

Implementing Microsoft Azure Arc Portal on Lenovo ThinkAgile MX

Planning / Implementation

Modern IT environments are increasingly distributed across on-premises datacenters, edge locations, public cloud platforms, and multi-cloud ecosystems, creating new operational challenges around visibility, governance, security, and lifecycle management. Lenovo ThinkAgile MX addresses these challenges by providing a validated hyperconverged infrastructure platform designed to run business-critical workloads close to where data is created and consumed.

Azure Arc extends Azure management capabilities to on-premises and hybrid infrastructure, enabling organizations to manage resources such as virtual machines, Kubernetes clusters and data services through Azure Resource Manager and the Azure portal. For ThinkAgile MX deployments, Azure Arc provides a consistent cloud-based control plane that helps customers monitor, govern, secure, and operate their hybrid infrastructure using familiar Azure services.

Solution Overview

ThinkAgile MX provides a validated Lenovo platform for Microsoft hybrid cloud solutions, supporting use cases such as virtualized workloads, containerized applications, Azure Kubernetes Service scenarios, SQL workloads, edge computing, and cloud-connected infrastructure management. Lenovo's ThinkAgile MX portfolio includes multiple validated Azure Local solutions, making it suitable for data center modernization, branch office deployments, retail environments, manufacturing sites, and edge locations.

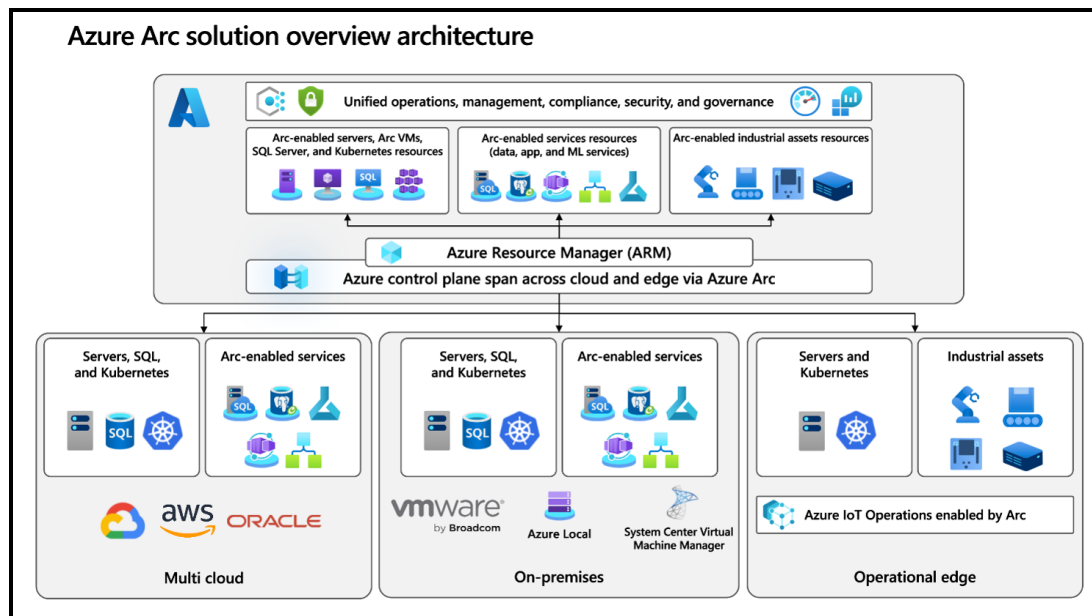


Figure 1. Azure Arc solution architecture (source: [Microsoft](#))

The Azure Arc portal experience helps simplify day-to-day operations by enabling centralized resource visibility, policy enforcement, security management, and workload governance. It also supports a more consistent operational approach across hybrid environments by allowing IT teams to use Azure tools and services regardless of where the underlying infrastructure resides.

For Lenovo ThinkAgile MX customers, this integration strengthens the overall hybrid cloud value proposition by combining Lenovo's validated infrastructure, Microsoft Azure Local capabilities, and Azure Arc-enabled management. Together, these technologies help organizations modernize their infrastructure, improve operational efficiency, support cloud-native application patterns, and maintain control over workloads that need to remain on-premises or at the edge.

Supported ThinkAgile MX Platforms

ThinkAgile MX is a fully engineered, jointly validated, and integrated solution. You don't need to design and test complex integrations yourself, which significantly reduces the time from deployment to value generation.

The following ThinkAgile MX offerings are supported:

- Rack solutions:
 - ThinkAgile MX V4: MX630 V4/MX650 V4/MX650a V4
 - ThinkAgile MX V3: MX630 V3/MX650 V3
 - ThinkAgile MX V2: MX3330/MX3331/MX3530/MX3531 on SR630/SR650 V2
- Edge solutions:
 - ThinkAgile MX455 V3 Edge
 - ThinkAgile MX450 Edge
 - ThinkAgile MX1020/MX1021 on SE350 Edge

Key advantages of ThinkAgile MX include:

- Exceptional Performance: High-performance infrastructure designed for demanding enterprise workloads
- Validated Design: Pre-tested configurations reduce risk and deployment complexity
- Integrated Lifecycle Management: Coordinated updates via Lenovo XClarity and Azure tools
- Faster Time to Value: Eliminates the need for complex integration and testing
- Enterprise Reliability: Built on Lenovo ThinkSystem servers for mission-critical environments

Implementing Azure Arc on ThinkAgile MX

This section walks through Arc-enabling a ThinkAgile MX environment, using a two-node ThinkAgile MX650 V3 Azure Local cluster as the reference deployment. The work proceeds in three steps: onboarding physical servers and virtual machines to Azure Arc from the Azure portal, deploying Azure Local on a certified ThinkAgile MX solution, and Arc-enabling the virtual machines that run on the resulting cluster.

Virtual machines created through the Azure portal are registered as Arc resources automatically, while those created directly on the cluster are onboarded by running the connection script from inside the guest. Once these steps are complete, every server, cluster, and virtual machine in the environment appears as an Azure resource and can be governed, monitored, and secured through the Azure Arc portal.

- [Step 1. Onboard servers and virtual machines to Azure Arc](#)
- [Step 2. Deploy Azure Local on ThinkAgile MX](#)
- [Step 3. Arc-enable virtual machines on the Azure Local cluster](#)

Step 1. Onboard servers and virtual machines to Azure Arc

Arc-enabled servers allow organizations to manage Windows and Linux physical servers and virtual

machines as Azure resources, regardless of where they are hosted. A list of the supported operating systems that can be managed by Azure Arc can be found here: <https://learn.microsoft.com/en-us/azure/azure-arc/servers/prerequisites>.

You can onboard your on-prem ThinkAgile MX servers to Azure Arc, as well as any VM not created in Azure, directly from the portal: go to Overview – Get started – Onboard machines:

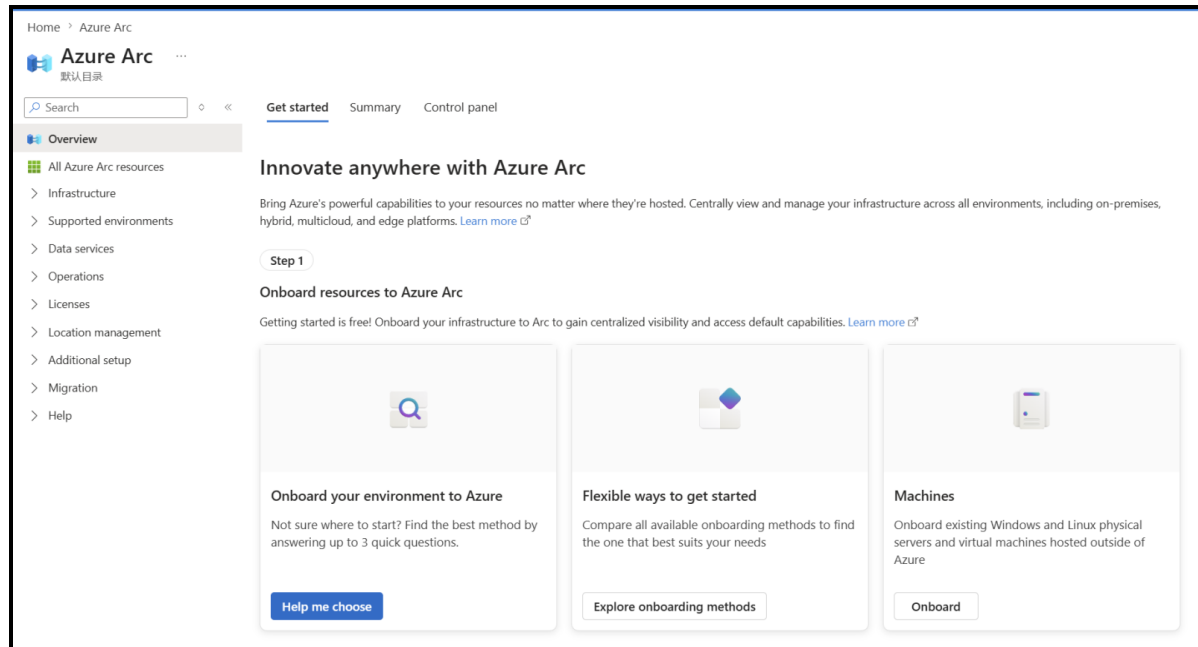


Figure 2: Azure Arc overview

Follow the steps required, including running the required script, and your servers will be Azure-Arc enabled.

Step 2. Deploy Azure Local on ThinkAgile MX

Note: All ThinkAgile MX System (IS) and Premier (PR) solutions come with the OS preloaded, so the customers should not need to install the operating system on their own. However, as Microsoft offers the possibility to install Azure Stack HCI OS from Azure Arc portal, we decided to go this route so that we can show how to take full advantage of the portal's capabilities.

To exemplify Azure Arc Portal on ThinkAgile MX, we deployed Azure Local on ThinkAgile MX650 V3 solution. You can do this using the very Azure Arc Portal, by going to Supported environments – Azure Local and downloading the Azure Stack HCI OS:

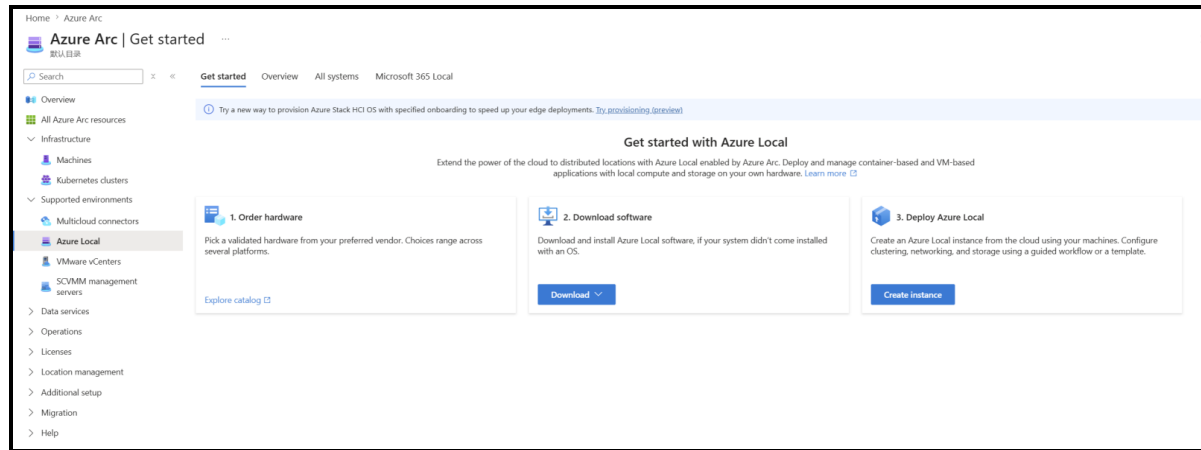


Figure 3: Azure Local view from the Azure Arc portal

After installing the image on your certified ThinkAgile MX solution and configuring and preparing the servers appropriately, you can continue from the same view to deploy Azure Local. This will allow for the Azure local cluster to be created in a resource group together with the arc resource bridge needed to manage the resources from Azure Arc.

Step 3. Arc-enable virtual machines on the Azure Local cluster

From this moment on, all the VMs deployed on the Azure Local cluster from the Azure Portal will be available in Azure Arc resources. We deployed a MX650 V3 2-node Azure Local cluster in the MX650V3-RG resource group, downloaded a VM image with WS2025 from marketplace and deployed from the Azure portal a VM using the image on the cluster. The VM is automatically listed under Azure Arc machines:

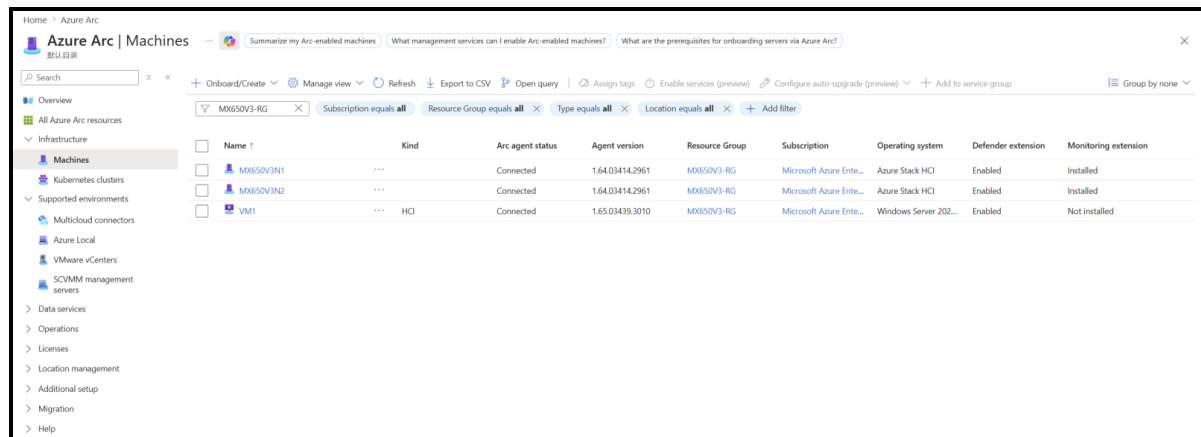


Figure 4: Azure Arc enabled machines

We also deployed another VM – VM2 – directly on the cluster without using Azure Portal and used the onboard script to make it Azure-Arc enabled:

```

VERBOSE: Installing Azure Connected Machine Agent
VERBOSE: PowerShell version: 5.1.20348.558
VERBOSE: Total Physical Memory: 12288 MB
VERBOSE: .NET Framework version: 4.8.4161
VERBOSE: Checking if this is an Azure virtual machine
VERBOSE: Error The operation has timed out. checking if we are in Azure
VERBOSE: No HNS endpoint provided, using default gbl.his.arc.azure.com
VERBOSE: Downloading agent package from https://gbl.his.arc.azure.com/azcmagent/latest/AzureConnectedMachineAgent.msi to C:\Windows\AzureConnectedMachineAgent\temp\AzureConnectedMachineAgent.msi
VERBOSE: Validating MSI signature for security compliance...
VERBOSE: Validating MSI signature for: C:\Windows\AzureConnectedMachineAgent\temp\AzureConnectedMachineAgent.msi
VERBOSE: Certificate chain validation succeeded
VERBOSE: MSI signature validation completed successfully
VERBOSE: Installing agent package
Installation of azcmagent completed successfully
INFO: Connecting machine to Azure... This might take a few minutes.
INFO: Cloud: AzureCloud
INFO: Testing connectivity to endpoints that are needed to connect to Azure... This might take a few minutes.
INFO: Please login using the pop-up browser to authenticate.
To sign in, use a web browser to open the page https://login.microsoft.com/device and enter the code FVU7QFK6N to authenticate.
20% [=====]
30% [=====]
INFO: Creating resource in Azure... Correlation ID=7394850e-d56a-45c5-94b3-6826568bf84b Resource ID=/subscriptions/943dccb7-7834-4046-ae08-a9c980b88d12/resourceGroups/MX650V3-RG/providers/Microsoft.HybridCompute/machines/VM2
INFO: Creating resource in Azure... Correlation ID=7394850e-d56a-45c5-94b3-6826568bf84b Resource ID=/subscriptions/943dccb7-7834-4046-ae08-a9c980b88d12/resourceGroups/MX650V3-RG/providers/Microsoft.HybridCompute/machines/VM2
60% [=====]
INFO: Retrieving certificate...
80% [=====]
100% [=====]
INFO: Connected machine to Azure
INFO: Machine overview page: https://portal.azure.com/#@e62fcd7c-a480-41cf-8ef9-92e409a0e576/resource/subscriptions/943dccb7-7834-4046-ae08-a9c980b88d12/resourceGroups/MX650V3-RG/providers/Microsoft.HybridCompute/machines/VM2/overview

```

Figure 5: Running the onboarding script from inside the on-premises deployed VM

Now there are two VMs Azure Arc-enabled:

Name	Kind	Arc agent status	Agent version	Resource Group	Subscription	Operating system	Defender extension	Monitoring extension
MX650V3N1	---	Connected	1.64.03414.2961	MX650V3-RG	Microsoft Azure Ente...	Azure Stack HCI	Enabled	Installed
MX650V3N2	---	Connected	1.64.03414.2961	MX650V3-RG	Microsoft Azure Ente...	Azure Stack HCI	Enabled	Installed
VM1	HCI	Connected	1.65.03439.3010	MX650V3-RG	Microsoft Azure Ente...	Windows Server 2022...	Enabled	Not installed
VM2	---	Connected	1.65.03439.3010	MX650V3-RG	Microsoft Azure Ente...	Windows Server 2022...	Not enabled	Not installed

Figure 6: View of the onboarded machines

Managing the Environment from the Azure Arc Portal

With the ThinkAgile MX cluster and its workloads registered as Azure resources, the Azure Arc portal becomes the single place from which the environment is operated. This section moves through the management surfaces the portal exposes, working from the platform outward: monitoring and security through Azure Monitor and Microsoft Defender for Cloud, cluster and node health views that surface configuration and Azure connectivity status, Arc-enabled Kubernetes clusters, and SQL Server instance inventory.

Each of these views applies the same Azure tooling, policies, and governance model used for resources running in Azure, so administrators do not need a separate operational process for infrastructure that stays on-premises or at the edge.

- [Monitoring and security](#)
- [Cluster and node views](#)
- [Kubernetes clusters](#)
- [SQL Server instances](#)

Monitoring and security

Once connected, systems appear as Azure Arc-enabled resources. Policies, monitoring, and security can be applied centrally, and management is performed through the Azure portal.

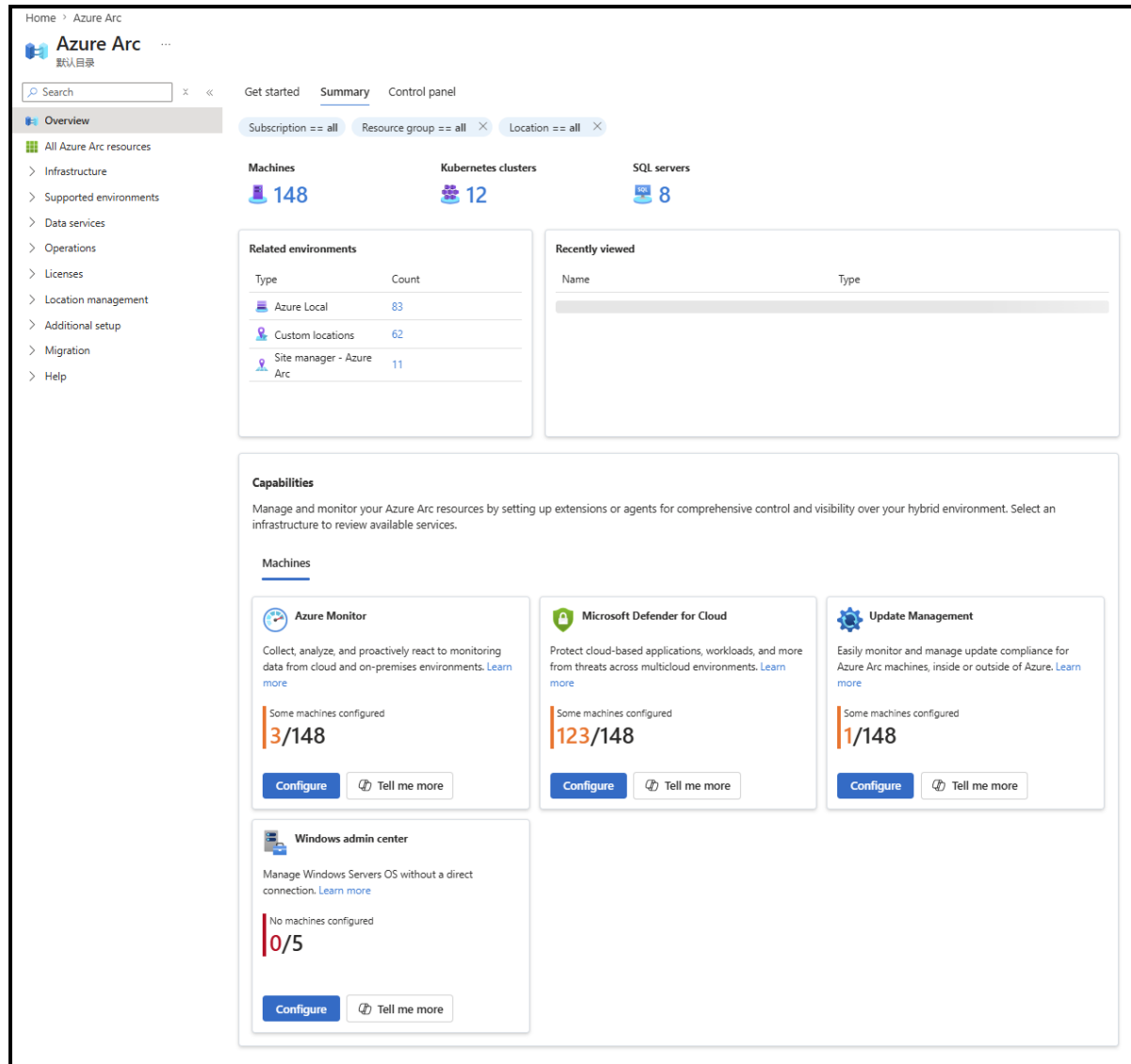


Figure 7: Azure Arc integrates monitoring and security capabilities by bringing Azure Monitor and Microsoft Defender for Cloud to hybrid and multicloud resources from a single Azure management experience

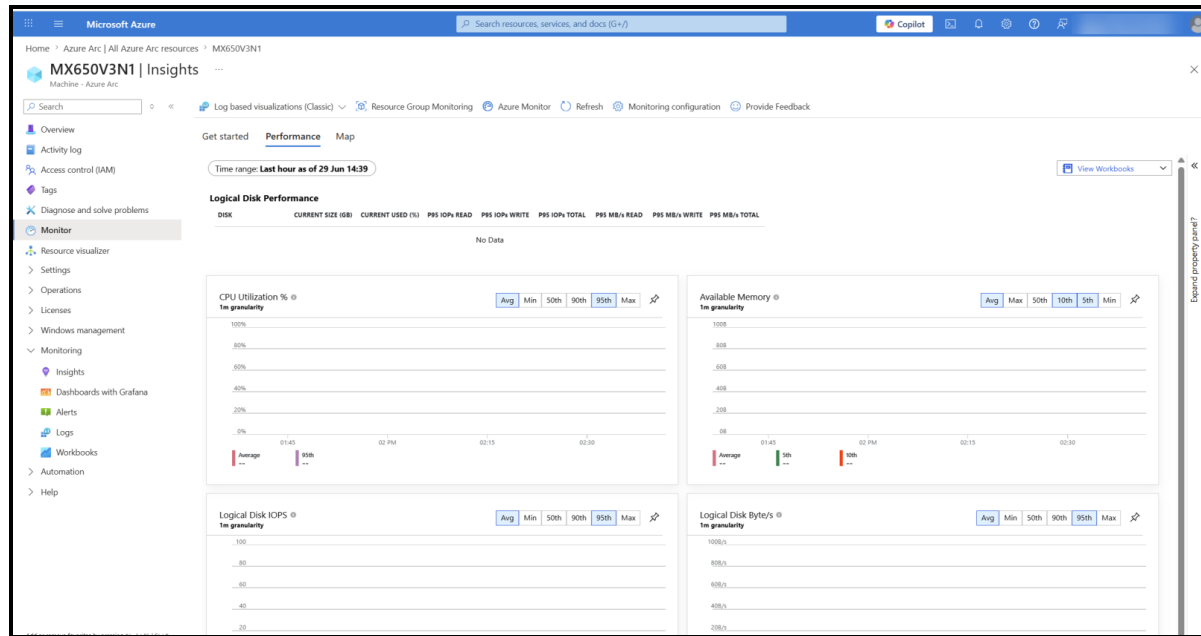


Figure 8: Cluster node Insights

Cluster and node views

Let's have a quick look into the Azure Arc Portal, using the deployed cluster and its resource group.

Clicking on the cluster will lead you to the Azure Portal view, where you are able to receive information about cluster health, be informed about potential errors and solve them.

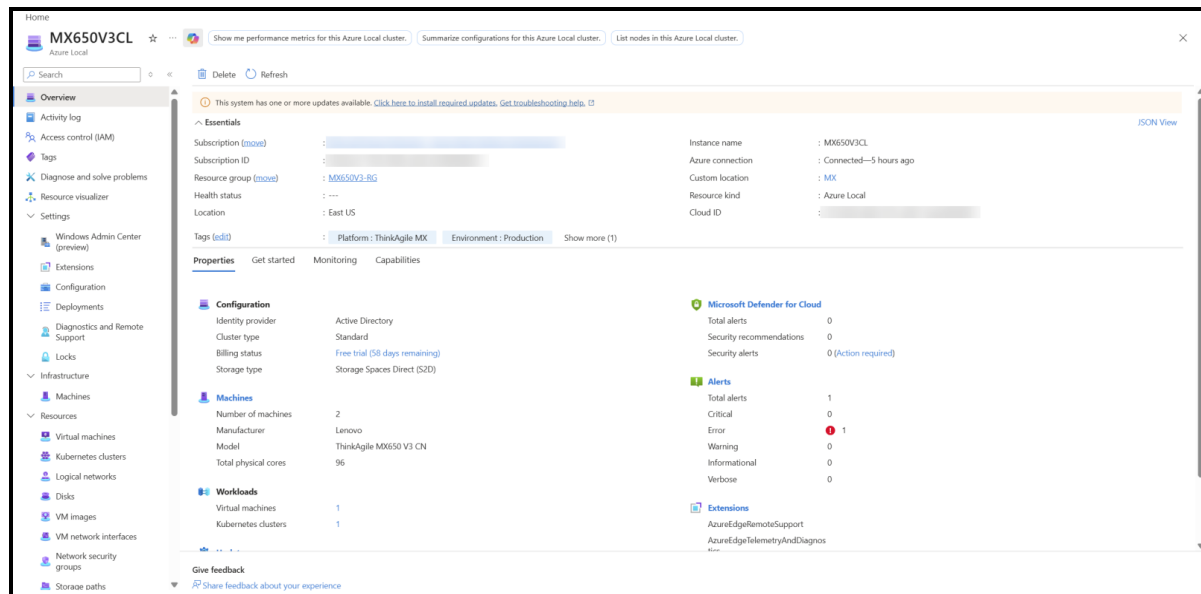


Figure 9: Centralized view of cluster health, configuration, and Azure connectivity status

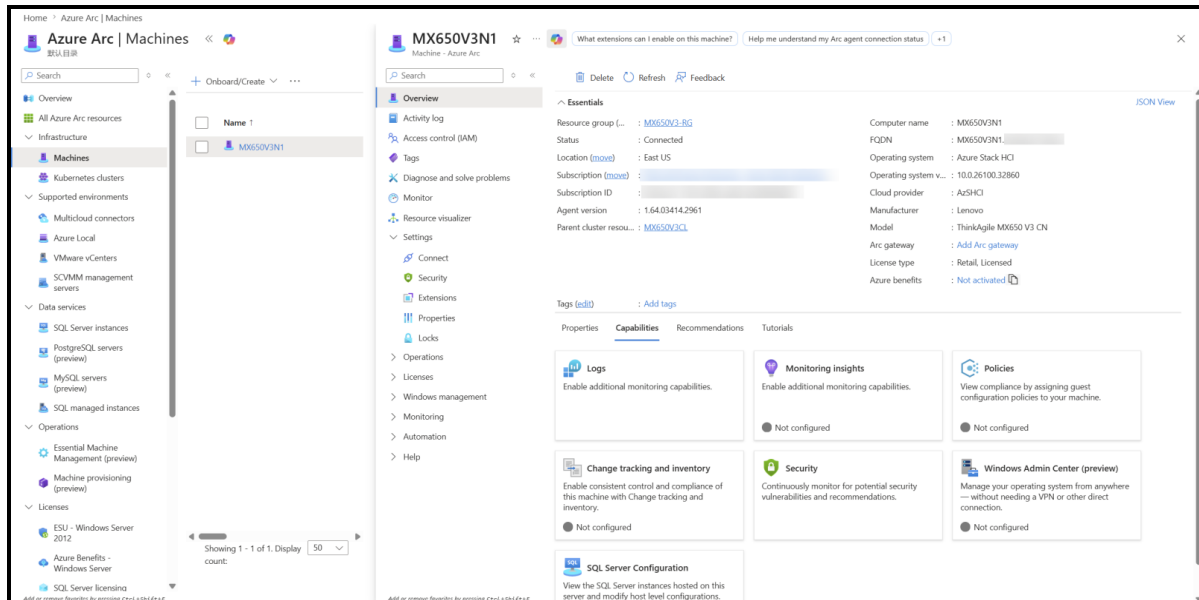


Figure 10: Individual ThinkAgile MX nodes projected into Azure and managed as Arc-enabled servers

Kubernetes clusters

Azure Arc provides centralized visibility and management for hybrid resources, including Arc-enabled servers, Kubernetes clusters, and SQL Server instances, directly from the Azure portal.

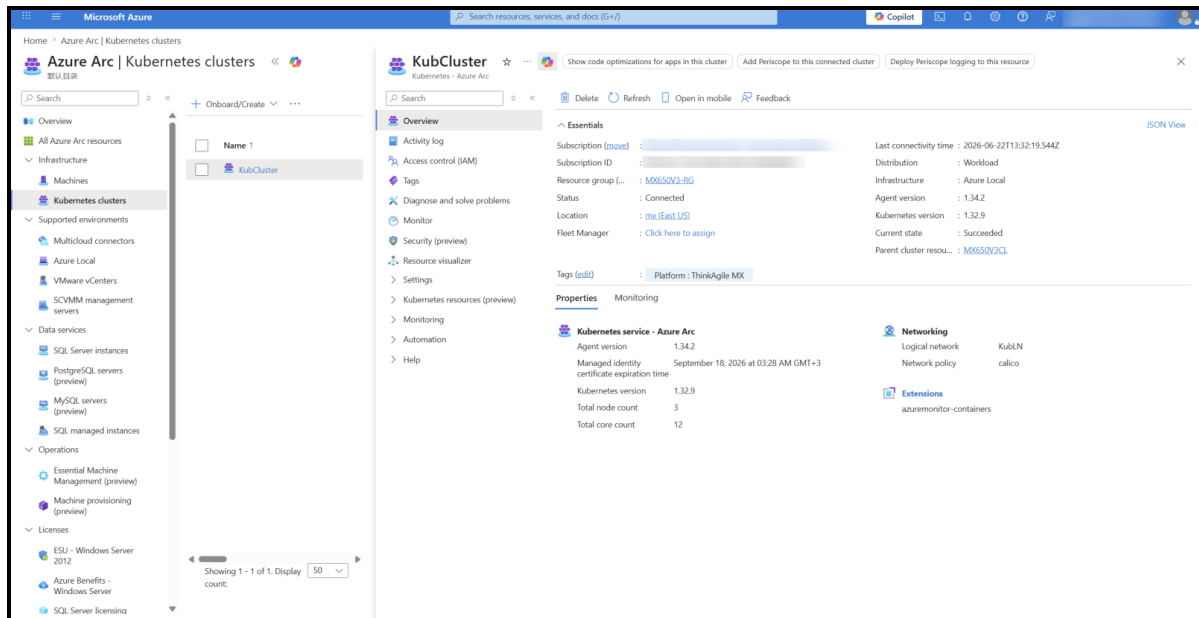


Figure 11: Azure Arc overview of a VM-based AKS cluster running on ThinkAgile MX Azure Local infrastructure, showing cluster configuration, connectivity, Kubernetes version, capacity, monitoring, and extensions

This enables:

- Centralized cluster visibility
- Policy enforcement
- Monitoring and extensions management

Kubernetes workloads can now be consistently managed across hybrid and multi-cloud environments.

SQL Server instances

SQL Server instances running on the ThinkAgile MX cluster are projected into Azure as Arc-enabled SQL Server resources, giving administrators a consolidated inventory alongside the servers and Kubernetes clusters already registered. The portal view lists the discovered instances together with their host, version, and edition, so database estate visibility comes from the same console used for the rest of the environment rather than from a separate tool.

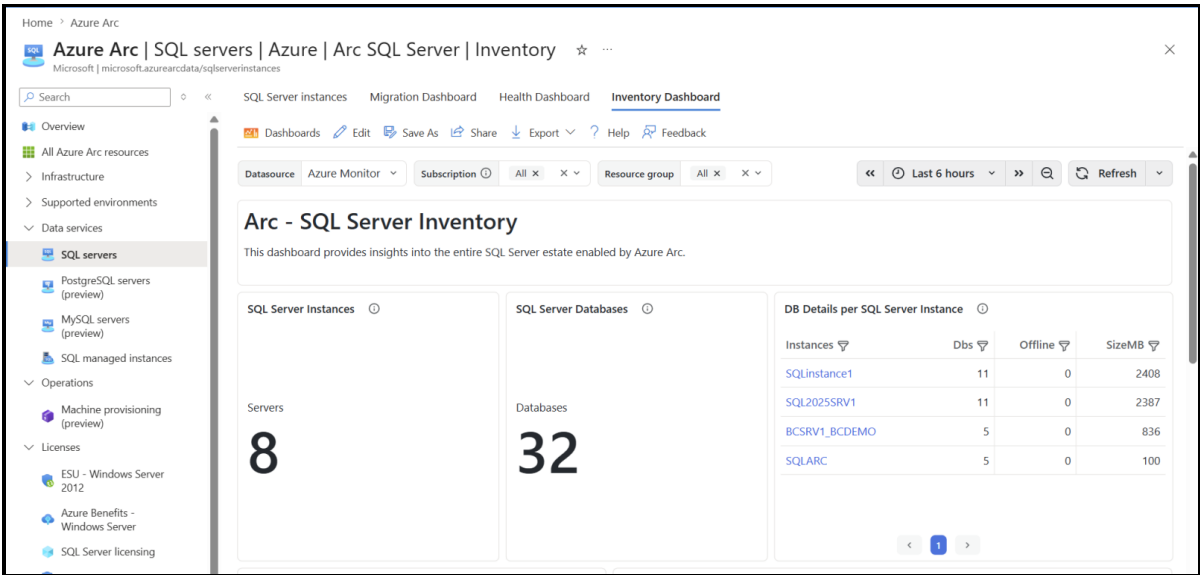


Figure 12: SQL Server inventory

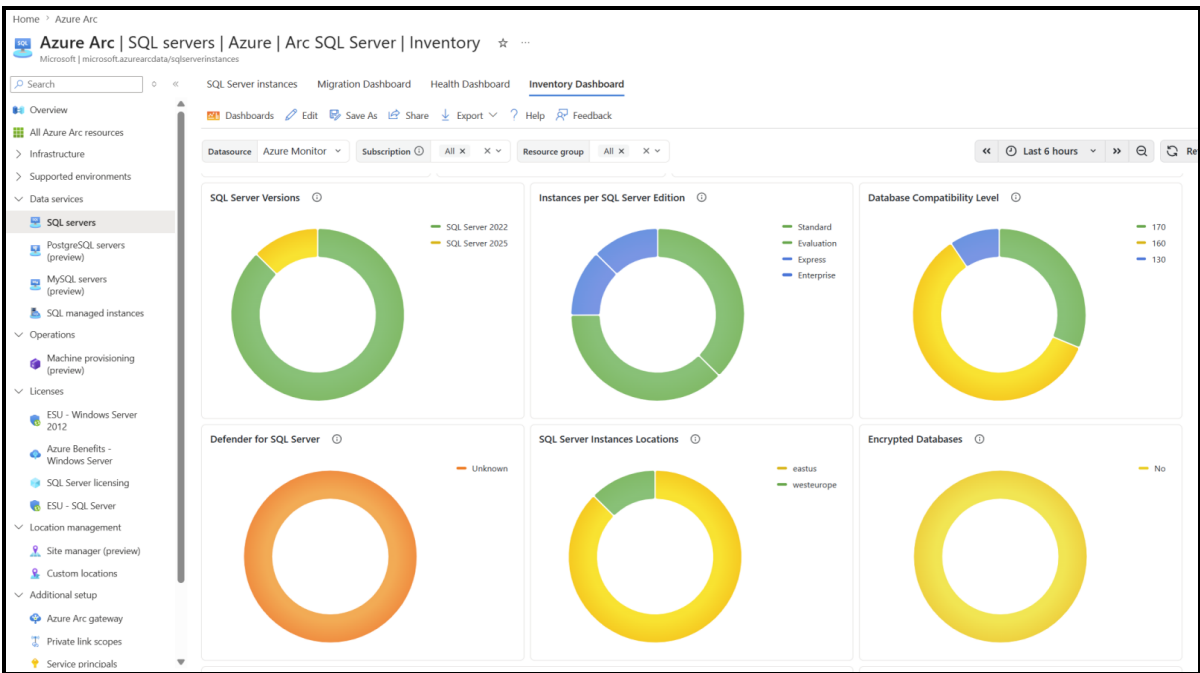


Figure 13: SQL Server inventory

Preview Capabilities

Azure Arc continues to add capabilities that extend beyond visibility and governance into provisioning and organization of distributed infrastructure. Two of these are currently in preview and are worth evaluating for ThinkAgile MX environments:

- Machine Provisioning, which automates server deployment from pre-configured images to support zero-touch rollout
- Site Management, which provides a structured way to group and manage resources that are spread across multiple locations.

Both are shown below as configured in the test environment. Because these features are in preview, their behavior and availability may change before general release, so validate them against current Microsoft documentation before building them into a production deployment process.

The two features are described in the following sections:

- [Machine Provisioning](#)
- [Site Management](#)

Machine Provisioning

A newly introduced Azure Arc capability, currently in preview, is Machine Provisioning. This feature enables automated deployment of servers using pre-configured images, including downloadable Linux ISO files. The approach supports zero-touch provisioning, allowing organizations to rapidly deploy infrastructure with minimal manual intervention. Once provisioning is complete, the deployed resources can be integrated and managed as part of an Azure Local instance, ensuring consistency across hybrid environments.

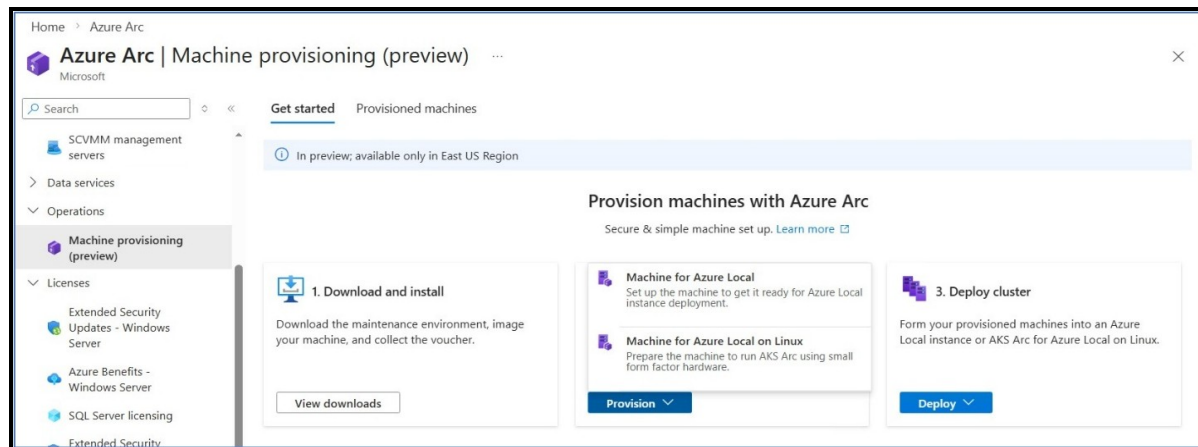


Figure 14: Machine Provisioning

Site Management

Another feature available in preview is **Site Management**, which provides a structured way to organize and manage distributed resources within Azure Arc. The example below illustrates a configured Azure Arc site, where all associated resources are centrally visible and manageable through a unified interface.

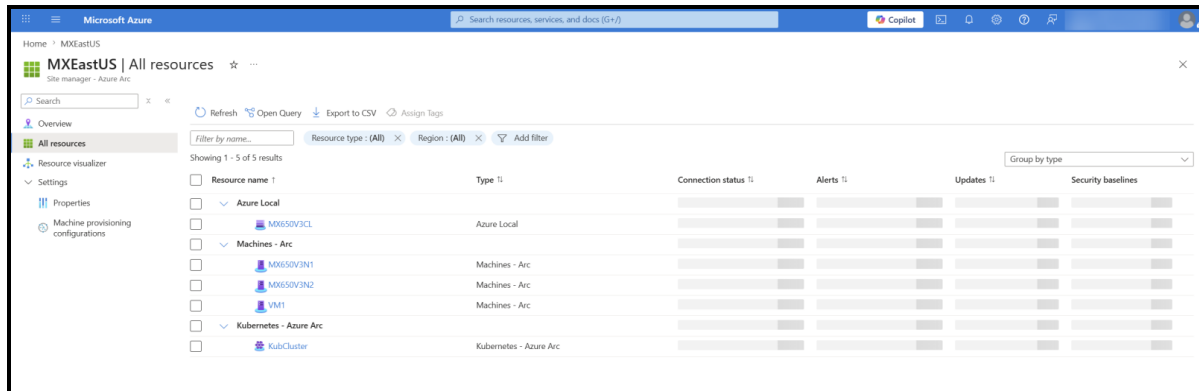


Figure 15: Azure Arc site

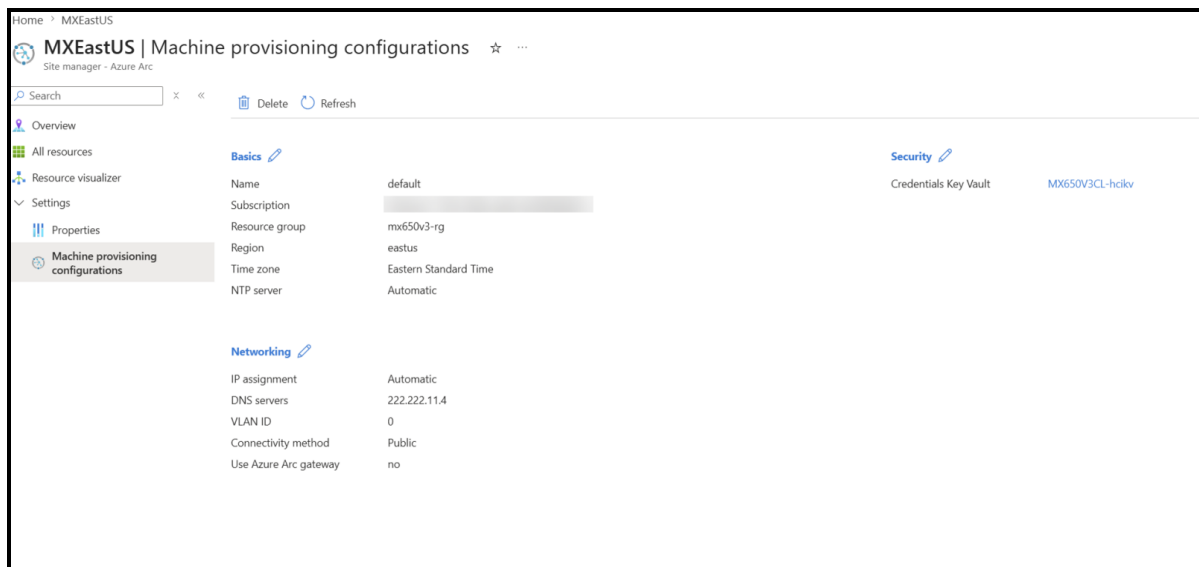


Figure 16: Azure Arc site configuration

Conclusion

By combining Azure Arc with Lenovo ThinkAgile MX, customers gain a simplified, high-performance, and secure hybrid cloud platform that drives operational efficiency. It accelerates time-to-market for new applications, unlocks the power of on-premises AI with enterprise-grade hardware, and ensures consistent governance and security — all while offering flexible consumption and world-class support. This powerful partnership empowers your organization to innovate faster while keeping critical data and workloads securely on-premises.

References

For more information, see these resources:

- Technical Brief for Microsoft Azure Arc on ThinkAgile MX
<https://lenovopress.lenovo.com/lp1682-azure-arc-on-thinkagile-mx>
- Azure Arc overview
<https://learn.microsoft.com/en-us/azure/azure-arc/overview>

Author

Adelina Onofrei is a Microsoft Solutions Engineer, specializing in Azure Local deployments, Azure Local cluster and LXCI testing. Adelina is dedicated to enabling business success through secure, innovative, and reliable solutions based on Azure Local and enterprise cloud technologies.

Related product families

Product families related to this document are the following:

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

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