

Application Note

INTERNET PEERING WITH EXAWARE

Open networking, Powered by Software Innovation

Jun<u>e-2021</u>

eXaware

INTERNET PEERING WITH EXAWARE

Networking, Powered by Software Innovation

Internet Peering is a critical part of every Communication Service Provider (CSP) Network, it allows two (or more) networks to connect and exchange traffic directly and ensures access to global content for all customers on the Network, in the most cost-effective way according to the Service Provider requirements and network topology.

Exaware modern software architecture, provides the agility needed to scale seamlessly and onboard additional value-added services, this emphasizes further the advantages of disaggregated solutions over traditional monolithic routing solutions.

In this document, we are explaining the different configurations for an Internet Peering and how Exaware stands out.





INTERNET PEERING: HOW IT WORKS

Every Service Provider needs to provide a connection to the internet, for the benefit of its end users.. This connection has a significant impact on the overall costs of the network and the routing equipment is part of it.

Set of peering solutions

INTERNET TRANSIT ONLY

In its most basic form, Internet access is made possible through direct access to a large Service Provider (Tierl) , whose network is connected to other global networks.



PEERING THROUGH IXP



Peering through an Internet eXchange Point (IXP) is the most common form of peering. IXPs are organizations which enable the public connection between two or multiple networks, it allows the free exchange of traffic between the networks.

MULTI-HOMED NETWORK

Multihoming is a common deployment approach to establish multiple Peering connections through multiple IXP, it reduces Transit costs and adds redundancy in case of failures.

The selection is based on a detailed analysis of the Service Provider origin and destination of the traffic.



PRIVATE PEERING



When two networks identify that they exchange significant traffic, they can decide to establish a private peering. A private peering does not involve the IXP and is set by the two networks.



EXAWARE PEERING SOLUTIONS

Exaware provides a complete set of peering solutions for all the above use cases. We work closely with our Whitebox hardware partners to provide both the features and the capacity required by Service Providers a flexible solution that addresses small Service Providers (Tier2 and Tier3) as well as large (Tier 1) Service Providers.

Why does it make sense to use disaggregated routing solutions for internet peering?

Internet peering has a significant impact on the overall costs of the network and the routing equipment is part of it.

Cost effective/affordable entry-level routers

While traditional equipment manufacturers require you to buy high-end, expensive routers, in order to have the necessary hardware components required for peering, disaggregation comes to fix this issue and provides an entry-level routers, with the capability to hold peering traffic at scale.

Exaware modern software architecture, provides the agility required to scale seamlessly and onboard additional value-added services, this emphasizes further the advantages of disaggregated solutions over traditional monolithic routing solutions.

Robust and scalable solution

Having a strong Hardware equipment, powered by a robust and scalable software Operating System is a key to ensure flawless internet peering.

Exaware modern software architecture, allows agility in terms of scale and services, our innovative solutions can scale from 800GB up to 1,300TB (Peering Application), it is carrier grade, feature rich Open Networking Solutions, with a variety of features and protocols required in the network transformation journey of Service Providers to a disaggregated solutions.

Modern software architecture

The performance of a routing solution is mainly driven by 2 factors:

- The architecture of the Software Operating System
- The performance of the hardware

Exaware modern routing software support advanced BGP features to ensure an optimal performance, monitor the incoming traffic, and balance the amount of transmit traffic per connection in a cost-effective manner. In addition, Exaware have developed CUPL (Compass Unified Policy Language), a state-of-the-art policy language which offers a common programmability for Control Plane and Data Plane Policies (Routing Protocol, ACL, QoS). CUPL offer powerful yet simplified interface for advanced configurations.

as simplicity is key to Service Provider operational efficiency and convenience, ExaNOS includes an Open API's for 3rd party applications that enables Automation and Lifecycle Management solution.

ExaNOS software was built from the ground up with performance and scalability in mind. Originally designed to operate on a chassis-based hardware, ExaNOS has a distributed architecture, allowing to run separate processes with their dedicated memory and CPU resources, in order to take full advantage of the underlying hardware.



ExaNOS feature set goes way beyond peering applications, and has many features required to set up and manage your internet traffic as required, whether in a single-homed or a multi-homed network. All these features are included in the standard version of ExaNOS and comes at no additional charge.

Complete set of peering solutions

Exaware provides a complete set of peering solutions:

- Internet transit
- Peering Through IXP
- Multi-Homed network
- Private peering

Exaware works with a variety of hardware manufacturers, who use the same family set of DNX chipsets from Broadcom (Qumran MX and Jericho 2/2C).

The major performance differences are found in the quantity and the type of memory used. With Exaware, you have access to a broad choice of hardware, which covers various needs and certainly the most demanding peering applications. Typically, peering requires external TCAM Memory, allowing to perform fast search in millions of entries for instant routing decisions.

All of our certified Whitebox hardware platforms support internet scale and reliability through external TCAM, high end CPU, redundant power supply and fans.



Exaware solutions for medium size peering points is based on a 800G throughput Hardware platform, with redundant fans and power supply.



The below table presents key performance indicators of ExaNOS Routing

Solution. for the Edgecore AS5916-54XKS MX equipment.

Feature	Value
Max Number of IPv4	2.7 million IPv4
Typical insertion time	135 seconds
Insertion rate	21K prefixes/sec
BGP Path Scale	12M paths
BGP Peers	300 iBGP, 100 eBGP

Product Specs	Features supported
Qumran MX ASIC Based Platform	L2/L3 VPN, VPLS, H-QoS, v4/v6/MPLS
800 Gbps throughput	BGP/OSPF/ISIS/MPLS
48 x 10G SFP+ Ports	BGP Policy configuration
6 x 100G QSFP28 Ports	Fast Re-Route (FRR) – MPLS and IP
External TCAM	Next-hop tracking
Hierarchical FIB convergence - BGP-PIC	BFD for all protocols

For large size peering points, which require full redundancy, Exaware provides capacities ranging from 4.8T and up to 8T, in back-to-back configuration, by connecting two boxes together.

Product Specs	Features supported
Jericho 2C ASIC Based Platform	L2/L3 VPN, VPLS, H-QoS, v4/v6/MPLS
2.4T throughput	BGP/OSPF/ISIS/MPLS
4 x 10G SFP+ Ports	BGP Policy configuration
48 x 25G SFP28 Ports	Fast Re-Route (FRR) – MPLS and IP
External TCAM	Next-hop tracking
Hierarchical FIB convergence - BGP-PIC	BFD for all protocols



Reduced TCO (Total Cost of Ownership)

Exaware solution is geared to reduce your TCO, help increase efficiency, flexibility and provide greater value for money. The transition to white box routing comes also with financial benefits, that of significant cost savings, so you can grow your internet connectivity while keeping your costs under control. This does not come at the price of routing stability or quality of customer support.

The savings are categorized as follows:

- Lower cost per bit
- Lower initial investment cost in comparison to traditional router vendors
- Lower operational costs in comparison to traditional routers
- No lock-in with Optics
- Easy and affordable expansion
- Pay as you grow licensing model



Openness & Ecosystem

ExaNOS unique Software architecture brings a new horizon of Openness in the disaggregated networking, it allows additional applications to co-exist alongside with the NOS (e.g DDoS Mitigation) to maximize the utilization of commercialized Whitebox.

DDoS Mitigation- Boost your cybersecurity shield with Exaware

DDoS attacks have a devastating impact on business operations, often time shutting down activities for a prolonged period of time. Exaware provides the capability to filter DDoS attacks at the peering point, in real-time, automatically and at scale. ExaNOS connects with your existing DDoS mitigation platform to identify the source of attacks and apply the necessary filters to stop the attacks. With ExaNOS you can block, throttle or rate-limit the traffic from specific IP addresses, at the peering point to keep the unnecessary traffic out of your network and allow your users to continue their normal activities.

With ExaNOS DDoS filtering, you can provide your customers with a dedicated DDoS protection service, for their specific IP destinations. Contact us for more details.



SUMMARY



Cloud architecture

- Modern software architecture
- Cloud architecture for flexibility and dynamic scale

Complete set of Peering Solutions

- Multiple hardware platforms from major Hardware vendors
- Flexibility to customize your network to your needs



Carrier Grade

- ExaNOS is the result of a decade of development
- Deployed among several Tier1 service providers



Reduced TCO

- From plan-ahead (chassis) to pay-as-you-grow
- Generate new stream of revenues, with 3rd party Application
- Break the chains of vendor lock-in

Contact us for a personalized analysis of your situation and the potential savings you could gain by moving to Exaware Routing.

Open networking, Powered by Software Innovation

CONTACT US



www.exaware.com



info@exaware.com

Tel: +972-73-2124500