Upgrading ThinkAgile MX Servers from Azure Local version 22H2 to 23H2

Version 1.0

Provides overview about the upgrade process

Describes supported configurations and workloads

Provides guidance and recommendations in the PowerShell upgrade process

Upgrading Think Agile MX solution

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1 Problem Statement

Software upgrades can cause disruptions and need to be carefully planned to avoid or reduce downtime. Before performing an upgrade, ensure a comprehensive backup policy is in place and that the restore process has been recently tested. This precaution provides a recovery point in the unlikely event of an issue.

2 Upgrade overview

Upgrading your current Azure Local instance from 22H2 to 23H2 provides access to the latest enhancements while retaining the resources already created. While updates are mostly an automated process, in the case of this major upgrade, certain steps are necessary to prevent potential problems.

Starting with version 23H2, Azure Local transitioned to an Arc-enabled solution, built upon the operating system with Arc and Lifecycle Manager as an added layer. This integration follows the infrastructure-as-code model.

The following diagram illustrates the components:

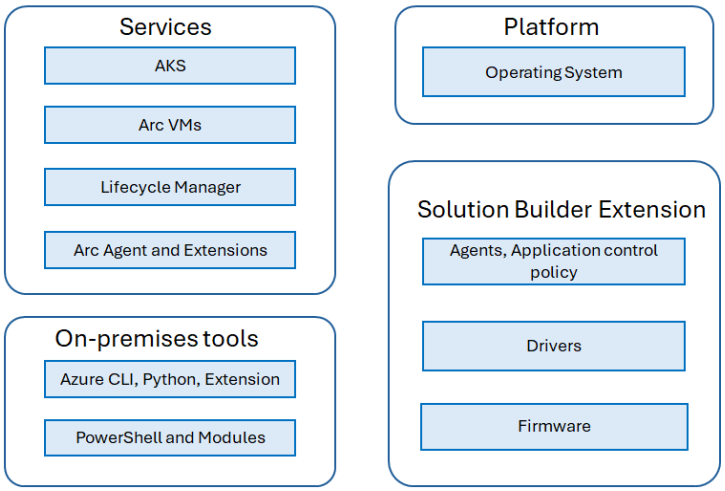

Figure 1. Azure Local 23H2 Components.

3 Supported configurations and workloads

3.1 Lenovo`s supported configurations for upgrade to 23H2

In case you`re using one of the following Lenovo ThinkAgile MX Appliances:

7Z20: ThinkAgile MX Certified Node on SR650
7D5R: ThinkAgile MX3520 Appliance on SR650
7D1B/7D2U: ThinkAgile MX1021 on SE350
7D5S/7D5T: ThinkAgile MX1020 Appliance on SE350

NIC compatibility with Network ATC must be verified. This verification can also be obtained by opening a support ticket.

Workloads

Before initiating the upgrade, confirm that the workloads on the instance are supported. See the following article for a complete list of supported workloads:

https://learn.microsoft.com/en-us/azure/azure-local/upgrade/about-upgrades-23h2#supported-workloads-and-configurations

3.2 Stretch Clustering considerations

Azure Stack HCI version 22H2 offered stretch clustering for disaster recovery, allowing customers to split a single cluster across two geographical locations for automatic failover and high availability. This feature provided synchronous or asynchronous replication of Storage Spaces Direct volumes, allowing production workloads to fail over seamlessly to a secondary site in case of disaster. However, with the release of Azure Stack HCI version 23H2 (now part of Azure Local), stretch clustering is no longer supported. This change reflects Microsoft's evolving product strategy, focusing on clusters with fewer nodes deployed in many edge locations. For customers currently using stretch clustering in version 22H2, this version reached end of service in May 2025. Customers are advised to either continue using version 22H2 until a future update potentially reintroduces stretch cluster support, or to upgrade to version 23H2 if stretched clusters are not an immediate requirement, benefiting from the latest features

4 Azure local upgrade summary

The upgrade process can be divided into five phases:

- Upgrading the Azure Local 22H2 to 23H2 operating system that is recommended to be performed over PowerShell (Windows Admin Center and other manual methods are supported)
- Perform post-OS upgrade tasks
- Install and enable Network ATC
- Validating the solution upgrade readiness
- Apply the solution upgrade

4.1 Operating System PowerShell upgrade process

The order of operations for upgrading the operating system can be summarized as follows:

- Complete the prerequisites
- Establish a connection to Azure Local (currently on 22H2)
- Check available updates
- Upgrade to the new operating system
- Check the update status
- Perform post-OS upgrade steps

Refer to the official documentation for the most current upgrade guide:

https://learn.microsoft.com/en-us/azure/azure-local/upgrade/upgrade-22h2-to-23h2-powershell

- Use the following steps to upgrade the OS in PowerShell:
- Configure Web Services Management and PowerShell remote commands (on each node of the instance)

```
Set-WSManQuickConfig
Enable-PSRemoting
```

- Test the Cluster-Aware Updating (CAU) with the following command (where <System name> needs to be replaced with your environment):

```
test-CauSetup -ClusterName <System name>
```

- Testing the hardware and setting it is recommended before moving forward:

```
test-cluster
```

- Next step is checking for any available updates by using CAUScan. This should be run on each node of the instance and the updates available should be identical

```
Invoke-CauScan -ClusterName <SystemName> -CauPluginName
"Microsoft.RollingUpgradePlugin" -CauPluginArguments
@{'WuConnected'='true';} -Verbose | fl *
```

- From another system (that is running Windows Server 2022, and it can be physical or virtual) in the same domain the following command should be run to start the upgrade process:

```
Invoke-CauRun –ClusterName <SystemName> -CauPluginName
Microsoft.RollingUpgradePlugin -CauPluginArguments @{
'WuConnected'='false';'PathToSetupMedia'='\some\path\';
'UpdateClusterFunctionalLevel'='true'; } -Force
```

The status of the update can be verified by running the following command:

```
  Get-CauRun -ClusterName <SystemName>
```

4.2 Perform post-OS upgrade tasks

Once the new operating system is installed and verified, complete the following steps:

- Update the instance functional level by running the following PowerShell command on any of the nodes:

```
Update-ClusterFunctionalLevel
```

- Upgrade the storage pool:

```
Update-StoragePool -FriendlyName "S2D on hci-cluster1"
```

replace the "S2D on hci-cluster1" with the name of the storage pool on your instance

4.3 Install and enable Network ATC

If Network ATC **was** already enabled in Azure Local 22H2, skip the following steps. If Network ATC was not enabled, follow these steps after the OS is installed:

- Install Network ATC on each node of the instance

```
Install-WindowsFeature -Name NetworkATC
```

- Stop the Network ATC service (this is to avoid applying any intent while a virtual machine is running):

```
Set-Service -Name NetworkATC -StartupType Disabled
```

```
Stop-Service -Name NetworkATC
```

- Suspend the cluster node that we`re connected on:

```
Suspend-ClusterNode -drain
```

Stop the Network ATC service and pause the instance node, then remove any existing network configuration that might interfere with Network ATC:

- Removing existing virtual switches

```
Get-VMSwitch -Name <VMSwitchName> | Remove-VMSwitch -force
```

- Removing existing NetQos configuration:

```
Get-NetQosTrafficClass | Remove-NetQosTrafficClass
Get-NetQosPolicy | Remove-NetQosPolicy -Confirm:$false
Get-NetQosFlowControl | Disable-NetQosFlowControl
```

- Making sure that no LBFO team is configured:

```
Get-NetLBFOTeam | Remove-NetLBFOTeam -Confirm:$true
```

After successfully completing these steps, start the Network ATC service by running the following commands:

```
Start-Service -Name NetworkATC
Set-service -Name NetworkATC -StartupType Automatic
```

After selecting a configuration, add the Network ATC intent. For a list of example intents, please refer to the following article:

https://learn.microsoft.com/en-us/azure/azure-local/upgrade/install-enable-network-atc#example-intents

In the following example we`re going to use two intents, one for management (that uses two NIC`s) and one for storage (also two NIC`s)

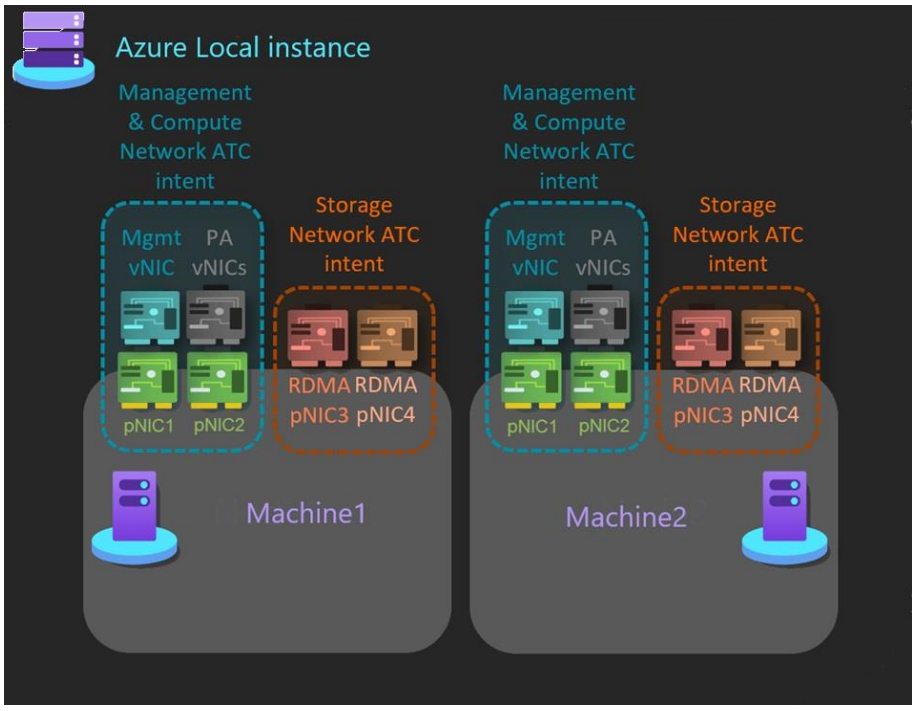

Figure 2. Two Intents

Applying these two network intents can be done by running the following commands:

```
Add-NetIntent -Name Management_Compute -Management -Compute -AdapterName pNIC1, pNIC2
Add-NetIntent -Name Storage -Storage -AdapterName pNIC3, pNIC4
```

These commands do not account for environment-specific customizations. Prior to execution, consult the following article:
https://learn.microsoft.com/en-us/powershell/module/networkatc/add-netintent?view=windowsserver2025-ps

Review existing VLANs, intents, and network configurations within your environment and adapt the commands accordingly.

After the commands have executed successfully, we need to confirm that the intent status is successful by running the following steps

```
Get-NetIntentStatus -Name <IntentName>
```

If issues arise during intent status verification, utilize the `Remove-NetIntent` command to delete the newly created intents and revert to the previous phase. Re-evaluate the settings before proceeding. Further information on `Remove-NetIntent` can be found here: https://learn.microsoft.com/en-us/powershell/module/networkatc/remove-netintent?view=windowsserver2025-ps

During this phase, you must rename the VMSwitch on the remaining node to the same name as the VMSwitch used in the Network ATC deployment.

```
Rename-VMSwitch -Name 'ExistingName' -NewName 'NewATCName'
```

If you don't know the name of the VMSwitch created on the node with Network ATC already installed, run the following command:

```
Get-VMSwitch | ft Name
```

Once these settings have been performed, if there are any virtual machines on the instance, connect them to the renamed VMSwitch. You can do this for all VMs by running the following commands:

```
$VMSW = Get-VMSwitch
$VMs = Get-VM
$VMs | %{Get-VMNetworkAdapter -VMName $_.name | Disconnect-VMNetworkAdapter
; Get-VMNetworkAdapter -VMName $_.name | Connect-VMNetworkAdapter -
SwitchName $VMSW.name}
```

Once all of this has been done, you can connect to the node that has been set on pause and resume it:

```
Resume-ClusterNode
```

4.4 Validating the solution upgrade readiness

Before the last step in the upgrade, ensure you check for and resolve any issues that might prevent the upgrade. An updated list of these issues can be accessed here:

https://learn.microsoft.com/en-us/azure/azure-local/upgrade/validate-solution-upgrade-readiness#table-blocking-validation-tests-for-upgrade

To verify the solution readiness the environment checked needs to be installed on one of the instance nodes by running the following command:

```
Install-Module -Name AzStackHci.EnvironmentChecker -AllowClobber
```

To initiate the validation on that node run the following command:

```
Invoke-AzStackHciUpgradeValidation
```

From the node where you ran the previous command, validate other nodes in the instance using the following command:

```
$PsSession=New-Pssession -ComputerName "MyRemoteMachine"
Invoke-AzStackHciUpgradeValidation -PsSession $PsSession
```

4.5 Apply the solution upgrade

Before upgrading the solution, ensure you meet the following prerequisites:

- The system should be validated with the Environment Checker. More information about the process and remediation can be found in the following link: https://learn.microsoft.com/en-us/azure/azure-local/upgrade/validate-solution-upgrade-readiness#run-the-validation

- The AzureEdgeLifecycleManager extension should be installed and in a healthy state. Detailed information on how to check this can be found in the following document: https://learn.microsoft.com/en-us/azure/azure-local/upgrade/validate-solution-upgrade-readiness#remediation-9-check-the-azure-arc-lifecycle-extension

- Have an active directory domain user that is member of the local Administrator Group.
- A range of six consecutive IPv4 addresses must be exclusively reserved for the instance.
- Azure Stack HCI Administrator and Reader permissions should be granted to the Azure user that is being used for upgrade. More information on granting those permissions and how to check them can be found in the following link:

  https://learn.microsoft.com/en-us/azure/azure-local/manage/assign-vm-rbac-roles#about-builtin-rbac-roles

When all **conditions** are satisfied, the solution upgrade can be started from the Azure portal. Once the instance has been selected, an upgrade banner should be visible.

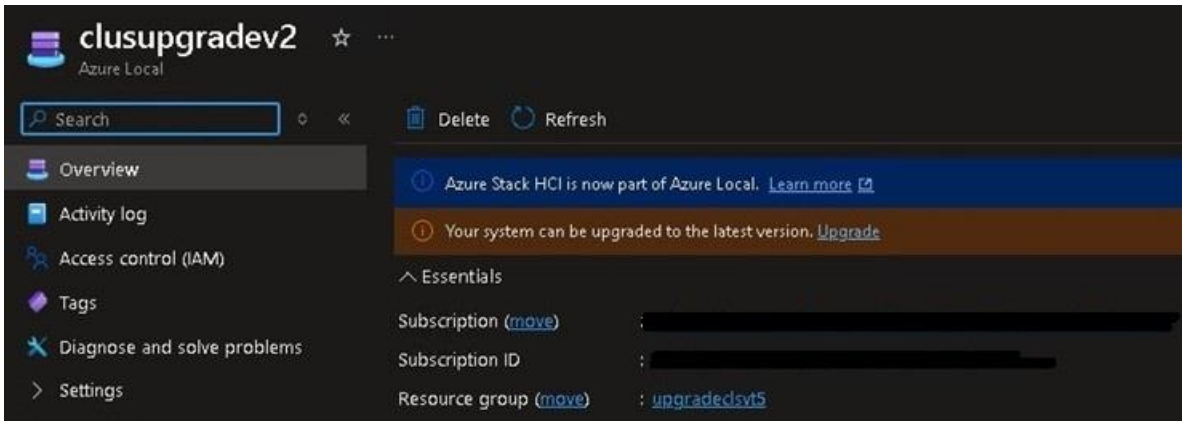

Figure 3. Azure Portal upgrade

Once the Upgrade option has been selected, data gathering for the upgrade will begin. On the Basics tab, provide the following information:

- Create a new key vault key for security purposes.
- Use the credentials of the Active Directory user previously added to the local Administrators group for the deployment account.
- For the custom location name the default value can be used or customized.
- On the IP address range fields, the range must include at least six consecutive IPs. Also provide the subnet mask, gateway, and DNS server addresses.

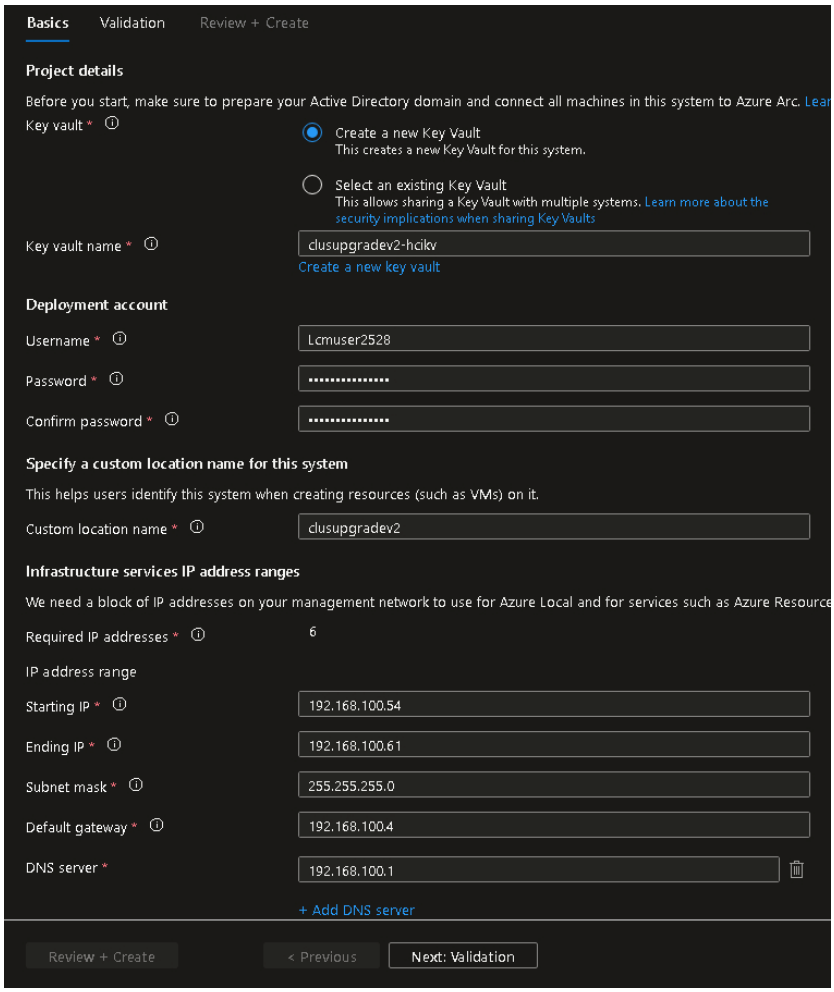

Figure 4. Basics Tab

The Validation tab will perform a series of checks to prevent errors during the solution upgrade process.

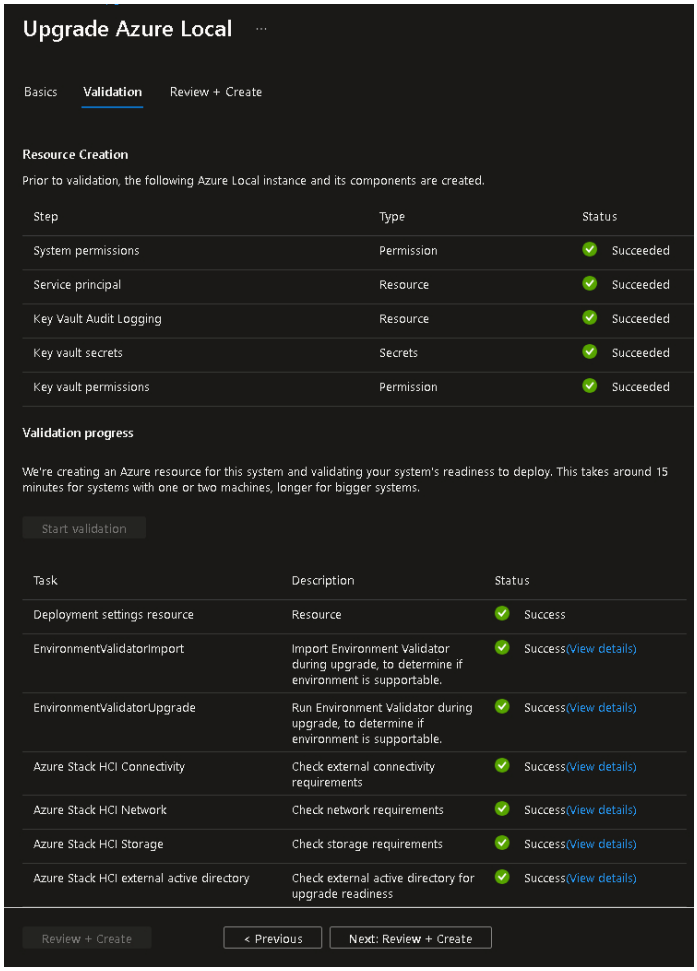

Figure 5. Validation Tab

After validation completes successfully, select Review + Create to start the upgrade process.

You can monitor the upgrade process by accessing the **Settings > Deployment** section. Note that it might take a few minutes for the tasks to be listed. The upgrade process is dependent on the number of machines in the system and the load.

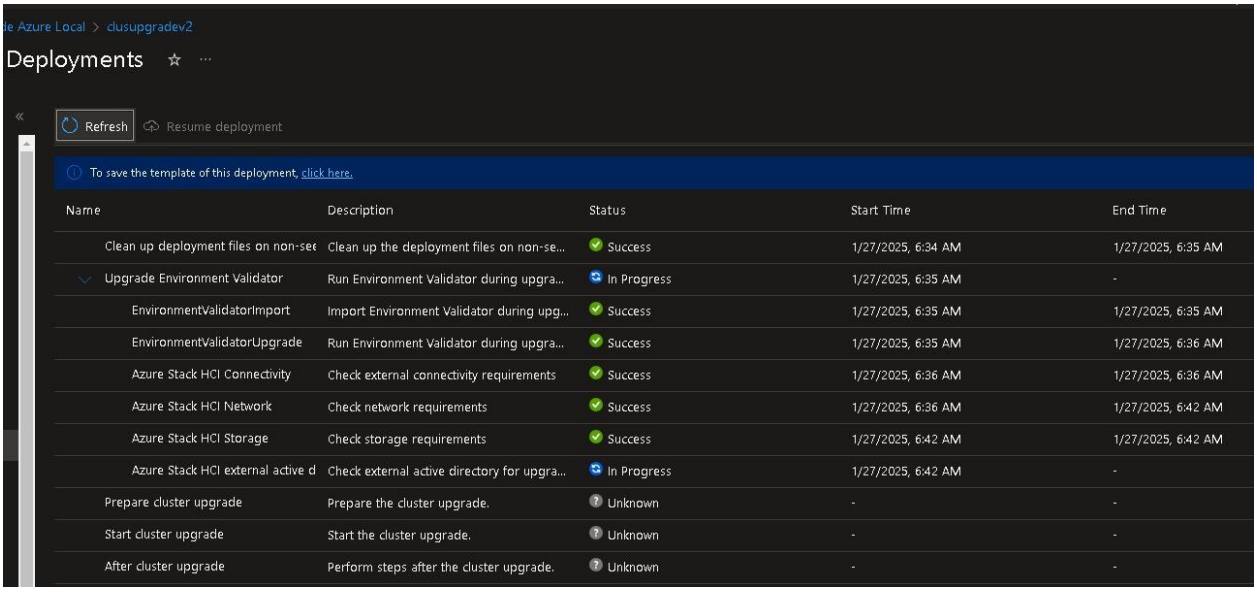

Figure 6. Upgrade Progress Monitoring

Once all the tasks have been successfully completed, the instance can be verified by accessing the resource group where it has been deployed. There, the following resources should be present:

Resource type	Number of resources
Machine - Azure Arc	1 per machine
Azure Local	1
Arc Resource Bridge	1, -arcbridge suffix by default
Custom location	1, -cl suffix by default
Key Vault	1

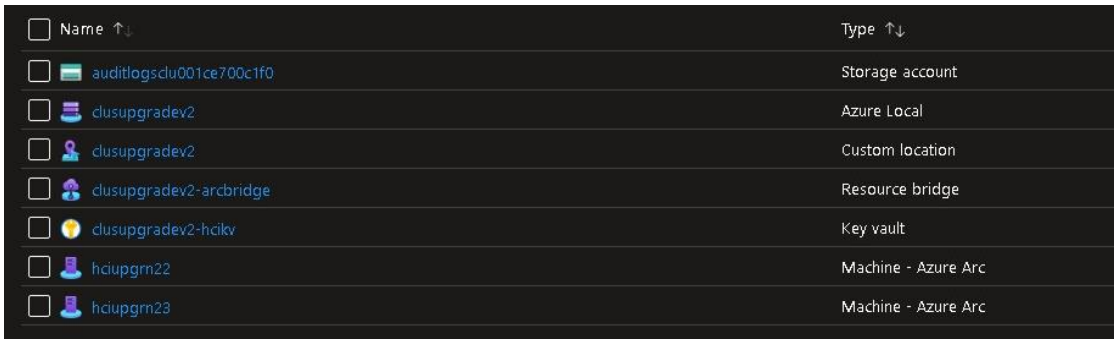

Figure 7. Instance Resources

5 Why Choose Lenovo ThinkAgile MX with Azure Local 23H2?

The Lenovo ThinkAgile MX combined with Azure Local 23H2 is the best solution for customers looking for a hybrid cloud solution. Here is why:

1. Ease of Deployment: The pre-integrated solution reduces setup time and complexity.
2. Scalability: Easily scale your infrastructure as your business grows.
3. Cost Savings: Consolidate workloads and optimize cloud spending.
4. Simplified Management: Manage your hybrid cloud environment with ease using Azure Arc and Windows Admin Center.
5. Enhanced Security: Protect your data with the latest security features.

6 Conclusion

Upgrading your Lenovo ThinkAgile MX appliance from Azure Stack HCI 22H2 to Azure Local 23H2 is a smart move for businesses looking to improve performance, enhance security, and save costs. The Lenovo ThinkAgile MX offer, with its ease of deployment and scalability, combined with the advanced features of Azure Local 23H2, provides a powerful and cost-effective hybrid cloud solution.

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