Improving ThinkAgile MX Solutions with the New Features in Microsoft Azure Stack HCI 22H2

Version 1.0

Provides information about new features released in Azure Stack HCI Version 22H2

Describes new HCI features to improve ThinkAgile MX

Provides guidance and recommendations for new HCI features deployment

Describes new features that increase use cases for ThinkAgile MX

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1 Introduction

Deploying hyperconverged infrastructure has become the de-facto standard for organizations looking to modernize their aging infrastructure. Large storage deployments are increasingly being replaced by HCI-based solutions for most general-purpose workloads. HCI has proven to deliver better efficiency and price performance in the datacenter. Additionally, customers have been choosing a hybrid approach, migrating certain workloads to the cloud, while keeping other workloads on-premises.

Azure Stack HCI, a host operating system from Microsoft, is Microsoft's HCI solution for customers who wish to run workloads on-premises and extend easily to Microsoft Azure for hybrid capabilities such as back-up, site recovery, storage, cloud-based monitoring and more.

Microsoft requires that Azure Stack HCI needs to be updated at least once every six months to be in supported state. The recommendation is to install the quality and security updates once they are released, every month. Lenovo ThinkAgile MX Series solutions are built using Lenovo's popular servers and Microsoft Azure Stack HCI software.

More details about the modern Lifecycle Policy that Azure Stack HCI follows is described in detailed on Microsoft`s page:

https://docs.microsoft.com/en-us/lifecycle/policies/modern

Also, information about the naming scheme is presented in the following page:

https://docs.microsoft.com/en-us/azure-stack/hci/concepts/updates

Lenovo has worked closely with Microsoft for many years to ensure our products perform smoothly and reliably with Microsoft operating systems and software. Our customers can leverage the benefits of our partnership with Microsoft by taking advantage of HCI solutions that have been certified under the Microsoft Azure Stack HCI program using the Azure Stack HCI operating system.

The benefits of Lenovo ThinkAgile MX Series solutions include:

- Highly available and scale-on-demand compute/storage integrated solutions

- Easy to provision new IT services and reduce deployment time
- Better performance and lower Total Cost of Ownership (TCO)
- Flexible infrastructure and data centers

This document provides an overview of the new features implemented in Azure Stack HCI version 22H2 operating system, requirements for using the features and their administration.

2 Business problem and business value

2.1 Business problem

The proliferation of servers and storage that is taking place generates a series of challenges where a business needs to allocate considerable resources to manage that infrastructure. Also, having separate solutions for each service increases fragmentation and the effort required for managing everything efficiently.

2.2 Business value

Lenovo ThinkAgile MX Series uses the Storage Spaces Direct technology to aggregate the storage and compute in one flexible solution. With the release of Azure Stack HCI version 22H2, support for GPU pools has been added consolidating multiple services in one solution. The continuous development of Windows Admin Center is making sure that the clusters and the services running can be managed from a single interface accessible from any modern browser.

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3 New Features in Azure Stack HCI 22H2

With each new Azure Stack HCI release, Lenovo ThinkAgile MX Series is being tested with the new features in order to make sure that everything is working without any issues on the hardware that is and will be released. Special attention is given to the capabilities that are closely intertwined with the hardware to ensure a smooth experience

On clusters that have installed the latest version of Azure Stack HCI, 22H2, a series of new features have been released. Most of the functionality (or features) can be accessed from PowerShell or Windows Admin Center.

The new features are:

- Network ATC v2 improvements
- Storage Replica compression
- Hyper-V live migration improvements
- Cluster-Aware Updating (CAU) improvements
- Single server scale-out
- Tag-based segmentation network security groups
- Azure Hybrid Benefit for Azure Stack HCI
- Azure Arc VM changes and Azure Marketplace
- Windows Server 2022 Datacenter: Azure Edition VMs on Azure Stack HCI
- Partition and share GPU with virtual machines on Azure Stack HCI

4 Network ATC v2 and Tag-based segmentation

4.1 Network ATC v2 improvements

With a new version of ATC several additions and improvements have been released. Some of those are:

- Network symmetry
- Storage automatic IP assignment
- Scope Detection
- Contextual cluster network naming
- Live migration optimization

    o Maximum simultaneous live migration

    o Best live migration network

    o Best live migration transport

    o Maximum SMB (RDMA) bandwidth

- Proxy configuration
- Stretched cluster support
- Post-deployment VLAN modification

For detailed description of ATC v2 improvements and additions the following article can be accessed:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#network-atc-v2-improvements

4.2 Tag-based segmentation

Securing application workload virtual machines became easier by being able to assign tags and then apply Network Security Groups. By doing this, communication can be restricted between certain servers to increase security and the security risks.

For more information the following article can be accessed:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#tag-based-segmentation

5 Cluster resiliency Improvements

5.1 Storage Replica Compression

This new release brings compression for storage replica deployments. This can lower the synchronization time and lower costs in case that a metered connection is used. For easy of use, all the other commands and steps are identical just a new PowerShell command is available. For the moment the feature is only available over PowerShell.

For an up-to-date description and working instructions the following article can be accessed:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#storage-replica-compression

5.2 Hyper-V live migration improvements

Improvements have been made to Hyper-V live migration to be more reliable and faster for switchless two node and three node clusters

For more information the following article can be accessed:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#hyper-v-live-migration-improvements

5.3 Cluster-Aware Updating improvements

Cluster-Aware Updating is getting more is getting more reliable due to the smarter retry and mitigation logic. It now also supports single node server.

For more information the following article can be accessed:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#cluster-aware-updating-cau-improvements

5.4 Thin provisioning conversion

Improving storage efficiency is getting easier with the option of switching from fixed to thin provisioning.

For more information the following article can be accessed:
https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#thin-provisioning-conversion

5.5 Single Server scale-out

Azure Stack HCI 22H2 supports changing from one single server cluster to a two node or a three node. This can easily come to help businesses that want to have a more gradual investment in hardware as the company grows or resiliency requirements increase.

Up to date and detailed instructions can be found in the following article:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#single-server-scale-out

6 GPU Partitioning and share GPU with virtual machines

A more efficient utilization of the existing GPU`s in the datacenter can be achieved the release of GPU partitioning (GPU-P) that is available in this new version of Azure Stack HCI.

GPU-P is based on single root I/O virtualization and thus had a hardware-backed security boundary. With this new addition sharing a GPU with multiple virtual machines is now possible. The GPU is being partitioned and by doing this the total costs gets lower and the performance it can be easily predicted as each VM is only using what is assigned to it.

GPU partitioning brings hardware acceleration to workloads that would befit most from it, no matter it is a need for graphic right virtual desktop infrastructure, deep learning or AI compute. The GPU options for ThinkAgile solutions include all the supported adapters by this feature. The supported GPU`s are Nvidia A2, A10, A16 and A40.

For an up-to-date hardware requirement and details the following article can be accessed:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#partition-and-share-gpu-with-virtual-machines-on-azure-stack-hci

7 Azure integration

7.1 Azure Hybrid Benefit for Azure Stack HCI

The azure Hybrid Benefit programs comes to lower the costs of using workloads in the cloud for clients that have Windows Server Datacenter licenses with active Software Assurance. Azure Hybrid Benefit can waive the fees for Azure Stack HCI and enable unlimited virtualization at no additional costs.

Detailed information can be found in the following article:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#azure-hybrid-benefit-for-azure-stack-hci

7.2 Azure Arc VM changes and Azure Marketplace

For Azure Arc-enable Azure Stack HCI clusters Azure Marketplace is now available. This grants access to the lates images from Microsoft from either cli or Azure Portal. This feature is only available if for clusters running version 22H2 or later.

For more information follow the following article:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#azure-arc-vm-changes-and-azure-marketplace

7.3 Windows Server 2022 Datacenter: Azure Edition VMs on Azure Stack HCI

On this release of Azure Stack HCI customers can deploy virtual machines with Windows Server 2022 Datacenter: Azure Edition on their local infrastructure from Marketplace. This allows access to features like Hot patch and SMB over QUIC that were only available in Azure IaaS until now.

More information can be found here:

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new#windows-server-2022-datacenter-azure-edition-vms-on-azure-stack-hci

Conclusion

The new features described in this paper improve the ThinkAgile MX Series solutions from Lenovo and provide customers with better value for their HCI investment. It also opens up ThinkAgile MX offerings to more use cases and make it attractive to more customers.

Resources

https://learn.microsoft.com/en-us/azure-stack/hci/whats-new

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