

Dell EMC XC Series Appliances VM Scaling with Toshiba PX05S SAS SSDs

All-flash hyper-converged infrastructure.



Executive Summary

The Dell EMC XC Series web-scale converged appliances powered by Nutanix software with Toshiba PX05S 12Gb/s SAS SSDs consolidate compute and storage. Designed to run multiple virtualized workloads, Dell EMC XC web-scale appliances enable IT administrators to manage virtual environments at a VM level using policies based on the needs of each workload instead of managing individual LUNs, volumes or RAID groups.

Demartek deployed a three-node Dell EMC XC730xd cluster pre-installed with Microsoft Windows Hyper-V with a Microsoft SQL Server OLTP workload in order to demonstrate the scale-up and scale-out capabilities of the solution. Each node of the cluster was configured with 12 Toshiba 3.84TB PX05S Series 12Gb/s SAS SSDs, making an all-flash hyper-converged solution. The same read-write Microsoft SQL Server application was deployed to the three-node Nutanix Hyper-V cluster, with one virtual machine (VM) deployed on each node. The performance was measured first with one VM running, then a second and then a third. Then a fourth node was added to the cluster to test the process of adding a node to the cluster. The performance was measured when all four nodes were running the workload.

Key Findings

We found that the Dell EMC XC Series appliances with Toshiba 12Gb/s SAS SSDs make it quite easy to add a new node to a cluster. We also found that for our configuration, the performance scaled linearly as we added virtual machines and as we added nodes to the cluster.

- > The addition of a new node to the cluster required only a few mouse clicks and keystrokes. The Prism software performed all the tasks needed to add the new server into the Windows Active Directory and incorporate the internal drives into the Nutanix drive pool.
- > With Toshiba 3.84TB 12Gb/s SAS SSDs and a four-node Dell EMC XC730xd cluster, we achieved just over 12000 Microsoft SQL transactions per second while running 12 copies of the OLTP workload across four physical nodes.
- > The performance scaled linearly as we added VMs to the original 3-node cluster and continued to scale linearly when we added a fourth node to the cluster.

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Server Hardware

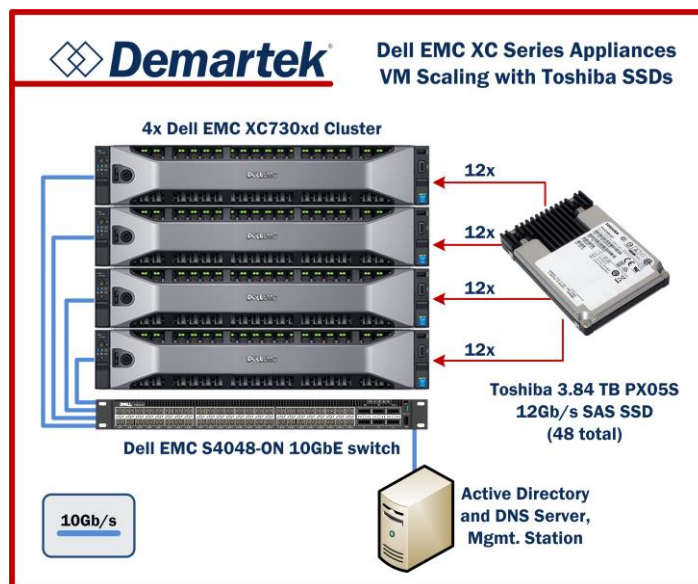
Dell EMC XC730xd servers were used for each node of the cluster. Each server included:

- > 2x Intel® Xeon® E5-2650 v4 processors, 2.3 GHz, 24 total cores, 48 total threads
- > 256 GB RAM
- > 10GbE network adapter

Storage Hardware

The data storage consisted of 12x Toshiba 3.84 TB PX05S 12Gb/s SAS SSDs in each node. These provided 46 TB of flash storage in each node, for a total of 184 TB of flash storage in the four-node cluster.

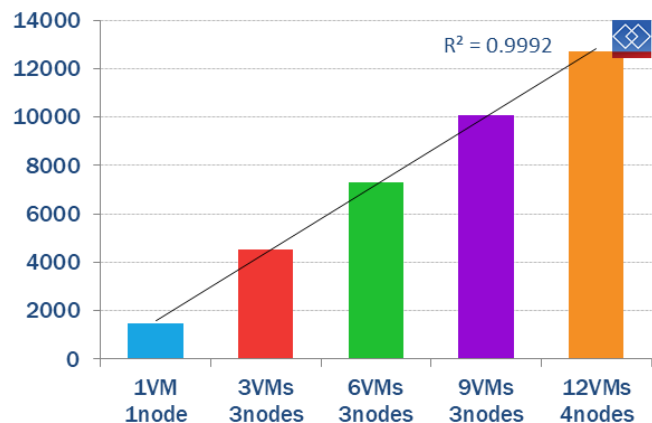
Configuration



Performance

We observed nearly linear performance as we scaled up and scaled out. The final configuration of four nodes each running one VM achieved approximately 3x the performance of a single node running one VM.

Transactions/second



Summary and Conclusion

Toshiba PX05S Series 12Gb/s SAS SSDs are an ideal way to provide storage capacity for a hyper-converged platform, and the Dell XC Series appliances make it easy to grow and manage a hyper-converged cluster to meet increasing application workload needs.

The most current version of this report is available at www.demartek.com/Dell-XC-Toshiba on the Demartek website.

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