Application Note

Intel® Architecture Processors
Qosmos* DPI Technology

Intel® Architecture Processors: Qosmos* DPI Technology

Challenges:

- Network operators struggle with service functions such as firewalls, load balancers, WAN optimization systems, and other value-added services (VASs) with the introduction of virtualization, network overlays, and orchestration.
- Services are typically implemented in a static chain leading to technical and organizational challenges involving significant modification to the network management.
- Common deployment models have service functions inserted in the data-forwarding path between communicating peers, thereby lowering the bandwidth savings.
- Service functions implemented in silos lead to higher OPEX due to duplicated functionalities (network data interpretation, security rules, application classification, etc.).

Chaining Services Using DPI in NFV-based Infrastructure

The networking and telecommunications industries have begun to incorporate virtualization technology in ways similar to data centers. Adopting principles outlined by network functions virtualization (NFV), network functions are being consolidated onto standard, high-volume servers, switches, and storage in order to increase flexibility, equipment utilization, and operating efficiencies. Since network functions are easily co-located on the same hardware platforms, combining services together, as needed for service chaining, is more straightforward.

Solution:

Qosmos* Service Aware Module* (Qosmos SAM*) technology, running on hypervisor-hosted platforms based on Intel® Xeon® processors, allows DPI functions to be performed locally and enables dynamic traffic steering according to Layer 7 policy and rules. As an example, the virtual switch can directly steer video traffic by bypassing a next-generation firewall virtual network function (VNF). Also, the DPI-based virtual switch (vSwitch) can act as a service classifier, upfront of a network, and can rely on a packet tagging process standard (being discussed within IETF SFC working group) to convey the classified information remotely.

Implementation:

Activated dynamically, Qosmos DPI technology analyzes the required packets coming from the virtual switch. The DPI technology classifies the flow, extracts information from it, and stores the information in the flow table; and afterwards, the virtual switch does not need to send additional packets from the flow to the DPI module. Thanks to the respective provisioning using, for instance, the Openflow Application eXtensible Matchers (AXM), the virtual switch can act as a true Layer 7 service, making flow decisions based on the application requirements.

A video example is at https://www.youtube.com/watch?v=jkbkvX2B_kI.

QOSMOS
The Network is Information

Example:

A network operator deploys an Apache* server to provide users with embedded video services that run in a tenant virtual machine. Incoming traffic is first examined by the Qosmos DPI module, which reveals the application ID and metadata associated with each flow. This information is used by the virtual switch to bypass the next-generation firewall VNF, and the virtual switch directly steers the video-based traffic to the application delivery controller (ADC) VNF and Apache VNFs.

Benefits:

This hypervisor-hosted solution consolidates networking functions in a small form factor, helping network operators maximize their return on investment (ROI) and lower operating expenses (OpEx). When extended to multiple physical platforms, application ID, and metadata can be passed inline in a packet header, allowing the information to be processed throughout the network. It also enables network operators to implement cloud-based enterprise projects involving both compute and networking workloads. Network operators can decrease time to market and improve capacity planning by utilizing independent software vendors (ISVs) and deploying commercial off-the-shelf (COTS) hardware.

For more information about Qosmos DPI technology, visit www.qosmos.com.

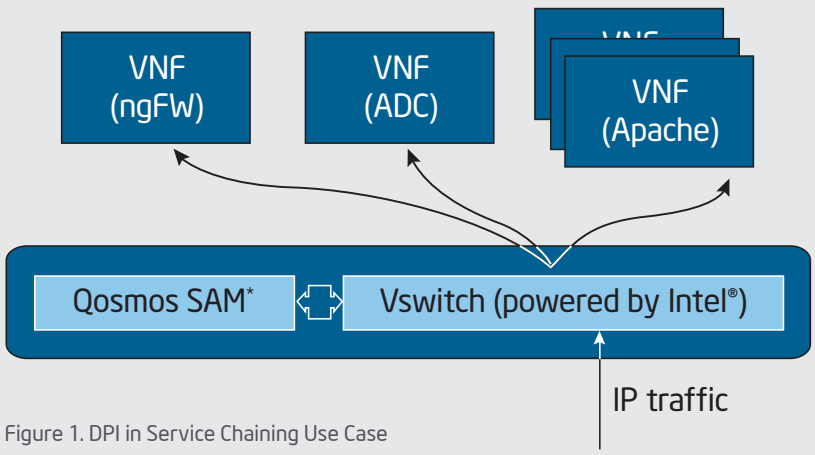

Figure 1. DPI in Service Chaining Use Case

For more information about Intel solutions for communications infrastructure, visit **www.intel.com/gocommsinfrastructure**.

Solution Provided By:

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