

# Cubro Aggregator C-Series Overview

January 2026

# Aggregator C Series - Solution for 1G to 100G



The C-Series family consists of three products providing a flexible lineup of economical network packet brokers.

- **C32 - 32 x 40G/100G**
- C48 - 48 x 1/10/25G & 8 x 40G/100G
- C64 - 64 x 40G/100G



**Aggregator C32**

## Key points:

- Non-blocking architecture
- All ports are included (no software license to enable ports) & 3rd party transceivers are supported
- Timestamping
- User Defined Filtering via Offset



- **32 x 40G/100G** – 16 ports can be used in 4 x 1/10G or 4 x 10/25G split mode
- Each port can be used simultaneously as input and output and is totally independent of other ports
- Non-blocking architecture
  - 6,4 Tbit/s throughput
- All ports are included and open to 3rd party transceivers

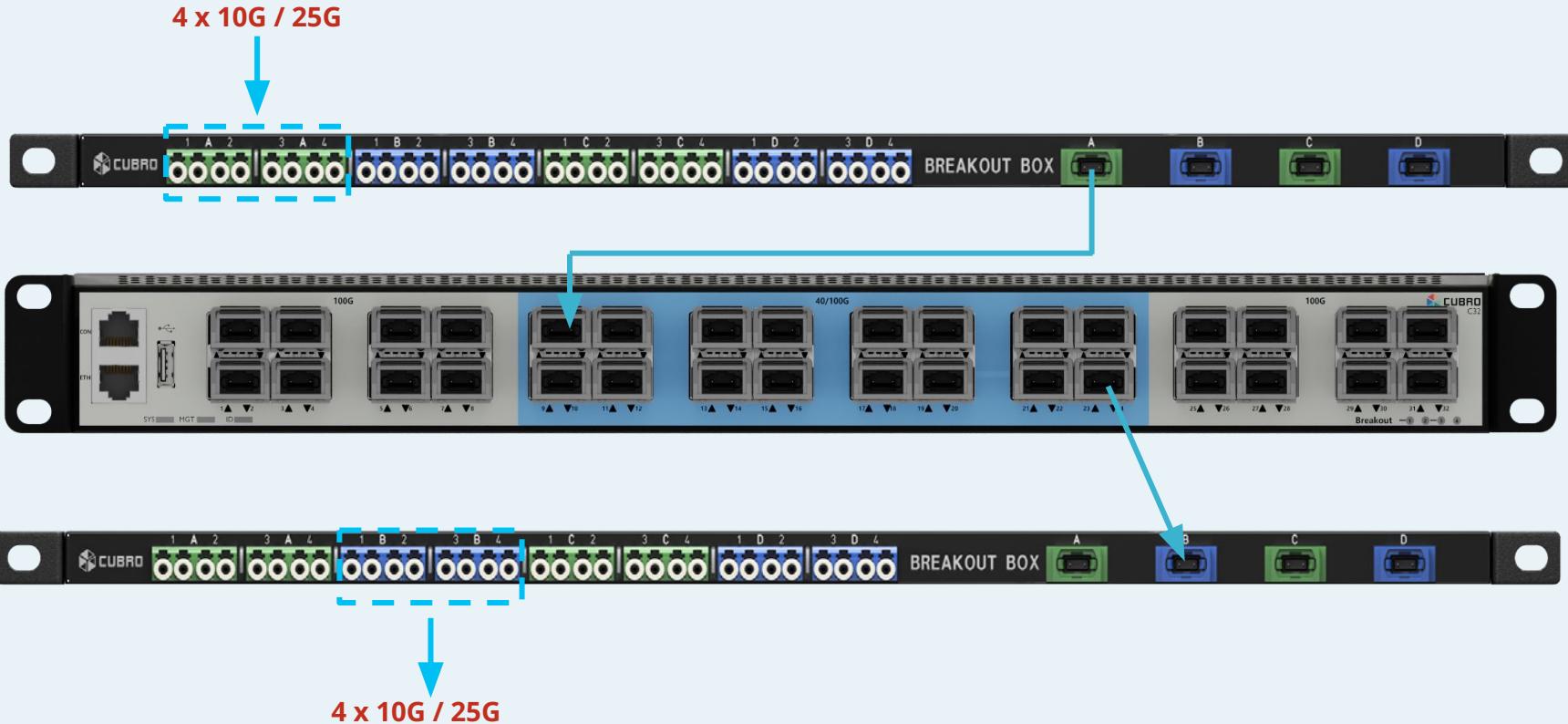


- **48 x 1/10/25G + 8 x 40G/100G**
- Each port can be used simultaneously as input and output and is totally independent of other ports
- Non-blocking architecture
  - 4000 Gbit/s throughput
- All ports are included and open to 3rd party transceivers



- **64 x 40G/100G** - 16 ports can be used in 4 x 1/10G or 4 x 10/25G split mode
- Each port can be used simultaneously as input and output and is totally independent from other ports
- Non-blocking architecture
  - 12,8 Tbit/s throughput
- All ports are included and open to 3rd party transceivers

# Break-out Mode (4 x 10G / 25G)



# Every port within the split is completely independent

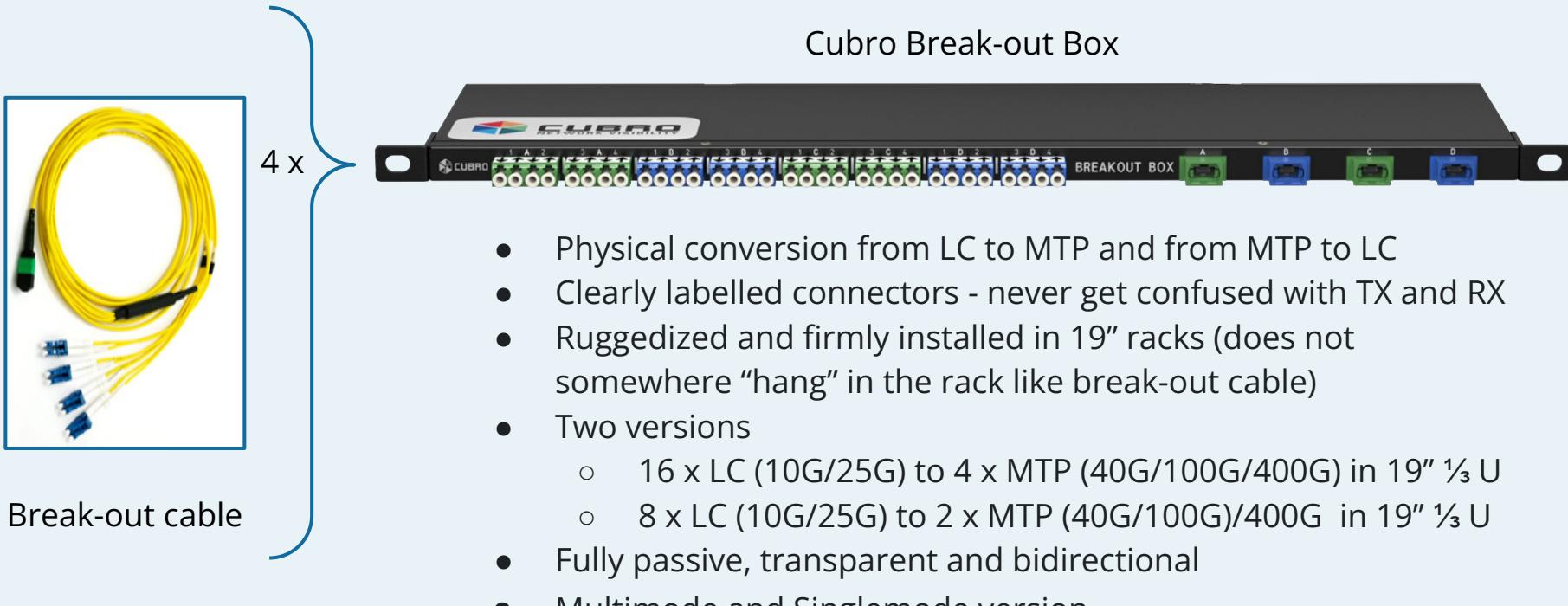


C32 Rule Table + Add Rule Group Table + Add Group Save-Points Apps Ports Device LOG OUT 'ADMIN' (SUPER RIGHTS) CUBRO

RESET PORT COUNTERS EXPORT TABLE AS CSV

Port	^	Description	◊	RX Pkts	◊	RX Bytes	◊	RX bit/sec.	◊	TX Pkts	◊	TX Bytes	◊	TX bit/sec.	◊	RX CRC	◊	Oversub.	◊
11		Filter...		Filter...		Filter...		Filter...		Filter...		Filter...		Filter...		Filter...		Filter...	
				0		0.0 B		0.0 b		0		0.0 B		0.0 b		0		0	
				11/1															
				11/2															
				11/3															
				11/4															
						0		0.0 B		0		0.0 B		0.0 b		0		0	

# Break-out Cable vs Breakout Box



Break-out cable

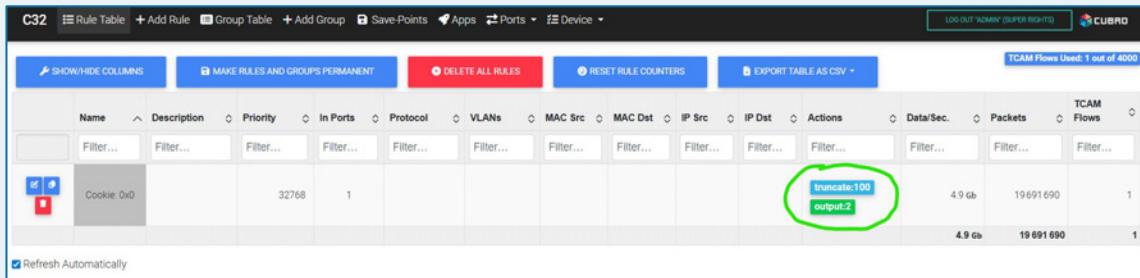
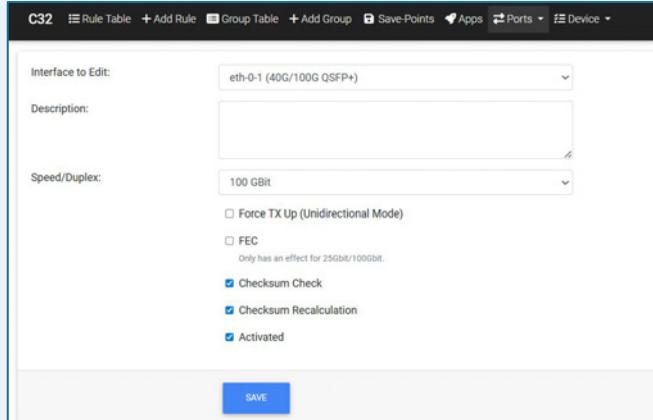
4 x

Cubro Break-out Box

- Physical conversion from LC to MTP and from MTP to LC
- Clearly labelled connectors - never get confused with TX and RX
- Ruggedized and firmly installed in 19" racks (does not somewhere "hang" in the rack like break-out cable)
- Two versions
  - 16 x LC (10G/25G) to 4 x MTP (40G/100G/400G) in 19"  $\frac{1}{3}$  U
  - 8 x LC (10G/25G) to 2 x MTP (40G/100G/400G) in 19"  $\frac{1}{3}$  U
- Fully passive, transparent and bidirectional
- Multimode and Singlemode version

# Operation

- All main functions are accessible via WebUI
- In addition to WebUI, the CLI provides access to the full functionality including all enhanced features such as
  - User Defined Filtering
  - GRE Tunnel encapsulation & decapsulation
  - Packet Capture (1000 packets maximum)
  - Monitor Sessions for easy connection to external ad-doc capture tools
  - Timestamping



Name	Description	Priority	In Ports	Protocol	VLANs	MAC Src	MAC Dst	IP Src	IP Dst	Actions	Data/Sec.	Packets	TCAM Flows
Cookie 0x0		32768	1							truncate:100 output:2	4.9 Gb	19 691 690	1

Most of the  
CLI functions  
are shown in  
WebUI

# Filtering capabilities

The C-Series supports up to 4000 parallel running IPv4/IPv6 filters. These filters can be used to redirect a selected part of the incoming traffic to a low bandwidth monitoring tool.

Filtering parameters include:

▼ Match Fields

In-Ports	1 – 32, ranges allowed, e.g. "1,3-5"
VLAN (802.1Q)	match tagged traffic only
VLAN IDs	e.g. "11,13-15" or "0x10-0xfd,0xff"
VLAN PCP	e.g. 7
MAC Source (+ /Mask)	e.g. FEE:FE:EE:EE:EE:EE
MAC Dest. (+ /Mask)	e.g. FE:EE:FE:EE:EE:EE
Protocol	IP/TCP
IP Source (+ /Mask or + /CIDR-Num.)	e.g. 1.2.3.4 or 4.3.2.1/255.255.255.1
IP Dest. (+ /Mask or + /CIDR-Num.)	e.g. 1.2.3.4 or 4.3.2.1/255.255.255.1
TCP Source (+ /Mask)	e.g. 42 or 3/255 or 0x3/0xff
TCP Dest. (+ /Mask)	e.g. 42 or 3/255 or 0x3/0xff
Extra Custom Match	

Layer 2	Layer 3	Layer 4
MAC Src / Dst	IPv4 Src / Dst	Port Src / Dst
VLAN tag (QinQ)	IPv6 Src / Dst	TCP/UDP/SCTP Port Number
Ethertype	Protocol	
	MPLS	

# Output Actions

The C-Series supports a wide range of different output actions so that filtered traffic can be provided to the appropriate tools.

- Forward Action
  - single port
  - multiple (parallel) ports
  - load-balanced ports
    - single load-balancing group
    - multiple load-balancing group
- Drop Action
  - delete filtered traffic
- Modify Egress traffic
  - Supports to modify header parameters like
    - MAC Src/Dest, IP Src/Dest, UDP/TCP Src/Dest.

Standard Actions

- Drop
- Output to Group
- Output to Ports 29-32 1 – 32, ranges allowed, e.g. "1, 3-5"
- Push VLAN 1-4094, pushes a new VLAN ID in any case.
- Modify VLAN ID 1-4094, changes existing VLAN ID or pushes a VLAN with this ID if there is none.
- Modify MAC Source
- Modify MAC Dest. D8:20:9f:00:00:10
- Modify IP Source
- Modify IP Dest. 192.168.0.200
- Modify UDP Source
- Modify UDP Dest. 8888

Distribute traffic as required

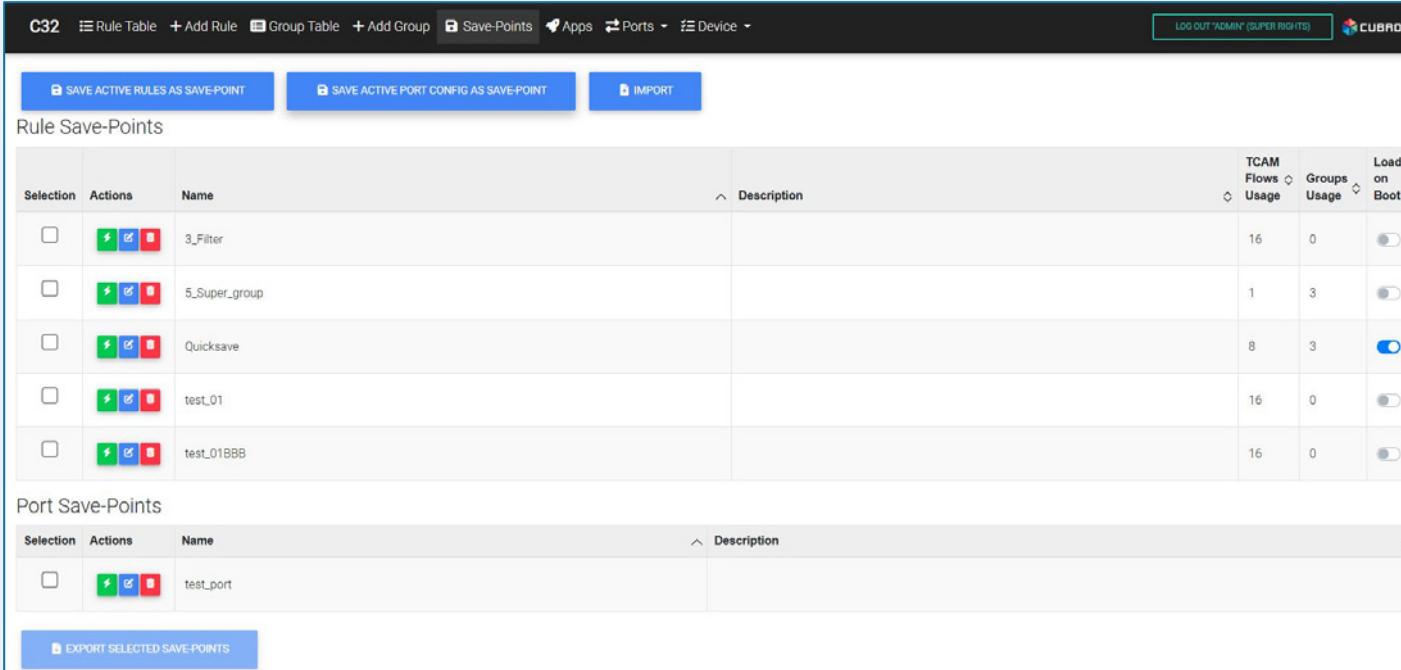
The platform not only allows 100% transparency to L2 protocols but also to CRC errors.

- Per default, the device will drop incoming CRC packets
- Via simple configuration option, the ingress and egress interfaces transparently receive and forward incoming CRC errors.
- This option allows the monitoring appliance to provide statistics about CRC errors of the live network

eth-0-9 (40G/100G QSFP+)
No
100 GBit
<input type="checkbox"/> Force TX Up (Unidirectional Mode)
<input checked="" type="checkbox"/> FEC
Only has an effect for 25Gbit/100Gbit.
<input type="checkbox"/> Checksum Check
<input type="checkbox"/> Checksum Recalculation
<input checked="" type="checkbox"/> Activated

# Easy to manage Setups

Save and Load Configurations fast and easy



The screenshot displays the CUBRO Network Visibility interface with the following sections:

- Header:** C32, Rule Table, Add Rule, Group Table, Add Group, Save-Points, Apps, Ports, Device, LOG OUT ADMIN (SUPER RIGHTS), CUBRO.
- Rule Save-Points:** A table with columns: Selection, Actions, Name, Description, TCAM Flows Usage, Groups Usage, and Load on Boot. The table contains the following data:

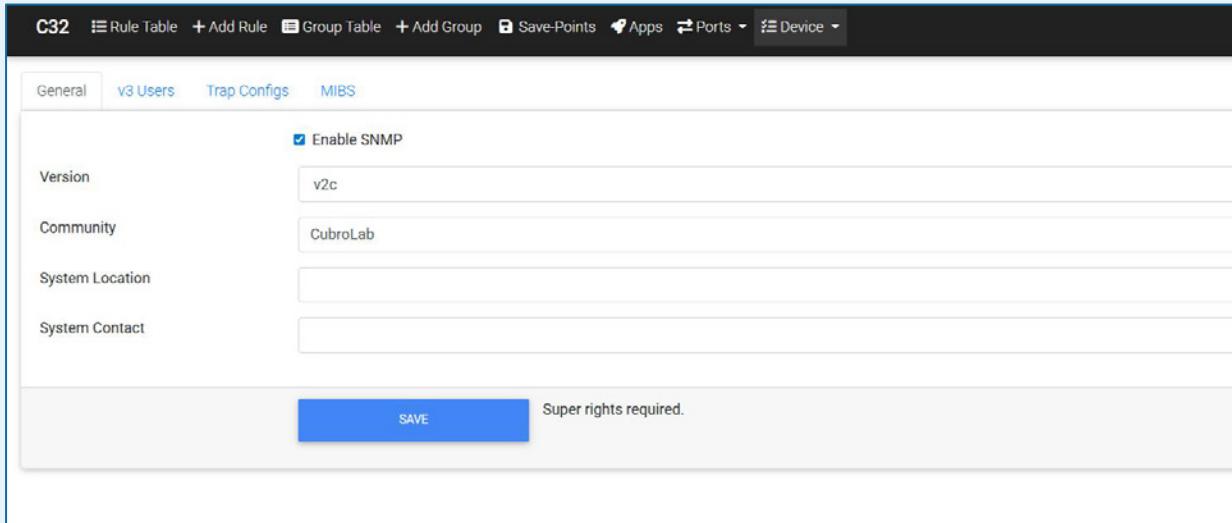
Selection	Actions	Name	Description	TCAM Flows Usage	Groups Usage	Load on Boot
<input type="checkbox"/>		3_Filter		16	0	<input type="checkbox"/>
<input type="checkbox"/>		5_Super_group		1	3	<input type="checkbox"/>
<input type="checkbox"/>		Quicksave		8	3	<input checked="" type="checkbox"/>
<input type="checkbox"/>		test_01		16	0	<input type="checkbox"/>
<input type="checkbox"/>		test_01BBBB		16	0	<input type="checkbox"/>

- Port Save-Points:** A table with columns: Selection, Actions, Name, Description. The table contains the following data:

Selection	Actions	Name	Description
<input type="checkbox"/>		test_port	

- Buttons:** SAVE ACTIVE RULES AS SAVE-POINT, SAVE ACTIVE PORT CONFIG AS SAVE-POINT, IMPORT, EXPORT SELECTED SAVE-POINTS.

- SNMP v1, v2c and v3 supported
- SNMP query and traps
- MIB file provided

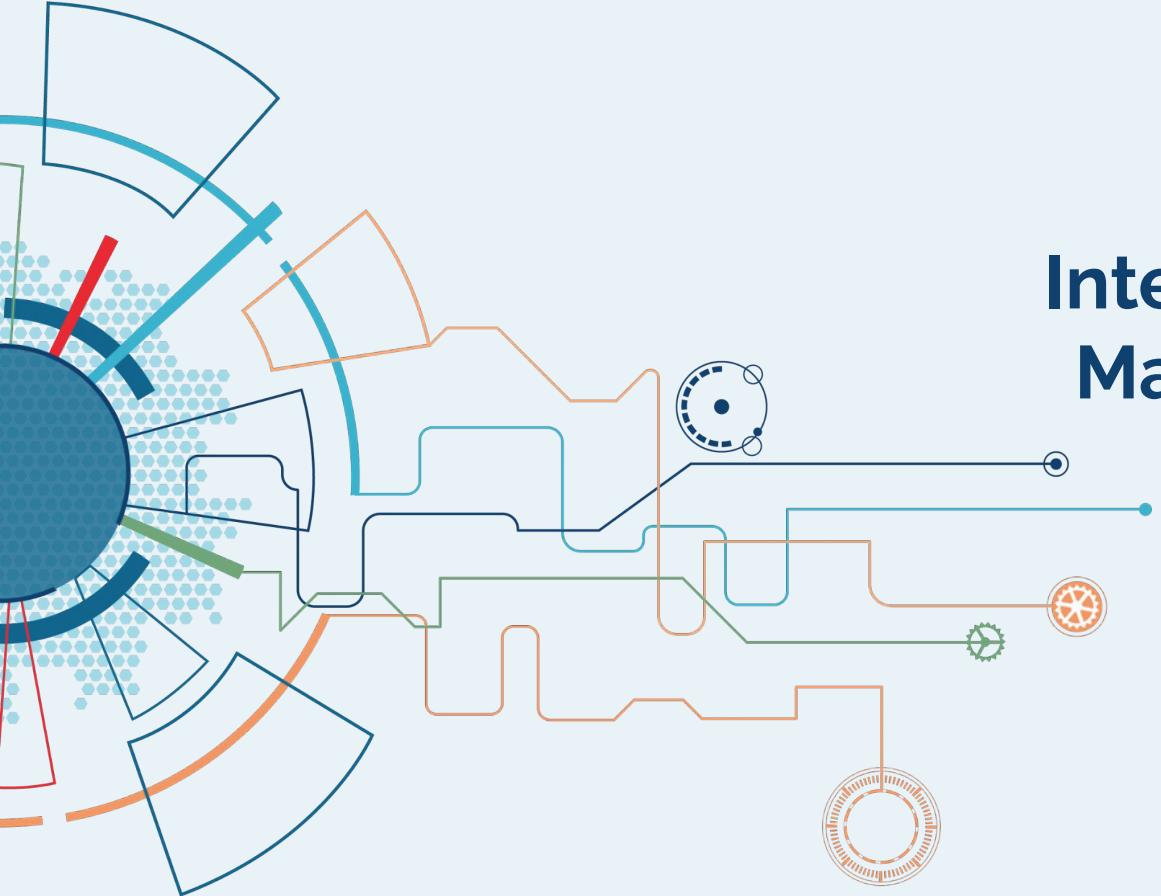


The screenshot shows the 'Device' configuration page in the C32 interface. The 'General' tab is selected, displaying the following configuration:

- Enable SNMP:** Checked
- Version:** v2c
- Community:** CubroLab
- System Location:** (Empty field)
- System Contact:** (Empty field)

At the bottom of the form, there is a blue 'SAVE' button and a note: "Super rights required."

# Integration into Cubro Management System



# Integration into Cubro Vitrum Management Tool



Management of Cubro equipment

Device browser with drill-in and statistics

Integrated KPI builder for easy troubleshooting

Alarm monitoring

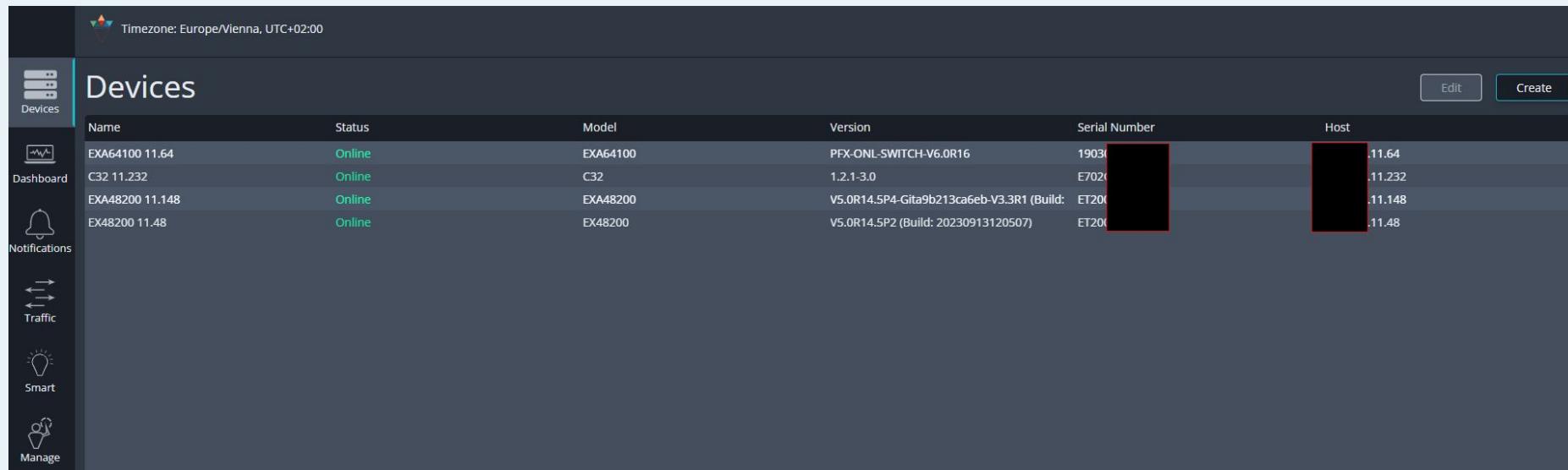
Backup and firmware upgrade, user management

Vitrum NG is Cubro's next-generation centralized network management software designed to provide businesses with advanced, real-time visibility and control over their network environments.

# Device Overview



**Effortless device tracking** - No need to memorise IP addresses. Simply access each device's management website with a single click. Devices and ports can be easily named and annotated, providing clear visibility into each network equipment's role.

A screenshot of a web-based network management interface. The top navigation bar shows the time as 'Timezone: Europe/Vienna, UTC+02:00'. The main title 'Devices' is centered above a table. The table has columns for Name, Status, Model, Version, Serial Number, and Host. The 'Devices' icon in the sidebar is highlighted with a teal bar. The 'Edit' and 'Create' buttons are located in the top right corner of the table area. The 'Dashboard' and 'Notifications' icons are also visible in the sidebar. The 'Host' column for the first four rows is redacted with a red box. The 'Host' column for the last row is also redacted with a red box.

Name	Status	Model	Version	Serial Number	Host
EXA64100 11.64	Online	EXA64100	PFX-ONL-SWITCH-V6.0R16	1903	11.64
C32 11.232	Online	C32	1.2.1-3.0	E702	11.232
EXA48200 11.148	Online	EXA48200	V5.0R14.5P4-Gita9b213ca6eb-V3.3R1 (Build: ET200)		11.148
EX48200 11.48	Online	EX48200	V5.0R14.5P2 (Build: 20230913120507)	ET200	11.48

# Overall Device statistics

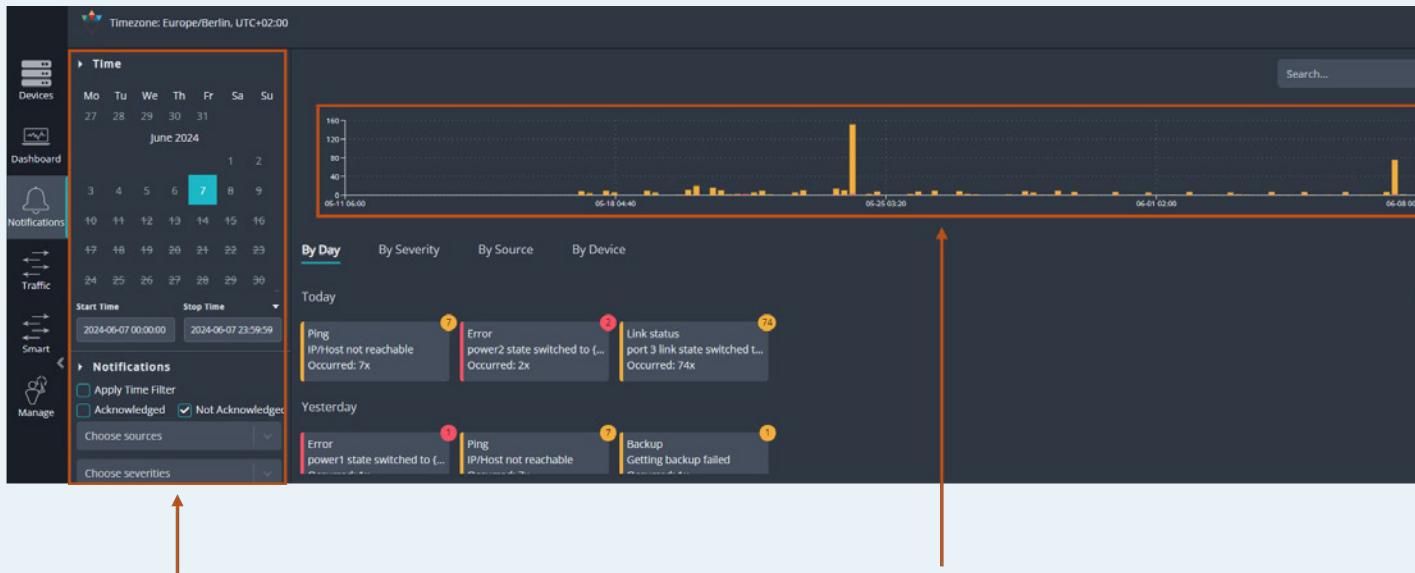


View ingress and egress port statistics for each device instantly; no preconfiguration needed - statistics are auto-collected upon device addition.



# Alarm Management

The error centre consolidates error events (e.g., device offline, port down) and issues on-page notifications for immediate attention. It maintains a comprehensive log of all historical events for linked devices.



# Drill down to the individual port & rule statistics



On the Device Overview page, each device can be selected to get an overview of all ports & rules statistics in table format.

Drill down to the individual ports & rules for in-depth troubleshooting.

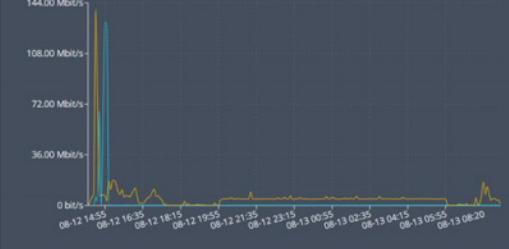
Timezone: Europe/Vienna, UTC+02:00

Devices		Ports					Savepoints		
Name	Status	Name	Status	Model	Serial No.	Image Version	Memory Usage	CPU Usage	URL
Internet Switch	Online	Internet Switch	Online	EX5-3	E357GD19A013	3.2.14-3.1	63%	1%	<a href="https://192.168.0.203">https://192.168.0.203</a>
Port	Description	Link Status	RX Rate	TX Rate	RX Errors				
1		up	0 bit/s	12.89 Kbit/s	0				
2		up	41.57 Kbit/s	12.85 Kbit/s	0				
3		up	2.11 Kbit/s	14.82 Kbit/s	0				
4		up	7.37 Kbit/s	54.65 Kbit/s	0				
5		up	11.98 Kbit/s	34.07 Kbit/s	0				
6		down	0 bit/s	0 bit/s	0				
7		up	0 bit/s	12.83 Kbit/s	0				
8		down	0 bit/s	0 bit/s	0				
9		down	0 bit/s	0 bit/s	0				
10		up	4.89 Kbit/s	13.27 Kbit/s	8 746				
11		up	8.92 Kbit/s	23.78 Kbit/s	0				
12		down	0 bit/s	0 bit/s	0				
13		down	0 bit/s	0 bit/s	0				
14		down	0 bit/s	0 bit/s	0				
15	Labor Router	up	8.91 Kbit/s	1.45 Mbit/s	0				
16		down	0 bit/s	0 bit/s	0				
17		down	0 bit/s	0 bit/s	0				
18		down	0 bit/s	0 bit/s	0				
19		down	0 bit/s	0 bit/s	0				
20		down	0 bit/s	0 bit/s	1				
21		up	0 bit/s	11.65 Kbit/s	0				
22		down	0 bit/s	0 bit/s	0				
23		down	0 bit/s	0 bit/s	0				
24		down	0 bit/s	0 bit/s	0				
25	backup uplink	down	0 bit/s	0 bit/s	0				
26		up	0 bit/s	11.75 Kbit/s	0				
27		up	126.01 bit/s	11.75 Kbit/s	0				

Port Number: 15      Link Status: up  
Interface Name: -      Admin Status: up  
Description: Labor Router      Speed Status: 1 G

**TX**  
Packets Total: 967 756K      Packets Total: 32 397 376K  
Bytes Total: 429.28 GB      Bytes Total: 8024.89 GB  
Errors Total: 0K      Errors Total: 1K  
Rate: 8.91 Kbit/s      Rate: 1.45 Mbit/s

Rate in bit/s



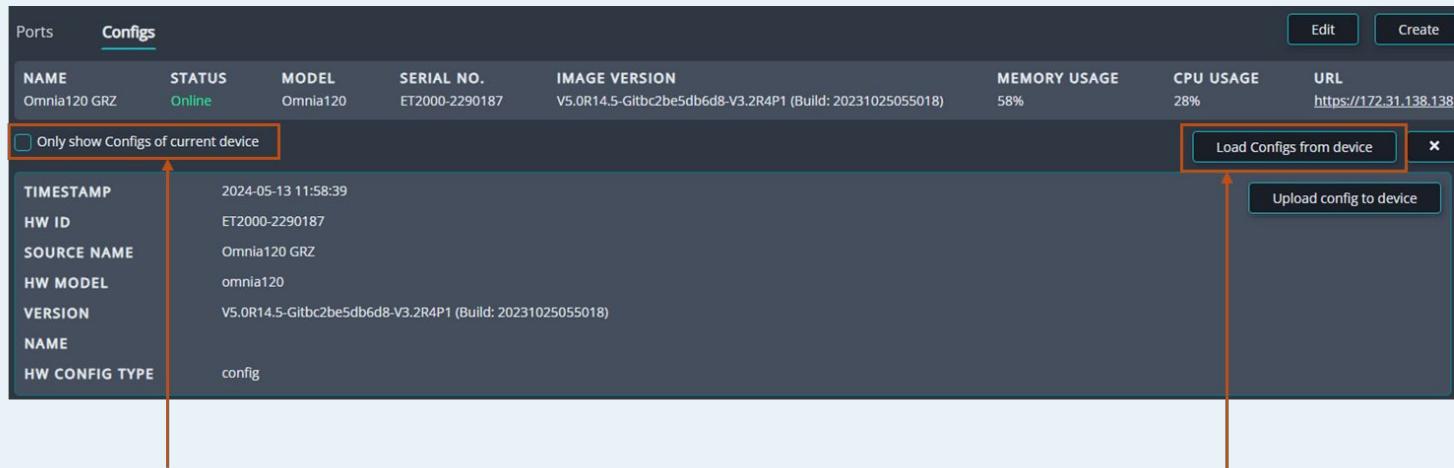
144.00 Mbit/s  
108.00 Mbit/s  
72.00 Mbit/s  
36.00 Mbit/s  
0 bit/s

08-12 14:55 08-12 16:35 08-12 18:15 08-12 19:55 08-12 21:35 08-12 23:15 08-13 00:55 08-13 02:35 08-13 04:15 08-13 05:55 08-13 08:20

# Config Backup and Restore



Configuration backups for all Cubro Network Packet Brokers can be initiated with a single click. These backups can then be swiftly transferred to other devices, facilitating quick device cloning or preparation of backup devices.



The screenshot shows the 'Configs' tab of the Cubro Network Packet Broker interface. The top bar includes 'Ports' and 'Configs' tabs, and buttons for 'Edit' and 'Create'. The main area displays device details: NAME (Omnia120 GRZ), STATUS (Online), MODEL (Omnia120), SERIAL NO. (ET2000-2290187), IMAGE VERSION (V5.0R14.5-Gitbc2be5db6d8-V3.2R4P1 (Build: 20231025055018)), MEMORY USAGE (58%), CPU USAGE (28%), and URL (https://172.31.138.138). A checkbox 'Only show Configs of current device' is checked. Below the device details, a table lists configuration parameters: TIMESTAMP (2024-05-13 11:58:39), HW ID (ET2000-2290187), SOURCE NAME (Omnia120 GRZ), HW MODEL (omnia120), VERSION (V5.0R14.5-Gitbc2be5db6d8-V3.2R4P1 (Build: 20231025055018)), NAME (config), and HW CONFIG TYPE (config). To the right of the table is a 'Load Configs from device' button, which is highlighted with an orange box and an arrow pointing to it from the text 'Show configuration from selected device, or from all devices from the same type'. Below the table is an 'Upload config to device' button, also highlighted with an orange box and an arrow pointing to it from the text 'Download current running configuration'.

Show configuration from selected device,  
or from all devices from the same type

Download current running configuration

# Central Firmware Upgrade



Use Vitrum as a centralised platform to upgrade the firmware of Cubro Devices.

Simply upload the Cubro firmware files using “Upload Firmware” and assign it to a device type.

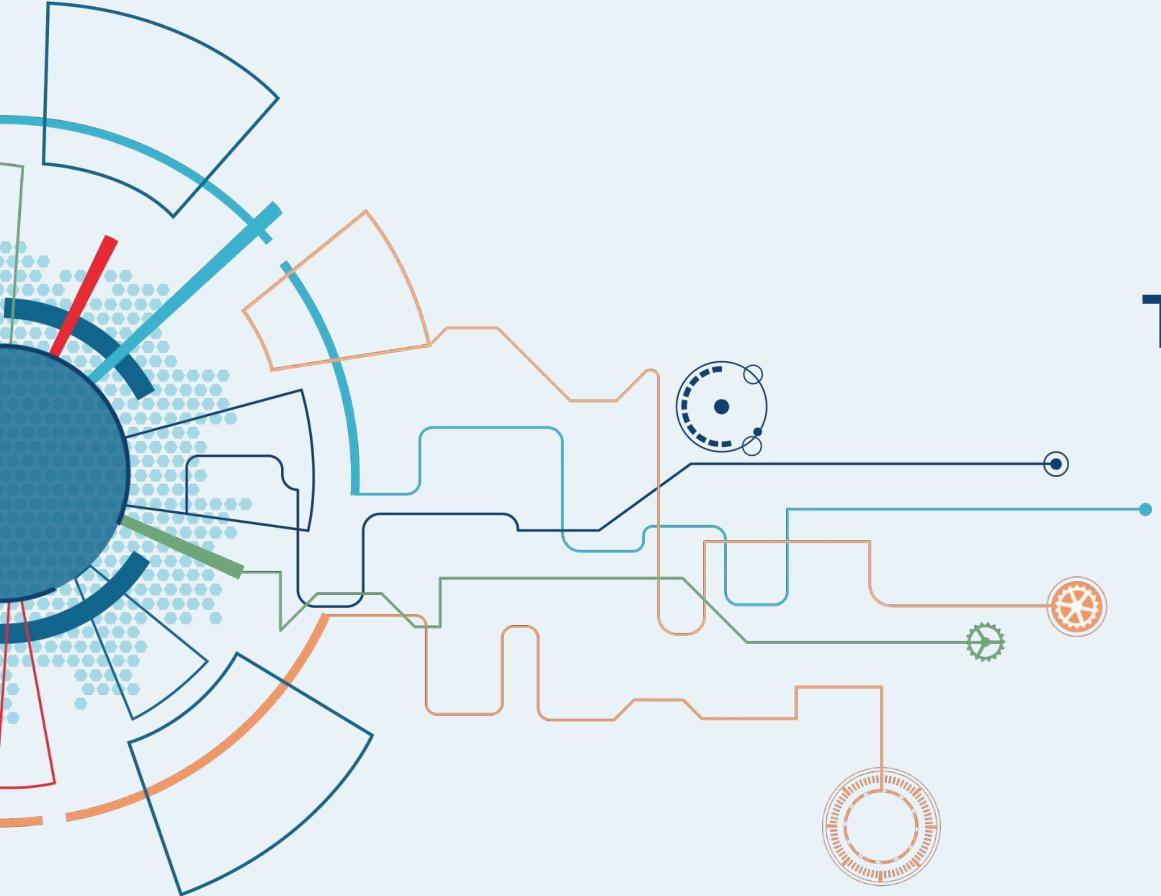
Ports	Savepoints	Firmware	Edit	Create	Search...		
		<b>Name</b> Internet Switch <b>Status</b> Online <b>Model</b> EX5-3 <b>Serial No.</b> E357GD19A013 <b>Image Version</b> 3.3.0-4.0 <b>Memory Usage</b> 59% <b>CPU Usage</b> 1% <b>URL</b> <a href="https://192.168.0.203">https://192.168.0.203</a>					
<input type="checkbox"/> Only show firmwares of current device							
<b>Timestamp</b> 2025-02-10 12:56:37							
<b>ID</b> 1739188597829-158542136							
<b>Name</b> EXG6update_3.3.1-4.1							
<b>HW Models</b> EX6-3, EX5-3							
<b>Files</b> EXG6update_3.3.1-4.1.cuu (69.99 MB)							
<b>Upload Firmware</b>							
<b>Delete the file</b>							
<b>Delete firmware</b>							
<b>Start firmware upgrade</b>							

List only applicable files to the selected device

Delete the file

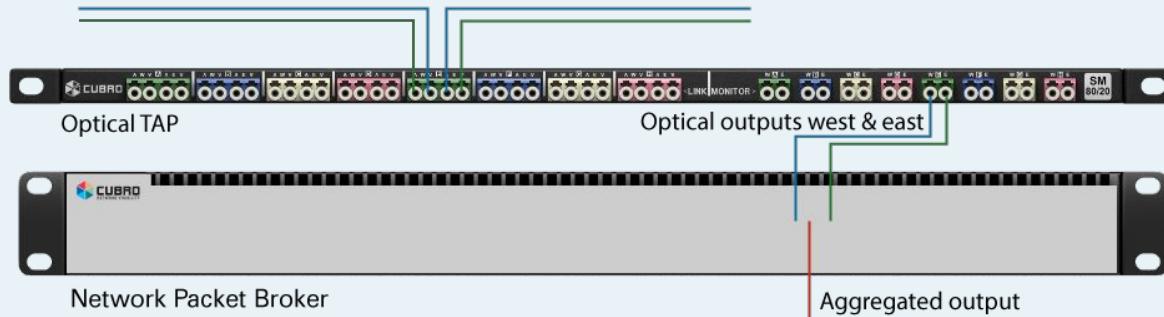
Start the upgrade procedure of the selected firmware to the selected device

## Typical Use-cases



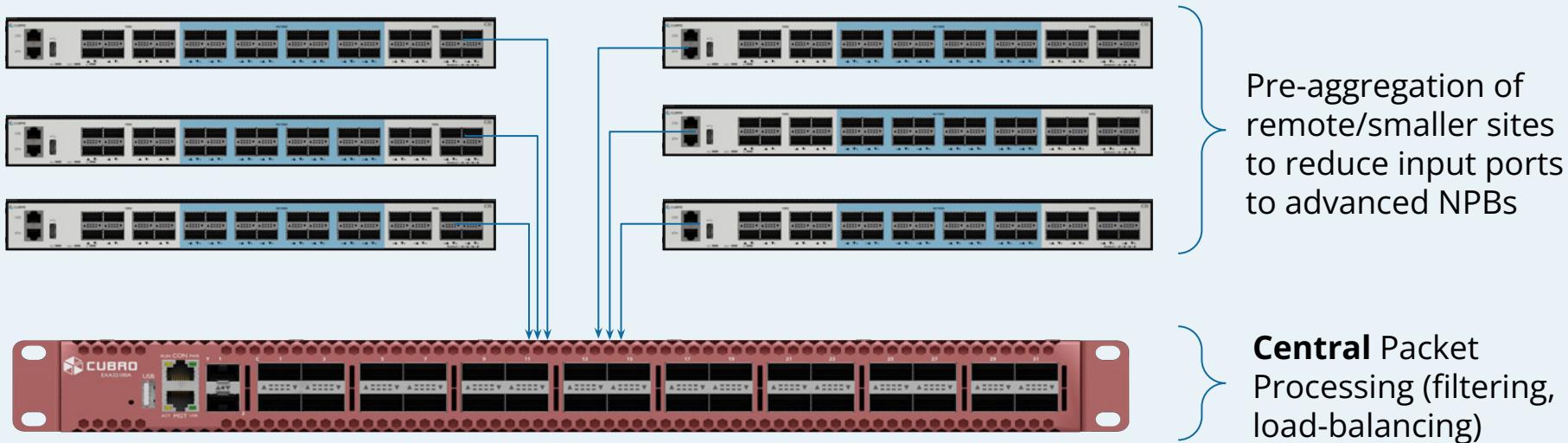
# Aggregation & Simple Filtering

The C-Series aggregates traffic from one or more 40/100G links via inline TAP monitor ports. It combines up- and downstream traffic into a single output, optimising the use of connected probes and analytics tools.



The Aggregator's advanced filtering reduces traffic volume for faster, more accurate analysis. VLAN tagging per port enables easy identification of the packet's ingress point.

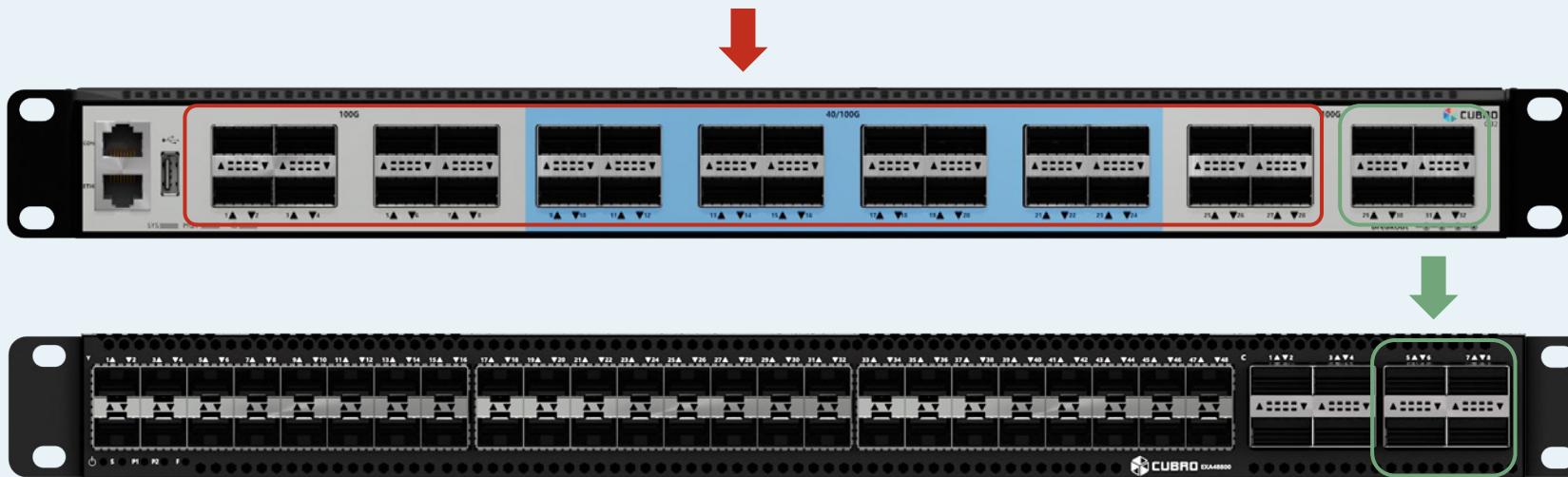
# Economical solution to aggregate remote site 100G links



Central Filtering on EXA32100A allows  
easy management & operation

# Extending 100G interfaces for “advanced” NPB functions

The Aggregator extends the capabilities of advanced NPBs like EXA48800 by adding flexible 100G interfaces. Paired with the EXA48800 Advanced series, it supports powerful Layer 7 filtering - by application, keyword, or Regex.

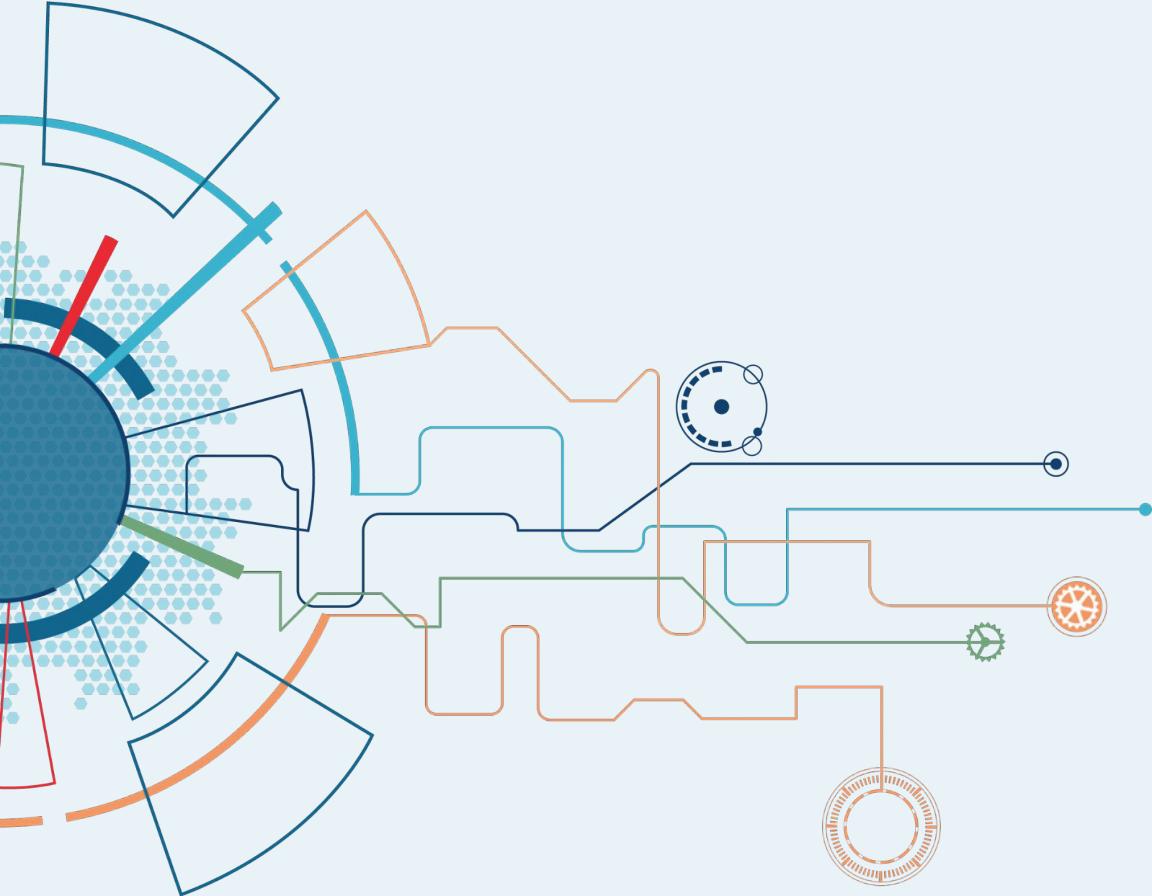


C32 as 20:4 aggregator

EXA48800 as advanced filtering / packet processing engine

Economic way to extend 100G port coverage

# Timestamping



# C-Series - Timestamping Overview



- NTP, PTP or internal clock as time-source
- Timestamp format
  - Adds 32 Byte to original Packet
    - New Outer MAC Src: 6 Byte (defined by user)
    - New Outer MAC Dst: 6 Byte (defined by user)
    - New Ether type: 2 Byte (defined by user)
    - Reserved: 2 Byte (currently set to 00 00)
    - **Ingress Timestamp:** 8 Byte (Date and Time in **ns resolution**)
    - **Egress Timestamp:** 8 Byte (Date and Time in **ns resolution**)

MAC Destination	Mac Source	Type	Reserved	Ingress Timestamp	Egress Timestamp	Original Packet incl. Layer 2	CRC Reculated
6 Byte	6 Byte	2 Byte	2 Byte	8 Byte	8 Byte		4 Byte

# Timestamp Details

No.	Time	Source IP	Destination IP	Protocol	Length	Source Port	info
1	2025-07-29 09:33:30,937765	192.168.0.1	192.168.0.2	UDP	528	60512	60512 → 60513 Len=454

Frame 1: 528 bytes on wire (4224 bits), 528 bytes captured (4224 bits) on interface \Device\NPF\_{4530F753-52DB-4008-BE11-3D3BAE52DA98}, id 0

Ethernet II, Src: Xerox\_00:cc:dd (00:00:00:00:cc:dd), Dst: Xerox\_00:aa:bb (00:00:00:00:aa:bb)

    > Destination: Xerox\_00:aa:bb (00:00:00:00:aa:bb)

    > Source: Xerox\_00:cc:dd (00:00:00:00:cc:dd)

    Type: Unknown (0x9123)

Custom Timestamp Header

    Reserved: 0000

    Ingress Timestamp: Jul 29, 2025 07:33:30.495213508 UTC

    Egress Timestamp: Jul 29, 2025 07:33:30.495214020 UTC

Encapsulated Ethernet Header

    Inner Dst: 0a:00:00:00:00:12 (0a:00:00:00:00:12)

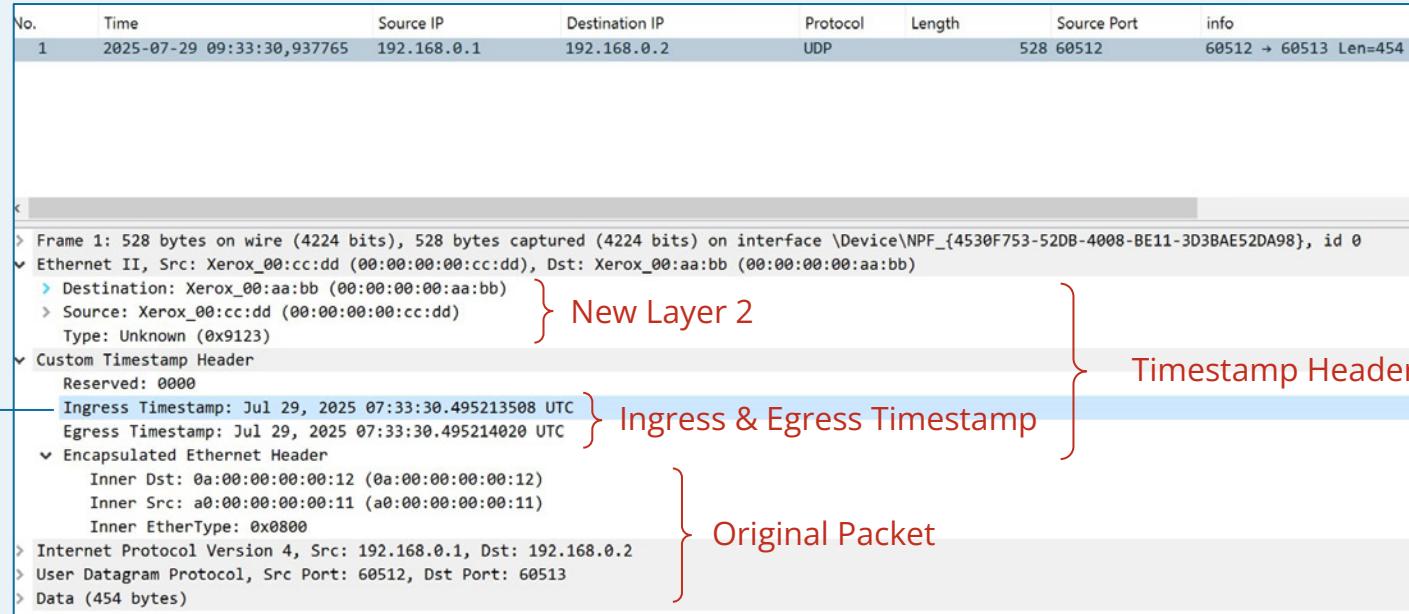
    Inner Src: a0:00:00:00:00:11 (a0:00:00:00:00:11)

    Inner EtherType: 0x0800

> Internet Protocol Version 4, Src: 192.168.0.1, Dst: 192.168.0.2

> User Datagram Protocol, Src Port: 60512, Dst Port: 60513

> Data (454 bytes)

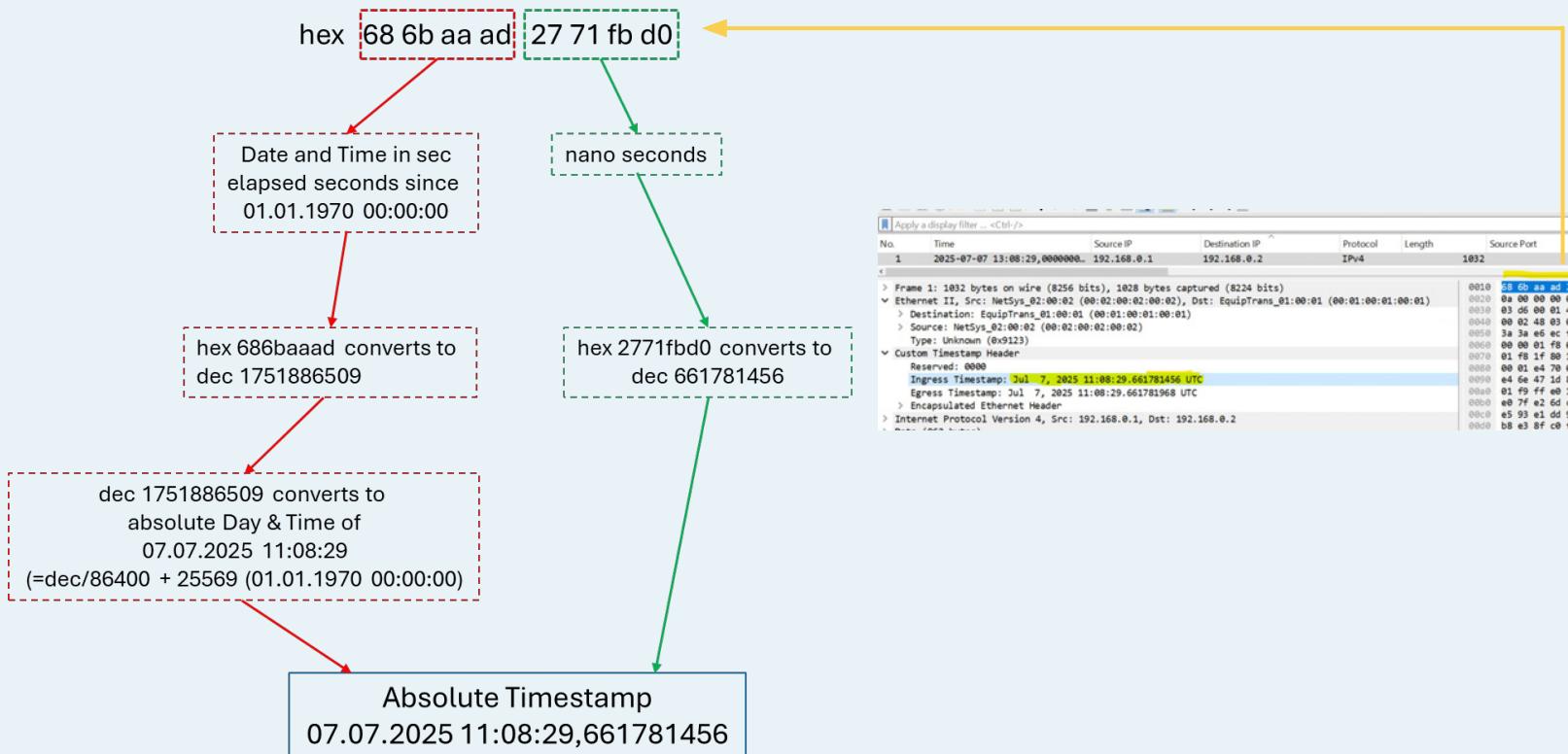


The diagram illustrates the structure of the captured packet. It is divided into several layers and timestamp components:

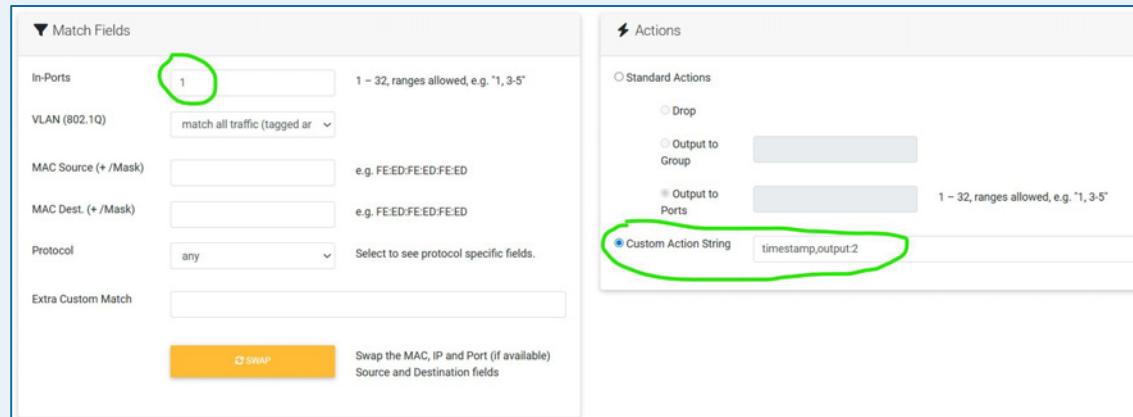
- New Layer 2:** The Ethernet II header (Src: Xerox\_00:cc:dd, Dst: Xerox\_00:aa:bb) is grouped under this label.
- Timestamp Header:** The Custom Timestamp Header (Ingress and Egress timestamps) is grouped under this label.
- Ingress & Egress Timestamp:** The Ingress and Egress timestamp fields are grouped under this label.
- Original Packet:** The Internet Protocol Version 4 (IPv4) and User Datagram Protocol (UDP) layers, along with their source and destination addresses and ports, are grouped under this label.

Cubro .lua file for Wireshark to decode timestamp in human-readable format

# Timestamp Decode



- Basic parameters via CLI
  - CubroC32# configure terminal
  - Enter configuration commands, one per line. End with CNTL/Z.
  - CubroC32(config)# timestamp sync systime
  - CubroC32(config)# timestamp-over-ether 0.0.aabb 0.0.cddd 0x9123
    - #timestamp-over-ether <MAC DA in dot> <MAC SA in dot> 0x<Ethertype>
  - CubroC32(config)# timestamp sync systime
  - CubroC32(config)#exit
- Flow via WebUI



▼ Match Fields

In-Ports  1 – 32, ranges allowed, e.g. "1, 3-5"

VLAN (802.1Q)

MAC Source (+ /Mask)  e.g. FE:ED:FE:ED:FE:ED

MAC Dest. (+ /Mask)  e.g. FE:ED:FE:ED:FE:ED

Protocol  Select to see protocol specific fields.

Extra Custom Match

 SWAP Swap the MAC, IP and Port (if available)  
Source and Destination fields

Actions

Standard Actions

Drop

Output to Group

Output to Ports  1 – 32, ranges allowed, e.g. "1, 3-5"

Custom Action String



We have operations in all time zones.  
Reach us at: [support@cubro.com](mailto:support@cubro.com)