

NETRONOME OFFERS CLOUD AND NFV SMARTNIC SOLUTION WITH RED HAT

PARTNER TECHNOLOGY BRIEF

Netronome's programmable network flow processor (NFP) delivers on-demand acceleration with traditional Ethernet services. By working with the open source community to develop standard application programming interfaces (APIs) for SmartNICs, Netronome and Red Hat offer breakthrough efficiencies in datacenter and cloud-based computing.

Learn more at
www.netronome.com.

Virtualization has brought many benefits to server technology, but it has also introduced high overhead that consumes a server's central processing unit (CPU) cycles, crippling efficiency for deployments like hyperscale datacenters and network functions virtualization (NFV). Foundational open source building blocks, like Red Hat® Enterprise Linux® and Red Hat OpenStack® Platform, deliver leading performance, free from proprietary vendor lock-in.

Red Hat and Netronome, a leading provider of SmartNIC technology, have partnered to offer a new cloud and NFV infrastructure solution to boost efficiency for Red Hat Enterprise Linux and Red Hat OpenStack Platform users. SmartNICs, a new breed of network interface cards (NICs), fully offload software-defined networking (SDN) and NFV-centric functions, like virtual switching, virtual routing, and match-action processing. And because SmartNICs are highly programmable, the feature set evolves quickly with open source community innovations. With this solution, datacenter operators can realize wire-speed network throughput and greatly reduced CPU overhead.

Netronome's Agilio family of 10/25/40/50/100Gb/s Ethernet SmartNICs fits into any commercial-off-the-shelf (COTS) server and works seamlessly with Red Hat Enterprise Linux and Red Hat OpenStack Platform to eliminate system bottlenecks that have delayed deployments and frustrated network operators.

SCALING THE CLOUD AND NFV INFRASTRUCTURE

The networking infrastructures that host cloud and NFV applications in a datacenter are built using x86 CPU-based COTS servers that run Linux and Open vSwitch (OVS) software. Red Hat Enterprise Linux and OpenStack Platform with TripleO orchestration scale to very large clouds. However, network processing in these environments can consume CPU cores, making servers and the networks that connect them inefficient. This problem becomes more acute as bandwidth increases to 25/40/50 and 100Gb/s.

Offloading network processing to Netronome's Agilio SmartNICs is the open source solution that overcomes performance and scalability bottlenecks that limit productivity. Using industry-accepted APIs and Linux constructs with Agilio SmartNICs, servers running Red Hat Enterprise Linux and Red Hat OpenStack Platform can achieve 7x the throughput with only 20% CPU utilization.¹

NETRONOME AGILIO SMARTNIC PLATFORM

Built for accelerating SDN processing, the hardware component of the platform provides high-performance connectivity with programmability to facilitate fast feature innovation. Unlike expensive and inflexible field-programmable gate arrays (FPGAs), Netronome's NFP-based Agilio SmartNICs accommodate diverse software loads to transform from a traditional Ethernet NIC to a high-performance offload engine that transparently supports multiple acceleration use cases.

¹ Netronome press release, "Netronome Announces In-Box Support and Certification for its Agilio SmartNICs in Red Hat Enterprise Linux 7.5." May 8, 2018. <https://www.netronome.com/press-releases/netronome-announces-box-support-and-certification-its-agilio-smartnics-red-hat-enterprise-linux-75/>

FEATURES AND CAPABILITIES

Reduce CPU overhead, increase server productivity

Servers, and the virtual machines (VMs) and containers that run in them, are the workhorses of the datacenter infrastructure. The ability to host them efficiently, with adequate levels of agility, security, and visibility, are important considerations for operators wanting to offer users more services and a better quality experience. The Red Hat and Netronome solution, when deployed on popular original equipment manufacturer (OEM)- and original design manufacturer (ODM)-based servers, expands the capacity of each server rack to accommodate more VMs and containers. At the same time, agility, security, and visibility features delivered by the cloud infrastructure are maintained.

Deliver new services while improving experience

Features like network slicing, which provides an end-to-end virtual network that includes compute and storage functions, are imperative for delivering new services for on-demand video, Internet of Things (IoT), augmented reality, and vehicle-to-infrastructure services for autonomous cars. With current networking technologies, such features cannot be delivered cost-effectively or with the desired quality of experience. The Red Hat and Netronome solution can deliver network slicing at scale without impacting server rack efficiency. The solution, using hardware acceleration on COTS servers, enables low and deterministic latency demanded by new services suitable for mobile edge computing.

CONCLUSION

Service providers and datacenters deploying cloud-based technologies need to deliver modern, innovative services and contain costs to be successful in a highly competitive market. The Red Hat and Netronome cloud and NFV infrastructure solution allows service providers to build and deploy data-center infrastructures with significantly higher levels of efficiency and performance while maintaining the benefits of using popular COTS server hardware with comprehensive TripleO cloud orchestration.



ABOUT RED HAT

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to provide reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies. Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.



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