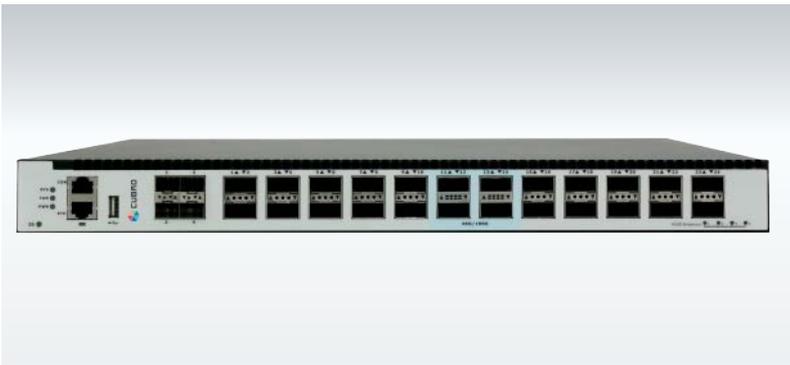


Cubro Packetmaster EX20400

PRODUCT OVERVIEW



The Packetmaster EX20400 is a network packet broker and network controller switch that aggregates, filters and load balances network traffic sent to network monitoring, security and management tools. The EX20400 filters and load balances traffic from 10 or 100 Gbps link to multiple 1 Gbps monitoring tools or aggregates multiple 1 Gbps links to 10 or 100 Gbps monitoring tools. The EX20400 also supports traffic modification as well as changing, removing and adding VLANs, MPLS, VXLAN, NVGRE/MLAG/GENEVE.

Functions / Benefits:

- Lifetime of rules: Rules can be set with a live time counter. If the counter becomes 0, the rule will be removed automatically.
- Generate sFLOWS CDRS: The EX20400 can send standard sFlow CDRS to a collector devices to monitor the traffic processed by the EX20400. These devices can produce graphs and SNMP traps for northbound signalization.
- Load balancing: L2 / L3 / L4 hash based load balancing, up to 15 load balancing groups.
- GRE Tunnel support: The device can work as end device for a GRE tunnel, for back hauling applications.
- AAA Radius support: User identification.
- VXLAN Tunnel support: The device can work as end device for a VXLAN tunnel, for back hauling applications.
- Stacking of units: One Packetmaster can control several other Packetmasters. This gives the possibility to extend the amount of ports per unit.

Network Packet Broker (NPB) At a glance

Definition

A network packet broker (NPB) is a tool that receives data from a number of network links; duplicates, aggregates and filters that data for the monitoring tools.

Advantages of EX20400

- Filters and load-balances traffic from 10 or 100 Gbps links to multiple 1 Gbps monitoring tools
- Aggregates multiple 1 Gbps links to 10 or 100 Gbps monitoring tools
- Supports traffic modification as well as changing, removing and adding VLANs, MPLS, VXLAN, NVGRE/MLAG/GENEVE
- No additional software costs, all applications included in the unit price
- Application: Symmetric Load Balancing
- Application: UDF Filtering

Extended Functions:

The management host controller of every EX unit runs a full featured Debian Linux as operating system. On this host script languages like Python, Perl, TCL, or simple Linux shells are available to run 3rd party applications in order to extend the function of the Packetmaster. These applications can be developed by Cubro or the customer.

Examples:



A perl script collects counters and writes these counters in an external SQL Database for later analysis.



A python script reads files from a server and sets filters based on this changing data.



A python script changes the filters based on link load information from another Packetmaster.



A shell script pings different devices and changes filter rules based on ping response.

PRODUCT CAPABILITIES / FEATURES

Link/Port Aggregation	Aggregation many to any, and any to many at all link speeds.
100 Gbps traffic de-multiplexer	The traffic can be easily de-multiplexed into 48 low traffic 10 Gbps links to monitor highly loaded 100 Gbps links.
Jumbo Frame Support	The Packetmaster supports jumbo Ethernet frames with a size of up to 16000 bytes
Support of IPv4 and IPv6	
Ports	20 x 40 Gbps or 4 x 10 Gbps 4 x QSFP28 or zQSFP 100 Gbps (LR4) 4 x 10 Gbit SFP+ 1 x 10/100/1000 Base-T (Management) 1 x RS232 Console
Configuration / Communication	Web, Telnet and SSH
Bandwidth	2,4 Mbps backplane 2300 million Packets per sec
Aggregation latency	Average < 1 μ s for 64-byte frames
MTBF	178.125 hours
Rugged 19" housing	The Packetmaster is delivered in a rugged 19" 1U housing with precise connector labeling on the front panel
Power	100-240 VAC dual power supply (DC power module available)

TECHNICAL DATA / SPECIFICATIONS



Operating specifications:

Operating Temperature: 0°C to 40°C
 Storage Temperature: -10°C to 70°C
 Relative Humidity: 10% min, 95% max
 Non-condensing

Mechanical specifications:

Dimension (W X D X H): = 484 X 497 X 43 mm
 Weight: 8,4 kg

Airflow: Front-Back

Electrical specifications:

AC
 Input Power: 100-240V, 2A, 47-63 Hz
 Maximum Power Consumption: 350W
 DC

Certifications:

Fully RoHS compliant
 CE compliant
 Safety - UL 60950-1 / CSA C22.2 60950-1-07 / IEC 60950-1 (2005) EN 60950-1 (2006)

INPUTS*

20 x 40 Gbps / 10 Gbps full duplex QSFP Ports for any kind of QSFP
 4 x 100 Gbps full duplex QSFP28 Ports for any kind of QSFP28

* Each port can be input and/or output depending on the application and configuration

OUTPUTS*

20 x 40 Gbps / 10 Gbps full duplex QSFP Ports for any kind of QSFP
 4 x 100 Gbps full duplex QSFP28 Ports for any kind of QSFP28

* Each port can be input and/or output depending on the application and configuration

PERFORMANCE

Performance up to 2400 Gbps
 2300 million packets/sec
 Non-blocking design
 Estimated boot time up to 280 sec
 Packet delay through processing less than 1 μs

MANAGEMENT

Management Port: (1) RJ45
 10/100/1000 Mbit Configuration
 (CLI) Port: (1) RS-232 DB9

INDICATORS

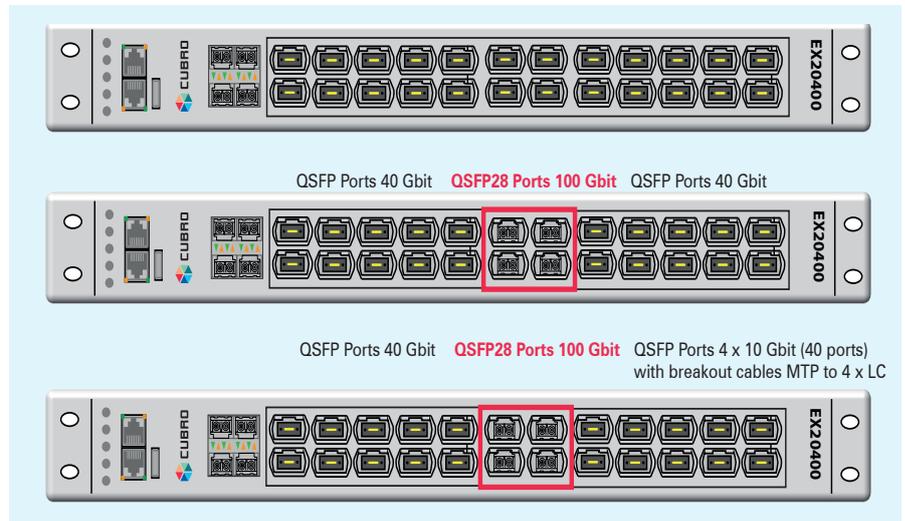
Per RJ45 port: Speed, Link/ Activity
 Per SFP+ port: Status, Rx, Tx, Link
 Per Device: Power, Status

APPLICATIONS / SOLUTIONS



Aggregation

Traffic aggregation from many input ports to one or many output ports. This works also with different link speed up to 100 Gbps.



Preamble	Destination MAC Address	Source MAC Address	Type	Vlan	Vlan PCP	MPLS
Version	IHL	Type of Service	Total Length			
Identification			Flags	Fragmentation Offset		
Time to Live	Protocol	Header Checksum				
Source-Address						
Destination-Address						
Options					Padding	
Source Port			Destination Port			



Filtering

4500 flow rules (filters) can be set in a unit. The red dot marked fields can be used as a match for a packet, stand-alone, combined or with wild cards. For IP Src and IP Dst super nets are supported.

Available actions after a positive match include –

- **Send out:** To one or more ports - even the same as the input is possible
- **Drop:** Delete the specific packet
- **Modify:** Modify specific fields in the matched packets, VLAN, MPLS, MAC SRC, MAC DST, PORT, Priority and some more
- **Add VLAN:** The unit can tag a VLAN on the input to separate the traffic after aggregation

- **Strip VLAN:** VLAN can be removed, Q in Q is supported
- **Add MPLS:** Add an MPLS Tag to a matched packet
- **Strip MPLS:** Remove an MPLS Tag from a matched packet
- **Stacking of rules:** This function gives the option to generate very complex filter rules



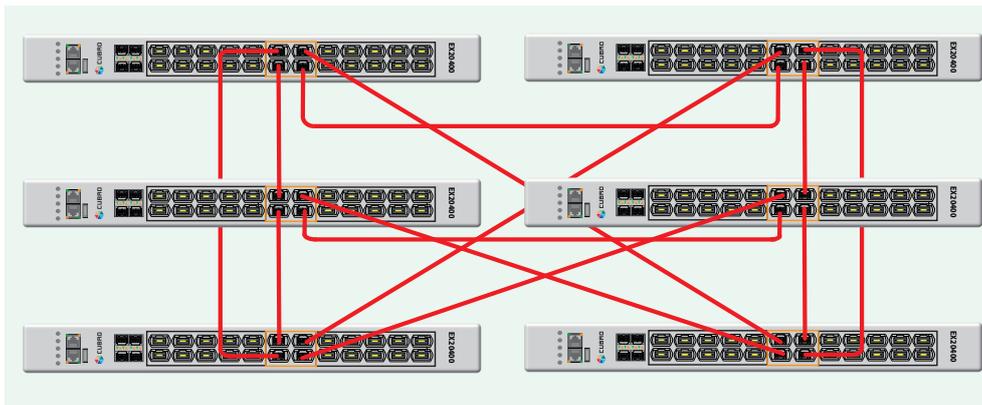
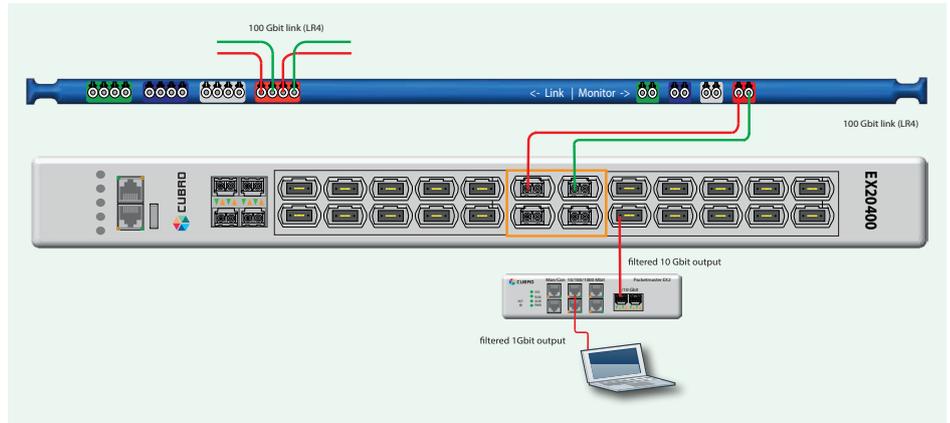
App: 100 Gbit Load Balancing

The EX20400 is connected via the Cubro Optical TAP to a 100 Gbit live link. Load balance the 100 Gbit traffic to 12 X 10Gbit ports using the load balancing capability of the Packetmaster EX20400.

App: 10 Gbit Monitoring

The EX20400 is connected via the Cubro Optical TAP to a 100 Gbit live link. The user can select only the portion of the traffic which is needed to solve the network problem using the filtering capability of the Packetmaster EX20400.

In combination with a Cubro EX20400 it is possible to look into a 100 Gbit link with a standard PC and Wireshark.



App: 504 Ports 10 Gbit Cross Connect

6 x EX20400 are connected over the 100 Gbit links to generate a cross connect with 504 10 Gbit ports.

App: Symmetric Load Balancing

Symmetric load balancing is a mechanism of interchanging the source and destination addresses to ensure that bidirectional traffic specific to a particular source and destination address pair flows out of the same member of a trunk group.

For many monitoring and security applications, bidirectional conversations flowing through the system must be carried on the same port of a LAG. For network telemetry applications, network traffic is tapped and sent to a Cubro G4 Packetmaster, which can hash selected traffic to the application servers' downstream. Each server analyses the bidirectional conversations. Therefore, the Packetmaster must enable symmetric load balancing to accomplish bidirectional conversations. In addition, the firewall between the Cubro devices can be configured to allow the bidirectional conversations per link of the LAG. These network telemetry applications also require symmetric load balancing on the LAGs between the Cubro devices.

After enabling symmetric load balancing, Flow X upstream traffic (with SIP as 10.10.10.10, DIP as 8.8.8.8, layer 4 source port as 32500, layer 4 destination port as 53) and Flow X downstream traffic (with SIP as 8.8.8.8, DIP as 10.10.10.10, layer 4 source port as 53, layer 4 destination port as 32500) will hash to the same member link of the LAG resulting in the bidirectional conversation going to the same DPI pool.

App: UDF Filtering

Cubro supports UDF (user defined filtering) on all G4 Packetmaster EX. This feature allows to filter the first 128 byte for a 4 byte match. This is often very useful if the standard filters are not enough.

ORDERING INFORMATION

Part Number	Description
CUB.PM-EX20400	Packetmaster EX20400, 20 x 40G and 4x100G Network Packet Broker
CUB.PM-DC-C	DC Power supply module for Cubro Packetmaster EX20400/48400/484-3
CUB.RR19-1U	Universal Rackrail Kit for 1U 19" units (Packet/Sessionmaster)

Product Components:

- Packetmaster EX20400
- AC, DC power modules available
- Europe/US/UK power cords available

For more information please check our website www.cubro.com