 Kbps	966.87 Kbps	966.87 Kbps
Tx RTD Frames	0	0	0
Tx OWD Frames	0	0	0
Rx Total Frames	1775	1837	1737
Rx BERT Frames	1775	1837	1737
Rx Rate	967.10 Kbps	967.10 Kbps	967.10 Kbps
Rx RTD Frames	0	0	0
Rx OWD Frames	0	0	0
Lost Frames	0	0	0
Out Of Order Frames	0	0	0
Pattern Error Frames	0	0	0
Good Frames	0	0	0
Non Test Frames Received	0	0	0
Bit Error Rate	0.00E+00	0.00E+00	0.00E+00
Error Status	SYNC	SYNC	SYNC
SyncLoss Count	0	0	0
Bit Error Count	0	0	0
RTD	-NA-	-NA-	-NA-
OWD (Average)	-NA-	-NA-	-NA-
OWD (Min)	-NA-	-NA-	-NA-
OWD (Max)	-NA-	-NA-	-NA-
IP Checksum Error Frames	0	0	0
UDP Checksum Error Frames	0	0	0
Zero UDP Checksum Frames	0	0	0
HDL/PCAP File Recording ...	Idle	Idle	Idle
Binary File Recording Status	Idle	Idle	Idle

**PacketCheck Reset**

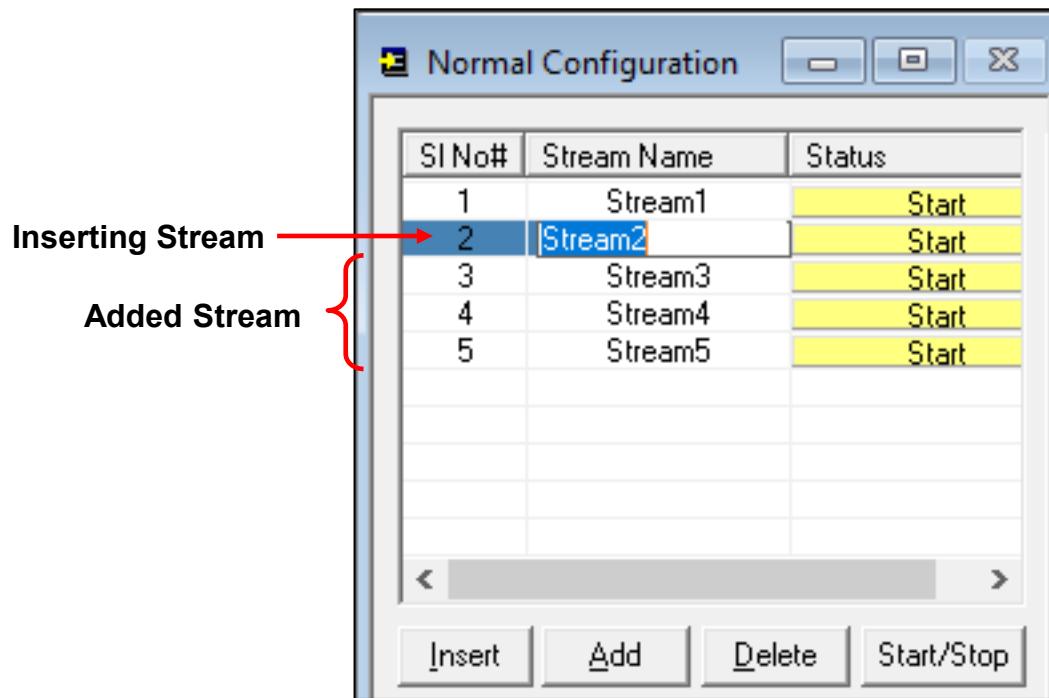
**NIC Reset**

**Other Reset**

Default Stream Statistics	PacketCheck Tx	PacketCheck Rx	NIC Tx	NIC Rx	Cumulative Statistics	Tx	Rx
Total Frames	0	228	3264	11617	Total Frames	8604	38532
Rate	0.00 bps	0.00 bps	0.00 bps	0.00 bps	Rate	2.90 Mbps	2.90 Mbps
Non Test Frames	-NA-	-NA-	-NA-	-NA-	Non Test Frames	0	0
IP Frames	0	0	3185	8540	IP Frames	3185	8572
UDP Frames	0	0	326	4767	UDP Frames	326	4785
TCP Frames	0	0	2854	2030	TCP Frames	2854	2044
ICMP Frames	0	0	5	0	ICMP Frames	5	0
IGMP Frames	0	0	0	1743	IGMP Frames	0	1743
Other L4 Protocol Frames	0	0	0	0	Other L4 Protocol Frames	0	0
ARP Request Frames	0	0	16	37	ARP Request Frames	16	21269
ARP Response Frames	0	0	37	16	ARP Response Frames	37	90
Other Frames	0	228	26	3024	Other Frames	5366	8601
Broadcast Frames	0	0	2	2498	Broadcast Frames	2	23800
Unicast Frames	0	228	3261	2482	Unicast Frames	8601	8095
Multicast Frames	0	0	1	6637	Multicast Frames	1	6637
64 Length Frames	0	0	892	3499	64 Length Frames	892	24806
65_127 Length Frames	0	0	507	5802	65_127 Length Frames	507	5833
128_255 Length Frames	0	0	335	818	128_255 Length Frames	335	818
256_511 Length Frames	0	0	120	801	256_511 Length Frames	120	801
512_1023 Length Frames	0	0	88	433	512_1023 Length Frames	88	433
1024_1518 Length Fra...	0	228	1322	264	1024_1518 Length Frames	6662	5841
>1518 Length Frames	0	0	0	0	>1518 Length Frames	0	0
Status	Stopped	-	Stopped	-			
Duration	00:13:09	-	00:13:09	-			
File Recording Status	Idle	-	Idle	-			

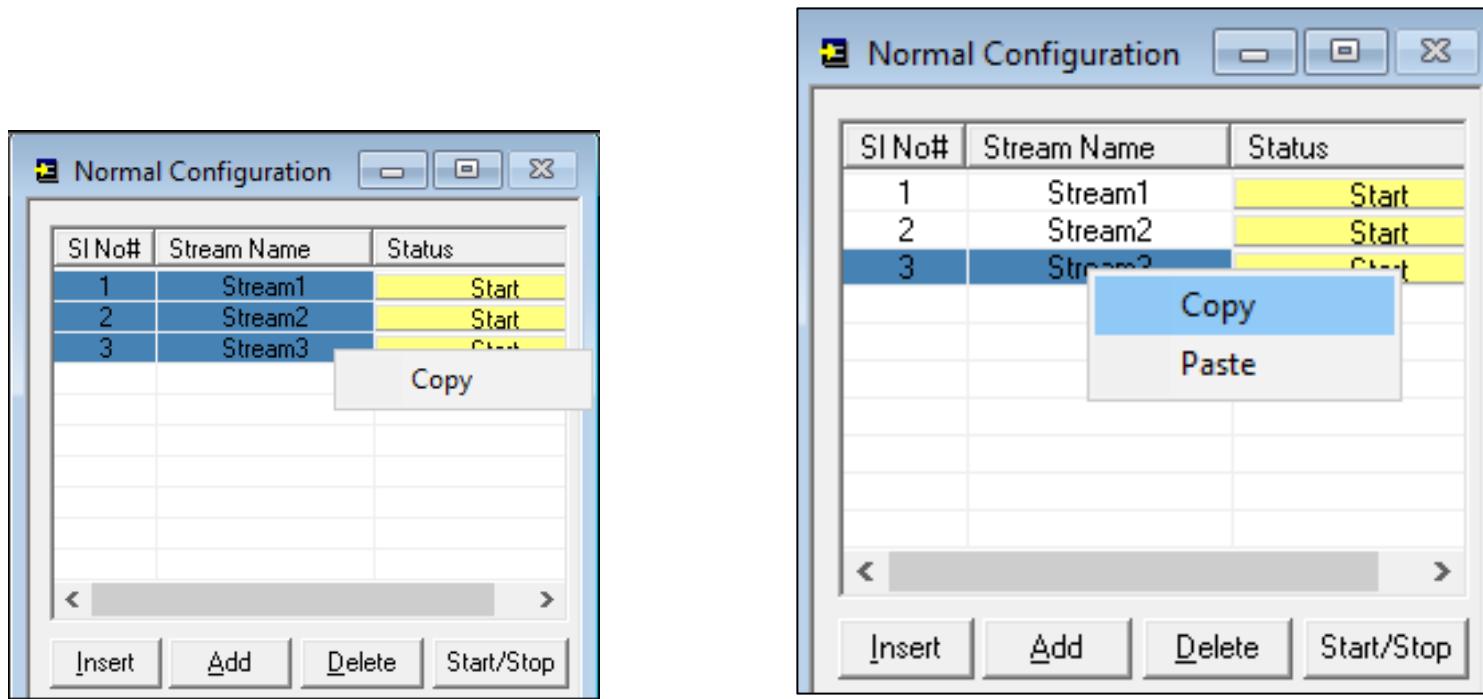
Ready

# Add / Insert / Delete Streams



- PacketCheck™ allows for multi-stream generation
- Each stream can be configured to Tx, Rx or both Tx\_Rx in layer 2, layer 3, and layer 4

# Copy and Paste Streams



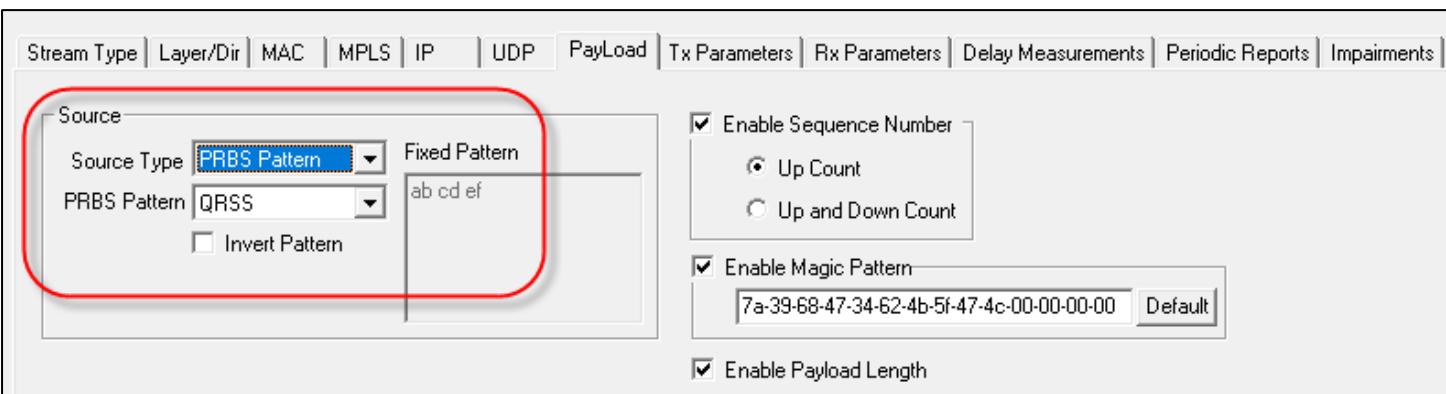
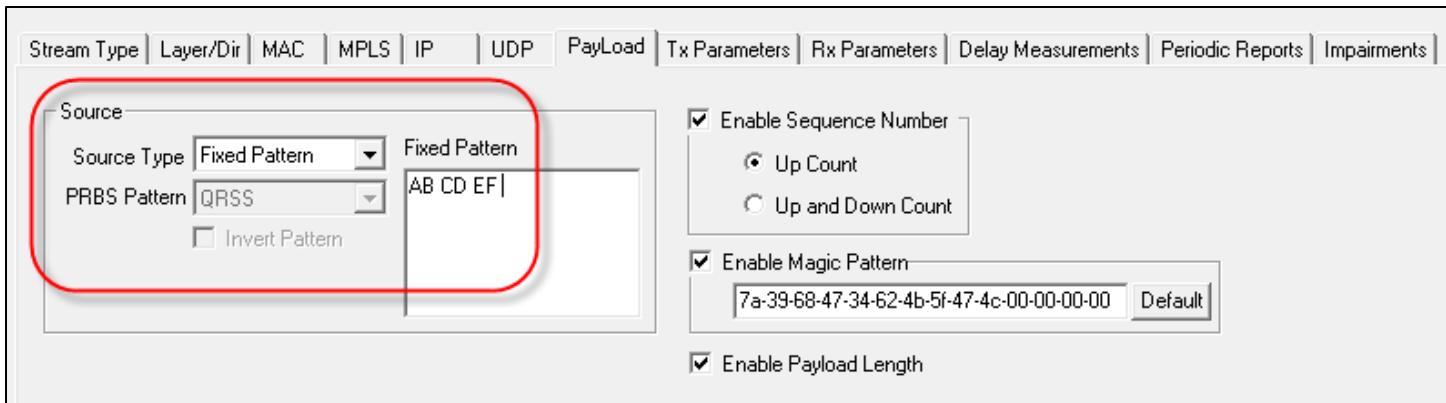
- Provides options to copy from one stream to another (both one-to-one copy and one-to-many copy) to quickly configure multiple streams

# MAC / IP / UDP Configurations

The diagram illustrates the configuration of network layers across four windows:

- Main Configuration Window (Left):** Shows the stack of layers: Layer (Dir: Tx Rx), Layer 2 (Ethernet), Layer 2.5 (MPLS), Layer 3 (IP), and Layer 4 (UDP).
- Layer 2 Configuration (Top Right):** Shows Source MAC Addr (fc-aa-14-9c-bf-99) and Destination MAC Addr (FC-AA-14-9C-BF-99). EtherType is set to 00-00.
- MPLS Configuration (Middle Right):** Shows an MPLS Stack with three entries:
  - MPLS #1: Label 564564, CoS 1, TTL 128
  - MPLS #2: Label 765765, CoS 5, TTL 128
  - MPLS #3: Label 234234, CoS 7, TTL 128
- IP Configuration (Bottom Middle):** Shows Source IP Address (192 . 168 . 1 . 88) and Subnet Mask (225 . 225 . 225 . 0). It also includes Destination IP address (192 . 168 . 1 . 176), Default Gateway (0 . 0 . 0 . 0), TOS/DS (00), TTL (128), Protocol (17), and a checkbox for Build MAC Header Automatically.
- UDP Configuration (Bottom Right):** Shows Source Port (4000) and Destination Port (5000). A checkbox for Configure Checksum is present.

# Payload



## Payload Source Types –

- Fixed Patterns – pattern repeats throughout the packet's payload. Configure test pattern of 2 bytes. Eg: AB-CD, BD-EF, and so on to achieve pattern sync
- PRBS Patterns - generates PRBS patterns e.g. QRSS,  $2^6-1$ ,  $2^9-1$ ,  $2^{11}-1$ ,  $2^{15}-1$ ,  $2^{20}-1$ , and  $2^{23}-1$

# Tx and Rx Parameters

- Tx streams can be set to transmit frame with fixed / random sizes, specific duration, count, IFG, and rate
- Rx streams can be set to generate Binary, HDL (GL proprietary), PCAP (Wireshark®) file formats, and BERT log files
- Stop conditions to limit the fixed / PBRSS pattern file transmission and logging of the received patterns to a defined file
- Zero-Padding bytes can be appended to outgoing frames to test router interoperability with packet sizes less than 60 bytes, ensuring that routers handle small packets correctly

The screenshot displays two panels of the GL Communications software interface, both titled "Tx Parameters" and "Rx Parameters".

**Top Panel (Tx Parameters):**

- Frame Size:** Options include "Fixed Size" (selected), "Random (Min-Max)", "Increasing", "Decreasing", and "Statistical Distribution". Fields for "Min" (68), "Max" (8996), "Min Frame Len" (68), and "Max Frame Len" (8996) are present.
- Zero Padding:** A checked checkbox labeled "Zero Padding". Sub-options include "Frame Size Range" (Range(68 - 8996)), "Number of Padding Bytes" (Padding "Pad upto Framesize"), "Min" (68), "Max" (1514), and "Post Padding Frame Size" (120). A note below states: "Min Tx frame size with padding = 120" and "Max Tx frame size with padding = 120".
- Stop Condition:** Options include "Continuous" (selected), "EOF", "Duration (sec)" (0), and "N No of Frames" (0).
- Bandwidth Type:** Set to "Rate" with a value of "10.00" and a dropdown menu showing "%".
- IFG:** Set to "20 msec" with a checkbox "Take From File".

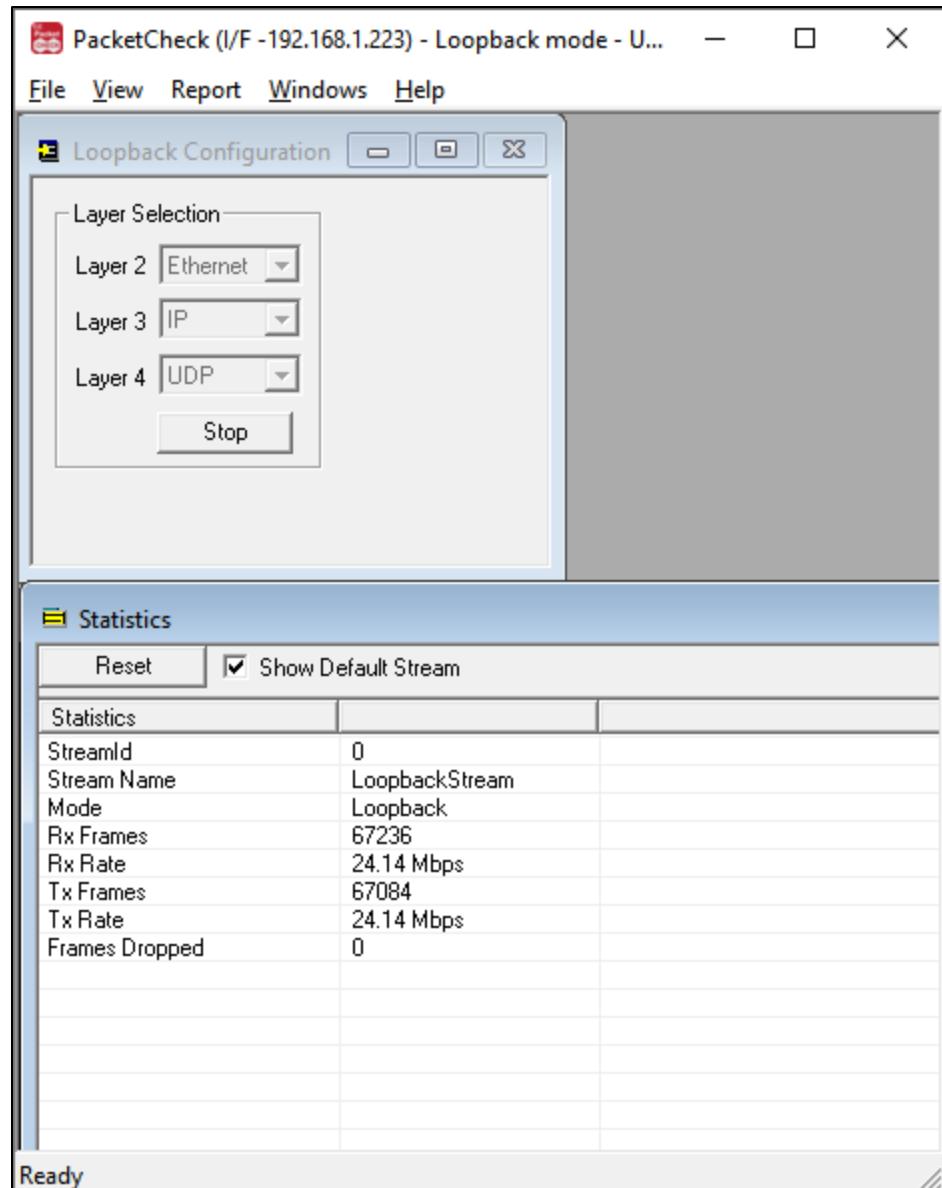
**Bottom Panel (Rx Parameters):**

- Record To Binary File:** Checked, with a path field "C:\Program Files (x86)\GL Communications Inc\tx\testfile" and a browse button "...".
- Generate Bert Log:** Checked, with a path field "C:\Program Files (x86)\GL Communications Inc\tx\testfile" and a browse button "...".
- Record To File:** Options include "None" (radio button), "HDL" (radio button selected, path "C:\Program Files (x86)\GL Communications Inc\tx\testfile"), and "PCAP" (radio button).
- Stop Condition:** Options include "Continuous", "Duration" (360000 sec selected), and "N No of Frames" (0).

**Traffic Generation Mode:** Options include "Burst (Rate value will be used)" (selected) and "IFG (IFG value will be used)".

# Loopback Mode

- PacketCheck™ can operate in Loopback mode.  
PacketCheck™ can perform loopback at the Ethernet, IP and UDP levels



# Statistics

- Receive (Rx) and Transmit (Tx) statistics in normal and loopback modes
- Options: Tx & Rx frames, bit error rates, sent frames, lost frames, out of order frames, pattern error, good frames, non-test frames received, error status, error count, sync loss count, frames dropped, impairments introduced into the outgoing traffic, UDP checksum error frames, and zero UDP checksum packets

**Normal Mode**

Statistics	Stream1	Stream2	Stream3
StreamId	1	2	3
Stream Name	Stream1	Stream2	Stream3
Mode	TX_RX	TX_RX	TX_RX
Duration	00:12:14	00:12:14	00:12:14
Tx Total Frames	53582	53575	53562
Tx BERT Frames	53582	53575	53562
Tx Rate	871.85 Kbps	868.82 Kbps	865.79 Kbps
Tx RTD Frames	0	0	0
Tx OWD Frames	0	0	0
Rx Total Frames	53336	53334	53312
Rx BERT Frames	53336	53334	53312
Rx Rate	859.69 Kbps	862.72 Kbps	862.72 Kbps
Rx RTD Frames	0	0	0
Rx OWD Frames	0	0	0
Lost Frames	0	0	0
Out Of Order Frames	0	0	0
Pattern Error Frames	0	0	0
Good Frames	0	0	0
Non Test Frames Received	0	0	0
Bit Error Rate	0.00E+00	0.00E+00	0.00E+00
Error Status	SYNC	SYNC	SYNC
SyncLoss Count	0	0	0
Bit Error Count	0	0	0
RTD	-NA-	-NA-	-NA-
OWD (Average)	-NA-	-NA-	-NA-
OWD (Min)	-NA-	-NA-	-NA-
OWD (Max)	-NA-	-NA-	-NA-
IP Checksum Error Frames	0	0	0
UDP Checksum Error Frames	0	0	0
Zero UDP Checksum Frames	0	0	0
HDL/PCAP File Recording ...	Idle	Idle	Idle
Binary File Recording Status	Idle	Idle	Idle

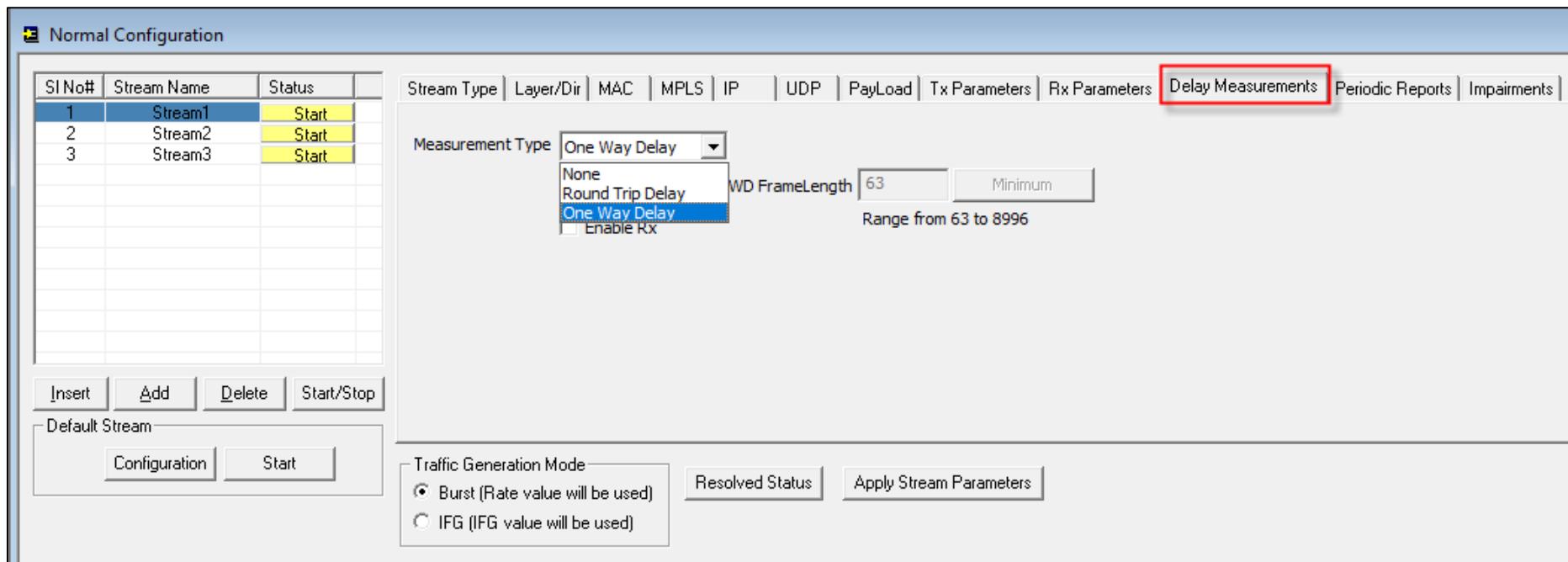
**Loopback Mode**

Reset	Stream Name
StreamId	0
Stream Name	LoopbackStream
Mode	Loopback
Rx Frames	7756
Rx Rate	0.03 Mbps
Tx Frames	7756
Tx Rate	0.03 Mbps
Frames Dropped	0

Ready

# Delay Measurements

- PacketCheck™ can measure One-Way Delay (OWD), calculating the delay at the receiving end in  $\mu$ sec
- Also, PacketCheck™ can be configured to measure the average Round Trip Delay [RTD] value of each packet in  $\mu$ sec
- OWD and RTD provides user configurable frame length, minimum frame length, maximum frame length or can define any value within the range between 68



# One Way Delay (OWD)

**Normal Configuration**

SI No#	Stream Name	Status
1	Stream1	Start
2	Stream2	Start
3	Stream3	Start

Stream Type | Layer/Dir | MAC | MPLS | IP | UDP | PayLoad | Tx Parameters | Rx Parameters | **Delay Measurements** | Periodic Reports | Impairments

Measurement Type: One Way Delay

Enable Tx  
 Enable Rx

Tx OWD FrameLength: 21 Minimum Range from 21 to 8996

Minimum Length  
Maximum Length  
User Defined

< >

Insert | Add | Delete | Start/Stop

Default Stream

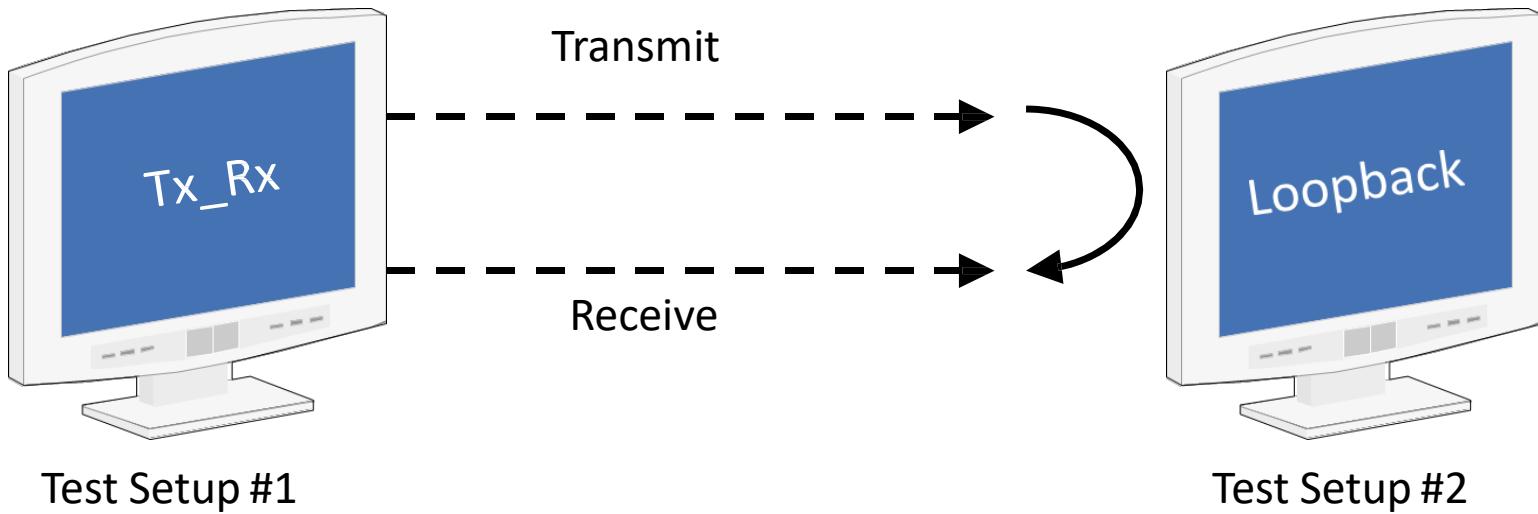
Configuration | Start

Traffic Generation Mode

Burst (Rate value will be used)  
 IFG (IFG value will be used)

Resolved Status | Apply Stream Parameters

# Round Trip Delay (RTD)



- Calculates the average Round Trip Delay with microsecond resolution
- RTD is the time taken for a packet to travel to the remote end and back to the source
- RTD calculated using 2 PacketCheck™ applications - one at the local end running in Tx\_Rx (Transmit and Receive) mode and another at the remote end running in loopback mode

# Round Trip Delay (RTD)

Normal Configuration

SI No#	Stream Name	Status
1	Stream1	Start
2	Stream2	Start
3	Stream3	Start

Stream Type | Layer/Dir | MAC | MPLS | IP | UDP | PayLoad | Tx Parameters | Rx Parameters | Delay Measurements | Periodic Reports | Impairments

Measurement Type **Round Trip Delay**

Enable Tx Tx RTD FrameLength **56** Minimum  
 Enable Rx Range from 56 to 8996

Insert Add Delete Start/Stop

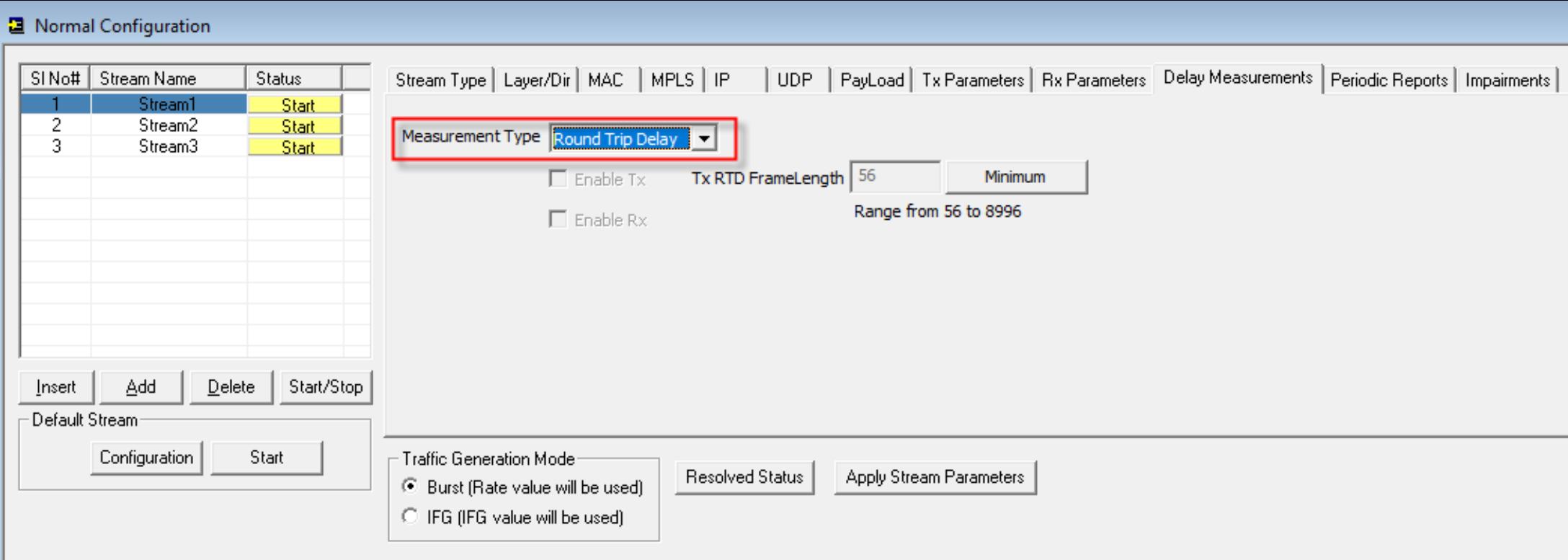
Default Stream

Configuration Start

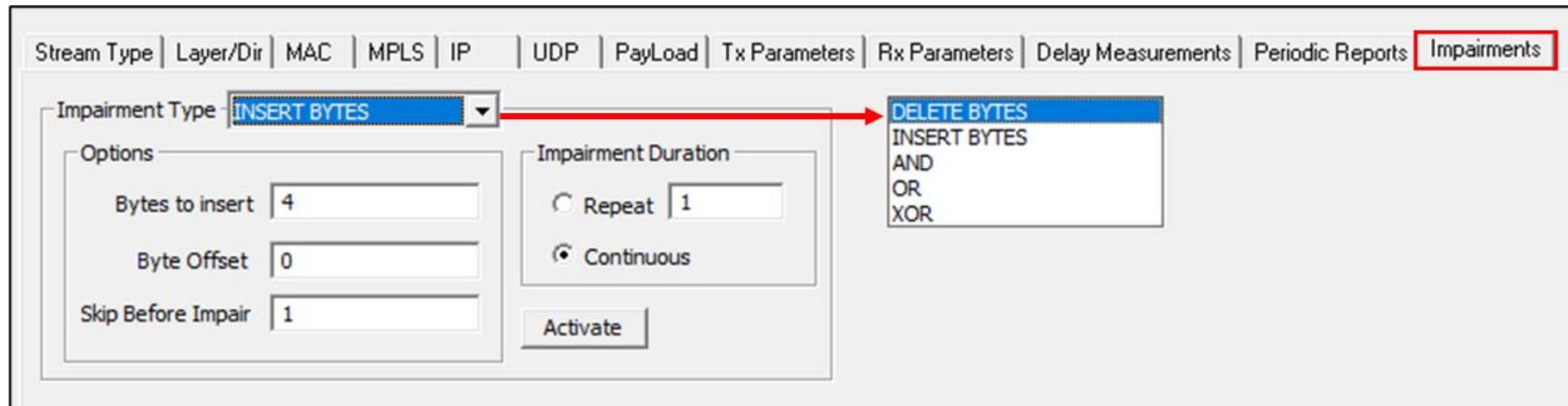
Traffic Generation Mode

Burst (Rate value will be used)  
 IFG (IFG value will be used)

Resolved Status Apply Stream Parameters



# Run-time Impairment Generation



- Impairments can be introduced in outgoing traffic using various impairment types and duration. Supports various types of impairments - DELETE BYTES, INSERT BYTES, AND, OR, & XOR. Impairments can be introduced at specific intervals or can be set to continuous insertion on each stream

# Impairments (Contd.)

The following Impairment Types are supported in PacketCheck™:

## Delete bytes:

Deletes 'X' number of bytes at specified offset for every 'Y' packets sent out for the stream. Repeat this for limited number of times or repeat continuously.

**E.g. :** 20 bytes being deleted from every 11th frame sent at an offset of 18 bytes which will be repeated 500 times

Impairment Type **DELETE BYTES**

Options	Byte count <input type="text" value="20"/>	Impairment Duration
	Byte Offset <input type="text" value="18"/>	<input checked="" type="radio"/> Repeat <input type="text" value="500"/> <input type="radio"/> Continuous
Skip Before Impair <input type="text" value="10"/>	<input type="button" value="Activate"/>	

## Insert bytes

Insert 'X' number of bytes at specified offset for every 'Y' packets sent out for the stream. Repeat this for limited number of times or repeat continuously.

**E.g.:** "ABCD" **being** inserted within the frame at an offset of 14 bytes in every alternate frame, which will be repeated 500 times.

Impairment Type **INSERT BYTES**

Options	Bytes to insert <input type="text" value="ABCD"/>	Impairment Duration
	Byte Offset <input type="text" value="14"/>	<input checked="" type="radio"/> Repeat <input type="text" value="500"/> <input type="radio"/> Continuous
Skip Before Impair <input type="text" value="1"/>	<input type="button" value="Activate"/>	

# Impairments (Contd.)

## Logical AND

Modify a byte at specified offset for every 'Y' packets sent out for the stream. Modification is done by doing logical AND with the user specified Hex byte. Repeat this for limited number of times or repeat continuously.

E.g.: 56th byte of every 17th frame being ANDed with 00 which will be repeated 20 times.

Impairment Type **AND**

Options	Impairment Duration
AND with <input type="text" value="00"/>	<input checked="" type="radio"/> Repeat <input type="text" value="20"/> <input type="radio"/> Continuous
Byte Offset <input type="text" value="56"/>	
Skip Before Impair <input type="text" value="16"/>	<input type="button" value="Activate"/>

## Logical OR

Modify a byte at specified offset for every 'Y' packets sent out for the stream. Modification is done by doing logical OR with the user specified Hex byte. Repeat this for limited number of times or repeat continuously.

E.g.: 21st byte of every 6th frame being ORed with FF which will be repeated continuously.

Impairment Type **OR**

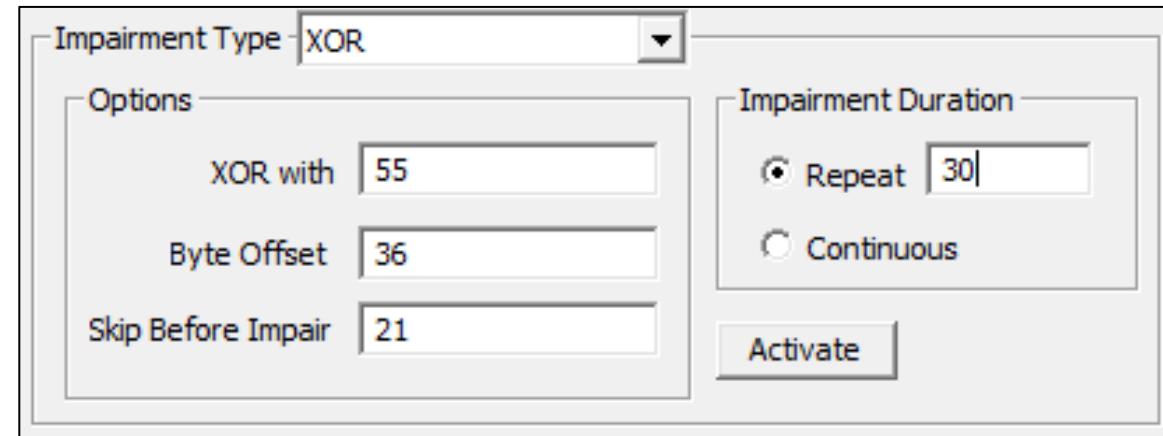
Options	Impairment Duration
OR with <input type="text" value="FF"/>	<input type="radio"/> Repeat <input type="text" value="20"/> <input checked="" type="radio"/> Continuous
Byte Offset <input type="text" value="21"/>	
Skip Before Impair <input type="text" value="5"/>	<input type="button" value="Activate"/>

# Impairments (Contd.)

## Logical XOR

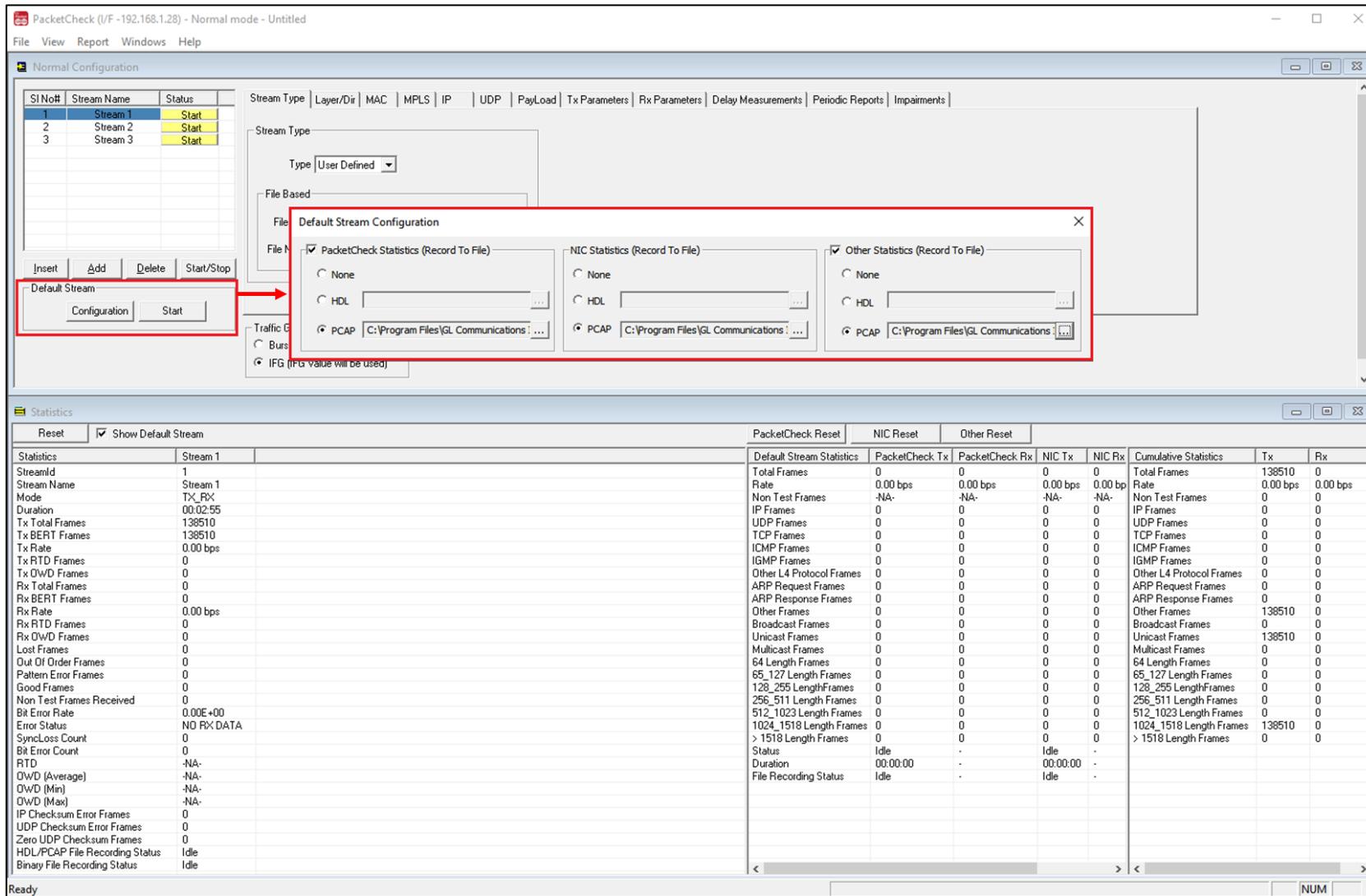
Modify a byte at specified offset for every 'Y' packets sent out for the stream. Modification is done by doing logical XOR with the user specified Hex byte. Repeat this for limited number of times or repeat continuously.

E.g.: 36th byte of every 22nd frame being XORed with 55 which will be repeated 30 times.



# Default Stream Configuration

- All incoming Ethernet frames not belonging to any of the user defined streams are treated as default stream



# Default Stream Statistics

PacketCheck (I/F -192.168.1.223) - Normal mode - 1.233

File View Report Windows Help

**Normal Configuration**

SI No#	Stream Name	Status
1	Stream1	Stop
2	Stream2	Stop
3	Stream3	Stop

**Frame Size**

Fixed Size  
 Random (Min-Max)  
 Increasing  
 Decreasing  
 Statistical Distribution

Range(60 - 8996)

Padding Random no. of Padding bytes  
 Min [60] Range (0-8996)  
 Max [60]  
 Max. Post Padding Frame Size [60] Range(60 - 8996)

**Stop Condition**

Continuous  
 EOF  
 Duration (sec) [0]  
 N No of Frames [0]

**Bandwidth Type** Rate  
Rate [1.000] Mbps  
IFG [20] msec  Take From File

**Traffic Generation Mode**

Burst (Rate value will be used)  
 IFG (IFG value will be used)

**Resolved Status** **Apply Stream Parameters**

**Default Stream**

**Configuration** **Stop**

**Statistics**

**Reset**  Show Default Stream

Statistics	Stream1	Stream2	Stream3
StreamId	1	2	3
Stream Name	Stream1	Stream2	Stream3
Mode	TX_RX	TX_RX	TX_RX
Duration	00:12:14	00:12:14	00:12:14
Tx Total Frames	53582	53575	53562
Tx BERT Frames	53582	53575	53562
Tx Rate	871.85 Kbps	868.82 Kbps	865.79 Kbps
Tx RTD Frames	0	0	0
Tx QWD Frames	0	0	0
Rx Total Frames	53336	53334	53312
Rx BERT Frames	53336	53334	53312
Rx Rate	859.63 Kbps	862.72 Kbps	862.72 Kbps
Rx RTD Frames	0	0	0
Rx QWD Frames	0	0	0
Lost Frames	0	0	0
Out Of Order Frames	0	0	0
Pattern Error Frames	0	0	0
Good Frames	0	0	0
Non Test Frames Received	0	0	0
Bit Error Rate	0.00E+00	0.00E+00	0.00E+00
Error Status	SYNC	SYNC	SYNC
SyncLoss Count	0	0	0
Bit Error Count	0	0	0
RTD	-NA-	-NA-	-NA-
QWD (Average)	-NA-	-NA-	-NA-
QWD (Min)	-NA-	-NA-	-NA-
QWD (Max)	-NA-	-NA-	-NA-
IP Checksum Error Frames	0	0	0
UDP Checksum Error Frames	0	0	0
Zero UDP Checksum Frames	0	0	0
HDL/PCAP File Recording ...	Idle	Idle	Idle
Binary File Recording Status	Idle	Idle	Idle

**PacketCheck Reset** **NIC Reset** **Other Reset**

Default Stream Statistics	PacketCheck Tx	PacketCheck Rx	NIC Tx	NIC Rx	Cumulative Statistics	Tx	Rx
Total Frames	0	0	1414	7956	Total Frames	162135	186799
Rate	0.00 bps	0.00 bps	743.84 b...	7.99 Kbp	Rate	2.62 Mbps	2.62 Mbps
Non Test Frames	-NA-	-NA-	-NA-	-NA-	Non Test Frames	0	0
IP Frames	0	0	1341	6094	IP Frames	1341	6097
UDP Frames	0	0	296	3120	UDP Frames	296	3120
TCP Frames	0	0	1040	1158	TCP Frames	1040	1159
ICMP Frames	0	0	5	0	ICMP Frames	5	0
IGMP Frames	0	0	0	1816	IGMP Frames	0	1816
Other L4 Protocol Frames	0	0	0	0	Other L4 Protocol Frames	0	2
ARP Request Frames	0	0	31	41	ARP Request Frames	31	18834
ARP Response Frames	0	0	41	31	ARP Response Frames	41	96
Other Frames	0	0	1	1790	Other Frames	160722	161772
Broadcast Frames	0	0	2	1928	Broadcast Frames	2	20786
Unicast Frames	0	0	1411	1579	Unicast Frames	162132	161564
Multicast Frames	0	0	1	4449	Multicast Frames	1	4449
64 Length Frames	0	0	618	3138	64 Length Frames	618	21996
65_127 Length Frames	0	0	335	3082	65_127 Length Frames	335	3083
128_255 Length Frames	0	0	178	544	128_255 Length Frames	178	546
256_511 Length Frames	0	0	73	686	256_511 Length Frames	73	686
512_1023 Length Frames	0	0	33	385	512_1023 Length Frames	33	385
1024_1518 Length Frames	0	0	177	121	1024_1518 Length Frames	160898	160103
> 1518 Length Frames	0	0	0	0	> 1518 Length Frames	0	0
Status	Running	-	Running	-			
Duration	00:12:04	-	00:12:04	-			
File Recording Status	Idle	-	Idle	-			

# Report Generation

(\* .pdf, \*. csv file formats)

Reports

Choose Format PDF  
PDF (highlighted)  
CSV

Title Generate Report

User Comments

Header PacketCheck Report

Footer GL Communication Inc.

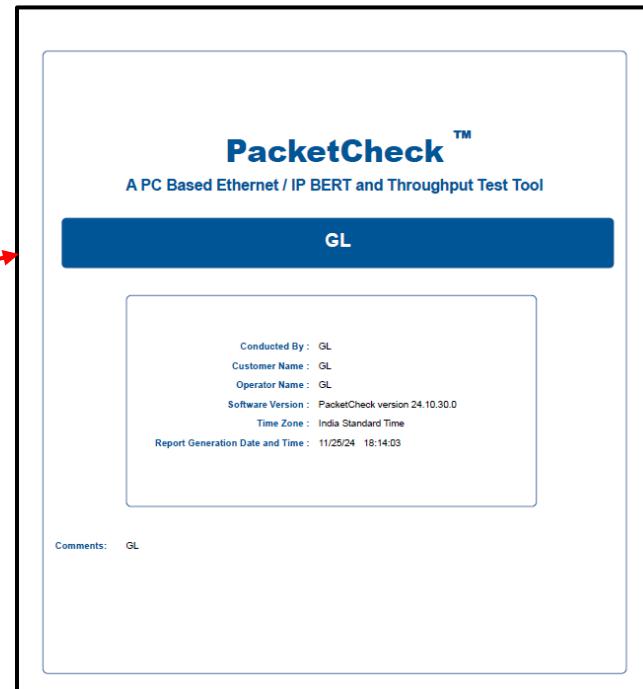
Conducted by GL

Customer Name GLComm

Operator Name GLC

File name C:\Program Files\GL Comm

Save Cancel



The screenshot shows an Excel spreadsheet titled "PacketCheck\_Test\_Report". The table has the following columns:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Stream wise statistics																
2	TimeStamp	StreamId	StreamName	Mode	Duration	TxTotalFrames	TxBERTFrames	TxRate	TxRTDFrames	TxOWDFrames	RxTotalFrames	RxBERTFrames	RxRate	RxRTDFrames	RxOWDFrames	LostFrames	OutOfOrderFrames
3	12:38:40	1	Stream 1	TX_RX	00:02:34	63710	63710	-	0	0	26637	26637	-	0	0	0	0
4	12:38:40	2	Stream 2	TX_RX	00:02:34	63788	63788	-	0	0	26608	26608	-	0	0	0	0
5	12:38:40	3	Stream 3	TX_RX	00:02:34	63729	63729	-	0	0	26598	26598	-	0	0	0	0
6																	
7	Default Stream statistics																
8	DSPC_TxTotalF	DSPC_RxT	DSNIC_TxTotal	DSNIC_F	DSOther_R	DSPC_TxRate	DSPC_RxRate	DSNIC_TxR	DSNIC_RxRate	DSOther_RxRa	DSPC_TxNonT	DSPC_RxNonT	DSNIC_T	DSNIC_RxNonT	DSOther_RxNo	DSPC_TxIPFr	DSPC_RxIPFrame
9	0	0	0	0	0	-	-	-	-	-	-NA-	-NA-	-NA-	-NA-	-NA-	0	0
10																	
11	Cumulative statistics																
12	TxTotalFrames	RxTotalFra	TxRate	RxRate	TxNonTest	RxNonTestFra	TxIPFrames	RxIPFrames	TxUDPFrames	RxUDPFrames	TxTCPFrames	RxTCPFrames	TxICMPF	RxICMPFrames	TxIGMPFrames	RxIGMPFram	TxOtherL4Protoc
13	191227	79843	-	-	0	0	191227	79843	0	0	0	0	0	0	0	0	191227
14																	
15																	

# Thank you!