

Microsoft Azure Project

By Omer Asraf

This project focuses on designing, deploying, and securing a cloud-based storage and networking infrastructure using Microsoft Azure. It simulates a full IT workflow from cloud storage configuration and virtual machine integration to advanced networking and access control scenarios covering real-world use cases that IT administrators and cloud engineers regularly face.

Part 1 of the project: Azure Storage, Access Management, and File Syncing.

Focused on building a secure and redundant Azure Storage solution. I created a RA-GZRS storage account, configured Blob Containers with restricted access, and managed file access using SAS tokens. I tested blob access tiering (hot → cool → cold) and implemented automatic lifecycle management.

Next, I worked with Azure Files to set up a cloud file share, mapped it as a local network drive, and tested uploading, deleting, and restoring files using snapshots. Two Windows VMs were then deployed and configured to sync with the Azure File Share. I verified that file changes on one VM automatically synced to the other and to the cloud simulating real-time collaboration and hybrid storage.

Part 2 of the project: Virtual Networking, Subnet Security, and Access Control.

Focused on Azure Virtual Networking and Security. After testing latency to Azure regions, I selected one and deployed a VNet with two subnets:

The First subnet hosted a VM with no public access.

The second subnet hosted a VM that allowed RDP from the first subnet and HTTP from the internet.

I assigned static IPs, configured NSGs to enforce subnet isolation and allowed secure connections using Azure Bastion. Then, I installed IIS on the second VM to serve a public web page and tested its accessibility. Finally, I deleted the entire Resource Group to ensure complete cleanup of all deployed resources.

By the end of the project, a secure, scalable, and regionally optimized cloud infrastructure is fully deployed and validated. The solution demonstrates enterprise-grade design principles including high availability, security, backup, hybrid integration, and controlled public exposure all aligned with best practices in Azure cloud architecture.

Part 1: Azure Storage, Access Management, and File Syncing

Create a new RA-GZRS storage account

[Home](#) > [Storage accounts](#) >

Create a storage account ...

Basics

Advanced

Networking

Data protection

Encryption

Tags

Review + create

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more about Azure storage accounts](#)

Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription *

Resource group * [Create new](#)

Instance details

Storage account name *

Region * [Deploy to an Azure Extended Zone](#)

Primary service

Performance * ☒ **Standard:** Recommended for most scenarios (general-purpose v2 account)
☐ **Premium:** Recommended for scenarios that require low latency.

Redundancy * ☒ Make read access to data available in the event of regional unavailability.

Previous

Next

Review + create

✓ Your deployment is complete



Deployment name: oaysa_1751903801827

Subscription: [Azure subscription 1](#)

Resource group: oayRG

Deployment details

Next steps

[Go to resource](#)

Create a container and upload several files into the container

The screenshot shows the Azure Storage account 'oaysa_1751903801827' in the 'Overview' tab. The 'Containers' section is highlighted in the left sidebar. The 'Add container' button is highlighted with a green box. The 'New container' dialog is open, showing the container name 'oaycontainer1' and the anonymous access level set to 'Private (no anonymous access)'.

click 'Create'

The screenshot shows the 'oaycontainer1' container page. The 'Upload' button is highlighted with a green box. The 'Upload blob' dialog is open, showing 3 files selected: 'TextDocument2.txt', 'TextDocument1.txt', and 'TextDo...'. The 'Upload' button is highlighted with a green box.

Try to access one of the files by its link from another browser (shouldn't work)

The screenshot shows the 'TextDocument1.txt' blob page. The 'URL' property is highlighted with a green box, and the 'Copy to clipboard' button is also highlighted. The URL is 'https://oaysa.blob.core...'. The 'Properties' section shows details about the blob, including its creation time, version ID, type, size, access tier, and server encryption status.

The screenshot shows a web browser window with the URL 'oaysa.blob.core.windows.net/oaycontainer1/TextDocument1.txt'. The browser displays an error message: 'This XML file does not appear to have any style information associated with it. The document tree is shown below.' The error details are as follows:

```
<?xml version="1.0" encoding="utf-8" standalone="no"?>
<Error>
  <Code>PublicAccessNotPermitted</Code>
  <Message>Public access is not permitted on this storage account. RequestId:795ac073-801e-00bd-795a-ef7b72000000 Time:2025-07-07T16:16:27.4968009Z</Message>
</Error>
```

Create an access key to one of the file blobs and try access again from another browser

TextDocument1.txt ×

Blob

Save Discard Download Refresh Delete

Overview Versions Snapshots Edit **Generate SAS**

A shared access signature (SAS) is a URI that grants restricted access to an Azure Storage blob. Use it when you want to grant access to storage account resources for a specific time range without sharing your storage account key. [Learn more about creating an account SAS](#)

Signing method
☒ Account key ☐ User delegation key

Signing key ⓘ
Key 1

Stored access policy
None

Permissions * ⓘ
Read

Start and expiry date/time ⓘ

Start
07/07/2025 7:22:15 PM
(UTC+03:00) --- Current Time Zone ---

Expiry
07/08/2025 3:22:15 AM
(UTC+03:00) --- Current Time Zone ---

Allowed IP addresses ⓘ
for example, 168.1.5.65 or 168.1.5.65-168.1....

Allowed protocols ⓘ
☒ HTTPS only ☐ HTTPS and HTTP

Generate SAS token and URL

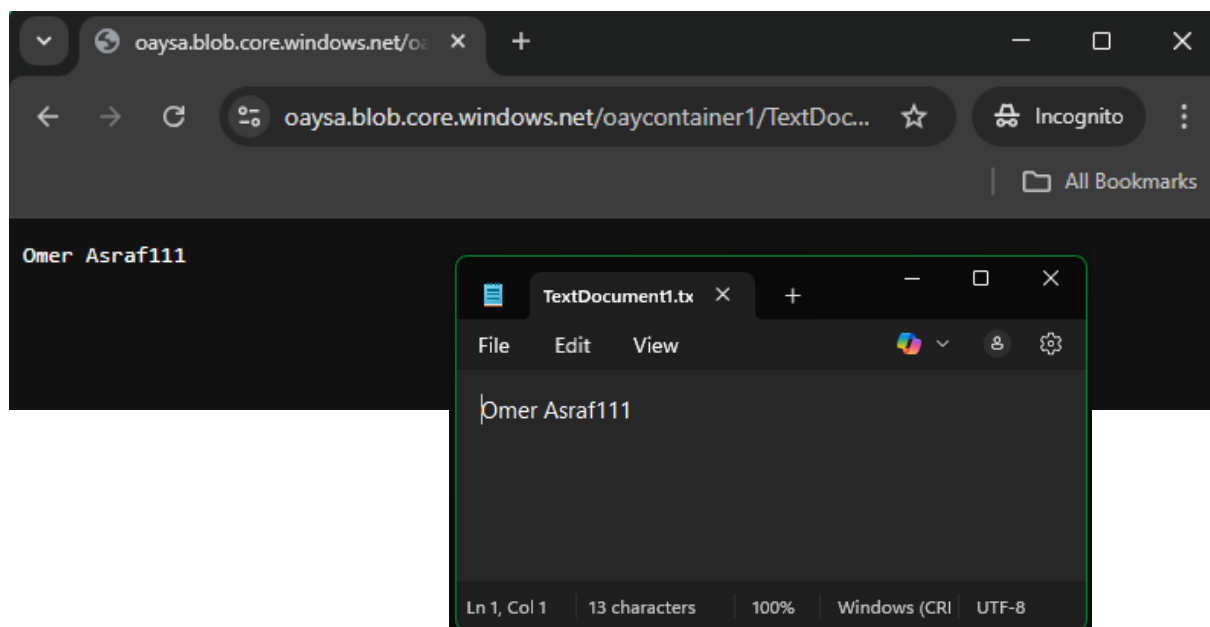
Copy Blob SAS URL to another browser

Generate SAS token and URL

Blob SAS token ⓘ
sp=r&st=2025-07-07T16:22:15Z&se=2025-07-08T00:22:15Z&spr=https&sv=2024-11-04&sr=b&sig=rYltbJHeAxxP%2BNPm%2FPaK9fyTeHAtYp4Mu5yXzc59uM%3D

Blob SAS URL
https://oaysa.blob.core.windows.net/oaycontainer1/TextDocument1.txt?sp=r&st=2025-07-07T16:22:15Z&se=2025-07-08T00:22:15Z&spr=https&sv=2024-11-04&sr=b&sig=rYlt...

The original text document = Blob SAS URL



Change the blob access tier to cold

Before

<input type="checkbox"/>	Name	Last modified	Access tier	Blob type	Size	Lease state
<input checked="" type="checkbox"/>	TextDocument1.txt	7/7/2025, 7:14:43 PM	Hot (Inferred)	Block blob	13 B	Available ...
<input type="checkbox"/>	TextDocument2.txt	7/7/2025, 7:14:51 PM	Hot (Inferred)	Block blob	13 B	Available ...
<input type="checkbox"/>	TextDocument3.txt	7/7/2025, 7:15:03 PM	Hot (Inferred)	Block blob	13 B	Available ...

Change

TextDocument1.txt

Blob

Save

Discard

Download

Refresh

Delete

Change tier

Acquire lease

Break lease

Give feedback

Overview

Versions

Snapshots

Edit

Generate SAS

Properties

URL

https://oaysa.blob.core....

Change tier

TextDocument1.txt

Optimize storage costs by placing your data in the appropriate access tier. Archive is not supported for this storage account configuration. [Learn more](#)

Access tier

Hot (Inferred)

Hot (Inferred)

Cool

Cold

Archive

Click 'Save'.

After

<input type="checkbox"/>	Name	Last modified	Access tier	Blob type	Size	Lease state
<input checked="" type="checkbox"/>	TextDocument1.txt	7/7/2025, 7:14:43 PM	Cold	Block blob	13 B	Available ...
<input type="checkbox"/>	TextDocument2.txt	7/7/2025, 7:14:51 PM	Hot (Inferred)	Block blob	13 B	Available ...
<input type="checkbox"/>	TextDocument3.txt	7/7/2025, 7:15:03 PM	Hot (Inferred)	Block blob	13 B	Available ...

Set automatically tiering (7d from change --> cool --> 14d from change cold)

Home > **oaysa** Storage account

Search

- Storage mover
- Partner solutions
- Resource visualizer
- Data storage
 - Containers
 - File shares
 - Queues
 - Tables
- Security + networking
- Data management**
 - Storage Actions
 - Redundancy
 - Data protection
 - Object replication
 - Blob inventory
 - Static website
 - Lifecycle management**
 - Azure AI Search
- Settings

Upload Open in Explorer Delete Move Refresh Open in mobile CLI / PS Feedback

Essentials

Resource group (move) : oayRG
Location : eastus
Primary/Secondary Location : Primary: East US, Secondary: West US
Subscription (move) : Azure subscription 1
Subscription ID : 48e82b54-5183-45ec-8762-91ac4aaddb4
Disk state : Primary: Available, Secondary: Available
Tags (edit) : Add tags

Properties

Blob service

Hierarchical namespace	Disabled
Default access tier	Hot
Blob anonymous access	Disabled
Blob soft delete	Enabled (7 days)
Container soft delete	Enabled (7 days)
Versioning	Disabled
Change feed	Disabled
NFS v3	Disabled
Allow cross-tenant replication	Disabled

oaysa | Lifecycle management Storage account

Search

- Storage mover
- Partner solutions
- Resource visualizer
- Data storage
 - Containers
 - File shares
 - Queues
 - Tables
- Security + networking

+ Add a rule Enable Disable Refresh Delete Give feedback

Lifecycle management offers a rich, rule-based policy for general purpose v2 and blob storage accounts. [Learn more](#)

List View Code View

Enable access tracking ⓘ ☐

Name	Status
No rules	

Next step:

Add a rule ...

1 Details 2 Base blobs

A rule is made up of one or more conditions and actions that apply to the entire storage account. Optionally, specify that rules will apply to particular blobs by limiting with filters.

Rule name *
oayAutoTieringRule

Rule scope *

☒ Apply rule to all blobs in your storage account

☐ Limit blobs with filters

Blob type *

☒ Block blobs

☐ Append blobs

Blob subtype *

☒ Base blobs

☐ Snapshots

☒ Versions

Previous

Next

If

Base blobs were *

☒ Last modified

☐ Created

More than (days ago) *
7

Then

Move to cool storage

If

Base blobs were *

☒ Last modified

☐ Created

More than (days ago) *
14

Then

Move to cold storage

Previous

Add

Create a backup storage account in another region

Home > Storage accounts >

Create a storage account

BasicsAdvancedNetworkingData protectionEncryptionTagsReview + create

Azure Storage is a Microsoft-managed service providing cloud storage that is highly available, secure, durable, scalable, and redundant. Azure Storage includes Azure Blobs (objects), Azure Data Lake Storage Gen2, Azure Files, Azure Queues, and Azure Tables. The cost of your storage account depends on the usage and the options you choose below. [Learn more about Azure storage accounts](#)

Project details

Select the subscription in which to create the new storage account. Choose a new or existing resource group to organize and manage your storage account together with other resources.

Subscription *

Azure subscription 1

Resource group *

oayRG

Create new

Instance details

Storage account name * ⓘ

backupoaysa

Region * ⓘ

(Middle East) Israel Central

Deploy to an Azure Extended Zone

Primary service ⓘ

Select a primary service

Performance * ⓘ

☒ Standard: Recommended for most scenarios (general-purpose v2 account)

☐ Premium: Recommended for scenarios that require low latency.

Redundancy * ⓘ

Locally-redundant storage (LRS)

Previous

Next

Review + create

Storage accounts

Default Directory (omeriko3@outlook.onmicrosoft.com)

+ Create

↶ Restore

⚙ Manage view

↻ Refresh

📄 Export to CSV

🔍 Open query

🏷 Assign tags

🗑 Delete

ⓘ You are viewing a new version of Browse experience. Some features may be missing. [Click here to access the old experience.](#)

🔍 Filter for any field...

Subscription equals all

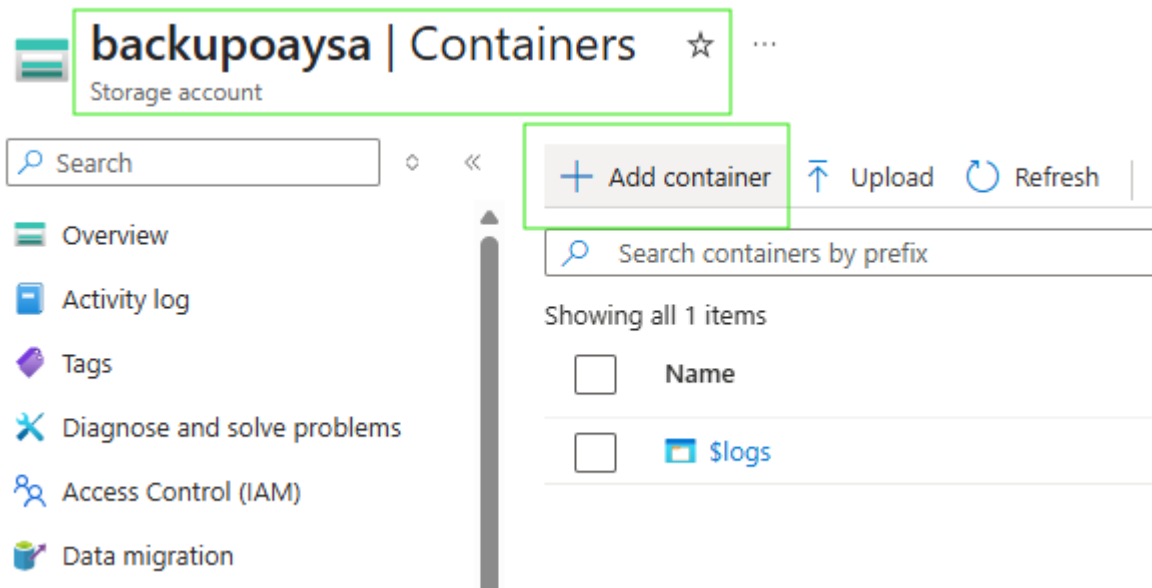
Resource Group equals all

Location equals all

+ Add filter

<input type="checkbox"/>	Name ↑	Type	Kind	Resource Group	Location
<input type="checkbox"/>	backupoaysa	Storage account	StorageV2	oayRG	Israel Central
<input type="checkbox"/>	oaysa	Storage account	StorageV2	oayRG	East US

Create a backup container in backup account



backupoaysa | Containers ☆ ...
Storage account

Search

Overview
Activity log
Tags
Diagnose and solve problems
Access Control (IAM)
Data migration

+ Add container Upload Refresh

Search containers by prefix

Showing all 1 items

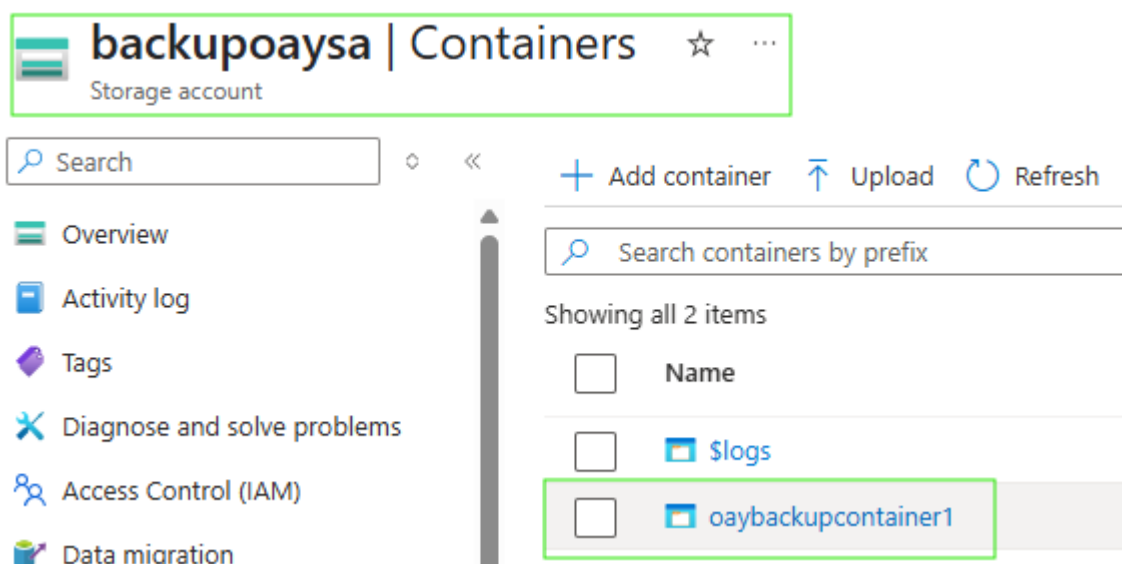
<input type="checkbox"/>	Name
<input type="checkbox"/>	\$logs

New container

Name *

oaybackupcontainer1 ✓

Anonymous access level ⓘ
Private (no anonymous access) ▼



backupoaysa | Containers ☆ ...
Storage account

Search

Overview
Activity log
Tags
Diagnose and solve problems
Access Control (IAM)
Data migration

+ Add container Upload Refresh

Search containers by prefix

Showing all 2 items

<input type="checkbox"/>	Name
<input type="checkbox"/>	\$logs
<input type="checkbox"/>	oaybackupcontainer1

Home > Storage accounts > backupoaysa | Containers > oaybackupcontainer1

oaybackupcontainer1 | Shared access tokens

Container

A shared access signature (SAS) is a URI that grants restricted access to an Azure Storage container. Use it when you want to grant access to storage account resources for

Signing method
☒ Account key ☐ User delegation key

Signing key
 Key 1

Stored access policy
 None

Permissions *
 4 selected
☒ Read
☐ Add
☐ Create
☒ Write
☒ Delete
☒ List
☐ Immutable storage

Allowed IP addresses
 for example, 168.1.5.65 or 168.1.5.65-168.1.5.65

Allowed protocols
☒ HTTPS only ☐ HTTPS and HTTP

Generate SAS token and URL

Blob SAS token
 sp=rcwd&st=2025-07-09T09:35:15Z&se=2025-07-10T17:35:15Z&spr=https&sv=2024-11-04&sr=c&sig=q23hiNeJlZUMrjKw3ns5mvLj3oSL%2FLLUJH3noFZOo4lg%3D

Blob SAS URL
 https://backupoaysa.blob.core.windows.net/oaybackupcontainer1?sp=rcwd&st=2025-07-09T09:35:15Z&se=2025-07-10T17:35:15Z&spr=https&sv=2024-11-04&sr=c&

Create an 'AzCopy' for coping and syncing files

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.26100.4349]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>cd C:\Users\User\Downloads\azcopy_windows_amd64_10.29.1
```

'azcopy copy' command:

```
Administrator: Command Prompt
C:\Users\User\Downloads\azcopy_windows_amd64_10.29.1>azcopy copy "https://oaysa.blob.core.windows.net/oaycontainer1?sp=r&l&st=2025-07-09T16:06:32Z&se=2025-07-10T00:06:32Z&spr=https&sv=2024-11-04&sr=c&sig=wUGi%2BoHeyJ360EUxw4syiEpqJ7arYL0oSmdarkkhXpI%3D" "https://backupoaysa.blob.core.windows.net/oaybackupcontainer1?sp=rwdl&st=2025-07-09T16:12:47Z&se=2025-07-10T00:12:47Z&spr=https&sv=2024-11-04&sr=c&sig=Mew4RMqV3iWczmYeLLUttk1q4BTk0uu0d5wipzQ3430%3D" --recursive
INFO: Scanning...
WARN: Failed to create one or more destination container(s). Your transfers may still succeed if the container already exist s.
INFO: Any empty folders will not be processed, because source and/or destination doesn't have full folder support

Job c0f8870e-6949-d441-5f8b-fbacde62bf2c has started
Log file is located at: C:\Users\User\azcopy\c0f8870e-6949-d441-5f8b-fbacde62bf2c.log

100.0 %, 3 Done, 0 Failed, 0 Pending, 0 Skipped, 3 Total, 2-sec Throughput (Mb/s): 0.0002

Job c0f8870e-6949-d441-5f8b-fbacde62bf2c summary
Elapsed Time (Minutes): 0.0334
Number of File Transfers: 3
Number of Folder Property Transfers: 0
Number of Symlink Transfers: 0
Total Number of Transfers: 3
Number of File Transfers Completed: 3
Number of Folder Transfers Completed: 0
Number of File Transfers Failed: 0
Number of Folder Transfers Failed: 0
Number of File Transfers Skipped: 0
Number of Folder Transfers Skipped: 0
Total Number of Bytes Transferred: 39
Final Job Status: Completed
```

‘azcopy sync’ command:

```
Administrator: Command Prompt
C:\Users\User\Downloads\azcopy_windows_amd64_10.29.1>azcopy sync "https://oaysa.blob.core.windows.net/oaycontainer1?sp=r&st=2025-07-09T16:06:32Z&se=2025-07-10T00:06:32Z&spr=https&sv=2024-11-04&sr=c&sig=wUGi%2BoHeyJ360EUxw4syiEpqJ7arYLOoSmdarkkhXpI%3D" "https://backupoaysa.blob.core.windows.net/oaybackupcontainer1?sp=rwdl&st=2025-07-09T16:12:47Z&se=2025-07-10T00:12:47Z&spr=https&sv=2024-11-04&sr=c&sig=Mew4RMqV3iWczmYeLLUttk1q4BTk0uu0d5wipzQ3430%3D" --recursive --delete-destination=false
INFO: Any empty folders will not be processed, because source and/or destination doesn't have full folder support

Job 5c6b2a78-b0d8-904d-61e9-b9a032fc7c84 has started
Log file is located at: C:\Users\User\azcopy\5c6b2a78-b0d8-904d-61e9-b9a032fc7c84.log

100.0 %, 0 Done, 0 Failed, 0 Pending, 0 Total, 2-sec Throughput (Mb/s): 0

Job 5c6b2a78-b0d8-904d-61e9-b9a032fc7c84 Summary
Files Scanned at Source: 3
Files Scanned at Destination: 3
Elapsed Time (Minutes): 0.0333
Number of Copy Transfers for Files: 0
Number of Copy Transfers for Folder Properties: 0
Total Number of Copy Transfers: 0
Number of Copy Transfers Completed: 0
Number of Copy Transfers Failed: 0
Number of Deletions at Destination: 0
Total Number of Bytes Transferred: 0
Total Number of Bytes Enumerated: 0
Final Job Status: Completed
```

Result:

Home > Storage accounts > backupoaysa | Containers >

oaybackupcontainer1
Container

Search

+ Add Directory Upload Change access level Refresh Delete Copy Paste Rename Acquire lease Break lease Edit columns

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

oaybackupcontainer1

Authentication method: Access key (Switch to Microsoft Entra user account)

Add filter

Search blobs by prefix (case-sensitive)

Sorting all 3 items

	Name ↑	Last modified	Access tier
	TextDocument1.txt	7/9/2025, 7:38:18 PM	Cold
	TextDocument2.txt	7/9/2025, 7:23:32 PM	Hot
	TextDocument3.txt	7/9/2025, 7:23:32 PM	Hot

Create a Batch file for blobs sync:

azcopy_windows_amd64_10.29.1

Downloads > azcopy_windows_amd64_10.29.1

Search azcopy_windows_amd64_10.29.1

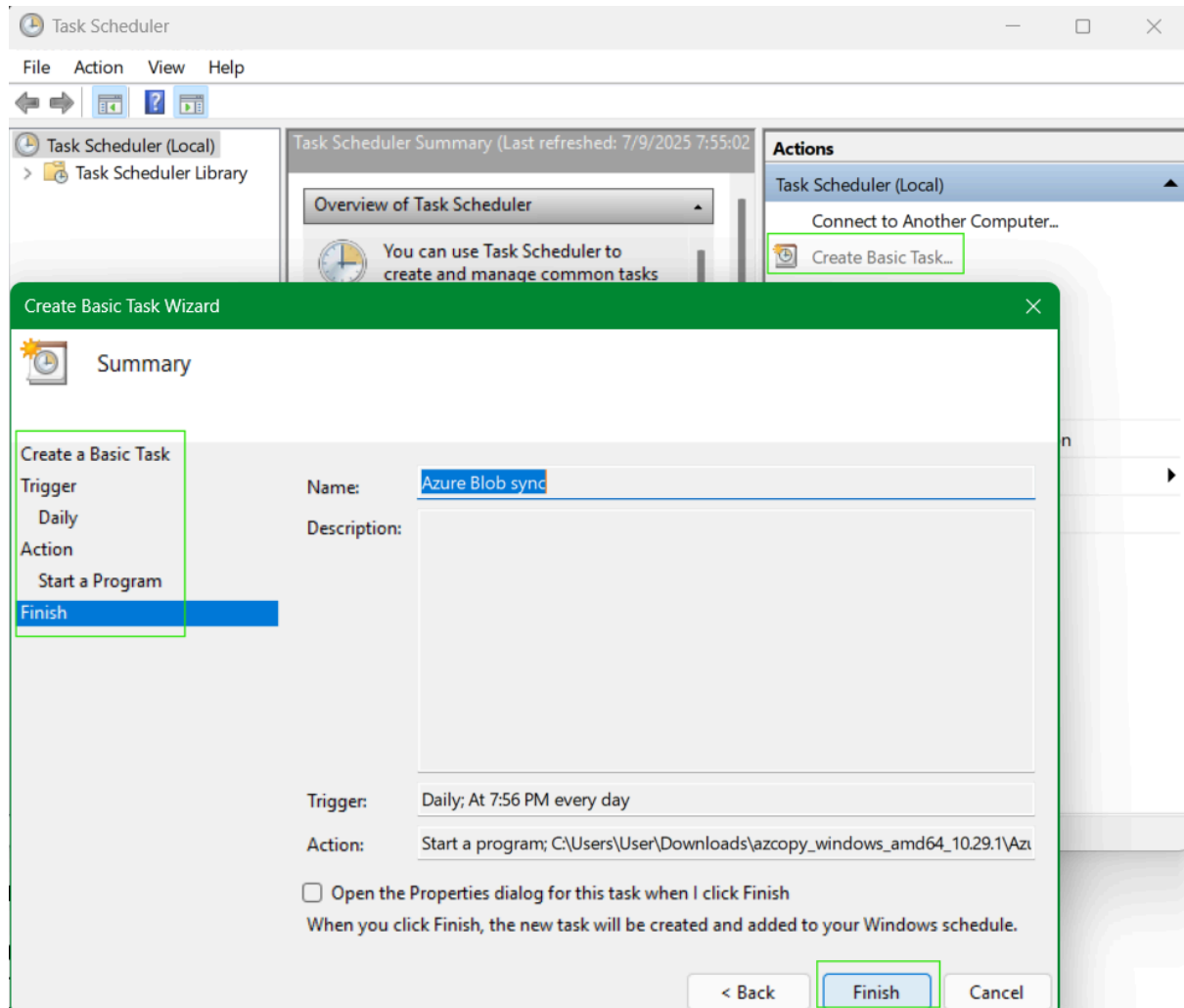
New Copy Paste Move Sort View Details

Name	Date modified	Type	Size
Today			
AzureBlobSync	7/9/2025 7:49 PM	Windows Batch File	1 KB
azcopy	7/9/2025 1:10 PM	Application	56,411 KB
NOTICE	7/9/2025 1:10 PM	Text Document	501 KB

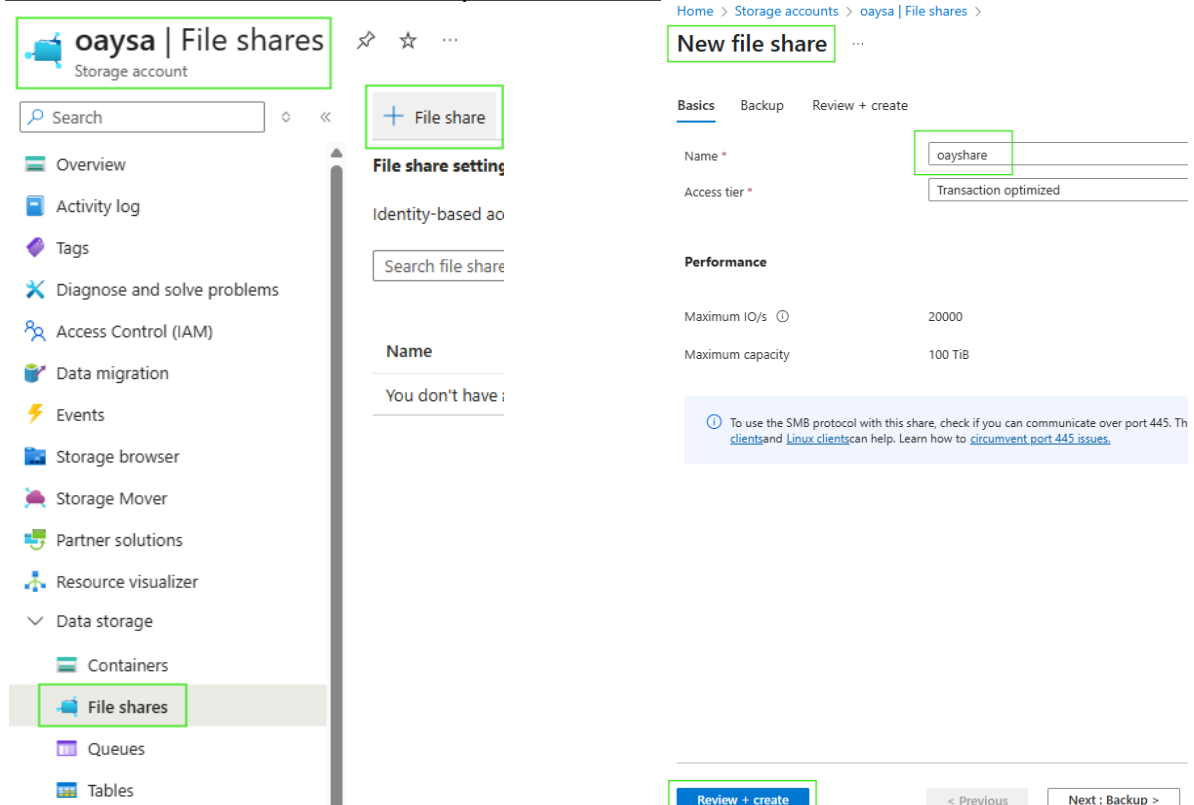
AzureBlobSync.bat

```
azcopy sync "https://oaysa.blob.core.windows.net/oaycontainer1?sp=r&st=2025-07-09T16:06:32Z&se=2025-07-10T00:06:32Z&spr=https&sv=2024-11-04&sr=c&sig=wUGi%2BoHeyJ360EUxw4syiEpqJ7arYLOoSmdarkkhXpI%3D" "https://backupoaysa.blob.core.windows.net/oaybackupcontainer1?sp=rwdl&st=2025-07-09T16:12:47Z&se=2025-07-10T00:12:47Z&spr=https&sv=2024-11-04&sr=c&sig=Mew4RMqV3iWczmYeLLUttk1q4BTk0uu0d5wipzQ3430%3D" --recursive --delete-destination=false
```

Schedule the command automatically in Windows Task Scheduler:



Create an Azure File share and map to local network drive Z:



oayshare
SMB File share

Search

Connect
 Upload
 Refresh
 Add directory
 Delete share

Overview
 Diagnose and solve problems
 Access Control (IAM)
 Browse
 Operations

Enable Backup for file share "oayshare" to protect your data. [Learn more](#)

Essentials
Storage account : [oaysa](#)
Resource group ([move](#)) : [oayRG](#)
Location : East US
Primary/Secondary location : Primary: East US, Secondary: West US
Subscription ([move](#)) : [Azure subscription 1](#)
Subscription ID : 48e82b54-5183-45ec-8762-91ac4aaddb4

Copy Script to PowerShell:

Drive letter

Z

Authentication method

- ☐ Active Directory or Microsoft Entra
☒ Storage account key

Connecting to a share using the storage account key is only appropriate for admin access. Mounting the Azure file share with the Active Directory or Microsoft Entra identity of the user is preferred. [Learn more](#)

Hide Script

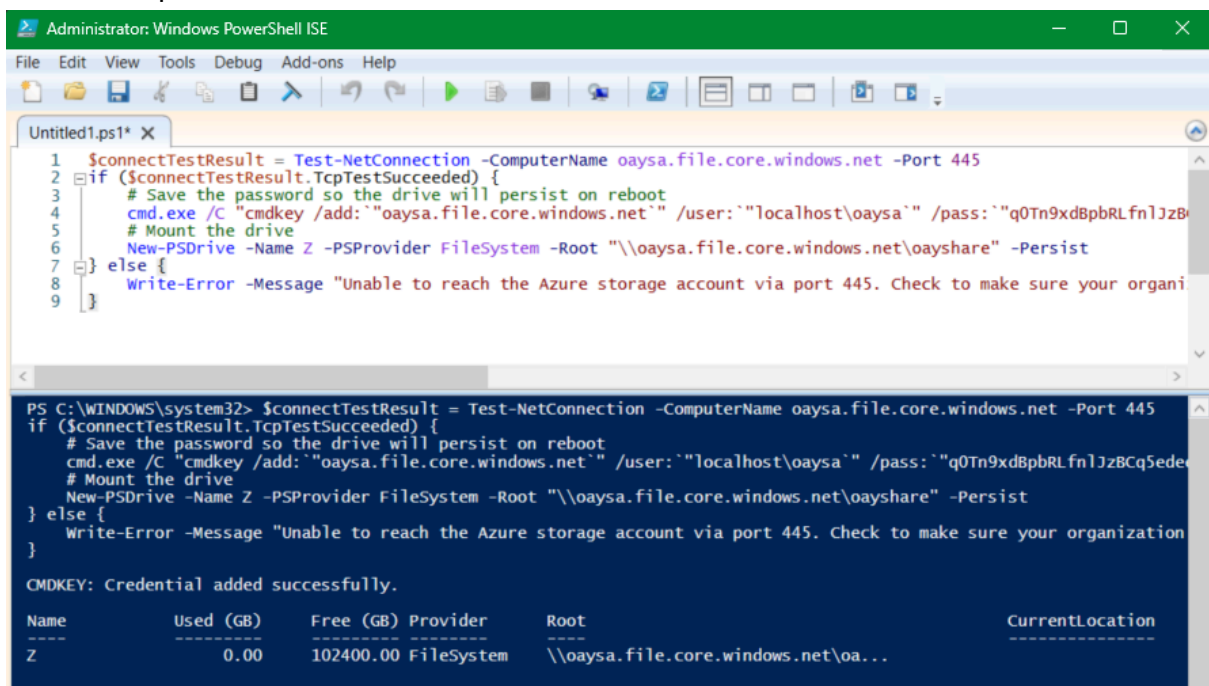
```

$connectTestResult = Test-NetConnection -ComputerName
oaysa.file.core.windows.net -Port 445
if ($connectTestResult.TcpTestSucceeded) {
    # Save the password so the drive will persist on reboot
    cmd.exe /C "cmdkey /add:"oaysa.file.core.windows.net"
/user:"localhost\oaysa"
/pass:"q0Tn9xdBpbRLfnIjzBCq5edeeqgWw7kEUPNvtJ4On8WJG6vXe+ZgUmF
GB8KprAig8G7nQyjmTyqE+Ast6rF36A="`""
    # Mount the drive
    New-PSDrive -Name Z -PSProvider FileSystem -Root
"\oaysa.file.core.windows.net\oayshare" -Persist
} else {
    Write-Error -Message "Unable to reach the Azure storage account via port
445. Check to make sure your organization or ISP is not blocking port 445, or
use Azure P2S VPN, Azure S2S VPN, or Express Route to tunnel SMB traffic
over a different port."
}

```

Copy to clipboard

Run the script on PowerShell:



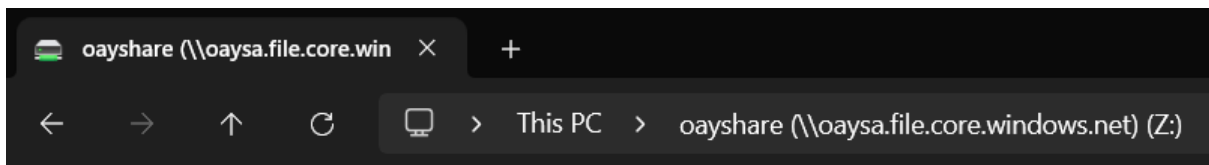
```
1 $connectTestResult = Test-NetConnection -ComputerName oaysa.file.core.windows.net -Port 445
2 if ($connectTestResult.TcpTestSucceeded) {
3     # Save the password so the drive will persist on reboot
4     cmd.exe /C "cmdkey /add:"oaysa.file.core.windows.net" /user:"localhost\oaysa" /pass:"q0Tn9xdBpbRLfn1JzB8
5     # Mount the drive
6     New-PSDrive -Name Z -PSProvider FileSystem -Root "\\oaysa.file.core.windows.net\oayshare" -Persist
7 } else {
8     Write-Error -Message "Unable to reach the Azure storage account via port 445. Check to make sure your organi
9 }
```

```
PS C:\WINDOWS\system32> $connectTestResult = Test-NetConnection -ComputerName oaysa.file.core.windows.net -Port 445
if ($connectTestResult.TcpTestSucceeded) {
    # Save the password so the drive will persist on reboot
    cmd.exe /C "cmdkey /add:"oaysa.file.core.windows.net" /user:"localhost\oaysa" /pass:"q0Tn9xdBpbRLfn1JzB8Cq5ede
    # Mount the drive
    New-PSDrive -Name Z -PSProvider FileSystem -Root "\\oaysa.file.core.windows.net\oayshare" -Persist
} else {
    Write-Error -Message "Unable to reach the Azure storage account via port 445. Check to make sure your organization
}

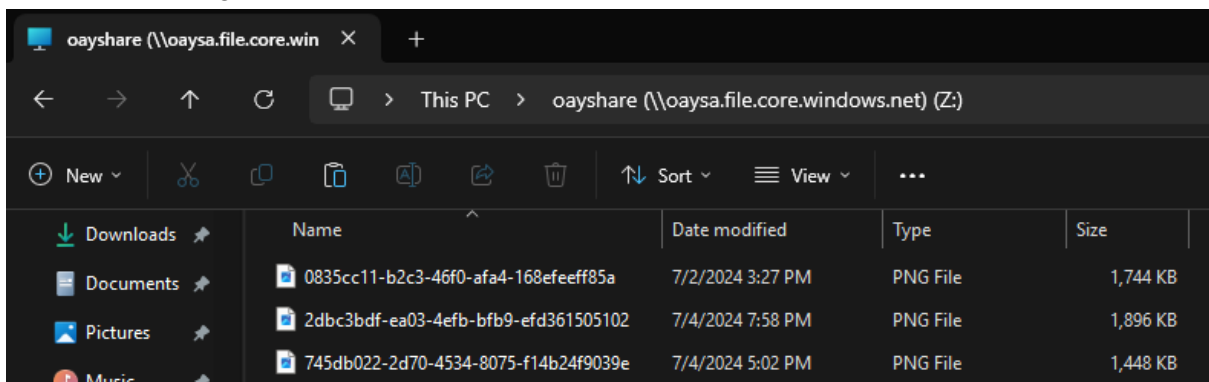
CMDKEY: Credential added successfully.

Name          Used (GB)  Free (GB) Provider      Root                                     CurrentLocation
-----
Z              0.00      102400.00 FileSystem    \\oaysa.file.core.windows.net\oa...
```

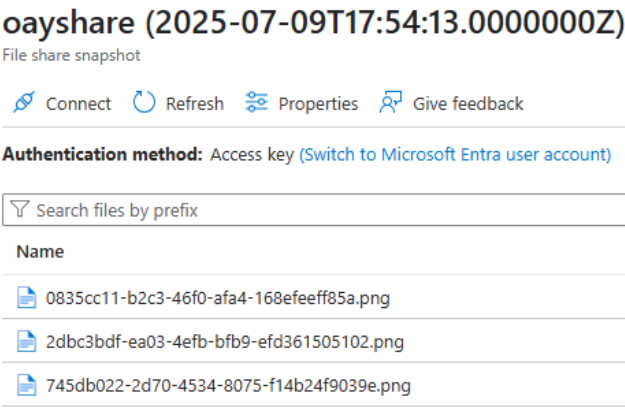
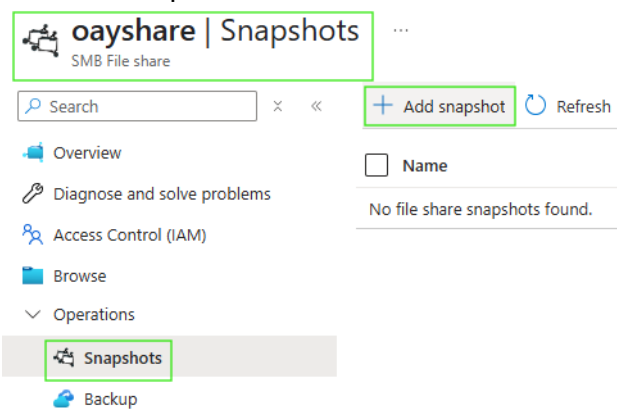
Result:



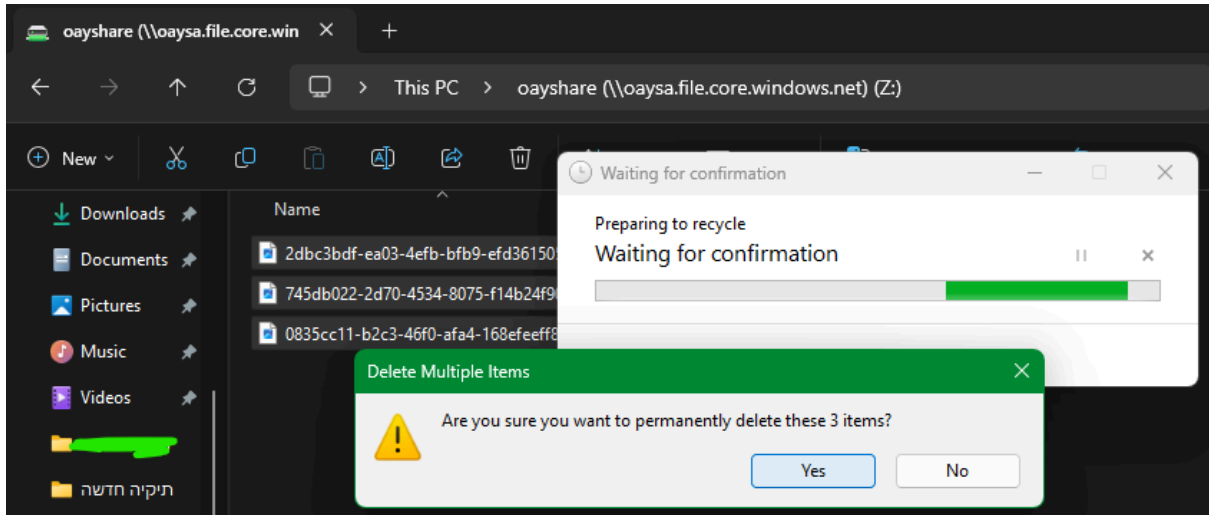
Upload files using the new local mapped drive Z:



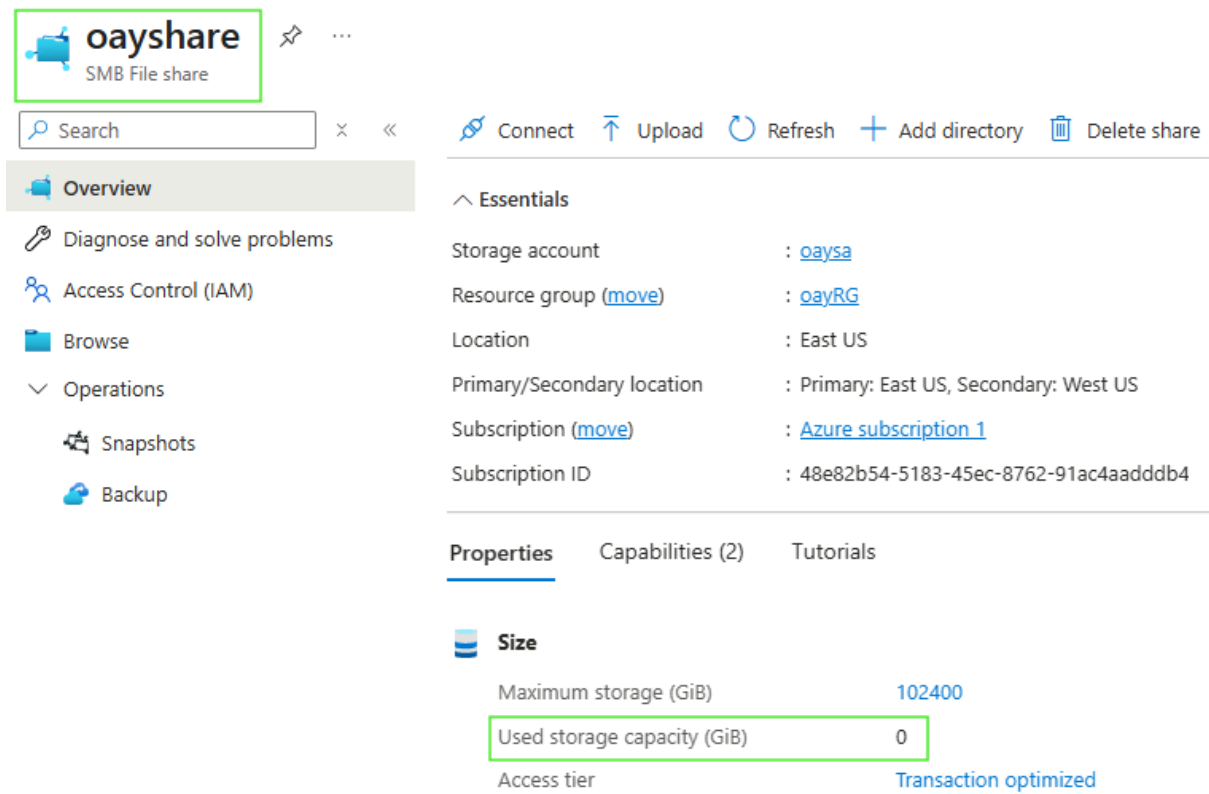
Create a snapshot for the Azure file share:



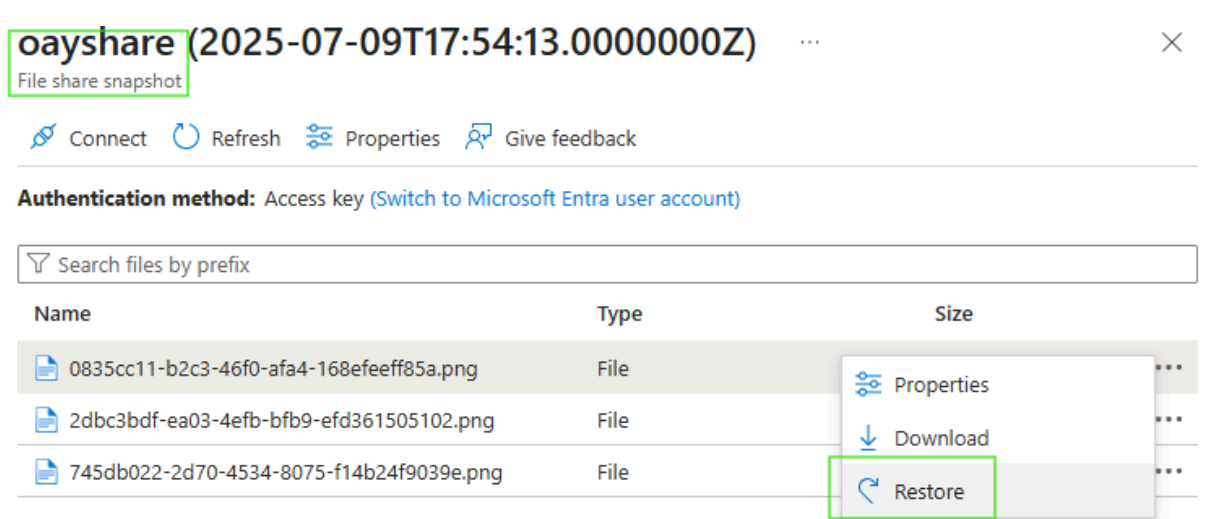
Erase all files from Drive Z:



Verify from Azure Portal that files were erased:



Revert to the snapshot and verify using the local mapped drive that all files were restored:



oayshare (\\oaysa.file.core.win) x +

This PC > oayshare (\\oaysa.file.core.windows.net) (Z:)

	Name	Date modified	Type	Size
Downloads	2dbc3bdf-ea03-4efb-bfb9-efd361505102	7/9/2025 9:11 PM	PNG File	1,896 KB
Documents	745db022-2d70-4534-8075-f14b24f9039e	7/9/2025 9:11 PM	PNG File	1,448 KB
Pictures	0835cc11-b2c3-46f0-afa4-168efeeff85a	7/9/2025 9:11 PM	PNG File	1,744 KB
Music				

Create 2 VMs with full internet out access and RDP inside access:

Compute infrastructure | Virtual machines

Microsoft

Search

Overview
All resources
Infrastructure
Virtual machines
Virtual Machine Scale Set (VMSS)

Virtual machines Get started

+ Create Switch to classic Reservations

Virtual machine
Best for lower-traffic workloads, testing, or to control or highly customize apps, OS, or file system. If your workload or traffic starts to grow, a VM can later be attached to a Virtual Machine Scale Set (VMSS).

Subscription * Azure subscription 1

Resource group * **oayRG**
[Create new](#)

Instance details

Virtual machine name * **oayVM1**

Region * (US) East US

Availability options * Availability zone

Zone options * ☒ Self-selected zone
Choose up to 3 availability zones, one VM per zone
☐ Azure-selected zone (Preview)
Let Azure assign the best zone for your needs
i Using an Azure-selected zone is not supported in region 'East US'.

Availability zone * **Zone 3**
i You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type * Trusted launch virtual machines
[Configure security features](#)

Image * **Windows Server 2022 Datacenter: Azure Edition Hotpatch - x64 Gen2 (free)**
[See all images](#) | [Configure VM generation](#)

Size * ⓘ Standard_B1s - 1 vcpu, 1 GiB memory (10.22\$/month) (free services eligible) ▼
[See all sizes](#)

Enable Hibernation ⓘ



i Hibernation is not supported by the size that you have selected. Choose a size that is compatible with Hibernation to enable this feature. [Learn more](#) ↗

Administrator account

Username * ⓘ

oaylocaladmin ✓

Password *

..... ✓

Confirm password *

..... ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ⓘ



None



Allow selected ports

Select inbound ports *

RDP (3389) ▼



This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

< Previous

Next : Disks >

Review + create

✓ Your deployment is complete



Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe...
Subscription: [Azure subscription 1](#)
Resource group: [oayRG](#)

Start time: 7/9/2025, 9:28:36 PM

Correlation ID: dbfce118-dec3-4190-863c-e9e5fd23d675

Deployment details

Next steps

[Setup auto-shutdown](#) Recommended

[Monitor VM health, performance and network dependencies](#) Recommended

[Run a script inside the virtual machine](#) Recommended

[Go to resource](#)

[Create another VM](#)

Compute infrastructure | Virtual machines

Microsoft

Search

Virtual machines

Get started

Overview

All resources

Infrastructure

Virtual machines

Virtual Machine Scale Set (VMSS)

Compute Fleet



> Disks + images

> Capacity + placement

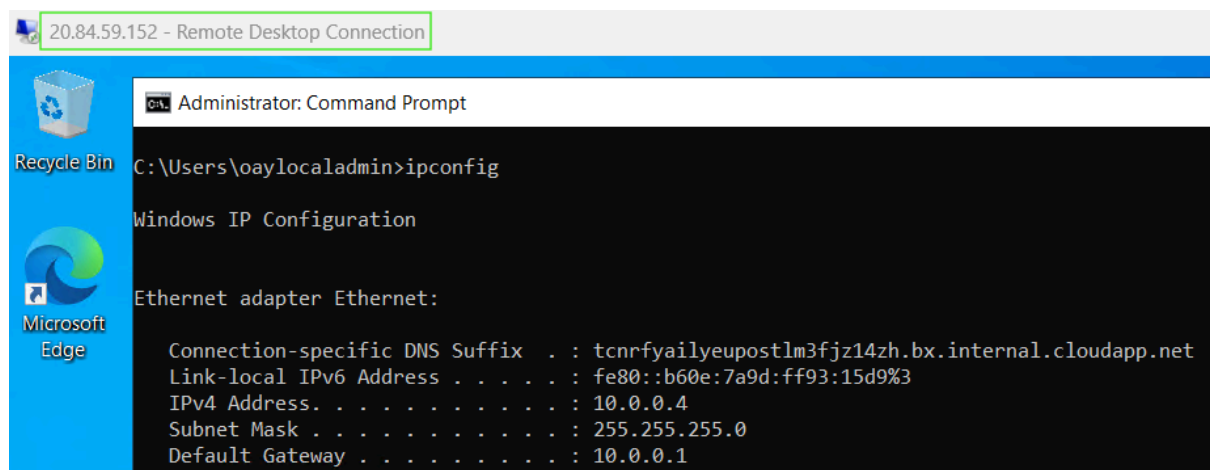
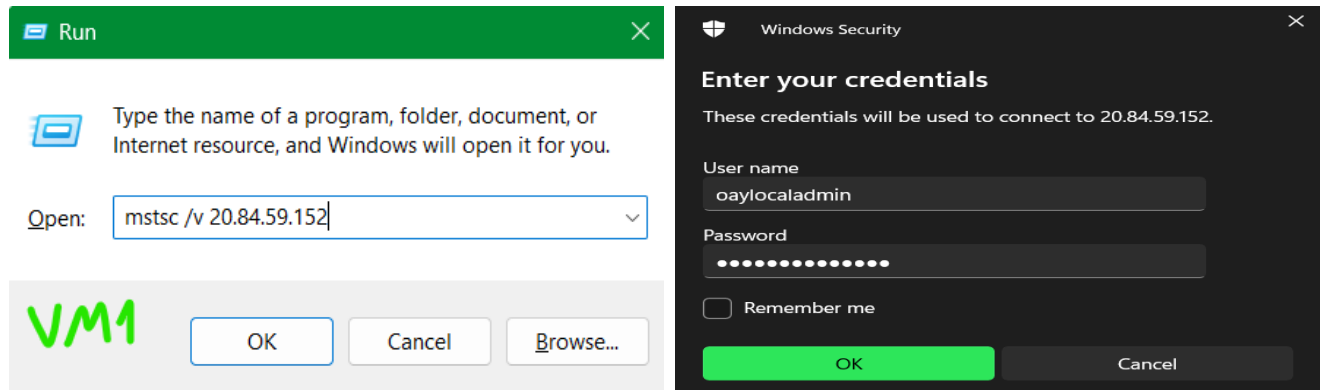
+ Create Switch to classic Reservations Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete Serv

You are viewing a new version of Browse experience. Some features may be missing. [Click here to access the old experience.](#)

Filter for any field... Subscription equals all Type equals all Resource Group equals all Location equals all Add filter

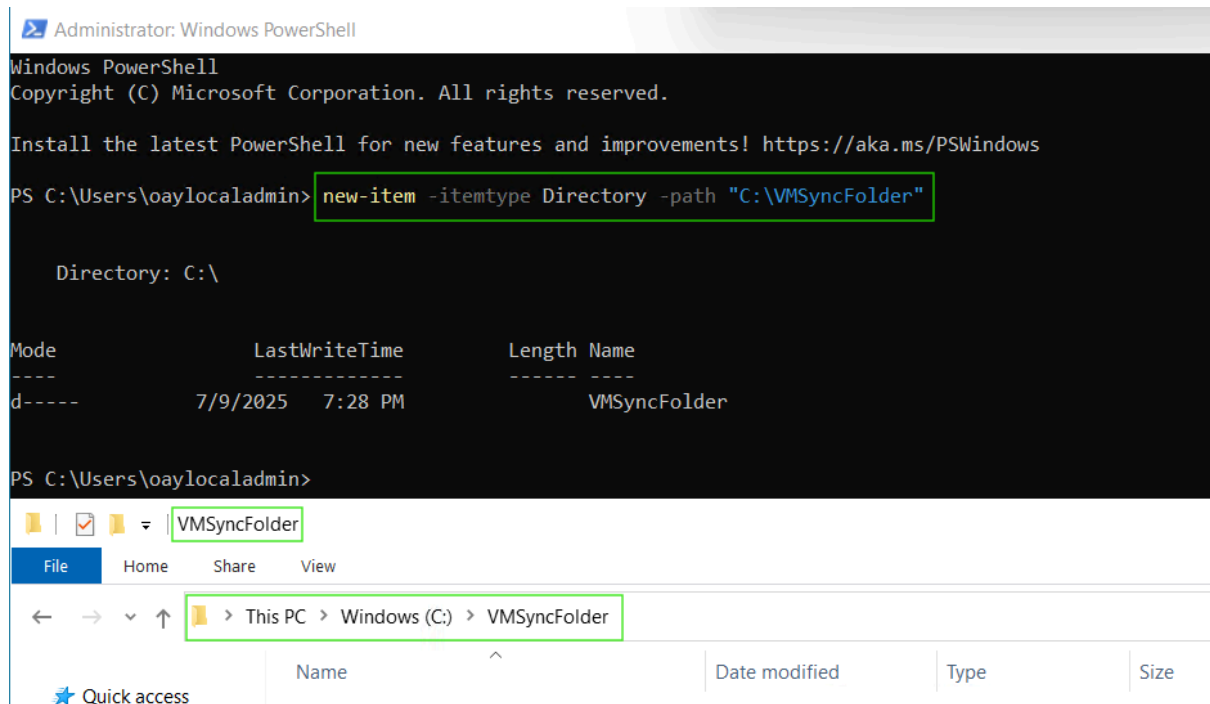
<input type="checkbox"/>	Name ↑		Subscription	Resource Group	Location	Status	Operating system	Size	Public IP address
<input type="checkbox"/>	 oayVM1	...	Azure subscription 1	oayRG	East US	Running	Windows	Standard_B1s	20.84.59.152
<input type="checkbox"/>	 oayVM2	...	Azure subscription 1	oayRG	East US	Running	Windows	Standard_B1s	4.236.162.60

RDP check connection:



(Same with 'oayVM2')

Create a file directory in VM1+2 for file sharing:



(Same in 'oayVM2')

Sync both directories to the azure file share:

Create Storage Sync Services:

Storage Sync Services ...

Default Directory (omeriko30outlook.onmicrosoft.com)

[+ Create](#) [Manage view](#) [Refresh](#) [Export to CSV](#) [Open query](#) [Assign tags](#)

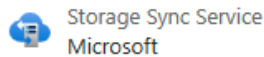
[You are viewing a new version of Browse experience. Some features may be missing. Click here to access the old experience.](#)

[Filter for any field...](#) [Subscription equals all](#) [Resource Group equals all](#) [Location equals all](#) [+ Add filter](#)

Deploy Azure File Sync ...

*** Basics** [Networking](#) [Tags](#) [Review + create](#)

Azure File Sync in combination with Azure file shares allows you to centralize your organization's file shares in Azure, while keeping the flexibility, performance, and compatibility of an on-premises file server. [Learn more](#)



Deploying this storage sync service resource will allow you to transform your Windows Server into a quick cache for Azure file shares with optional cloud tiering and multi-server sync functionality. Keep in mind that servers registered to different storage sync service resources cannot exchange data with each other. It's best to register all servers to the same storage sync service if they will ever have a need to sync the same Azure file share.

Subscription *	<input type="text" value="Azure subscription 1"/>
Resource group *	<div><input type="text" value="oayRG"/> Create new</div>
Storage sync service name *	<input type="text" value="oaysss"/>
Region *	<input type="text" value="East US"/>


[i](#) Azure File Sync environments now use Managed identities for authentication. This improves the security of your environment. [Learn more](#)

[Review + Create](#)

[Previous](#)

[Next: Networking >](#)

Create a Sync Group:

 **oaysss | Sync groups**
Storage Sync Service

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Settings

Sync

Sync groups

Registered servers

Getting Started

+ Create a sync group

Refresh

Give feedback

Sync group name

No Sync groups to display

Sync group

Start by specifying an Azure file share to sync with - this is the sync group's cloud endpoint.

You can specify a folder on your servers you want to sync later.

[Learn more](#)

Sync group name *

vmFSgroup ✓

Cloud endpoint

Subscription *

Azure subscription 1

Storage account *

Select storage account

/subscriptions/48e82b54-5183-45ec-8762-9... ✓

Azure File Share

oayshare ✓

Create

Cancel

 Give feedback

Install Azure File Sync Agent on VM1+2:

oaysssRegistered servers

Storage Sync Service

Search

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Settings

Sync

Sync groups

Registered servers

Getting Started

To register a server:

1

Download the [Azure File Sync agent](#) and install it on all servers you want to sync.

2

After finishing the agent install, use the server registration utility that opens to register the server to this Storage Sync Service. [Learn more](#)

RefreshGive feedback

Server Name	State	Type	Operating Syste...	Agent Version	Managed Identi...	Last seen
No items to display.						

Choose the download you want

<input type="checkbox"/> File Name	Size
<input type="checkbox"/> StorageSyncAgent_WS2019.msi	41.8 MB
<input type="checkbox"/> StorageSyncAgent_WS2025.msi	41.7 MB
<input type="checkbox"/> Microsoft Azure File Sync - License Terms.docx	15.3 KB
<input type="checkbox"/> StorageSyncAgent_WS2016.msi	41.8 MB
<input checked="" type="checkbox"/> StorageSyncAgent_WS2022.msi	41.7 MB

Download

Total size: 41.7 MB

Run the Installation:

Storage Sync Agent Setup

Welcome to the Storage Sync Agent Setup Wizard

The Setup Wizard will install Storage Sync Agent on computer. Click Next to continue or Cancel to exit the Wizard.

BackNext

Azure File Sync - Server Registration

Sign in and register this server

Sign in to Azure to register with an existing Storage Sync Service. To create a new Storage Sync Service, go to the Azure portal.

Azure Environment

AzureCloud

I am signing in as a Cloud Solution Provider

Sign in

Azure File Sync - Server Registration

Choose a Storage Sync Service

Azure Subscription

Azure subscription 1

Subscription ID: 48e82b54-5183-45ec-8762-91ac4aaddb4

Resource Group

oayRG

Storage Sync Service

oaysss

✓ Your Storage Sync Service is enabled for managed identities.

To proceed with server registration, click **Register**.

Register

Azure File Sync - Server Registration

Registration successful!

✓ File share authentication mode: Managed identities

You can now use PowerShell or the Azure portal to configure sync.

Network connectivity test

✓ Passed. You are all set. [\(Report\)](#)

Close

(Same for 'oayVM2')

Add Server Endpoints for VM1+2:

oaysss | Sync groups

Storage Sync Service

Search

+ Create a sync group

Refresh

Give feedback

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Settings

Sync

Sync groups

Registered servers

Getting Started

Home > Storage Sync Services > oaysss | Sync groups >

vmFSgroup

Sync group

Search

Delete sync group

Overview

Monitoring

Cloud endpoint

+ Add cloud endpoint

File share name

oayshare

Server endpoints

+ Add server endpoint

Server name + path

No items found

Add server endpoint

A server endpoint integrates an entire volume or a subfolder of a volume from a registered server as a location to sync. The following considerations apply:

Servers must be registered to the storage sync service that contains this sync group before you can add a location on them here.

A specific location on the server can only sync with one sync group. Syncing the same location or even a part of it – with a different sync group doesn't work.

Make sure that the path you specify for this server is correct.

Learn more

Registered Server *

oayVM1

Path *

C:\VMSyncFolder

Files from this server path have been brought to the cloud via DataBox or other means of seeding the cloud endpoint (Azure file share) in this sync group.

You may be trying to create a server endpoint on the server's system volume. Please note that you will not be able to enable cloud tiering on the system volume.

Give feedback

Create

Cancel

(Same for 'oayVM2')

File share name	Storage account	Provisioning state	Change enumeration
oayshare	oayssa	Provisioned	Complete on 7/12/2025, 1:48:24 PM

Server endpoints

+ Add server endpoint

Server name + path	Health	Persistent sync errors	Upload to cloud	Download to server	Cloud tiering space savings
oayVM1 + C:\VMSyncFolder	Pending	0	Waiting for initial upload to start	Waiting for initial download to start	Disabled
oayVM2 + C:\VMSyncFolder	Pending	0	Waiting for initial upload to start	Waiting for initial download to start	Disabled

Verify data from the file share was synced to both VMs:

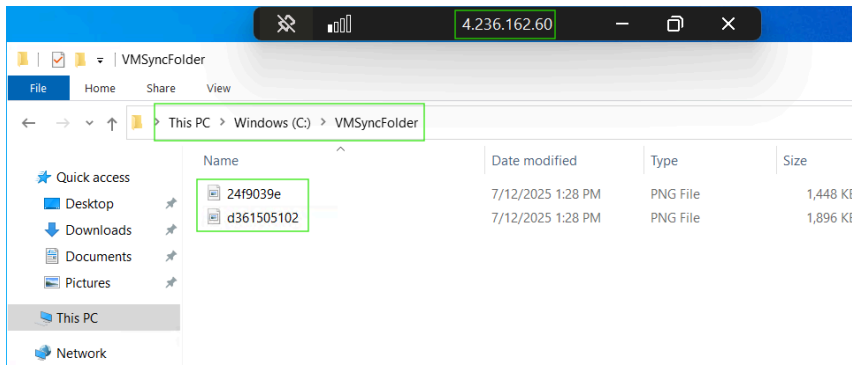
Upload Files to File share:

The screenshot shows the 'File shares' page in the Azure portal for the storage account 'oaysa'. The left sidebar contains a navigation menu with options like Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser, Storage Mover, Partner solutions, Resource visualizer, Data storage, Containers, **File shares** (highlighted), Queues, and Tables. The main content area has a search bar and buttons for '+ File share', 'Refresh', and 'Give feedback'. Under 'File share settings', it states 'Identity-based access: Not configured' and provides a search bar for file shares by prefix. A table lists file shares, with 'oayshare' highlighted.

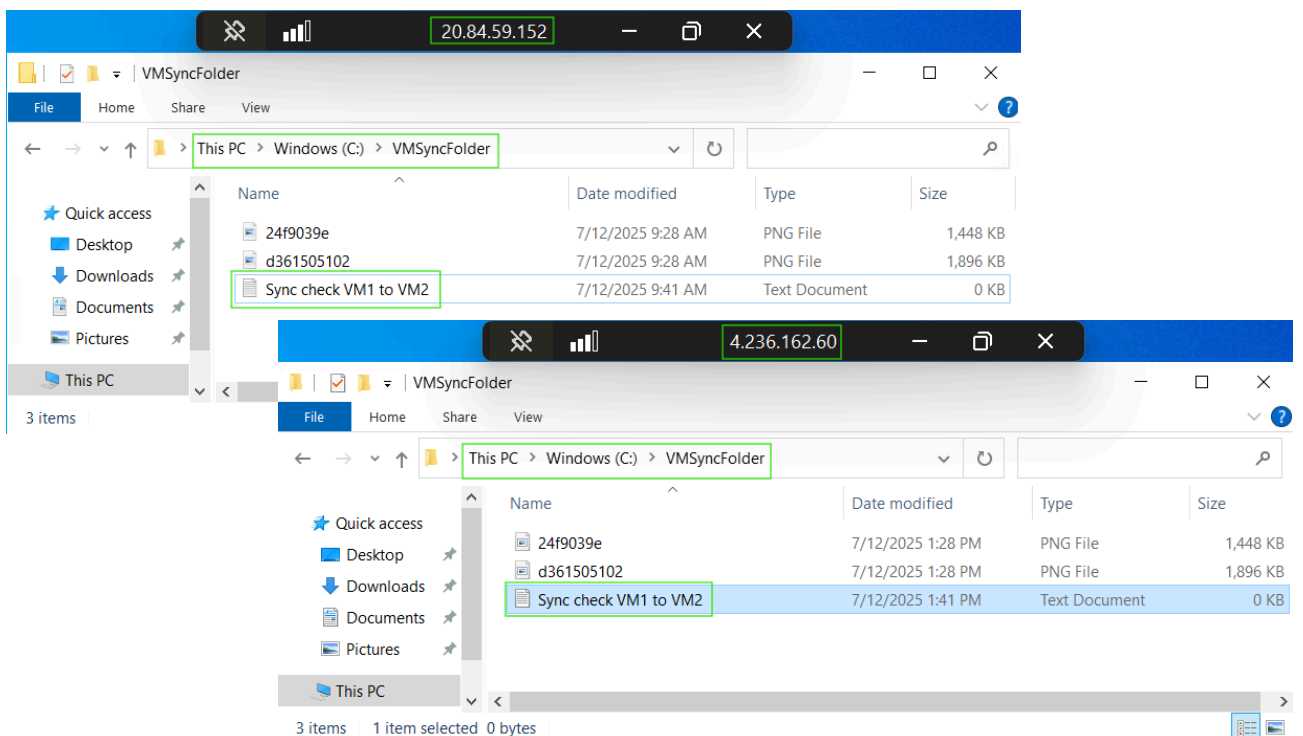
This block contains two screenshots. The left screenshot shows the details for the 'oayshare' SMB file share, including its location (East US), subscription, and storage capacity (102,400 GiB). The right screenshot shows an 'Upload files' dialog box with a 'Browse for files' button and a list of current uploads: '24f9039e.png' (1.41 MB / 1.41 MB) and 'd361505102.png' (1.85 MB / 1.85 MB).

Verify locally on VM1+2:

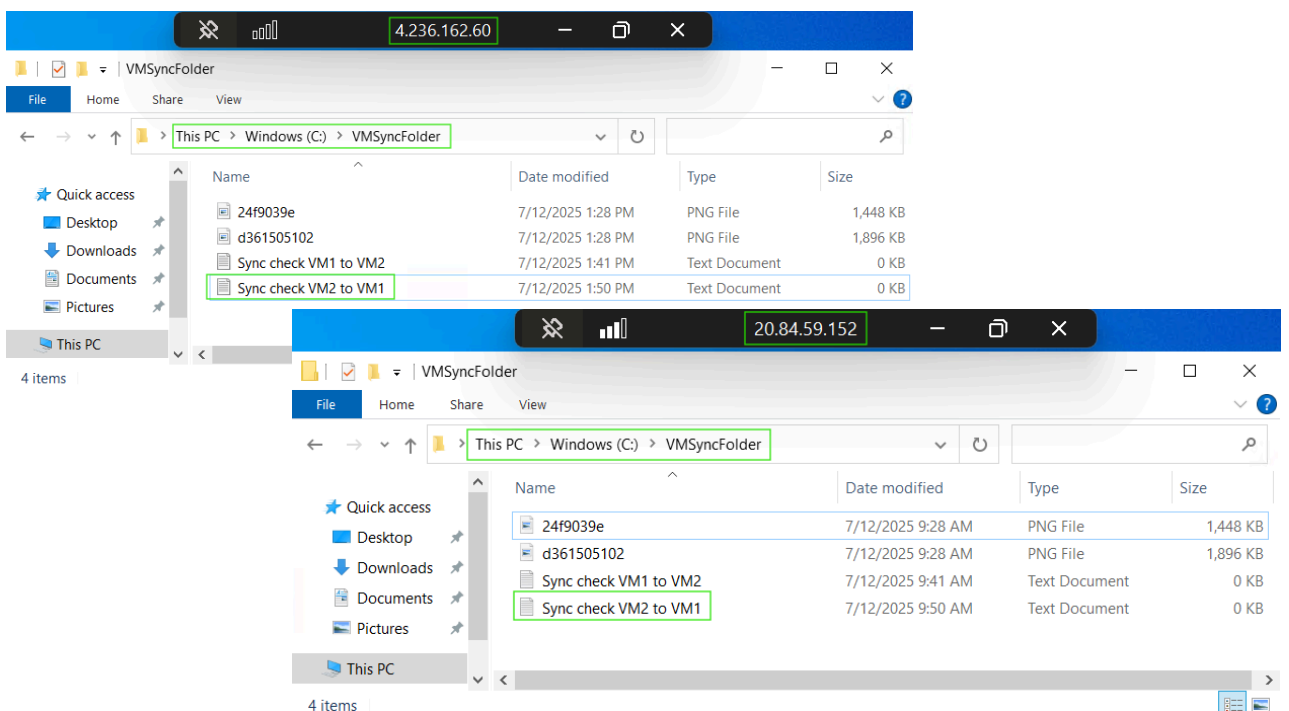
The screenshot shows a Windows File Explorer window with the address bar set to 'This PC > Windows (C:) > VMSSyncFolder'. The address bar also displays the IP address '20.84.59.152'. The file list contains two files: '24f9039e.png' (1,448 KB) and 'd361505102.png' (1,896 KB), both modified on 7/12/2025 at 9:28 AM.



Make some changes in VM1 and verify sync to azure files share and to VM2:



Make some changes in VM2 and verify sync to azure files share and to VM1:



Part 2: Virtual Networking, Subnet Security, and Access Control











Test pings for all Azure regions:

Azure Speed Test 2.0 (azurespeedtest.azurewebsites.net)

*Higher network latencies because I connected from a mobile hot spot.

Azure Speed Test 2.0

Measuring the latency from your web browser to the Blob Storage Service in each of the Microsoft Azure Data Centers.

Data Center	Average Latency	History
 Germany North	108ms	
 Poland Central	114ms	
 France Central	118ms	
 West Europe	121ms	
 South UK	130ms	

I chose the 'France Central' region.

Create a new RG in the selected region:



Resource groups

Default Directory (omeriko30outlook.onmicrosoft.com)

[+ Create](#) [Manage view](#) [Refresh](#) [Export to CSV](#) [Open query](#) | [Assign tags](#)

[You are viewing a new version of Browse experience. Click here to access the old experience.](#)

[Subscription equals all](#) [Location equals all](#) [+ Add filter](#)

<input type="checkbox"/>	Name ↑		Subscription	Location
<input type="checkbox"/>	 NetworkWatcherRG	...	Azure subscription 1	East US
<input type="checkbox"/>	 oayRG	...	Azure subscription 1	East US

[Home](#) > [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 * ⓘ

Azure subscription 1

Resource group name * ⓘ

FRAoayRG

Region * ⓘ

(Europe) France Central

Previous

Next

Review + create

Resource groups

Default Directory (omeriko30outlook.onmicrosoft.com)

+ Create

Manage view ▾

Refresh

Export to CSV

Open query

Assign tags

Group by none ▾

ⓘ You are viewing a new version of Browse experience. [Click here to access the old experience.](#)

Filter for any field...

Subscription equals all

Location equals all ×

+ Add filter

<input type="checkbox"/>	Name ↑	Subscription	Location
<input checked="" type="checkbox"/>	FRAoayRG	Azure subscription 1	France Central

Create a VNet with 172.20.0.0/16 CIDR and 172.20.21.0/24 ; 172.20.22.0/24 subnets:

Create virtual network

Basics

Security

IP addresses

Tags

Review + create

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation. [Learn more.](#)

Project details

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

Subscription *

Azure subscription 1

Resource group *

FRAoayRG

[Create new](#)

Instance details

Virtual network name *

FRAoayVnet

Region * ⓘ

(Europe) France Central

[Deploy to an Azure Extended Zone](#)

Create virtual network ...

Basics Security **IP addresses** Tags Review + create

Configure your virtual network address space with the IPv4 and IPv6 addresses and subnets you need. [Learn more](#)

Define the address space of your virtual network with one or more IPv4 or IPv6 address ranges. Create subnets to segment the virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet. [Learn more](#)

+ Add a subnet

172.20.0.0/16

172.20.0.0

/16

172.20.0.0 - 172.20.255.25565,536 addresses

Delete address space

Subnets	IP address range	Size	NAT gateway
---------	------------------	------	-------------

Add a subnet

Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to add select services later. [Learn more](#)

Subnet purpose

Default

Name *

Subnet21

IPv4

Include an IPv4 address space

☒

IPv4 address range

172.20.0.0/16

172.20.0.0 - 172.20.255.255

Starting address *

172.20.21.0

Size

/24 (256 addresses)

Subnet address range

172.20.21.0 - 172.20.21.255

Add

Cancel

Add a subnet

Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to add select services later. [Learn more](#)

Subnet purpose

Default

Name *

Subnet22

IPv4

Include an IPv4 address space

☒

IPv4 address range

172.20.0.0/16

172.20.0.0 - 172.20.255.255

Starting address *

172.20.22.0

Size

/24 (256 addresses)

Subnet address range

172.20.22.0 - 172.20.22.255

Add

Cancel

[Give feedback](#)

172.20.0.0/16 Delete address space

172.20.0.0 - 172.20.255.255 65,536 addresses

Subnets	IP address range	Size	NAT gateway
Subnet21	172.20.21.0 - 172.20.21.255	/24 (256 addresses)	-
Subnet22	172.20.22.0 - 172.20.22.255	/24 (256 addresses)	-

Add IPv4 address space | ▾

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

[FRAoayVnet | Subnets](#)
☆
...

Virtual network

Search

- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Resource visualizer
- Settings
 - Address space
 - Connected devices
 - Subnets**
 - Bastion

[+ Subnet](#)
[Refresh](#)
|
 [Manage users](#)
[Delete](#)

Create subnets to segment the virtual network address space into smaller ranges for use. When you deploy resources into a subnet, Azure assigns the resource an IP address from

Search subnets

<input type="checkbox"/>	Name ↑	IPv4	IPv6	Available IPs
<input type="checkbox"/>	Subnet21	172.20.21.0...	-	251
<input type="checkbox"/>	Subnet22	172.20.22.0...	-	251

In 'Subnet21', create a VM with NSG that WILL NOT Allow incoming traffic from the internet:

Create a virtual machine ...

[Help me create a low cost VM](#)
[Help me create a VM optimized for high availability](#)
[Help me choose the right V](#)

[Basics](#)
[Disks](#)
[Networking](#)
[Management](#)
[Monitoring](#)
[Advanced](#)
[Tags](#)
[Review + create](#)

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

i This subscription may not be eligible to deploy VMs of certain sizes in certain regions.

Project details

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

Subscription * ⓘ

Azure subscription 1

Resource group * ⓘ

FRAoayRG

[Create new](#)

Instance details

Virtual machine name * ⓘ

fraoayVM1 ✓

Region * ⓘ

(Europe) France Central ✓

Availability options ⓘ

Availability zone ✓

Zone options ⓘ

- ☒ Self-selected zone
Choose up to 3 availability zones, one VM per zone
- ☐ Azure-selected zone (Preview)
Let Azure assign the best zone for your needs

Availability zone * ⓘ

Zone 1 ✓

👉 You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type ⓘ

Trusted launch virtual machines ✓

[Configure security features](#)

Image * ⓘ

Windows Server 2022 Datacenter: Azure Edition Hotpatch - x64 Gen2 (free) ✓

[See all images](#) | [Configure VM generation](#)

VM architecture ⓘ

- ☐ Arm64
- ☒ x64
- 📘 Arm64 is not supported with the selected image.

Run with Azure Spot discount ⓘ

☐

Size * ⓘ

Standard_B1s - 1 vcpu, 1 GiB memory (11.53\$/month) (free services eligible) ✓

[See all sizes](#)

Enable Hibernation ⓘ

☐

📘 Hibernate is not supported by the size that you have selected. Choose a size that is compatible with Hibernation to enable this feature. [Learn more](#)

Administrator account

Username * ⓘ

oaylocaladmin ✓

Password *

..... ✓

Confirm password *

..... ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ⓘ

- ☒ None
- ☐ Allow selected ports

Select inbound ports

Select one or more ports ✓

📘 All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

< Previous

Next : Disks >

Review + create

Basics Disks **Networking** Management Monitoring Advanced Tags Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.

[Learn more](#)

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network *	<div>FRAoayVnet</div> <div>Create new</div>
Subnet *	<div>Subnet21 (172.20.21.0/24)</div> <div>Manage subnet configuration</div>
Public IP	<div>None</div> <div>Create new</div>
NIC network security group	<div><input type="radio"/> None</div> <div><input type="radio"/> Basic</div> <div><input checked="" type="radio"/> Advanced</div>
Configure network security group *	<div>(new) fraoayVM1-nsg</div> <div>Create new</div>

Create network security group

Name *	<div>fraoayVM1-nsg</div>
Inbound rules	<div>1000: default-allow-rdp</div> <div>Any</div> <div>RDP (TCP/3389)</div> <div>+ Add an inbound rule</div>
Outbound rules	<div>No results.</div> <div>+ Add an outbound rule</div>

Add inbound security rule

fraoayVM1-nsg

Source

Any

Source port ranges *

*

Destination

Any

Service

Custom

Destination port ranges *

*

Protocol

☒ Any

☐ TCP

☐ UDP

☐ ICMPv4

☐ ICMPv6

Action

☐ Allow

☒ Deny

Priority *

100

Name *

DenyAllInboundInternet

Add

Cancel

[Give feedback](#)

Load balancing

You can place this virtual machine in the backend pool of an existing Azure load balancing solution. [Learn more](#)

Load balancing options ⓘ

- ☒ None
- ☐ Azure load balancer
Supports all TCP/UDP network traffic, port-forwarding, and outbound flows.
- ☐ Application gateway
Web traffic load balancer for HTTP/HTTPS with URL-based routing, SSL termination, session persistence, and web application firewall.

< Previous

Next : Management >

Review + create

Compute infrastructure | Virtual machines

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Infrastructure

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Virtual Machine Scale Set (VMSS)

Compute Fleet

Disks + images

Virtual machines Get started

+ Create Switch to classic Reservations Manage view Refresh Export to CSV Open query

You are viewing a new version of Browse experience. [Click here to access the old experience.](#)

Filter for any field...

Subscription equals all Type equals all Resource Group equals all Location equals all

	Name ↑	Subscription	Resource Group	Location	Status	Operating syst...
<input type="checkbox"/>	fraoayVM1	Azure subscrip...	FRAoayRG	France Central	Running	Windows

In 'Subnet22', create a VM with SG that will allow RDP from 172.20.21.0/24 and allow HTTP from the Internet (0.0.0.0/0):

Create a virtual machine

Help me create a low cost VM Help me create a VM optimized for high availability Help me choose the right VM

Project details

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

Subscription * ⓘ

Resource group * ⓘ

Azure subscription 1

FRAoayRG

[Create new](#)

Instance details

Virtual machine name * ⓘ

Region * ⓘ

Availability options ⓘ

Zone options ⓘ

Availability zone * ⓘ

Security type ⓘ

Image * ⓘ

fraoayVM2

(Europe) France Central

Availability zone

- ☒ Self-selected zone
Choose up to 3 availability zones, one VM per zone
- ☐ Azure-selected zone (Preview)
Let Azure assign the best zone for your needs

Zone 1

You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Trusted launch virtual machines

[Configure security features](#)

Windows Server 2022 Datacenter: Azure Edition Hotpatch - x64 Gen2 (free

[See all images](#) | [Configure VM generation](#)

Size * ⓘ Standard_B1s - 1 vcpu, 1 GiB memory (11.53\$/month) (free services eligible) ▾
[See all sizes](#)

Enable Hibernation ⓘ ☐
 ⓘ Hibernation is not supported by the size that you have selected. Choose a size that is compatible with Hibernation to enable this feature. [Learn more](#) ⓘ

Administrator account

Username * ⓘ oaylocaladmin ✓
Password * ✓
Confirm password * ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * ⓘ ☐ None ☒ Allow selected ports
Select inbound ports * HTTP (80), RDP (3389) ▾
⚠ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

[< Previous](#)

[Next : Disks >](#)

[Review + create](#)

Create a virtual machine ...

[Help me create a low cost VM](#) [Help me create a VM optimized for high availability](#) [Help me choose the right VM si](#)

Basics Disks **Networking** Management Monitoring Advanced Tags Review + create

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution.
[Learn more](#) ⓘ

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network * ⓘ FRAoayVnet ▾
[Create new](#)
Subnet * ⓘ Subnet22 (172.20.22.0/24) ▾
[Manage subnet configuration](#)
Public IP ⓘ (new) fraoayVM2-ip ▾
[Create new](#)
NIC network security group ⓘ ☐ None ☐ Basic ☒ Advanced
Configure network security group * (new) fraoayVM2-nsg ▾
[Create new](#)

Create network security group ...

Name *
fraoayVM2-nsg

Inbound rules ⓘ

1000: default-allow-rdp
Any
RDP (TCP/3389)

+ Add an inbound rule

 **default-allow-rdp**
fraoayVM2-nsg

×

Outbound rules ⓘ

No results.

+ Add an outbound rule

Source ⓘ
IP Addresses

Source IP addresses/CIDR ranges * ⓘ
172.20.21.0/24 ✓

Source port ranges * ⓘ
*

Destination ⓘ
Any

Service ⓘ
RDP

Destination port ranges ⓘ
3389

Protocol
☐ Any
☒ TCP
☐ UDP
☐ ICMPv4
☐ ICMPv6

Action
☒ Allow
☐ Deny

Priority * ⓘ
110 ✓

Save

Cancel

Create network security group ...

Name *
fraoayVM2-nsg

Inbound rules ⓘ

110: default-allow-rdp
172.20.21.0/24
RDP (TCP/3389)

+ Add an inbound rule

Outbound rules ⓘ

No results.

+ Add an outbound rule



Add inbound security rule

fraoayVM2-nsg



Source ^①
Any

Source port ranges * ^①
*

Destination ^①
Any

Service ^①
Custom

Destination port ranges * ^①
80 ✓

Protocol
☐ Any
☒ TCP
☐ UDP
☐ ICMPv4
☐ ICMPv6

Action
☒ Allow
☐ Deny

Priority * ^①
120 ✓

Name *
AllowHTTPfromInternet ✓

Description

Add

Cancel

Give feedback

Create network security group



Name *
fraoayVM2-nsg ✓

Inbound rules ^①

110: default-allow-rdp 172.20.21.0/24 RDP (TCP/3389)	✓	
120: AllowHTTPfromInternet Any HTTP (TCP/80)	✓	

+ Add an inbound rule

Outbound rules ^①
No results.

+ Add an outbound rule

Load balancing

You can place this virtual machine in the backend pool of an existing Azure load balancing solution. [Learn more](#)

Load balancing options ⓘ

- ☒ None
- ☐ Azure load balancer
Supports all TCP/UDP network traffic, port-forwarding, and outbound flows.
- ☐ Application gateway
Web traffic load balancer for HTTP/HTTPS with URL-based routing, SSL termination, session persistence, and web application firewall.

< Previous

Next : Management >

Review + create

Microsoft

Compute infrastructure | Virtual machines

×

Search

Virtual machines

Get started

Overview

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Virtual Machine Scale Set (VMSS)

Compute Fleet

Disks + images

Capacity + placement

Related services

Help

+ Create

Switch to classic

Reservations

Manage view

...

Group by none

① You are viewing a new version of Browse experience. [Click here to access the old experience.](#)

Filter for any field...

Subscription equals all

Type equals all

Resource Group equals all

Location equals all

+ Add filter

	Name ↑		Subscription	Resource Group	Location	Status
<input type="checkbox"/>	fraoayVM1	...	Azure subscript...	FRAoayRG	France Central	Running
<input type="checkbox"/>	fraoayVM2	...	Azure subscript...	FRAoayRG	France Central	Running

Set static IP x.x.x.50 to both VMs:

Virtual machine

fraoayVM1 | Network settings

☆

...

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Connect

Networking

Network settings

① This is a new experience. [Please provide feedback](#)

List all my network interfaces for fraoayVM1.

What are the requirements for attaching or detaching a network interface?

Attach network interface

Detach network interface

View topology

Network interface / IP configuration

fraoayvm1713_z1 (primary) / ipconfig1 (primary)

▼

Essentials

Network interface

fraoayvm1713_z1

Load balancers

0 (Configure)

fraoayvm1713_z1 | IP configurations

Network interface

Search

Refresh

Overview

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Access control (IAM)

Tags

Resource visualizer

Settings

IP configurations

DNS servers

Network security group

Properties

Locks

Monitoring

Automation

Help

IP Settings

Enable IP forwarding

Virtual network

Subnet

Subnet21 (172.20.21.0/24) 250 free IP addresses

250 free IP addresses

Private and public IP addresses can be assigned to a virtual machine's network interface controller. You can add as many private and public IPv4 addresses as necessary to a network interface, within the limits listed in the Azure limits article. [Learn more](#)

Add

Make primary

Delete

Name	IP Version	Type	Private IP Address	P
<input type="checkbox"/> ipconfig1	IPv4	Primary	172.20.21.4 (Dynamic)	-

Edit IP configuration

fraoayvm1713_z1

A primary IP configuration already exists. Any additional IP configurations will be secondary. The virtual network this network interface is attached to only supports IPv4. [Learn more](#)

Name

ipconfig1

IP version

IPv4

Type

Primary

Private IP address settings

Allocation

Dynamic

Static

Private IP address

172.20.21.50

Public IP address settings

Associate public IP address

Save

Cancel

[Give feedback](#)

	Name	IP Version	Type	Private IP Address	Public IP Address
<input type="checkbox"/>	ipconfig1	IPv4	Primary	172.20.21.50 (Static)	-

Same for 'fraoayVM2':

Name	IP Version	Type	Private IP Address	Public IP Address
<input type="checkbox"/> ipconfig1	IPv4	Primary	172.20.22.50 (Static)	20.199.65.87 (fraoayVM2-ip)

Connect to VM1 by bastion:

FraoayVM1 | Bastion

Virtual machine

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Overview

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Access control (IAM)

Tags

Diagnose and solve problems

Resource visualizer

Connect

Connect

Bastion

Windows Admin Center

Networking

Azure Bastion protects your virtual machines by secure and seamless RDP & SSH connectivity without the need to expose them through public IP addresses. Deploying will automatically create a Bastion host on a subnet in your virtual network. [Learn more](#)

Create Bastion

Name

FRAoayVnet-bastion

Resource group

FRAoayRG

Virtual network

FRAoayVnet

Public IP address

FRAoayVnet-ip

SKU

Standard

Bastion pricing starts with an hourly base rate. [Learn more](#)

Deploy Bastion

Configure manually

fraoayVM1 | Bastion

Virtual machine

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Diagnose and solve problems

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Settings

Disks

Extensions + applications

Operating system

Azure Bastion protects your virtual machines by secure and seamless RDP & SSH connectivity without the need to expose them through public IP addresses. Deploying will automatically create a Bastion host on a subnet in your virtual network. [Learn more](#)

Using Bastion: **FRAoayVnet-bastion**

Provisioning State: **Succeeded**

Please enter username and password to your virtual machine to connect using Bastion.

Connection Settings

Protocol [?]

☒ RDP ☐ SSH

Port [?]

3389

Keyboard Language [?]

English (US)

Authentication Type [?]

Username [?]

oaylocaladmin

VM Password [?]

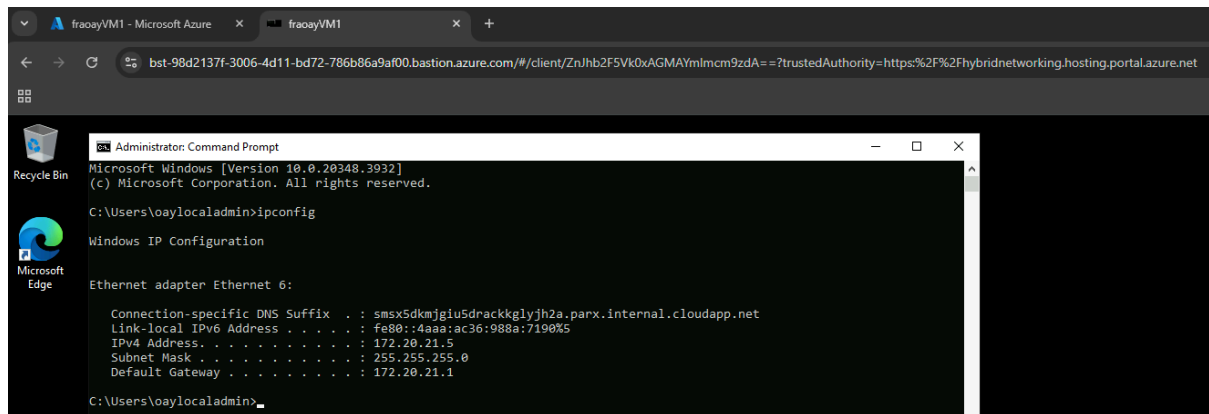
.....

Show

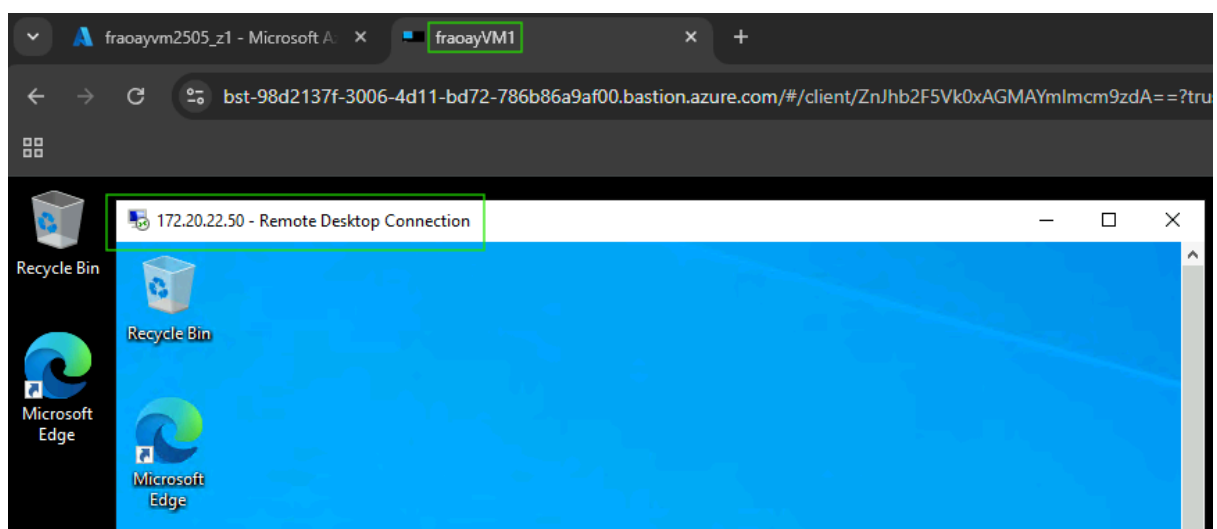
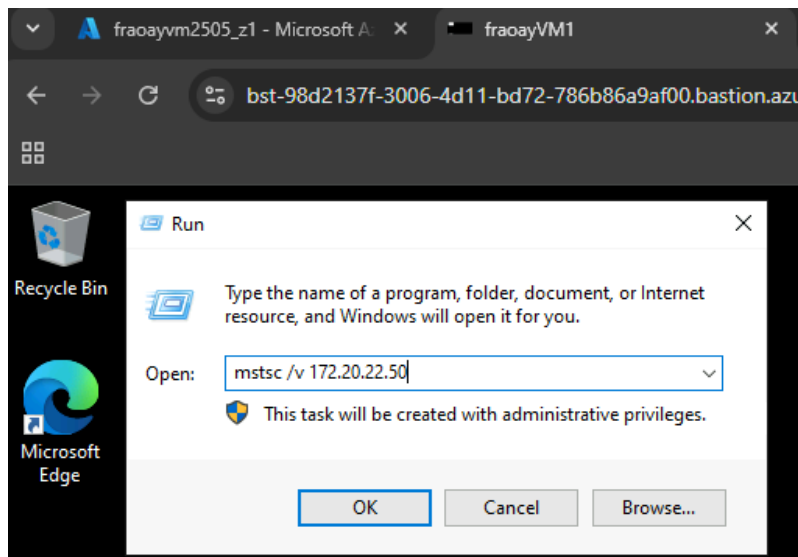
☒ Open in new browser tab

Connect

'fraoayVM1' via Bastion:



Connect VM2 by RDP from VM1 by RDP to its private IP:



Install VM2 and IIS on change its default webpage:

The screenshot shows a web browser window with the URL `bst-98d2137f-3006-4d11-bd72-786b86a9af00.bastion.azure.com/#/client/ZnJhb2F5Vk0yAGMAYmlmcm5`. Below the browser is the Server Manager interface. The top navigation bar shows 'Server Manager' and 'Dashboard'. The left sidebar has a 'Dashboard' link and a list of server types: 'Local Server', 'All Servers', and 'File and Storage Services'. The main content area displays 'WELCOME TO SERVER MANAGER' with a 'QUICK START' section. A numbered list of steps is shown: 1. 'Configure this local server', 2. 'Add roles and features' (highlighted with a green box), and 3. 'Add other servers to manage'. Below this, the 'Add Roles and Features Wizard' is open. The wizard's title bar says 'Add Roles and Features Wizard'. The main heading is 'Select server roles'. On the right, it says 'DESTINATION SERVER fraoayVM2'. The left sidebar of the wizard lists steps: 'Before You Begin', 'Installation Type', 'Server Selection', 'Server Roles' (highlighted with a blue bar), 'Features', 'Web Server Role (IIS)', 'Role Services', 'Confirmation', and 'Results'. The main area of the wizard shows a list of roles to install. The roles are: Active Directory Domain Services, Active Directory Federation Services, Active Directory Lightweight Directory Services, Active Directory Rights Management Services, Device Health Attestation, DHCP Server, DNS Server, Fax Server, File and Storage Services (1 of 12 installed), Host Guardian Service, Hyper-V, Network Controller, Network Policy and Access Services, Print and Document Services, Remote Access, Remote Desktop Services, Volume Activation Services, Web Server (IIS) (checked with a green box), Windows Deployment Services, and Windows Server Update Services. On the right, a description for 'Web Server (IIS)' is provided: 'Web Server (IIS) provides a reliable, manageable, and scalable Web application infrastructure.' At the bottom, there are four buttons: '< Previous', 'Next >' (highlighted with a green box), 'Install', and 'Cancel'.

fraoayVM2 - Microsoft Azure x fraoayVM2 x +

bst-98d2137f-3006-4d11-bd72-786b86a9af00.bastion.azure.com/#/client/ZnJhb2F5Vk0yAGMAYmlmcm5

Server Manager

Server Manager Dashboard

WELCOME TO SERVER MANAGER

QUICK START

1 Configure this local server

2 Add roles and features

3 Add other servers to manage

Add Roles and Features Wizard

Select server roles

DESTINATION SERVER fraoayVM2

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Web Server Role (IIS)

Role Services

Confirmation

Results

Select one or more roles to install on the selected server.

Roles

- ☐ Active Directory Domain Services
- ☐ Active Directory Federation Services
- ☐ Active Directory Lightweight Directory Services
- ☐ Active Directory Rights Management Services
- ☐ Device Health Attestation
- ☐ DHCP Server
- ☐ DNS Server
- ☐ Fax Server
- ☒ File and Storage Services (1 of 12 installed)
- ☐ Host Guardian Service
- ☐ Hyper-V
- ☐ Network Controller
- ☐ Network Policy and Access Services
- ☐ Print and Document Services
- ☐ Remote Access
- ☐ Remote Desktop Services
- ☐ Volume Activation Services
- ☒ Web Server (IIS)
- ☐ Windows Deployment Services
- ☐ Windows Server Update Services

Description

Web Server (IIS) provides a reliable, manageable, and scalable Web application infrastructure.

< Previous Next > Install Cancel

Confirm installation selections

DESTINATION SERVER
fraoayVM2

Before You Begin

Installation Type

Server Selection

Server Roles

Features

Web Server Role (IIS)

Role Services

Confirmation

Results

To install the following roles, role services, or features on selected server, click Install.

☒ Restart the destination server automatically if required

Optional features (such as administration tools) might be displayed on this page because they have been selected automatically. If you do not want to install these optional features, click Previous to clear their check boxes.

Web Server (IIS)

- Management Tools
 - IIS Management Console
- Web Server
 - Common HTTP Features
 - Default Document
 - Directory Browsing
 - HTTP Errors
 - Static Content
 - Health and Diagnostics

[Export configuration settings](#)[Specify an alternate source path](#)

< Previous

Next >

Install

Cancel

fraoayVM2 - Microsoft Azure x fraoayVM2 x +

bst-98d2137f-3006-4d11-bd72-786b86a9af00.bastion.azure.com/#/client/ZnJhb2F5Vk0yAGMAYmlmcm9zdA==?trustedAuthority=http

Server Manager

Server Manager ▸ IIS

Dashboard

Local Server

All Servers

File and Storage Services ▸

IIS

SERVERS
All servers | 1 total

Filter

Server Name	IPv4 Address	Manageability	Last Update	Windows Activation
fraoayVM2	172.20.22.50	Online - Performance counters not started	7/13/2025 4:47:26 PM	00446-90000-00000-AA612 (Activated)

fraoayVM2 - Microsoft Azure x fraoayVM2 x +

bst-98d2137f-3006-4d11-bd72-786b86a9af00.bastion.azure.com/#/client/ZnJhb2F5Vk0yAGMAYmlmcm9zdA==?trustedAuthority=http

Recycle Bin

Microsoft Edge

wwwroot

File Home Share View

This PC ▸ Windows (C:) ▸ inetpub ▸ wwwroot

Quick access

- Desktop
- Downloads
- Documents
- Pictures
- This PC
- Network

Name

iisstart

Date modified

Type

Size

Microsoft Edge H... 1 KB

PNG File 98 KB

Open

Share

Open with

Restore previous versions

Send to

Cut

Copy

Create shortcut

Delete

Rename

Properties

Internet Explorer

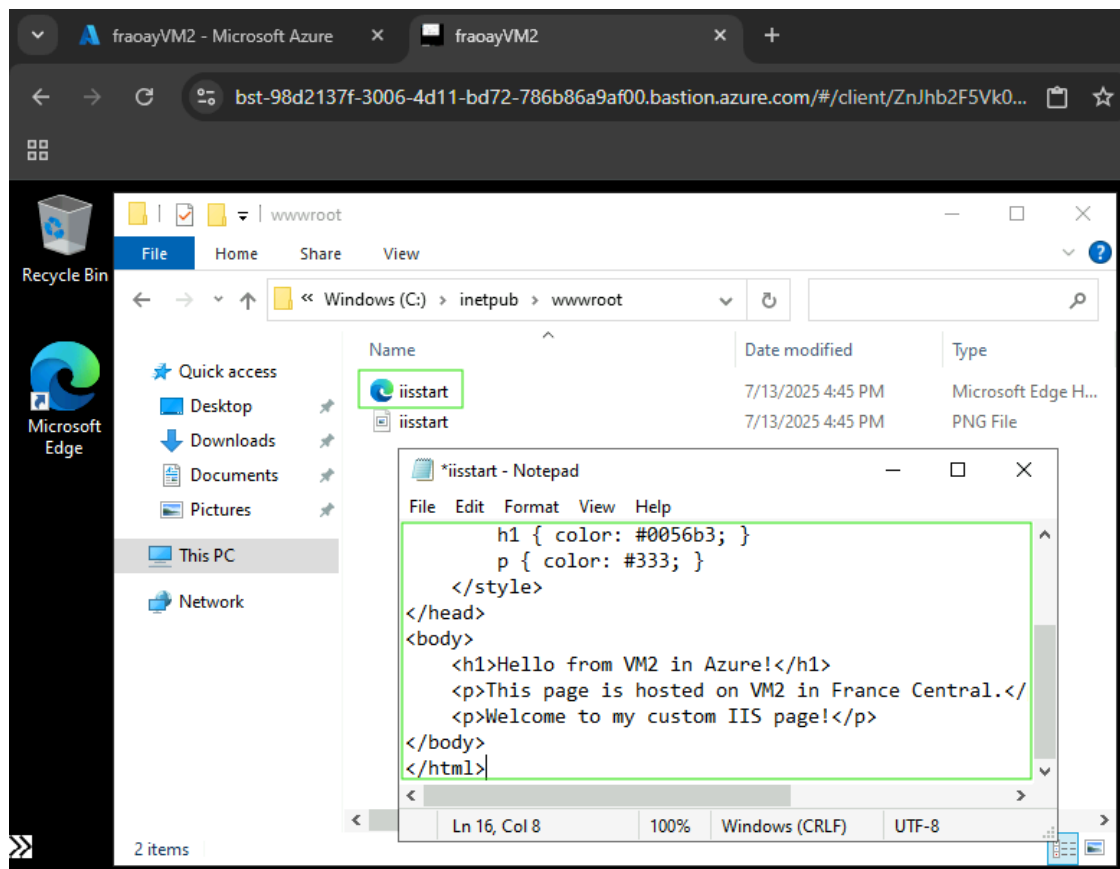
Microsoft Edge

Notepad

Search the Microsoft Store

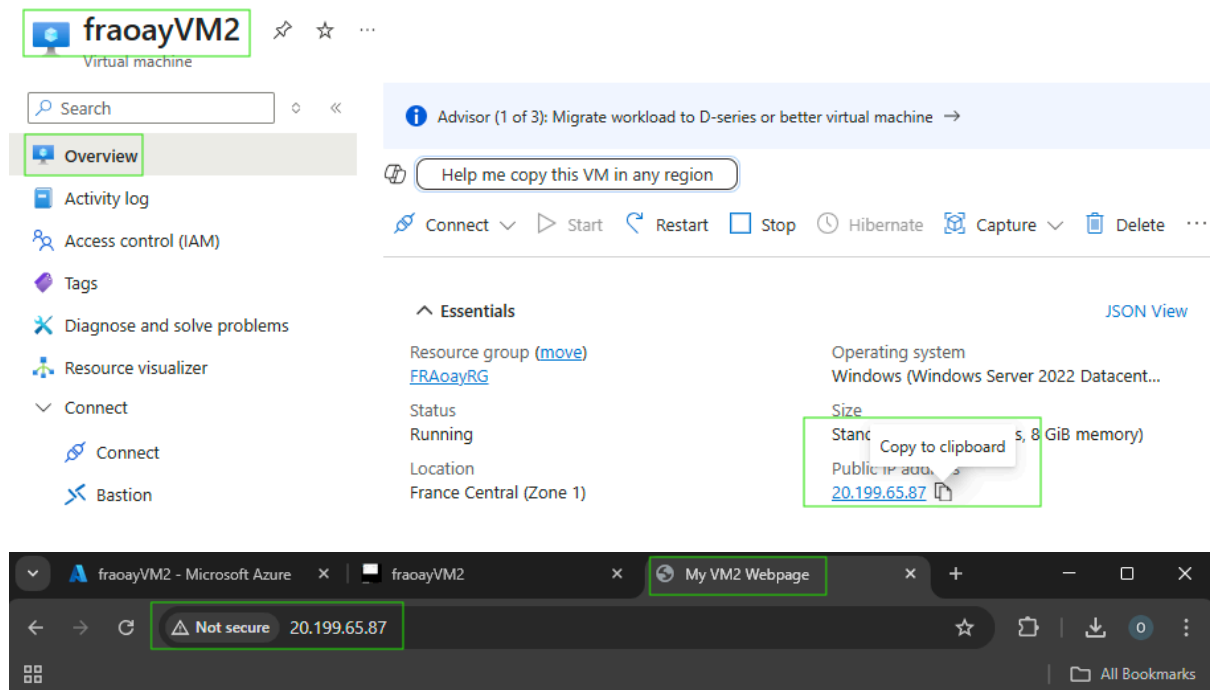
Choose another app

Edit the content inside the html to custom + save:



Connect from your computer to the public website of VM2:

Copy IP public of 'fraoayVM2' to local browser:



Hello from VM2 in Azure!

This page is hosted on VM2 in France Central.

Welcome to my custom IIS page!

Delete the RG and check that the process deleted all resources:

FRAoayRG

Resource group

Search

Create

Manage view

Delete resource group

Refresh

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

Cost Management

Essentials

Subscription (move)

Azure subscription 1

Subscription ID

48e82b54-5183-45ec-8762-91ac4aaddbdb4

Tags (edit)

Add tags

Deployments

4 Succeeded

Location

France Central

Resources

Recommendations

Delete a resource group

X

The following resource group and all its dependent resources will be permanently deleted.

Resource group to be deleted

FRAoayRG

Dependent resources to be deleted (13)

All dependent resources, including hidden types, are shown

Name	Resource type
enablevmAccess (fraoayVM1/enablevmAccess)	Microsoft.Compute/virtualMachines/ex...
fraoayVM1	Virtual machine
fraoayVM1-nsg	Network security group
fraoayvm1713_z1	Network interface
fraoayVM1_OsDisk_1_d7ae2a31c51448d4aafb50c5	Disk
fraoayVM2	Virtual machine
fraoayVM2-ip	Public IP address
fraoayVM2-nsg	Network security group
fraoayvm2505_z1	Network interface
fraoayVM2_OsDisk_1_2e396a6d89ec4e27884b32e	Disk
FRAoayVnet	Virtual network
FRAoayVnet-bastion	Bastion

☒ Apply force delete for selected Virtual machines and Virtual machine scale sets

Enter resource group name to confirm deletion *

FRAoayRG

Delete

Cancel

Deleting resource group FRAoayRG

Running X

Deleting resource group FRAoayRG

2 minutes ago

Deleted resource group FRAoayRG

Deleted resource group FRAoayRG

3 minutes ago

End of Azure project by Omer Asraf