

# Dell EMC Solutions for Microsoft Azure Stack HCI

A simple alternative for organizations looking to maximize their infrastructure investments, while still leaving open the option to leverage Azure alongside their HCI cluster when the time is right.



Choose the model that best suits your use case

AX-640

Compute-density workloads

AX-740xd

Storage capacity heavy workloads

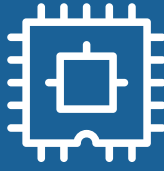
AX-6515

Value-optimized system

THE **AX-640 AX NODE** CAN BE OUTFITTED TO DELIVER WHAT MAY BE THE FASTEST HCI NODE AVAILABLE ON THE MARKET.



The AX-640 node that we will be using in this test came equipped with:



Dual Intel Xeon 6230 CPUs



384GB of DDR4 memory



Ten 4TB NVMe SSDs.

We configured a SQL Server performance test consisting of up to 8 SQL Server 2019 VMs running Windows Server 2019 balanced on our 2-node cluster

Each SQL Server instance was then given a 1,500 scale TPC-C database where the database and log files equaled 350GB in capacity per instance. This gave us a database storage footprint ranging from 1.4TB with 4VMs up to 2.8TB with 8VMs. We used Quest's Benchmark Factory as the workload generator for this project, with 15,000 virtual users interacting with each VM.

Each VM was allocated 8 virtual CPUs and 60GB of RAM along with its storage footprint. With our cluster being configured with 384GB of RAM per host, in our failed node scenario we lowered the VM RAM allocation to 40GB to fit all 8VMs on a single host.

## TEST RESULTS

In our first test measuring the performance of 8VMs, 4 on each node, that figure increased to **5ms average**.

### Non-degraded State

8 SQL VMs total 4 SQL VMs per node



5ms Latency

**Our first scenario** covered how the platform would respond to a failed SSD. We kicked off the workload and right after it stabilized, we pulled a single SSD from one node. In that situation, performance slowed ever so slightly to **6.5ms from 5ms** under normal conditions.

### 1 SSD Failed on a Node

8 SQL VMs total 4 SQL VMs per node

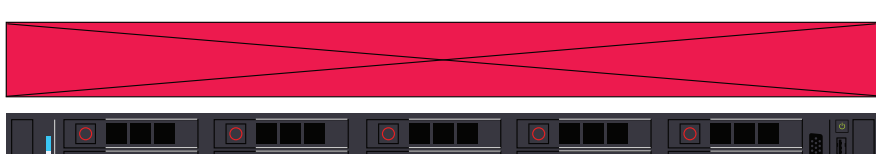


6.5ms Latency

**Our second scenario** covered how the cluster would operate if a node was offline for maintenance or how things would operate if one failed. In both conditions, everything falls back to just one node, although there is a subtle advantage of no traffic passing over the backend network. In this situation, we measured an average latency of **5.875ms**.

### One Node Failed

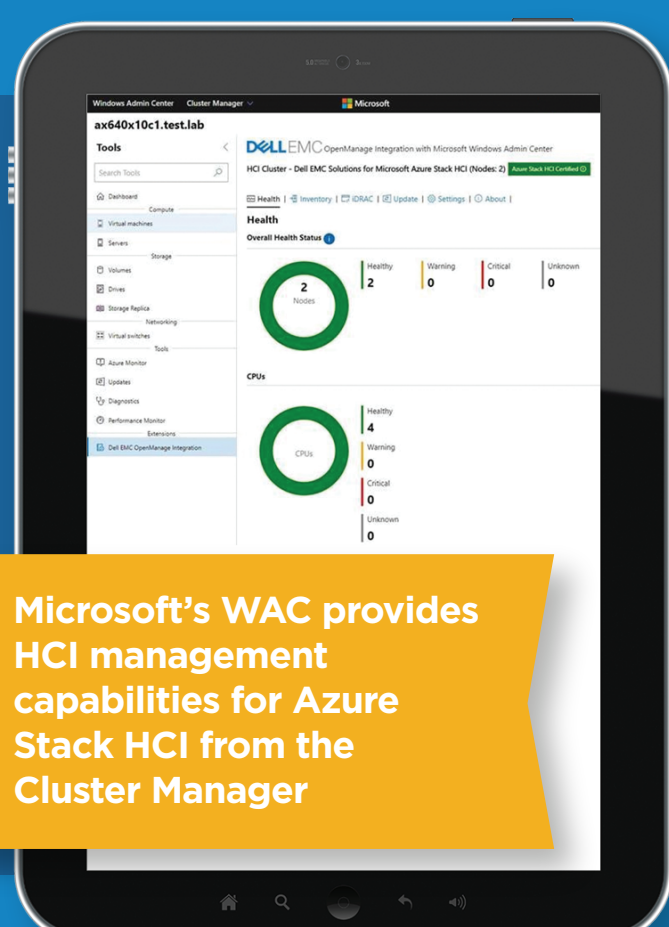
8 SQL VMs total 8 SQL VMs per node



5.875ms Latency

Having reliable and performant hardware is only half the story when deploying a ROBO HCI solution; the other half is the software.

In this case, we will be running an Azure Stack HCI validated system. Azure Stack HCI allows customers to run a Windows Server OS with the added benefit of seamlessly connecting to the Azure cloud for additional services (such as backups and disaster recovery) via the Microsoft Windows Admin Center. The Azure services are integrated via WAC extensions from the same management plane.



Microsoft's WAC provides HCI management capabilities for Azure Stack HCI from the Cluster Manager

Dell EMC's unique LCM integration using the OpenManage Integration with WAC extends these capabilities by including the ability to execute cluster-aware BIOS, as well as firmware and driver updates for AX nodes. This allows Dell EMC to update nodes sequentially, thus eliminating downtime for workloads when updating an Azure Stack HCI cluster running on AX nodes in hybrid and edge scenarios by supporting the Dell EMC online catalogs or the Dell EMC Repository Manager (DRM) based offline catalog to ensure the HCI is running in an optimized fashion with the latest updates.

Learn More About the Test