



Test. Improve. Repeat.

ValkyrieManager (val-94)

A STEP-BY-STEP GUIDE**

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Add Chassis

testvmcfg - ValkyrieManager v1.84.8385.1 r93

Quick Menu: [Icons]

Chassis

Available Resources

Current Testbed: Default testbed

Testbed Name	Port #	Logging?
Default testbed	0	No

Show Only Used Ports | Reserve Used Ports | Reset Used Ports

Chassis Sort Order: Index | Expand All | Collapse All

Name	Used	Owner
Chassis 0 'Support test 02' (10.20.1.25)		
Chassis 1 'Live Demo 2400G' (10.20.1.1)		
Chassis 2 'L23 Live Demo' (10.20.1.170)		

Please select a resource in the treeview to view its properties.

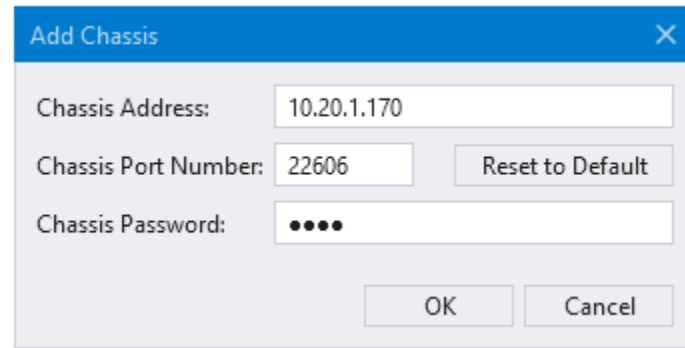
Click "Add Chassis" button.

Event Log (1 new events) | Stream Wizard | Communication Trace | Scheduler | Statistics Charting | Logging and Reporting

CHIMERA NETWORK IMPAIRMENT EMULATOR

Add Chassis

For the **Chassis Address** enter the IP address of the Management port:



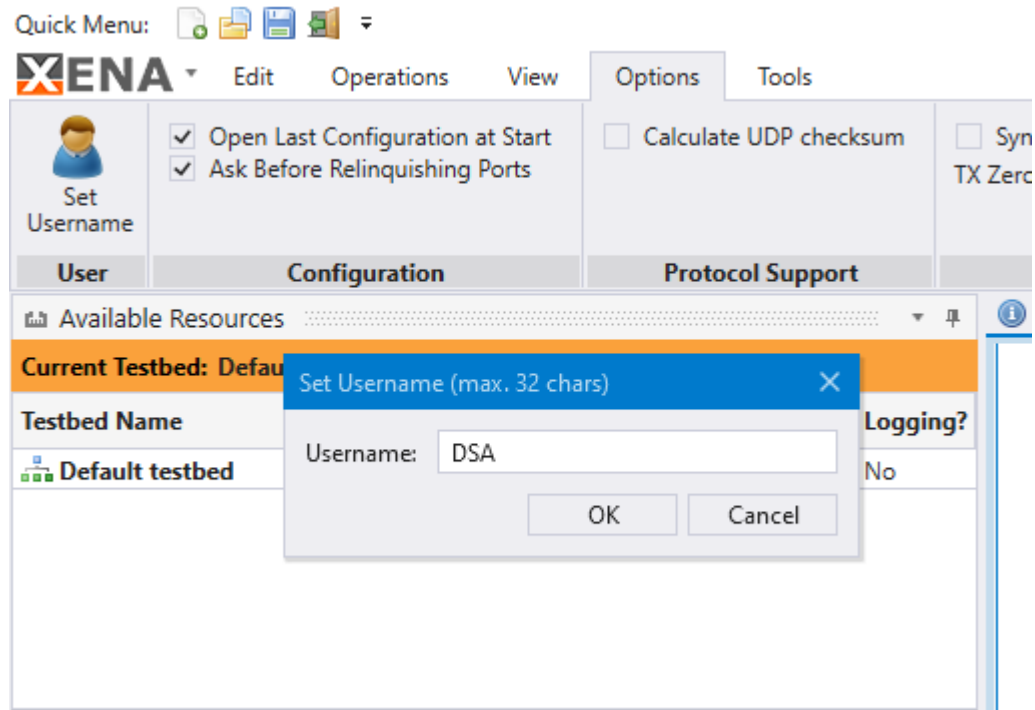
The screenshot shows a dialog box titled "Add Chassis" with a close button (X) in the top right corner. The dialog contains three input fields: "Chassis Address" with the value "10.20.1.170", "Chassis Port Number" with the value "22606" and a "Reset to Default" button next to it, and "Chassis Password" with four black dots. At the bottom of the dialog are "OK" and "Cancel" buttons.

The default port number is 22606

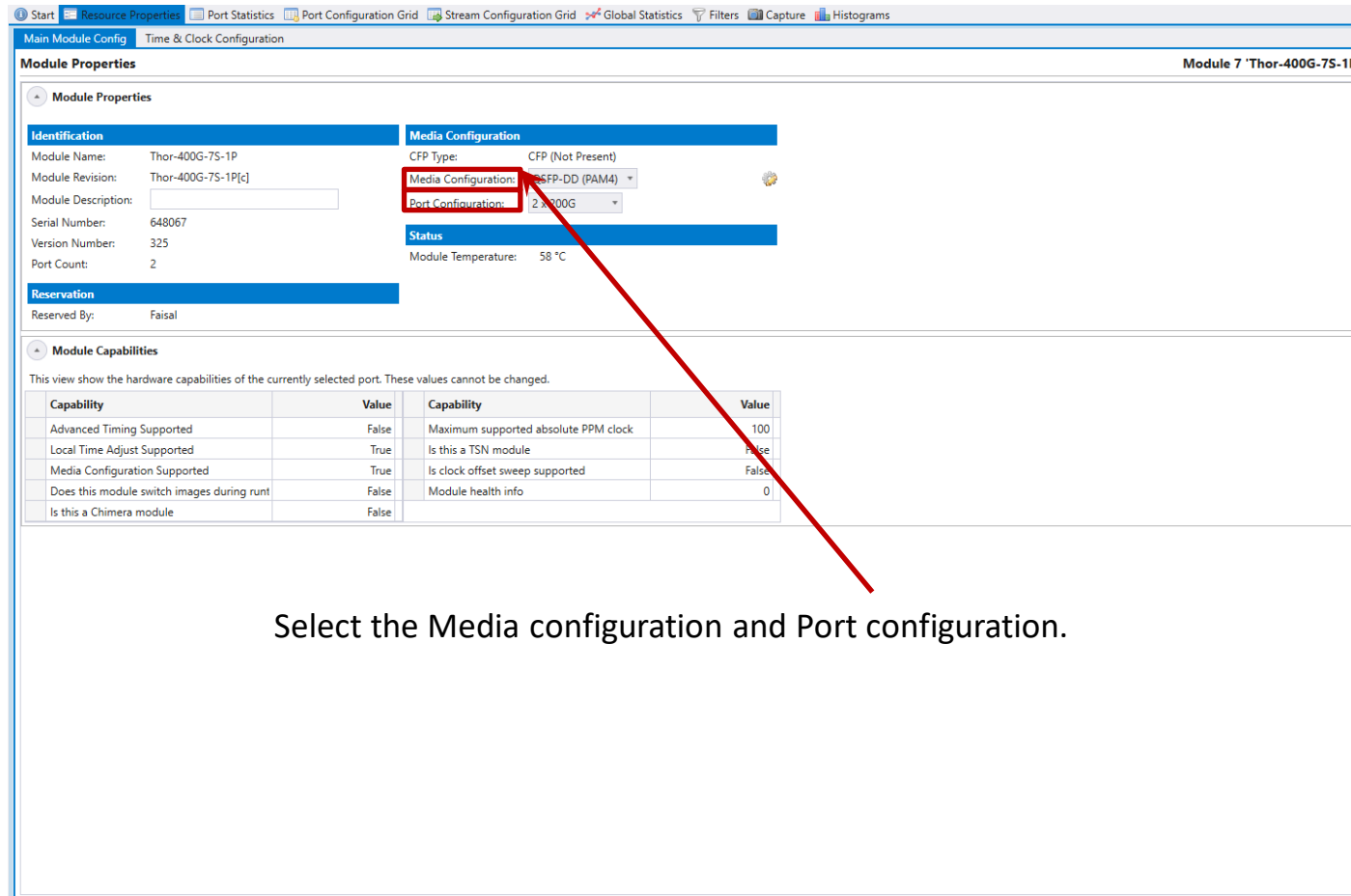
The default **Chassis Password** is “xena”

Add Chassis

Use **Options > Set Username** to indicate who owns the port reservation:



Configure Module



The screenshot shows the configuration page for Module 7 'Thor-400G-75-1P'. The 'Media Configuration' section includes the following fields:

- CFP Type: CFP (Not Present)
- Media Configuration: SFP-DD (PAM4)
- Port Configuration: 2 x 100G

The 'Status' section shows:

- Module Temperature: 58 °C

The 'Reservation' section shows:

- Reserved By: Faisal

The 'Module Capabilities' section shows a table of hardware capabilities:

Capability	Value	Capability	Value
Advanced Timing Supported	False	Maximum supported absolute PPM clock	100
Local Time Adjust Supported	True	Is this a TSN module	False
Media Configuration Supported	True	Is clock offset sweep supported	False
Does this module switch images during runt	False	Module health info	0
Is this a Chimera module	False		

Select the Media configuration and Port configuration.

Time & Clock Configuration

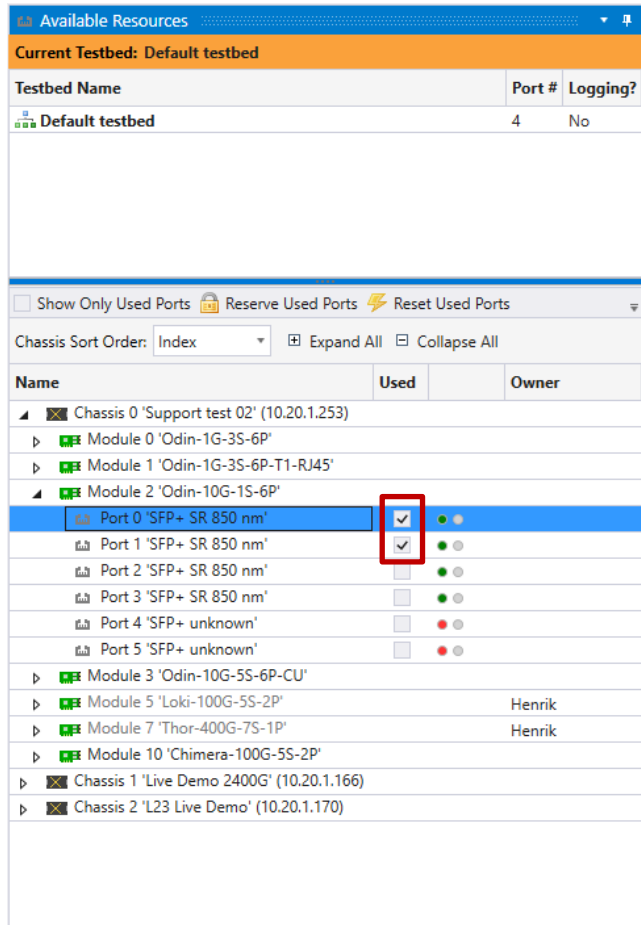
Configure the required clock configuration from this screen.

The screenshot displays the 'Time & Clock Configuration' window for 'Module 3 'Freya-800G-1S-1P-OSFP''. The 'Timing configuration' section shows 'Timing Source' set to 'Local Chassis Time', 'Local clock adjustment' at 0,000 ppm, and 'Maximum supported offset' at 400,000 ppm. The 'Clock offset sweep' section, highlighted with a red box, includes 'Sweep mode' set to 'Linear', 'Sweep direction' set to 'Pos.', 'Iterations' at 0, 'Maximum offset' at 400,000 ppm, and 'Slope' at 40,000 ppm/s. A 'Clock offset waveform' graph shows a triangular wave between 0 and 40 seconds, ranging from -400 to 400 ppm. The 'Clock sweep control' section shows 'Sweep iteration duration' at 40.0 sec, 'Current sweep progress' at 0%, and 'Sweep Control' with a 'Start' button. The 'Sweep iteration' is 0 and 'Current clock offset' is 0 ppm.

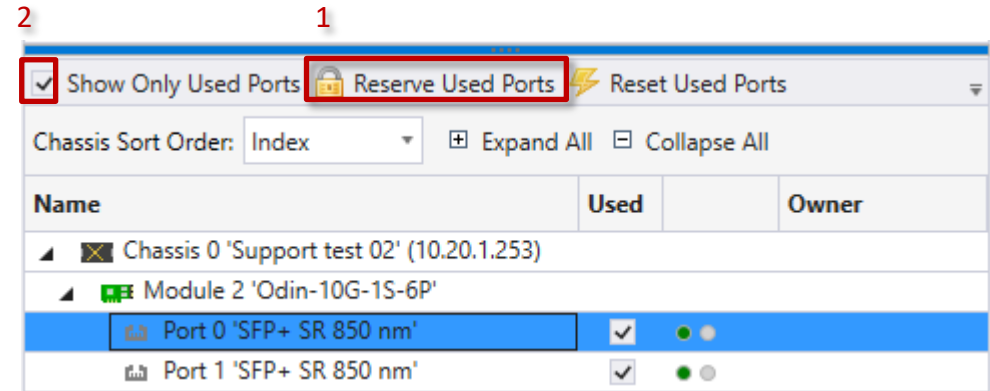
This section is available only on selected modules

Add Port(s)

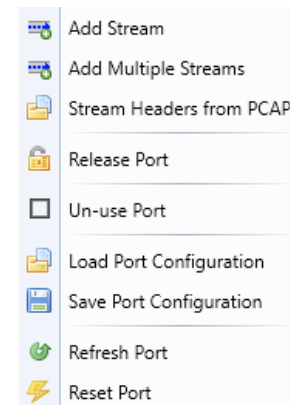
1 Select the Port/s you want to use:



2 - Click "Reserve Used Ports"
- Check "Show Only Used Ports"



TIP: Right-clicking on ports, modules or chassis will provide additional options e.g.:



Configure Port(s)

Select the port(s) to configure and click “Resource Properties” tab:

The screenshot displays the ValkyrieManager v1.84.8385.1 r93 interface. The 'Resource Properties' tab is selected, showing configuration options for a port. The 'Port Properties' section is expanded to show 'Main Properties'. The 'Port 0 'SFP-E 10/100/1000M'' is highlighted in the left-hand tree view. The 'Main Properties' section includes:

- Identification:** Name: P-0-0-0, Description: Port number 0, Loaded From: (none), Interface Type: SFP-E 10/100/1000M, Reserved By: Faisal
- Layer-1 Control:** Port Speed Selection: AUTO, Min. Average Inter-Frame Gap: 20 bytes, Speed Reduction: 0 ppm, emulated, Current Port Speed: 1 Gbit/s, Effective Port Speed: 1 Gbit/s, Auto-Negotiation Enable: , MDI/MDIX Mode: Auto, Stagger Factor: 0 x 64 μs, TCVR Temperature: N/A, Optical RX Power: N/A
- TX Control:** Sync Status: IN SYNC, Traffic Status: OFF, Traffic Control: Start, Include in Global Control: , Enable TX Output: , TX Time Limit: 00:00:00, TX Time Elapsed: 00:01:01, Stop After: 0 packets
- TX Profile:** Port TX Mode: Normal, Rate Fraction: 0 percent, Packet Rate: 0 packets/second, Bit Rate: 0 Mbit/sec (L2), Inter Packet Gap: N/A, Burst Period: 0 μs
- Misc. Settings:** Flash Port LED:
- Layer-2 Control:** MAC Address: 04 F4 BC A0 C6 00, MAC Auto-Training: 0 seconds, React to PAUSE Frames: , React to PFC Frames: CoS 0 CoS 7, Gap Monitor Start: 0 μs, Gap Monitor Stop: 0 packets
- Payload:** Payload Checksum Offset: 0 bytes, Random Seed: 0, Max Stream Header Length: 128 bytes, MIX Weights: Set Weights, TPLD Size: Default (20 bytes)
- Loopback and Latency:** Loopback Mode: Off, Latency Mode: Last-To-Last, Latency Offset: 0 ns

The 'IPv4/IPv6 Properties' section is also visible at the bottom, showing IPv4 Address: 0.0.0.0 and IPv6 Address: ::.

Configure Port(s)

Resource Properties
Main Port Configuration | Transceiver Registers
Port Properties **XB live demo / Module 0 / Port 0 'SFP-E 10/100/1000M'**

Main Properties | Load Streams | Save Streams | Load MIX Weights | Save MIX Weights

IPv4/IPv6 Properties

Port Capabilities

Identification
Name: P-0-0-0
Description: Port number 0
Loaded From: (none)
Interface Type: SFP-E 10/100/1000M
Reserved By: Faisal

TX Control
Sync Status: IN SYNC
Traffic Status: OFF
Traffic Control:
Include in Global Control:
Enable TX Output:
TX Time Limit: 00:00:00
TX Time Elapsed: 00:00:00
Stop After: 0 packets

TX Profile
Port TX Mode: Normal
Rate Fraction: 0 percent
Packet Rate: 0 packets/second
Bit Rate: 0 Mbit/sec (L2)
Inter Packet Gap: N/A
Burst Period: 0 μs

Misc. Settings
Flash Port LED:

Layer-1 Control
Port Speed Selection: AUTO
Min. Average Inter-Frame Gap: 20 bytes
Speed Reduction: 0 ppm, emulated
Current Port Speed: 1 Gbit/s
Effective Port Speed: 1 Gbit/s
Auto-Negotiation Enable:
MDI/MDIX Mode: Auto
Stagger Factor: 0 x 64 μs
TCVR Temperature: N/A
Optical RX Power: N/A

Layer-2 Control
MAC Address: 04 F4 BC A0 C6 00
MAC Auto-Training: 0 seconds
React to PAUSE Frames:
React to PFC Frames: CoS 0 CoS 7
Gap Monitor Start: 0 μs
Gap Monitor Stop: 0 packets

Payload
Payload Checksum Offset: 0 bytes
Random Seed: 0
Max Stream Header Length: 128 bytes
MIX Weights:
TPLD Size: Default (20 bytes)

Loopback and Latency
Loopback Mode: Off
Latency Mode: Last-To-Last
Latency Offset: 0 ns

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

Configure the following port parameters to accommodate your test.

Configure Port(s)

1 Minimum IFG

- Set to 20 -> 12B (Minimum allowed by Ethernet at 100% load) +8B Preamble
- can be set to 16B to achieve >100% load for port pressure testing
- * Values range between 16B-20B depending on module.

2 Mac Address

- Used as default SRC.MAC for each stream
- Used when sending Ping or replying to ARP

3 Mac training

- Used to train Devices with Xena MAC so stream won't be flooded

4 React to pause frames

- This means enable **Flow Control** on this port

Configure Port(s)

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Gap Monitor

- Used to monitor(time) the disruptions of service to traffic
- Gap Monitor start - After how many uSec would the Monitor start
- Gap Monitor stop – After how many packets would Monitor stop
- Results can be seen in port statistics (type of GAP can only be set)

6

Payload checksum, start at:

- Used to enter a Headers + Payload Data Integrity Checksum
- Should start from offset 14 for pure L2 packets
- Should start after IP offset for L3 and beyond packets (because of TTL)

7

Max. stream header length

- When user wants to set headers larger than 128
- Number of streams will be downsized to 1/2

Configure Port(s)

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Loopback mode

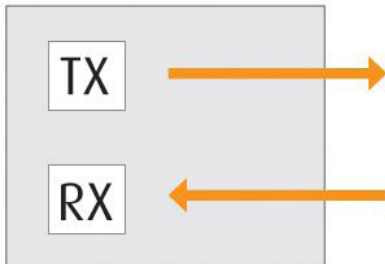
- Off: Traffic flows naturally out of the port
- L1 RX-to-TX: Any received packet is bounced back through TX
- L2 RX-to-TX: Same as 8.2 yet it also swaps MAC SRC<>DST
- L3 RX-to-TX: Same as 8.3 yet it also swaps IP SRC<>DST
- TX(on)-to-RX: Packet goes out of TX but also internally direct to RX
- TX(off)-to-RX: Packet goes directly to RX (No link sync needed)
- Port-to-port: Any received packet goes out through the neighbor port

Loopback Mode:

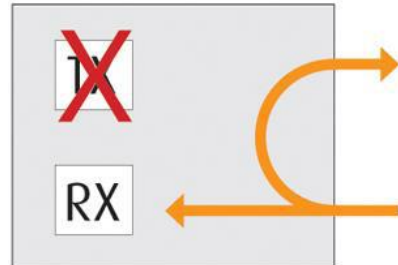
Off

- Off
- L1 RX-to-TX
- L2 RX-to-TX
- L3 RX-to-TX
- TX(on)-to-RX
- TX(off)-to-RX
- Port-to-Port

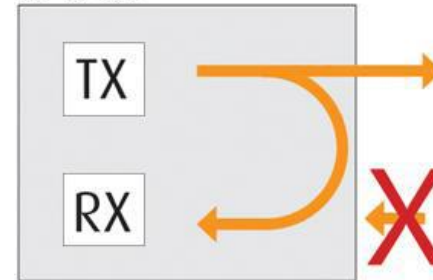
Normal



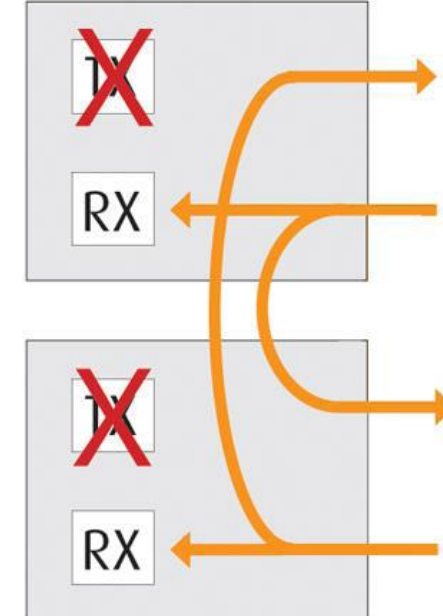
RX-to-TX



TX-to-RX



Port-to-Port

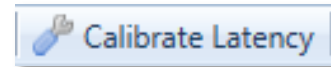


Configure Port(s)

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Latency offset

- Used to automatically eliminate transceiver + cable latency
- Set either manually or via Port Statistics “calibrate” button



Configure Port(s)

1 Test port IPv4

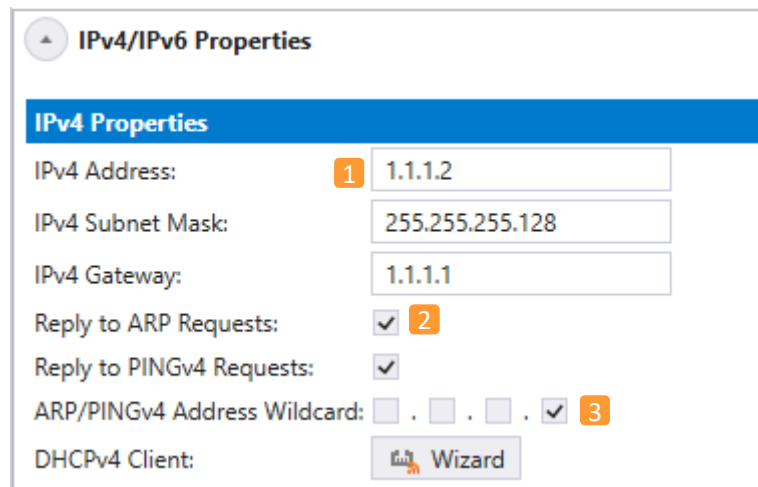
- Address/Subnet/Gateway used for PING and ARP functionality

2 Reply to incoming ARP/PING-request

- Enable port`s ability to reply to incoming requests

3 ARP and PING address wildcard:

- Used to enable multi unique ARP/PING requests



The screenshot shows the 'IPv4 Properties' configuration window. The 'IPv4 Properties' section is highlighted in blue. The configuration fields are as follows:

Field	Value	Annotation
IPv4 Address:	1.1.1.2	1
IPv4 Subnet Mask:	255.255.255.128	
IPv4 Gateway:	1.1.1.1	
Reply to ARP Requests:	<input checked="" type="checkbox"/>	2
Reply to PINGv4 Requests:	<input checked="" type="checkbox"/>	
ARP/PINGv4 Address Wildcard:	<input type="checkbox"/> . <input type="checkbox"/> . <input type="checkbox"/> . <input checked="" type="checkbox"/>	3
DHCPv4 Client:	<input type="button" value="Wizard"/>	

This means 1.1.1.x **will be replied** as long as it is part of 1.1.1.1/28 subnet.

Configure Port(s)

Some modules support:

1 Port Impairment

- Link Flap: Set Duration, Repeat Period and Repetitions (0=continuous)
- PMA Errors: Set BER coeff and BER exp for the error insertion

2 Payload Mode

- Extended Payload
 - Custom Data Field
- See application note *Freely Programmable Test Packets (Custom Data Fields)* for details

The screenshot shows a configuration interface with several sections:

- Port Impairment 1**:
 - Function: None (dropdown)
 - Duration: None (dropdown) ms
 - Repeat Period: Link Flap (dropdown) ms
 - Repetitions: PMA Errors (dropdown) 0
 - BER coeff: 1,00 (input)
 - BER exp: -4 (input)
 - Control: Start (green arrow) Stop (red circle)
- TX Profile**:
 - Port TX Mode: Normal (dropdown)
 - Rate Fraction: 0 percent (input)
 - Packet Rate: 0 packets/second (input)
 - Bit Rate: 0 Mbit/sec (L2) (input)
- Gap Monitor**:
 - Gap Monitor Start: 0 μs (input)
 - Gap Monitor Stop: 0 packets (input)
- Payload**:
 - Payload Checksum Offset: 0 byte (input)
 - Random Seed: 0 (input)
 - Max Stream Header Length: 128 bytes (dropdown)
 - MIX Weights: Set Weights (button)
 - TPLD Size: Default (20 bytes) (dropdown)
 - Payload Mode: Normal (dropdown) 2
- Loopback and Latency**:
 - Loopback Mode: Normal (dropdown)
 - Latency Mode: Last-To-Last (dropdown)
 - Latency Offset: 0 ns (input)

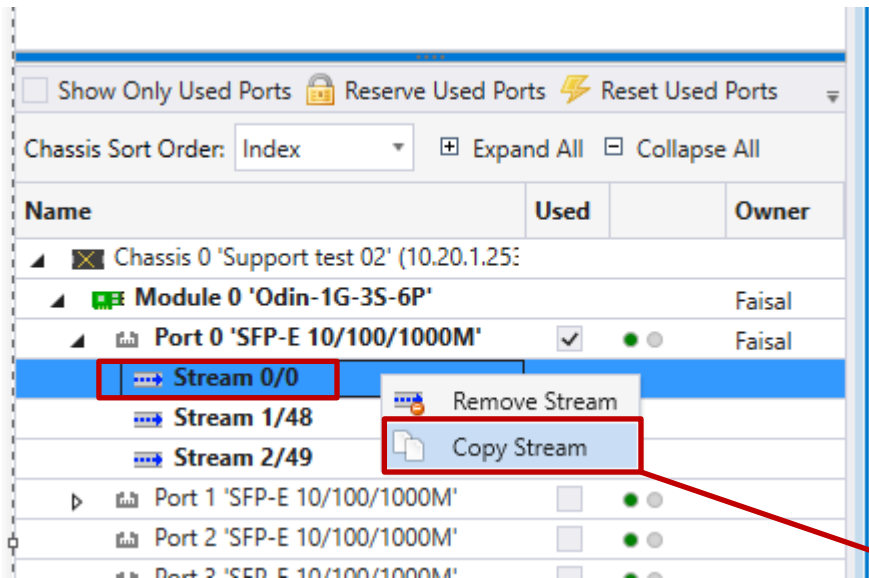
Configure Stream(s)

To add a stream, click “**Add Stream**” under Edit Menu

Or right-click port and choose “**Add Stream**”, to add multiple streams select the add multiple streams option

The screenshot displays the XENA VallyrieManager v1.84.8385.1 r93 interface. The top menu bar includes 'Edit', 'Operations', 'View', 'Options', and 'Tools'. The 'Edit' menu is open, showing 'Add Stream' highlighted with a red box. A red arrow points from this menu item to the 'Add Stream' option in the context menu that appears when right-clicking on 'Port 1 'SFP-E 10/100/1000M'' in the 'Available Resources' tree. The main window shows 'Port Properties' for 'Port 1 'SFP-E 10/100/1000M'', with various configuration tabs like 'Main Properties', 'Layer-1 Control', 'Layer-2 Control', 'Payload', and 'Loopback and Latency' visible.

Copy Stream



Copy Stream feature can also be used when user right clicks on any stream and then select copy stream and paste it anywhere.

Configure Stream(s)

Quick Menu: [Icons]

test.vmcfg - ValkyrieManager v1.84.8385.1 r93

ENANA Edit Operations View Options Tools

Add Chassis Discover Chassis Remove Chassis Open ScriptClient Reconnect to Chassis Disconnect from Chassis Keep Disconnected Create Testbed Edit Testbed Delete Testbed Reserve Resource Release Resource Relinquish Resource Refresh Port Reset Port Clear Stats Start Traffic Stop Traffic Replay File Add Stream Enable All Streams ARP All IP Streams Remove Stream Disable All Streams Equalize Rates Copy Stream Paste Stream

Chassis TestBeds Reservation Ports Streams

Available Resources

Current Testbed: Default testbed

Testbed Name	Port #	Logging?
Default testbed	1	No

Show Only Used Ports Reserve Used Ports Reset Used Ports

Chassis Sort Order: Index Expand All Collapse All

Name	Used	Owner
Chassis 0 'Support test 02' (10.20.1.25)		
Module 0 'Odin-1G-3S-6P'		Faisal
Port 0 'SFP-E 10/100/1000M'		Faisal
Stream 0/0		
Port 1 'SFP-E 10/100/1000M'		
Port 2 'SFP-E 10/100/1000M'		
Port 3 'SFP-E 10/100/1000M'		
Port 4 'SFP-E 10/100/1000M'		
Port 5 'SFP-E 10/100/1000M'		
Module 1 'Odin-1G-3S-6P-T1-RJ45'		
Module 2 'Odin-10G-1S-6P'		
Module 3 'Odin-10G-5S-6P-CU'		
Module 5 'Loki-100G-5S-2P'		
Module 7 'Thor-400G-7S-1P'		Faisal
Module 10 'Chimera-100G-5S-2P'		
Chassis 1 'Live Demo 2400G' (10.20.1.1)		
Chassis 2 'L23 Live Demo' (10.20.1.170)		

Main Stream Config

Stream Properties

Common Stream Control

Traffic Control

Traffic Status: OFF

Traffic Control: Start

Port TX Mode: Normal

TX Time Limit

Port TX Time Limit: 00:00:00

Port TX Time Elapsed: 00:01:01

TX Packet Limit

Port Stop After: 0 packets

Burst Period

Port Burst Period: 0 µs

Stream Properties

Identification

Port: P-0-0-0

Stream ID: 0

Test Payload ID: 1

Description: 2 Stream number 0

State: 3 Disabled

Error Handling

Insert Frame Checksum (FCS): [x]

Error Injection: Frame Checksum Error

Inject Error

Packet Content

Packet Size Type: Mixed Sizes

Packet Auto Size: [x]

Minimum Size: 64 bytes

Maximum Size: 1500 bytes

Payload Type: Incrementing 8-bits

Payload Pattern Size: 0 bytes

Payload Pattern:

Connectivity Check

IPv4 Gateway Address: 0.0.0.0

IPv6 Gateway Address: [x]

Resolve Peer Address: Send ARP

Check IP Peer: Send PING

Transmission Profile

Rate Fraction: 0 percent

Packet Rate: 0 packets/second

Bit Rate L2: 0 Mbit/sec

Bit Rate L1: 0 Mbit/sec

Rate Cap: Cap Rate

Inter Packet Gap: -922.337.203.685.477.580 ns (-115.292.150.460.68)

Stop After: 4 0 packets

Burst Size: 0 packets

Burst Density: 100 percent

Inter Packet Gap: 0 bytes

Inter Burst Gap: 0 bytes

Inter Burst Gap: 0 ns (0 bytes)

Burst Signature: [x]

Packet Header Definition (Total Header Size: 14 bytes)

Configure Stream(s)

1 Insert test payload, TID: This is the stream ID used to identify Latency/Jitter/Packet Loss.

2 Description: Stream Description text
(e.g. “Upstream connected to DUT Port 11”)

3 Stream State



Disabled: Stream is not started when traffic is ON nor is it included in port rate usage.

Suppressed: Stream is not started when traffic is ON, but it is included in port rate usage. (“Paused State”) can be switched to enabled on the fly.

Enabled: Stream is started when traffic is ON.

4 Stop After: Send specific number of packets and stop traffic.
Also used in sequential mode as stream packet quantity.

Configure Multiple Stream(S)

Multiple streams can be configured from Stream configuration Grid

The screenshot displays the XENA ValkyrieManager v1.84.8385.1 r93 interface. The 'Stream Configuration Grid' is highlighted with a red box in the top navigation bar. The main window shows the 'Stream Properties (3 streams)' section, which includes a table of stream configurations and a detailed view of the selected 'Stream 0/0'.

Stream Properties (3 streams)

Port	SID	TID	Description	State	Traffic	Rate %	Pps	Bit Rate L2	Bit Rate L1	Rate Cap	IPG	Stop	Seq.Pkt	Burst	Dens.	IPG Size	IBG Size	IBG	FCS	Error Injection	InjectError	Size
P-0-0-0	0	0	Stream number 0	Disabled	OFF	0,000	0	0,0000	0,0000	Cap Rate	-922.3372	0	0	0	100	0	0	0 ns (0 by	<input checked="" type="checkbox"/>	Frame Checksum Error	Inject Error	Mix
P-0-0-0	1	48	Stream number 1	Enabled	OFF	10,000	148809	76,1905	100,0000	Cap Rate	6,208 ns (	0	1	0	100	0	0	0 ns (0 by	<input checked="" type="checkbox"/>	Frame Checksum Error	Inject Error	Fixe
P-0-0-0	2	49	Stream number 2	Enabled	OFF	10,000	148809	76,1905	100,0000	Cap Rate	6,208 ns (	0	1	0	100	0	0	0 ns (0 by	<input checked="" type="checkbox"/>	Frame Checksum Error	Inject Error	Fixe

Stream 0/0 Details:

Segment/Field Name	M	Field Value	Named Values
Ethernet - Ethernet II (14 bytes)			
DMAC Address (48 bit)		04 F4 BC A0 C6 01	Support test 02/0/1
SMAC Address (48 bit)		04 F4 BC A0 C6 00	Support test 02/0/0
EtherType (16 bit)		08 00	IP
IPv4 - Internet Protocol v4 (20 bytes)			
Version (4 bit)		4	
Header Length (4 bit)		5	
DSCP (6 bit)		000000	Best effort
ECN (2 bit)		00	
Total Length (16 bit)		446	
Identification (16 bit)		00 00	
Flags (3 bit)		000	
Fragment Offset (13 bit)		0	
TTL (8 bit)		127	
Protocol (8 bit)		255	<special>
Header Checksum (16 bit)		39 42	
Src IP Addr (32 bit)		0.0.0.0	

The interface also shows a 'Stream Configuration Grid' table with columns for Identification, Transmission Profile, and Error Handling. A red arrow points from the 'Stream 0/0' entry in the table to the detailed view below.

Configure Stream(s)

The grid layout allows scaling configuration.

Select either to view streams under:

All Port(s)

Selected Port(s)

Selected Stream(s)

Stream Properties (2 streams)

Streams Source: All Ports In Testbed

Page 1

IDENTIFICATION		IDENTIFICATION		TRANSMISSION PROFILE																		
Port	SID	TID	Description	State	Traffic	Rate %	Pps	Bit Rate L2	Bit Rate L1	Rate Cap	IPG	Stop	Seq.Pkt	Burst	Dens.	IPG Size	IBG Size	IBG	ERRC	Error Injection	Injec	
P-2-8-0	0	28	Stream number 0	Enabled	ON	10,000	135869	78,2609	100,0000	Cap Rate	6.784 ns (	0	1	0	100	0	0 ns (0 by	0	0 ns (0 by	✓	Frame Checksum Error	Injec
P-0-0-0	0	23	Stream number 0	Enabled	OFF	10,000	148809	76,1905	100,0000	Cap Rate	6.208 ns (	0	1	0	100	0	0 ns (0 by	0	0 ns (0 by	✓	Frame Checksum Error	Injec

Configure Stream(s)

IDENTIFICATION		TRANSMISSION PROFILE										ERROR HANDLING			PACKET CONTENT										
Port	SID	TID	Rate %	1 Pps	Bit Rate L2	Bit Rate L1	Rate Cap	IPG	Stop	Seq.Pkt	Burst	Dens.	IPG Size	IBG Size	IBG	3 FCS	4 Error Injection	InjectError	5 Size Type	Auto!	Min	Max	6 PL Type	Pattern Size	Payload
P-0-0-0	0	23	10,000	148809	78,2609	100,0000	Cap Rate	6,784 ns	0	1	0	100	0	0 ns (0 by	0 ns (0 by	<input checked="" type="checkbox"/>	Frame Checksum Error	Inject Error	Fixed Size	<input type="checkbox"/>	72	1518	Incrementing 8-bits	1	100

1

Stream transmission profile:

Percent is L1 rate including IFG + Preamble.

Configuring on field actually changes all the others accordingly.

Grayed text can be edited. To have it set you need one more click.

2

Burst used to configure bursty traffic.

Density sets the inner IFG inside the burst

There is a trade-off between the stream rate and the Burst rate.

Inter Packet Gap: 1,974 ns (247 bytes)

Stop After: 0 packets

Burst Size: 10 packets

Burst Density: 70 percent

Inter Burst Gap: 44,310 ns (5,539 bytes)

Burst Signature:

3

Error injection: Can send specific errors on the fly – but only when traffic is ON.

Error Injection	InjectError
Frame Checksum Error	Inject Error
Frame Checksum Error	
Sequence Error	
Misordering Error	
Payload Integrity Error	
Test Payload Error	

4

Insert frame checksum, FCS: Un-checking this checkbox will cause error frames.

Configure Stream(s)

IDENTIFICATION		TRANSMISSION PROFILE										ERROR HANDLING			PACKET CONTENT										
Port	SID	TID	Rate %	1 Pps	Bit Rate L2	Bit Rate L1	Rate Cap	IPG	Stop	Seq.Pkt	Burst	Dens.	IPG Size	IBG Size	IBG	FCS	Error Injection	InjectError	Size Type	Auto!	Min	Max	PL Type	Pattern Size	Payload
P-0-0-0	0	23	10,000	148809	76,1905	100,0000	Cap Rate	6,208 ns	0	1	0	100	0	0 ns (0 by	0	0 ns (0 by	0	0 ns (0 by	Fixed Size		64	1518	Incrementing 8-bits	1	100

5 Packet length:

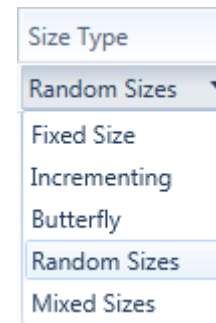
Fixed – for min value =x all packets will be x

Incrementing – for min value =100 and max value=200
100,101,102,103,...,197,198,199,200,100,101,102

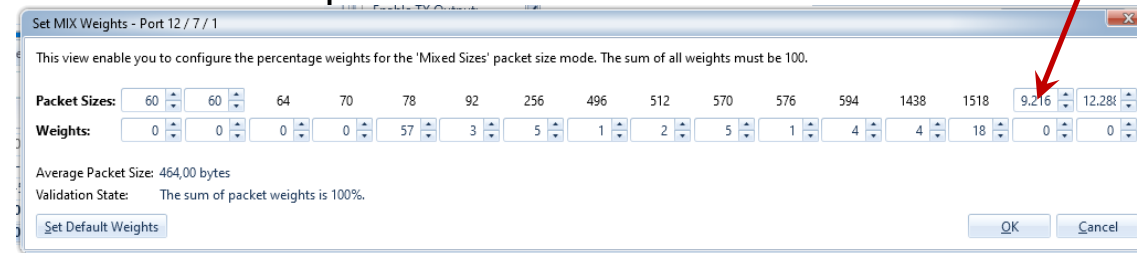
Butterfly – for min=100 max=200
100,200,101,199,102,198,103,197,104,196,105,...

Random – random values between min. and max.

Mix sends internet mixture of packet sizes:



For some modules 4 packet sizes are programmable. If not supported the programming boxes are dimmed



*MIX Weights sets can be loaded/saved via the port resource properties

Configure Stream(s)

IDENTIFICATION		TRANSMISSION PROFILE										ERROR HANDLING			PACKET CONTENT										
Port	SID	TID	Rate %	1 Pps	Bit Rate L2	Bit Rate L1	Rate Cap	IPG	Stop	Seq.Pkt	Burst	Dens.	IPG Size	IBG Size	IBG	3 FCS	4 Error Injection	InjectError	5 Size Type	Auto !	Min	Max	6 PL Type	Pattern Size	Payloa
P-0-0-0	0	23	10,000	148809	76,1905	100,0000	Cap Rate	6,208 ns	0	1	0	100	0	0 ns (0 by	0 ns (0 by	<input checked="" type="checkbox"/>	Frame Checksum Error	Inject Error	Fixed Size	<input type="checkbox"/>	72	1518	Incrementing 8-bits	1	00

6

Payload Type:

PL Type
Random
Pattern
Incrementing
PRBS-31
Random

Incrementing means “000102030405...FF00010203...”
provides built-in data integrity check for payload.

PRBS provides Pseudo Random Bit Sequence of $2^{31}-1$ pattern
No data integrity with adding Payload checksum in port properties.

Random provides Random bit Sequence pattern
No data integrity with adding Payload checksum in port properties.

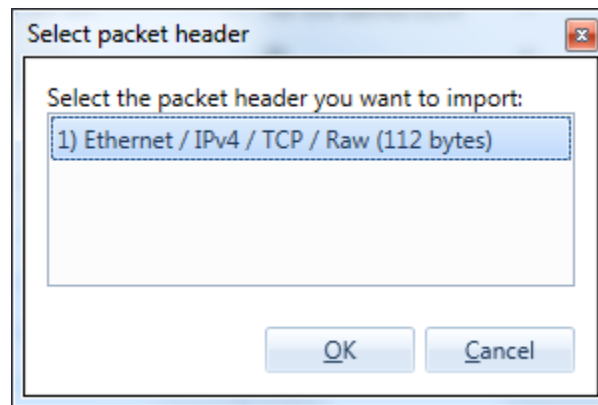
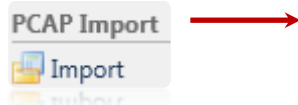
Pattern mean you can set your own custom pattern:

PL Type
Payload Pattern
Pattern
AB CD EF OF OF OF FF

Configure Stream(s)

Create Stream based on PCAP

Pcap Import:



Packet Header Definitions (Total Header Size: 112 bytes)

Segment/Field Name	M	Field Value	Named Values
▶ Ethernet - Ethernet II (14 bytes)			
▶ IPv4 - Internet Protocol v4 (20 bytes)			
▶ TCP - Transmission Control Protocol (20 bytes)			
▶ Raw - Data Segment (58 bytes)			

Offset	Hex	ASCII
0000	00 00 00 00 00 00 04 F4 BC 75 4D 40 08 00 45 00	.....??uM@..E.
0010	00 3E 00 00 00 00 7F 06 3B BB 00 00 00 00 00 00	.>.....;?.....
0020	00 00 00 00 00 00 00 00 00 00 00 00 00 00 50 00	.....P.
0030	00 00 AF CF 00 00 00 00 00 35 35 35 00 00 00 00	..??.....
0040	00 00 00 00 00 00 C0 00 00 00 00 45 61 45 10 00	.....
0050	00 00 35 33 50 00 45 56 74 40 00 00 00 00 00 00	.....
0060	00 00 00 00 00 00 00 00 00 34 51 45 00 00 00 00	.....

Segments

- + Add Segment
- + Add Custom Segment
- Remove Segment

Segment Order

- ▲ Move Up
- ▼ Move Down

Modifiers

- 📄 Add
- ✎ Edit
- 🗑 Remove

PCAP Import

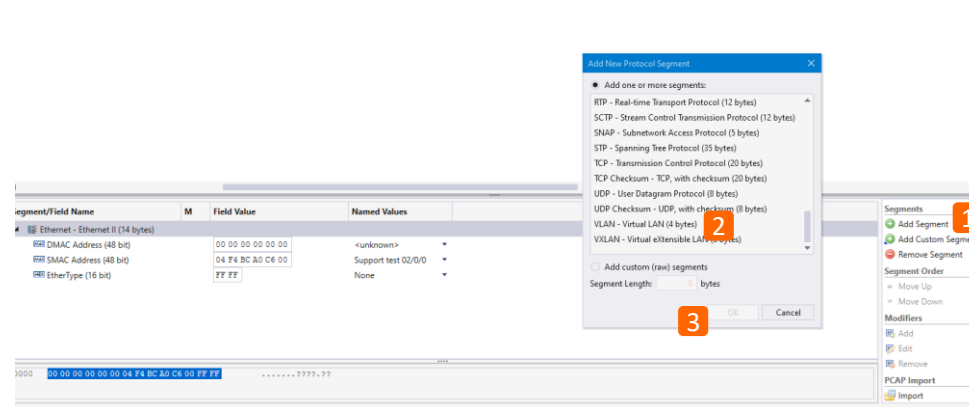
- 📄 Import

Configure Stream(s)

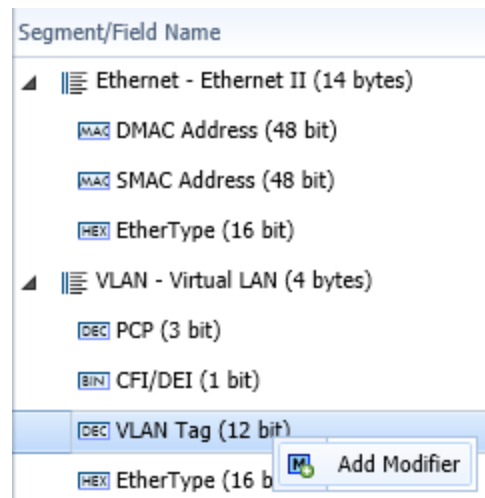
How To Create Flows

To create multiple flows per stream, place the modifier on important headers.
e.g. to create 1 Stream with 1000 VLAN flows with values between 1000-2000

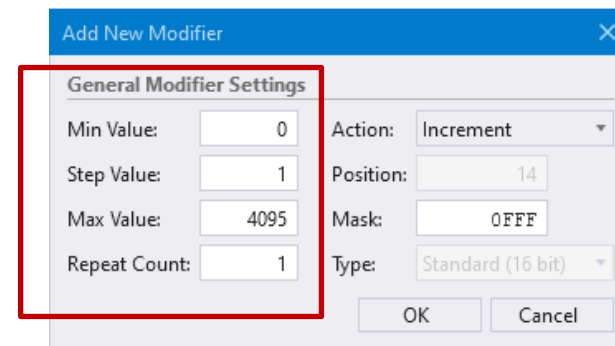
- 1 "Add Segment"
- 2 Choose VLAN
- 3 Click "OK"



- 4 Right-click VLAN tag and "Add modifier"



- 4 Configure as follows:



Configure Stream(s)

Setup simple bidirectional traffic.

- 1 Add 1 stream for each traffic port (right-click -> Add Stream)
- 2 Select both streams using the Available Resources panel and CTRL+

3

IDENTIFICATION		PROTOCOL SEGMENTS										CONNECTIVITY CHECK						
Port	SID	TID	Summary	DMAC	SMAC	VLAN	PCP	DSCP	IPv4 SrcAddr	IPv4 DstAddr	IPv6 SrcAddr	IPv6 DstAddr	UDP Src	UDP Dst	TCP Src	TCP Dst	IPv4 Gateway Address	IPv6
P-2-8-0	0	28	Ethernet	00 00 00 00 00 00	04 F4 BC 19 32 20		0	0	0.0.0.0	0.0.0.0			10000	11000			0.0.0.0	-
P-0-0-0	0	23	Ethernet	00 00 00 00 00 00	04 F4 BC A0 C6 00		0	0									0.0.0.0	-
P-0-0-1	0	31	Ethernet	00 00 00 00 00 00	04 F4 BC AB CF 01		0	0									0.0.0.0	-

- 3 Clicking “Pair Streams” results in ...

Identification				Protocol Segments				
	Port	SID	TID	Summary	DMAC	SMAC	VLAN	
>	P-0-10-1	0	4	ons (Total Header Size: 14 bytes)	Ethernet	04 F4 BC F4 1D E0	04 F4 BC F4 1D E1	
+	P-0-10-0	0	1	ons (Total Header Size: 14 bytes)	Ethernet	04 F4 BC F4 1D E1	04 F4 BC F4 1D E0	

Configure Stream(s)

Stream Scheduler

The Stream Scheduler can be used to build a series of actions (“operations”) based on existing streams in the current testbed.

Before starting the Stream Scheduler, you must reserve ports and configure ports and streams.

Example: 120 times the traffic is running for 5 seconds and then stopped for 5 seconds:

The screenshot shows the 'Scheduler' window for testbed 'Default testbed'. The title bar indicates 'All Ports in Testbed'. The interface includes buttons for 'Add Schedule', 'Remove Schedule', 'Rename Schedule', and 'Start Schedule'. The 'Selected Schedule' dropdown is empty, and the state is 'Stopped'. Below, the 'Current Schedule Operations' section contains a table with the following data:

Operation	Parameter	Operation Data	Target	State
Enable Stream			All targets	
Start Traffic			All targets	
Loop Block		120 loops	N/A	
Suspend Stream			All targets	
Wait Period		5.000 seconds	N/A	
Enable Stream			All targets	
Wait Period		5.000 seconds	N/A	

FILTERS

Filters
Filter Definitions 1 **XB live demo / Module 11 / Port 1 'SFP-E 10/100/1000M'** 5

Match Terms 6

Match ID	Segment/Field Type	Segment/Field Selector	Position	Filter Mask	Filter Value	
M0	Ethernet - SMAC Address	Select Field 2	6 3	FF FF 00 00 00 00	00 00 00 00 00 00	Remove
M1	Ethernet - DMAC Address	Select Field	0	FF 00 00 00 00 00	00 00 00 00 00 00	Remove
M2	VLAN - VLAN Tag	Select Field	14	0F FF 00 00 00 00	00 64 00 00 00 00	Remove
M3	IPv4 - Src IP Addr	Select Field	26	FF FF 00 00 00 00	00 00 00 00 00 00	Remove
M4	IPv4 - Dest IP Addr	Select Field	30	FF FF 00 00 00 00	00 00 00 00 00 00	Remove
M5	TCP Checksum - Src Port	Select Field	34	FF FF 00 00 00 00	00 00 00 00 00 00	Remove

Length Terms 5

Length ID	Length Type	Length	
L0	At Most	64	Remove
L1	At Least	1500	Remove
L2	At Most	512	Remove
L3	At Least	100	Remove
L4	At Most	100	Remove
L5	At Most	100	Remove

Filters 7 8

Index	Enabled	Description	Filter Condition	Filter Usage
0	<input type="checkbox"/>	ILLEGAL PACKET SIZE	L0 | L1	Remove
1	<input type="checkbox"/>	VLAN 100	M2	Remove
2	<input type="checkbox"/>	IVLAN 100	~M2	Remove
3	<input type="checkbox"/>	SEPCIAL TCP PACKET	M0 & M1 & M3 & M4 & M5	Remove
4	<input type="checkbox"/>	AT MOST 512B	L2	Remove
5	<input type="checkbox"/>	LEGAL PACKETS	~L0 & ~L1	Remove

Filters

Filters are used in order to get statistics on specific types of packets either specific content or specific packet size.

These filters can also trigger the Capture mechanism or focus Histogram results.

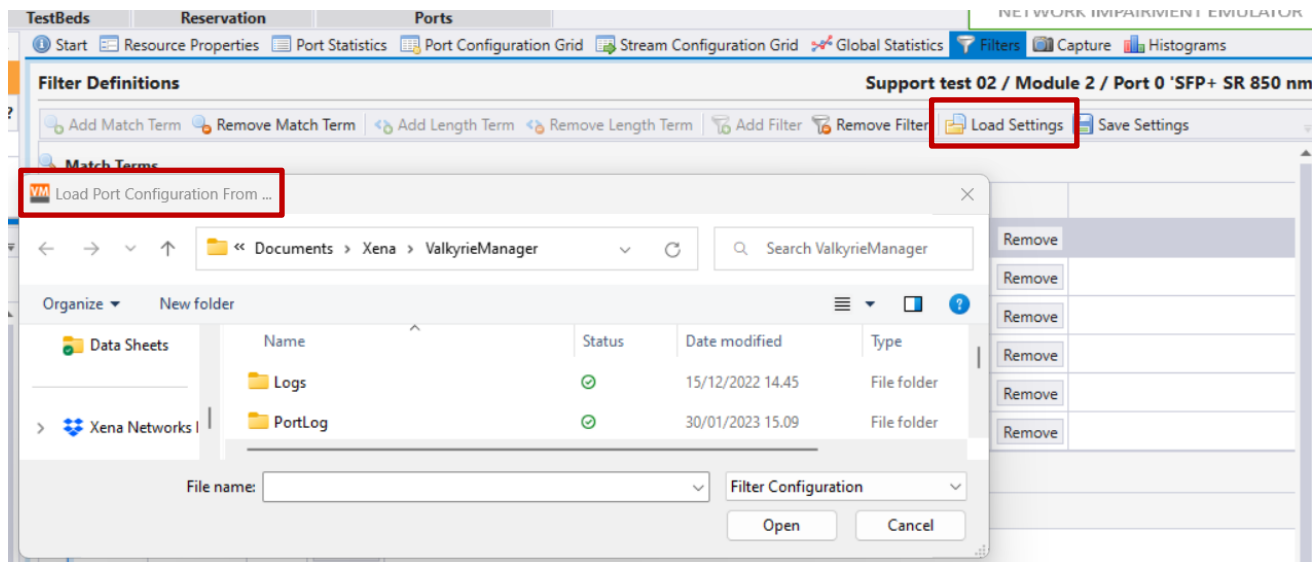
- 1 Add match term** –click to add new match term
(Added to provided Statistics for a matched packet (e.g. Packets of VLAN 100))
- 2** Click to access the field you want to match (headers must be added manually per match term).
- 3 Position** is set to beginning of field e.g. if you want to match last octet of IP, the offset should be incremented manually
Mask – to focus on a specific Byte the other should be set to “00”
- 4 Value** – The value you would like to match (the value is in Hex so 50Dec = 32Hex)
- 5** Length term –used to find specific packet sizes

Filters

- 6 Add filter** – click to add/build a new filter based on match terms
- 7 Enable** checkbox to enable a filter to be present in the results and capture trigger
- 8 Describe** –Name of the filter


Filter Condition – Build a filter based on pre-built terms using the **&**, **|**, and **~** operators

* Load/Save Filters settings:




Filters


Configuration Examples

 Match Terms

Match ID	Segment/Field Type	Segment/Field Selector	Position	Filter Mask	Filter Value
M0	Ethernet - SMAC Address	Select Field	6	FF FF 00 00 00 00	00 01 00 00 00 00
M1	Ethernet - DMAC Address	Select Field	0	FF FF 00 00 00 00	00 02 00 00 00 00
M2	VLAN - VLAN Tag	Select Field	14	0F FF 00 00 00 00	00 64 00 00 00 00
M3	IPv4 - Src IP Addr	Select Field	26	FF FF 00 00 00 00	01 01 00 00 00 00
M4	IPv4 - Src IP Addr	Select Field	28	FF FF 00 00 00 00	01 0A 00 00 00 00
M5	TCP - Src Port	Select Field	34	FF FF 00 00 00 00	00 00 00 00 00 00

 Length Terms

Length ID	Length Type	Length	
L0	At Most	64	Remove
L1	At Least	1500	Remove

 Filters

Index	Enabled	Description	Filter Condition
0	<input checked="" type="checkbox"/>	SRC IP = 1.1.1.10	M3 & M4
1	<input checked="" type="checkbox"/>	VLAN ID= 100	M2
2	<input checked="" type="checkbox"/>	Runts	L0
3	<input checked="" type="checkbox"/>	Jumbo	L1
4	<input checked="" type="checkbox"/>	Legal Packet Size	~L0 & ~L1
5	<input checked="" type="checkbox"/>	Illegal Packet Size	L0 | L1

Filters

Results Examples

Filter Results Under Global Statistics > Port Statistics:

Filter Traffic

Name	Description	RX (%)	RX (bit/s)	RX (pps)	RX (bytes)	RX (packets)
▲ P-0-10-0	(Aggregated filter counters)	29.585	290,855,140	31,231	8,139,506,404	6,939,422
Filter 0	SRC IP = 1.1.1.10	1.005	9,857,620	1,192	116,137,606	113,177
Filter 1	VLAN ID= 100	0.008	79,160	10	1,078,644	1,041
Filter 2	Runts	0.005	35,730	72	900,469	14,533
Filter 3	Jumbo	8.673	85,749,370	6,115	2,444,688,239	1,397,063
Filter 4	Legal Packet Size	11.214	109,319,420	17,653	3,131,110,945	4,002,011
Filter 5	Illegal Packet Size	8.680	85,813,840	6,189	2,445,590,501	1,411,597

Capture

- 1 Start Capture
- 2 Start Trigger
- 3 Stop Trigger
- 4 Packets to Keep
- 5 Test Payload ID
- 6 Byte to keep
- 7 Save Packets
- 8 Launch Wireshark

The screenshot shows the Xena Networks capture configuration and results interface. The 'Capture Handling' section is at the top, with a 'Start Capture' button (1) and 'Load Settings' and 'Save Settings' buttons. Below this is the 'Capture Configuration' section, which includes 'Start Trigger' (2) set to 'From ON', 'Stop Trigger' (3) set to 'Until Full', 'Packets To Keep' (4) set to 'All Packets', and 'How Much To Keep' (6) set to '0 bytes of each packet'. A 'Test Payload ID (TID)' field (5) is set to '0'. The 'Capture Result Grid' section shows a table of captured packets (227 total) with columns for #, Timestamp (ns), Latency (ns), IFG (bytes), Source, Destination, Protocol, Full Length, and Cap Length. The 'Save Packets' (7) and 'Launch Wireshark' (8) buttons are visible. The bottom section shows the packet details for the selected packet, including Ethernet II, Raw Data Segment, Xena TPLD section, and Ethernet FCS.

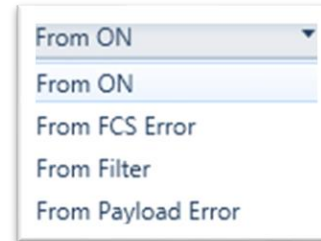
#	Timestamp (ns)	Latency (ns)	IFG (bytes)	Source	Destination	Protocol	Full Length	Cap Length
0	432	2.640	0	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
1	7.104	2.592	776	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
2	13.824	2.616	778	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
3	20.592	2.664	780	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
4	27.264	2.640	772	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
5	33.960	2.640	778	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
6	40.680	2.616	778	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
7	47.376	2.616	774	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64
8	54.096	2.640	776	04:F4:BC:A0:C6:01	04:F4:BC:A0:C6:00	ETHERNET/Raw/XENA_TPL	64	64

Capture

1 Checkbox enabled means when click Start/Stop in global view, capture mechanism will Start/Stop on this port.

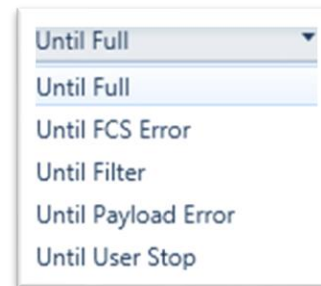
2 Start Triggers:

- From ON – Means Automatically Start
- From FCS error – First FCS error seen triggers Capture Start
- From payload error - First Payload error seen triggers Capture Start
- Filter x – First packet answering Filter condition triggers Capture Start



3 Stop Triggers:

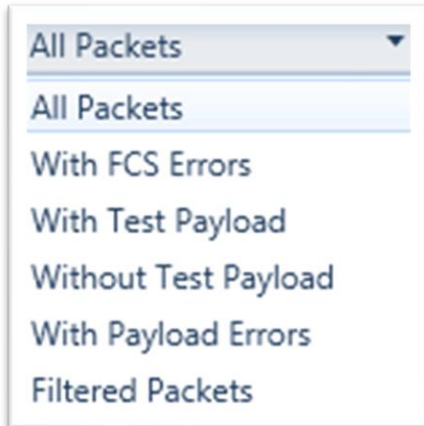
- Until full – Means Automatically stop when buffer full
- Until FCS error – First(/2nd) FCS error seen triggers Stop
- Until payload error - First(/2nd)Payload error seen triggers Stop
- Filter x – First (/2nd) packet answering Filter condition triggers Stop
- Until User Stop – Capture will keep capturing FILO till manually stopped.



Capture

4

Which packets to keep (which will be left in capture buffer):



- **All** - All packets are captured
- **With FCS error** – Only FCS error frames
- **With payload error** – Only payload error frames
- **Without test payload** – Only non-stream packets remain
- **With test payload** – keeps only packets that are part of stream x(5) fill in the payload ID
- **Filter x** – keeps only packets answering Filter x conditions

Capture

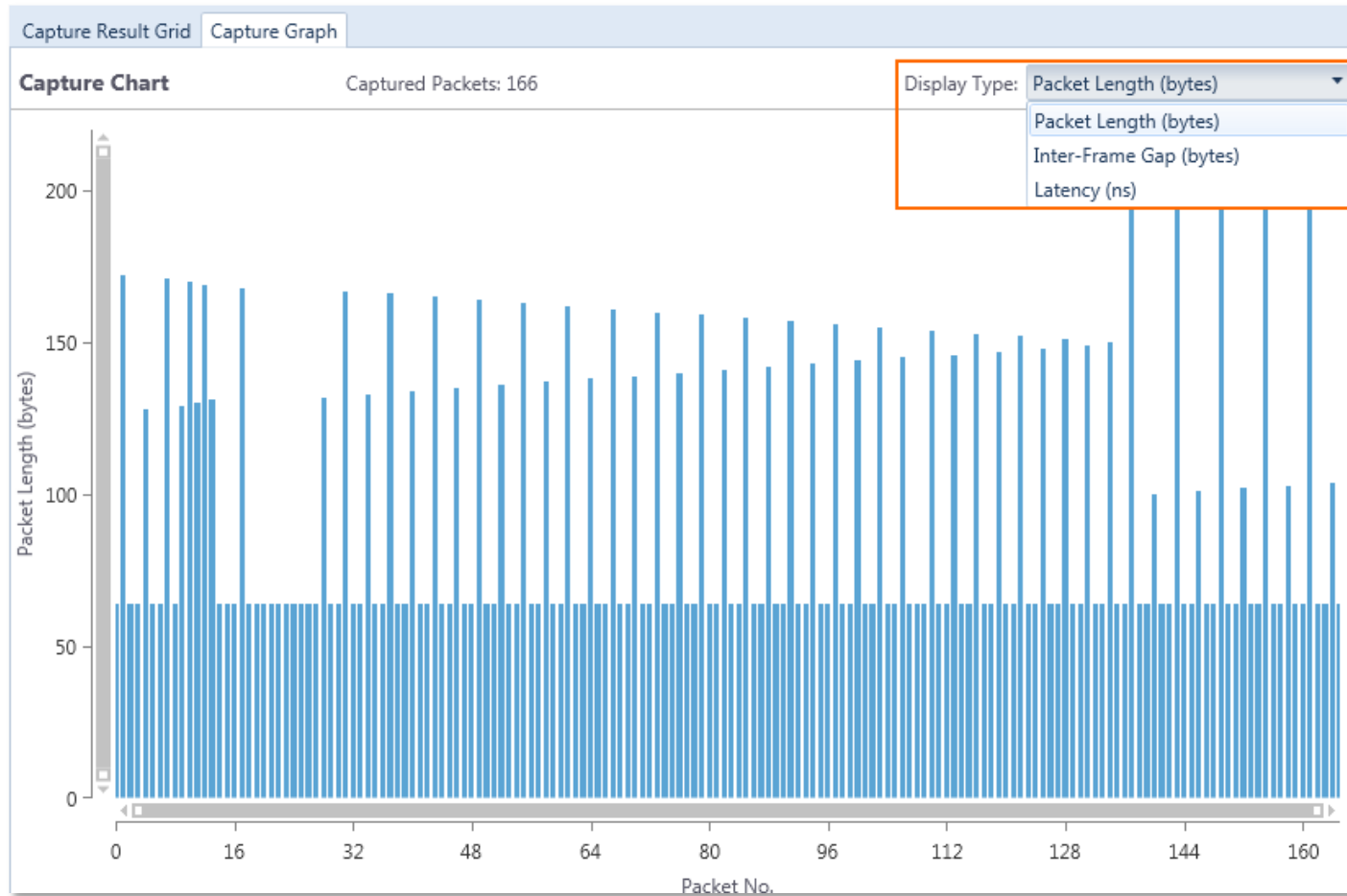
- 7 Save capture buffer as PCAP file (tcpdump, wireshark, ethereal...)
- 8 Open Capture buffer with Wireshark* (or any PCAP associated software)

```
Frame 3: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface 0  
Ethernet II, Src: XenaNetw_0b:16:c2 (04:f4:bc:0b:16:c2), Dst: 00:00:00_00:00:00 (00:00:00:00:00:00)  
XENA Protocol  
  Payload  
  Sequence Number: 2  
  Time Stamp: 3470317309  
  Test Payload ID: 1  
  Payload Check Offset: 14  
  First Packet Flag: 0  
  Payload CRC Enabled: 0  
  TPLD Signature: 0x91d9d1d857ff94ce  
  valid: True
```

Tip:
Try downloading the Wireshark plugin to see the TID.

Capture

9 Choose the capture buffer visualization method:



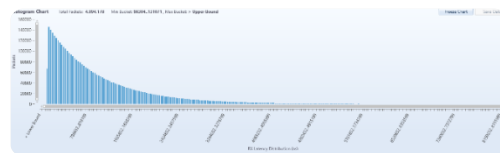
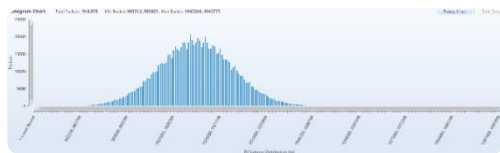
Histograms

Histograms are used to plot different distributions of values gathered over time e.g.

- Tx/Rx Length (Packet size distribution)
- Rx Latency (Latency and Jitter may drift over time)
- Rx Jitter
- Rx IFG (an additional way of observing Jitter behavior)

Each change of configuration will reset the results.

ID	State	Control 2	Global?	Source type for the 3	Which Packets	TID	Filter 4	Start 5	Step	
0	Inactive	Start	<input checked="" type="checkbox"/>	TX IFG	All		N/A	0 16		Remove
1	Inactive	Start	<input checked="" type="checkbox"/>	TX IFG	All		N/A	0 16		Remove



Histograms

- 1 **Add histogram** – Multiple histograms can be run simultaneously
- 2 **Start Histogram** – Start Manually or use checkbox to start from Global

- 3 Select the type of measurement you would like to track using the Histogram:

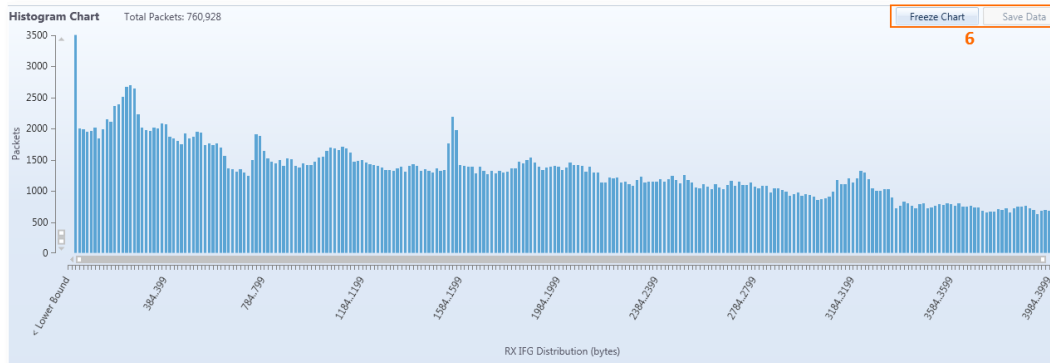
Source Type

- TX IFG
- TX Length
- RX IFG
- RX Length
- RX Latency
- RX Jitter

- 4 Select which packets will be monitored by this Histogram:
... either Specific TID or packets answering a specific filter

Which Packets

- All
- Test Payload
- Filter



- 5 **X-axis range** – choose the minimum offset and the resolution (step)
- 6 Use the **Freeze button** to freeze the view and enable the Save option.

Global Statistics change icons

Ports Statistics

- 1 **Mark** – freeze constant results and show only changing results
- 2 **Save** – Save a CSV with all ports results

The screenshot shows the 'Global Statistics' window in XENA Networks. The window title is 'Global Statistics (1 Ports, 3 Streams)'. The main content area is titled 'All Ports and Streams in Current Testbed'. Below the title bar, there are controls for traffic (Start/Stop), running time, stop at, force port limit, errors, clear counters, mark, and save. The 'Mark' and 'Save' buttons are highlighted with orange callouts 1 and 2 respectively. Below the controls, there are tabs for 'Port Statistics', 'Stream Statistics', and 'Chimera Statistics'. The 'Port Statistics' tab is active, showing a list of statistics categories with numbered callouts 3 through 11:

Port Summary	3
Main Port Traffic Statistics	4
Traffic Without Test Payload Statistics	5
Filter Traffic	6
ARP/NDP and PING Statistics	7
Frame Events	8
Injected Errors Statistics	9
Alarms and Errors Statistics	10
Misc. Statistics	11

Global Statistics

Ports

3 Port Summary – SYNC status and error summary

4 Main Port Traffic Statistics – included results of TID traffic and non TID traffic:

Global Statistics (2 Ports, 0 Streams) All Ports and Str

Start Traffic Stop Traffic Running Time: 00:00:00 Stop At: 00:00:00 Force Port Limit Errors: 0 Clear Counters Mark Save TX Stream Display: All defined Clean RX Filters

Port Statistics Stream Statistics Chimera Statistics

Port Summary

Name	Description	Speed	Sync Status	FCS Status	FCS Errors	Total Errors
P-0-2-0	Port number 0	10 Gbit/s	IN SYNC	FCS OK	0	0
P-0-2-1	Port number 1	10 Gbit/s	IN SYNC	FCS OK	0	0

Main Port Traffic Statistics

Name	TX L1 (%)	TX L1 (bit/s)	TX L2 (bit/s)	TX L2 (bytes/s)	TX (pps)	TX (bytes)	TX (packets)	RX L1 (%)	RX L1 (bit/s)	RX L2 (bit/s)	RX L2 (byte/:	RX (pps)	RX (bytes)	RX (packets)
P-0-2-0	0,000	0	0	0	0	0	0	0,000	0	0	0	0	456.428.722	644.734
P-0-2-1	0,000	0	0	0	0	0	0	0,000	0	0	0	0	456.428.722	644.734

Traffic Without Test Payload Statistics

Filter Traffic

ARP/NDP and PING Statistics

Frame Events

Injected Errors Statistics

Alarms and Errors Statistics

Misc. Statistics

Global Statistics

Ports

5 Traffic without test payload – non TID traffic

6 Filters – Filter results but only 2 for port (the rest are under Statistics)

7 ARP/PING control plane results

8 Frame Events

9 Injected errors statistics

10 Alarm and Error statistics
Contents depend on module
and port mode

11 Miscellaneous results:
- # sent MAC training packets
- # sent IGMP joins
- Gap count and duration
- # RX Pause frames received
- Flow Control pause frames received

Global Statistics (2 Ports, 0 Streams) All Ports and

Start Traffic Stop Traffic Running Time: 00:00:00 Stop At: 00:00:00 Force Port Limit Errors: 0 Clear Counters Mark Save TX Stream Display: All defined Clean RX Filters

Port Statistics Stream Statistics Chimera Statistics

Port Summary

Main Port Traffic Statistics

Traffic Without Test Payload Statistics

Filter Traffic

ARP/NDP and PING Statistics

Name	TX ARP Req	TX ARP Rep	TX Ping Req	TX Ping Rep	RX ARP Req	RX ARP Rep	RX Ping Req	RX Ping Rep
P-0-2-0	0	0	0	0	0	0	0	0
P-0-2-1	0	0	0	0	0	0	0	0

Frame Events

Name	RX Oversize	RX Undersize	RX Jabber
P-0-2-0	0	0	0
P-0-2-1	0	0	0

Injected Errors Statistics

Name	FCS	Sequence	Misordered	Integ.Err	TID Err
P-0-2-0	0	0	0	0	0
P-0-2-1	0	0	0	0	0

Alarms and Errors Statistics

Name	No sync alarm	PCS errors	FEC errors	FCS Errors	PCS head errors	PCS align errors	PCS BIP errors	PCS High BER er
P-0-2-0	0	N/A	N/A	0	N/A	N/A	N/A	N/A
P-0-2-1	0	N/A	N/A	0	N/A	N/A	N/A	N/A

Misc. Statistics

Name	TX MAC Trn	TX Join	Gap Count	Gap Dur. (µs)	RX PAUSE	RX PFC	RX # PFC Quanta (CoS0 .. CoS7)
P-0-2-0	0	0	0	0	0	0	0/0/0/0/0/0/0/0
P-0-2-1	0	0	0	0	0	0	0/0/0/0/0/0/0/0

Global Statistics

Streams

Global Statistics (2 Ports, 2 Streams) All Ports and Streams in Current Testbe

Start Traffic Stop Traffic Running Time: 00:02:19 Stop At: 00:00:00 Force Port Limit Errors: 0 Clear Counters Mark Save TX Stream Display: All defined Clean RX Filters

Port Statistics Stream Statistics Chimera Statistics

Aggregated Stream Statistics

Src.Port	SID	TID	Dest.Port	Description	TX L1 (%)	TX L1 (bit/s)	TX L2 (bit/s)	TX (pps)	TX (bytes)	RX (bytes)	TX (packets)	RX (packets)	RX L1 (%)	RX L1 (bit/s)
N/A	N/A	N/A	N/A	N/A	20,000	19,999,999.6	15,238,094.9	29,761,904	261,932,632,704	261,930,037,184	4,092,697,386	4,092,656,831	20,000	19,999,999

Src.Port	SID	TID	Dest.Port	Description	(TX-RX)	Lost Packets	Packet Loss Ratio	Misordered	Payload Errors	BER (aggr)	BER (curr)
N/A	N/A	N/A	N/A	N/A	0	0	0,000E+000	0	0	0,000E+000	0,000E+000

Data Pager: 1 of 1 Rows per Page: 50

Stream Traffic Statistics **12**

Src.Port	SID	TID	Dest.Port	Description	TX L1 (%)	TX L1 (bit/s)	TX L2 (bit/s)	TX (pps)	TX (bytes)	TX (packets)	RX L1 (%)	RX L1 (bit/s)	RX L2 (bit/s)	RX (pps)	RX (bytes)
Port 12 / 7 / 0	0	1	Port 12 / 7 / 1	Stream number 0	10,000	9,999,999.690	7,619,047.37C	14,880,952	130,965,014,336	2,046,328,349	10,000	10,000,000.65	7,619,048.17C	14,880,953	130,966,014,336
Port 12 / 7 / 1	0	2	Port 12 / 7 / 0	Stream number 0	10,000	9,999,999.930	7,619,047.61C	14,880,952	130,967,618,368	2,046,369,037	10,000	9,999,999.27C	7,619,047.11C	14,880,951	130,963,014,336

Stream Errors **14**

Src.Port	SID	TID	Dest.Port	Description	(TX-RX)	Lost Packets	Misordered	Payload Errors	BER (aggr)	BER (curr)	Packet Loss Ratio
Port 12 / 7 / 0	0	1	Port 12 / 7 / 1	Stream number 0	(running)	0	0	0	0,000E+000	0,000E+000	0,000E+000
Port 12 / 7 / 1	0	2	Port 12 / 7 / 0	Stream number 0	(running)	0	0	0	0,000E+000	0,000E+000	0,000E+000

Latency and Jitter

Src.Port	SID	TID	Dest.Port	Description	RX Latency (ns) 15				RX Jitter (ns) 16										
					AggrMin	AggrAvg	AggrMax	AggrRng	CurrMin	CurrAvg	CurrMax	CurrRng	AggrMin	AggrAvg	AggrMax	AggrRng	CurrMin	CurrAvg	CurrMax
Port 12 / 7 / 0	0	1	Port 12 / 7 / 1	Stream number 0	26	53	90	64	26	53	90	64	0	4	40	40	0	4	32
Port 12 / 7 / 1	0	2	Port 12 / 7 / 0	Stream number 0	26	54	90	64	26	54	90	64	0	4	40	40	0	4	32

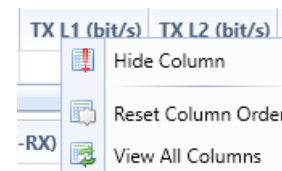
12

For each stream instance a separate set of results would be presented.

13

The traffic results (move the right bar to the left to see results that have +eXX)

* Right click on results counter to set counter visibility:



Global Statistics

Streams

14

Stream Errors:

(TX –RX) packets gives packet loss results

- Based on simply Tx-Rx (not live results)
- Might fail in case of duplicates

Lost packets – Live results based on

- “Next Expected Sequence Number”
- Might fail for First or Last packet or in case of reordering

Misordered packets – for example expecting Sequence x, y and receiving y,x

Payload errors calculated per packet.

- examined based on Payload checksum or Incremental Payload.

Bit error rate calculated based on number of defected packets vs. correct packets bit count

Packet Loss Ratio calculated as “Lost Packets/(Lost Packets + Rx Packets)”

Stream Errors												
Src.Port	SID	TID	Dest.Port	Description	(TX-RX)	Lost Packets	Misordered	Payload Errors	BER (aggr)	BER (curr)	Packet Loss Ratio	
Port 12 / 7 / 0	0	1	Port 12 / 7 / 1	Stream number 0	(running)	0	0	0	0,000E+000	0,000E+000	0,000E+000	
Port 12 / 7 / 1	0	2	Port 12 / 7 / 0	Stream number 0	(running)	0	0	0	0,000E+000	0,000E+000	0,000E+000	

Global Statistics

Streams

15

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Latency/Jitter:

- Aggr.: Minimum, Average, Maximum – based on overall traffic.
- Curr.: 1-second– based on moving average per second
- Range = Maximum –Minimum

ID				ID	RX Latency (ns)								RX Jitter (ns)							
Src.Port	SID	TID	Dest.Port	Description	AggrMin	AggrAvg	AggrMax	AggrRng	CurrMin	CurrAvg	CurrMax	CurrRng	AggrMin	AggrAvg	AggrMax	AggrRng	CurrMin	CurrAvg	CurrMax	
Port 12 / 7 / 0	0	1	Port 12 / 7 / 1	Stream number 0	26	53	90	64	26	53	90	64	0	4	40	40	0	4	32	
Port 12 / 7 / 1	0	2	Port 12 / 7 / 0	Stream number 0	26	54	90	64	26	54	90	64	0	4	40	40	0	4	32	

Global Statistics

Logging and Reporting

In order to save results over time and record all results for each second that passes

- Enable Counter Logging.

In order to generate a report of accumulated results

- Enable Generate Report

The screenshot displays the 'Logging and Reporting' configuration window in the Xena Networks software. The window is divided into several sections:

- State and Content:** Includes 'Enable Logging' (checked), 'Counter Types' (Select Types), 'Source Resolution' (Aggregate Port), 'Latency OOR Indication' (unchecked), 'State Control' (Start Logging), and 'Elapsed Time' (0 00:00:00 days hh:mm:ss).
- Report Properties:** Includes 'Generate Report' (checked), 'Report Title' (Test Report), 'Report File Types' (Select Types ...), 'Selected Types' (PDF), 'PDF Page Settings' (Setup ...), 'Chart Settings' (Setup ...), 'Curr. Report Directory' (<none>), and 'Open Report Directory' (Browse ...).
- Logfile Name and Location:** Includes 'File Name Prefix' (statslog), 'Append Timestamp' (checked), 'Separate Run Directories' (checked), 'File Type' (CSV File), 'Curr. Log Directory' (<none>), and 'Open Log Directory' (Browse ...).
- Targets:** Includes 'Logging Target' (Text File).
- Scheduling:** Includes 'Poll Interval' (00:00:01 hh:mm:ss), 'Log Duration' (0 days), 'Log Duration' (01:00:00 hh:mm:ss), 'Run Until Stopped' (checked), and 'Start/Stop on Global' (checked).
- Report Information:** Includes 'Company Name' (Xena Networks), 'Tester Name', 'Test Description', 'Selected Logo Image' (<default>), 'Custom Logo Image' (Select ...), and 'Clear Logo Image' (Clear ...).
- Disc Space Management:** Includes 'Archive Into Files' (checked), 'Archive File Size' (100 Kbytes), 'Limit Archive File No' (checked), and 'Max Archive Files' (25).

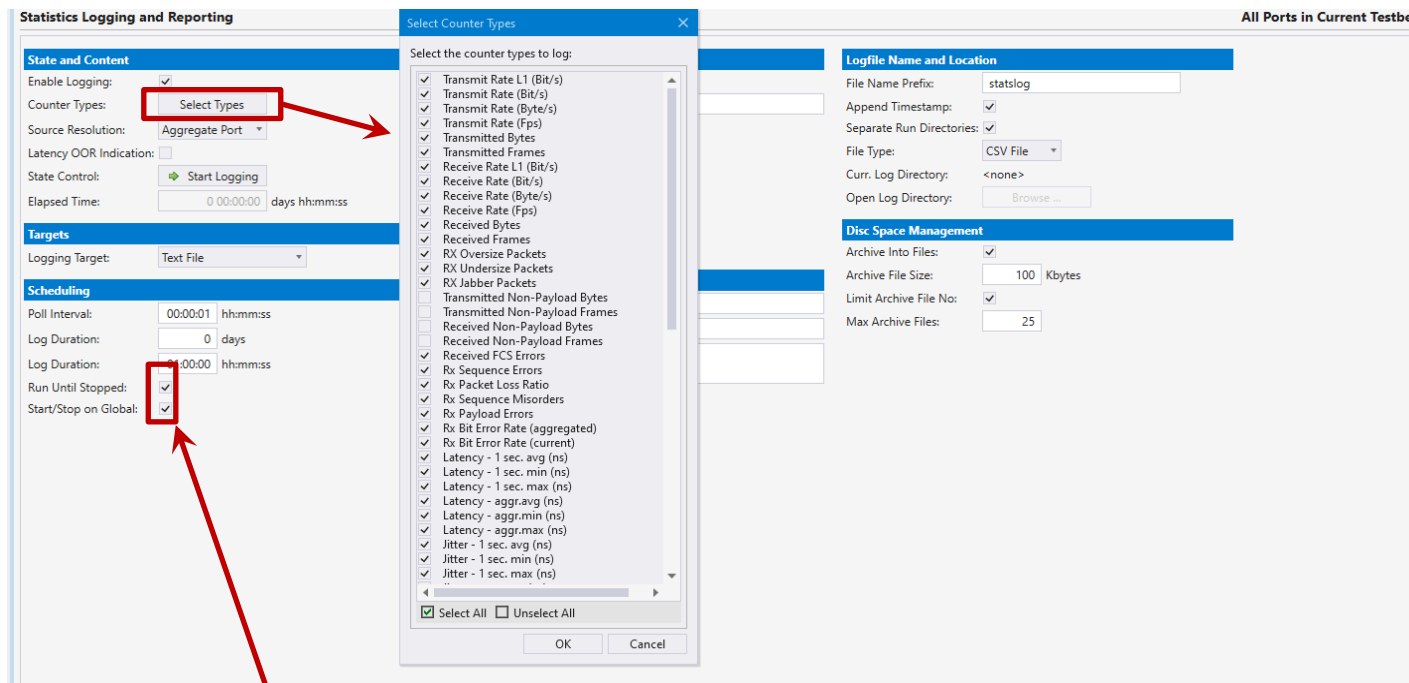
The 'Logging and Reporting' tab is selected in the bottom navigation bar, and the 'Generate Report' checkbox in the 'Report Properties' section is highlighted with a red box. The 'Enable Logging' checkbox in the 'State and Content' section is also highlighted with a red box.

Global Statistics

Logging and Reporting

Select the counters you want to record and/or include in the report:

- Please observe that rate counters (e.g., Receive Rate) and Latency and Jitter 1 sec. counters will not be shown in report tables – they may however be included in charts in reports



- Check these boxes to start and stop logging and reporting with traffic generation

Global Statistics

Logging and Reporting

- 1 A text that will be shown in the report
- 2 Select PDF and/or HTML as file type.
- 3 Configure PDF pages.
- 4 Select counters to chart in the report.
- 5 Click to open directory where the report is stored.

The screenshot shows the 'Statistics Logging and Reporting' configuration page. The 'Report Properties' section is highlighted with a red box and contains the following fields:

- 1 Report Title: Test Report
- 2 Report File Types: Select Types ...
- 3 PDF Page Settings: Setup ...
- 4 Chart Settings: Setup ...
- 5 Open Report Directory: Browse ...

The 'Report Information' section, also within the red box, contains the following fields:

- Company Name: Xena Networks
- Tester Name: [Empty]
- Test Description: [Empty]
- Selected Logo Image: <default>
- Custom Logo Image: Select ...
- Clear Logo Image: Clear ...

Additional information and a logo for the report

Global Statistics

Logging and Reporting

- 1 A prefix that will be used for the file name
- 2 Select file name with or without Timestamp.
- 3 Select to separate files by Directory.
- 4 Select CSV or XML as file type.
- 5 Click to open directory where the log file is stored.

Statistics Logging and Reporting All Ports in Current Testbed

State and Content

Enable Logging:

Counter Types:

Source Resolution:

Latency OOR Indication:

State Control:

Elapsed Time: days hh:mm:ss

Report Properties

Generate Report:

Report Title:

Report File Types:

Selected Types: PDF

PDF Page Settings:

Chart Settings:

Curr. Report Directory: <none>

Open Report Directory:

Logfile Name and Location

1 File Name Prefix:

2 Append Timestamp:

3 Separate Run Directories:

4 File Type:

Curr. Log Directory: <none>

5 Open Log Directory:

Targets

Logging Target:

Scheduling

Poll Interval: hh:mm:ss

Log Duration: days

Log Duration: hh:mm:ss

Run Until Stopped:

Start/Stop on Global:

Report Information

Company Name:

Tester Name:

Test Description:

Selected Logo Image: <default>

Custom Logo Image:

Clear Logo Image:

Disc Space Management

Archive Into Files:

Archive File Size: Kbytes

Limit Archive File No:

Max Archive Files:

Global Statistics

Statistics Charting

The screenshot displays the Xena Networks Statistics Charting interface. A red box labeled '1' highlights the 'Add Chart' button in the top toolbar. A red arrow points from this button to a 'Select Chart Type' dialog box. The dialog box lists various counter types, with 'Transmit Rate (Bit/s)' selected. A red box labeled '2' highlights the 'OK' button in the dialog. The main window shows a line chart titled 'Stream Statistics Charts' with the subtitle 'Transmit Rate (Fps) / Rx Sequence Errors (Delta)'. The chart has two y-axes: the left axis for 'Transmit Rate (Fps)' ranging from 0 to 1.6 K, and the right axis for 'Rx Sequence Errors' ranging from 0 to 3 K. The x-axis represents 'Time (hh:mm:ss)' from 11:54:27 to 11:56:08. A red box labeled '3' highlights the 'Start Charting' button in the chart's toolbar. The chart displays multiple data series for different streams, showing transmit rates and sequence errors over time.

1 Add Chart

2 OK

3 Start Charting

Select Chart Type

Select the counter type to chart:

- Transmit Rate L1 (Bit/s)
- Transmit Rate (Bit/s)**
- Transmit Rate (Byte/s)
- Transmit Rate (Fps)
- Transmitted Bytes
- Transmitted Frames
- Receive Rate L1 (Bit/s)
- Receive Rate (Bit/s)
- Receive Rate (Byte/s)
- Receive Rate (Fps)
- Received Bytes
- Received Frames
- RX Oversize Packets
- RX Undersize Packets
- RX Jabber Packets
- Transmitted Non-Payload Bytes
- Transmitted Non-Payload Frames
- Received Non-Payload Bytes
- Received Non-Payload Frames
- Received FCS Errors
- Rx Sequence Errors
- Rx Packet Loss Ratio
- Rx Sequence Misorders
- Rx Payload Errors

Chart Value Delta

OK Cancel

Stream Statistics Charts

Transmit Rate (Fps) / Rx Sequence Errors (Delta)

Transmit Rate (Fps)

Rx Sequence Errors

Time (hh:mm:ss)

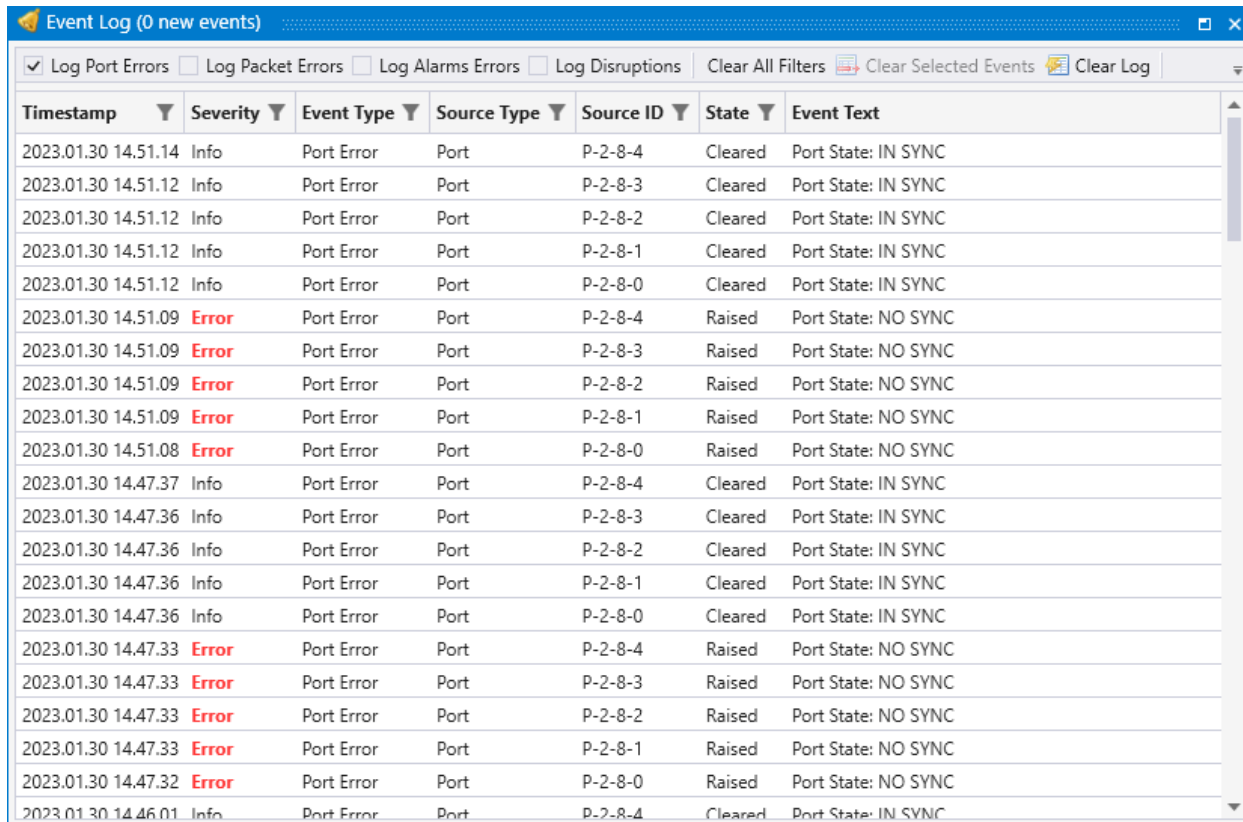
Left Axis Legend: Stream number 0 (P-0-11-4/S:0) Stream number 0 (P-0-11-5/S:0) Stream number 1 (P-0-11-4/S:1) Stream number 2 (P-0-11-4/S:2)

Right Axis Legend: Stream number 0 (P-0-11-4/T:16) Stream number 0 (P-0-11-5/T:13) Stream number 1 (P-0-11-5/T:14) Stream number 2 (P-0-11-5/T:15)

Event Log

The event log may be used observe:

- Port link issues (Log port Errors).
- Packet Loss (Log Packet Errors).
- Service disruptions (Log Disruptions).



Event Log (0 new events)

Log Port Errors Log Packet Errors Log Alarms Errors Log Disruptions

Timestamp	Severity	Event Type	Source Type	Source ID	State	Event Text
2023.01.30 14.51.14	Info	Port Error	Port	P-2-8-4	Cleared	Port State: IN SYNC
2023.01.30 14.51.12	Info	Port Error	Port	P-2-8-3	Cleared	Port State: IN SYNC
2023.01.30 14.51.12	Info	Port Error	Port	P-2-8-2	Cleared	Port State: IN SYNC
2023.01.30 14.51.12	Info	Port Error	Port	P-2-8-1	Cleared	Port State: IN SYNC
2023.01.30 14.51.12	Info	Port Error	Port	P-2-8-0	Cleared	Port State: IN SYNC
2023.01.30 14.51.09	Error	Port Error	Port	P-2-8-4	Raised	Port State: NO SYNC
2023.01.30 14.51.09	Error	Port Error	Port	P-2-8-3	Raised	Port State: NO SYNC
2023.01.30 14.51.09	Error	Port Error	Port	P-2-8-2	Raised	Port State: NO SYNC
2023.01.30 14.51.09	Error	Port Error	Port	P-2-8-1	Raised	Port State: NO SYNC
2023.01.30 14.51.08	Error	Port Error	Port	P-2-8-0	Raised	Port State: NO SYNC
2023.01.30 14.47.37	Info	Port Error	Port	P-2-8-4	Cleared	Port State: IN SYNC
2023.01.30 14.47.36	Info	Port Error	Port	P-2-8-3	Cleared	Port State: IN SYNC
2023.01.30 14.47.36	Info	Port Error	Port	P-2-8-2	Cleared	Port State: IN SYNC
2023.01.30 14.47.36	Info	Port Error	Port	P-2-8-1	Cleared	Port State: IN SYNC
2023.01.30 14.47.36	Info	Port Error	Port	P-2-8-0	Cleared	Port State: IN SYNC
2023.01.30 14.47.33	Error	Port Error	Port	P-2-8-4	Raised	Port State: NO SYNC
2023.01.30 14.47.33	Error	Port Error	Port	P-2-8-3	Raised	Port State: NO SYNC
2023.01.30 14.47.33	Error	Port Error	Port	P-2-8-2	Raised	Port State: NO SYNC
2023.01.30 14.47.33	Error	Port Error	Port	P-2-8-1	Raised	Port State: NO SYNC
2023.01.30 14.47.32	Error	Port Error	Port	P-2-8-0	Raised	Port State: NO SYNC
2023.01.30 14.46.01	Info	Port Error	Port	P-2-8-4	Cleared	Port State: IN SYNC

Communication Trace

You can use the Communication Trace to debug communication between the GUI and the Appliance.

Filters can be used to narrow the search for errors or loss of communication.

The screenshot displays the XENA Networks Communication Trace interface. At the top, there are options to 'Show Only Used Ports', 'Reserve Used Ports', and 'Reset Used Ports'. Below this, a tree view shows the hierarchy: Chassis 0 'Support test 02' (10.20.1.25) > Module 0 'Odin-1G-3S-6P' > Port 0 'SFP-E 10/100/1000M'. A 'Filter Traffic' section is visible, and below it, 'ARP/NDP and PING Statistics' are shown in a table.

Name	TX ARP Req	TX ARP Rep	TX Ping Req	TX Ping Rep	RX ARP Req	RX ARP Rep	RX Ping Req	RX Ping Rep
P-0-2-0	0	0	0	0	0	0	0	0
P-0-2-1	0	0	0	0	0	0	0	0

The main 'Communication Trace' window shows a list of events with columns for Timestamp, Dir, Chassis, Resource, Command, SeqNo, Param, Result, and Data. The trace shows a series of 'Rx' and 'Tx' events for 'Support test 02' on resource '2/1'. The commands include 'VALUE', 'QUERY', and various protocol parameters like 'P_RECEIVESYNC', 'PD_INDICES', 'PC_KEEP', etc. The results are mostly 'OK'. The total count of events is 8,997.

At the bottom of the interface, there is a navigation bar with icons for 'Event Log (3 new events)', 'Stream Wizard', 'Scheduler', 'Statistics Charting', 'Logging and Reporting', and 'Communication Trace'. The 'Communication Trace' icon is highlighted with a red box.

What's Next?

CHECK TECHNICAL
DOCUMENTATION

TRY OUR LIVE
DEMO SYSTEM

BOOK A TECH
MEETING

SUPPORT