

# ThinkAgile MX455 V3 Edge Premier Solution for AI Solution Brief

## Overview

Designed in collaboration with Microsoft, Lenovo is delivering a best-in-class, AI-ready edge infrastructure solution that connects hardware, software, and cloud for customers without interruption, greatly reducing time to value. The Lenovo Premier solution for Azure Stack HCI simplifies Day 0 planning, dramatically reduces the time and resources needed for Day 1 remote (and local) deployments, and allows for simpler and consolidated Day 2 to Day N operational and maintenance support.



Figure 1. View of Lenovo ThinkAgile MX455 V3 Edge Premier Solution front with security bezel attached

## Benefits of ThinkAgile MX455 V3 Edge Premier Solution

The solution, designed in collaboration with Microsoft, delivers a leading AI-ready edge infrastructure solution that integrates hardware, software, and cloud services into one cohesive package. It benefits from continuous and extensive testing and validation by Lenovo and Microsoft through a CI/CD pipeline. Moreover, keeping it up to date has never been easier, as cluster-aware updates can be performed in a single step with rigorous health pre-checks.

Having multiple support paths can introduce significant delays to critical infrastructure; thus, the Premier Solution provides a single point of support, available 24/7, for hardware and L1, and L2 software support from Lenovo, ensuring enhanced reliability and minimized downtime. Additionally, management is simplified through the use of Azure Arc-enabled servers, which offer a unified, single-pane-of-glass experience for creating and managing VMs, S2D volumes, and virtual networks via the Windows Admin Center (WAC) in the Azure Portal. Furthermore, comprehensive hardware management is made available through the latest XClarity version.

The solution can be configured with the NVIDIA L4 GPU, which is based on the Ada Lovelace architecture. This configuration offers a cost-effective and energy-efficient solution for scenarios requiring high throughput and low latency. Depending on the configuration, each node can contain up to six single-wide GPUs (NVIDIA A4 and L4) or two double-wide GPUs (NVIDIA L40). With access to a GPU, the solution is ideal for AI training, inferencing, data visualization, HPC workloads, and Azure Virtual Desktop environments that utilize GPU partitioning for graphics-intensive applications.

The ThinkAgile MX455 V3 Edge Premier Solution integrates Lenovo Open Cloud Automation (LOC-A) with Azure Stack HCI Cloud Deployment to facilitate near Zero Touch Provisioning. These services provide the elasticity needed to deploy a high number of servers in minimal time without overburdening existing IT departments. This offers the quickest and most convenient path to implementing a hyper-converged solution powered by Azure Stack HCI OS, featuring Hyper-V virtualization, Microsoft Storage Spaces Direct (S2D) for Software Defined Storage (SDS), and Software Defined Networking (SDN) for network virtualization.

Lenovo has designed the MX455 V3 server to withstand the most demanding physical and environmental requirements, despite its low footprint, while offering features comparable to a full-sized unit. It can deliver consistent, low-latency performance with a hypervisor-embedded architecture, built-in read and write cache, and support for NVMe PCIe drives. Additionally, it can sustain drive, server, or component failures with built-in resiliency, ensuring continuous availability. Designed for the edge, it also features a lockable front bezel and a secure top cover for locations that lack the physical security typically found in a data center.

## Microsoft Azure Stack HCI Overview

Azure Stack HCI Premier Solutions constitute the top tier of Azure Stack HCI 23H2 offerings, featuring a comprehensive integration of hardware and software components, and are subject to ongoing validation. This service provides automated updates through the Azure portal, which reduces maintenance time and centralizes management of a customer's worldwide infrastructure.

The next tier of the Azure Stack HCI offering is the Integrated Systems. Constructed upon identical software foundations, these systems maintain equivalent hardware and software integration and undergo similar validation processes. However, unlike the Premier Solution, updates for these systems are initiated manually once the update packages have been transferred to the cluster, rather than being automated through the Azure portal.

The Validated Nodes have also been certified for Azure Stack HCI and on the solution update side it is conducted manually.

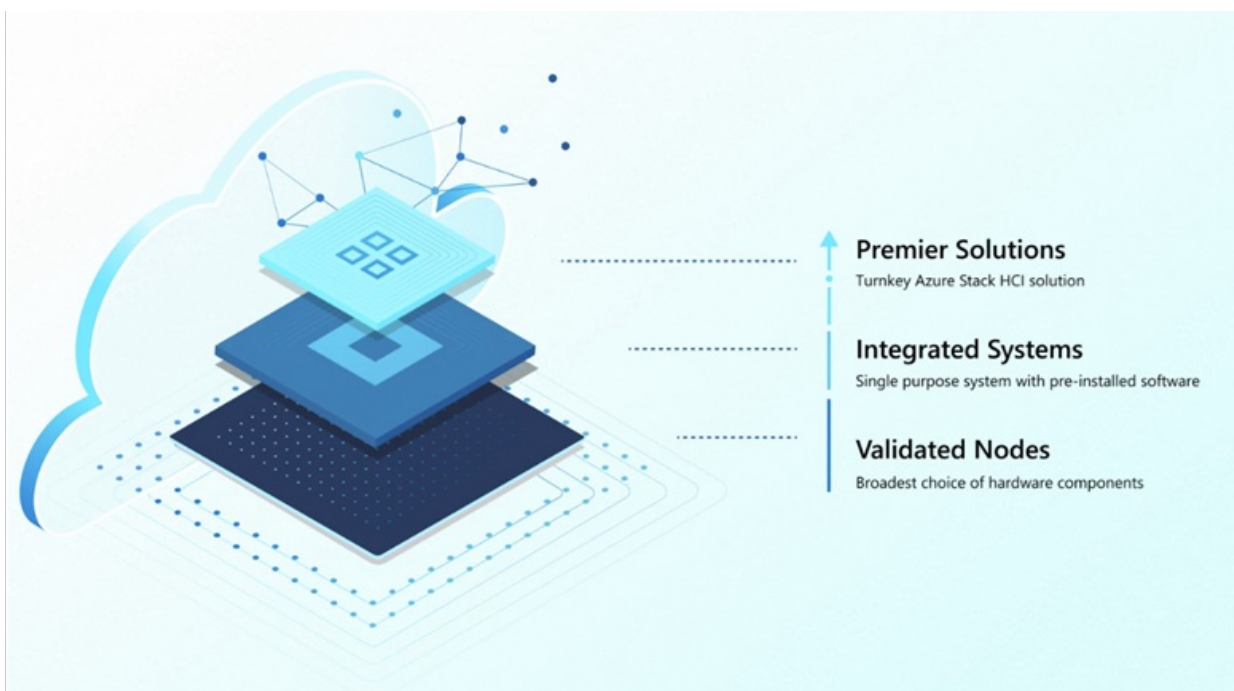


Figure 2. Azure Stack HCI tiers

For a comprehensive and up-to-date list of the features and differences between each option the following link can be accessed:

<https://azurestackhcisolutions.azure.microsoft.com/#/learn>

## Hardware configuration

The Lenovo ThinkAgile MX455 V3 Edge Premier Solution is engineered to facilitate the deployment of Microsoft's highly reliable, hyper-converged infrastructure on specialized Lenovo edge servers, tailored for use in remote and branch offices.

The systems feature a 4th Generation AMD EPYC processor, a maximum of 576GB memory, eight drive bays, and 100Gb network connectivity, housed in a 2U case with a short depth. They are adaptable for wall mounting, floor placement, or rack installation. The ThinkAgile MX455 V3 Edge Premier operates reliably between 5°C to 45°C. Select models meet NEBS Level-3 and ETSI standards, enduring temperature fluctuations from -5°C to 55°C and withstand high-dust and vibration conditions. These systems are tailored for edge and remote offices/branch offices workloads requiring proximity to data generation points, such as real-time processing, smart surveillance, and machine learning/AI, while maintaining a minimal compute footprint in challenging environments.



Figure 3. View of the ThinkAgile MX455 V3 Edge Premier Solution front without security bezel attached

## **Additional value of ThinkAgile MX455 V3 Edge Premier Solution**

The Lenovo ThinkAgile MX455 V3 Edge Premier Solution has a minimum of 5 years of hardware support. This ensures a smooth operation of the Azure Stack HCI cluster and allows for the predictable planning of operating expenses.

Before Premier Solution, cluster updates were split between operating systems, drivers, and firmware. The Solution Builder Extension (SBE) now consolidates all updates for the operating system, drivers, firmware, or UEFI. The SBE employs the Cluster-Aware Updating (CAU) plugin to apply the latest validated code. Updates are accessible from the Azure Update Manager within the Azure portal. Simplifying maintenance, all update types can now be applied in one step. Any update, whether for the OS alone or including firmware and drivers, can be executed through the Azure portal.

The approach to addressing issues has been enhanced. Previously, hardware and software support were separate; now, there is a single point of contact for problems related to either hardware or software. Therefore, when a ticket is submitted, it will be routed to the appropriate team from either Lenovo or Microsoft based on the problem type.

Before shipment, each system will be preloaded with the Azure Stack HCI operating system and the latest validated code.

The Lenovo ThinkAgile MX455 V3 Edge Premier Solution supports configurations of up to four nodes. These setups can be switchless for two or three nodes, while the four-node configuration requires a switch for data transfers.

Azure Stack HCI 23H2 now prioritizes security more than ever; Windows Defender Application Control, which was previously optional, is now enabled by default. Furthermore, the SBE package undergoes digital signing by Lenovo and Microsoft before its release to ensure the integrity of the content and protect against the execution of malicious code.

Lenovo adopts a proactive stance with the ThinkAgile MX455 V3 Edge Premier Solution, diverging from traditional reactive methods. That means that in the event of a disk failure, a ticket is automatically generated, and Lenovo proactively contacts the customer to arrange for disk replacement.

Lenovo provides hardware and installation services across all geographic areas, taking responsibility for the creation and initial setup of the cluster.

A distinctive attribute of the ThinkAgile MX455 V3 Edge Premier Solution is its integration with Lenovo Open Cloud Automation (LOC-A). The LOC-A Core Framework streamlines the setup of clusters by initially validating the hardware configuration, followed by employing Azure Arc Integration to enroll the servers with Azure. Data Center Administrators supply the Edge Technicians details like Azure Subscription ID, Resource Group, Region and so on that are encrypted for enhanced security.

## Conclusion

The Lenovo ThinkAgile MX4555 V3 Premier Solution for Azure Stack HCI was developed in response to market demand for a product that seamlessly integrates hardware and software. Having a single point of contact for all types of requests simplifies the process and saves time.

From a hardware perspective, Lenovo has managed to incorporate components typically found in much larger chassis into one compact form factor, all while maintaining the ability to operate in harsh environmental conditions (selected models meet NEBS Level-3 and ETSI standards).

Lenovo and Microsoft have worked closely to ensure that the hardware and software are fully integrated, so no time is wasted on deployment and configuration upon receipt of the solution. Moreover, all the tools and processes Lenovo has developed to maintain firmware and drivers are now integrated into the solution, allowing for updates to be performed with just one click. Moving forward, Lenovo will continue to expand the ThinkAgile MX Premier Solution's hardware offerings to meet all market needs.

## Related product families

Product families related to this document are the following:

- [Microsoft Alliance](#)
- [ThinkAgile MX Series for Microsoft Azure Stack HCI](#)

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This document, LP1983, was created or updated on July 3, 2024.

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