Mellanox ConectX-4 Lx vs. Intel XXV710

Mellanox Overview

WORLD-CLASS ETHERNET PERFORMANCE

- Maximize workloads w/ highest industry bandwidth
- I/O virtualization maximizes performance in VMs
- Address latency sensitivity with Intelligent offloads

SUPERIOR PRODUCTIVITY

- Optimized for efficient packet processing
- RoCE offloads CPU with sub 1usec latencies
- Scale virtual and physical resources on demand for greater data center agility

Unique Capabilities

MELLANOX: OUR DIFFERENCE IS NETWORK ACCELERATORS

- Founded as a state-of-the-art silicon chip manufacturer
- Intelligence hardware offloads to reduce CPU utilization;
  - RDMA, RoCE, iSER, T10-DIF
- Scale & automate with stateless overlay networks;
  - VXLAN, NVGRE, GENEVE
- Hardware and packet processing offloads and accelerators

Market Leader

MELLANOX IS THE LEADING SUPPLIER OF HIGH-SPEED ETHERNET NETWORK ADAPTERS!

65% For 25GbE and higher

Based on Crehan Q3'19 Quarterly Market Share Report

Mellanox ConnectX: It Just Works, Better!

PERFORMANCE

- Hardware-based stateless offload and flow steering engines free CPU cycles
- Direct data transfer to memory without CPU intervention
- Proven to accelerate: **Windows Storage Spaces, Red Hat Ceph and VMware VSAN**

VIRTUALIZATION

- Accelerate virtualized networks with **VXLAN, GENEVE & NVGRE**
- Extend hardware resources to 32 PF, 126 VF w/ SR-IOV & ROCE
- Stateless offloads enable near-native performance for VMs
- Align network services with compute services for multitenant network support

STORAGE

- Achieve full potential of flash with 25/40/50GbE support
- Future-proof with 10/40 & easily upgrade to 25/50GbE
- Leverage within scale-out storage to simplify networking
- Alleviate storage network bottlenecks with **RDMA and RoCE support**

CLOUD & NFV

- Support for a wider range of networking speeds 10/25/40/50G
- Optimized for efficient packet processing to improve server utilization
- **ASAP2** for OVS offloads
- Packet Rate = **70Mpps**
  - 2X higher than Intel

Mellanox Just Works **Better.**

Specs and Features… No Comparison!

Mellanox ConnectX-4 Leads Intel in Every Category:

Technology and Performance

- Support for the widest variety of hardware offloads needed for data centers to stay competitive
- Leadership in RDMA; ConnectX-4 Lx is our 9th generation while Intel doesn't offer RDMA.
- The ConnectX-4 Lx allows for the industry's highest throughput, lowest latency and most acceleration:
  - **70M Mpps acceleration**, 2X higher than Intel's XXV710
  - **<0.7µs RDMA latency and 6.6µs for TCP**, 95% lower latency over RDMA than Intel's XXV710

Superior Storage Acceleration

- Mellanox offers storage acceleration that can't be found on the Intel XXV710
  - Including, RDMA and T10-DIF

Superior Acceleration for Enterprise and Cloud

- Open vSwitch Offloads, Overlay Network Offloads, Resilient RoCE
- SR-IOV with 126 VF and up to 32 PF per port

www.mellanox.com sales@mellanox.com USA: 408-970-3400 INTL: +972-74-723-7200

ConectX-4 Lx vs. Intel XXV710

02.04.20 v4

	Intel	Mellanox
Adapter	**XXV710**	**ConnectX-4 Lx**
PCIe Interface	PCIe Gen3 x8	PCIe Gen3 x8
Form Factors	PCIe & OCP 3.0	PCIe & OCP 3.0
Speed Rates	2 x 1/10/25GbE	2 x 1/10/25GbE 1 x 40/50GbE
RDMA	Not Available	9th Generation
Storage Features	✗	RDMA, T10-DIF
Power Consumption	10.3W	9.6W
Latency	N/A (RoCE) 12us (TCP)	0.7us (RoCE) 6.6us (TCP)
Packet Rate	37Mpps	70Mpps
Multi-Host and Multi-Host Socket Direct	✗	✓
Virtualization	SR-IOV (128 VFs per port) , VMQ	SR-IOV (up to 126 VFs) VMQ
Network Tunneling	VXLAN, GENEVE, NVGRE, GRE	VXLAN, GRE, GENEVE, NVGRE
OVS Offload	✗	eSwitch and ASAP^2
IPv4 and IPv6 Offloads	✓	✓
TCP/IP Stateless Offload	Checksum, TSO, LSO	Checksum, TSO, LSO, LRO, RSS

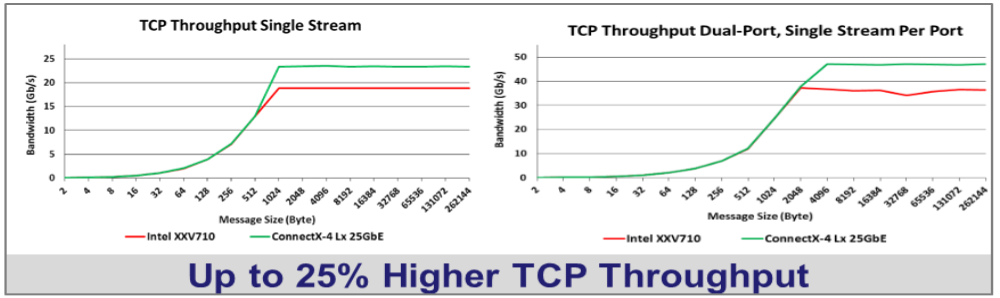
Benchmark

Within this section we compare three performance metrics of each adapter in a side-by-side comparison. For the first test we compared the throughput or the speed each can move data. This test determines how many bits get processed per second (Gbps) and the higher the number, the better the results. It's clear ConnectX holds the advantage at the larger block size with up to 25% higher bandwidth.

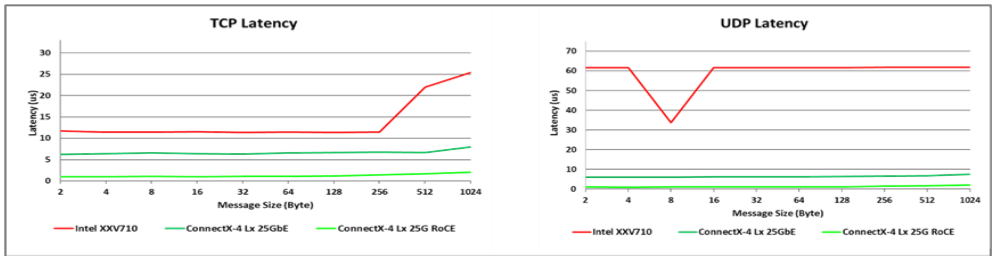
Next, we tested TCP and UDP latency. This is important on a network as lower latency results in less congestion and quicker data transfers. Again, ConnectX holds the advantage here with straight TCP/UDP latency and when RoCE was utilized with up to 90% lower latency then the Intel XXV710.

For the final test, we compared how much CPU was necessary to drive the data transfers in each adapter. In this test, less is more effectively leaving more processing power to handle the application workload and again ConnectX holds up to a 25% advantage

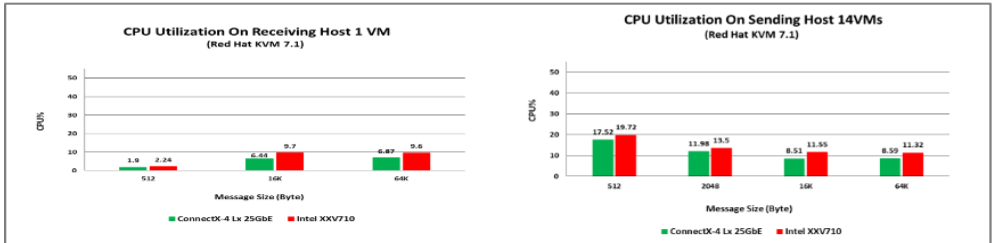
With the best performance and lowest CPU utilization, it's easy to see why customers choose ConnectX, it just works better!



Up to 25% Higher TCP Throughput



Up to 90% Lower TCP/UDP Latency



Up to 25% Lower CPU Utilization