NEXCOM launches TCA5170, a verified Intel® Select Solution for uCPE

The business goals are seeking solutions to work toward network virtualization for communications and cloud services providers. It should be a challenge faced by service providers' enterprise and business customers.

Meanwhile, small business owners also encounter connectivity issues when adopting current consumer-graded IT **communication appliances** for business purposes. This problem persists through the transition of IT infrastructure from traditional stand-alone **communication appliances** (such as load balancers, edge routers, **industry firewalls**, and VPNs) to virtualized appliances, where a great variety of network functions run on general-purpose servers.

NEXCOM TCA5170 1U rackmount is designed with features perfect as an universal Customer Premises Equipment (uCPE) platform to expand customers' service portfolios for this growing 5G world to solve challenges mentioned above.

Intel® Select Solution for uCPE - TCA5170 Configuration

NEXCOM TCA5170 is a verified **Intel® Select Solution** for uCPE with multi-access edge computing, multiple network connections including high-speed Ethernet, LTE and WiFi- flexible to adopt to the connectivity available in the market today. Hardware configuration as table 1 below

Table 1: Intel® Select Solution TCA5170 HW configuration	
Processor Number	Intel Xeon D-2166NT processor
Processor Spec.	12 Cores , 17M Cache , 2.0 GHz
Memory	8 x 16GB DDR4 2666 DIMM ECC/non-ECC memory, max. 256GB
Networking	2 pairs LAN bypass (4 x 1 GbE integrated Intel® Ethernet Controller I350 LAN Switch)
Storage	1x Intel® Solid State Drive Data Center @ 480 GB 1 x 2.5" HDD bay 1 x M.2 2242 and 2280 length M-key socket
Front I/O	1 x USB 3.0 1 x Micro USB type console port 1 x LAN controller 8 x Copper RJ45 ports 4 x SFP+ fiber ports 1 x 16x2 LCM (optional) 2 x LAN module slots (optional; refer LAN module list) 4 x SMA connector holes for RF antenna cable
Internal I/O	M.2 2280/2242 (M key) for Storage M.2 2230 (SATA E key) for WiFi M.2 3042 (SATA B key) with SIM slot for LTE One standard SIM slot for LTE modem SATA ports x 4
Rear I/O	VGA

NEXCOM TCA5170

Connectivity: NEXCOM TCA5170 comes with eight Gigabit-Ethernet ports and four SFP+ ports for 10-Gbit-Ethernet. Available to enhance with a variety of NEXCOMLAN modules connected by PCIe interface x16 or x8. Table two provides the list of NEXCOM LAN modules available for TCA5170. Customers can match specific deployment needs with the same platform by adopting different configurations of 25GbE, 40GbE and 100GbE network interfaces.

Table 2 NEXCOM LAN modules				
Model	**NEXCOM P/N**	**LAN Controller**	**Type**	**Ports**
NX 140F	10S20142F03X0	XL710-BM1	PCIe x8	4 SFP+
NX 142F	10S20142F01X0	XL710-BM1	PCIe x8	4 SFP+
NX 142F-LR	10S20142F03X0	XL710-BM1	PCIe x8	4 SFP+
NX 120F	10S20120F00X0	XL710-BM1	PCIe x8	2 SFP+
NI 140F	10SK000NI02X0	I350-AM4 x1	PCIe x8	4 SFP
NI 180F	10S10180F01X0	I350-AM4 x2	PCIe x8	8 SFP
NI 142C	10SK000NI03X0	I350-AM4 x1	PCIe x8	4 Copper
NI 180C	10S10180C01X0	I350-AM4 x2	PCIe x8	8 Copper
NI 184C	10S10184C01X0	I350-AM4 x2	PCIe x8	8 Copper
NI 142F	10S10142F01X0	I350-AM4 x1	PCIe x8	4 SFP
NI 121F	10S10121F01X0	I350-AM4 x2	PCIe x8	2 SFP
NI 140C	10S10140C01X0	I350-AM4 x1	PCIe x8	4 Copper
NV 120F	10S50120F01X0	XXV710-AM2	PCIe x8	2-SFP28 ports 25G

M.2 for Wi-Fi / LTE 4G & 5G: The TCA5170 integrates 3 types of M.2 connectors (M.2 2280/2242 M key; M.2 2230 SATA E key; M.2 3042 SATA B key with SIM slot), one SIM slot, and four SMA connector holes for RF antenna cable. LTE and Wi-Fi connectivity options can be easily enabled in this platform.

Intel® QuickAssist Technology : TCA5170 also provides Intel® QuickAssist Technology (Intel® QAT). Inte® QAT accelerates encrypted data traffic in a secured network, reduces overall data size and lowers storage demands by speeding real-time compression while at the same time offloading the CPU of some of the processing workloads. An optional trusted platform module (TPM) for encryption, authentication and digital rights management is also available for the TCA5170, and the whole system can be monitored by the Intelligent Platform Management Interface (IPMI 2.0).

Optimizations: TCA5170 is optimized by using Intel® Virtualization Technology (Intel® VT) to enable virtualization for the uCPE/vCPE field.

Scalability: TCA5170 comes with high scalability as a server-graded uCPE/vCPE offering up-to 12 cores with Intel® Hyper-Threading Technology (2 threads/core) & 256 GB memory capability.

Performance: The Intel® Xeon® processors D-2100 at the core of the TCA5170 support Intel® Advanced Vector Extensions 512 (Intel® AVX-512) and Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI)

- Intel® AVX-512 delivers workload-optimized performance and throughput increases for advanced analytics, compute-intensive applications, cryptography, and data compression

- Intel® AES-NI accelerates data encryption and decryption for security-enabled websites

The Intel® Xeon® D-2100 processor includes the Network Virtualization Optimizations (VXLAN, NVGRE, GENEVE, NSH, etc.) to support the establishment and connection to the virtual network between VMs and group them as the LANs.

Compatible virtualization: Virtual technology is not limited to IT room, and it goes beyond for the connection between VMs. As an enterprise-level of uCPE/vCPE, the TCA 5170 can support VM-to-VM connections from public or private cloud, or from the uCPE/vCPE where enterprise branches are located for easy central management.
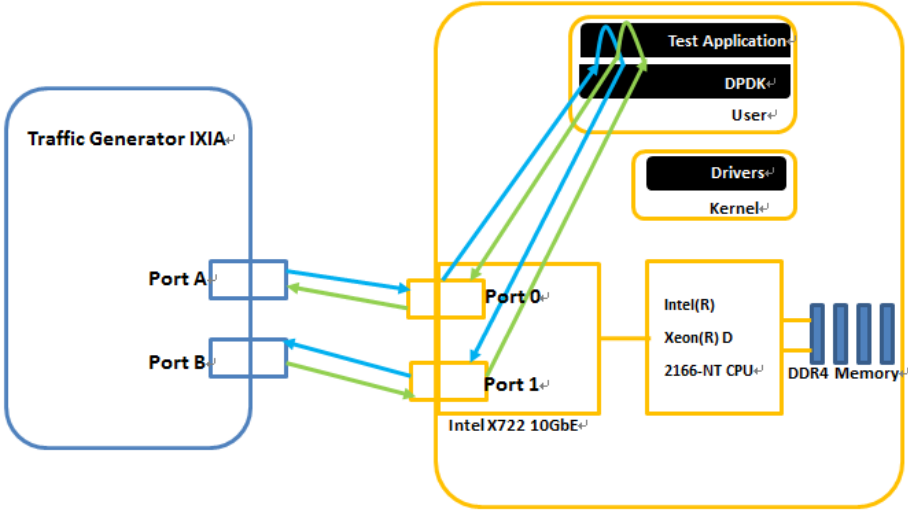
How far away are you from the "edge"? With TCA 5170 the "edge" is under your feet. Visit us or contact us for more information.

Related Products: [TCA 5170](#)
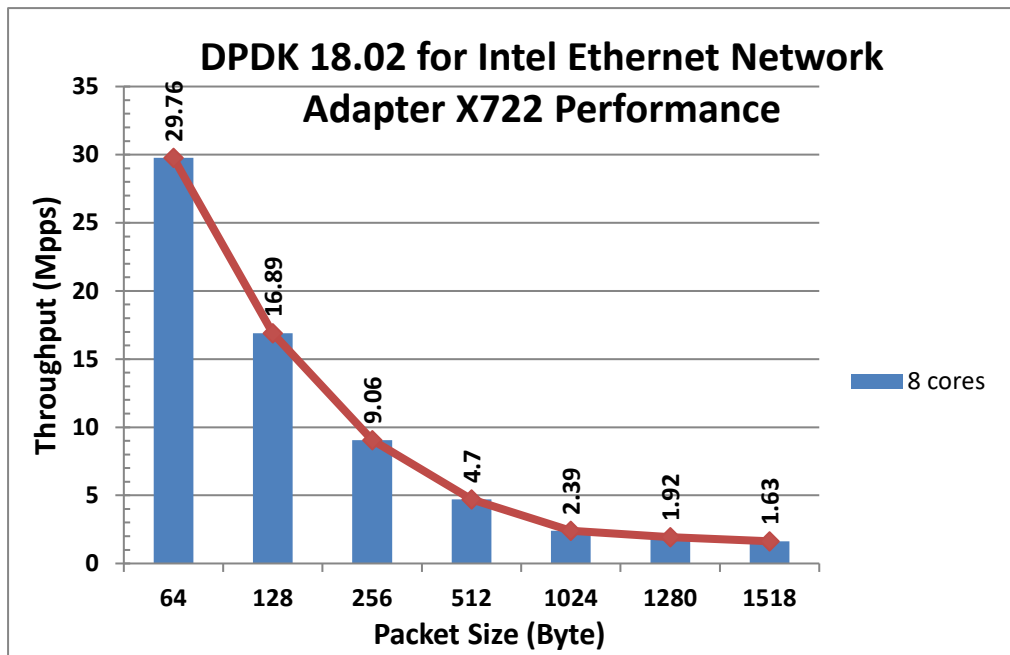
Performance test report:

- RFC 2544: two SFP+ ports of embedded Intel® Ethernet Network Adapter X722

Topology

Test result

Packet Size (Bytes)	Throughput (Mpps)	Line Rate%	Line Rate [2*10G] (Mpps)
64	29.76	100	29.76
128	16.89	100	16.89
256	9.06	100	9.06
512	4.70	100	4.70
1024	2.39	100	2.39
1280	1.92	100	1.92
1518	1.63	100	1.63

DPDK 18.02 for Intel Ethernet Network Adapter X722 Performance

Throughput (Mpps) vs Packet Size (Byte)

Packet Size (Byte)	Throughput (Mpps)
64	29.76
128	16.89
256	9.06
512	4.7
1024	2.39
1280	1.92
1518	1.63

Legend: 8 cores

- SR-IOV: VM-to-VM iperf performance of Intel® Ethernet Controller I350 and Intel® Ethernet Controller XL710
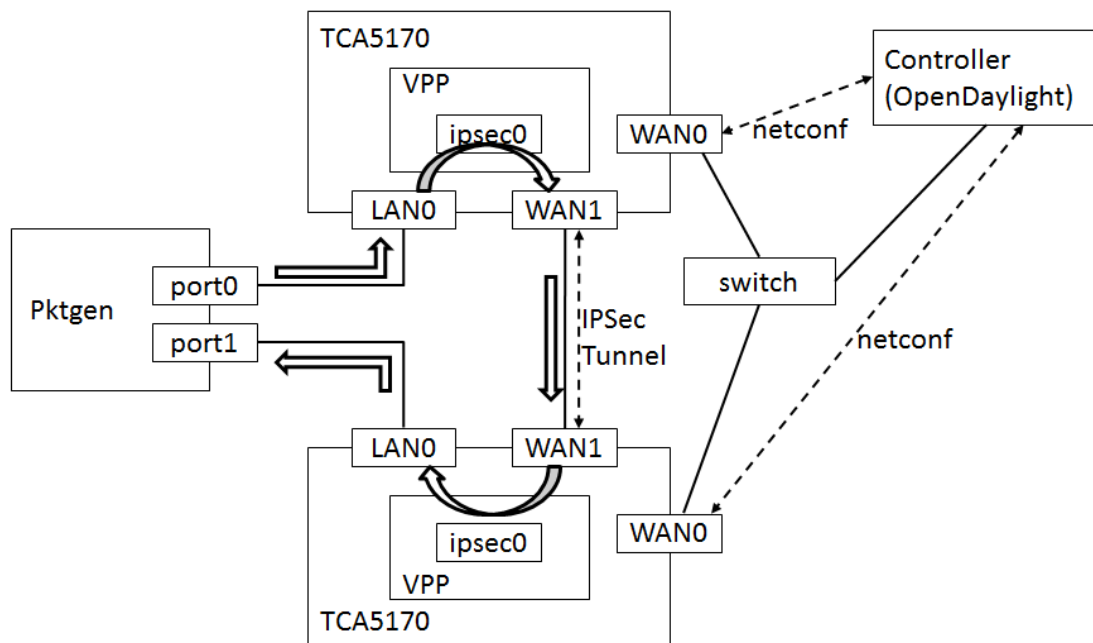
Topology

VM1:
iperf3 -s
ens9:
11.11.11.1

VM2:
iperf3 –c 11.11.11.1 -i 10 -t 60 -R
ens9:
11.11.11.2

VF0 assigned to VM1

VF1 assigned to VM2

VF0

VF1

I350: SR-IOV
XL710: SR-IOV
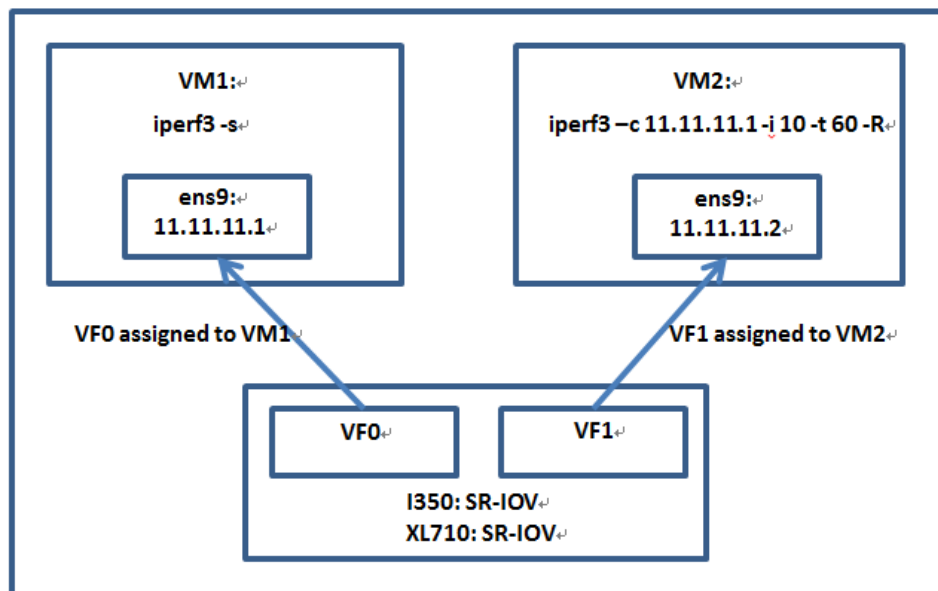
Test result

NIC	Throughput (Bits/s)
I350 v-switch	7.14G
Intel® Ethernet Controller XL710 v-switch	10.1G

- VPP-ipsec:
  Topology

Test result

Platform	Intel Xeon processor D-2100
CPU	Intel Xeon processor D-2166NT @2.0GHz
Memory	DDR4@2400 16G x 1
NIC	Intel® Ethernet Network Adapter X722 10G SFP+ (FW 3.33 0x8000e2c)
Intel® QAT	Intel® C6xx Series Chipsets
VPP	Default setting (1queue @1core)
Kernel boot options	iommu=pt intel_iommu=on

Intel® Ethernet Controller I350 1Gb Ethernet TP port								
	64B	128B	256B	512B	768B	1024B	1280B	1518B
MBits/s	590	717	826	901	931	947	957	962
PPS	880279	606774	374250	211866	147754	113430	92057	78223

Intel® Ethernet Network Adapter X772 10Gb Ethernet SFP+ port								
	64B	128B	256B	512B	768B	1024B	1280B	1518B
MBits/s	2343	4067	7486	9000	9310	9480	9570	9624
PPS	348745	3435770	3390647	2115166	1477056	1135134	920209	782220