



# Deploying a Single Node Cluster of Azure Stack HCI on ThinkAgile MX Planning / Implementation

This document describes the deployment process of a single node cluster on Azure Stack HCI. Azure Stack HCI support for single node cluster was recently released by Microsoft in order minimize the hardware costs for locations that don't require a high resiliency. The feature was announced on May 24, 2022, at the Microsoft Build event.

This document provides an overview of the Azure Stack HCI single node cluster support, steps in the deployment process, requirements, and considerations for this deployment type.

For setting up the Azure Stack HCI cluster it is necessary for the node to have access to a windows domain. Once the connection is in place we can already go forward with the installation.

#### Installation

Once the Azure Stack HCI operating system is running the cluster installation can be started.

At this moment the one node cluster can only be created over powershell (it can still be managed from Windows Admin center).

Before creating the cluster, the appropriate features needs to be installed by running the following command:

```
Install-WindowsFeature -Name Hyper-V, Failover-Clustering, FS-Data-
Deduplication, Bitlocker, Data-center-Bridging, RSAT-AD-Powershell,
NetworkATC -IncludeAllSubFeature -IncludeManagementTools -Verbose
```

The output is shown in the following figure.

```
Administrator C:\Windows\system32\cmd.exe

WARNING: To launch Server Configuration tool again, run "SConfig"

PS C:\Users\lpetre> Install-WindowsFeature -Name Hyper-V, Failover-Clustering, FS-Data-D

ose

VERBOSE: Installation started...

VERBOSE: Continue with installation?

VERBOSE: Prerequisite processing started...

VERBOSE: Prerequisite processing succeeded.

Success Restart Needed Exit Code Feature Result

------

True Yes SuccessRest... {BitLocker Drive Encryption, Data Center B...

WARNING: You must restart this server to finish the installation process.

VERBOSE: Installation succeeded.
```

Figure 1. Feature Installation

Once the features are installed the cluster can be created by running the following command:

New-Cluster -Name ClusterName -Node nodename -NoStorage

The output is shown in the following figure.

Figure 2. Cluster Creation

And then Storage Spaces Direct Can be enabled by using typing in the following:

Enable-ClusterS2D -verbose

The output is shown in the following figure.

```
PS C: VUSEPS\lptre> Enable-ClusterS2D -verbose
VERBOSE: 2022/02/28-05:28:16.948 Ensuring that all nodes support S2D
VERBOSE: 2022/02/28-05:28:17.433 Sorted disk types present (fast to slow): NVMe. Number of types present: 1
VERBOSE: 2022/02/28-05:28:17.433 Checking that nodes support the desired cache state
VERBOSE: 2022/02/28-05:28:17.448 Checking that all disks support the desired cache state
VERBOSE: 2022/02/28-05:28:17.448 Checking that all disks support the desired cache state
VERBOSE: 2022/02/28-05:28:17.448 Checking that all disks support the desired cache state
Confirm
Are you sure you want to perform this action?
Performing operation 'Enable Cluster Storage Spaces Direct' on Target 'OneNodeCluster'.
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend [?] Help (default is "Y"): y
VERBOSE: 2022/02/28-05:28:27.77 Creating health resource
VERBOSE: 2022/02/28-05:28:27.77 Setting cluster property
VERBOSE: 2022/02/28-05:28:27.77 Setting default fault domin awareness on clustered storage subsystem
VERBOSE: 2022/02/28-05:28:27.86 Waiting until physical disks are claimed
VERBOSE: 2022/02/28-05:28:30.904 Number of claimed disks on node 'SE350n2': 0/8
VERBOSE: 2022/02/28-05:28:49.049 SBL disks initialized in cache on node 'SE350n2': 8/8
VERBOSE: 2022/02/28-05:28:49.049 SBL disks initialized in cache on node 'SE350n2': 8 (8 on all nodes)
VERBOSE: 2022/02/28-05:28:49.049 SBL disks initialized in cache on node 'SE350n2': 8 (8 on all nodes)
VERBOSE: 2022/02/28-05:28:53.112 Disks surfaced on node 'SE350n2': 8/8
VERBOSE: 2022/02/28-05:28:53.112 Disks surfaced on node 'SE350n2': 8/8
VERBOSE: 2022/02/28-05:28:69.049 SBL disks in clustered storage subsystem
VERBOSE: 2022/02/28-05:28:06.018 Muting until SBL disks are reported by clustered storage subsystem
VERBOSE: 2022/02/28-05:28:06.018 Waiting until SBL disks are reported by clustered storage subsystem
VERBOSE: 2022/02/28-05:29:06.018 Physical disks in clustered storage subsystem: 8
VERBOSE: 2022/02/28-05:29:08.048 Node SE3507: No disks found to be used for cach
```



# **Cluster Management**

After the cluster was created it can be managed like any other cluster, by using Windows Admin Center, Failover Cluster Manager or with PowerShell commands.

Windows Admin Center   Clu	ister Manager	~					Microsoft
onenodecluster.ms	en.local						
Tools	<	Servers					
Search Tools	Q	Summary	Inventory				
1 Dashboard		🕤 Restart	() Shutdown	🕂 Add 🗔 Manag	ge 🖁 Pause	🎼 Resume 🛛 Ren	nove 🗸 Validate cluster (Previe
Compute		□ Name ↑		Status		Uptime	Manufacturer
📮 Virtual machines		SE350n2		🕑 Up		0 hours, 10 minutes	Lenovo
Servers							
Azure Kubernetes Service							
Storage							
Drives							
Storage Replica							
Networking							
📰 Virtual switches							
Tools Tools							
👦 Updates							
Diagnostics							
👬 Performance Monitor							
💎 Security							

Figure 4. WAC management

### Notes and considerations

Before deploying a one node cluster special analysis must be done so that it will be deployed for services that can tolerate downtime in case of a prolonged power failure or physical issues that might occur.

Cluster aware updates is one of the services that is not available on a one node cluster as it requires more than one node to in the cluster to be beneficial.

For an updated list of limitations please access the following link: https://docs.microsoft.com/en-us/azure-stack/hci/concepts/single-server-clusters#known-issues

#### Resources

For more information, see these pages:

- Announcing Azure Stack HCI support for single-node clusters https://techcommunity.microsoft.com/t5/azure-stack-blog/announcing-azure-stack-hci-support-forsingle-node-clusters/ba-p/3408431
- Azure Stack HCI documentation: Deploy Azure Stack HCI on a single server https://docs.microsoft.com/en-us/azure-stack/hci/deploy/single-server

### **Related product families**

Product families related to this document are the following:

• ThinkAgile MX Series for Microsoft Azure Local

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