Cubro Packetmaster EX 32100

Version 1 June. 2016

The Packetmaster EX 32100 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. Packetmaster EX 32100 allows you to filter and load-balance traffic from 40 or 100-Gbps link to multiple 40-Gbps monitoring tools or aggregate multiple 1-Gbps links to 10 or 100-Gbps monitoring tools. Packetmaster EX20400 also supports traffic modification as well as changing,removing and adding VLAN's, MPLS, VXLAN,NVGRE/MLAG/GENEVE

No additional software costs all applications included in the unit price.

Extended Functions:

- **L7 packet based filtering**
- **Software defined Counters**
- **Flexible Key Creation (Parse)**
- **Flexible Tables (Lookup)**
- **Flexible Packet editing (Modify)**
- **Integrated Traffic Management (Queue)**
- **Create new metrics (Count)**

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 to extend the function of the Packetmaster. These applications can be developed by Cubro or the customer.

Link/Port Aggregation

Aggregation many to any, and any to many at all link speeds

100 Gbps traffic die-multiplexer

If highly loaded 100 Gbps links have to be monitored the traffic can be easily die-multiplexed into multiple 40 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

32 x QSFP28 or zQSFP 100 Gbps (LR4)
25 Gbps MAS support
1 x 10/100/1000 Base-T (Management)
1 x RS232 Console

Configuration / Communication

Web,Telnet and SSH

Bandwidth

3.2 Tbps backplane
5000 million Packets per sec

Aggregation latency

Average < 700 ns for 64-byte frames

MTBF

201,743 hours

Network Buffer Memory

24 MB

Low Power Design

Operating Temperature

0 to 45°C

Operating Humidity

90% maximum relative humidity

Dimension

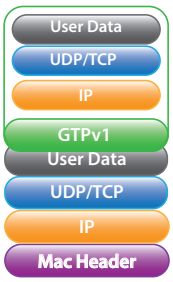
W=435.00 mm, L=393.70 mm, H=42.80 mm

General Functions:

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

Filtering: up to 500.000 flow rules (filters) can be set in active the unit.

It is possible to filter in any Layer of the OSI Model, because the unit has the capability to add relatively simple new keys . This keys are extension to the packet parser to detect fields which are not integrated in the standard setup. As examples is the GTP tunnel explained.



The GTP stack looks like this, it is usually a normal UDP packet but in the payload you have a second IP packet encapsulated. A typical Packet parser could not handle this encapsulated IP packet and filter on this second IP stack.

But with the EX 32100 we can generate a new key field for the parser so that we can filter (match) also on the second IP.

But it also possible to go higher in the stack to match in the user data. The only limit is that this matching is packet based, so each packet must have the match criteria.

Available actions functions after a positive match are:

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, VLAN 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.

Lifetime of rules: Rules can be set with a live time counter, if the counter becomes 0 the rule will be removed automatically.

Generate nFLOWS and sFLOWS CDRS:
The EX20400 can send standard nFlow or sFlow CDRS to a collector devices to monitor the traffic processed by the EX 20400. These devices can produce graphs and SNMP traps for northbound signalization.

GRE Tunnel support: The device can work as end device for a GRE tunnel, for back hauling applications.

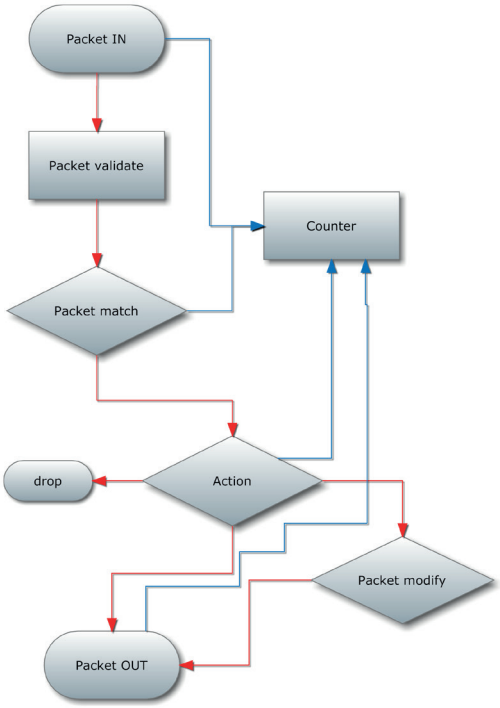
VXLAN Tunnel support: The device can work as end device for a VXLAN tunnel, for back hauling applications.

Symmetric Load balancing: L2 / L3 L4 hash based load balancing, up to 16 load balancing groups.

AAA Radius support: user identification

Stacking of units: one Packetmaster can control several other Packetmasters. This gives the possibility to extend the amount of ports per unit.

Packet flow inside the Packetmaster:



Technical Data:

Operating Specifications

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

Mechanical Specifications:

Dimension (HxWxD): 42.8 x 435 x 393.7 mm
Weight : 8.9 kg

Airflow: Front -Back

Electrical Specifications:

Input Power: 100-240V, 2A, 47-63Hz
Maximum power consumption: < 300W

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*

32 x 100 Gbps / 40 Gbps full duplex
QSFP Ports for any kind of QSFP

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

Outputs*

32 x 100 Gbps / 40 Gbps full duplex
QSFP Ports for any kind of QSFP

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

Performance

Performance up to 3200 Gbps

2300 million packets/sec

Non blocking design

Boot time from power on to working 180 sec.

Constant Packet delay through processing less than 700 ns

Management

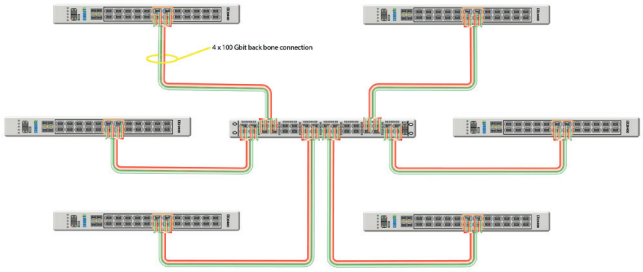
Management Port: (1) RJ45 10/100 Mbit
Configuration (CLI) Port: (1) RS-232 DB9

Indicators

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

Applications:

Application 500 x 10 Gbit port cross connect with 400 Gbit non blocking backbone



6 x EX20400 are connect over 4 x 100 Gbit to one EX 32100 to build a 500 port 10 Gbit cross connect.

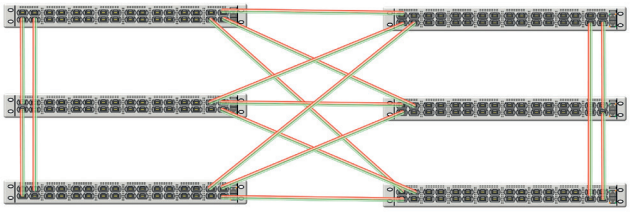
The connection is layer 2 transparent

To have full control and have secure transfer all traffic is transported in VXLAN tunnels across the system.

At the output the VXLAN tunnel header will be removed.

Centralized management.

Application 100 Gbit port cross connect full mash



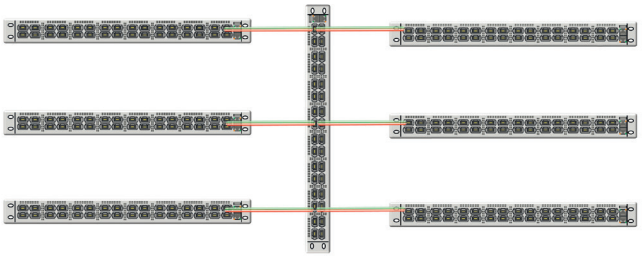
In this application 6 EX 32100 are connected to a fully mashed cross connect with 162 available 100 Gbit ports (27 per box).

The interconnection between the boxes cold be done with one link or with two and more depending on the bandwidth what is needed

The table beside show who many units can be interconnected and how many ports are available

Amount of units	100 Gbit	200 Gbit	300 Gbit	400 Gbit
6	162 ports	132 ports	102 ports	72 ports
7	182 ports	140 ports	98 ports	56 ports
8	200 ports	144 ports	88 ports	32 ports
9	192 ports	128 ports	72 ports	XXX

Application 100 Gbit port cross connect with central unit



In this application 6 EX 32100 are connected to a central with 186 available 100 Gbit ports (31 per box).

The interconnection between the boxes cold be done with one link or with two and more depending on the bandwidth what is needed

The table beside show who many units can be interconnected and how many ports are available

Amount of units	100 Gbit	200 Gbit	300 Gbit	400 Gbit
6	186 ports	180 ports	174 ports	168 ports
7	217 ports	210 ports	203 ports	196 ports
8	248 ports	240 ports	232 ports	224 ports
9	279 ports	270 ports	261 ports	XXX
10	310 ports	300 ports	290 ports	XXX

This is the screen shot of the management console of this cross connect application. The user must only define the connected endpoint and the application finds the best and shortest way to the endpoint. But it also possible to define a hard-coded way.
By clicking on a point the route is shown as a highlighted path. The application supports any combination of layout, full mesh, central and any combinations and it is self-learning in how the units are connected. Also we provide any type of traffic statistic.