



DATASHEET

# Network Operating System for Disaggregated IP/MPLS Router Solutions

With average traffic CAGR increasing 50% and the expansion of new applications and networks such as non linear video and 5G deployments, all networks must expand while keeping costs under control.

## NETWORK APPLICATIONS

Access  
OLT  
Aggregation  
Provider edge  
Network peering

## IP ROUTING AT SCALE

Suited for internet traffic  
routing on Tier 1/Tier 2  
carrier networks

## OPEN ARCHITECTURE

Any Broadcom-based  
hardware  
Northbound interface for SDN

## 3rd PARTY APPLICATIONS

Integrated KVM hypervisor  
to support 3rd party  
applications

## A Disruption in the Market

Until 2016, the only way for a vendor to provide a carrier grade router was to develop a proprietary, vertically integrated router that included its own ASICs, hardware, and software.

The barriers to entry for new vendors were extremely high due to the high cost of developing a vertically integrated router. As a result, only a small number of incumbent vendors shared this market, locking communication service providers (CSP) into expensive solutions with little innovation.

With disaggregated routing solutions, Exaware enables internet service providers, mobile network operators, and telecom carriers to benefit from the software and hardware disaggregation model (white box router), which disrupts the economic value chain of the networking industry.

Filling the missing link between merchant-based hardware and customer requirements, Exaware provides the necessary scale and feature set for the most demanding networks. Built with the customer in mind, Exaware enables you to adapt your network to fast-changing conditions by adding a layer of programmability to enable new services that your end users can benefit from instantaneously. Without compromising on security and performance, Exaware enables a new economic model for your network.

## EXAWARE BENEFITS



### Reduced CAPEX

With Exaware, operators can effortlessly use disaggregated routers across the network, while reducing upfront network investment dramatically in comparison to traditional proprietary IP routers.



### Carrier Grade

Our router was built from the ground up with carrier scale in mind, to meet current and future demanding requirements and applications. Our longstanding experience in the industry serves our customers.



### On-Demand Bandwidth Growth

Exaware gives you the power and freedom to scale without limits, thanks to our NOS distributed chassis architecture.



### Lower OPEX

Built for network and service automation through Yang and NETCONF interfaces, Exaware's open API solution reduces the need for operational and maintenance staff.



### Scalability

Exaware NOS enables seamless scaling, no matter your application, while meeting your network service demands effortlessly.

# Flexible Software Architecture

## Fault Isolation

Each application runs as a separate entity, without impacting other applications

## Memory Protection

Hardware components are managed through memory-protected user spaces to ensure faultless operations and service continuity

## Open API

For management and hardware abstraction QoS

## Service Orchestration



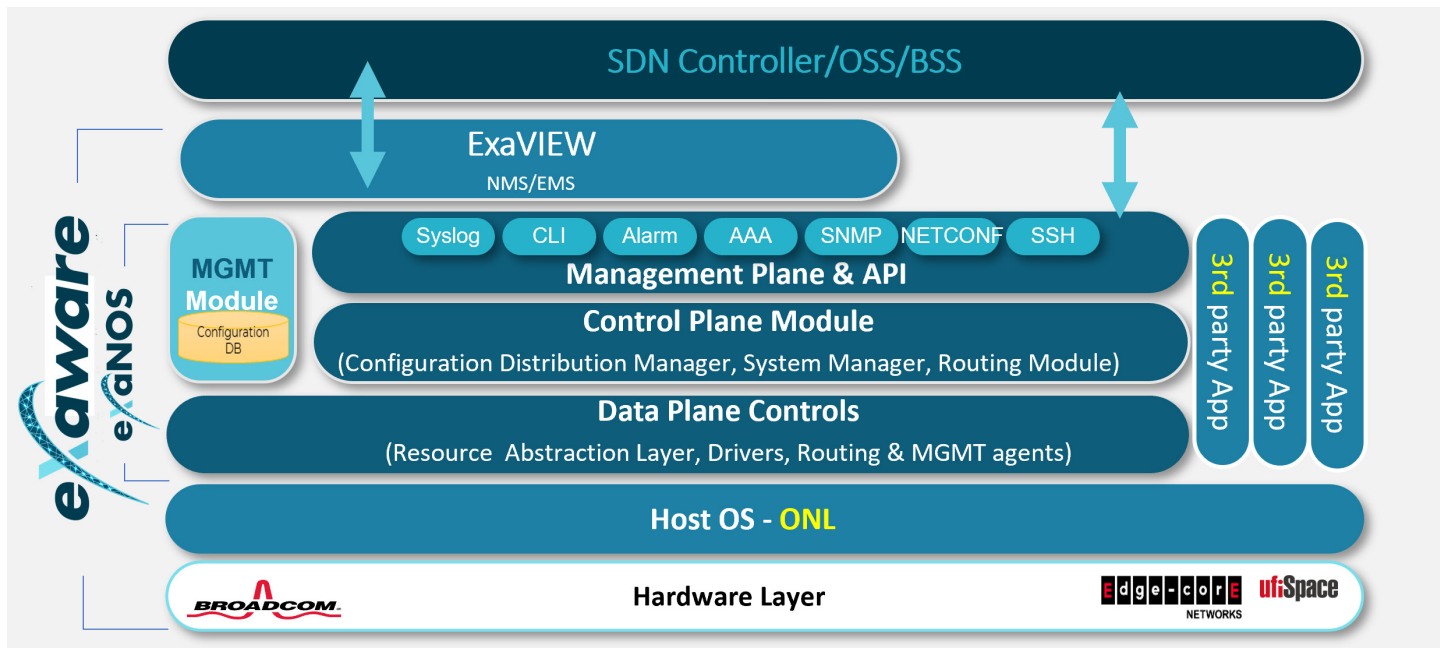
puppet

CFEngine

signal fx



Nagios  
Log Server



## End-to-End Routing Solution

exa**NOS**

+ White Box



## APPLICATIONS



### ACCESS

Economically deploy reliable FTTx residential, business, and wireless backhaul services with maximum networking flexibility



### OLT

Support for 3rd party applications via pluggable modules



### AGGREGATION

Transparently consolidate multi-service network access traffic at scale to meet growing needs



### PROVIDER EDGE

Cost effectively mitigate network bottlenecks and improve wide area network quality of service



### NETWORK PEERING

Reduce cost and increase flexibility when exchanging traffic with cloud, data center, transport, and internet peering off-net partners

# Specifications

## Routing Protocols

- IPv4, IPv6 Dual stack
- eBGP, iBGP at scale
- MP-BGP
- Multi-AS VPN/BGP-LU
- BGP signalling for L3VPN
- BGP signalling for L2VPN
- 6PE and 6VPE
- Seamless MPLS
- OSPFv2, v3
- IS-IS – IPv4/IPv6, Multi topology
- Route distribution across protocols
- PIM-SSM/SM
- IGMPv3
- RSVP-TE
- LDP, T-LDP
- IGP shortcut
- OSPF-TE
- ISIS-TE
- Local VRF
- L3VPN
- L2VPN
- Inter-AS L3VPN
- VPWS
- H-VPLS
- Internet Access
- NH Tracking
- VRRP V2, V3 IPv4/IPv6
- Static-Route
- BGP RPKI
- Route leak
- DHCP Relay

## High Availability

- Process restart
- Graceful restart for all routing protocols

## Management

- Hierarchical, Commit based CLI
- NETCONF
- SSH
- Telnet
- Out-of-band and in-band management
- SNMPv2/V3
- RBAC
- AAA/TACACS+/Radius
- NTP
- Syslog
- Rich, Hierarchical Policy Language
- Enhanced logging
- Optical monitoring

## Security

- Data Path ACL
- Control Plane ACL
- Management VRF Separation
- Hardware policing for CPU traffic
- MD5 for routing protocols
- BGP FlowSpec

## Timing

- SyncE
- IEEE1588 (hardware platform dependent)

## QoS & Policy

- Hierarchical Shaping
- Per PORT/VLAN rate control
- WRED
- Weighted and strict priority queues
- Minimum latency queues
- 8 Queues per port/VLAN
- Ingress policing
- PRI/DSCP/EXP classification
- Flexible packet fields classification
- Ethernet EBN (MW dynamic rate)

## Data Path

- VLAN
- QinQ for all services
- LAG
- MPLS FRR
- IP-LFA
- Hierarchical FIB
- BGP-PIC Core/Edge
- Two level load-balancing
- VRF at scale
- BFD

## Infrastructure

- ONIE Bootloader
- Standard ONL
- Embedded KVM Hypervisor