ESG WHITE PAPER

Unlocking the Value of the Cloud for the Mid-size Enterprise

Microsoft, AMD, and Supermicro Partnership Creates a Greener, Open, and Cost-effective Architecture—without Sacrificing Performance

By Paul Nashawaty, ESG Senior Analyst

August 2022

This ESG White Paper was commissioned by Supermicro and is distributed under license from ESG.

Contents

Executive Summary

Organizations around the world are requiring new options for their next generation of computing environments. Mid-size organizations, in particular, are facing increasing pressure to deliver cost-effective, high-performance solutions within their hyperconverged infrastructure (HCI). Recent collaboration between Supermicro, Microsoft Azure, and AMD, leveraging their collective technologies, has created a fresh approach that enables enterprises to maintain performance at lower cost while helping to reduce the organization's carbon footprint in support of any sustainability initiatives. This cost-effective, 1U system offers both power and flexibility in large-scale GPU deployments. Note, there are 1U and 2U options also available.

This collaboration combines the latest technologies, supporting multiple CPU, GPU, storage, and networking options—all of which are optimized to deliver uniquely configured and highly scalable systems. Systems can be optimized for any set of databases (SQL, Oracle), VDI, productivity applications, and database analytics, creating a powerful, modular, and flexible platform. This paper will explore why this universal GPU system architecture is an intriguing and cost-effective option for those CTOs and IT administrators who are planning to rapidly execute new hybrid cloud, data center modernization, branch office and edge networking, or Kubernetes deployments at scale.

Overview

As mid-size companies continue to invest in digital technologies that deliver competitive advantage from a high-performance HCI, they will need to look at the most flexible, open, and cost-effective cloud-ready options. "Doing more with less" is still an IT mantra and requires CTOs and senior IT managers to consider new approaches for HCI solutions that improve or maintain existing workload performance—and at a lower cost. In addition, enterprises need to be flexible and fast in their platform deployments, with the option to manage new, cloud-native, and traditional workloads. In fact, a multi-cloud approach is still the de facto standard for most organizations. Leveraging the efficiency and capability inherent in Microsoft Azure, the collaboration between Supermicro, Microsoft, and AMD has created a flexible approach to cost-effectively extract the most benefit from Azure Stack HCI and is especially well-suited for the mid-size organization.
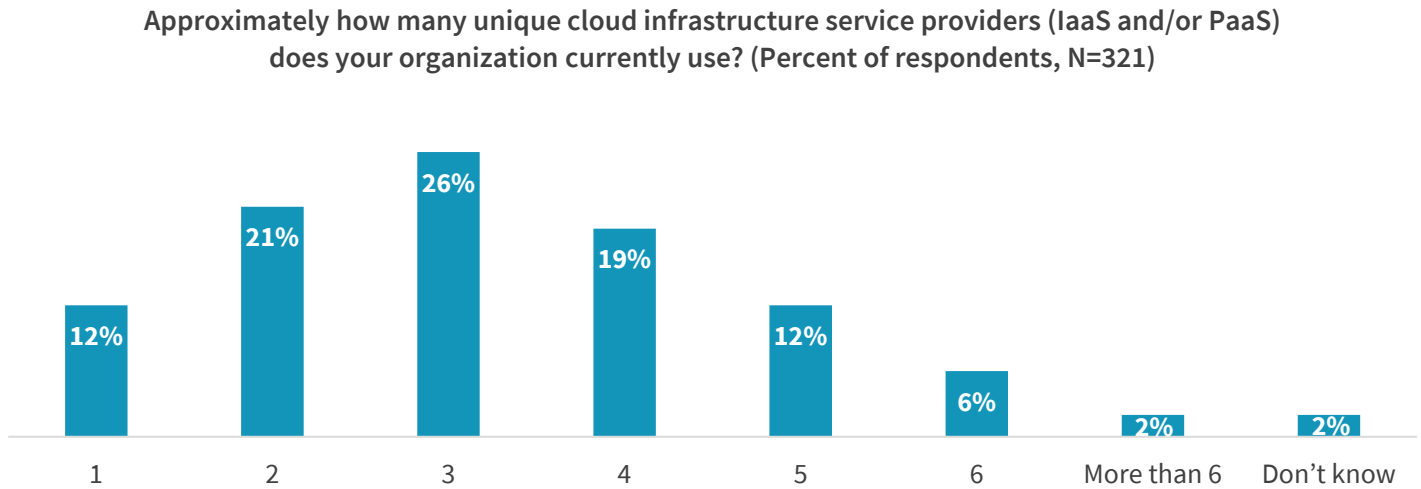
With reduced investment in hardware, and lower operational expenses, this Microsoft Azure stack-certified solution ensures mid-size enterprises are able to balance cost with performance with a tested, pre-validated, ready-to-go system. The solution uses Supermicro servers and AMD EPYC CPUs running on Azure Stack HCI, delivering performance with one socket and offering plenty of storage space and performance power. Using a single or dual socket per system, with the same level of IOPS and fewer nodes, makes it both environmentally friendly and cost-efficient.

Challenges for Mid-size Companies

With its inherent benefits—such as performance, innovation, and cost efficiencies—cloud adoption continues to rise. In fact, Enterprise Strategy Group (ESG) research shows that nearly 9 in 10 organizations use multiple cloud service providers, with 65% leveraging at least 3 cloud providers (see Figure 1).[1]

Source: ESG Research Report, *Application Infrastructure Modernization Trends Across Distributed Cloud Environments*, March 2022.

Figure 1. Nearly 9 in 10 Organizations Leverage Multiple Cloud Providers

Approximately how many unique cloud infrastructure service providers (IaaS and/or PaaS) does your organization currently use? (Percent of respondents, N=321)

1	2	3	4	5	6	More than 6	Don't know
12%	21%	26%	19%	12%	6%	2%	2%

Source: ESG, a division of TechTarget, Inc.

So, the pressure is on for mid-size companies to make use of smart, "future-proof" cloud-ready technology that provides entry to a hybrid cloud solution with lower entry and operational costs. These include:

- Flexible per-core subscription models for cost optimization.

- No upfront perpetual license cost for Azure Stack HCI OS, Azure Subscription of Core per Month.

- Flexibility to meet a wide range of unique requirements (allows IT organizations to manage new cloud-native workloads as well as traditional workloads).

- Easy to scale (up to 16 nodes in a cluster).

- Easy to manage, with no learning curve using both GUI and scripts.

- Able to be integrated into existing IT environments.

- High performance (due to the AMD processor) without the high cost (compared to other vendors).

Meeting Increasing ESG Demands

Environmental, social, and corporate governance (ESG) initiatives continue to gain traction with consumers, countries, companies, and businesses stepping up the focus on green technology solutions. Companies with remote and branch offices (ROBO) on edge networks need the smallest, simplest, and most streamlined footprint possible. And when we think of the edge, sustainability comes to mind. Green technology solutions are expected to:

- Enable cost-effective repatriation from public cloud, if needed.

- Allow edge and application portability.

- Provide leadership advantage of performance per watt enabled with AMD EPYC.

Solution Overview: A New Azure Stack HCI Certified System

Supermicro solutions for Microsoft Azure Stack HCI is a new, hyperconverged infrastructure cluster solution for hybrid cloud environments. The new Azure Stack HCI OS, delivered as an Azure service, enables virtualized workloads on Microsoft-certified Supermicro HCI platforms, on-premises, and under an organization's IT control, while providing the efficiency and capability expected from Azure Cloud (see Figure 2).

Figure 2. Azure Stack HCI On-premises Solution
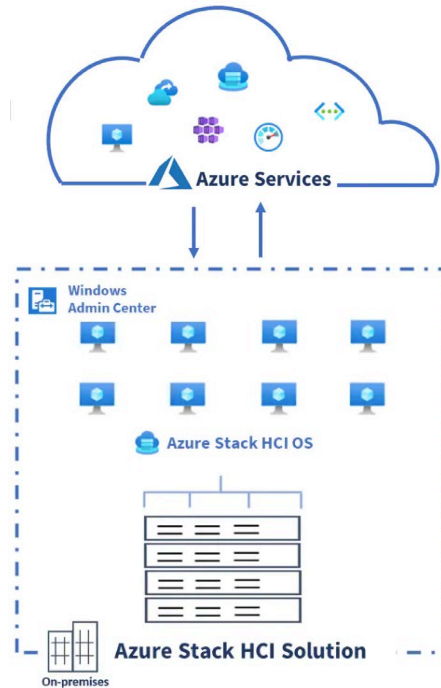
Source: Supermicro

Supermicro A+ H12 1U WIO 1114S-WN10RT All-Flash and A+ Ultra 2U Hybrid systems offer a wide range of I/O options to deliver truly optimized systems. They offer the extreme configurability of storage and networking options, well-suited for custom applications. Ongoing benchmarking efforts recently yielded five TPCx-HS results that set 10 world records with data sizes ranging from 1TB to 100TB on Supermicro WIO servers powered by 3rd Gen AMD EPYC processors.

Supermicro WIO servers powered by AMD EPYC 7003 Series Processors help enterprises reduce time to solution across a wide range of applications, provide enhanced security features, and allow for the running of all workloads either on-premises or in a public or private cloud.

Cost-effective Solution without Sacrificing Performance

The partnership between Supermicro, Microsoft, and AMD offers a flexible, scalable, and certified pre-validated solution, well-suited for the mid-size organization.

The Supermicro solution is pre-validated/certified and optimized for running an Azure Stack HCI cluster, starting from 2 server nodes and supporting up to 16 nodes in a cluster. Each server node in the cluster is equipped with the latest AMD scalable processors, DDR4 memory, NVMe as caching devices, with flexible options of different drive combinations, including All-NVMe-, NVMe+HDD-, NVMe+SSD-, NVMe+SSD+HDD-, and RDMA-enabled high-speed networks.

Table 1. SuperMicro AMD Server Specifications

	AS -1114S-WN10RT-HCI
Best for	Balanced performance, cost-effective, 2-node optimized
Form factor (per node)	1U
Scale	2-16 nodes
ON EACH NODE:	
System Model	AMD WIO H12 1U AS -1114S-WN10RT
CPU	1 x AMD EPYC 75F3 UP 32C/64T 2.95G 256M 280W SP3
Memory	8 x 16GB DDR4 1.2V 3200 ECC REG
Networking	Mellanox Connectx-4Lx Dual port 25 GbE SFP28 (RoCE v2) up to 100GbE
Boot	1 x M.2 NVMe
Cache	N/A
Capacity	4 x NVMe (Gen 4)
Raw Storage	4 x Intel D7-P5510 3.84TB NVMe PCIe4.0X4 3D TLC U.2 15mm 1DWPD

Source: Supermicro

The platform from Supermicro uses AMD's H12 single-socket AMD EPYC 75F3 32-core processor system and is based on open standards that work with a wide range of GPUs. By adhering to an agreed upon set of hardware design standards, such as Universal Baseboard (UBB) and OCP Accelerator Modules (OAM), as well as PCI-E and platform-specific interfaces, IT administrators can choose the GPU architecture best suited for their HPC or AI workloads. This flexibility in options helps meet the demanding requirements of many enterprises and simplifies the installation, testing, production, and upgrades of GPU solutions. In addition, IT administrators will be able to easily choose the right combination of CPUs and GPUs to create the most optimal system for their users.

Solution Value at a Glance

Supermicro's Universal GPU servers support multiple GPU form factors, CPU choices, and networking options optimized together. Supermicro Solutions for Microsoft Azure Stack HCI have the potential to unlock value with:

- **Microsoft-certified hardware solutions.**

  o Industry-leading performance.

  o Quality delivered by pre-validation and optimization for workloads.

  o High availability and easy to scale out from 2 nodes up to 16 nodes in a cluster.

  o Flexibility options of AMD platforms, all-flash and hybrid, with multiple form factors, drive combinations, and network bandwidths to choose from.

- Native Azure hybrid capabilities.

  o   Delivered as an Azure service; always up to date with the latest security and features.

  o   Manage the on-premises HCI cluster from the Azure Portal.

  o   Natively integrated with Azure services such as Azure Monitor, Azure Backup, and Azure Security Center.

- Price-performance of HCI.

  o   Flexible per-core subscription model for cost optimization.

  o   No upfront license cost for Azure Stack HCI OS.

- An ability to manage easily with no learning curve.

  o   Easy to deploy and manage using both GUI and scripts.

  o   Integrate into the existing IT environment.

  o   Familiarity with existing virtualization and storage concepts and skills.

The Bigger Truth

To thrive during volatile economic conditions, mid-size enterprises will need to be innovative in how they compete. The delicate balance of ensuring optimal performance with maximum cost-efficiencies will be essential to success in an uncertain marketplace. This means these companies will need to invest in flexible, future-proof, cloud-ready technologies that allow for scalability and performance, without exorbitant cost.

Supermicro Solutions for Microsoft Azure Stack HCI provide an intriguing option to deliver the highest performance, flexibility, scalability, and serviceability.

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www.esg-global.com

contact@esg-global.com

508.482.0188