Solution Brief

CoSP network engineers
Network Functions Virtualization Infrastructure (NFVI)

NEXCOM NSA 7150 Speeds Network Functions Virtualization

The NSA 7150 is a verified Intel® Select Solution for NFVI v3 workload-optimized server solution, based on Red Hat* OpenStack Platform, that eases interoperability and speeds deployment

Communications service providers (CoSPs) are actively virtualizing their service platforms to gain flexibility, agility, and scale. The infrastructure that used to be closed and proprietary, full of purpose-built black boxes, is now moving toward an open architecture where cloud-native applications run on commercial-off-the-shelf (COTS) servers.

Not all COTS servers are up to the challenge of virtualization. A difficult job for IT managers is to select the right hardware from the numerous hardware providers and to select those servers with the right system configurations that will deliver the best performance within budget. In addition, these servers can't sacrifice scalability and flexibility.

To serve this market, NEXCOM has chosen to partner with Intel to develop and launch its NSA 7150 as a verified Intel® Select Solutions for NFVI v3 system.

Virtualization offers many benefits to network services, but it can be challenging and complex to deploy. Because NSA 7150 is based on Intel Select Solutions for NFVI reference designs, it provides consistent performance with virtual network function (VNF) interoperability—both of which help speed deployment.

The NSA 7150 is a high-performance 2U rackmount server and features enhancements in multi-core computing performance, high memory capacity, high-speed I/O interfaces to support NEXCOM proprietary LAN modules and OCP NIC 3.0 modules. The server can support up to 1.2Tb throughput. The NSA 7150 has onboard connectors for optimal support of TPM 2.0 and BMC modules. The NSA 7150 serves as a multi-purpose network appliance and can be deployed in various scenarios, including 5G public and private networks, where the demand for NFV platform adoption is at its peak.

ITEM	INGREDIENT
Server Name	NSA 7150
Processor	Intel® Xeon® Platinum 8352M CPU32c 2.30GHz 185W
Memory	1024GB, Micron Technology, Inc.
Network Controller	4
LAN on Motherboard	Module with 4x Intel® Ethernet Controller X710
Storage (NVMe)	2x Intel SSD D3-S4510 @480GB
Intel QAT	Intel® C627A Chipset
Operating System	Red Hat* Enterprise Linux 8.2, Red Hat OpenStack Platform
Hypervisor	KVM/QEMU 4.2.0

Table 1. Detailed NSA 7150 configuration.

Optimized for Virtualization

This reference design is defined in collaboration with CoSP and ecosystem partners to expose the value of an I/O-balanced architecture based on a foundation of 3rd generation Intel® Xeon® Scalable processors, Intel® Ethernet 800 Series Network Adapters, Intel® QuickAssist Technology (Intel® QAT), and Intel® Optane™ persistent memory. The NSA 7150 is offered with multiple CPU options from the 3rd gen Intel® Xeon® Scalable processor family.

Design Features

The NSA 7150 solution contains a cloud node for network function delivery and a controller node for clustered node deployments. Together, these configurations help realize an efficient balance of functionality to meet many deployment needs.

Tables 1 and 2 shows system specifications for the cloud node and controller node.

KEY KPI TARGETS		TARGET FOR PLUS CONFIGURATION	NSA 7150 RESULTS
Intel QAT Performance	Compression (compress and verify) throughput1	50 Gb/s	51 Gb/s
OpenSSL Performance3 (PKE operation with 1 thread)	Software 1 thread	1K signs/s	13206 sign/s
OpenSSL Performance (AES128-CBC-HMAC-SHA1 operation with 8 threads with 16KB Packet Size)	Utilizing Intel® QAT	100 Gbps	103.8 Gbps
Packet Processing Performance using DPDK L3fwd RFC2544 zero packet loss test	2x single or dual port 100 GbE(E810 CAM1/2)	80% Line Rate with Packet Size 256B at 36 Million packets per second	96%
NGINX Stack with OpenSSL 1.1.0 (PKE operations)	HTTPS CPS throughput (utilizing Intel QAT engine)	40000 CPS	57788 CPS
HAproxy	Number of requests per second with Intel QAT over number requests per second without Intel QAT	300%	430%

Table 2. Key Benchmark Requirements for Intel® Select Plus Solutions for NFVI v3

To be verified as Intel Select Solutions, appliances are required to show a certain level of workload-optimized performance, which varies for different levels. The NSA 7150 delivers excellent performance and achieves the qualifications required for the Intel® Select Plus Solution configuration (more details about target and NSA 7150 results are shown in Table 2).

Key Benefits

Virtualization is a growing service delivery paradigm that relies on high-performance standard servers like the NSA 7150. Because it is a verified Intel Select Solution for NFVI, customers can expect additional benefits, including:

- **Faster evaluation:** The tight hardware and software specifications of Intel Select Solutions for NFVI eliminate guesswork and speed decision making. Network managers can focus their search on key value-added elements and select an optimal solution quickly.
- **Fast and easy deployment:** Intel Select Solutions for NFVI feature pre-defined settings and rigorous system-wide tuning for efficient pre-deployment testing. This helps speed time to service delivery and network staff can have increased confidence in solution performance.
- **Workload-optimized performance:** Verified Intel Select Solutions for NFVI, like the NSA 7150, are designed by Intel and NEXCOM to deliver to a performance threshold for the workload and are built on the latest Intel architecture technology.

Conclusion

With the NSA 7150 verified as an Intel Select Solutions for NFVI, NEXCOM is delivering a differentiated platform that can simplify and accelerate the process of selecting and deploying the hardware and software needed for today's workloads and applications. Intel Select Solutions for NFVI represent the latest technology that will accelerate the transformation of the network from end to end.

About NEXCOM

Founded in 1992 and headquartered in Taipei, Taiwan, NEXCOM integrates its diverse capabilities and operates six global businesses, including the Network and Communication Solutions (NCS) unit. NCS focuses on the latest network technology and helps to build reliable network infrastructure, by delivering professional design and manufacturing services for customers all over the world. NCS's network application platform is widely adopted in cybersecurity appliances, load balancers, uCPE, SD-WAN, edge computing, storage, NVR, and other network applications for businesses of all sizes.

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NEXCOM NSA 7150

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