

Deploying a Single-Node Instance of Azure Local on ThinkAgile MX

Planning / Implementation

Microsoft released support for single-node Azure Local instances in order to minimize hardware costs at locations that do not require high resiliency. A single-node instance runs the same Azure Local software stack as a multi-node instance, is deployed and managed through the same Azure Arc control plane, and carries the same subscription and billing model. The difference is that it does so on one machine rather than two or more.

This deployment type is aimed at edge and remote sites — retail stores, branch offices, clinics, restaurants, manufacturing cells, and similar locations — where floor space, power, and budget are constrained, and where the workload can tolerate the site being offline for the time it takes to repair the hardware. Microsoft positions its single-server storage reference pattern for facilities that can tolerate a lower level of resiliency without affecting the business, and cites food service, healthcare, finance, retail, and government sites as typical examples. Lenovo ThinkAgile MX systems suit this profile: they are certified Azure Local configurations whose firmware and device driver levels are validated together and published as the ThinkAgile MX Best Recipe.

A single-node instance is functionally equivalent to a multi-node instance in the following respects:

- It is deployed from the Azure portal or from an Azure Resource Manager template, using the same wizard and the same quickstart template as a multi-node deployment.
- It is registered with Azure Arc, and is monitored, updated, and managed from the Azure portal in the same way.
- It runs the same workloads, including virtual machines, Azure Kubernetes Service (AKS) on Azure Local, and Azure Virtual Desktop (AVD).
- It uses Storage Spaces Direct. Volumes are created with two-way mirror resiliency, and on a single machine the two copies are held on separate drives inside that machine, so a volume survives the loss of a drive but not the loss of the machine.

The differences are concentrated in the hardware and network requirements, and they are best settled before the hardware is ordered:

- **Storage drives.** A single-server deployment must use one drive type only — either NVMe or SSD. Mixed drive types are not supported. The operating system is installed on a separate RAID-1 boot device that is not part of the storage pool.
- **Network intents.** A single-node instance uses one Network ATC intent that carries both management and compute traffic. There is no storage intent and no storage traffic, so RDMA is disabled during deployment. Microsoft's reference pattern calls for two teamed ports of at least 1 Gbps, with 10 Gbps recommended, behind a single top-of-rack switch.
- **Storage adapters.** If a second machine is likely to be added later, install the RDMA adapters up front. In the single-server reference pattern they remain disconnected until that second machine is added.

- A single-node instance is deployed without a quorum witness, because there is no second machine to arbitrate between. A witness has to be configured before the instance can be scaled out.

Scale-out is supported. An Azure Local instance can grow to a maximum of 16 machines, added one at a time. Growing a single-node instance to two machines is performed with the Add-Server PowerShell cmdlet rather than from the Azure portal, and it requires a quorum witness and a storage network intent to be in place first. Each machine that is added must closely match the existing machine in processor type and core count, memory, and drive count, type, and size. Once the second machine joins, volume resiliency becomes a two-way mirror across the two machines and Storage Spaces Direct rebalances the data as a low-priority background task, which can run for several days.

Weigh these characteristics against the workload before committing to a single-node instance. The Notes and considerations section at the end of this document summarizes the operational trade-offs.

This document provides an overview of single-node Azure Local support, the steps in the deployment process, the requirements, and the considerations for this deployment type. The walkthroughs were performed on a Lenovo ThinkAgile MX650 V3 system running Azure Local 2606; other ThinkAgile MX platforms follow the same process. Requirements that Microsoft documents in detail are linked rather than repeated, so that this guide remains accurate as those articles are revised.

Microsoft supports two deployment methods, for both single-node and multi-node deployments:

- **Deploy from the Azure portal**
- **Deploy from an Azure Resource Manager template**

Both methods are described in this document.

Prepare for deployment

Perform the following steps before using either of the deployment methods:

- [Review the Microsoft prerequisites](#)
- [Prepare Active Directory](#)
- [Prepare the server](#)
- [Configure the operating system](#)
- [Register with Azure Arc](#)
- [Stage the SBE package](#)

Review the Microsoft prerequisites

Read and understand the Microsoft prerequisites for Azure Local deployment:

<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-prerequisites>

Also read and understand the single-server storage deployment network reference pattern for Azure Local:

<https://learn.microsoft.com/en-us/azure/azure-local/plan/single-server-deployment>

Read through each of the requirements and make sure that you understand them. Each requirement includes a link to further information.

Prepare Active Directory

The Azure Local Active Directory prerequisites are as follows:

- A dedicated Organizational Unit (OU)
- Blocked Group Policy Object (GPO) inheritance for the designated OU
- An Active Directory user account with full permissions over the OU

Follow the steps in the Microsoft article to prepare Active Directory:

<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-prep-active-directory>

PowerShell scripts and commands are provided to simplify the process. After you modify the OU parameters in the script from the Microsoft article, run the script. The credentials that the script prompts for belong to the new user it creates in the OU. Running the script in our lab produced the result shown in the following figure.

```
$credential = New-Object System.Management.Automation.PSCredential ($user, $password)
New-HciAdObjectsPreCreation -AzureStackLCMUserCredential $credential -AsHciOunName "OU=MX650V3,DC=contoso11,DC=local"
VERBOSE: Successfully verified DC=contoso11,DC=local
VERBOSE: Successfully created MX650V3 organization unit within the 'DC=contoso11,DC=local'
VERBOSE: Successfully created 'lcmuser' within the 'OU=MX650V3,DC=contoso11,DC=local'
VERBOSE: Access permissions to 'OU=MX650V3,DC=contoso11,DC=local' have been successfully granted to 'lcmuser'
VERBOSE: Gpo inheritance blocked for 'OU=MX650V3,DC=contoso11,DC=local', inheritance blocked state is : True
```

Figure 1. Output of the New-HciAdObjectsPreCreation script, confirming that the organizational unit, the deployment user, and blocked GPO inheritance were created successfully

Prepare the server

Two tasks prepare the server itself:

- [Download and install the Azure Stack HCI operating system](#)
- [Update system firmware according to Best Recipe](#)

Download and install the Azure Stack HCI operating system

All ThinkAgile MX Integrated System (IS) and Premier (PR) solutions ship with the operating system preloaded, so customers should not need to perform this step. However, the Microsoft article explains how to download the Azure Stack HCI operating system from the Azure portal if you need to reinstall it.

The following two figures show where the operating system download is found in the Azure portal.

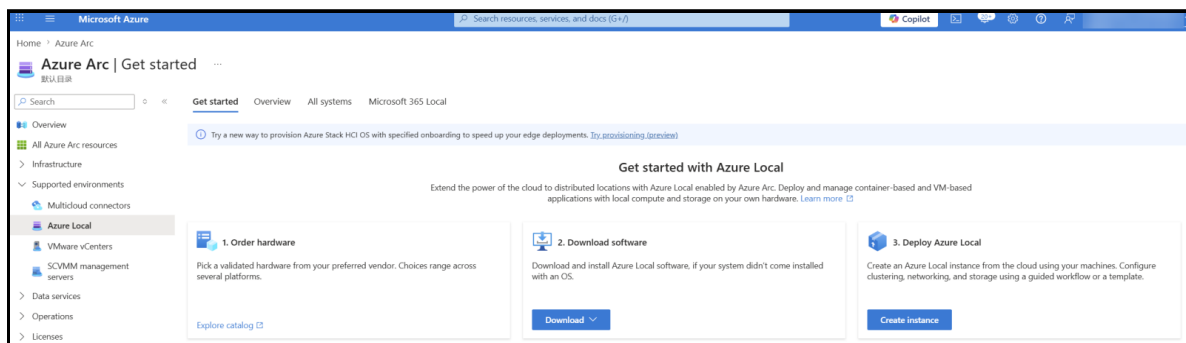


Figure 2. The Azure Arc | Get started page for Azure Local, showing the Order hardware, Download software, and Deploy Azure Local options

Home > Azure Arc | Get started

Download Azure Stack HCI OS ...

Software download includes a free 60-day free trial. [Learn more](#)

Deployment ISO

Choose your subscription and then select the version of the Azure Stack HCI Operating System that you wish to download. Only the versions 2503 and newer are eligible for deployment using the Azure portal. To deploy a previous version, please use an Azure Resource Manager template. [Learn more](#)

Subscription * Microsoft Azure Enterprise - Azure Stack Solutions Development

Software version * 2606

⚠ Starting with version 2504, all new Azure Local deployments will use the new operating system (OS) version 26100.3775. Please ensure that your hardware has the necessary drivers compatible with Azure Local 12.2504 or Windows Server 2025. [Learn more](#)

Review Service Terms and Privacy notice:

Customer may download the software with their Azure Subscription pursuant to the Azure Local License Terms provided in the [Microsoft Online Service Terms](#).

Privacy notice:
Microsoft is an independent controller of the diagnostic data collected in the connection with Azure Local. Microsoft will handle the diagnostic data in accordance with the [Microsoft Privacy Statement](#) and Data Processing Agreement (DPA) terms do not apply.

☐ I agree with the Azure Local license terms and the privacy notice.

Figure 3. The Download Azure Stack HCI OS page, with the subscription and software version selected

After you download the operating system from the Azure portal, install it on the RAID-1 boot drive, not on one of the storage pool devices. If an operating system was installed previously, delete all existing partitions from the boot drive before you select it for the new installation.

Update system firmware according to Best Recipe

For Lenovo ThinkAgile MX solutions, ensure that the latest Best Recipe firmware and device driver versions are running on the machine. For information about the current ThinkAgile MX Best Recipe, see the following page:

<https://datacentersupport.lenovo.com/us/en/solutions/HT507406>

To simplify the process of downloading all firmware and device driver update packages for a given ThinkAgile MX Best Recipe, a single zip archive that includes all packages is available from the ThinkAgile MX Updates Repository site, which can be found at the following page: <https://thinkagile.lenovo.com/mx>

Lenovo offers multiple tools for updating firmware and device drivers, including the Lenovo XClarity™ Integrator for Microsoft Windows Admin Center (LXCI for WAC) and the Lenovo ThinkAgile MX Solution Builder Extension (SBE).

For ThinkAgile MX solutions running Azure Local, we recommend using SBE, which integrates firmware and driver updates directly into the Azure Local update experience. Not every ThinkAgile MX solution supports SBE packages; check the ThinkAgile MX Best Recipe page for your machine type to confirm which update packages are available for your system.

LXCI for WAC lets administrators manage Lenovo servers from Windows Admin Center. Azure Local instances are managed through the LXCI snap-in, which is integrated into the Windows Admin Center instance creation and Cluster-Aware Updating (CAU) functions. Notably, the tool can recognize and apply firmware and device driver updates based on the current ThinkAgile MX Best Recipe.

For more information about LXCI for WAC, see the following page:

<https://support.lenovo.com/us/en/solutions/ht507549>

Lenovo ThinkAgile MX SBE packages automate updates for system firmware, device drivers, and utility software on Lenovo ThinkAgile MX solutions through the Cluster-Aware Updating (CAU) plug-in. Additional SBE capabilities, such as automatic SBE package downloads and health checks, are provided by a PowerShell module. All update packages follow ThinkAgile MX Best Recipe releases and are delivered in a single compressed ZIP archive. Each SBE package supports specific machine types (MT) and specific Azure Local release versions.

An SBE update package appears automatically as an update option in the Azure portal, and applying it is a matter of clicking the appropriate button. This behavior is the same for all ThinkAgile MX solutions that support SBE packages; there is no longer any difference between Premier (PR) solutions and other ThinkAgile MX solutions.

For more information about SBE, including which solutions are supported, see the following page:

https://pubs.lenovo.com/thinkagile-mx/mx_sbe_overview

Configure the operating system

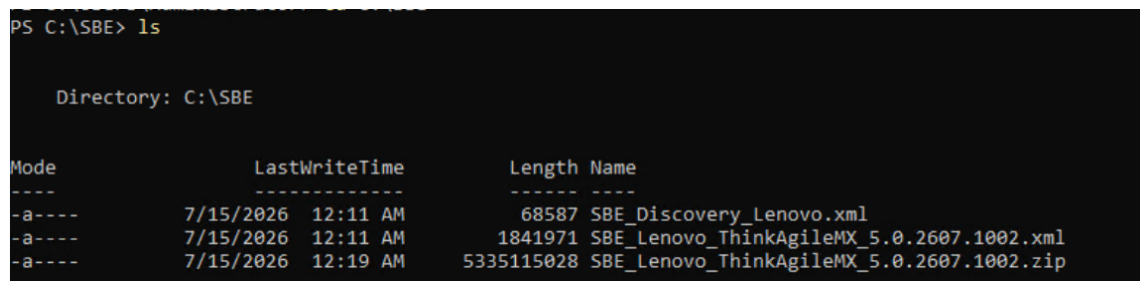
The portion of the Microsoft article that covers operating system configuration begins here:

<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-install-os>

After installing the operating system, refer to the “Configure the operating system using SConfig” section of the above article for the configuration steps. The following are some of the guidelines that should be followed:

- Do **not** install Windows updates using SConfig.
- Starting with Azure Stack HCI 2604, you can domain-join the server before Azure Local deployment. If you choose not to, the server is domain-joined automatically during Azure Local instance creation.
- Configure a single network interface on the server that will become the single-node instance. This interface provides connectivity to Azure Arc during deployment. Ensure that the default gateway is configured on only one NIC per node. This is due to the validation process's expectation of a single default gateway per node.
- The deployment process configures any other network interfaces that are required, based on your input to the deployment wizard.
- Change the computer name to a unique value.

This deployment uses an SBE package, because the target environment is a ThinkAgile MX650 V3 single-node instance. Download the latest available SBE package and copy it to a new folder, C:\SBE. The following figure shows the contents of the SBE folder.



```
PS C:\SBE> ls

Directory: C:\SBE

Mode                LastWriteTime         Length Name
----                -
-a----          7/15/2026 12:11 AM         68587 SBE_Discovery_Lenovo.xml
-a----          7/15/2026 12:11 AM        1841971 SBE_Lenovo_ThinkAgileMX_5.0.2607.1002.xml
-a----          7/15/2026 12:19 AM       5335115028 SBE_Lenovo_ThinkAgileMX_5.0.2607.1002.zip
```

Figure 4. Contents of the C:\SBE folder after downloading the ThinkAgile MX SBE package

Register with Azure Arc

Before deploying the single-node Azure Local instance, you must prepare the Azure environment and establish connectivity through Azure Arc. This process ensures that the required Azure services are

available and that the server can be managed and monitored from Azure.

1. [Register the required resource providers](#)
2. [Create the resource group in Azure](#)
3. [Register the server with Azure Arc](#)

Register the required resource providers

Register the required resource providers for your Azure subscription. See the following URL for the list of required resource providers:

<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-arc-register-server-permissions>

You can register them using PowerShell, as shown in the Microsoft article, or from the Azure portal itself:

1. From the Home page of the Azure portal, go to **Subscriptions** and click the name of the subscription that you want to use.
2. In the left pane, open the **Settings** category and then select **Resource providers**.
3. Choose the resource providers that you want to register.

The figure below shows three of the required resource providers registered for the subscription. More than three are required; this is simply an example of how registered resource providers appear in the Azure portal.

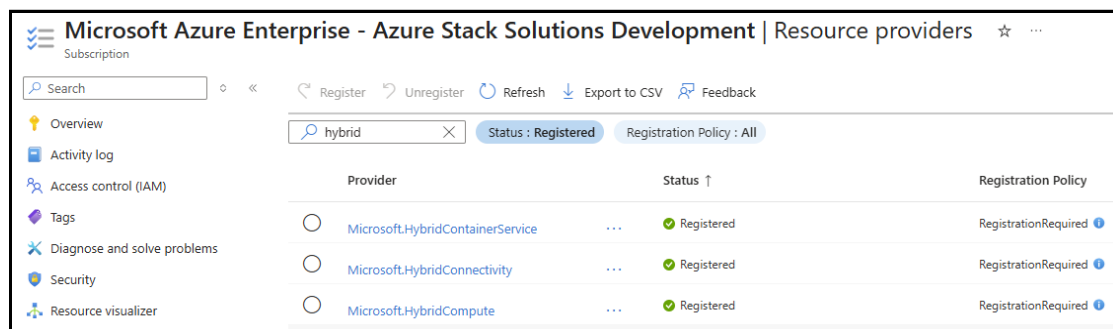


Figure 5. Three of the required resource providers registered for the subscription, filtered on "hybrid"

Create the resource group in Azure

Create the resource group in Azure that you will onboard the server into. Click **Resource groups** on the Azure portal home page:

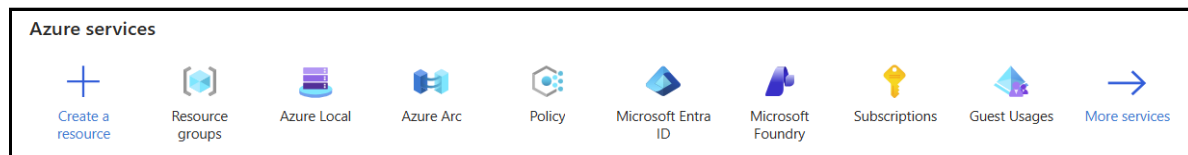


Figure 6. Azure services shortcuts on the Azure portal home page, including Resource groups

Click **Next** if you want to add a tag; otherwise, click **Review + create**.

Microsoft Azure

Home > Resource Manager | Resource groups

Create a resource group

Basics Tags Review + create

Resource group - A container that holds related resources for an Azure solution. The resource group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource groups based on what makes the most sense for your organization. [Learn more](#)

Subscription * ⓘ

Resource group name * ⓘ

Region * ⓘ

[Previous](#) [Next](#) [Review + create](#)

Figure 7. The Basics tab of Create a resource group, with resource group MX650V3 in the East US region

To assign the appropriate permissions to the resource group, see this URL:

<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-arc-register-server-permissions>

Register the server with Azure Arc

Register the server with Azure Arc, using either of the following methods:

- Register Azure Local with Azure Arc without using Arc gateway (with or without proxy):
<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-without-azure-arc-gateway>
- Register Azure Local with Azure Arc using Arc gateway (with or without proxy):
<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-with-azure-arc-gateway>

In this example we followed the guidance in the first method, “Register Azure Local with Azure Arc without using Arc gateway”, without a proxy. The following cmdlets are valid for Azure Local 2606 at the time of publication. Subsequent Azure Local versions and their registration process are subject to change.

```
$Tenant = ""
$Subscription = ""
$RG = "MX650V3"
$Region = "eastus"
$TargetSolutionVersion = "12.2606.1003.205"

Invoke-AzStackHciArcInitialization -TenantId $Tenant -SubscriptionID $Subscription -ResourceGroup
$RG -Region $Region -Cloud "AzureCloud" -TargetSolutionVersion $TargetSolutionVersion
```

or

```
$params = @{
    TenantId          = $Tenant
    SubscriptionID    = $Subscription
```

```

ResourceGroup      = $RG
Region             = $Region
Cloud              = "AzureCloud"
TargetSolutionVersion = $TargetSolutionVersion
}

# Optional: include only when using token-based authentication

if ($ArmAccessToken) {
    $params.ArmAccessToken = $ArmAccessToken
}

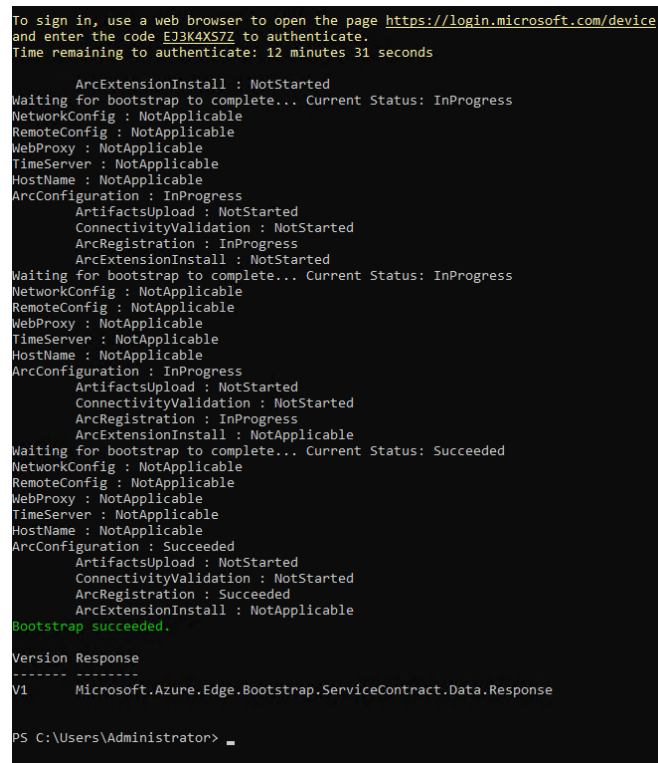
Invoke-AzStackHciArcInitialization @params

```

Replace the parameters with values that are appropriate for your environment and for the Azure Local solution version that you are targeting. If you set `$TargetSolutionVersion = ""`, the deployment uses the latest version available.

You are prompted to authenticate with your Azure account. Follow the instructions to complete the authentication process.

The output of a successful onboarding is shown in the figure below.



```

To sign in, use a web browser to open the page https://login.microsoft.com/device
and enter the code E33K4XS7Z to authenticate.
Time remaining to authenticate: 12 minutes 31 seconds

ArcExtensionInstall : NotStarted
Waiting for bootstrap to complete... Current Status: InProgress
NetworkConfig : NotApplicable
RemoteConfig : NotApplicable
WebProxy : NotApplicable
TimeServer : NotApplicable
HostName : NotApplicable
ArcConfiguration : InProgress
  ArtifactsUpload : NotStarted
  ConnectivityValidation : NotStarted
  ArcRegistration : InProgress
  ArcExtensionInstall : NotStarted
Waiting for bootstrap to complete... Current Status: InProgress
NetworkConfig : NotApplicable
RemoteConfig : NotApplicable
WebProxy : NotApplicable
TimeServer : NotApplicable
HostName : NotApplicable
ArcConfiguration : InProgress
  ArtifactsUpload : NotStarted
  ConnectivityValidation : NotStarted
  ArcRegistration : InProgress
  ArcExtensionInstall : NotApplicable
Waiting for bootstrap to complete... Current Status: Succeeded
NetworkConfig : NotApplicable
RemoteConfig : NotApplicable
WebProxy : NotApplicable
TimeServer : NotApplicable
HostName : NotApplicable
ArcConfiguration : Succeeded
  ArtifactsUpload : NotStarted
  ConnectivityValidation : NotStarted
  ArcRegistration : Succeeded
  ArcExtensionInstall : NotApplicable
Bootstrap succeeded.

Version Response
-----
V1      Microsoft.Azure.Edge.Bootstrap.ServiceContract.Data.Response

PS C:\Users\Administrator>

```

Figure 8. Output of `Invoke-AzStackHciArcInitialization` showing that the Arc bootstrap succeeded. The registered machine then appears in the resource group, as shown in the figure below.

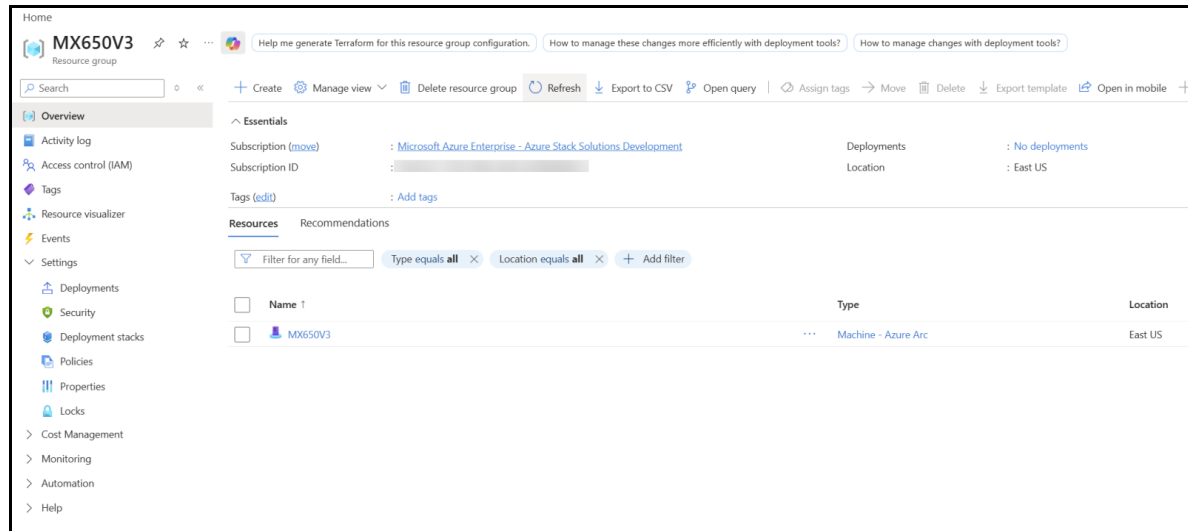


Figure 9. The MX650V3 resource group, showing the registered server as an Azure Arc machine resource

Stage the SBE package

This deployment uses an SBE package, because the target environment is a ThinkAgile MX650 V3 single-node instance. Download the latest available SBE package and copy it to a new folder, C:\SBE.

```
PS C:\SBE> ls

Directory: C:\SBE

Mode                LastWriteTime         Length Name
----                -
-a----          7/15/2026  12:11 AM           68587 SBE_Discovery_Lenovo.xml
-a----          7/15/2026  12:11 AM          1841971 SBE_Lenovo_ThinkAgileMX_5.0.2607.1002.xml
-a----          7/15/2026  12:19 AM          5335115028 SBE_Lenovo_ThinkAgileMX_5.0.2607.1002.zip
```

Figure 10. Contents of the C:\SBE folder after downloading the ThinkAgile MX SBE package

Deploy from the Azure portal

Azure Local can be deployed directly from the Azure portal through a guided workflow that validates the selected servers, collects networking and identity settings, and automates cluster configuration and Azure resource creation. The deployment wizard walks you through each required step, helping ensure that the environment meets the prerequisites before deployment begins.

1. Go to **Azure Arc – Azure Local** and click **Create instance**:

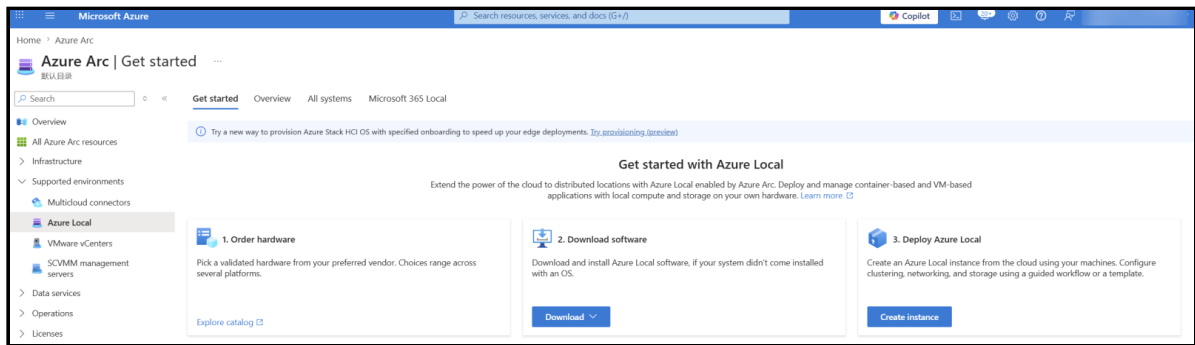


Figure 11. The Azure Arc | Get started page for Azure Local; click **Create instance** to begin the deployment

2. Fill in the required information. Add the server by clicking **Add machines**, select it, and then click **Add**:

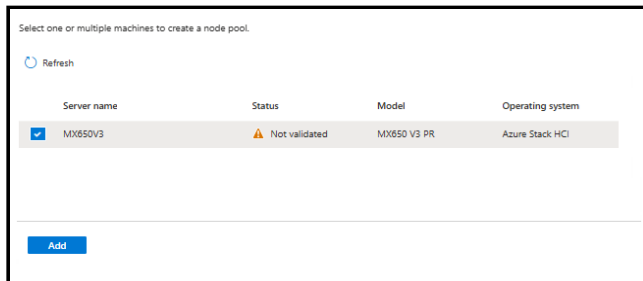


Figure 12. The Add machines pane, with the MX650V3 machine selected for the deployment

3. Azure installs the required extensions at this point. When the installation finishes successfully, the status changes to **Ready**. Validate the selected machine, and then either **Create a new Key Vault** or **Select an existing Key Vault**.

Microsoft Azure

Home

Deploy Azure Local

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource group *

Instance details

You'll use the instance name later to manage this Azure Local instance as a whole instead of managing the underlying machines. Create an empty key vault to securely store secrets for this system, such as cryptographic keys, local admin credentials and BitLocker recovery keys. [Learn more](#)

Instance name *

Region *

Cluster options * ☒ Standard ☐ Rack aware

Storage options * ☒ Storage Spaces Direct (S2D) ☐ Storage Area Network (SAN)

Identity provider

Identity provider for cluster * ☒ Active Directory ☐ Local identity with Azure Key Vault

Select the machines to use and validate

Selecting more than one machine creates a multi-node instance. [How do I add a machine?](#)

+ Add machines Refresh Retry installation

Name	Status	Operating system	Model
MX650V3	Ready	Azure Stack HCI	MX650 V3 PR

Validate selected machines ☒

Key vault * ☒ Create a new Key Vault
This creates a new Key Vault for this system.

☐ Select an existing Key Vault
This allows sharing a Key Vault in the same resource group with multiple instances. [Learn more about the security implications when sharing Key Vaults.](#)

Key vault name *
[Create a new key vault](#)

Figure 13. The Basics page of Deploy Azure Local: instance name, region, storage and identity options, the validated machine, and the key vault

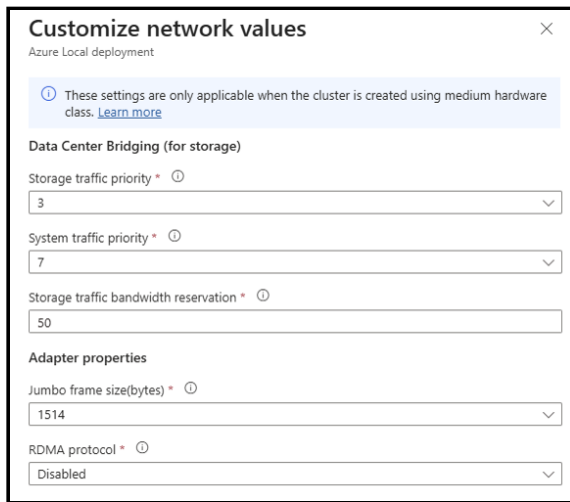
- When all fields are complete, click **Next: Configuration**.

Figure 14. The Configuration page, with New configuration selected as the deployment settings source

- On the **Configuration** page, select the source for the deployment settings. This document uses **New configuration**. After the deployment finishes, you can save a template of it to use in the future. After you select the source, click **Next: Networking**.
- Because this is a single-node instance, group **Management** and **Compute** traffic in the same network intent and do not create a **Storage** traffic intent. A single-node deployment doesn't require a dedicated storage network because there is no inter-node storage traffic.

Figure 15. The Networking page, with the "Group management and compute (no storage)" pattern selected and the Compute_Management intent defined

- Click **Customize network settings** and set **RDMA protocol** to **Disabled**:



Customize network values ✕

Azure Local deployment

ⓘ These settings are only applicable when the cluster is created using medium hardware class. [Learn more](#)

Data Center Bridging (for storage)

Storage traffic priority * ⓘ
3

System traffic priority * ⓘ
7

Storage traffic bandwidth reservation * ⓘ
50

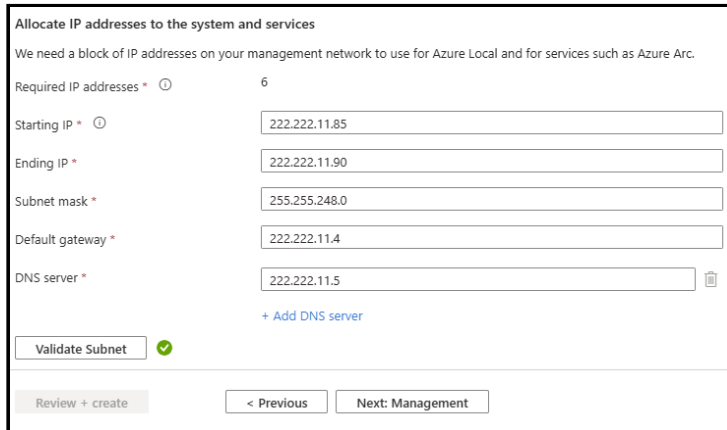
Adapter properties

Jumbo frame size(bytes) * ⓘ
1514

RDMA protocol * ⓘ
Disabled

Figure 16. The Customize network values pane, with the RDMA protocol set to Disabled

- Enter the details in the **Allocate IP addresses to the system and services** section of the page.



Allocate IP addresses to the system and services

We need a block of IP addresses on your management network to use for Azure Local and for services such as Azure Arc.

Required IP addresses * ⓘ 6

Starting IP * ⓘ 222.222.11.85

Ending IP * 222.222.11.90

Subnet mask * 255.255.248.0

Default gateway * 222.222.11.4

DNS server * 222.222.11.5 ⓘ

+ Add DNS server

Validate Subnet ✓

Review + create < Previous Next: Management

Figure 17. The Allocate IP addresses to the system and services section of the Networking page

- When all fields are complete, click **Next: Management**.

10. On the **Management** page, enter the required custom location, Active Directory domain, OU, and credential details, and then click **Next: Security**. A single-node instance uses no witness.

The screenshot shows the 'Deploy Azure Local' page in the Microsoft Azure portal, specifically the 'Management' tab. The page is titled 'Deploy Azure Local' and has a breadcrumb trail 'Home > Azure Arc | Get started'. The 'Management' tab is selected, with other tabs like 'Basics', 'Configuration', 'Networking', 'Security', 'Advanced', 'Tags', 'Validation', and 'Review + create' visible. The page contains several sections for configuration:

- Specify a custom location name:** A text input field labeled 'Custom location name *' with the value 'ThinkAgileMX' entered.
- Specify system witness settings:** A section with a description: 'The system witness is a small file (less than a kilobyte) that helps determine which machine is most up to date if there's contention.' Below it, a 'Witness type' dropdown is set to 'No witness'.
- Specify Active Directory details:** A section with a description: 'Let us know how your Active Directory Services domain was prepared for deployment.' It includes a 'Domain *' field with 'contoso11.local' and an 'OU *' field with 'OU=MX650V3,DC=contoso11,DC=local'.
- Deployment account:** A section with fields for 'Username *' (labeled 'lcmuser'), 'Password *', and 'Confirm password *', all masked with dots.
- Local administrator:** A section with fields for 'Username *' (labeled 'Administrator'), 'Password *', and 'Confirm password *', all masked with dots.

Figure 18. The Management page: custom location, witness setting, Active Directory details, and the deployment and local administrator accounts

11. On the **Security** page, leave **Security level** set to **Recommended security settings** unless you have a specific reason to change it. Click **Next: Advanced** to continue.

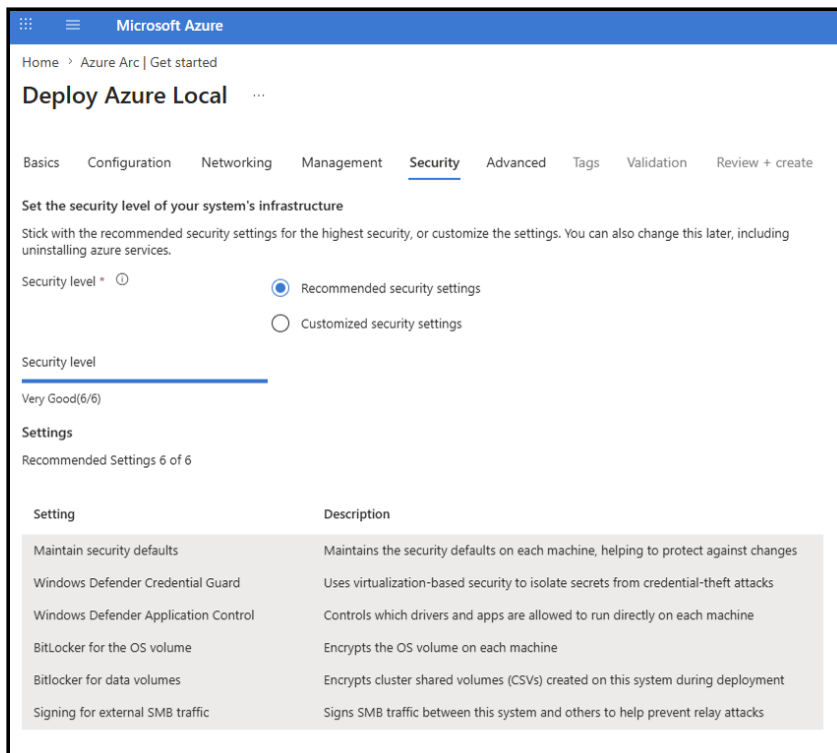


Figure 19. The Security page, with Recommended security settings selected (6 of 6 settings applied)

12. On the **Advanced** page, use the recommended option, which creates one workload volume and storage path per machine, together with the required infrastructure volume.

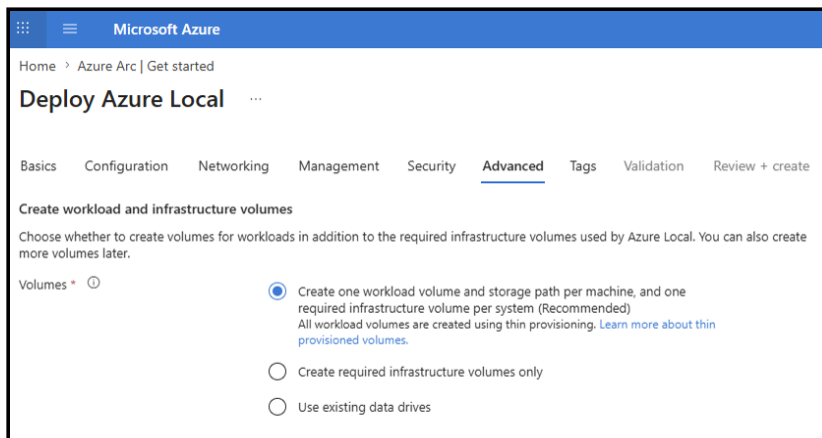


Figure 20. The Advanced page, with the recommended workload and infrastructure volume option selected

13. On the **Tags** page you can add tags to help organize the environment and make searching for specific instances more efficient. Tags can also separate billing across different resources or resource groups. Tags are optional. Click **Next: Validation** to continue.

The screenshot shows the Microsoft Azure portal interface for the 'Deploy Azure Local' wizard. The 'Tags' tab is selected, showing a table for adding tags. The table has three columns: 'Name', 'Value', and 'Resource'. A single tag is added with 'Platform' as the name, 'ThinkAgile MX' as the value, and 'Azure Local' as the resource. The 'Next: Validation' button is visible at the bottom right.

Name	Value	Resource
Platform	ThinkAgile MX	Azure Local

Figure 21. The Tags page, with a Platform = ThinkAgile MX tag applied to the Azure Local resource

14. On the **Validation** page, click **Start validation**, wait for validation to complete, and then click **Next: Review + create** to continue.

Microsoft Azure

Home

Deploy Azure Local

Basics Configuration Networking Management Security Advanced Tags **Validation** Review

Resource Creation

Following Azure Local instance resource object and its components are created prior validation.

Step	Type	Status
System resource	Resource	✓ Succeeded
System permissions	Permission	✓ Succeeded
Key Vault Audit Logging	Resource	✓ Succeeded
Key vault secrets	Secrets	✓ Succeeded
Key vault permissions	Permission	✓ Succeeded

Validation progress

We're creating an Azure resource for this system and validating your system's readiness to deploy. This takes around 15 minutes for systems with one or two machines, longer for bigger systems.

Start validation

Task	Description	Status
Deployment settings resource	Resource	✓ Success
Azure Stack HCI Remote Management	Check Remote Management requirements	✓ Success (View details)
Azure Stack HCI Connectivity	Check external connectivity requirements	✓ Success (View details)
Azure Stack HCI External Active Directory	Check external active directory preparation	✓ Success (View details)
Azure Stack SBE Health	Check SBE health requirements	✓ Success (View details)
Azure Stack HCI Hardware	Check hardware requirements	✓ Success (View details)
Azure Stack HCI Network Configuration	Check network requirements	✓ Success (View details)
Azure Local Network Infra Connection	Check network infra connection requirements.	✓ Success (View details)
Azure Local Network Storage Connection	Check network storage connection requirements.	✓ Success (View details)
Azure Stack HCI Observability	Check Log Collection and Remote Support requirements	✓ Success (View details)
Azure Stack HCI Software	Check Operating System requirements	✓ Success (View details)
Azure Stack HCI MOC Stack	Check Moc Stack requirements	✓ Success (View details)
Azure Stack HCI Arc Integration	Evaluate interface	✓ Success (View details)

Review + create < Previous Next: Review + create

Figure 22. The Validation page, showing resource creation and the validation tasks completed successfully

15. Deployment begins immediately. You can check the status of the deployment by clicking **Refresh**. When the **Status** column shows **Success**, deployment of the instance is complete.

Name	Description	Status	Start Time	End Time
Deploy Azure Stack HCI	Deploy the Azure Stack HCI system.	Success	7/2/2026, 4:38 PM	7/2/2026, 6:23 PM
Check and resolve requirements	Check and resolve deployment requireme...	Success	7/2/2026, 4:38 PM	7/2/2026, 4:38 PM
Validate environment	Validate the environment using the input ...	Unknown	7/2/2026, 4:38 PM	7/2/2026, 4:38 PM
Resolve requirement	Resolve deployment requirements.	Success	7/2/2026, 4:38 PM	7/2/2026, 5:00 PM
Install OpenSSH Client	Install OpenSSH Client.	Success	7/2/2026, 5:00 PM	7/2/2026, 5:00 PM
Clean up after update	Clean up after the OS update.	Success	7/2/2026, 5:00 PM	7/2/2026, 5:03 PM
Evaluate proxy configuration	Check if proxy is enabled on the cluster.	Success	7/2/2026, 5:03 PM	7/2/2026, 5:03 PM
Configure required proxy bypass	Configure required proxy bypass list	Success	7/2/2026, 5:03 PM	7/2/2026, 5:03 PM
Adjust the number of infrastru	Scale the number of infrastructure VMs b...	Success	7/2/2026, 5:03 PM	7/2/2026, 5:03 PM
Configure DNS if identity provide	Install DNS Server on each node if identit...	Success	7/2/2026, 5:03 PM	7/2/2026, 5:03 PM
Set up certificates	Set up certificates for authenticated com...	Success	7/2/2026, 5:03 PM	7/2/2026, 5:04 PM
Reload certificate	Reload the update orchestrator extension...	Success	7/2/2026, 5:04 PM	7/2/2026, 5:04 PM
Full AgentLifecycleManager Depl	Installs AgentLifecycleManager and Boots...	Success	7/2/2026, 5:04 PM	7/2/2026, 5:07 PM
Validate network settings for serv	Validate network settings for servers.	Success	7/2/2026, 5:07 PM	7/2/2026, 5:08 PM
Configure settings on servers	Configure settings on servers.	Success	7/2/2026, 5:08 PM	7/2/2026, 5:11 PM
Set Azure cloud for AzureLocal	Set up Azure cloud and CLI for AzureLocal.	Success	7/2/2026, 5:11 PM	7/2/2026, 5:11 PM
Create the cluster	Create the failover cluster from the server...	Success	7/2/2026, 5:11 PM	7/2/2026, 5:13 PM
Configure networking	Configure the host networking settings.	Success	7/2/2026, 5:13 PM	7/2/2026, 5:17 PM

Figure 23. The Deployments blade for the MX650V3CLS instance, showing each deployment step completing successfully.

The deployed instance is shown in the figure below.

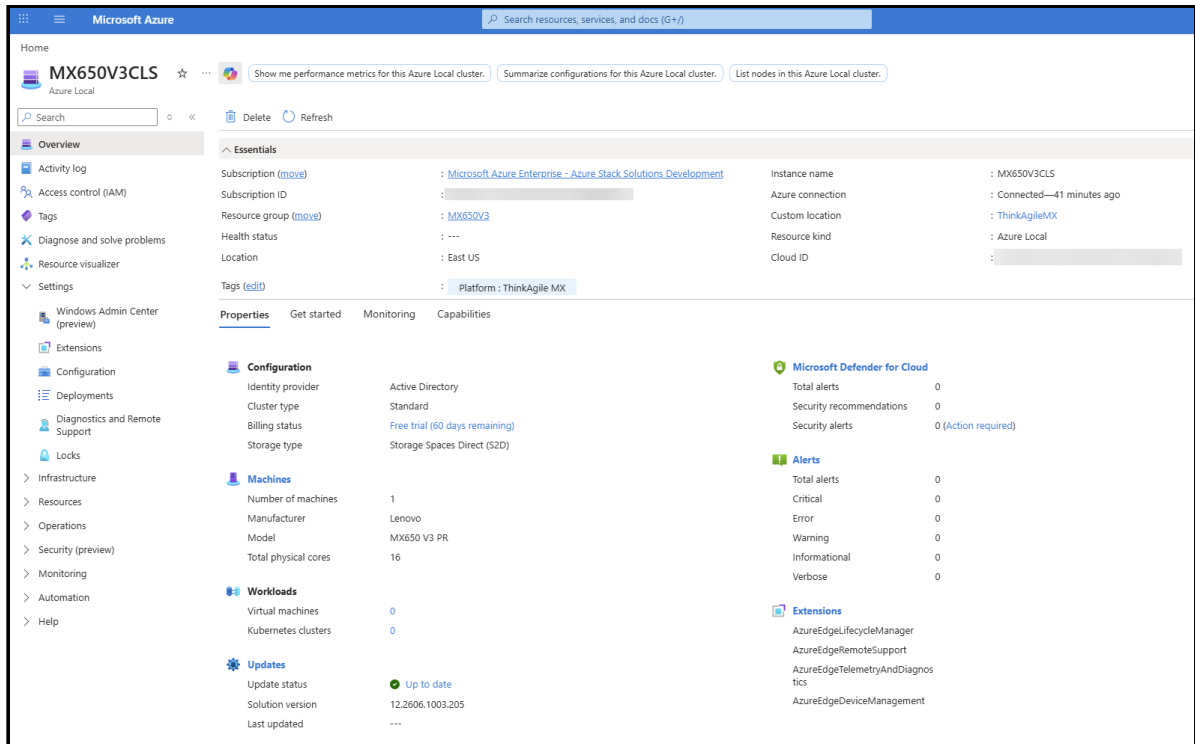


Figure 24. Overview of the deployed MX650V3CLS Azure Local instance, showing a single Lenovo MX650 V3 PR machine

You can save a template of this deployment for future use by clicking the **click here** link near the top of the page. For future deployments, select the template on the **Configuration** page instead of the **New configuration** option.

Deploy from an Azure Resource Manager template

For automated or repeatable deployments, Azure Local can be deployed using an Azure Resource Manager (ARM) template and a corresponding parameters file.

1. After registering the machine in the resource group – using the steps in the Register with Azure Arc section – retrieve from your subscription the information that the ARM template deployment requires. At the time of writing, the prerequisite was to obtain the object ID for the Azure Local Resource Provider:

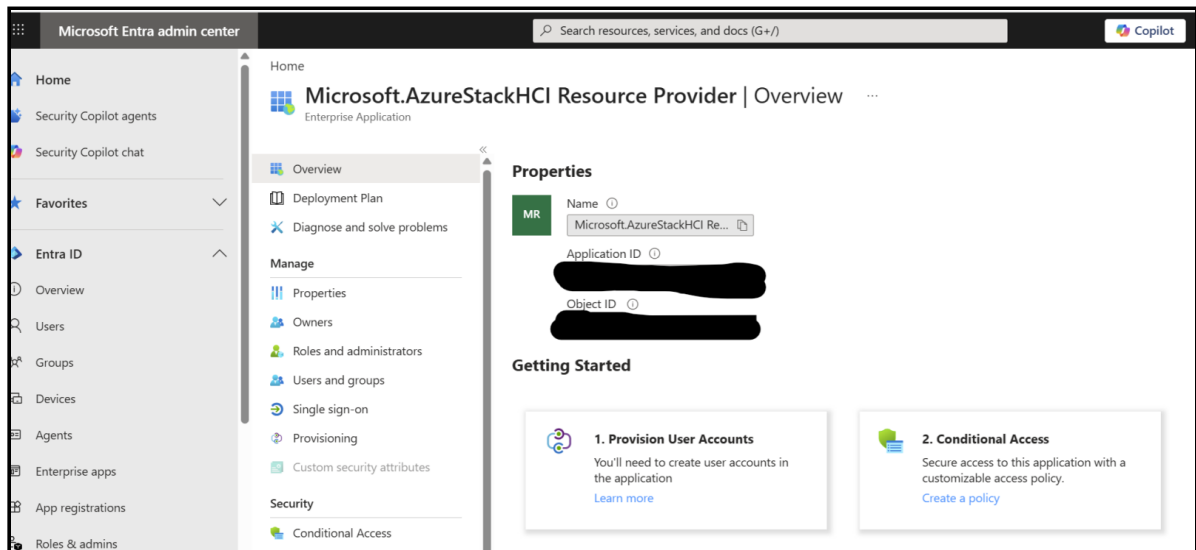


Figure 25. The Microsoft.AzureStackHCI Resource Provider enterprise application in Microsoft Entra ID, where the object ID is found

See the following URL for the prerequisites:

<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-azure-resource-manager-template>

2. In the Azure portal, click **Create a resource**:

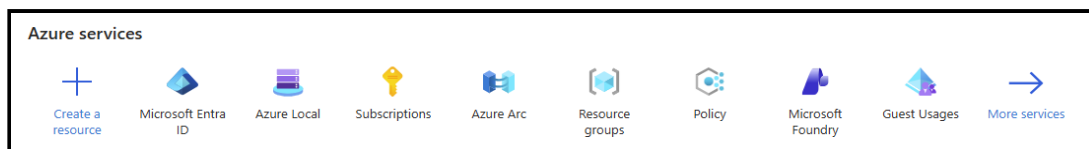


Figure 26. Azure services shortcuts on the Azure portal home page, including Create a resource

3. Search the Marketplace for **Template deployment (deploy using custom templates)** and click **Create**:

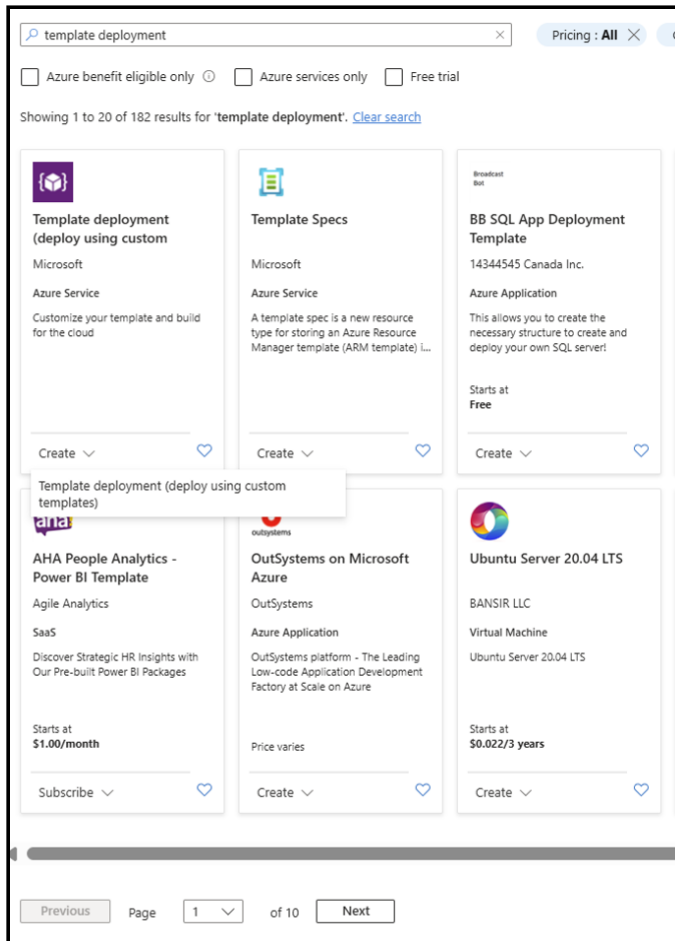


Figure 27. Marketplace search results for "template deployment", showing the Template deployment (deploy using custom templates) tile

4. In the **Custom deployment** window, under **Select a template**, set **Template source** to **Quickstart template**.

5. Select `quickstarts/microsoft.azurestackhci/create-cluster` from the drop-down menu and then click **Select template**:

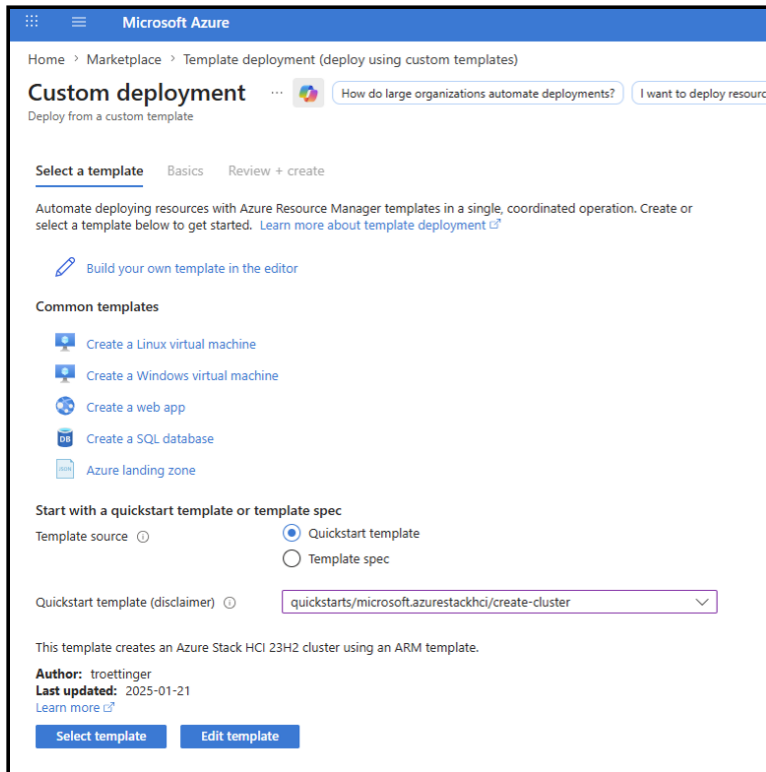


Figure 28. The Select a template tab, with the `quickstarts/microsoft.azurestackhci/create-cluster` quickstart template selected

6. Fill in the required parameters, as shown in the next three figures. A cloud witness can be configured during a single-node deployment. Although it does not provide workload availability if the only machine fails, it prepares the Azure Local instance for quorum requirements if a second machine is added later.

The screenshot shows the 'Custom deployment' form in the Azure portal. The form is titled 'Custom deployment' and has a subtitle 'Deploy from a custom template'. It includes a link to 'New! Deployment Stacks' and a button to 'I want to deploy resources using Bicep'. The form is divided into sections: 'Subscription', 'Resource group', 'Instance details', and 'Cluster details'. The 'Subscription' section shows 'Microsoft Azure Enterprise - Azure Stack Solutions Development'. The 'Resource group' section shows 'MX650V3'. The 'Instance details' section includes 'Region' (US East US), 'Deployment Mode' (Validate), 'Key Vault Name' (testkey32456), 'Create New Key Vault' (true), 'Soft Delete Retention Days' (30), 'Diagnostic Storage Account Name' (mx650v3armsa18), 'Logs Retention In Days' (30), 'Storage Account Type' (Standard_LRS), 'Cluster Name' (MX650V3CLA), 'Location' (eastus), 'Tenant Id' (redacted), 'Witness Type' (Cloud), 'Cluster Witness Storage Account Name' (witness1232412), 'Local Admin User Name' (Administrator), 'Local Admin Password' (redacted), 'Azure Stack LCM Admin Username' (lcmuser1), 'Azure Stack LCM Admin Password' (redacted), and 'Hdi Resource Provider Object ID' (redacted). The 'Cluster details' section is partially visible at the bottom. At the bottom of the form are buttons for 'Previous', 'Next', and 'Review + create'.

Home > CustomDeployment-20260722094908 | Overview

Custom deployment

Deploy from a custom template

New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →

Subscription * ⓘ Microsoft Azure Enterprise - Azure Stack Solutions Development

Resource group * ⓘ MX650V3
[Create new](#)

Instance details

Region * ⓘ (US) East US ✓

Deployment Mode ⓘ Validate ✓

Key Vault Name * ⓘ testkey32456 ✓

Create New Key Vault ⓘ true ✓

Soft Delete Retention Days 30 ✓

Diagnostic Storage Account Name * ⓘ mx650v3armsa18 ✓

Logs Retention In Days ⓘ 30 ✓

Storage Account Type ⓘ Standard_LRS ✓

Cluster Name * ⓘ MX650V3CLA ✓

Location eastus ✓

Tenant Id [redacted] ✓

Witness Type ⓘ Cloud ✓

Cluster Witness Storage Account Name ⓘ witness1232412 ✓

Local Admin User Name * ⓘ Administrator ✓

Local Admin Password * ⓘ [redacted] ✓

Azure Stack LCM Admin Username * ⓘ lcmuser1 ✓

Azure Stack LCM Admin Password * ⓘ [redacted] ✓

Hdi Resource Provider Object ID * ⓘ [redacted] ✓

[Previous](#) [Next](#) [Review + create](#)

Figure 29. Custom deployment parameters, part 1: subscription, resource group, deployment mode, key vault, diagnostic storage, and administrator accounts

Arc Node Resource Ids ⓘ	[]	✓
Domain Fqdn ⓘ	contoso11.local	✓
Naming Prefix ⓘ	hci	✓
Adou Path ⓘ	OU=MX650V3ARM,DC=contoso11,DC=local	✓
Security Level ⓘ	Recommended	✓
Drift Control Enforced ⓘ	true	✓
Credential Guard Enforced ⓘ	true	✓
Smb Signing Enforced ⓘ	true	✓
Smb Cluster Encryption ⓘ	false	✓
Bitlocker Boot Volume ⓘ	true	✓
Bitlocker Data Volumes ⓘ	true	✓
Wdac Enforced ⓘ	true	✓
Streaming Data Client ⓘ	true	✓
Eu Location ⓘ	false	✓
Episodic Data Upload ⓘ	true	✓
Configuration Mode ⓘ	Express	✓
Subnet Mask ⓘ	255.255.248.0	✓
Default Gateway ⓘ	222.222.11.4	✓
Starting IP Address ⓘ	222.222.11.53	✓
Ending IP Address ⓘ	222.222.11.58	✓
Dns Servers ⓘ	[]	✓
Use Dhcp ⓘ	false	✓
Physical Nodes Settings ⓘ	<input name":"mx650v3","ipv4address":"222.222.11.31"}]"="" type="text" value="[{"/>	✓
Networking Type ⓘ	singleServerDeployment	✓
Networking Pattern ⓘ	convergedManagementCompute	✓
Intent List ⓘ	[]	✓
Storage Metadata List ⓘ	[]	✓

Figure 30. Custom deployment parameters, part 2: Active Directory details, security settings, IP configuration, and the single-server networking type and pattern

Intent List ⓘ	
Storage Network List ⓘ	
Storage Connectivity Switchless ⓘ	false
Enable Storage Auto Ip * ⓘ	true
Custom Location ⓘ	mx ✓
Sbe Version ⓘ	5.0.2607.1002 ✓
Sbe Family ⓘ	ThinkAgileMX ✓
Sbe Publisher ⓘ	Lenovo ✓
Sbe Manifest Source ⓘ	C:\SBE ✓
Sbe Manifest Creation Date ⓘ	2026-07-08T16:25:03Z ✓
Partner Properties ⓘ	
Partner Credentiallist ⓘ	

Figure 31. Custom deployment parameters, part 3: storage settings, custom location, and SBE package details

7. Click **Edit parameters** so that you can customize your template.

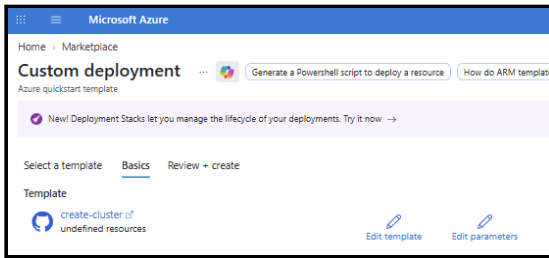


Figure 32. The Basics tab of the custom deployment, with the Edit template and Edit parameters links

In this example we set the RDMA traffic (networkDirect) to **Disabled** for the Management_Compute network intent, as shown in the figure below.

```
"networkingType": {
  "value": "switchedMultiServerDeployment"
},
"networkingPattern": {
  "value": "convergedManagementCompute"
},
"intentList": {
  "value": [
    {
      "name": "Management_Compute",
      "trafficType": [
        "Management",
        "Compute"
      ],
      "adapter": [
        "Management1",
        "Management2"
      ],
      "overrideVirtualSwitchConfiguration": false,
      "virtualSwitchConfigurationOverrides": {
        "enableIov": "",
        "loadBalancingAlgorithm": ""
      },
      "overrideAdapterProperty": true,
      "adapterPropertyOverrides": {
        "jumboPacket": "1514",
        "networkDirect": "Disabled",
        "networkDirectTechnology": ""
      }
    }
  ]
},
"storageNetworkList": {
  "value": []
},
"storageConnectivitySwitchless": {
  "value": null
},
"enableStorageAutoIp": {
  "value": null
}
```

Figure 33. The Edit Parameters view, with networkDirect set to Disabled for the Management_Compute intent. Also, the value of enableStorageAutoIP was set to null.

8. When all parameters are complete, click **Next**. Azure runs a quick check of the template. When the check finishes, click **Create**:

Microsoft Azure

Home > Create a resource > Marketplace

Custom deployment

Azure quickstart template

I want to deploy resources using Bicep | Where can I find sample ARM templates

Select a template | Basics | **Review + create**

Summary

create-cluster
undefined resources

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Basics

Subscription	Microsoft Azure Enterprise - Azure Stack Solutions Development
Resource group	MX650V3
Region	East US
Deployment Mode	Validate
Key Vault Name	testkey32456
Create New Key Vault	true
Soft Delete Retention Days	30
Diagnostic Storage Account Name	mx650v3armsa18
Logs Retention In Days	30
Storage Account Type	Standard_LRS
Cluster Name	MX650V3CL
Location	[resourceGroup().location]
Tenant Id	[subscription().tenantid]
Witness Type	Cloud
Cluster Witness Storage Account Name	witness1232412
Local Admin User Name	Administrator
Local Admin Password	*****
Azure Stack LCM Admin Username	lcmuser
Azure Stack LCM Admin Password	*****
Hci Resource Provider Object ID	
Arc Node Resource Ids	[]

[Previous](#) [Next](#) **Create**

Figure 34. The Review + create tab, with Deployment Mode set to Validate

Validation now begins, because **Deployment Mode** was set to **Validate** in the parameters, as shown in the figure below.

The result, as shown in the figure below, confirms that validation was completed successfully.

Home

CustomDeployment-20260722110719 | Overview

Deployment

Search x « Delete Cancel Redeploy Download Refresh

- Overview
- Inputs
- Outputs
- Template

Your deployment is complete

Deployment name : CustomDeployment-20260722110719
Subscription : Microsoft Azure Enterprise - Azure Stack Solutions Development
Resource group : MX650V3

Start time : 7/22/2026, 11:07:22 AM
Correlation ID :

Deployment details

Resource	Type	Status	Operation details
MX650V3CLA/default	microsoft.azurestackhci/clusters	OK	Operation details
MX650V3CLA	Azure Local	OK	Operation details
default	Microsoft.AzureStackHCI/edgeD	OK	Operation details
testkey32456/Microsoft.Insights/service	Microsoft.KeyVault/vaults/provic	OK	Operation details
testkey32456/MX650V3CLA-AzureStackLCMUserCredential	Microsoft.KeyVault/vaults/secret	OK	Operation details
testkey32456/MX650V3CLA-WitnessStorageKey	Microsoft.KeyVault/vaults/secret	OK	Operation details
testkey32456/MX650V3CLA-LocalAdminCredential	Microsoft.KeyVault/vaults/secret	OK	Operation details
AzureConnectedMachineResourceManager-RoleAssignment	Deployment	OK	Operation details
AzureStackHCICConnectedInfraVMs-RoleAssignment	Deployment	OK	Operation details
testkey32456	Key vault	OK	Operation details
AzureStackHCIDeviceManagementRole-RoleAssignment	Deployment	OK	Operation details
witness1232412	Storage account	OK	Operation details
KeyVaultSecretsUser-RoleAssignment	Deployment	OK	Operation details
NodeNamesValid	Deployment	OK	Operation details
witness1232412	Storage account	OK	Operation details
mx650v3armsa18	Storage account	OK	Operation details

Next steps

[Go to resource group](#)

Figure 35. Confirmation that the validation run completed, listing the resources that were created

9. Click **Download** to save the template for future deployments.

10. Click **Redeploy**, then set **Deployment Mode** to **Deploy** instead of **Validate**, as shown in the figure below.

The screenshot shows the 'Custom deployment' page in the Azure portal. The 'Basics' tab is selected, and the 'Deployment Mode' is set to 'Deploy'. The page includes sections for 'Template', 'Project details', and 'Instance details'. The 'Project details' section shows the subscription as 'Microsoft Azure Enterprise - Azure Stack Solutions Development' and the resource group as 'MX650V3'. The 'Instance details' section shows various configuration options, including region, key vault, storage, and cluster name, all of which are filled out and marked with green checkmarks.

Home > CustomDeployment-20260722110719 | Overview

Custom deployment

Deploy from a custom template

New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →

Basics Review + create

Template

Custom template [undefined resources](#)

[Edit template](#) [Edit parameters](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription * ⓘ Microsoft Azure Enterprise - Azure Stack Solutions Development

Resource group * ⓘ MX650V3 [Create new](#)

Instance details

Region * ⓘ (US) East US ✓

Deployment Mode ⓘ Deploy ✓

Key Vault Name * ⓘ testkey32456 ✓

Create New Key Vault ⓘ true ✓

Soft Delete Retention Days 30 ✓

Diagnostic Storage Account Name * ⓘ mx650v3armsa18 ✓

Logs Retention In Days ⓘ 30 ✓

Storage Account Type ⓘ Standard_LRS ✓

Cluster Name * ⓘ MX650V3CLA ✓

Location eastus ✓

Tenant Id [redacted] ✓

Witness Type ⓘ Cloud ✓

Figure 36. The Basics tab with Deployment Mode changed from Validate to Deploy

11. Verify that all required fields are completed correctly. You need to re-enter the following information:
- Resource group
 - Local administrator password
 - Azure Stack LCM administrator username
 - Azure Stack LCM administrator password

12. Follow the same steps that you took for the validation run, as shown in the figure below.

Home > CustomDeployment-20260722110719 | Overview

Custom deployment

Deploy from a custom template

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Basics

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Resource group	MX650V3
Region	East US
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Create New Key Vault	true
Soft Delete Retention Days	30
Diagnostic Storage Account Name	mx650v3armsa18
Logs Retention In Days	30
Storage Account Type	Standard_LRS
Cluster Name	MX650V3CLA
Location	eastus
Tenant Id	
Witness Type	Cloud
Cluster Witness Storage Account Name	witness1232412
Local Admin User Name	Administrator
Local Admin Password	*****
Azure Stack LCM Admin Username	lcmuser1
Azure Stack LCM Admin Password	*****
Hci Resource Provider Object ID	
Arc Node Resource Ids	["/subscriptions/ /resourceGroups/...
Domain Fqdn	contoso11.local

Previous

Next

Create

Figure 37. The Review + create summary for the Deploy run
Deployment completed successfully, as shown in the figure below.

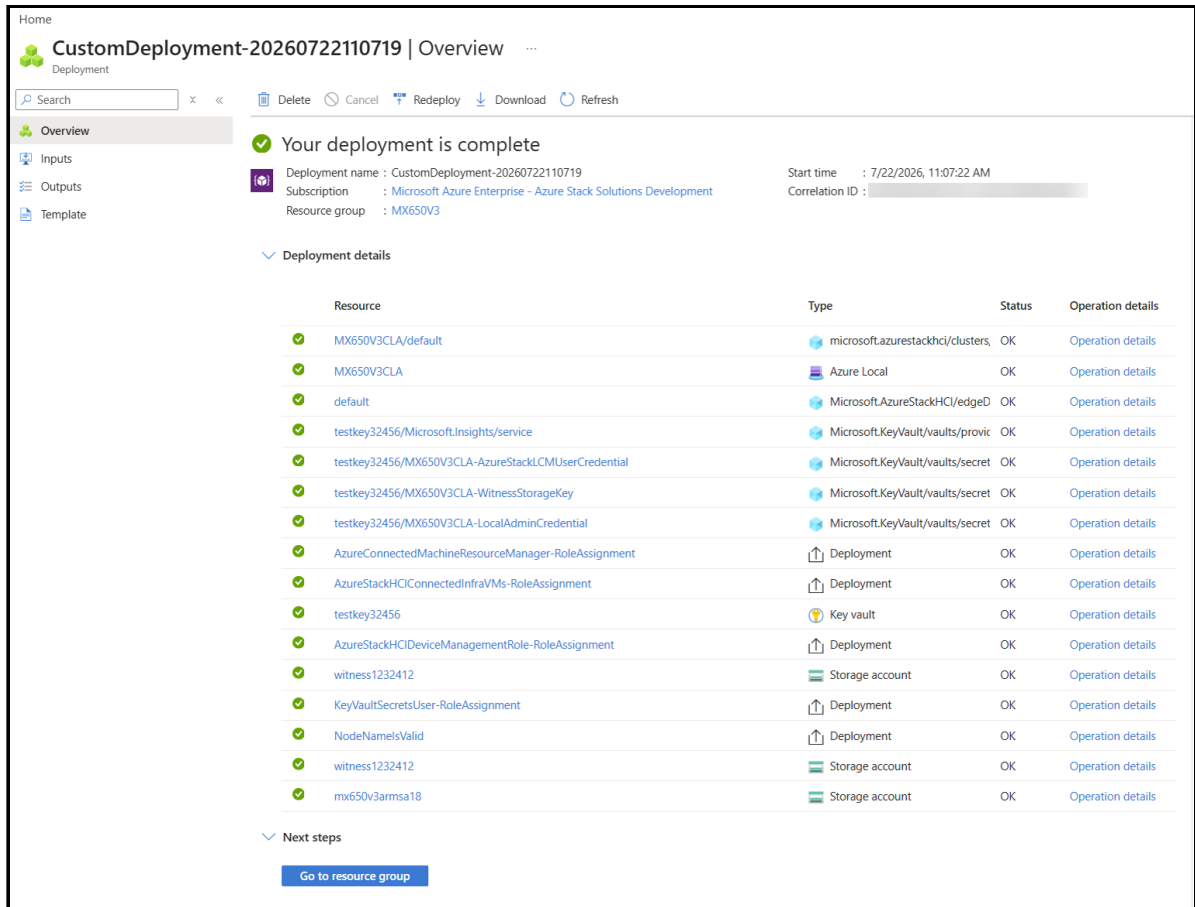


Figure 38. Confirmation that the deployment completed successfully

The figure below shows the registered machine in the resource group as an Azure Arc-enabled machine.

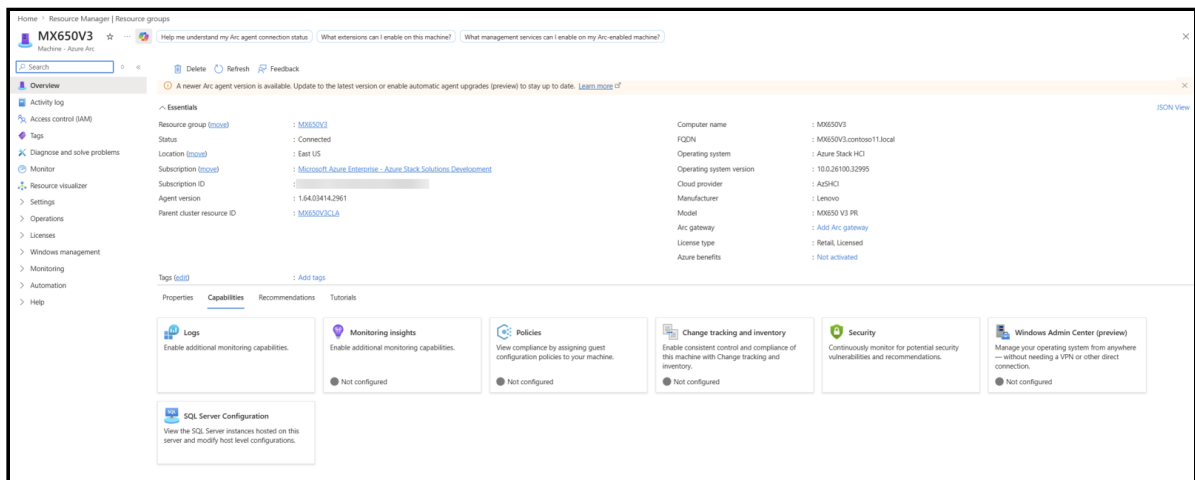


Figure 38. The MX650V3 machine in the resource group, shown as an Azure Arc-enabled machine with its parent instance resource ID

Notes and considerations

Before deploying a single-node instance, analyze the workload carefully. A single-node instance should host only services that can tolerate downtime in the event of a prolonged power failure or a hardware fault, because there is no second machine to fail over to.

Cluster-Aware Updating (CAU) is not available on a single-node instance, because it requires more than one machine to be of any benefit.

Resources

For more information, see these resources:

- Deploy Azure Local on a single server:
<https://learn.microsoft.com/en-us/azure/azure-local/plan/single-server-deployment>
- Azure Local deployment overview:
<https://learn.microsoft.com/en-us/azure/azure-local/deploy/deployment-introduction>
- ThinkAgile MX Best Recipes:
<https://datacentersupport.lenovo.com/us/en/solutions/HT507406>

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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