Demartek

# Dell EMC vSAN Mixed Enterprise Workloads with Toshiba 12Gb/s SAS SSDs

*Mixed Enterprise Workloads with Dell EMC PowerEdge R730 servers, VMware vSAN, and Toshiba PX05S Series 12Gb/s SAS SSDs*

## Executive Summary

Hyper-converged infrastructure (HCI) is a newer technology where a cluster of hypervisor server nodes are deployed in a single chassis containing tightly-integrated server, networking, and storage technology. VMware vSAN manages HCI distributed storage and is part of the VMware vSphere Hypervisor. Dell EMC provides VMware vSAN Ready Nodes that combine a wide range of Dell hardware and VMware vSAN software into a ready-to-order package, with Toshiba PX05S Series 12Gb/s SAS SSDs. These Dell EMC vSAN Ready Nodes are validated and configured to meet your hyper-converged workload needs, including value-optimized configurations for smaller projects, storage-dense configurations that require large storage capacities or compute-dense solutions for compute-intensive workloads. Dell certifies its vSAN ready node on 2U dual processor Dell EMC R730 servers which are suitable for multiple application workloads.

Demartek deployed a three-node all-flash Dell EMC vSAN cluster with Dell PowerEdge R730 servers. The performance of this cluster should be the same as that of a cluster of Dell EMC vSAN ready nodes. Each server had 5 Toshiba PX05S Series 3.84 TB 12Gb/s SAS SSDs and was running VMware ESXi 6.5.

Across the virtual machines (VMs) running on this cluster, several enterprise workloads were deployed including:

> VMware vCenter

> Windows Server Active Directory

> 3x Microsoft SQL Server (DVDStore 2)

> Microsoft Exchange Jetstress (4000 mailboxes)

> File server and clients

> Web server simulation

## Key Findings

> With Toshiba PX05S Series 12Gb/s SAS SSDs, for the combined workloads, we achieved an average read latency of approximately 500 microseconds (500 µs or ½ millisecond).

> With Toshiba PX05S Series 12Gb/s SAS SSDs, for the combined workloads, we achieved an average write latency of approximately 2 milliseconds (2 ms)

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## Server Hardware

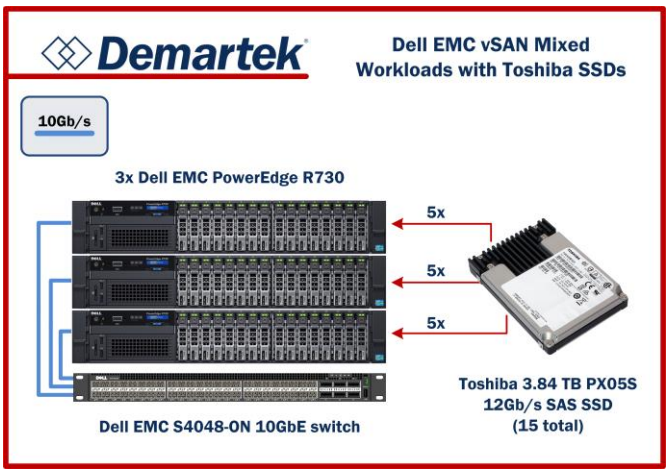
Three Dell EMC PowerEdge R730 servers were used for the vSAN cluster. Each server included:

- 2x Intel® Xeon® E5-2698 v4 processors, 2.2 GHz, 40 total cores, 80 total threads
- 512 GB RAM
- VMware ESXi 6.5

## Storage Hardware

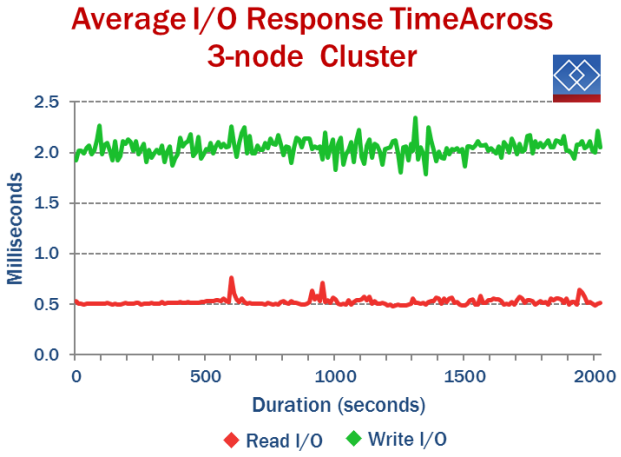
Five Toshiba PX05S Series 3.84TB 12Gb/s SAS SSDs were used for data storage in each node of the vSAN cluster. These R730 servers use an internal SD card as the boot drive.

## Configuration




## Performance

Running a set of mixed enterprise workloads in an all-flash vSAN environment with Toshiba SAS SSDs yielded an average read latency of approximately 500 microseconds and an average write latency of approximately 2 milliseconds.




## Summary and Conclusion

All-flash vSAN cluster nodes are the way to go when performance is key and Toshiba PX05S Series 3.84TB 12Gb/s SAS drives deliver a large amount of flash in a small package, ideal for busy virtualized environments. The Dell PowerEdge R730 server supports enough CPU and memory to satisfy mixed enterprise workloads, and when used in vSAN clusters with high-speed networking infrastructure, makes a powerful VMware vSAN platform.

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