

Windows d.VMMQ Performance

Line Rate Performance with Chelsio T6 100GbE

Executive Summary

Microsoft introduced in Windows Server 2016 a feature called Virtual Machine Multi-Queue (VMMQ) and Chelsio, as a leading network adapter supplier, was there from the beginning to implement it in our product offerings. VMMQ allows network traffic to be transferred efficiently to a virtualized host OS running in a Virtual Machine (VM). Now Microsoft has introduced an enhancement to VMMQ in Windows Server 2019 and once again Chelsio is there with support. The technology is called dynamic VMMQ (or just d.VMMQ), which overcomes some of the shortcomings of VMMQ. With this feature, Server 2019 now monitors CPU and network traffic usage and then dynamically adjusts and tunes the host to enable an efficient use of these resources – all dynamically. As a result, host CPU core use and VM network IO are maximized. This saves the administrator the tasks of monitoring VMMQ IO & CPU usage and from manually tuning the system. As a leader in networking hardware, Chelsio is proud to be again at the forefront with d.VMMQ implementation on Chelsio adapters with use on Windows Server 2019 platforms.

Test Results

The following graphs present the preliminary throughput results between a VM and a PEER host server, all running Windows Server 2019. The results were generated using the **ntttcp** tool varying the number of connections from 1 to 16 and a sweep of block sizes from 512 bytes to 512 Kbytes.

The results show that, using d.VMMQ the VM was able achieve 100 Gb/sec in both transmit and receive directions using the Chelsio T62100-CR Unified Wire Adapter.

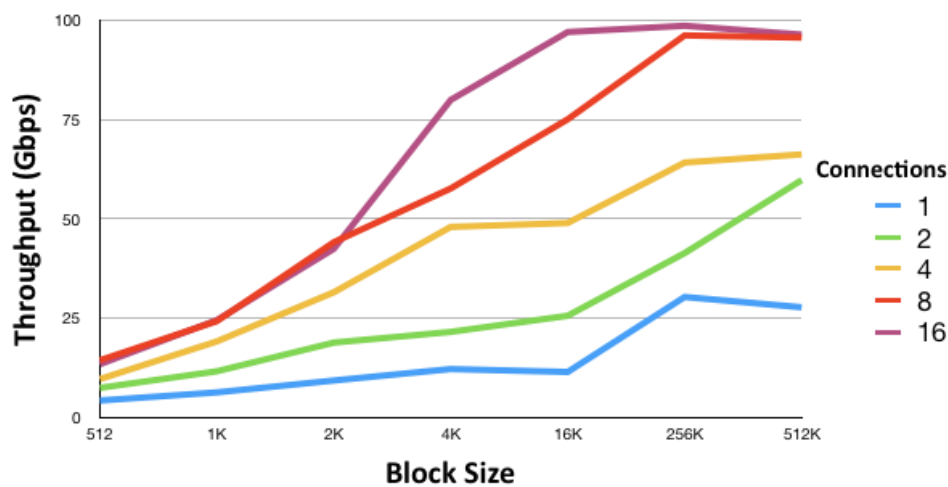


Figure 1 – Tx throughput with d.VMMQ – 1 100G port @ MTU 9000

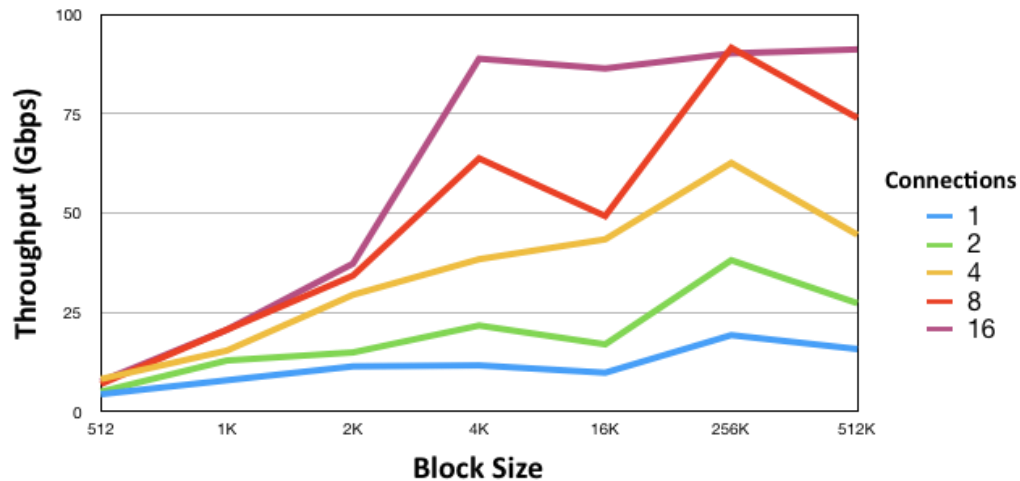


Figure 2 – RX throughput with d.VMMQ – 1 100G port @ MTU 9000

Test Setup

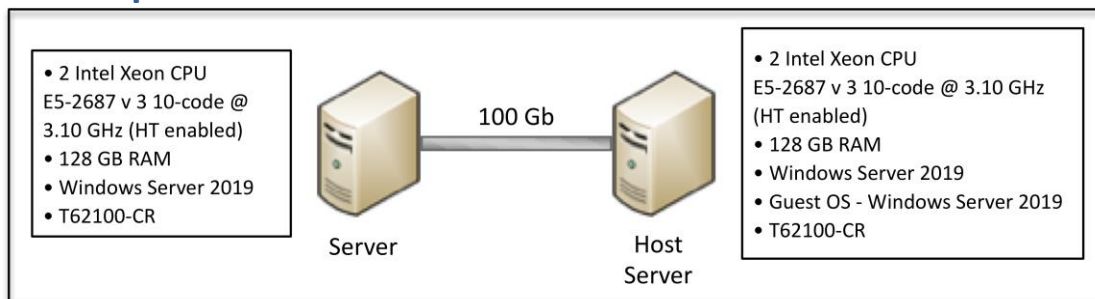


Figure 3 – Test setup

The setup consists of two machines connected back-to-back. The Host Server is running Hyper-V with a VM running Windows Server 2019 with a vSwitch. Latest Chelsio Unified Wire is installed on both machines. The following are the commands used:

Server:

```
# ntttcp.exe -r -m <Connections>,*,x.x.x.x -p 20001 -rb [128k|512k] -t 20 -l <512 to 512K>
```

Client:

```
# ntttcp.exe -s -m <connections>,*,x.x.x.x -p 20001 -sb [256k|512k] -t 20 -l <512 to 512K>
```

Conclusion

This paper showcases the performance capabilities of Windows Server 2019 using d.VMMQ along with the Chelsio T62100-CR adapter. A VM with a vSwitch was able to reach line rate of 100 Gb/sec using multiple TCP connections.

Related Links

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