



Application: DPI (Deep Packet Inspection)

Oct 2017

What is DPI

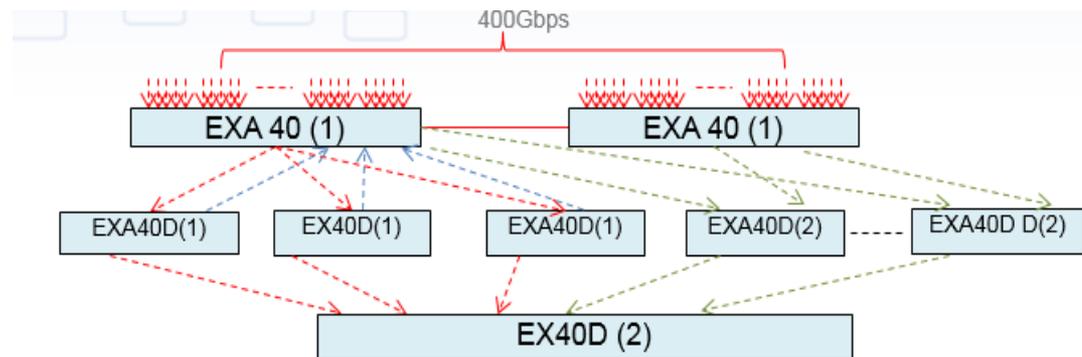
- It is an advanced computer network packet filtering system that inspects every packet of data when it passes a firewall (an inspection point).
- It enhances the capabilities of a firewall as it operates at the L3-7 application layer (the seventh layer) of the Open System Interconnection (OSI) reference model.

How does it work

- Typical firewalls on your routers read only the labels or headers on the data packets of Internet traffic. Deep Packet Inspection pores beyond the header information of the Open System Interconnection (OSI) reference model to inspect the payload of the packet in the application layer.
- Layer 7 is the application layer that contains the actual messages.
- The inspection strips off the headers and can identify the program or service being used.
- Further, it performs the packet analysis in real time, which avoids any delay in data traffic.

Simple DPI Integration – IMSI Based LB

Mixed traffic (including S1-MME/S11/S6a/S1-U)



Functions:

EXA40(1): Auto Study for eNB/xGW IP address from S1MME, LB traffic to EXA40D

EXA40D(1): Processing control plane traffic and get correlation meta data, then send meta data to EXA40(2), and output control plane traffic by IMSI

EXA40D(2): Correlation user plane and control plane meta data, then output user plane traffic by IMSI

EXA40(2): Aggregate output traffic from EXA40D(1)/(2) by IMSI based VLAN (same IMSI has same VLAN tag)

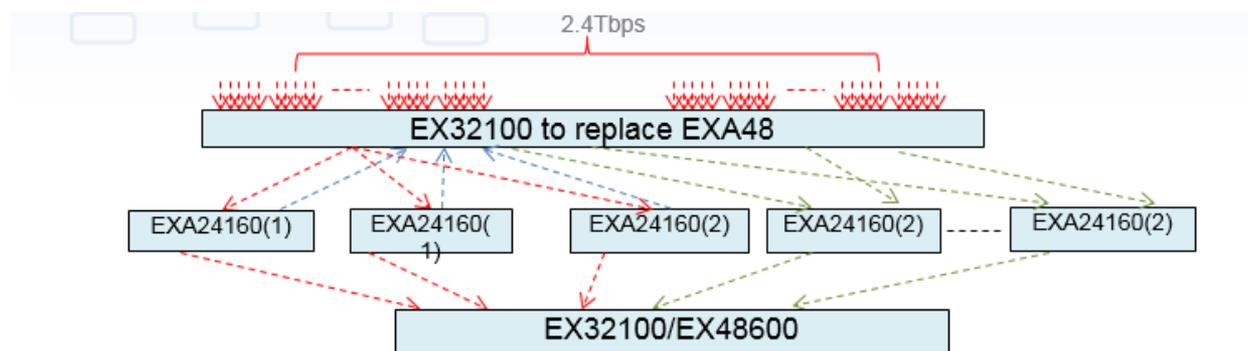
Performance:

EXA40D(1): 80Gbps/U (40G per CPU, 2x)

EXA40(2): 5~6Gbps/U (Control plane decoding only)

Scale-out possibility

Mixed traffic (including S1-MME/S11/S6a/S1-U)

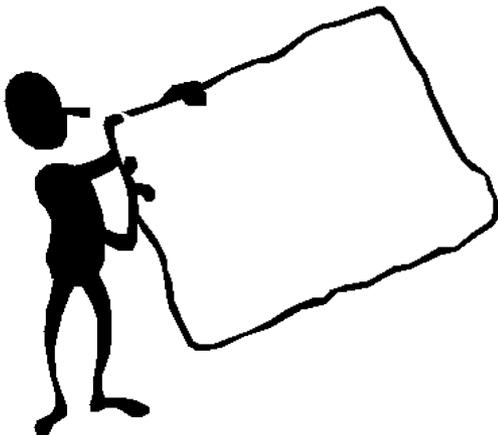


When the future traffic to be load balanced will in the line of 100GE, we can upgrade:

- EXA48 (Position 1) to EX32100 (32x100G)
- EXA40D (Position 1 and 2) to EXA24160 (each unit can handle 120G+ user plane traffic and 10G control plane traffic)
- By EX32100, we can connect up to 32 EXA24160 nodes for 2.4T traffic and have 20xEXA24160 (to replace EXA40D (2)) to process user plane and 12xEXA24160 (to replace EXA40D (1)) to process control plane traffic.
- The final output traffic can use EX32100/EX48600 combination to many 10G/40G end points

Review of the two DPI Integration

- Auto study of information of eNB/xGW from traffic - no manual configuration work on thousands of IP addresses
- Have enough access ports (up to 96 10GE), and the port number can be extended by adding simple aggregation switches
- Have the same performance on user plane processing, i.e. 80G bps per 2xCPU unit



Since complex solution needs correlation, special processing on control plane traffic by decoding is needed, which is a performance consuming task. Each 2xCPU units can handle 5Gbps signaling, i.e. 5% of 100G all-mixtures-traffic. The user needs extra 3~4 units to do correlation.

How DPI capabilities can benefit you?

- Filter and analyze messages
- Open and close ports
- Perform in-line spam screening
- Eliminate attacks against the BIOS
- Proxy your IM traffic
- Perform SSL session inspections
- Ward off Secure Socket Layer sniffing

Thank you

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