

The Lenovo logo is displayed in white text on a black rectangular background.

Using Azure Backup and Azure Site Recovery for Business Continuity on Lenovo ThinkAgile MX Solutions

Last update: 15 June 2021
Version 1.0

Presents business continuity options for Lenovo ThinkAgile MX

Describes Azure Backup as a solution for backing up Azure Stack HCI VMs

Describes Azure Site Recovery solution for disaster recovery scenarios

Provides step by step procedure for setting up Azure Backup and Azure Site Recovery

Laurentiu Petre
Vinay Kulkarni



Table of Contents

1	Introduction	1
2	Business problem and business value	2
2.1	Business problem	2
2.2	Business value	2
3	Azure Backup	3
3.1	Azure Backup prerequisites	3
3.2	WAC/Azure registration	3
3.3	Configure Azure Backup	4
3.4	Restoring from backup	8
4	Azure Site Recovery (ASR)	13
4.1	ASR Prerequisites	13
4.2	ASR configuration	13
4.3	Protecting VMs with ASR	15
	Resources	17

1 Introduction

A critical consideration when planning for setting up a hybrid cloud solution on-premises is high availability of applications and workloads. High availability can be accomplished in several ways. Lenovo ThinkAgile MX systems offer high availability by deploying multiple nodes in a cluster. In addition, Azure Backup, and Azure Site Recovery (ASR) are two Microsoft Azure services that will protect the customer's data on Lenovo ThinkAgile MX for Azure Stack HCI in case of planned and unplanned IT disruptions and outages.

This document describes Azure Backup and Azure Site Recovery services from Microsoft Azure and the process for configuring these features. The intended audience is IT professionals, technical architects, sales engineer and consultants to assist in planning, designing and implementing infrastructure projects that can leverage the Azure cloud for backup and high availability

2 Business problem and business value

The following section provides a summary of the business problems that this white paper is intended to help address, and the value that the listed solutions can provide.

2.1 Business problem

As an organization you need to ensure you keep your data safe and your workloads and applications keep running when outages occur; whether they are planned or unplanned. An organization needs to adopt a business continuity and disaster recovery (BCDR) strategy to meet these needs.

2.2 Business value

When you invest in a Lenovo ThinkAgile MX solution for Microsoft Azure Stack HCI to meet your hybrid cloud needs, Azure Backup and Azure Site Recovery are primary options available to implement high availability and disaster recovery for your data, applications and workloads.

Azure Backup is a Microsoft Azure cloud service that is simple to use while offering top of line security and being cost effective at the same time. Azure Backup lets you backup your data, VMs, managed disks, file shares, SQL server databases among other things to the Azure public cloud and recover from it when you lose access to on-premises data.

Azure Backup can be used in place of complicated and expensive on-premises backup solutions. Azure Backup takes advantage of the power and scale of Azure public cloud to deliver peace of mind with no maintenance or monitoring overhead. Azure Backup provides unlimited data transfer with no cost for the transfer. There are costs involved for data storage in Azure.

Azure Site Recovery is Microsoft Azure's built-in disaster recovery as a service (DRaaS). It helps maintain business continuity in case a natural disaster strikes an on-premises environment. Azure Site Recovery offers a cost-effective way to deploy a dependable disaster recovery solution that is easy to deploy. Replication, failover, and recovery processes can be deployed through Site Recovery to help keep your applications running.

3 Azure Backup

3.1 Azure Backup prerequisites

“The Azure Backup service backs up data to the Microsoft Azure cloud. We can back up on-premises machines and workloads, and Azure virtual machines (VMs).”

Source: <https://docs.microsoft.com/en-us/azure/backup/backup-overview>

The Azure Backup Microsoft Azure Recovery Services (MARS) agent will be used on the on-premises Windows machine to back up individual files and system states.

The requirements are:

- Windows Admin Center (WAC)
- Microsoft Azure Subscription (added to WAC)

3.2 WAC/Azure registration

Add the cluster to WAC by clicking on “Add” and then typing in the cluster name. It was added as a failover cluster.

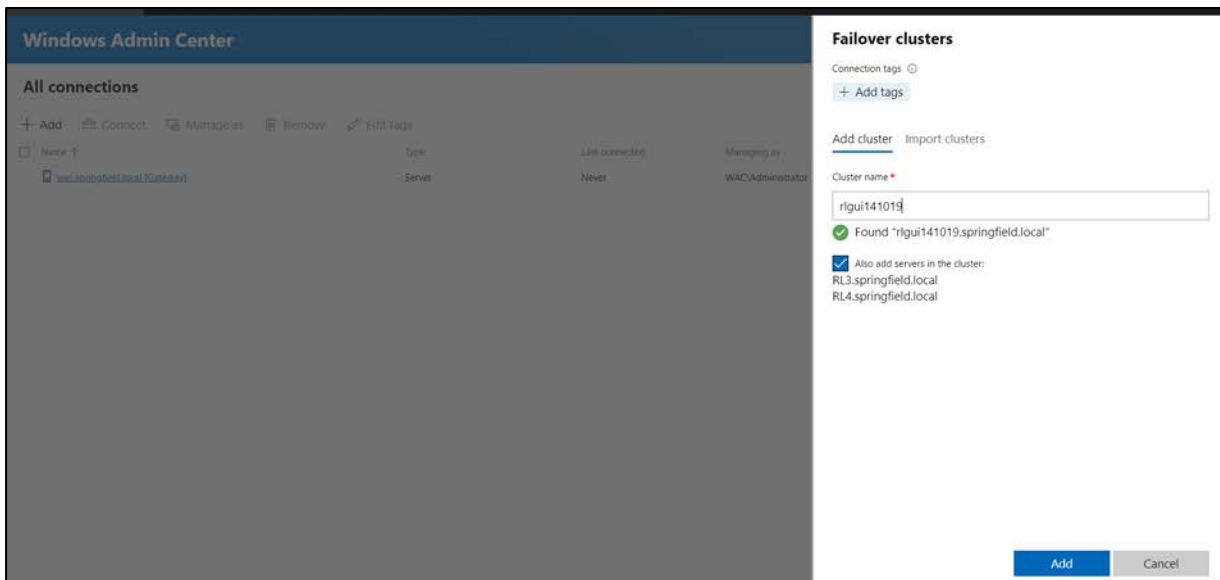


Figure 1: WAC Cluster view

The cluster and the nodes will be displayed in the “All connections” view:

All connections			
+ Add 🔌 Connect 👤 Manage as 🗑️ Remove ✎ Edit tags			
<input type="checkbox"/> Name ↑	Type	Last connected	Managing as
r3.springfield.local	Server	Never	WAC\Administrator
r4.springfield.local	Server	Never	WAC\Administrator
rlgui141019.springfield.local	Failover cluster	Never	WAC\Administrator
wac.springfield.local (Gateway)	Server	Never	WAC\Administrator

Figure 2: WAC Node and Cluster view

A cluster node can now be backed up. Alternately, you can also run a backup job for a stand-alone server. The cluster node used for this test is RL3. In order to backup nodes in Azure, you will first need to have WAC registered with Microsoft Azure. Navigate to “Settings” > “Azure” and check if you are already registered. If not, click on the button captioned “Register” and follow the steps.

Once WAC is registered with Microsoft Azure, you should see registration data like this:

Register with Azure

Registered Azure AD app name
WindowsAdminCenter-https://wac

Azure AD app ID
[REDACTED]

Directory ID
[REDACTED]

[View in Azure](#) ↗

[Unregister](#)

Figure 3: WAC Azure registration

3.3 Configure Azure Backup

Select the server that you want to backup and then choose the “Backup” option. A screen asking you to set up Azure Backup will pop up

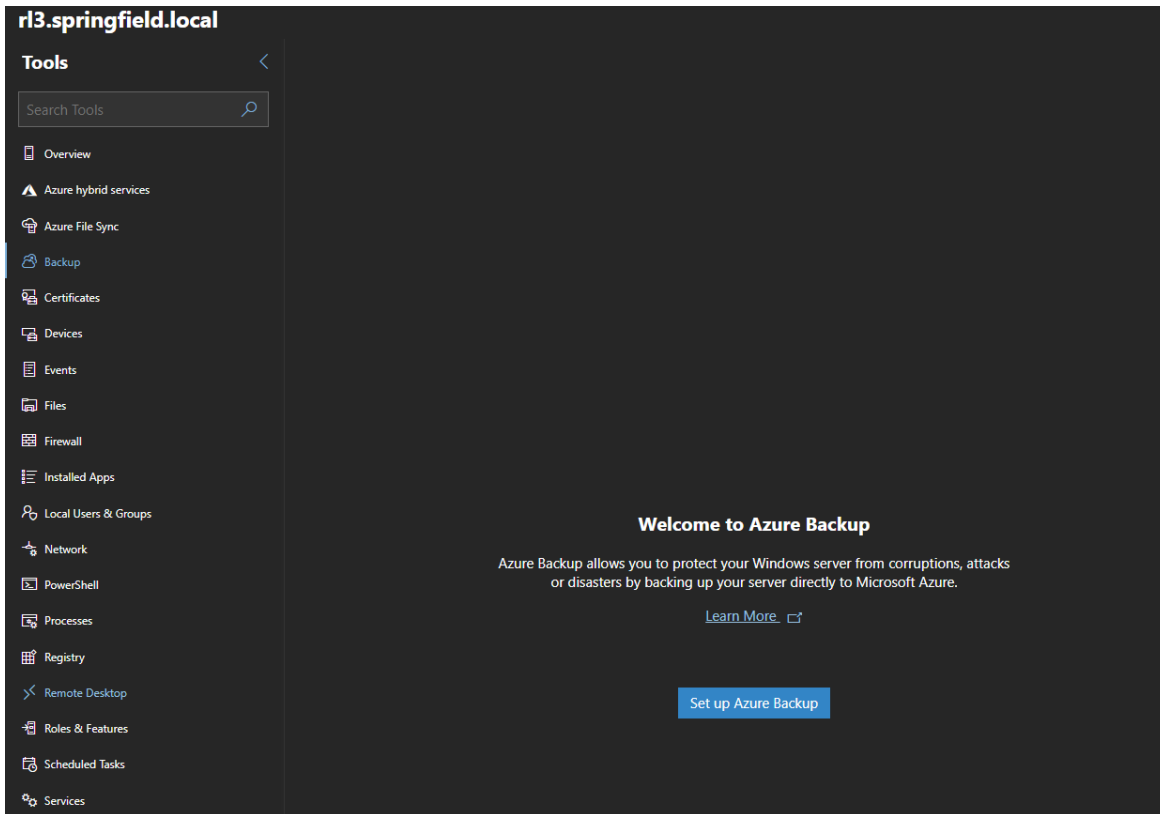


Figure 4: WAC Azure Backup

After selecting “Set up Azure Backup”, follow the steps and wait until the setup is ready. A new window appears, helping with the Azure Backup configuration.

The screenshots below illustrate the configuration for the Azure Backup. This includes choosing the subscription from the drop down menu, creating a new vault automatically (WACVault), as well as a new resource group (WACResourceGroup) and choosing the location (West Europe).

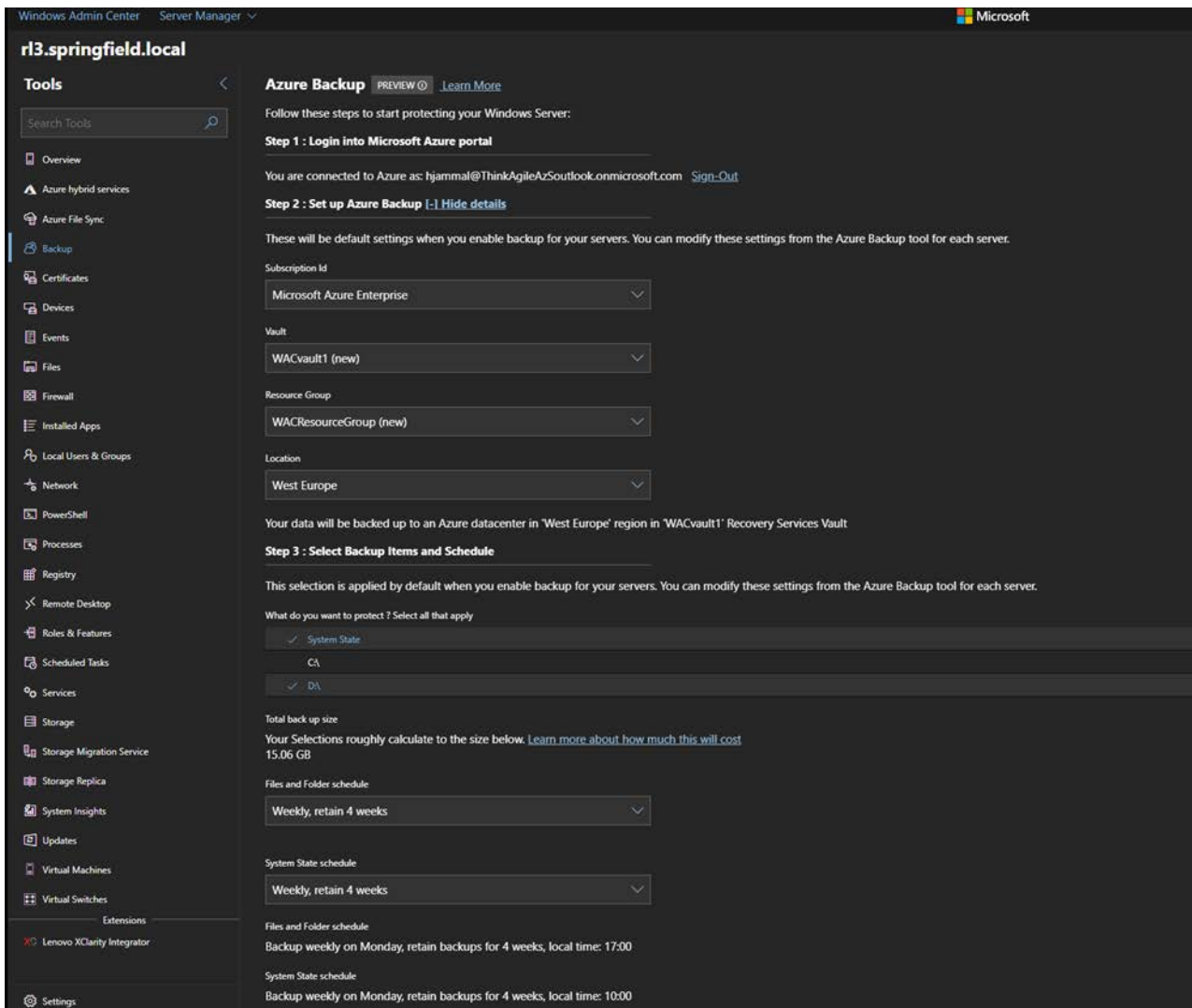


Figure 5: Azure Backup settings

Also, the D:\ volume has been selected to be backed up (“System State” is by default present). The retention time has been left with the default value. This can be changed as well, but we decided to keep it. The backup schedule can be adjusted as needed.

Set up an encryption phrase that will be necessary for the data recovery, then click on “Apply”.

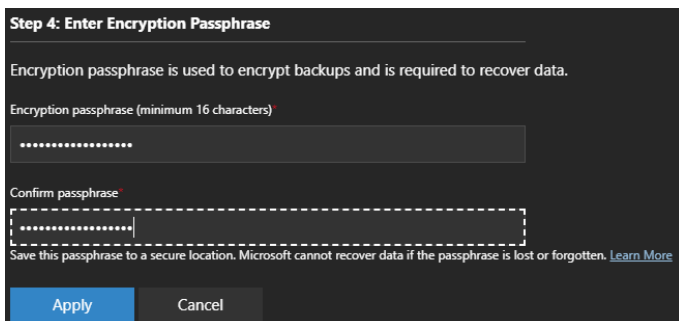


Figure 6: Encryption setup

After a few seconds, once everything is configured, the new resource group is created. The new vault is also created, the recovery services registered to the subscription and the Azure Backup agent is installed on the server. A confirmation like this one here should appear:

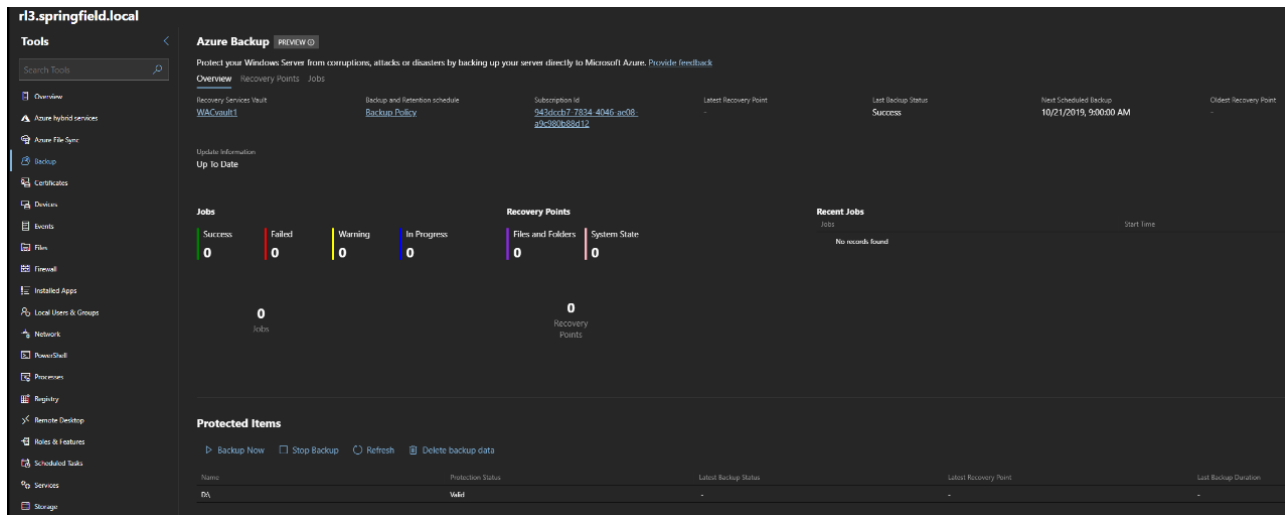


Figure 7: Azure Backup confirmation screen

We will start a backup of the D:\ volume. In order to start a backup immediately, click on “Backup Now”. After clicking on “Backup Now”, the following window will appear:

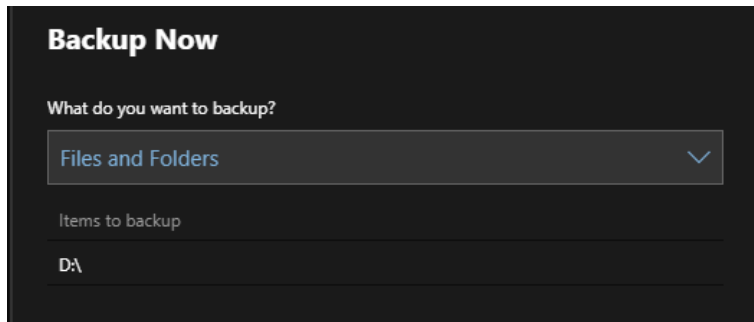


Figure 8: Azure Backup items

After starting the backup, the progress can be checked in “Jobs”:

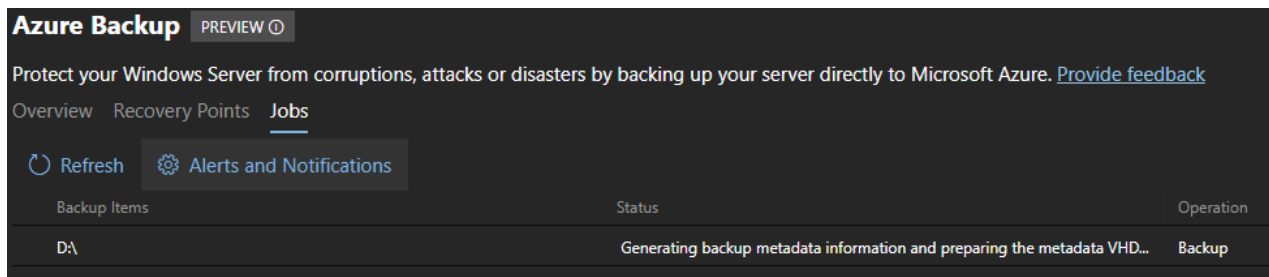


Figure 9: Azure Backup progress

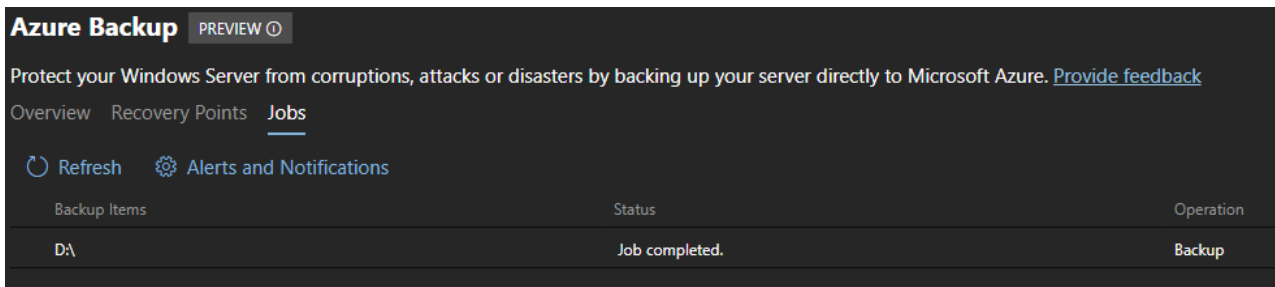


Figure 10: Azure Backup job completed

In Azure we can check the backup is ready:

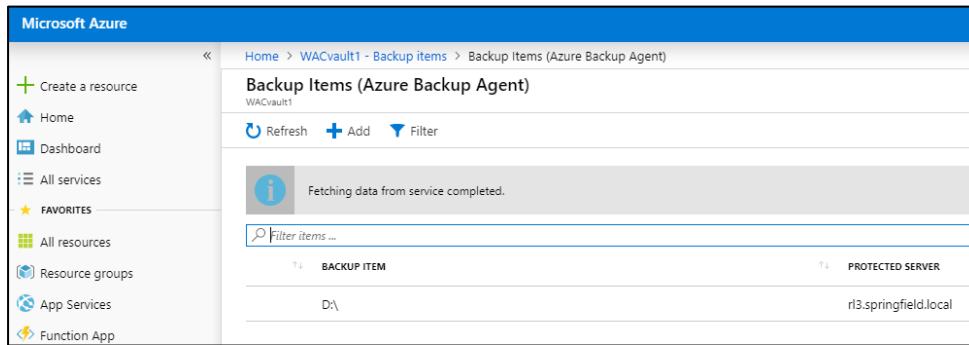


Figure 11: Azure Backup check

3.4 Restoring from backup

In order to restore the backed-up data we will need access to another server that has a GUI (unlike the server that we've backed up). On this server the Microsoft Azure Recovery Services (MARS) agent needs to be installed.

Before starting the MARS agent, we will need the vault credentials in order to access the data from Azure. To download them we just need to go to the vault in Azure->Properties and select the "Download" option:

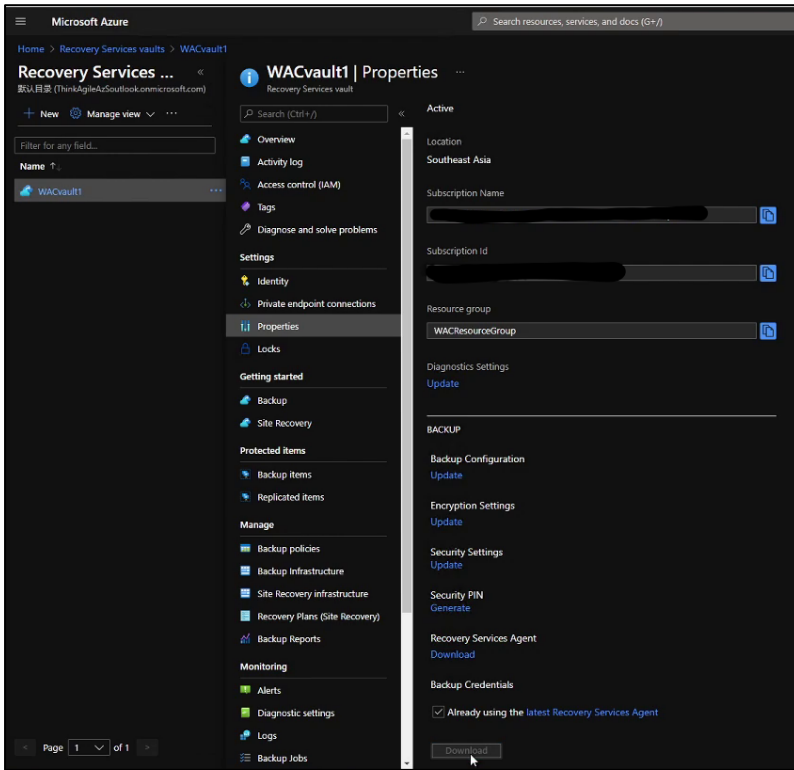


Figure 12 credentials download

From the computer that has the MARS agent installed we will start Microsoft Azure Backup, select “Recover Data” and “Another server”. We will need to select the credentials that we previously saved.

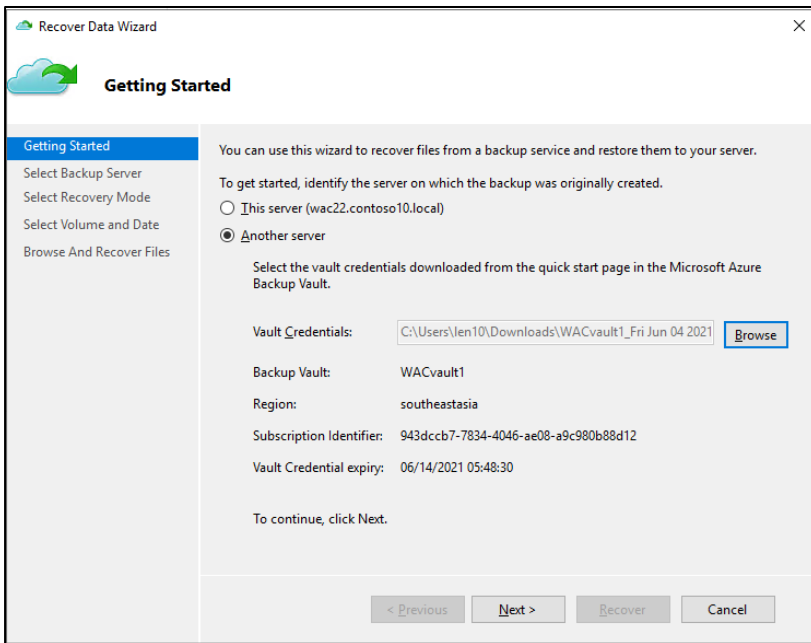


Figure 13: Recover Data Wizard

The passphrase that was used during setup will be required:

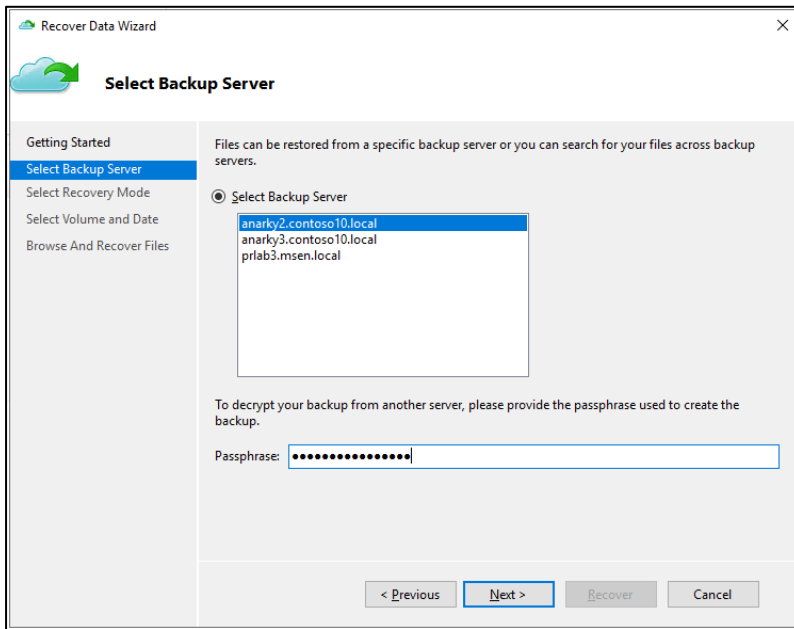


Figure 14: backup server and passphrase

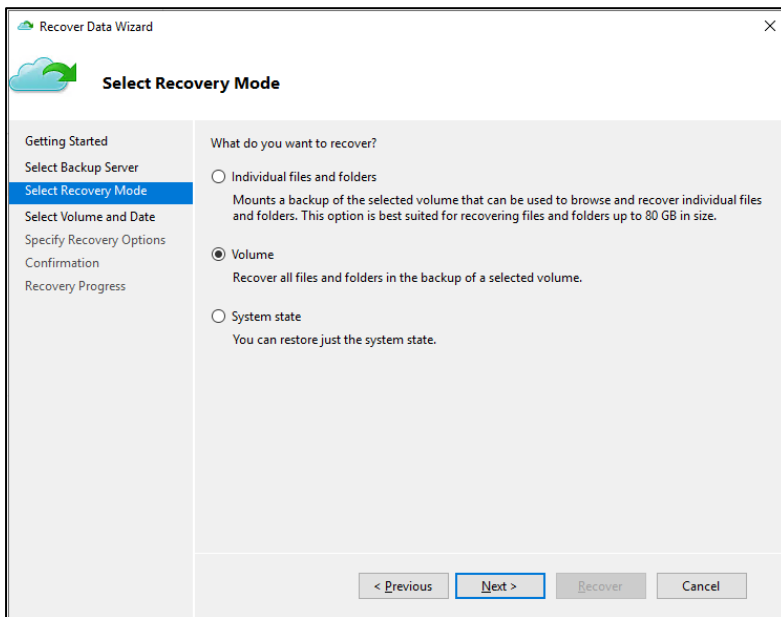


Figure 15: restore options

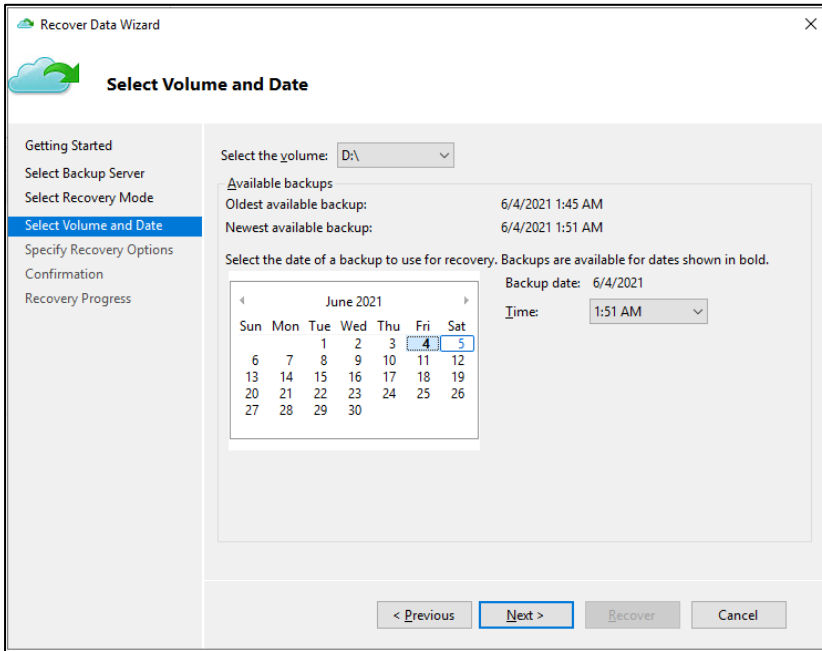


Figure 16: volume and date options

In our case we have chosen to restore the content of the volume on the computer that we were running MARS

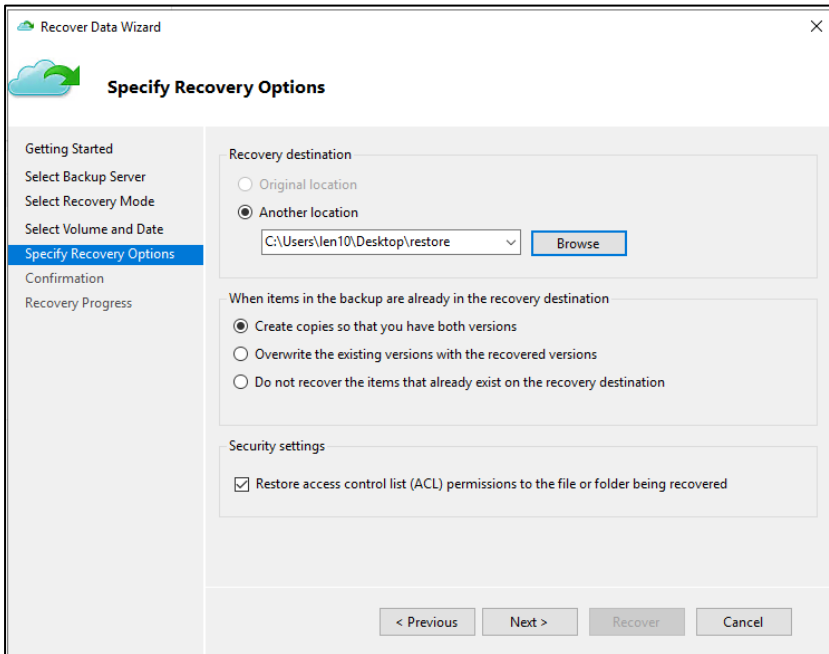


Figure 17: Restore location

The job has completed successfully, and the files can be accessed in the location that was selected for restore:

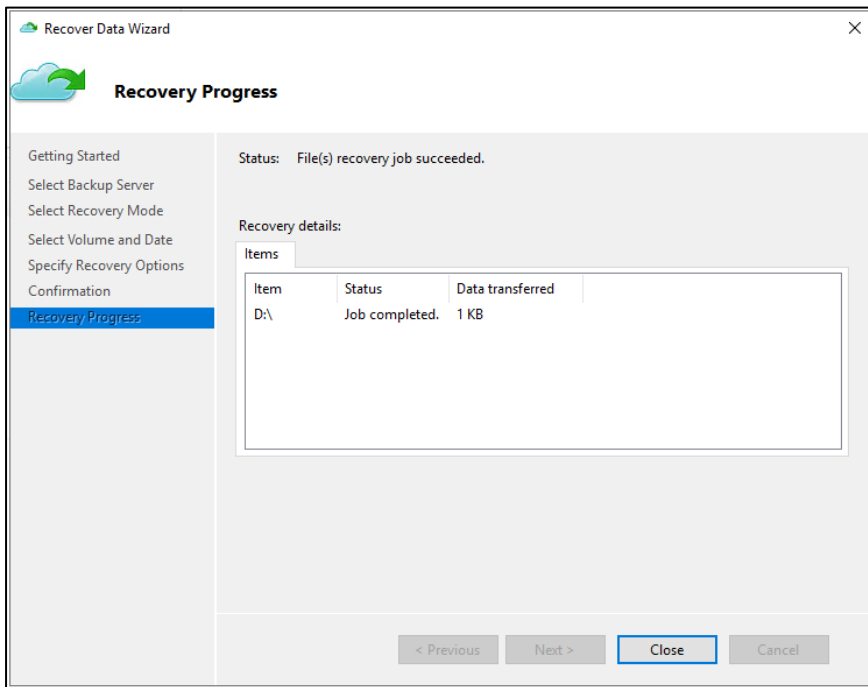


Figure 18: Recovery Progress

4 Azure Site Recovery (ASR)

“Azure Site Recovery replicates workloads running on physical and virtual machines (VMs) from a primary site to a secondary location. When an outage occurs at your primary site, you fail over to secondary location, and access apps from there. After the primary location is running again, you can fail back to it.”

Source: <https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-overview>

“Site Recovery can manage replication for: Azure VMs replicating between Azure regions, on-premises VMs, Azure Stack VMs and physical servers.”

Source: <https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-overview>

The following test case is going to demonstrate the replication of an on-premises VM to Microsoft Azure using Window Admin Center.

4.1 ASR Prerequisites

- A working WAC deployment
- A Microsoft Azure Subscription (added to WAC)

4.2 ASR configuration

Open WAC and choose the VM that you want to protect by clicking on the cluster/server name where the VM is stored. Click on the “Virtual Machines” tab to see all the VMs.

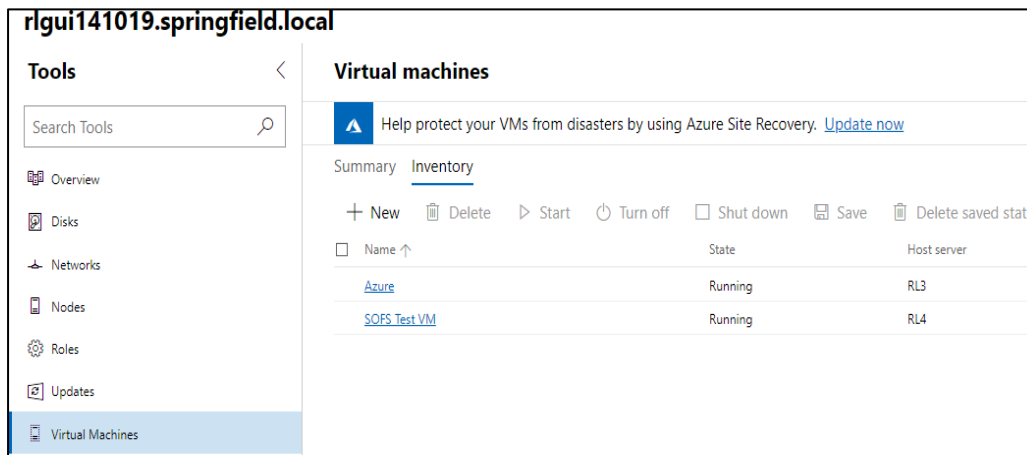


Figure 19: WAC Virtual Machines

Clicking on “Update now” will open a setup window for Azure Site Recovery:

Setting up host with Azure Site Recovery

[What is Azure Site Recovery?](#) ↗

✔ Signed in as:
@ThinkAgileAzSoutlook.onmicrosoft.com

Install the Site Recovery Provider on the target host(s):
r13.springfield.local
r14.springfield.local

Subscription *

Microsoft Azure Enterprise

Resource Group *

Create New
 Use Existing

recovery-rg-lenovo

Recovery Services Vault *

Create New
 Use Existing

recovery-vault-lenovo

Location *

West Europe

ℹ After we notify you that setup is finished (this can take up to 10 minutes), return to Virtual machines and select which VMs you want to protect.

Figure 20: Azure Site Recovery

Check the progress in “Notifications”:

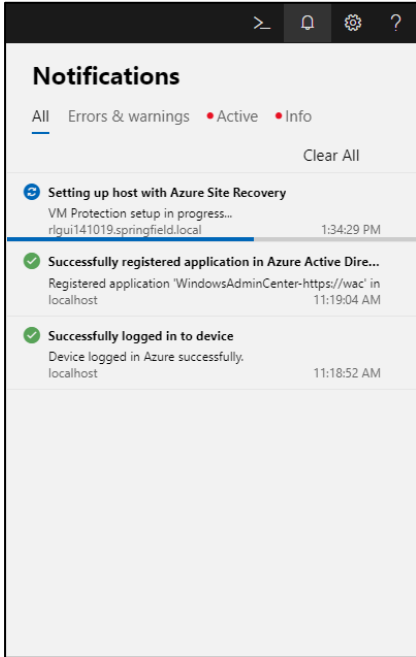


Figure 21: WAC Notifications

4.3 Protecting VMs with ASR

Click on “Protect VM” and complete the set up:

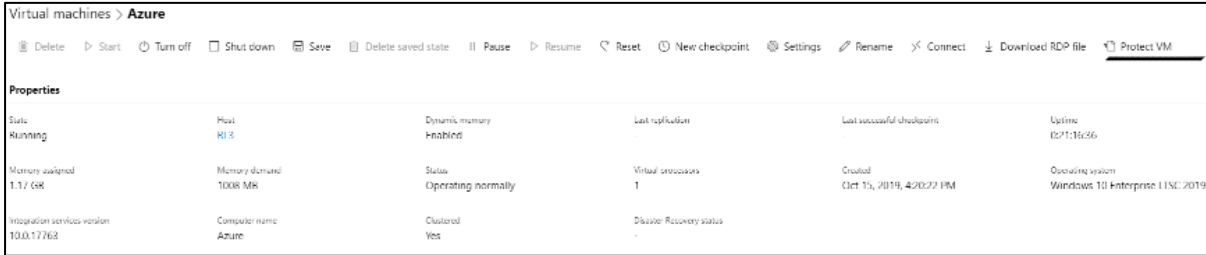


Figure 22: Azure Site Recovery



Figure 23: ASR Settings

We can check the “Disaster Recovery Status” column in WAC:

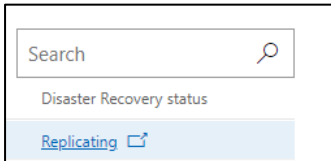


Figure 24: WAC status

The status of the replication can also be checked in Azure:

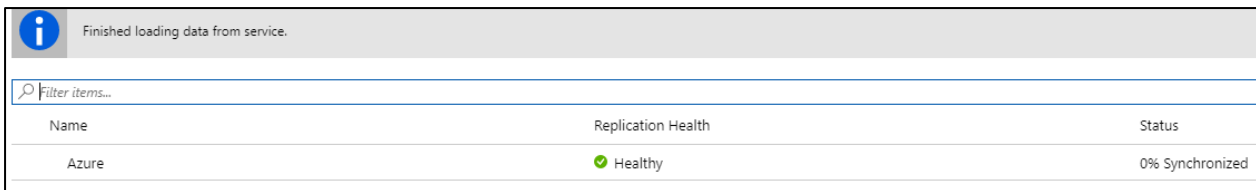



Figure 25: ASR synchronizing

When the replication is finished, the VM will appear as “Protected” in both Azure and WAC:

 Finished loading data from service.

Filter items...



Name	Replication Health	Status
Azure	 Healthy	Protected

Figure 26:ASR VM status

Search 

Disaster Recovery status


[Protected](#) 

Figure 27:WAC VM status

Resources

For more information about the topics that are described in this document, see the following resources:

- Lenovo ThinkAgile MX solution:
<https://www.lenovo.com/us/en/data-center/software-defined-infrastructure/ThinkAgile-MX-Certified-No-de/p/WMD00000377>
- Microsoft Azure Stack HCI:
<https://azure.microsoft.com/en-us/products/azure-stack/hci/>
- Azure Backup
<https://docs.microsoft.com/en-us/azure/backup/backup-overview>
- Azure Site Recovery
<https://docs.microsoft.com/en-us/azure/site-recovery/site-recovery-overview>

Trademarks and special notices

© Copyright Lenovo 2021.

References in this document to Lenovo products or services do not imply that Lenovo intends to make them available in every country.

The following terms are trademarks of Lenovo in the United States, other countries, or both:

Lenovo®
ThinkAgile

The following terms are trademarks of other companies:

Azure®, Microsoft®, and Windows® are trademarks of Microsoft Corporation in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

Information is provided "AS IS" without warranty of any kind.

All customer examples described are presented as illustrations of how those customers have used Lenovo products and the results they may have achieved. Actual environmental costs and performance characteristics may vary by customer.

Information concerning non-Lenovo products was obtained from a supplier of these products, published announcement material, or other publicly available sources and does not constitute an endorsement of such products by Lenovo. Sources for non-Lenovo list prices and performance numbers are taken from publicly available information, including vendor announcements and vendor worldwide homepages. Lenovo has not tested these products and cannot confirm the accuracy of performance, capability, or any other claims related to non-Lenovo products. Questions on the capability of non-Lenovo products should be addressed to the supplier of those products.

All statements regarding Lenovo future direction and intent are subject to change or withdrawal without notice and represent goals and objectives only. Contact your local Lenovo office or Lenovo authorized reseller for the full text of the specific Statement of Direction.

Some information addresses anticipated future capabilities. Such information is not intended as a definitive statement of a commitment to specific levels of performance, function or delivery schedules with respect to any future products. Such commitments are only made in Lenovo product announcements. The information is presented here to communicate Lenovo's current investment and development activities as a good faith effort to help with our customers' future planning.

Performance is based on measurements and projections using standard Lenovo benchmarks in a controlled environment. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

Photographs shown are of engineering prototypes. Changes may be incorporated in production models.

Any references in this information to non-Lenovo websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this Lenovo product and use of those websites is at your own risk.