

GRAPHIC BUNDLE

Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond

Chapter 1:

The screenshot shows the Microsoft Practice Resources dashboard for the AZ-104 exam. At the top, there's a navigation bar with 'Practice Resources' on the left and a 'SHARE FEEDBACK' button on the right. Below the navigation bar is a 'DASHBOARD' section featuring the book cover of 'Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond' by Donovan Kelly. This section also includes four dropdown menus: 'Mock Exams', 'Hands-On Activities', 'Exam Readiness Drills', and 'Flashcards'. Below this is a 'BACK TO THE BOOK' section with the book cover and title again. The main content area contains four comparison cards for Microsoft Entra ID plans:

Microsoft Entra ID Free	Microsoft Entra ID P1	Most comprehensive Microsoft Entra ID P2	Promotional offer available? Microsoft Entra ID Governance
Free	£4.90 user/month	£7.40 user/month	£5.80 user/month
Included with Microsoft cloud subscriptions such as Microsoft Azure, Microsoft 365, and others. ¹	Microsoft Entra ID P1 (formerly Azure Active Directory P1) is available as a standalone or included with Microsoft 365 E3 for enterprise customers and Microsoft 365 Business Premium for small to medium businesses.	Microsoft Entra ID P2 (formerly Azure Active Directory P2) is available as a standalone or included with Microsoft 365 E5 for enterprise customers. Price does not include VAT.	Entra ID Governance is an advanced set of identity governance capabilities for Microsoft Entra ID P1 and P2 customers. Special pricing is available for Microsoft Entra P2 customers. Price does not include VAT.
Sign in with your Microsoft account	Try free for 30 days	Try free for 30 days	Try free
Create a free Azure account >	Contact sales >	Contact sales >	Contact sales >

A red arrow points from the 'Try free for 30 days' button in the Microsoft Entra ID P1 card to the 'Try free for 30 days' button in the Microsoft Entra ID P2 card.

About you

Sign-in details

Complete & get started

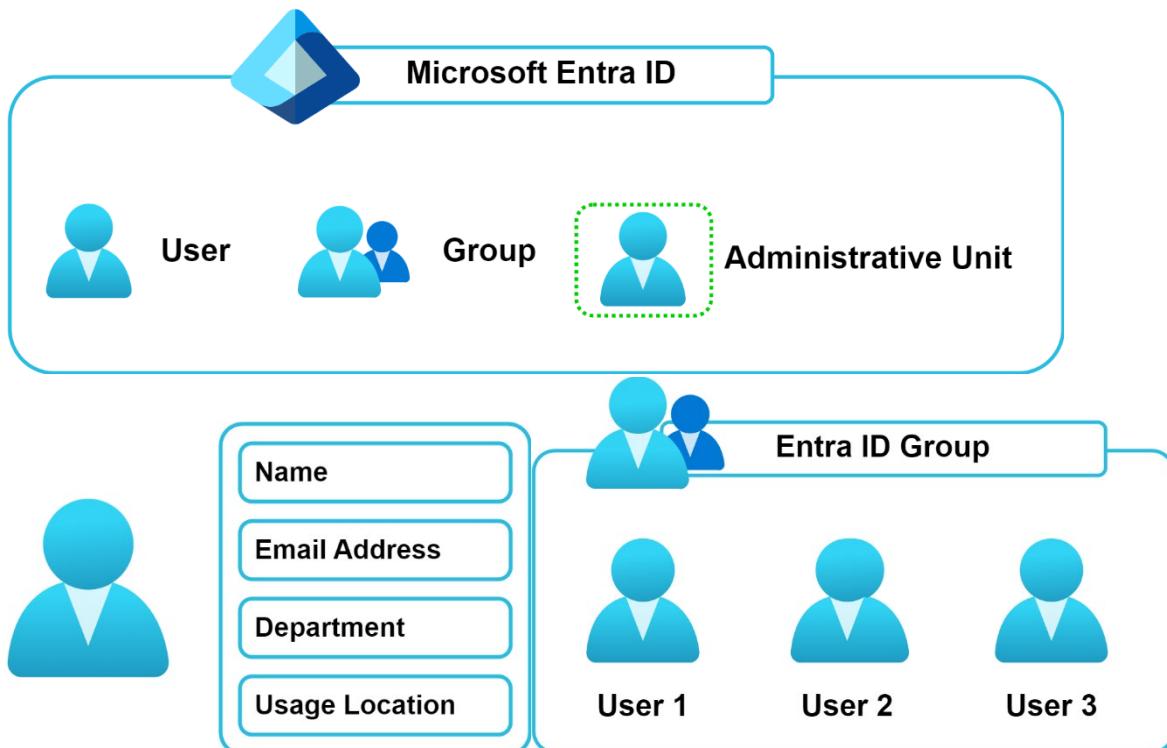
Let's get you started

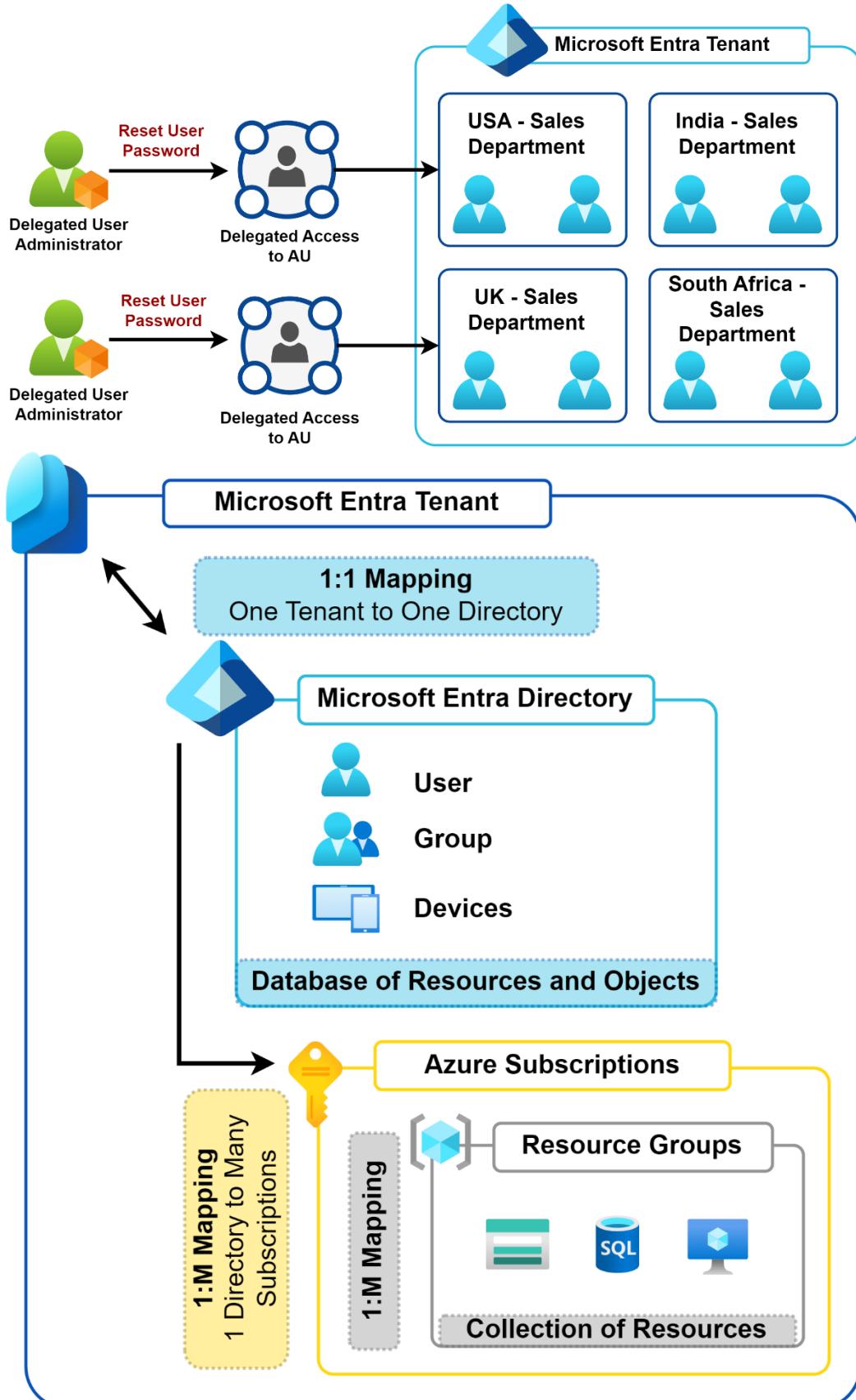
Enter your work or school email address, we'll check if you need to create a new account for Microsoft Entra ID P1 Trial.

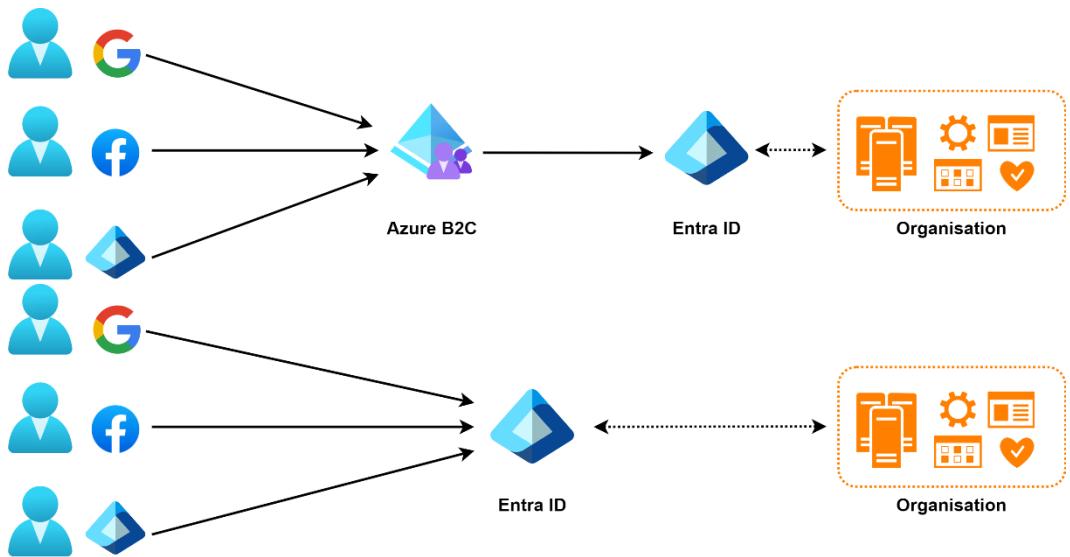
Email

This is required

Next







The screenshot shows the Microsoft Entra ID 'Users' page. The top navigation bar includes a search bar, a 'New user' button (highlighted with a red box and arrow), a 'Download users' button, 'Bulk operations' dropdown, 'Refresh' button, and a three-dot menu. A modal window titled 'Create new user' is open, with the sub-section 'Invite external user' selected. It prompts 'Create a new internal user in your organization'. Below the modal, a table lists six existing users:

	User Principal Name	Email Address
WJ	William Jones	william.jones@azureexpert.co.za
SL	Sophia Lewis	sophia.lewis@azureexpert.co.za
RJ	Robert Johnson	robert.johnson@azureexpert.co.za
OW	Olivia Wilson	olivia.wilson@azureexpert.co.za
MD	Michael Davis	michael.davis@azureexpert.co.za

Create new user

...

Create a new internal user in your organization

Basics Properties Assignments Review + create

Create a new user in your organization. This user will have a user name like alice@contoso.com. [Learn more](#)

Identity

User principal name

DemoUser1

@ azureexpert.co.za



Domain not listed

Mail nickname *

DemoUser1

Derive from user principal name

Display name*

DemoUser1

Password *



Auto-generate password

Account enabled ⓘ



[Review + create](#)

< Previous

Next: Properties >



Identity

First name

Demo

Last name

User1

User type

Member



Authorization info

+ Edit Certificate user IDs

Job Information

Job title	Azure Administrator
Company name	Azure Expert
Department	IT
Employee ID	IT0035
Employee type	Permanent
Employee hire date	Sun Jan 01 2023 
Office location	South Africa
Manager	+ Add manager

Contact Information

Street address	1 Fake Street
City	Some City
State or province	This State
ZIP or postal code	10101
Country or region	South Africa
Business phone	101010101
Mobile phone	10101010111
Email	demouser1@azureexpert.co.za
Other emails	+ Add email
Fax number	

Parental controls

Age group	Adult 
Consent provided for minor	Not required 

Settings

Usage location	South Africa 
----------------	--

Basics Properties **Assignments** Review + create

Make up to 20 group or role assignments. You can only add a user to a maximum of 1 administrative unit.

+ Add administrative unit + Add group + Add role

No assignments to display.

Groups | All groups

Azure Expert - Microsoft Entra ID

All groups **New group** Download groups Refresh ...

All groups Deleted groups Diagnose and solve problems

Settings General Expiration

Search mode Contains 18 groups found

Group type * ⓘ Security

Group name * ⓘ Azure Admins

Group description ⓘ Dynamic group for all Azure Admins

Microsoft Entra roles can be assigned to the group ⓘ Yes No

Membership type * ⓘ Dynamic User

Owners
No owners selected

Dynamic user members * ⓘ **Add dynamic query**

Dynamic membership rules

 Save  Discard | Got feedback?

[Configure Rules](#) [Validate Rules \(Preview\)](#)

You can use the rule builder or rule syntax text box to create or edit a dynamic membership rule. [Learn more](#)

And/Or	Property	Operator	Value
	jobTitle	Equals	Azure Administrator

[+ Add expression](#) [+ Get custom extension properties](#)

Rule syntax [Edit](#)

```
(user.jobTitle -eq "Azure Administrator")
```

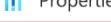
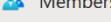
Azure Admins | Members

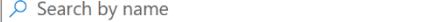
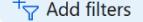
Group

 Overview  Diagnose and solve problems

 Add members  Remove  Refresh |  Bulk operations |  Columns

Manage

 Properties  Members  Owners  Roles and administrators

 Search by name 

Name	Type	Email	User type
DemoUser1	User		Member
DemoUser2	User		Member
DemoUser3	User		Member

Azure Admins | Dynamic membership rules

Group

Overview Diagnose and solve problems

Configure Rules **Validate Rules (Preview)**

Rule syntax
(user.jobTitle -eq "Azure Administrator")

Add users to validate against this rule. [Learn more](#)

+ Add users **Validate**

In group Not in group Unknown

Name	Status
DA David Anderson david.anderson@azureexpert.co.za	X View details
DE DemoUser1 demo.user1@azureexpert.co.za	✓ View details
DE DemoUser2 demo.user2@azureexpert.co.za	✓ View details
DE DemoUser3 demo.user3@azureexpert.co.za	✓ View details

Properties Members Owners Roles and administrators Administrative units Group memberships Applications Licenses Azure role assignments **Dynamic membership rules**

Activity Access reviews Audit logs Bulk operation results

Azure Expert | Administrative units

Microsoft Entra ID

Manage

Learn more + Add Delete Refresh Preview features ...

Search administrative units Add filters

Name	Description	Restricted management
No administrative units found.		

Users Groups External Identities Roles and administrators **Administrative units** Delegated admin partners

Add administrative unit

X

Got feedback?

Properties

Assign roles

Review + create

Name *

South Africa Users



Description

All South African Users

Restricted management administrative unit ⓘ

Yes

No

Review + create

Next: Assign roles >



Home > Azure Expert | Administrative units

Add administrative unit

Got feedback?

Properties

Assign roles

Review +

Administrative roles

Administrative roles can be used to grant access to resources.

Role ↑

Authentication Administrator

Cloud Device Administrator

Groups Administrator

Helpdesk Administrator

License Administrator

Password Administrator

Printer Administrator

SharePoint Administrator

Teams Administrator

Add assignments

Try changing or adding filters if you don't see what you're looking for.

Search

Demo

Selected (1)

Reset

DemoUser1
demo.user1@azureexpert.co.za



4 results found

All

Users

Name	Type	Details
DemoUser	User	demo.user@azureexpert.co.za
<input checked="" type="checkbox"/> DemoUser1	User	demo.user1@azureexpert.co.za
<input type="checkbox"/> DemoUser2	User	demo.user2@azureexpert.co.za
<input type="checkbox"/> DemoUser3	User	demo.user3@azureexpert.co.za

Review + create

Previous

Add



[Home](#) > [Azure Expert | Administrative units](#) > [South Africa Users](#)

South Africa Users | Users

Azure Expert - Microsoft Entra ID

Manage

- Properties (Preview)
- Users**
- Groups
- Devices
- Roles and administrators

Bulk operation results

Search [Add member](#)

Search users 0 users found

Name No users found

All Users

	Name	Type	Details
<input type="checkbox"/>	DemoUser	User	demo.user@azureexpert.co.za
<input checked="" type="checkbox"/>	DemoUser1	User	demo.user1@azureexpert.co.za
<input checked="" type="checkbox"/>	DemoUser2	User	demo.user2@azureexpert.co.za
<input checked="" type="checkbox"/>	DemoUser3	User	demo.user3@azureexpert.co.za

[Select](#)

South Africa Users | Users

Azure Expert - Microsoft Entra ID

Manage

- Properties (Preview)
- Users**
- Groups
- Devices
- Roles and administrators

Search [Add member](#) [Remove member](#) [Bulk operations](#) [Refresh](#)

Search users [Add filters](#)

3 users found

	Name	User principal name	User type
<input type="checkbox"/>	DE DemoUser1	demo.user1@azureexpert.co.za	Member
<input type="checkbox"/>	DE DemoUser2	demo.user2@azureexpert.co.za	Member
<input type="checkbox"/>	DE DemoUser3	demo.user3@azureexpert.co.za	Member

DemoUser3

User

Search

[Edit properties](#) [Delete](#) [Refresh](#)

Overview Audit logs

Overview Monitoring Properties

All [Identity](#) Job Information Contact Information Parental controls Settings On-premises

All Identity **Job Information** Contact Information Parental controls Settings On-premises

This view only contains properties that can be updated. [Learn more](#)

Search "Job Information" ...

Showing 9 results under "Job Information"

Job title	Azure Administrator
Company name	Azure Expert
Department	IT
Employee ID	IT0036
Employee type	Permanent
Employee hire date	Sun Jan 01 2023
Office location	South Africa
Manager	+ Add manager
Sponsors (preview)	+ Add sponsors

Groups | All groups

Azure Expert - Microsoft Entra ID

New group Download groups Refresh

All groups Deleted groups Diagnose and solve problems

Search Add filter

Search mode Contains

19 groups found

<input type="checkbox"/>	Name ↓
<input type="checkbox"/>	SA Sales
<input type="checkbox"/>	RA Research and Development

Sales | Properties

Group

Save Discard Got feedback?

Overview

Diagnose and solve problems

Manage

Properties

Members

Owners

Roles and administrators

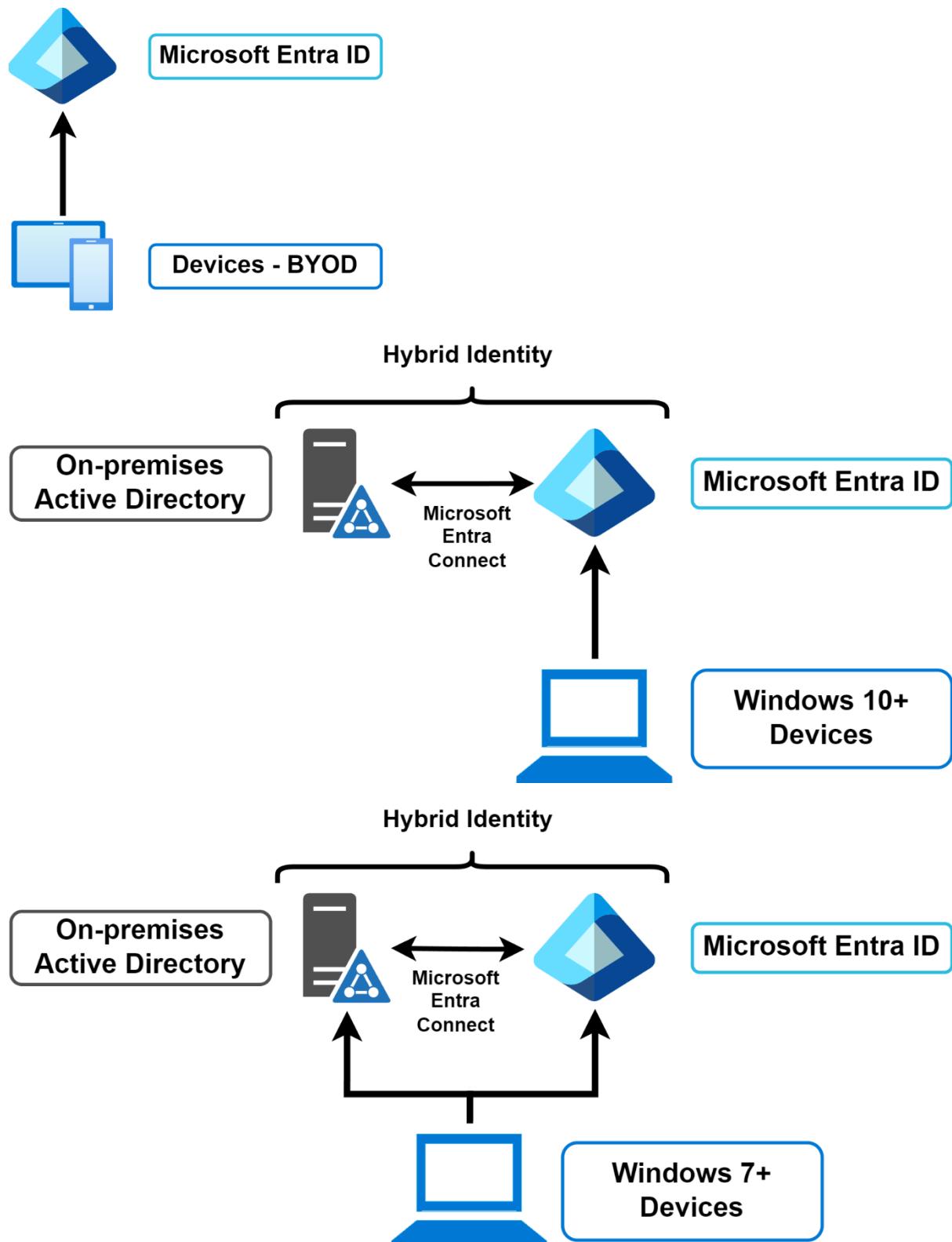
General settings

Group name * ✓

Group description ✓

Group type

Chapter 2:



Users may join devices to Microsoft Entra (i)

All

Selected

None

Users may register their devices with Microsoft Entra (i)

All

None

i [Learn more on how this setting works](#)

Require Multifactor Authentication to register or join devices with Microsoft Entra (i)

Yes

No

! We recommend that you require Multifactor Authentication to register or join devices with Microsoft Entra using [Conditional Access](#). Set this device setting to No if you require Multifactor Authentication using Conditional Access.

Local administrator settings

[Manage Additional local administrators on all Microsoft Entra joined devices](#)

Enable Microsoft Entra Local Administrator Password Solution (LAPS) (i)

Yes

No

Restrict users from recovering the BitLocker key(s) for their owned devices (i)

Yes

No

Users may sync settings and app data across devices (i)

All

Selected

None

Azure Expert | Overview

Microsoft Entra ID

Overview

Preview features

Diagnose and solve problems

Manage

- Users**
- Groups**
- External Identities**
- Roles and administrators**
- Administrative units**
- Delegated admin partners**
- Enterprise applications**
- Devices**

Basic information

Name	Azure Expert
Tenant ID	
Primary domain	
License	Microsoft Entra ID P2

Users 21



Devices | Device settings

Azure Expert - Microsoft Entra ID

Overview

All devices

Manage

- Device settings**
- Enterprise State Roaming**
- BitLocker keys (Preview)**
- Local administrator password recovery**

Activity

- Audit logs**
- Bulk operation results (Preview)**

Troubleshooting + Support

- New support request**

Microsoft Entra join and registration settings

Users may join devices to Microsoft Entra ⓘ

All Selected None

Selected
No member selected

Users may register their devices with Microsoft Entra ⓘ

All None

i Learn more on how this setting works

Require Multifactor Authentication to register or join devices with Microsoft Entra ⓘ

Yes **No**



Devices | All devices

Azure Expert - Microsoft Entra ID

Overview All devices Manage

Device settings Enterprise State Roaming BitLocker keys (Preview) Local administrator password recovery

Download devices Refresh Manage view Enable

Azure Active Directory is now Microsoft Entra ID. Learn More

Search by name or device ID or object ID

Add filters

1 device found

	Name ↑	Enabled	OS	Version
<input type="checkbox"/>	workstation1	Yes	Windows	10.0.19044.2728

Enable Disable Delete Manage Got feedback?

Name: workstation1

Device ID: 6e43fa23-87a1-4f66-8672

Object ID: -3a44-478c-affe-95cbd3d798df

Enabled: Yes

OS: Windows

Devices | Audit logs

Azure Expert - Microsoft Entra ID

Overview All devices Manage

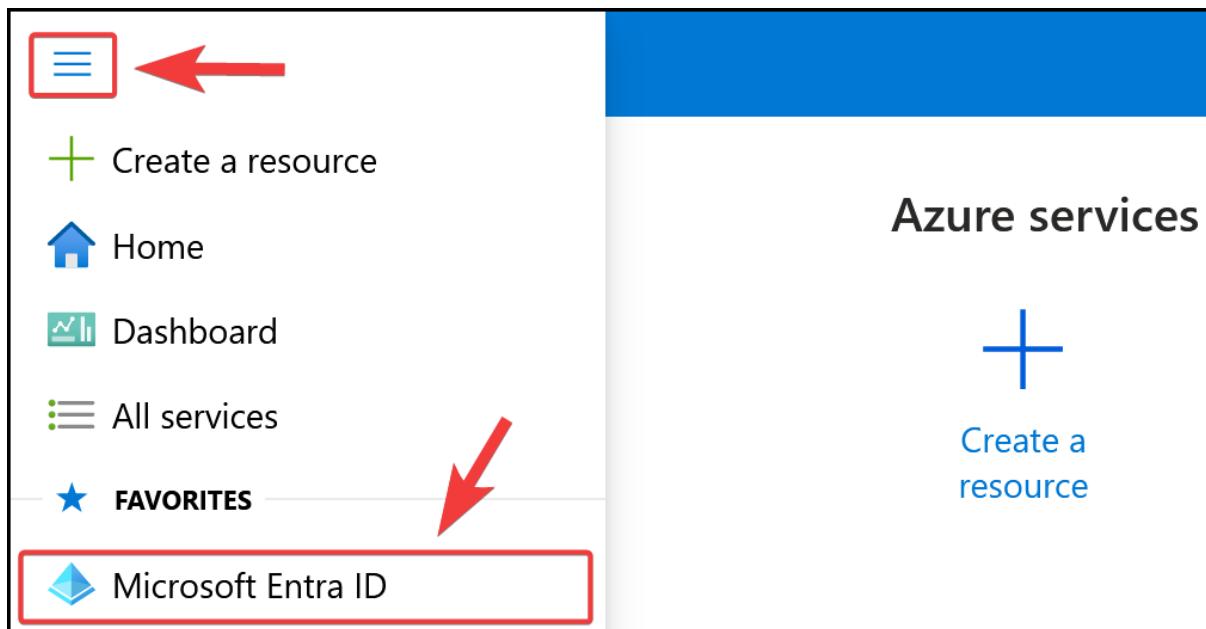
Device settings Enterprise State Roaming BitLocker keys (Preview) Local administrator password recovery

Audit logs Bulk operation results (Preview)

Date : Last 1 month Show dates as : Local Service : All Category : All Activity : All Add filters

This view will be soon replaced with a view that includes infinite scrolling and column reordering. Try out our new audits preview. →

Date	Service	Category	Activity	Status
08/01/2024, 23:03:50	Device Registration Service	Device	Register device	Success
08/01/2024, 23:03:50	Core Directory	Device	Add registered owner to de...	Success
08/01/2024, 23:03:50	Core Directory	Device	Add registered users to dev...	Success
08/01/2024, 23:03:50	Core Directory	Device	Add device	Success
08/01/2024, 23:02:46	Device Registration Service	Device	Register device	Success
08/01/2024, 23:02:46	Core Directory	Device	Add registered users to dev...	Success
08/01/2024, 23:02:46	Core Directory	Device	Add registered owner to de...	Success



Default Directory

Microsoft Entra ID

- Application proxy
- Custom security attributes
- Licenses
- Cross-tenant synchronization

 **Licenses | All products** ...

Azure Expert - Microsoft Entra ID

« + Try / Buy + Assign

i Overview

✖ Diagnose and solve problems

Manage

Licensed features

All products

Self-service sign up products



MICROSOFT ENTRA ID P2

With Microsoft Entra ID P2 you can gain access to advanced security features, richer reports and rule based assignments to applications. Your end users will benefit from self-service capabilities and customized branding.

[More information](#)

Free trial

Microsoft Entra ID P2 enhances your directory with additional features that include multifactor authentication, policy driven management and end-user self-service. [Learn more about features](#)

The trial includes 100 licenses and will be active for 30 days beginning on the activation date. If you wish to upgrade to a paid version, you will need to purchase Microsoft Entra ID P2. [Learn more about pricing](#)

Microsoft Entra ID P2 is licensed separately from Azure Services. By confirming this activation you agree to the [Microsoft Online Subscription Agreement](#) and the [Privacy Statement](#).

Activate



Licenses | All products

Azure Expert - Microsoft Entra ID

Overview

Diagnose and solve problems

Manage

Licensed features

All products

Self-service sign up products

+ Try / Buy + Assign Bills Columns

Name Total

Microsoft 365 E5 Developer ... 25

Users and groups Assignment options

+ Add users and groups

Search Demo

4 results found

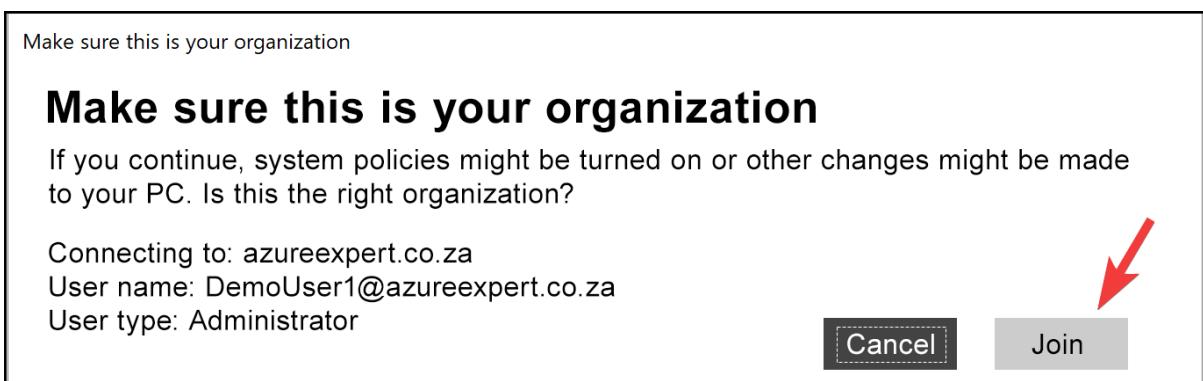
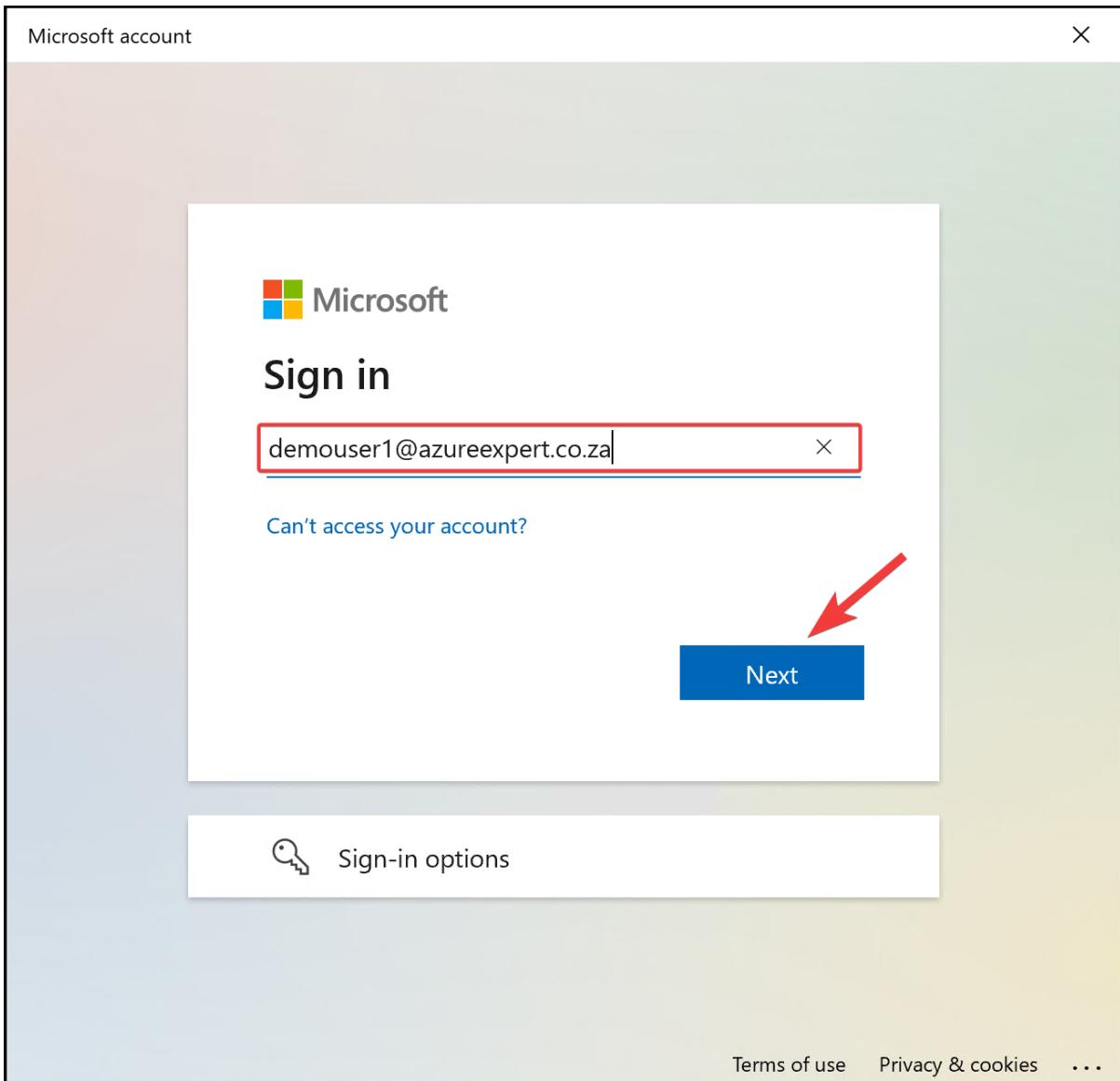
All Users Groups

	Name	Type	Details
<input type="checkbox"/>	DemoUser	User	demo.user@azureexpert.co.za
<input checked="" type="checkbox"/>	DemoUser1	User	DemoUser1@azureexpert.co.za
<input checked="" type="checkbox"/>	DemoUser2	User	demo.user2@azureexpert.co.za
<input type="checkbox"/>	DemoUser3	User	demo.user3@azureexpert.co.za

Select

The screenshot shows the Windows Settings app interface. On the left, there's a sidebar with options like 'Home', 'Find a setting', 'Accounts', 'Your info', 'Email & accounts', 'Sign-in options', and 'Access work or school'. The 'Access work or school' option is highlighted with a red box. On the right, the main area is titled 'Access work or school' with the sub-instruction 'Get access to resources such as email, apps and the network.' Below this, it says 'Connecting means that your work or school might control some things on this device, such as which settings you can change. Ask them for specific info about this.' At the bottom right of this area is a button labeled '+ Connect'.

The screenshot shows the 'Set up a work or school account' screen. It includes a header 'Microsoft account' with a close button 'X'. The main title is 'Set up a work or school account' with a descriptive text below it: 'You'll get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device, such as which settings you can change. For specific info about this, ask them.' A text input field contains the email address 'demouser1@azureexpert.co.za'. Below this, under 'Alternate actions:', there are two blue links: 'Join this device to Microsoft Entra ID' and 'Join this device to a local Active Directory domain'. A red arrow points to the first link. At the bottom right is a blue 'Next' button.



You're all set!

This device is connected to Azure Expert.

When you're ready to use this new account, select the Start button, select your current account picture, and then select 'Switch account'. Sign in using your **DemoUser1@azureexpert.co.za** email and password.

Access work or school

Get access to resources like email, apps, and the network. Connecting means your work or school might control some things on this device, such as which settings you can change. For specific info about this, ask them.



Connect



Connected to Azure Expert's Azure AD

Connected by DemoUser1@azureexpert.co.za

Devices | All devices ...

Azure Expert - Microsoft Entra ID

Overview

All devices

Manage

- Device settings
- Enterprise State Roaming
- BitLocker keys (Preview)
- Local administrator password recovery

Activity

- Audit logs
- Bulk operation results (Preview)

5 devices found

Name	Enabled	OS	Version	Join type	Owner
entrajoinvm1	Yes	Windows	10.0.19045.3803	Microsoft Entra joined	DemoUser1
entrajoinvm0	Yes	Windows	10.0.19045.3930	Microsoft Entra joined	DemoUser1
Windows10-AZ104	Yes	Windows	10.0.19045.3930	Microsoft Entra registered	DemoUser1
entrajoinvm2	Yes	Windows	10.0.19045.3803	Microsoft Entra registered	DemoUser1

Users ...

Azure Expert - Microsoft Entra ID

Search

New user

Download users

Bulk operations

All users

Azure Active Directory is now Microsoft Entra ID.

Download users

X

File name *

exportUsers_2024-1-12

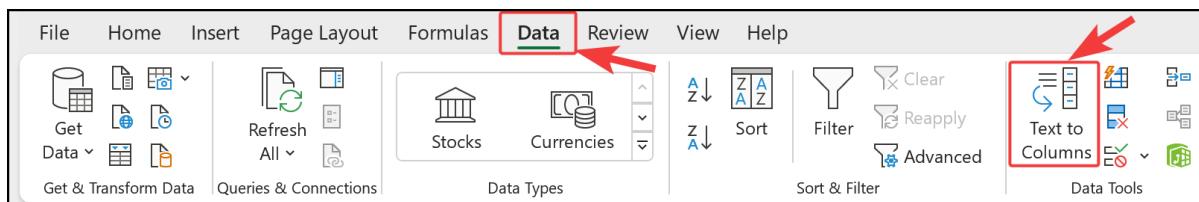
. CSV

Start

Succeeded

File is ready! Click here to download

	A	B	C	D	E
1	userPrincipalName,displayName,surname,mail,givenName				
2	demo.user3@azureexpert.co.za,DemoUser3,,,0d9633				
3	david.anderson@azureexpert.co.za,David Anderson,,,0d9633				
4	michael.davis@azureexpert.co.za,Michael Davis,,,4e8				
5	emily.clark@azureexpert.co.za,Emily Clark,,,5417941				



Convert Text to Columns Wizard - Step 1 of 3

? X

The Text Wizard has determined that your data is Fixed Width.

If this is correct, choose Next or choose the data type that best describes your data.

Original data type

Choose the file type that best describes your data:

- Delimited** - Characters such as commas or tabs separate each field.
 Fixed width - Fields are aligned in columns with spaces between each field.

Preview of selected data:

```
1 userPrincipalName,displayName,surname,mail,givenName,id,userTyp  
2 demo.user3@azureexpert.co.za,DemoUser3,,,0d963347-1aeb-431b-82  
3 david.anderson@azureexpert.co.za,David Anderson,,,24cf6556-3ef:  
4 michael.davis@azureexpert.co.za,Michael Davis,,,4e8d411e-18d4-  
5 emily.clark@azureexpert.co.za,Emily Clark,,,5417941f-f37a-46b3
```

Cancel < Back **Next >** **Finish**

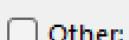
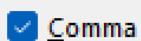
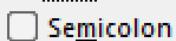
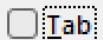


Convert Text to Columns Wizard - Step 2 of 3

? X

This screen lets you set the delimiters that your data contains. You can see how your text is affected in the preview below.

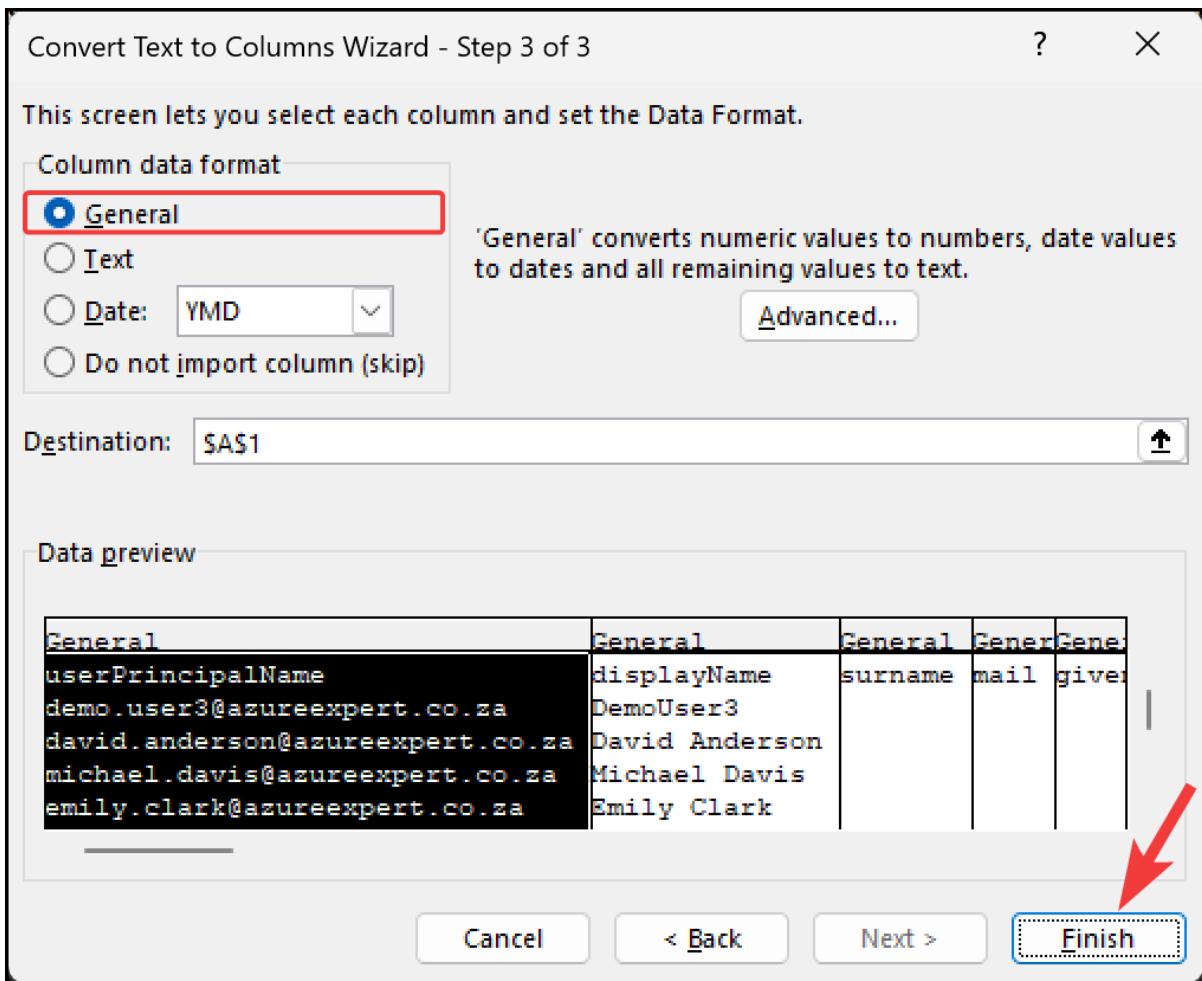
Delimiters

 Treat consecutive delimiters as oneText qualifier:

Data preview

userPrincipalName	displayName	surname	mail	givenName
demo.user3@azureexpert.co.za	DemoUser3			
david.anderson@azureexpert.co.za	David Anderson			
michael.davis@azureexpert.co.za	Michael Davis			
emily.clark@azureexpert.co.za	Emily Clark			





Users

Azure Expert - Microsoft Entra ID

Search << [New user](#) [Download users](#) [Bulk operations](#)

All users

Audit logs Search [Bulk create](#)

Sign-in logs [Bulk invite](#)

Diagnose and solve problems [Bulk delete](#)

21 users found [User principal name ↑](#)

Display name ↑

Bulk delete users

X

1. Download csv template (optional)

[Download](#)



2. Edit your csv file

3. Upload your csv file

Select a file



[Learn more about bulk delete users](#)

A
1 version:v1.0
2 User name [userPrincipalName] Required
3 jane.doe@azureexpert.co.za
4 bob.johnson@azureexpert.co.za

The screenshot shows the 'Users' page in the Azure portal. At the top, there's a search bar, a 'New user' button, a 'Download users' button, a 'Bulk operations' dropdown, a 'Refresh' button, a 'Manage view' dropdown, and a red box highlighting the 'Delete' and 'Per-user MFA' buttons. Below the header, a red box highlights the 'All users' link. The main area displays a table with 19 users found (3 users selected). The columns are 'Display name', 'User principal name', 'User type', and 'On-premises sync enabled'. Three users are selected: William Jones (william.jones@azureexpert.co.za), Sophia Lewis (sophia.lewis@azureexpert.co.za), and Robert Johnson (robert.johnson@azureexpert.co.za). A red arrow points to the 'Manage' link in the sidebar, and another red arrow points to the selected users in the table.

Display name	User principal name	User type	On-premises sync enabled
William Jones	william.jones@azureexpert.co.za	Member	No
Sophia Lewis	sophia.lewis@azureexpert.co.za	Member	No
Robert Johnson	robert.johnson@azureexpert.co.za	Member	No



Windows PowerShell

```
pwsh> cd c:\Scripts  
pwsh>
```



Windows PowerShell

```
pwsh> cd c:\Scripts  
pwsh> .\Create_EntraID_Users.ps1
```

Sign in to your account



Microsoft Azure



Sign in

Email, phone, or Skype

[Can't access your account?](#)

Back

Next



Sign-in options

[Terms of use](#) [Privacy & cookies](#) ...

 New user 

 Download users

Create new user

Create a new internal user in your organization

Invite external user

Invite an external user to collaborate with your organization

Invite external user

X

Invite an external user to collaborate with your organization

Basics Properties Assignments Review + invite

Invite a new guest user to collaborate with your organization. The user will be emailed an invitation they can accept in order to begin collaborating.

[Learn more](#) 

Identity

Email  *

GuestUser1@Gmail.com

Display name

Guest User

Invitation message

Send invite message 

Message

Welcome to our organization, please work responsibly and act as a member of our team. Please conduct Security Training 101 before performing any actions using your account.

 Review + invite

< Previous

Next: Properties >

 Give feedback

Users ...
Azure Expert - Microsoft Entra ID

Search New user Download users Bulk operations Refresh

All users (1 user found)

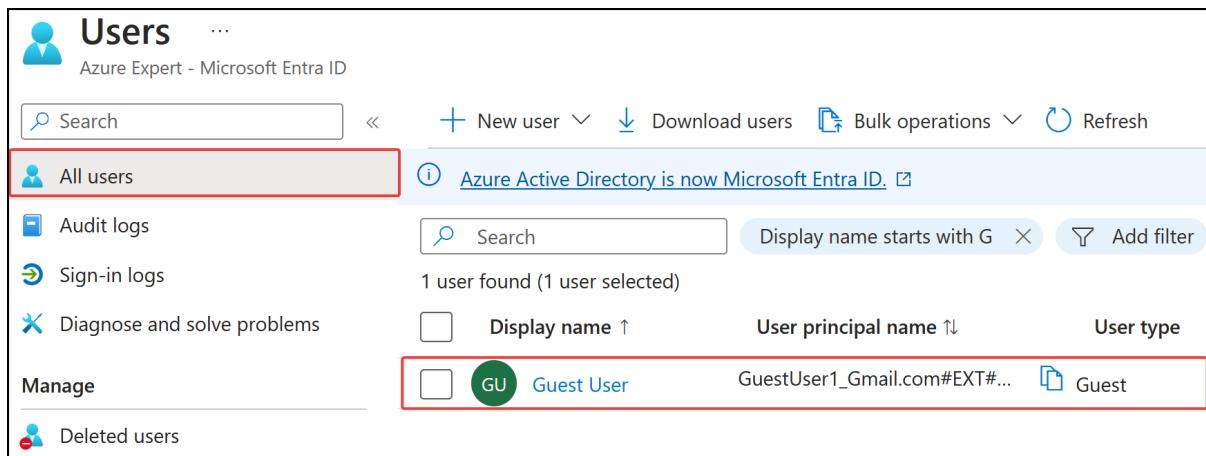
Audit logs Sign-in logs Diagnose and solve problems

Manage Deleted users

Display name starts with G Add filter

Display name ↑ User principal name ↑ User type

Guest User Guest User1_Gmail.com#EXT#... Guest



Azure Expert | Overview ...
Microsoft Entra ID

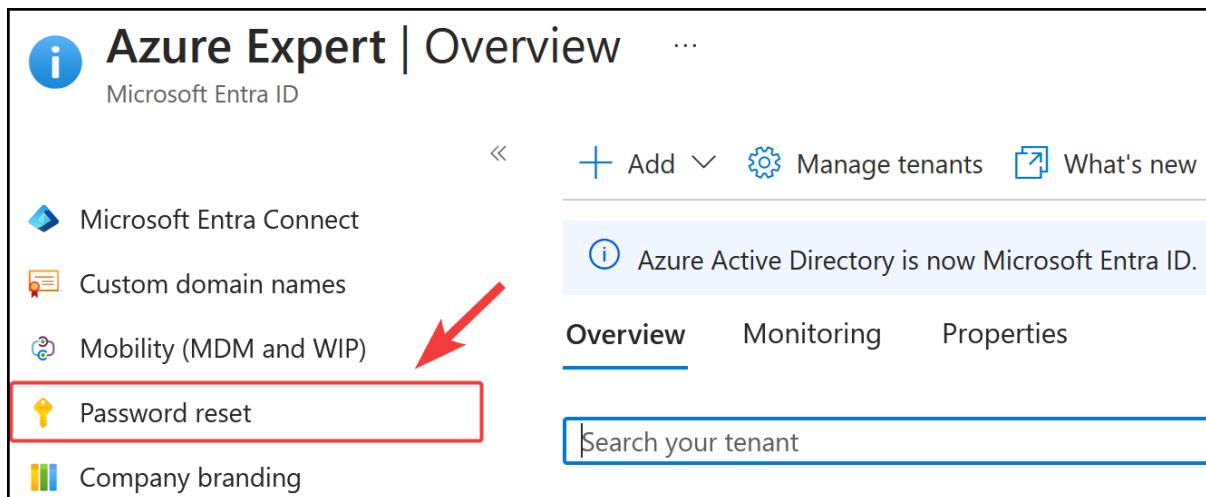
Add Manage tenants What's new

Azure Active Directory is now Microsoft Entra ID.

Overview Monitoring Properties

Search your tenant

Microsoft Entra Connect Custom domain names Mobility (MDM and WIP)  Password reset Company branding

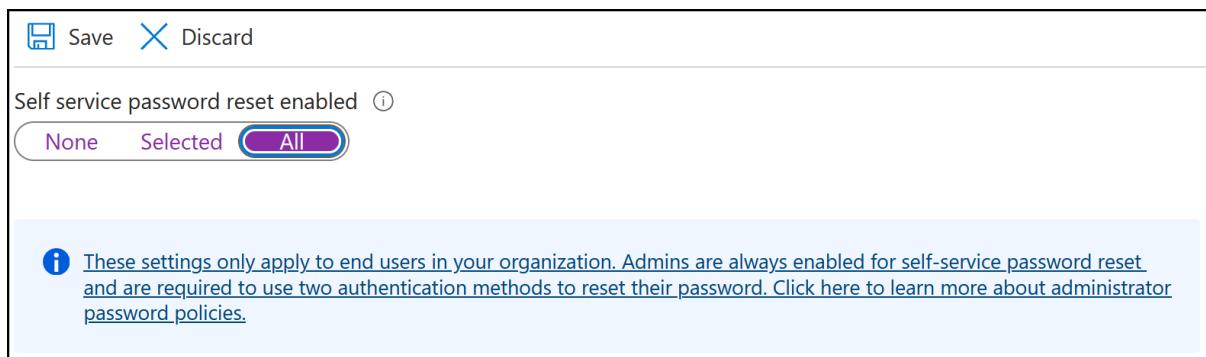


Save Discard

Self service password reset enabled 

None Selected All

 These settings only apply to end users in your organization. Admins are always enabled for self-service password reset and are required to use two authentication methods to reset their password. Click here to learn more about administrator password policies.



Password reset | Authentication methods

Azure Expert - Microsoft Entra ID

«  Save  Discard

 Diagnose and solve problems

Manage

 Properties

 Authentication methods

 Registration

 Notifications

 Customization

 On-premises integration

 Administrator Policy

Activity

 Audit logs

 Usage & insights

Troubleshooting + Support

 New support request

 Authentication Methods for SSPR and Signin can now be managed in one converged policy. [Learn more](#)

Number of methods required to reset 

 1 2

Methods available to users

Mobile app notification

Mobile app code

Email

Mobile phone (SMS only)

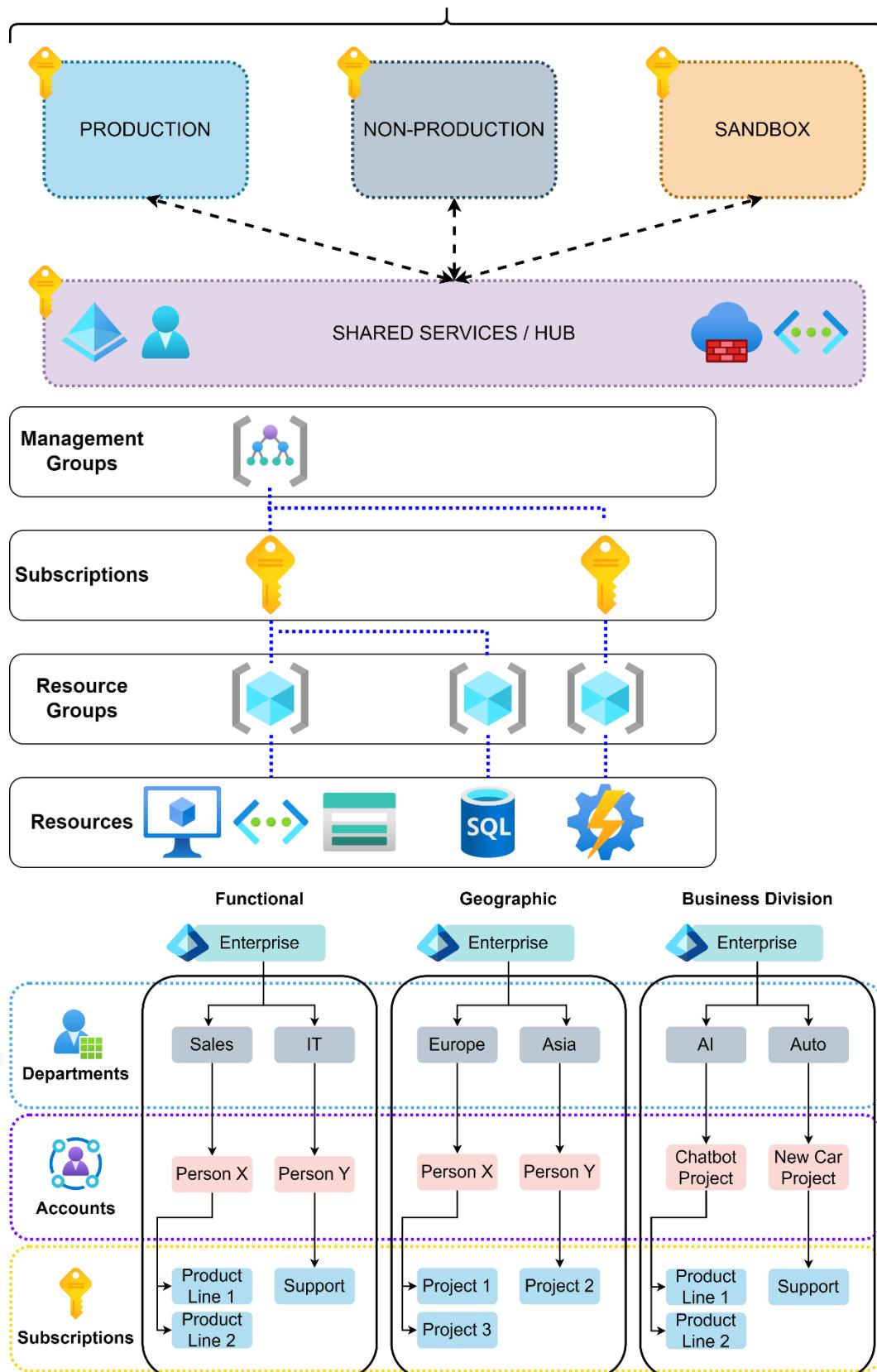
Office phone 

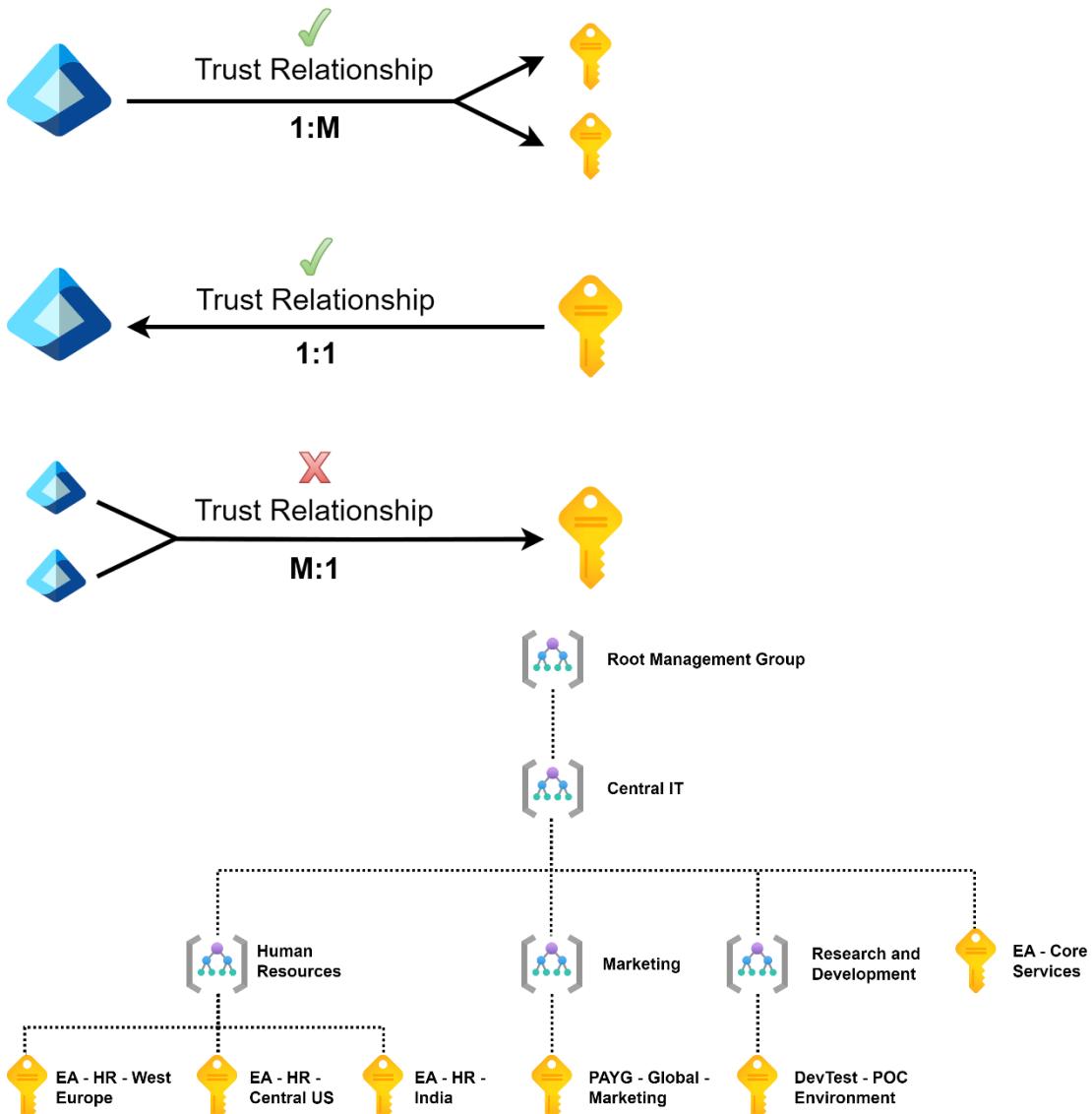
Security questions

 These settings only apply to end users in your organization. Admins are always enabled for self-service password reset and are required to use two authentication methods to reset their password. Click here to learn more about administrator password policies.

Chapter 3:

Subscription Types





management groups

All Services (26) Documentation (99+)

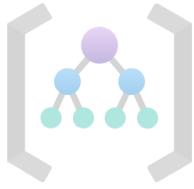
Marketplace (0)

Services

Management groups

API Management services

A red arrow points from the word "Services" to the "Management groups" button.



No management groups to display

Organize your subscriptions into groups called "management groups" to help you manage access, policy and compliance across your subscriptions. Management groups give you enterprise-grade management at a large scale no matter what type of subscriptions you might have. [Learn more](#)

[Start using management groups](#)



Create management group X

Create a new management group to be a child of 'Tenant Root Group'

Management group ID (Cannot be updated after creation) *

IT



Management group display name

IT



[Submit](#)

[Cancel](#)

↑↓ Name

Type

ID



Tenant Root Group

Management group



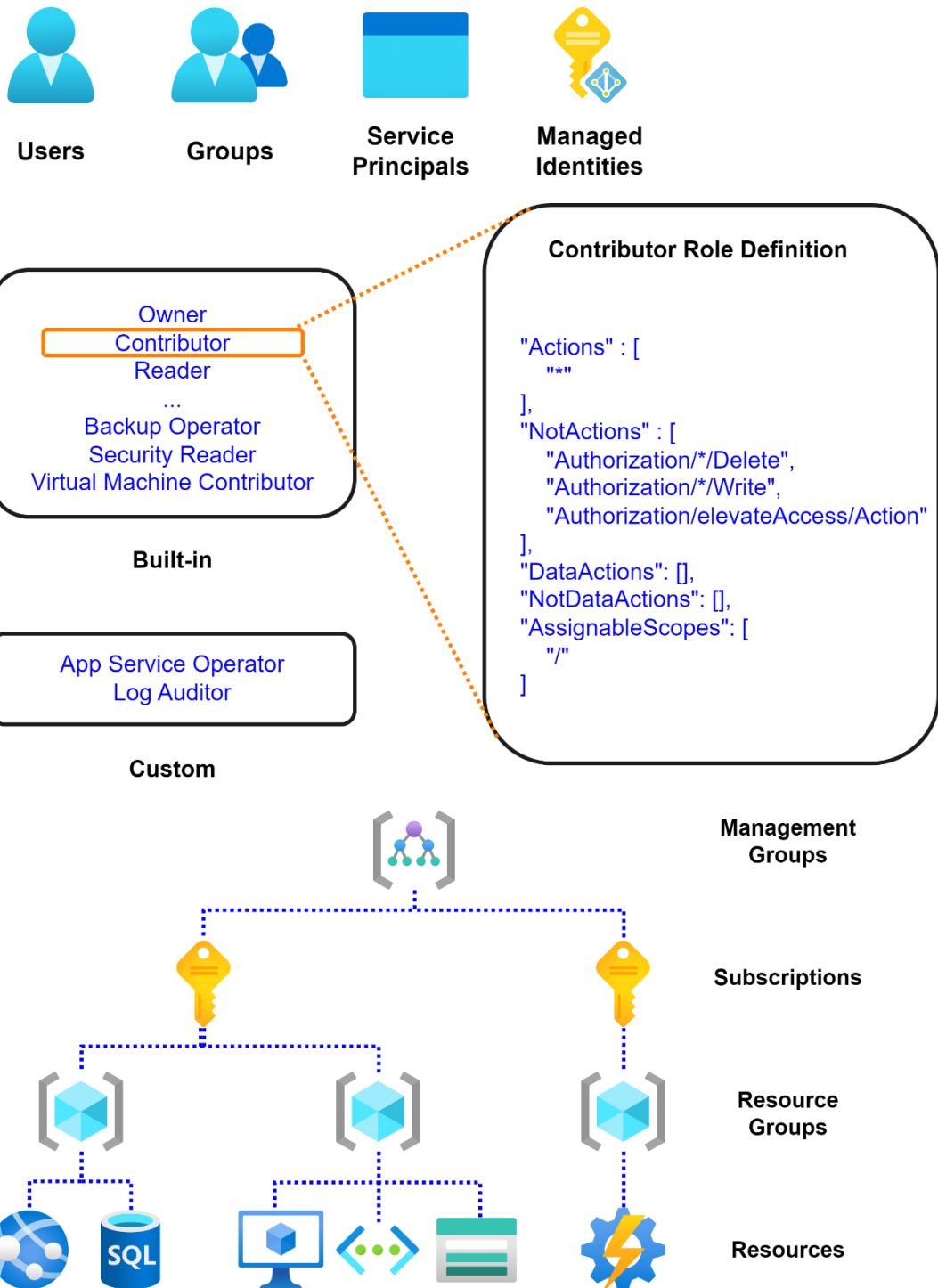
3 subscriptions

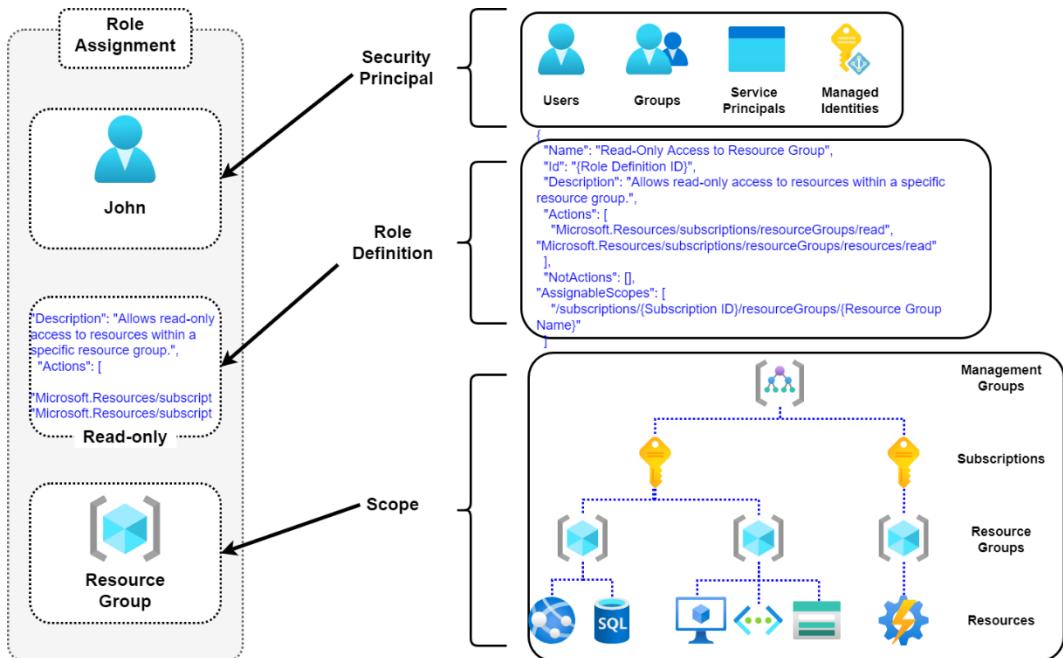


IT

Management group

IT





Screenshot of the Azure portal search results for "subscriptions":

- Search bar: subscriptions
- Filter buttons: All, Services (9), Marketplace (7), Documentation (99+), Microsoft Entra ID (1)
- Result count: Resource Groups (0)
- Services section:
 - Subscriptions** (highlighted with a red arrow)
 - OracleSubscription
 - Billing subscriptions
- Related items:
 - Event Grid (Keywords: subscription)
 - Quotas (Keywords: Subscription Limits)
 - Management groups (Keywords: subscription)

Screenshot of the Azure portal "Subscriptions" blade:

- Default Directory
- Add, Advanced options
- Search bar: Search for any field...
- Filter buttons: Subscriptions: Filtered (3 of 3), My role == all, Status == all, Add filter
- Table columns: Subscription name ↑, Subscription ID ↑, My role ↑↓
- Data rows:

Subscription name ↑	Subscription ID ↑	My role ↑↓
AzureTraining		Specified access
Pay-As-You-Go		Specified access
Visual Studio Enterprise Subscription		Owner

 AzureTraining | Access control (IAM) ...

Subscription

Search « + Add ▾ Download role assignments

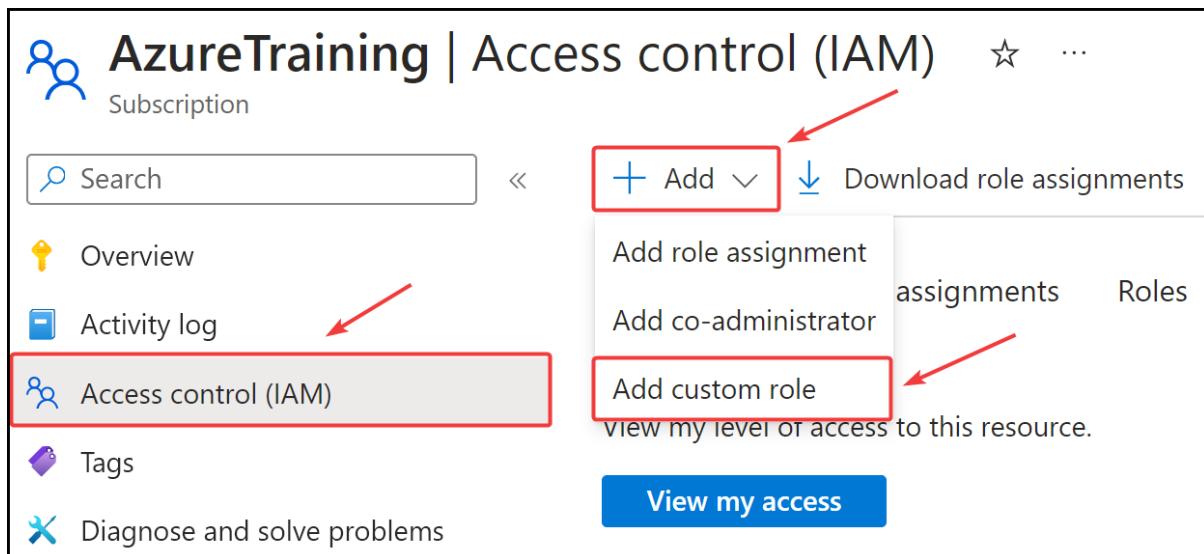
Overview Add role assignment

Activity log Add co-administrator

Access control (IAM) assignments Roles

Tags Add custom role
view my level of access to this resource.

Diagnose and solve problems View my access



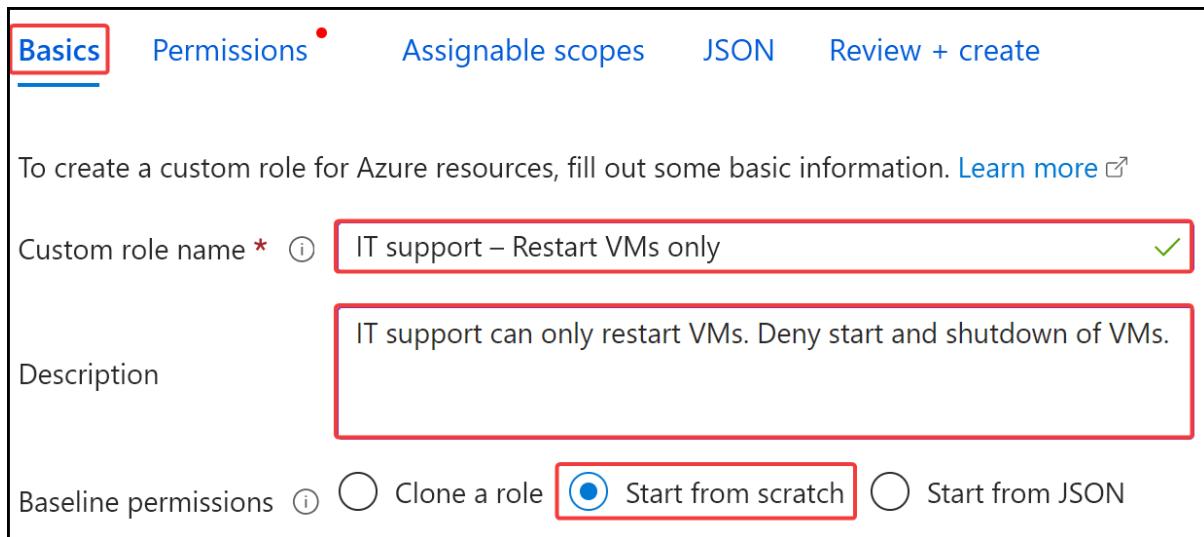
Basics Permissions Assignable scopes JSON Review + create

To create a custom role for Azure resources, fill out some basic information. [Learn more](#)

Custom role name * ① IT support – Restart VMs only ✓

Description
IT support can only restart VMs. Deny start and shutdown of VMs.

Baseline permissions ② Clone a role Start from scratch Start from JSON

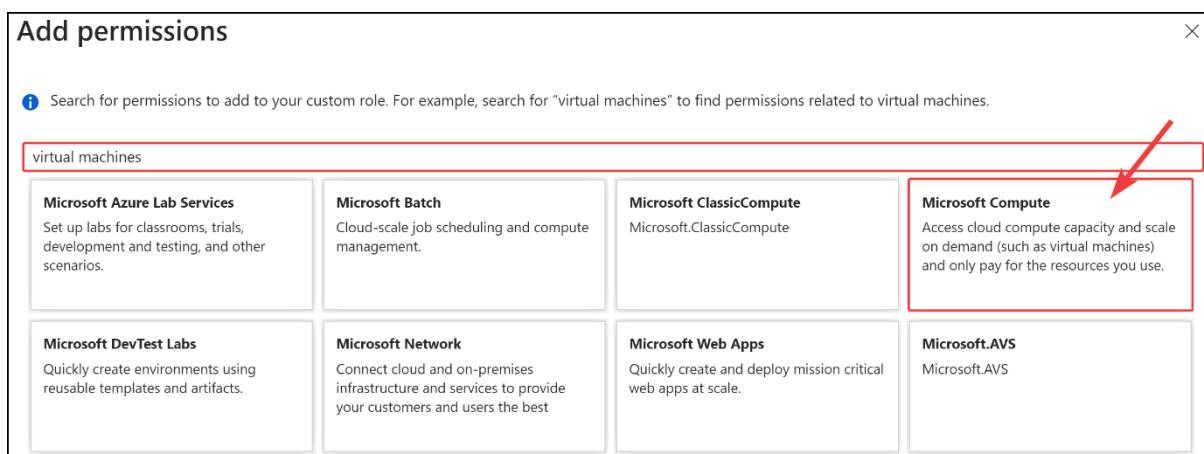


Add permissions ×

Search for permissions to add to your custom role. For example, search for "virtual machines" to find permissions related to virtual machines.

virtual machines

Microsoft Azure Lab Services Set up labs for classrooms, trials, development and testing, and other scenarios.	Microsoft Batch Cloud-scale job scheduling and compute management.	Microsoft ClassicCompute Microsoft.ClassicCompute	Microsoft Compute Access cloud compute capacity and scale on demand (such as virtual machines) and only pay for the resources you use.
Microsoft DevTest Labs Quickly create environments using reusable templates and artifacts.	Microsoft Network Connect cloud and on-premises infrastructure and services to provide your customers and users the best	Microsoft Web Apps Quickly create and deploy mission critical web apps at scale.	Microsoft.AVS Microsoft.AVS



Microsoft.Compute/virtualMachines	
<input checked="" type="checkbox"/> Read : Get Virtual Machine ⓘ	Get the properties of a virtual machine
<input type="checkbox"/> Write : Create or Update Virtual Machine ⓘ	Creates a new virtual machine or updates an existing virtual machine
<input type="checkbox"/> Delete : Delete Virtual Machine ⓘ	Deletes the virtual machine
<input type="checkbox"/> Other : Start Virtual Machine ⓘ	Starts the virtual machine
<input type="checkbox"/> Other : Power Off Virtual Machine ⓘ	Powers off the virtual machine. Note that the virtual machine will continue to be billed.
<input type="checkbox"/> Other : Reapply a virtual machine's current model ⓘ	Reapplies a virtual machine's current model
<input type="checkbox"/> Other : Redeploy Virtual Machine ⓘ	Redeploys virtual machine
<input checked="" type="checkbox"/> Other : Restart Virtual Machine ⓘ	Restarts the virtual machine
<input type="checkbox"/> Other : Retrieve boot diagnostic logs blob URIs ⓘ	Retrieves boot diagnostic logs blob URIs

Exclude permissions

X

i Exclude permissions enable you to subtract specific permissions from a wildcard (*) permission. If your custom role has a permission with a wildcard (*) and you don't want to include all the permissions under the wildcard, search for permissions to subtract from the wildcard. For example, search for "virtual machines" to find permissions related to virtual machines.

virtual machines



Microsoft Azure Lab Services

Set up labs for classrooms, trials, development and testing, and other scenarios.

Microsoft Batch

Cloud-scale job scheduling and compute management.

Microsoft ClassicCompute

Microsoft.ClassicCompute

Microsoft Compute

Access cloud compute capacity and scale on demand (such as virtual machines) and only pay for the resources you use.

<input checked="" type="checkbox"/> Other : Start Virtual Machine ⓘ	Starts the virtual machine
<input checked="" type="checkbox"/> Other : Power Off Virtual Machine ⓘ	Powers off the virtual machine. Note that the virtual machine will continue to be billed.
<input type="checkbox"/> Other : Reapply a virtual machine's current model ⓘ	Reapplies a virtual machine's current model
<input type="checkbox"/> Other : Redeploy Virtual Machine ⓘ	Redeploys virtual machine
<input type="checkbox"/> Other : Restart Virtual Machine ⓘ	Restarts the virtual machine
<input type="checkbox"/> Other : Retrieve boot diagnostic logs blob URIs ⓘ	Retrieves boot diagnostic logs blob URIs
<input checked="" type="checkbox"/> Other : Deallocate Virtual Machine ⓘ	Powers off the virtual machine and releases the compute resources

Basics Permissions Assignable scopes JSON Review + update

+ Add permissions + Exclude permissions

Click Add permissions to select the permissions you want to add to this custom role.
To add a wildcard (*) permission, you must manually add the permission on the JSON tab. [Learn more ↗](#)
To exclude specific permissions from a wildcard permission, click Exclude permissions. [Learn more ↗](#)

Permission	Description	Permission type
Microsoft.Compute/virtualMachine... Get the properties of a virtual mach...	Action	
Microsoft.Compute/virtualMachine... Restarts the virtual machine	Action	
Microsoft.Compute/virtualMachine... Starts the virtual machine	NotAction	
Microsoft.Compute/virtualMachine... Powers off the virtual machine. Not...	NotAction	
Microsoft.Compute/virtualMachine... Powers off the virtual machine and ...	NotAction	

Review + update  Previous Next

Basics Permissions Assignable scopes JSON Review + create

+ Add assignable scopes

Click Add assignable scopes to select the scopes (management groups, subscriptions, or resource groups) where this role will be available for assignment. Your role must have at least one assignable scope. [Learn more ↗](#)

Assignable scope	Type
/subscriptions/	Subscription

Basics Permissions Assignable scopes JSON Review + create

Here is your custom role in JSON format. [Learn more ↗](#)

Download  Edit 

```

1  {
2    "properties": {
3      "roleName": "IT support - Restart VMs only",
4      "description": "IT support can only restart VMs. Deny start and shutdown of VMs.",
5      "assignableScopes": [
6        "/subscriptions/"
7      ],
8      "permissions": [
9        {
10          "actions": [
11            "Microsoft.Compute/virtualMachines/read",
12            "Microsoft.Compute/virtualMachines/restart/action"
13          ],
14          "notActions": [
15            "Microsoft.Compute/virtualMachines/start/action",
16            "Microsoft.Compute/virtualMachines/powerOff/action",
17            "Microsoft.Compute/virtualMachines/deallocate/action"
18          ],
19          "dataActions": [],
20          "notDataActions": []
21        }
22      ]
23    }
  
```

Review + create Previous Next 

Basics Permissions Assignable scopes JSON Review + create

Basics

Role name	IT support – Restart VMs only
Role description	IT support can only restart VMs. Deny start and shutdown of VMs.

Permissions

Action	Microsoft.Compute/virtualMachines/read
Action	Microsoft.Compute/virtualMachines/restart/action
NotAction	Microsoft.Compute/virtualMachines/start/action
NotAction	Microsoft.Compute/virtualMachines/powerOff/action
NotAction	Microsoft.Compute/virtualMachines/deallocate/action

Assignable Scopes

Scope	/subscriptions/
-------	-----------------

You have successfully created the custom role "IT support – Restart VMs only". It may take the system a few minutes to display your role everywhere.

OK

Settings

 Programmatic deployment

 Billing properties

 Resource groups

 Resources



Name ↑↓	Subscription ↑↓	Location ↑↓
<input type="checkbox"/> AZ-104	Visual Studio Enterprise Subscription	West Europe
<input type="checkbox"/> AZ104-Chapter3	Visual Studio Enterprise Subscription	West Europe
<input type="checkbox"/> AZ104-Policies	Visual Studio Enterprise Subscription	West Europe

AZ-104 | Access control (IAM)

Resource group

Search Add Download role assignments

Add role assignment

Add co-administrator

Add custom role

View my access

- Overview
- Activity log
- Access control (IAM)
- Tags
- Resource visualizer

Role • Members • Review + assign

A role definition is a collection of permissions. You can use the built-in roles or you can create your own custom roles. [Learn more](#)

Assignment type

Job function roles Privileged administrator roles

Grant access to Azure resources based on job function, such as the ability to create virtual machines.

IT support - Restart VMs only

Type : All Category : All

Name ↑↓	Description ↑↓
IT support - Restart VMs only	IT support can only restart VMs. Deny start and shutdown of VMs.

Assign access to



User, group, or service principal



Managed identity

Members

+ Select members

Select ⓘ

Demo

DE

DemoUser1

DemoUser1@cloudexpert.co.za

DE

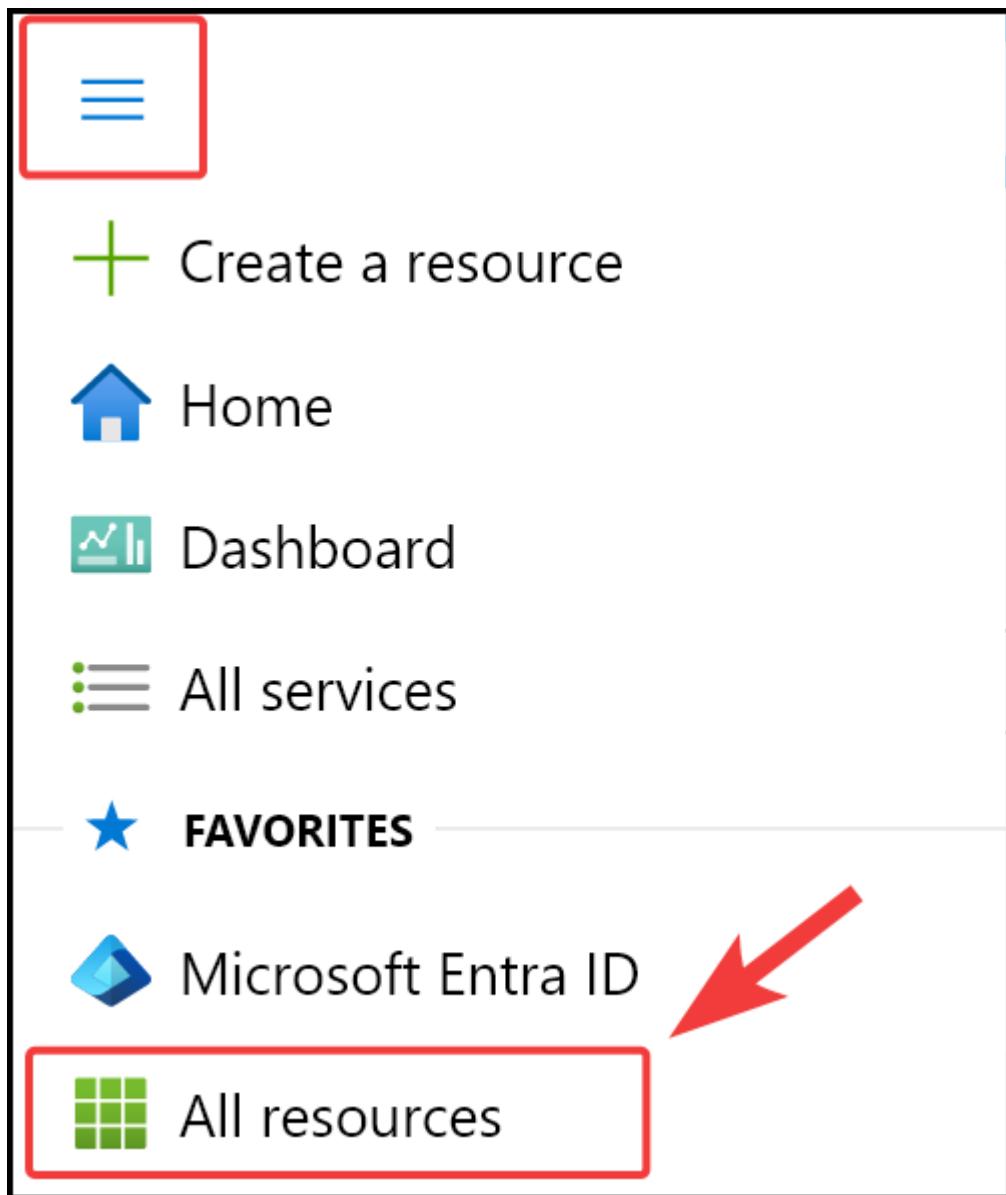
DemoUser2

DemoUser2@cloudexpert.co.za

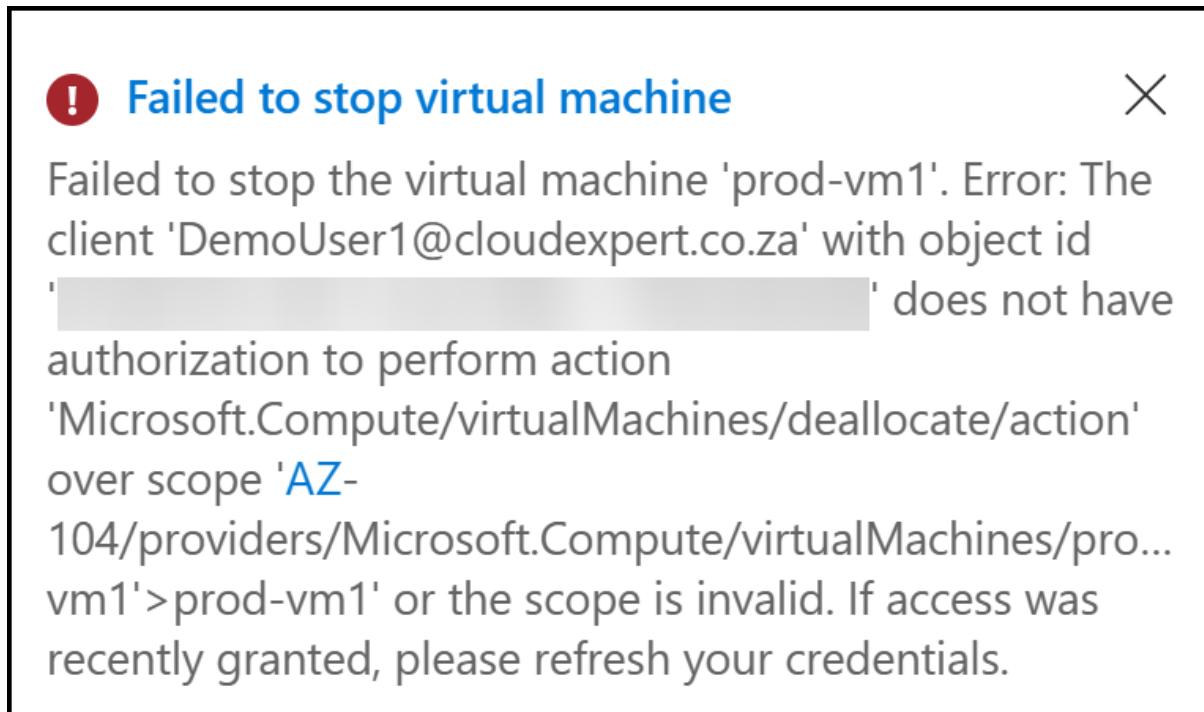
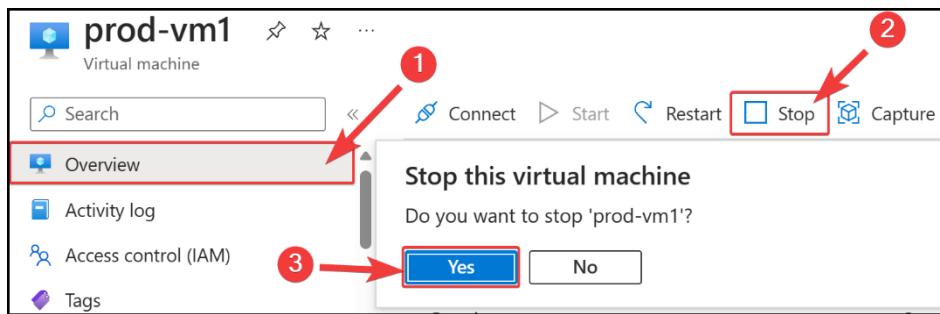
DE

DemoUser3

DemoUser3@cloudexpert.co.za



All resources		
Default Directory ()		
+ Create	Manage view	Refresh Export to CSV Open query
Filter for any field...	Subscription equals all	Resource group equals all X
Unsecure resources	Recommendations	Type equals all X
Name ↑↓	Type ↑↓	Resource group ↑↓
prod-vm1	Virtual machine	AZ-104
prod-vm1-ip	Public IP address	AZ-104



A screenshot of the Azure Access control (IAM) blade for a resource group named 'AZ-104'. The 'Role assignments' tab is selected. It shows 6 privileged role assignments for this subscription. A search bar at the top right shows 'Demo'. Below the search bar, filters are set to 'Type : All', 'Role : All', and 'Scope : Parent resource'. A table lists one item: 'IT support - Restart VMs only (1)' assigned to 'DemoUser1' (User type, Scope: Subscription (Inherited)).

Name	Type	Role	Scope
DemoUser1	User	IT support - Restart VMs only	Subscription (Inherited)

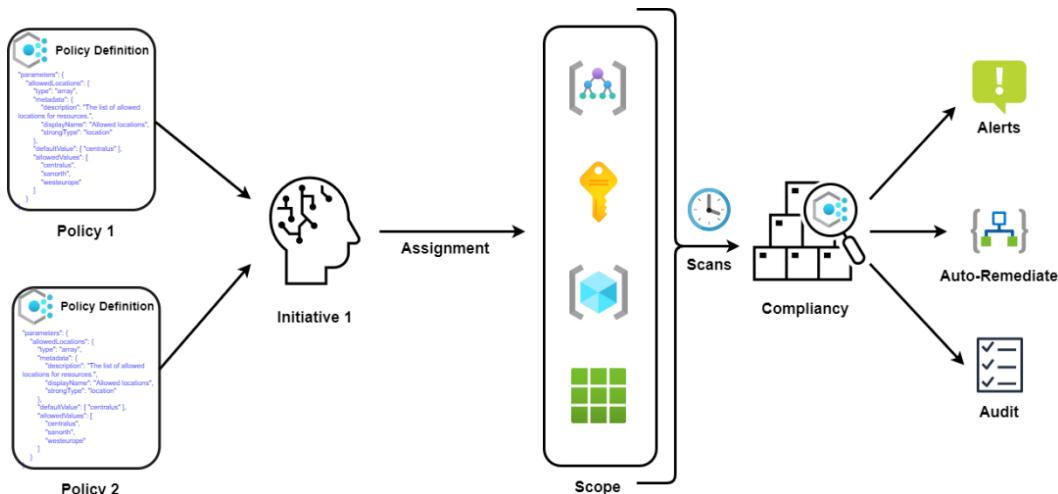
3 items (3 Users)

Name	Type	Role
▼ Contributor (1)		
<input type="checkbox"/> DE DemoUser1 DemoUser1@cloud...	User	Contributor ⓘ

Permissions	JSON	Assignments
	<pre>1 { 2 "id": "/subscriptions/ 3 "properties": { 4 "roleName": "Contributor", 5 "description": "Grants full access to manage all resources, but does not allow you to as 6 "assignableScopes": [7 "/" 8], 9 "permissions": [10 { 11 "actions": [12 "*" 13], 14 "notActions": [15 "Microsoft.Authorization/*/Delete", 16 "Microsoft.Authorization/*/Write", 17 "Microsoft.Authorization/elevateAccess/Action", 18 "Microsoft.Blueprint/blueprintAssignments/write", 19 "Microsoft.Blueprint/blueprintAssignments/delete", 20 "Microsoft.Compute/galleries/share/action", 21 "Microsoft.Purview/consents/write", 22 "Microsoft.Purview/consents/delete" 23], 24 } 25 } 26 } 27 }</pre>	

Chapter 4:

The screenshot shows the Azure Policy Overview page. Key statistics include Overall resource compliance at 30% (11 out of 37), Non-compliant initiatives at 1 (out of 1), and Non-compliant policies at 40 (out of 201). A pie chart indicates 37 resources: 11 Compliant, 0 Exempt, and 26 Non-compliant. Below this is a table of Related Services, and a bar chart titled 'ASSIGNMENTS BY COMPLIANCE (LAST 7 DAYS)' showing counts for ASC Default, Global - Audit ExpressRoute & VWN, and Global - Audit VPN.



Require a tag and its value on resources

Policy definition

Assign policy		Edit definition	Duplicate definition	Delete definition																
Essentials <table border="1"> <tr> <td>Name</td> <td>: Require a tag and its value on resources</td> <td>Definition location</td> <td>: --</td> </tr> <tr> <td>Description</td> <td>: Enforces a required tag and its value. Does not apply t...</td> <td>Definition ID</td> <td>: /providers/Microsoft.Authorization/policyDefinitions/1...</td> </tr> <tr> <td>Available Effects</td> <td>: Deny</td> <td>Type</td> <td>: Built-in</td> </tr> <tr> <td>Category</td> <td>: Tags</td> <td>Mode</td> <td>: Indexed</td> </tr> </table>					Name	: Require a tag and its value on resources	Definition location	: --	Description	: Enforces a required tag and its value. Does not apply t...	Definition ID	: /providers/Microsoft.Authorization/policyDefinitions/1...	Available Effects	: Deny	Type	: Built-in	Category	: Tags	Mode	: Indexed
Name	: Require a tag and its value on resources	Definition location	: --																	
Description	: Enforces a required tag and its value. Does not apply t...	Definition ID	: /providers/Microsoft.Authorization/policyDefinitions/1...																	
Available Effects	: Deny	Type	: Built-in																	
Category	: Tags	Mode	: Indexed																	

```

1   {
2     "properties": {
3       "displayName": "Require a tag and its value on resources",
4       "policyType": "BuiltIn",
5       "mode": "Indexed",
6       "description": "Enforces a required tag and its value. Does not apply to resource groups.",
7       "metadata": {
8         "version": "1.0.1",
9         "category": "Tags"
10      },
11      "version": "1.0.1",
12      "parameters": {
13        "tagName": {
14          "type": "String",
15          "metadata": {
16            "displayName": "Tag Name",
17            "description": "Name of the tag, such as 'environment'"
18          }
19        },
20        "tagValue": {
21          "type": "String",
22          "metadata": {
23            "displayName": "Tag Value",
24            "description": "Value of the tag, such as 'production'"
25          }
26        }
27      },
28      "policyRule": {
29        "if": {
30          "not": {
31            "field": "[concat('tags[', parameters('tagName'), ']')]",
32            "equals": "[parameters('tagValue')]"
33          }
34        },
35        "then": {
36          "effect": "deny"
37        }
38      },
39      "versions": [
40        "1.0.1"
41      ]
42    },
43    "id": "/providers/Microsoft.Authorization/policyDefinitions/1e30110a-5ceb-460c-a204-c1c3969c6d62",
44    "type": "Microsoft.Authorization/policyDefinitions",
45    "name": "1e30110a-5ceb-460c-a204-c1c3969c6d62"
46  }

```

The screenshot shows the Azure portal's search interface. At the top, there is a search bar with the word "policy". Below the search bar, there are several navigation buttons: "All" (selected), "Services (9)", "Marketplace (28)", and "More (4)". Under the "Services" heading, there is a list of services, with a red arrow pointing to the "Policy" item, which is highlighted with a red box.

Home > Policy

Policy | Definitions

Search (Ctrl+ /) + Policy definition + Initiative definition Export definitions Refresh

Scope: Visual Studio Enterprise Subscript... Definition type: All definition types Type: All types

Now export your definitions and assignments to GitHub and manage them using actions! Click on 'Export definition' menu option. Learn more here.

Authoring

- 1 Assignments
- 2 Definitions ...
- Exemptions

Related Services

- Blueprints (preview)
- Resource Graph
- User privacy

Name ↑	Definition location ↑↓	Policies ↑↓
[Preview]: NIST SP 800-171 R2		77
Audit machines with insecure password security setti...		9
IRS1075 September 2016		62
Configure Azure Monitor Agent to Linux virtual mac...		2
Deploy prerequisites to enable Guest Configuration ...		4
CIS Microsoft Azure Foundations Benchmark v1.1.0		99
Azure Security Benchmark		199
[Preview]: Australian Government ISM PROTECTED		61
UK OFFICIAL and UK NHS		59

BASICS

Definition location *



Subscription

Visual Studio Enterprise Subscription ...

Select

Cancel

Clear All Selections



Policy definition ...

New Policy definition

BASICS

Definition location *

Visual Studio Enterprise Subscription



...

Name * ⓘ

Custom - Allowed Locations



Description

This policy definition sets teh allowed locations for resources

Category ⓘ

Create new Use existing

Custom

POLICY RULE

↓ Import sample policy definition from GitHub

↗ Learn more about policy definition structure

```
1  {
2    "mode": "All",
3    "policyRule": {
4      "if": {
5        "not": {
6          "field": "location",
7          "in": "[parameters('allowedLocations')]"
8        }
9      },
10     "then": {
11       "effect": "audit"
12     }
13   },
14   "parameters": {
15     "allowedLocations": {
16       "type": "Array",
17       "metadata": {
```



Creating policy definition succeeded



Creating policy definition 'Custom - Allowed Locations' in 'Visual Studio Enterprise Subscription' was successful.

Definition type : All definition types Policy type : All policy types Category : Custom

Name ↑ Definition location ↑ Type ↑

Custom - Allowed Locations Visual Studio Enterprise Subscription Custom

Policy | Definitions

...
+ Policy definition + Initiative definition Refresh

Initiative location * ⓘ Visual Studio Enterprise Subscription ...

Name * ⓘ Custom - Allowed Resources

Description ⓘ Initiative to ensure only resources and resource groups in the allowed policy definitions are accepted.

Category ⓘ Create new Use existing

Custom

Review + create Cancel Previous Next

Basics Policies Groups Initiative parameters Policy parameters

Add one or more policies to this initiative. Reference ID can be used as a friendly name but must be unique within the initiative.

Add policy definition(s)

Add selected policies to a group

0 policies are not part of any group

Search by name or re...

Group : **1 selected**

Search

Policy type : **Custom**

Policy name ↑

↓ Category ↑



Custom - Allowed Locations

Custom

Basics Policies Groups Initiative parameters Policy parameters Review + create

Add one or more policies to this initiative. Reference ID can be used as a friendly display name but must be unique within the initiative.

Add policy definition(s)

Add selected policies to a group

1 policies are not part of any group

Search by name or re...

Group : **1 selected**

Policy definition

Reference ID

Group



 Custom - Allowed Locations

Custom - Allowed Locations_1

0 groups

...

Basics Policies **Groups** Initiative parameters Policy parameters Review + create

Groups help you organize policies within an initiative.

Create group

Search by group nam... Category : All categories

Name	Display name	Category	Total policies
This initiative does not contain any groups.			

Basics Policies Groups **Initiative parameters** Policy parameters

Initiative parameters allow parameter values to be re-used across individual policy also be used to specify parameter values at assignment time.

Create initiative parameter

Search by parameter ... Type : 7 selected

Edit initiative parameter

Name *	Allowed locations
Display name *	Allowed locations
Description	Allowed locations
Type *	String
Strong Type	<input checked="" type="radio"/> No <input type="radio"/> Yes
Allowed Values ⓘ	["East US", "West US", "West Europe", "North Europe"]
Default Value	West Europe

Save **Cancel**

Parameter name	Display name	Type	Allowed values	Default Value	
Allowed locations	Allowed locations	String	4	West Europe	... 1 Edit initiative parameter 2 Delete

Initiative definition

New Initiative definition

Basics Policies Groups Initiative parameters Policy parameters Review + create

Policy parameters are inputs into individual policies.

Search by reference ID or par... Only show parameters that need input or review

Reference ID	Parameter name	Type	Value Type	Value(s)
Custom - Allowed Lo...	Allowed locations	Array	Set value	West Europe

Basics Policies Groups Initiative parameters Policy parameters Review + create

Basics

Definition location Visual Studio Enterprise Subscription
Name Custom - Allowed Resources
Description Initiative to ensure only resources and resource groups ...
Category Custom
Version --

This initiative has 1 policies and 0 groups.

Initiative parameters (0)

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

Policy | Assignments

Search [Assign policy](#) [Assign initiative](#) Refresh

Overview Getting started Compliance Remediation Events

Definitions **Assignments** Exemptions

Scope 3 selected Definition type All definition types

Total Assignments 1 Initiative Assignments 2

Assignment name ASC Default (subscription:)

Basics Parameters Remediation Non-compliance messages Review + create

Scope

Scope * Visual Studio Enterprise Subscription ...

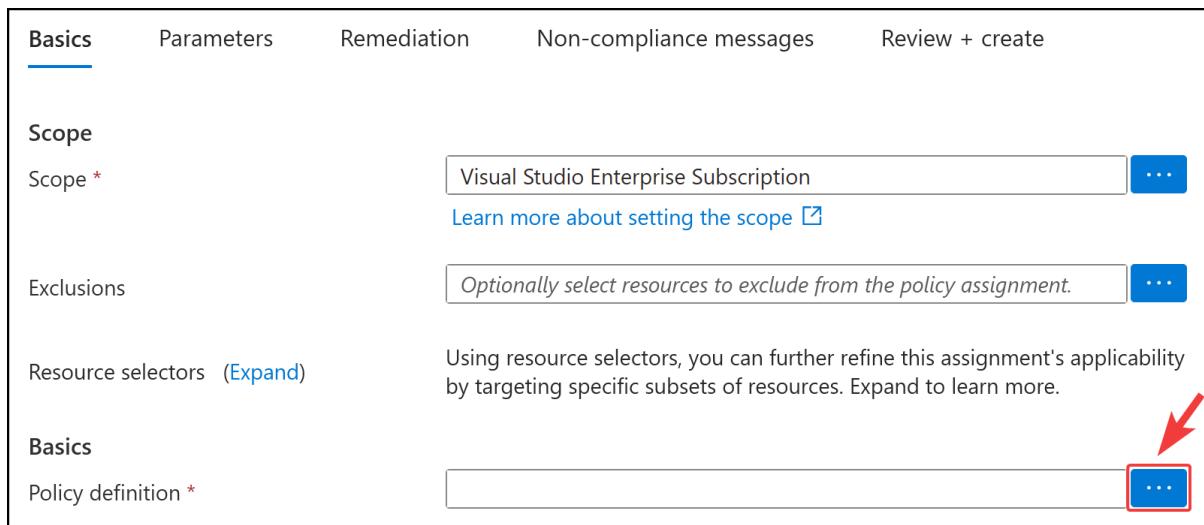
Learn more about setting the scope [\[link\]](#)

Exclusions ...

Resource selectors [\(Expand\)](#) Using resource selectors, you can further refine this assignment's applicability by targeting specific subsets of resources. Expand to learn more.

Basics

Policy definition * ...

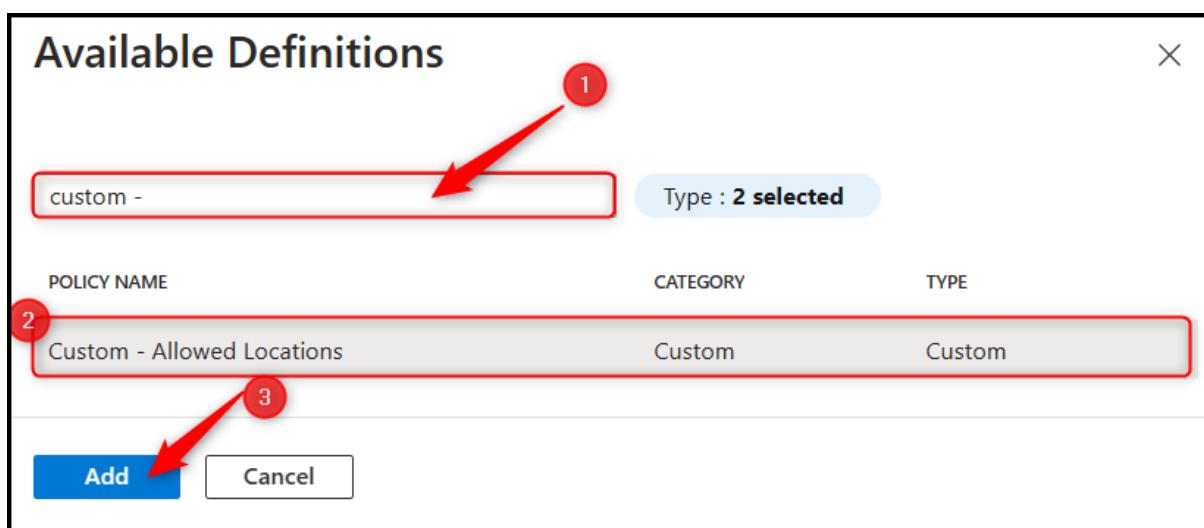


Available Definitions

Type : 2 selected

POLICY NAME	CATEGORY	TYPE
Custom - Allowed Locations	Custom	Custom

Add Cancel

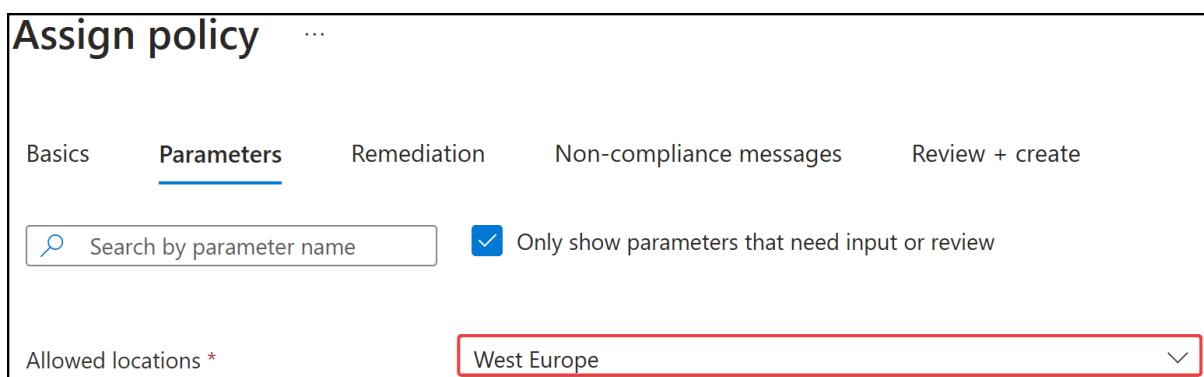


Assign policy ...

Basics **Parameters** Remediation Non-compliance messages Review + create

Search by parameter name Only show parameters that need input or review

Allowed locations * West Europe ▼



Basics Parameters **Remediation** Non-compliance messages Review + create

By default, this assignment will only take effect on newly created resources. Existing resources can be updated via a remediation task after the policy is assigned. For deployIfNotExists policies, the remediation task will deploy the specified template. For modify policies, the remediation task will edit tags on the existing resources.

Managed Identity

Policies with the deployIfNotExists and modify effect types need the ability to deploy resources and edit tags on existing resources respectively. To do this, choose between an existing user assigned managed identity or creating a system assigned managed identity. [Learn more about Managed Identity](#).

Create a Managed Identity ⓘ



Previous

Next

Review + create

Basics Parameters Remediation **Non-compliance messages** Review + create

Non-compliance messages help users understand why a resource is not compliant with the policy. The message will be displayed when a resource is denied and in the evaluation details of any non-compliant resource.

Non-compliance message

Resources may only be used in the following location:
West Europe



Creating policy assignment succeeded



Creating policy assignment 'Custom - Allowed Locations' in 'Visual Studio Enterprise Subscription' was successful. Please note that the assignment takes around 5-15 minutes to take effect.



A screenshot of the Azure Marketplace search results for 'managed disks'. The search bar shows 'managed disks'. Red annotations show a red arrow pointing from the search bar to the first search result, and another red arrow pointing from the 'Search' link in the results to the 'Create' button for the 'Managed Disks' service.

Marketplace

Get Started

Service Providers

Management

- Private Marketplace
- Private Offer Management

My Marketplace

- Favorites
- Recently created
- Private products

Categories

- AI + Machine Learning (7)
- Analytics (7)

managed disks

Pricing : All X Operating System : .

Showing 1 to 20 of 33 results for 'managed disks'.

Service	Provider	Description	Create	Heart
Managed Disks	Microsoft Azure Service	Managed Disks is an abstraction of current Standard and Premium storage disk in Azure Storage.	Create ▾	Heart
Disk Access	Microsoft Azure Service	Disk access enables Private Links for import and export operations for managed disks and snapshots.	Create ▾	Heart
Disk Encryption Set	Microsoft Azure Service	Disk encryption sets allow the use of server-side encryption (SSE) with customer-managed keys (CMK) for managed disks, images, and snapshots.	Create ▾	Heart

Create a managed disk

Basics Encryption Networking Advanced Tags Review + create

Select the disk type and size needed for your workload. Azure disks are designed for 99.999% availability. Azure managed disks encrypt your data at rest, by default, using Storage Service Encryption. [Learn more about disks.](#)

Project details

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

Subscription * ⓘ

Visual Studio Enterprise Subscription

Resource group * ⓘ

AZ104-Policies

[Create new](#)

Disk details

Disk name * ⓘ

1 testdisk01

Region * ⓘ

2 (Europe) UK South

Availability zone

None

Source type ⓘ

None

Size * ⓘ

1024 GiB

Premium SSD LRS

[Change size](#)

[Review + create](#)

< Previous

Next : Encryption >

Home > Resource groups > AZ104-Policies > Marketplace > Managed Disks >

Create a managed disk

Basics Encryption Networking Advanced Tags Review + create

Basics

Subscription: Visual Studio Enterprise Subscription
Resource group: AZ104-Policies
Region: UK South
Disk name: testdisk01

Errors

Summary Raw Error

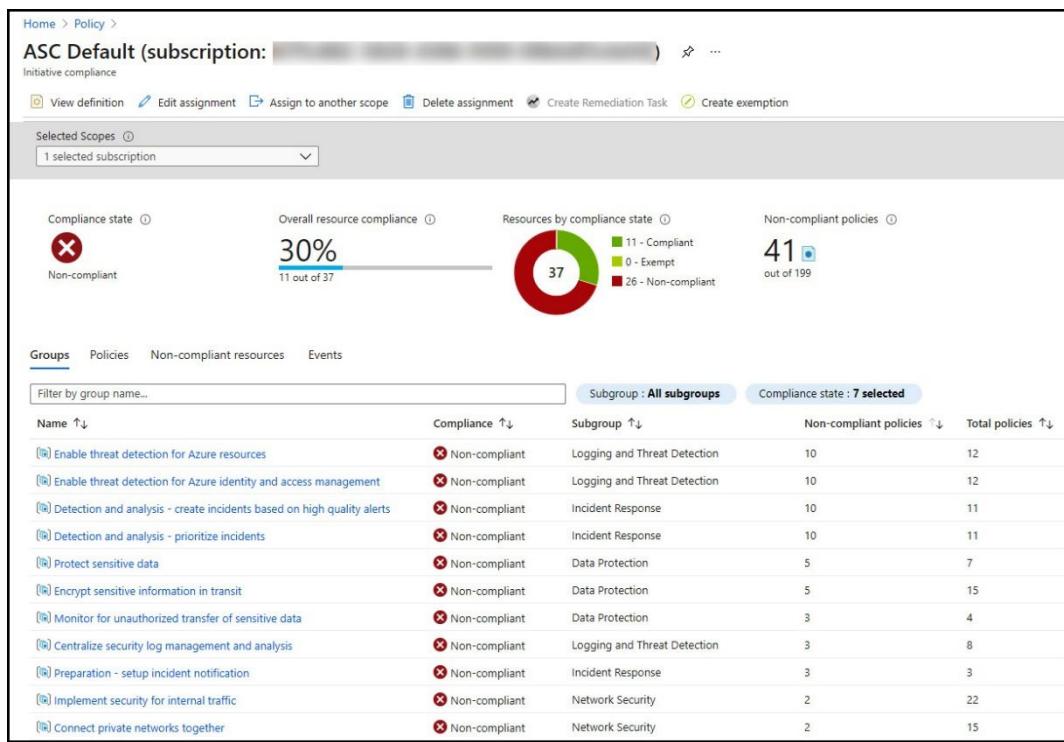
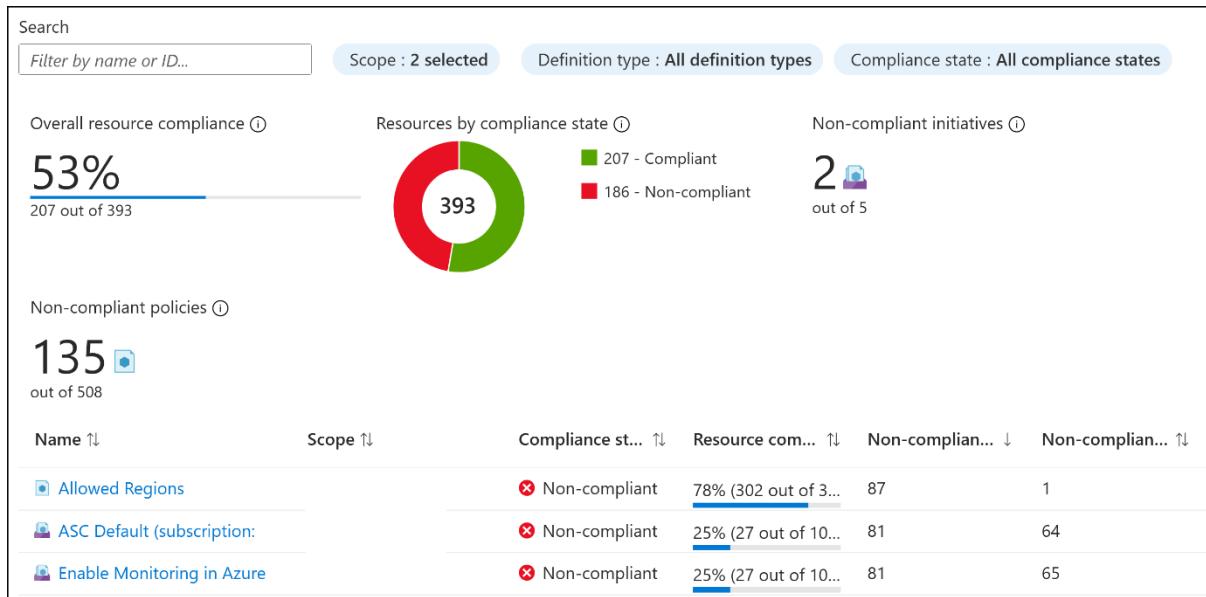
ERROR DETAILS

Resource 'testdisk01' was **disallowed by policy**. (Code: RequestDisallowedByPolicy)

Policy: Custom - Allowed Locations

Reason: Resources may only be used in the following location: West Europe

WAS THIS HELPFUL?



Name ⓘ	Value ⓘ
Department	: IT
Owner	: Infrastructure

AZ104-Policies (Resource group)

Department : IT Owner : Infrastructure

Name ⓘ	Value ⓘ
Department	: IT
Owner	: Infrastructure

AZ104-Policies (Resource group)

Department : IT Owner : Infrastructure

Home > AZ104-Chapter3

AZ104-Chapter3 | Tags ⚙️ ⋮

Resource group

Search (Ctrl+ /) Delete all

Overview Activity log Access control (IAM) Tags Events Settings Deployments Security Policies Properties Locks Cost Management Cost analysis Cost alerts (preview) Budgets Advisor recommendations Monitoring

Tags name/value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups. Tag names are case insensitive, but tag values are case sensitive. [Learn more about tags](#)

Do not enter names or values that could make your resources less secure or that contain personal/sensitive information because tag data will be replicated globally.

Name ⓘ	Value ⓘ
Department	: IT
Owner	: King
Purpose	: Demo

AZ104-Chapter3 (Resource group)

Department : IT Owner : King

1 to be added ⋮

Apply Discard changes



AZ104-Chapter3 (Resource group)

Department : IT

Owner : King

Purpose : Demo

No changes

Tags are name/value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups. Tag names are case insensitive, but tag values are case sensitive.[Learn more about tags](#)

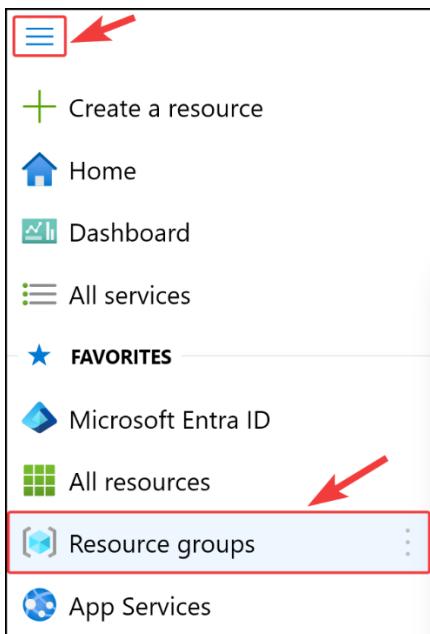
Do not enter names or values that could make your resources less secure or that contain personal/sensitive information because tag data will be replicated globally.

Name ⓘ	Value ⓘ	
Department	: IT	
Owner	: King	
Purpose	: Thishaschanged	
	:	

Apply

Discard changes

Chapter 5:



Resource groups

Default Directory

Create **Manage view** **Refresh** **Export to CSV**

Project details

Subscription * **Visual Studio Enterprise Subscription**
Resource group * **AZ104-Demo**

Resource details

Region * **(Europe) West Europe**

Review + create **< Previous** **Next : Tags >**

Create a resource group

X

Validation passed.

Basics Tags Review + create

Basics

Subscription

Visual Studio Enterprise Subscription

Resource group

AZ104-Demo

Region

West Europe

Create

< Previous

Next >

Download a template for automation



Resource group created

X

Creating resource group 'AZ104-Demo' in subscription 'Visual Studio Enterprise Subscription' succeeded.

Go to resource group

Pin to dashboard



Create a resource

Home

Dashboard

All services

FAVORITES

Microsoft Entra ID

All resources

Resource groups

App Services

Resource groups		
Default Directory		
Create Manage view Refresh Export to CSV Open query ...		
<input type="text"/> Filter for any field...	Subscription equals all Add filter	More (1)
Showing 1 to 25 of 25 records.	No grouping List view	
<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Location ↑↓
<input type="checkbox"/> AI	Visual Studio Enterprise Subscription	East US
<input type="checkbox"/> AZ104-BCDR	Visual Studio Enterprise Subscription	East US
<input type="checkbox"/> AZ104-Demo	Visual Studio Enterprise Subscription	West Europe

<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Location ↑↓
<input type="checkbox"/> AI	Visual Studio Enterprise Subscription	East US
<input type="checkbox"/> AZ104-BCDR	Visual Studio Enterprise Subscription	East US
<input type="checkbox"/> AZ104-Demo	Visual Studio Enterprise Subscription	West Europe

AZ104-Demo

Resource group

<input type="text"/> Search	Create Manage view	Delete resource group
Overview	Essentials	

Delete a resource group

X

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

Resource group to be deleted



Dependent resources to be deleted (0)

All dependent resources, including hidden types, are shown

Name	Resource type
Enter resource group name to confirm deletion *	
AZ104-Demo	

AZ104-Demo



Delete

Cancel

Delete confirmation

Deleting this resource group and its dependent resources is a permanent action and cannot be undone.

Delete

Go back



Deleted resource group AZ104-Demo



Deleted resource group AZ104-Demo

Resource groups

Default Directory

+ Create Manage view Refresh Export to CSV Open query Assign tags

resourcegroup

Subscription equals all

Location equals all

[Add filter](#)

Showing 1 to 5 of 5 records.

Name ↑

Subscription ↑↓

ResourceGroupB

AzureTraining

ResourceGroupA

Visual Studio Enterprise Subscription



ResourceGroupA

Resource group

[Search](#)

1

[Create](#)



Manage view



[Delete resource group](#)

[Overview](#)

[Activity log](#)

2

^ Essentials
Subscription ([move](#))
[Visual Studio Enterprise Subscription](#)

Marketplace

Get Started

Service Providers

Management

Private Marketplace

Private Offer Management

My Marketplace

...

storage account

Azure services only

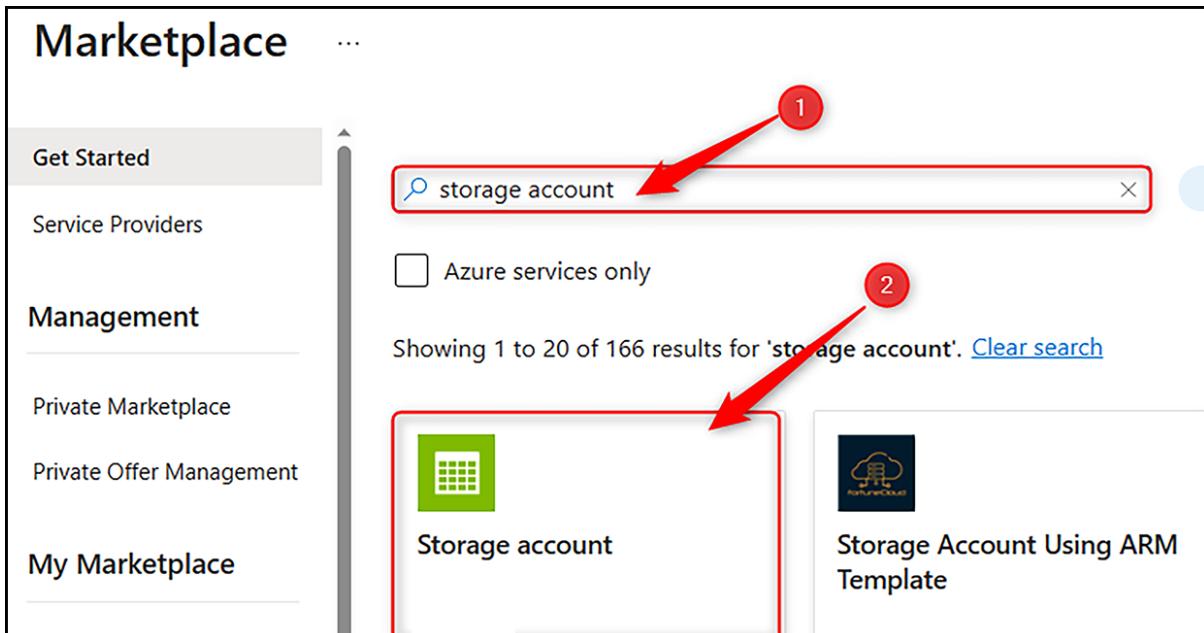
Showing 1 to 20 of 166 results for 'storage account'. [Clear search](#)

 Storage account

 Storage Account Using ARM Template

1

2



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 * Visual Studio Enterprise Subscription

Resource group * ResourceGroupA [Create new](#)

Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name ⓘ *

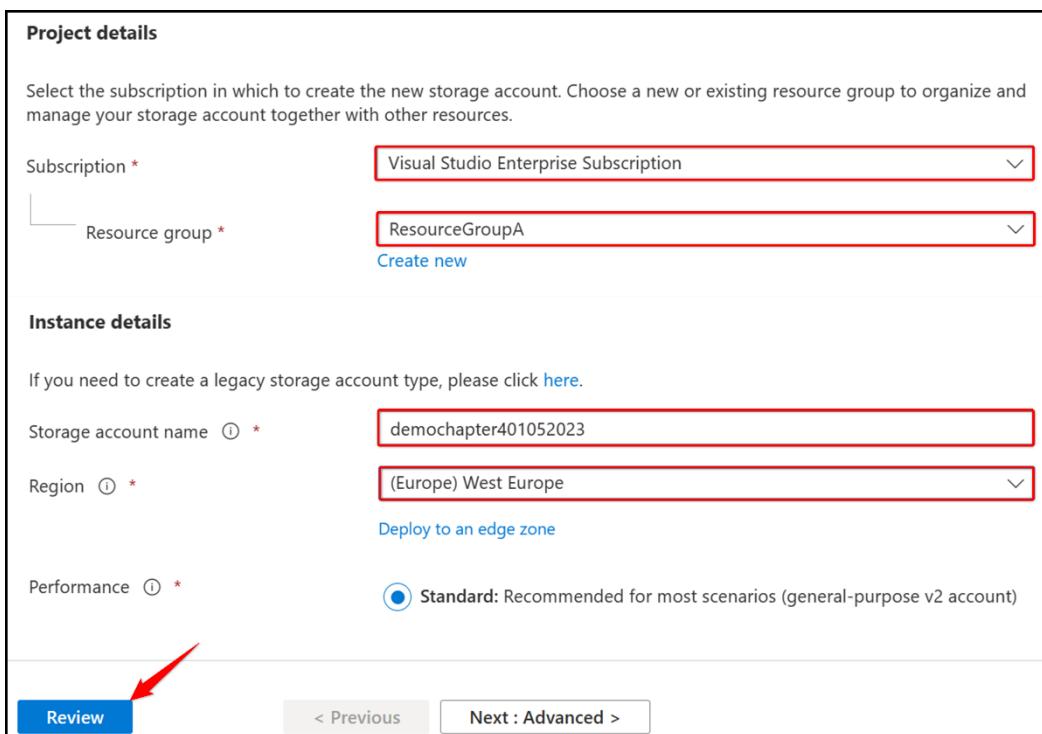
Region ⓘ *

Deploy to an edge zone

Performance ⓘ *

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

Review < Previous Next : Advanced >



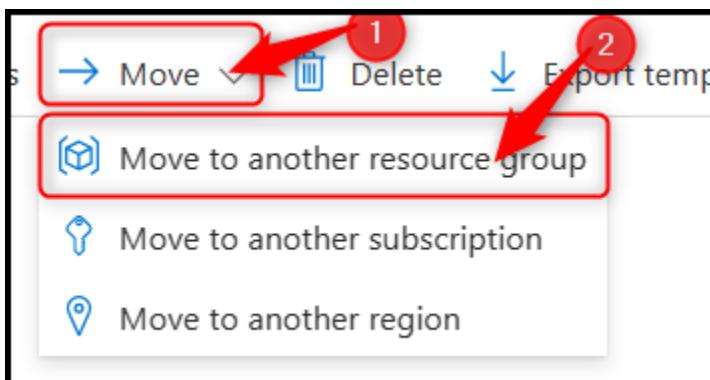
Move Delete Export temp

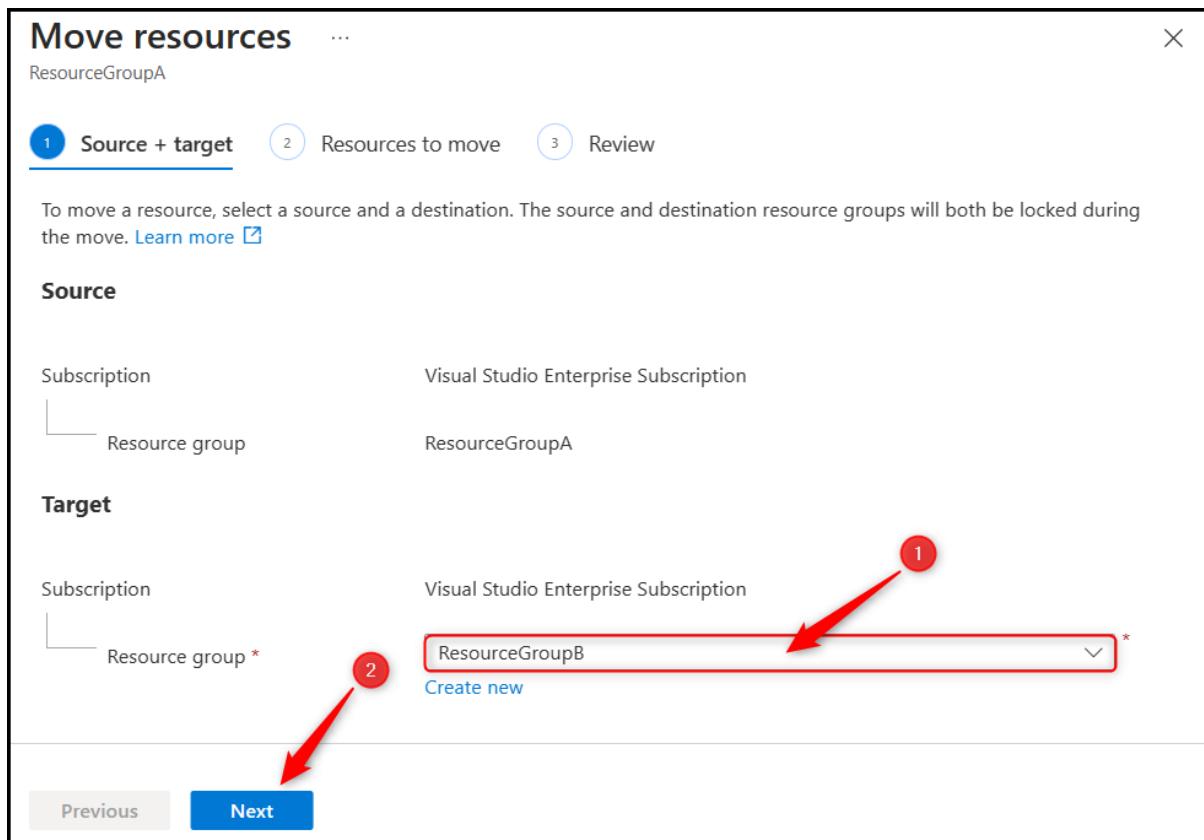
1 2

Move to another resource group

Move to another subscription

Move to another region





AZ104-Policies | Locks

Resource group

Search

Add * Subscription Refresh Feedback

Overview Activity log Access control (IAM) Tags Resource visualizer Events

Settings

Deployments Security Policies Properties Locks

This resource has no locks.

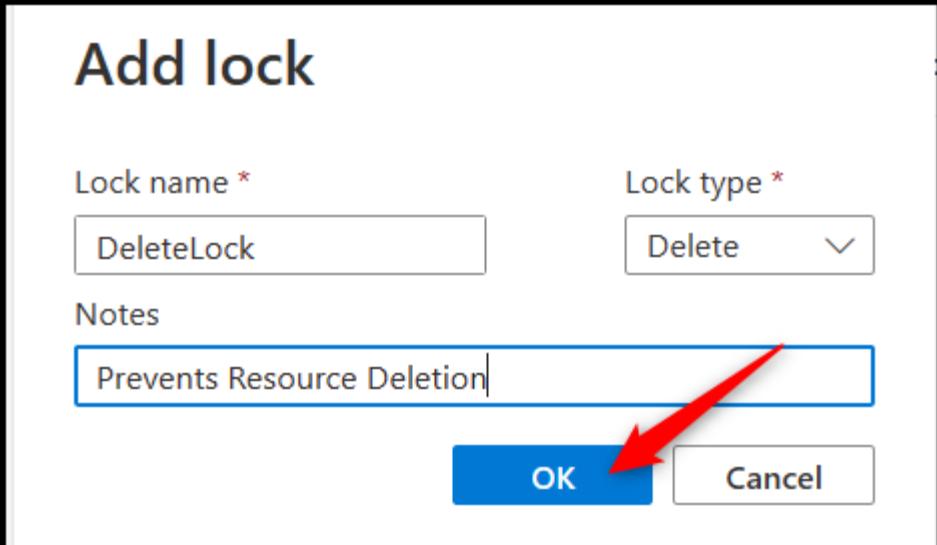
Add lock

Lock name *

Lock type *

Notes

OK **Cancel**



AZ104-Policies

Resource group

Search

1 Overview

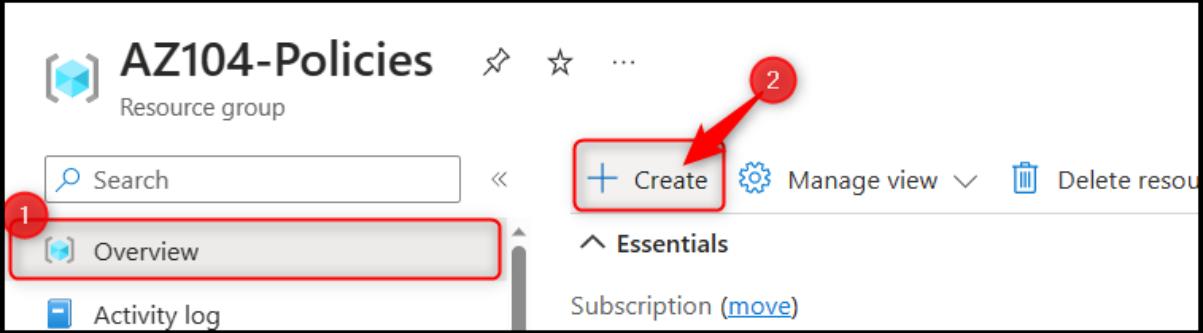
2 Create

Manage view

Delete resource

Essentials

Subscription (move)



Create a storage account

Basics Advanced Networking Data protection Encryption Tags Review

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 *	Visual Studio Enterprise Subscription
Resource group *	AZ104-Policies
	Create new

Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name ⓘ *	az104chapter301052023
Region ⓘ *	(Europe) West Europe
Deploy to an edge zone	
Performance ⓘ *	<input checked="" type="radio"/> Standard: Recommended for most scenarios (general-purpose v2 account) <input type="radio"/> Premium: Recommended for scenarios that require low latency.
Redundancy ⓘ *	Locally-redundant storage (LRS)

Review

< Previous

Next : Advanced >

1

2

3

4

 Your deployment is complete

 Deployment name: az104chapter301052023_1682965380667
Subscription: Visual Studio Enterprise Subscription
Resource group: AZ104-Policies

Deployment details

Next steps

[Go to resource](#)

az104chapter301052023 Storage account

Search Upload Open in Explorer Delete Move

Overview Activity log Tags Diagnose and solve problems

Resource group (move) : AZ104-Policies
Location : West Europe
Subscription (move) : Visual Studio Enterprise Subscription

Delete storage account

X

The following storage account and its contents will be deleted.

Resource to be deleted

az104chapter301052023 

Dependent resources to be deleted

The data provided is regularly updated about 2-4 times a day and published hourly. If your account has extremely large objects, it may be over a day between updates.

Resource	Number of instances	Total data stored
 Containers	-	-

 'az104chapter301052023' can't be deleted because this resource or its parent has a delete lock. Locks must be removed before this resource can be deleted. [Learn more about delete locks ↗](#)

 Delete

 Cancel

 Give feedback

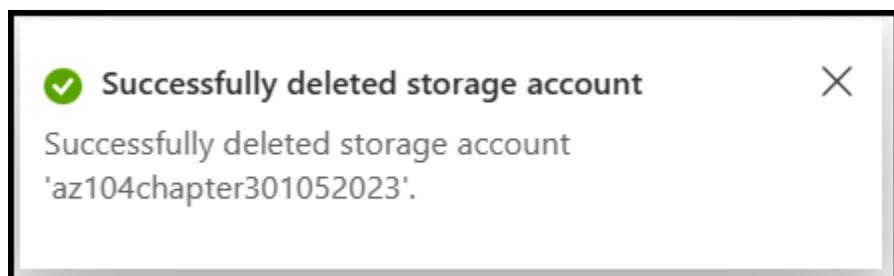
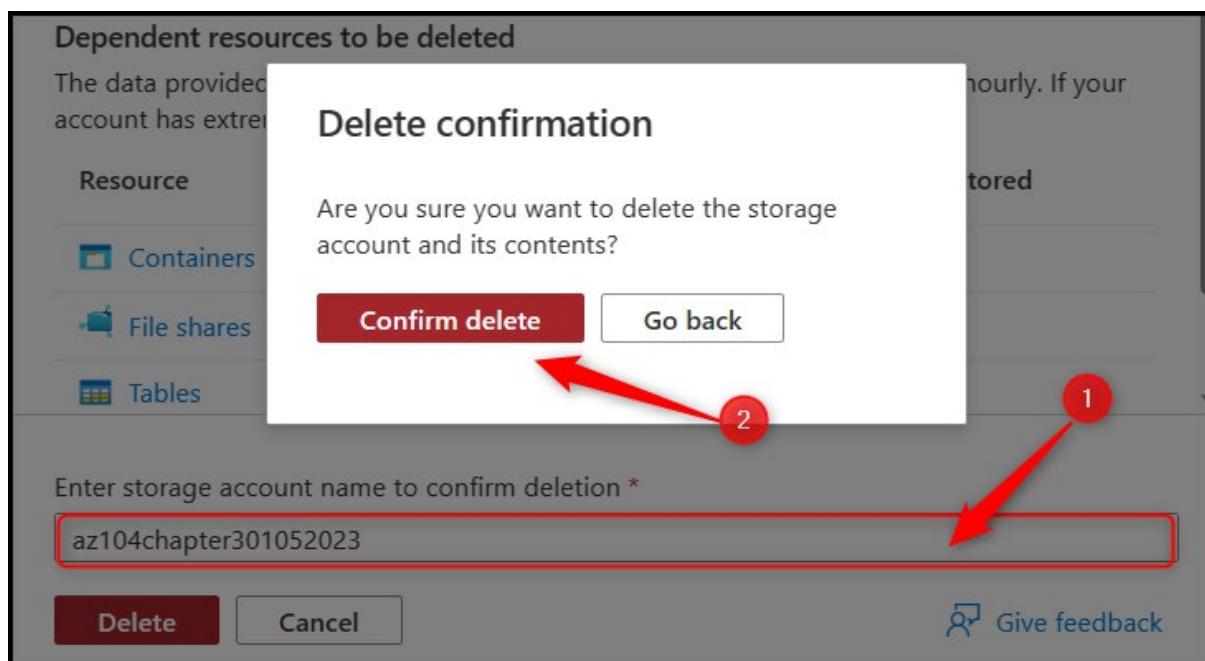
AZ104-Policies | Locks ...

X

 Resource group

 Add  Subscription  Refresh

Lock name	Lock type	Scope	Notes	Edit	Delete
DeleteLock	Delete	 az104-policies	Prevents Resource Deletion		



Add lock

Lock name *

Lock type *

Notes

OK **Cancel**

Create a storage account

✖ Validation failed. Click here to view details. →

Basics Advanced Networking Data protection Encryption Tags **Review**

Basics

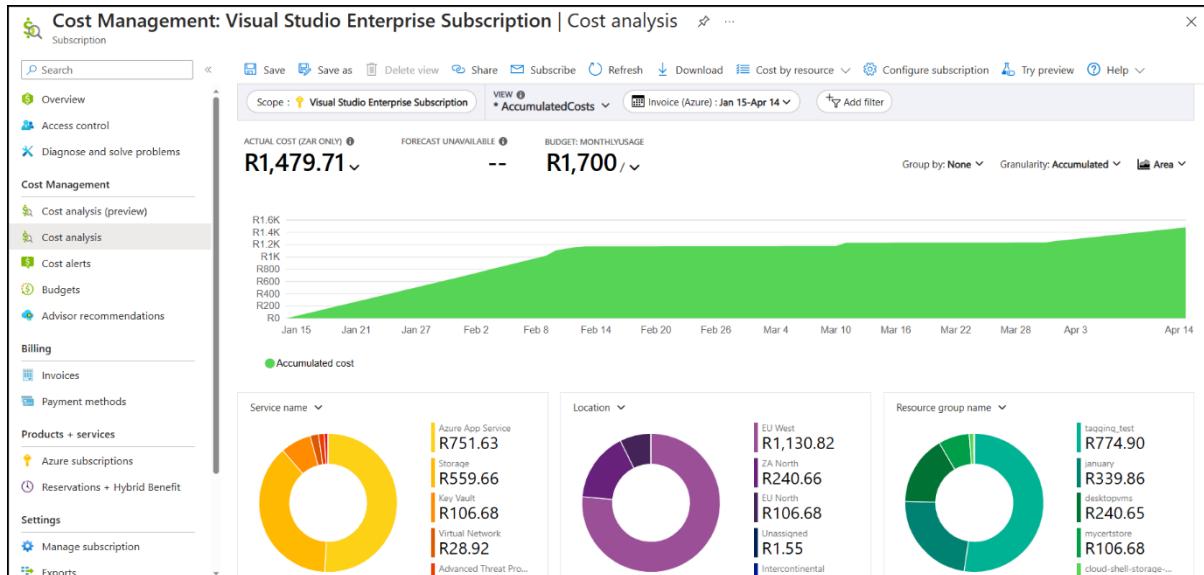
Subscription	Visual Studio Enterprise Subscription
Resource Group	AZ104-Policies
Location	westeurope
Storage account name	youwillseethatifail
Deployment model	Resource manager

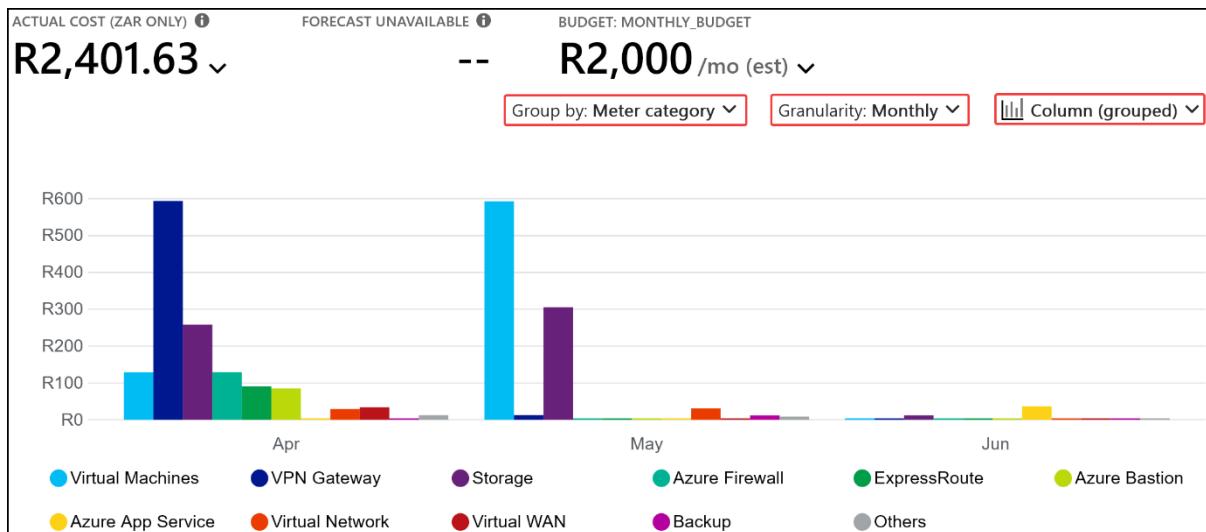
[Create](#)

[< Previous](#)

[Next >](#)

[Download a template for automation](#)





Custom: Cost analysis ⚡ ...

Save Save as Delete view Share Subscribe Refresh Download

Download

Cost analysis

Download

Excel CSV

Download charts

Download

X

Cost analysis

Download

PNG

Excel

CSV

Download charts

Schedule export

Configure exports to automatically publish your billing data to a storage account on daily, weekly, or monthly basis.

View all exports



No exports to display

Schedule daily exports to publish your billing data to a storage account.

[Learn more](#)

[Schedule export](#)

Create your own export



Select up to 10 datasets for advanced reporting and data integration needs.

Contains: No datasets

Add export

Visual Studio Enterprise Subscription

Type of data * ⓘ

Cost and usage details (usage only)

[Learn more](#)

Export name *

MonthlyUsage

Dataset version *

2019-11-01

[Learn more](#)

Frequency * ⓘ

Monthly export of last month's costs

- ⓘ Each monthly export will be executed on the 5th of every month.

Export description

Describe this export

Add

Cancel

Export prefix * ⓘ

MonthlyUsage

Storage type * ⓘ

Azure blob storage

Use existing

Create new

When selecting existing storage, trusted Azure service access is allowed.

Subscription * ⓘ

Visual Studio Enterprise Subscription

Storage account * ⓘ

csa10032002a42eb069

Container * ⓘ

monthlyreports

Directory * ⓘ

monthlyreports

File partitioning



Cost Management



Cost analysis



Cost alerts



Budgets



Advisor recommendations

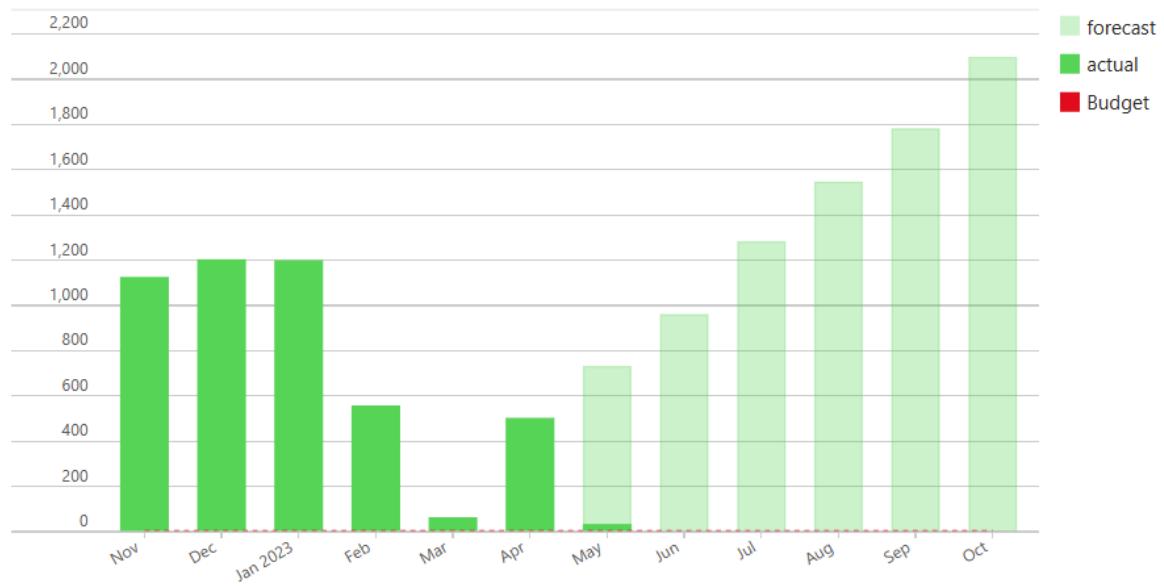
VIEW OF MONTHLY COST DATA

Nov 2022 - Oct 2023

LAST MONTH
ZAR 500

MAX (PAST 7 MONTH)
ZAR 1,200

MAX MONTHLY FORECAST
ZAR 2,095



Create budget

Budget

✓ Create a budget

② Set alerts

Create a budget and set alerts to help you monitor your costs.

Budget scoping

The budget you create will be assigned to the selected scope. Use additional filters like resource groups to have your budget monitor with more granularity as needed.

Scope

Visual Studio Enterprise Subscription

Filters

+ Add filter

Budget Details

Give your budget a unique name. Select the time window it analyzes during each evaluation period, its expiration date and the amount.

* Name

Monthly_Budget



* Reset period ⓘ

Billing month



* Creation date ⓘ

2023



May

15

* Expiration date ⓘ

2025



May

14



Budget Amount

Give your budget amount threshold

Amount (Z) *

2000



ⓘ Suggested budget: ZAR 2,095 based on forecast.

*** Alert conditions**

Type	% of budget	Amount	Action group
Actual	85	1,700	None
Select type	Enter %	-	None

[Manage action group i](#)



Action groups



[Create](#) [Columns](#) [Refresh](#) [Open query](#)



Project details

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

Subscription <small>i</small>	Visual Studio Enterprise Subscription
Resource group * <small>i</small>	Budgets
Create new	
Region *	Global

Instance details

Action group name * <small>i</small>	Budget-AzureExpert-Monthly
Display name * <small>i</small>	Budget-Azure
The display name is limited to 12 characters	

[Review + create](#) [Previous](#) [Next: Notifications >](#)



Email/SMS message/Push/Voice

X

Add or edit Email/SMS message/Push/Voice action

Email

Email * (i) someone@emaildomain.com



Basics Notifications Actions Tags Review + create

Choose how to get notified when the action group is triggered. This step is optional.

Notification type (i)

Name (i)

Selected (i)

Email/SMS message/Push/Voice

email to administrator

Email



[Review + create](#)

[Previous](#)

[Next: Actions >](#)

Action groups



[Create](#)

[Columns](#)

[Refresh](#)



[Open query](#)



[Delete](#)

...

[Search](#)

[Add tag filter](#)

No grouping

[More \(4\)](#)

Name ↑↓

Short name ↑↓

Resource group ↑↓



Application Insights Smart Detection

SmartDetect

tagging_test



Budget-AzureExpert-Monthly

Budget-Azure

budgets

*** Alert conditions**

Type	% of budget	Amount	Action group
Actual	85	1,700	None
Select type	Enter %	-	None
Manage action group ⓘ			
Application Insights Smart Detection			
Budget-AzureExpert-Monthly			

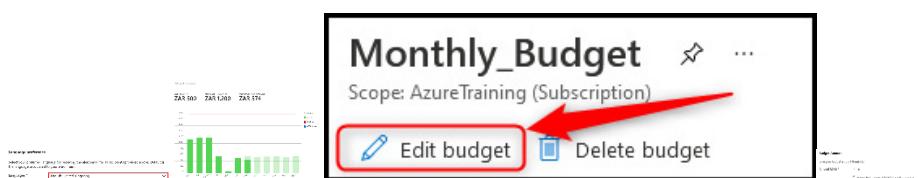
*** Alert recipients (email)**

Alert recipients (email)

ihavegoneover@azureexpert.co.za

example@email.com

It is recommended to add azure-noreply@microsoft.com to your email allow list to ensure alert mails do not go to your spam folder.



▼ Cost Management

Cost analysis

Cost alerts

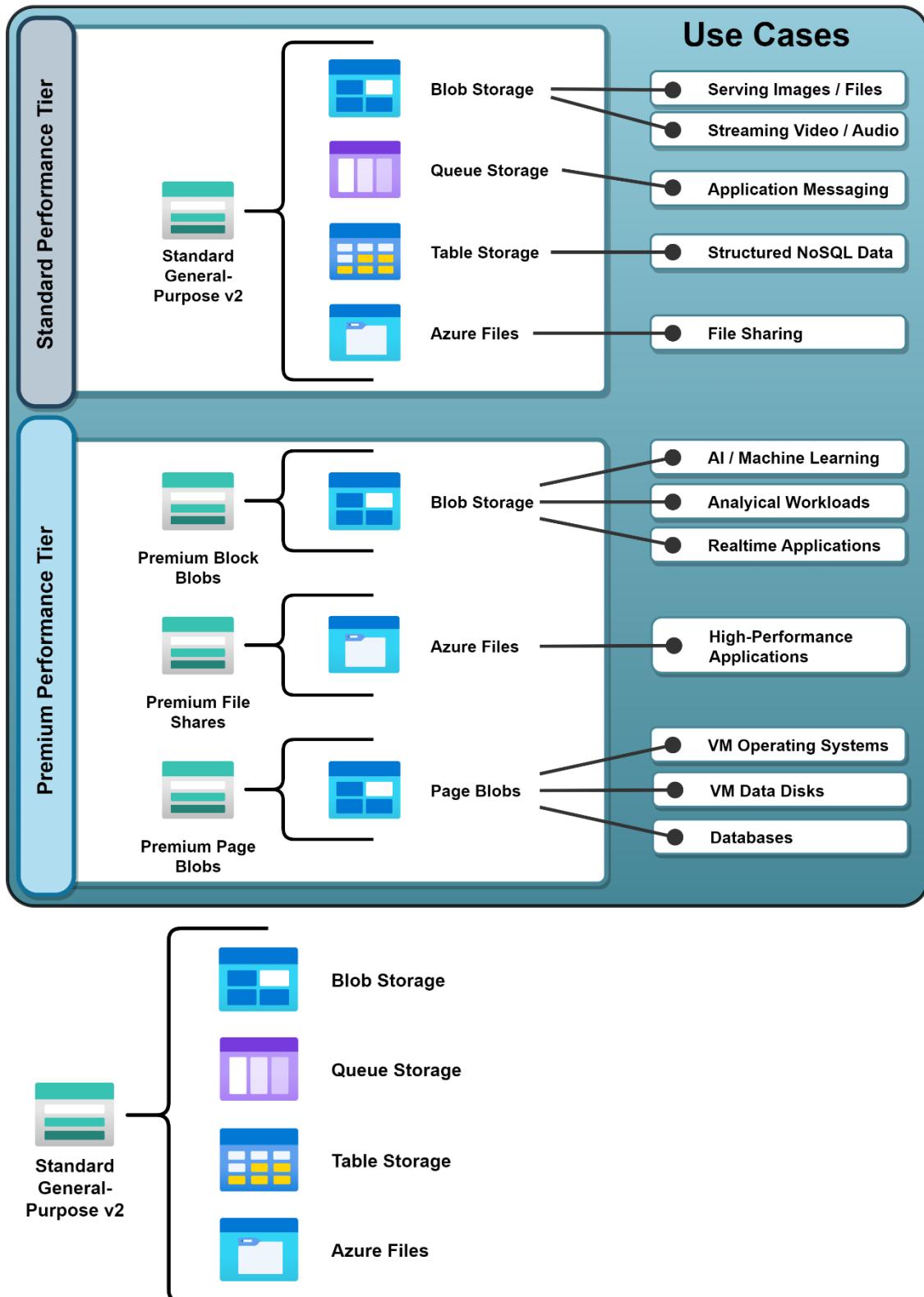
Budgets

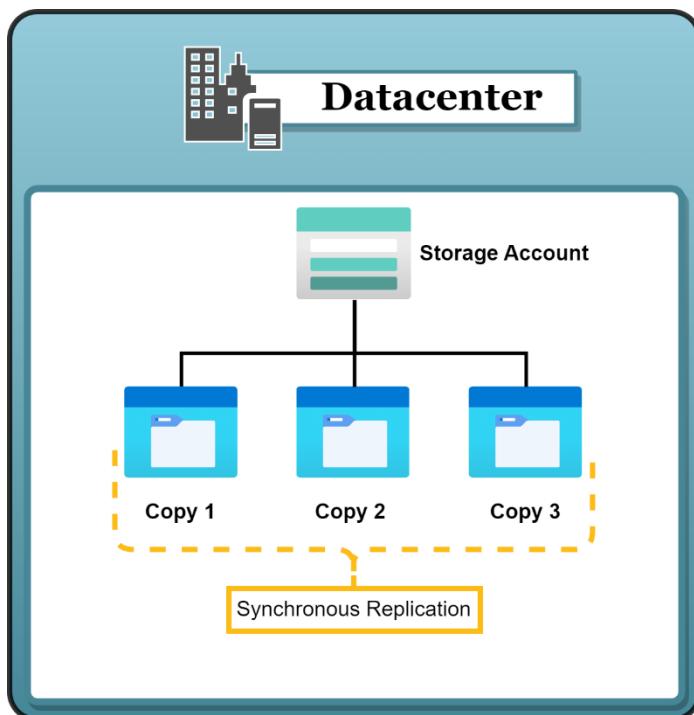
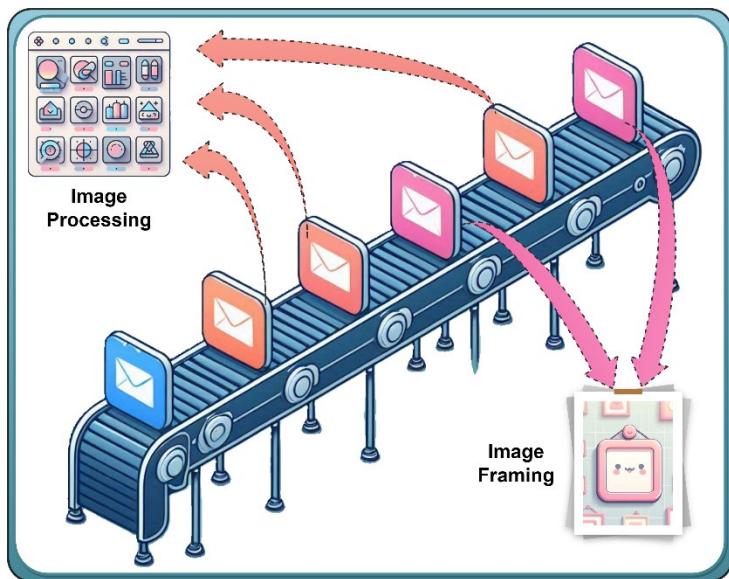
Advisor recommendations

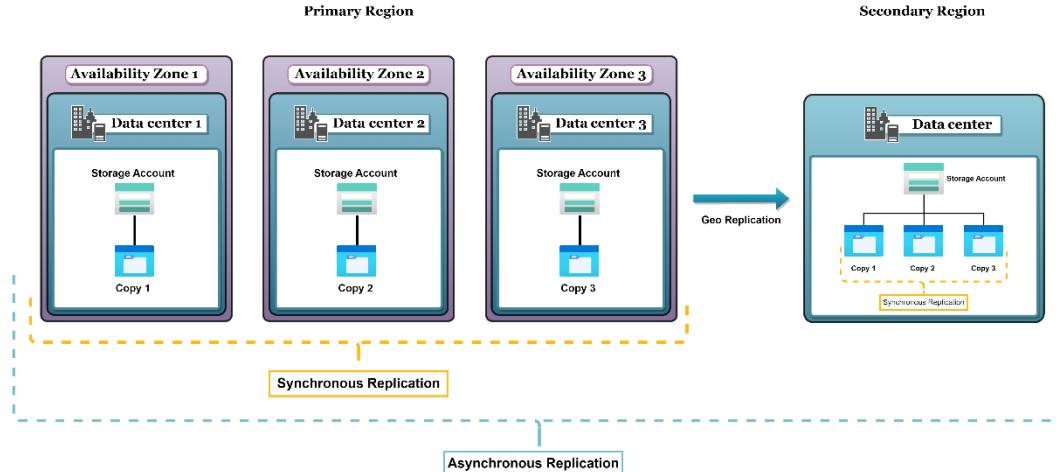
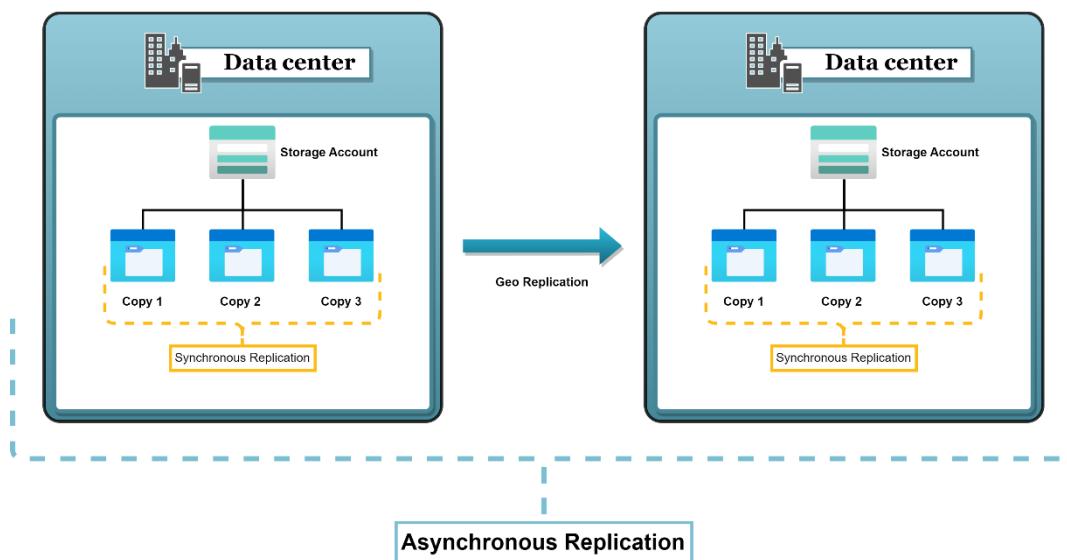
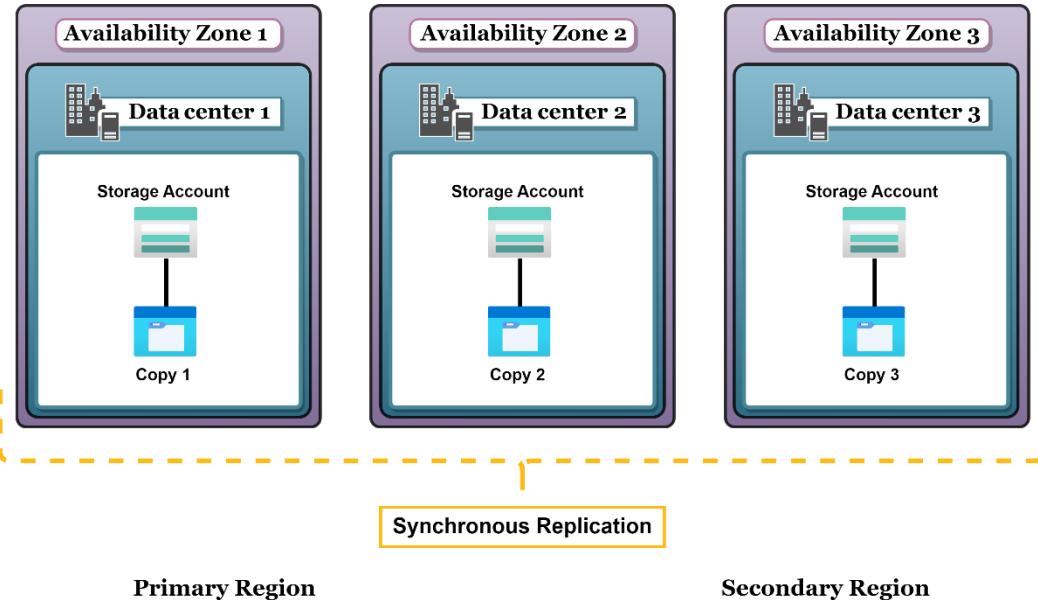


Total recommendations	Recommendations by impact	Impacted resources	Potential yearly savings based on retail pricing	
6		21		
Impact ↑	Description	Category	Potential benefits	Impacted resources ↑
High	Create an Azure Service Health alert	Reliability	Stay informed about issues and advisories across 4 areas (Service...)	2 Subscriptions
Medium	Enable Soft Delete to protect your blob data	Reliability	Save and recover your data when blobs or blob snapshots are...	10 Storage Accounts
Medium	Switch to Azure Monitor based alerts for backup	Operational excellence	Richer alert management capabilities	2 Recovery Services vaults
Medium	Use NAT gateway for outbound connectivity	Reliability	Prevent outbound connection failures with NAT gateway	7 Virtual networks
Medium	Enable Cross Region Restore for your recovery Services Vault	Reliability	As one of the restore options, Cross Region Restore (CRR) allows you t...	2 Recovery Services vaults
Medium	Enable soft delete for your Recovery Services vaults	Reliability	Helps recovery of backup data in cases of accidental deletion	1 Recovery Services vault

Chapter 6:







Marketplace

Get Started

Service Providers

Management

Private Marketplace

Private Offer Management

My Marketplace

Favorites

My solutions

Recently created

Private plans

Categories

IT & Management Tools (4)

storage account

Publisher name : microsoft

Azure services only

Pricing : All

Showing 1 to 12 of 12 results for 'storage account' with 1 selected filters. [Clear search + filters](#)

 Storage account	 Storage task - Azure Storage Actions	 Azure Storage Mover
Microsoft	Microsoft	Microsoft
Azure Service	Azure Service	Azure Service
Use Blobs, Tables, Queues, Files, and Data Lake Gen 2 for reliable, economical cloud storage.	Perform common operations on millions of objects based on logical conditions using object properties for Blobs and Data Lake Storage Gen2.	Azure Storage Mover is a migration service that migrates your on-premises file shares to Azure Storage
Create	Create	Create
		



Storage account

 Add to Favorites

Microsoft | Azure Service

★ 4.2 (1881 ratings)

Plan

Storage account

Create



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 * Visual Studio Enterprise Subscription

Resource group * AZ104-StorageAccounts

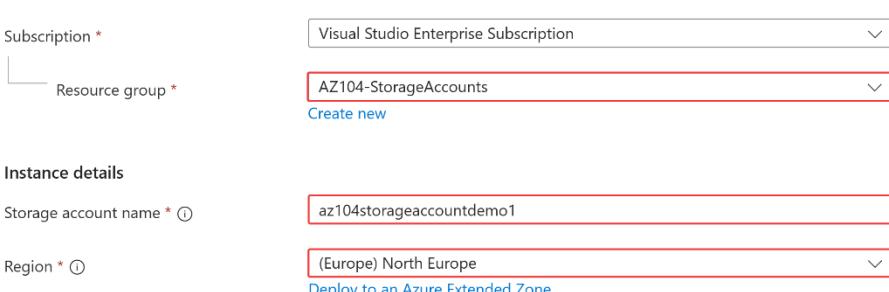
Create new

Instance details

Storage account name * az104storageaccountdemo1

Region * (Europe) North Europe

Deploy to an Azure Extended Zone



Instance details

Storage account name * ⓘ

Region * ⓘ

Performance * ⓘ

Redundancy * ⓘ

Locally-redundant storage (LRS):
Lowest-cost option with basic protection against server rack and drive failures.
Recommended for non-critical scenarios.

Geo-redundant storage (GRS):
Intermediate option with failover capabilities in a secondary region.
Recommended for backup scenarios.

Zone-redundant storage (ZRS):
Intermediate option with protection against datacenter-level failures.
Recommended for high availability scenarios.

Geo-zone-redundant storage (GZRS):
Optimal data protection solution that includes the offerings of both GRS and ZRS. Recommended for critical data scenarios.

Locally-redundant storage (LRS) ▾

Performance * ⓘ

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

Premium: Recommended for scenarios that require low latency.

Redundancy * ⓘ

Locally-redundant storage (LRS) ▾

Security

Configure security settings that impact your storage account.

Require secure transfer for REST API operations ⓘ

Allow enabling anonymous access on individual containers ⓘ

Enable storage account key access ⓘ

Default to Microsoft Entra authorization in the Azure portal ⓘ

Minimum TLS version ⓘ Version 1.2 ▾

Permitted scope for copy operations (preview) ⓘ From any storage account ▾

Hierarchical Namespace

Hierarchical namespace, complemented by Data Lake Storage Gen2 endpoint, enables file and directory semantics, accelerates big data analytics workloads, and enables access control lists (ACLs) [Learn more](#) ↗

Enable hierarchical namespace ⓘ

Access protocols

Blob and Data Lake Gen2 endpoints are provisioned by default [Learn more](#) ↗

Enable SFTP ⓘ
ℹ️ SFTP can only be enabled for hierarchical namespace accounts

Enable network file system v3 ⓘ
ℹ️ To enable NFS v3 'hierarchical namespace' must be enabled. [Learn more about NFS v3](#) ↗

Blob storage

Allow cross-tenant replication

Access tier Hot: Optimized for frequently accessed data and everyday usage scenarios
 Cool: Optimized for infrequently accessed data and backup scenarios

Azure Files

Enable large file shares

Previous **Next** **Review + create**



Network connectivity

You can connect to your storage account either publicly, via public IP addresses or service endpoints, or privately, using a private endpoint.

Network access Enable public access from all networks
 Enable public access from selected virtual networks and IP addresses
 Disable public access and use private access

? Enabling public access from all networks might make this resource available publicly. Unless public access is required, we recommend using a more restricted access type. [Learn more](#)

Network routing

Determine how to route your traffic as it travels from the source to its Azure endpoint. Microsoft network routing is recommended for most customers.

Routing preference ***** **?** Microsoft network routing
 Internet routing

Previous **Next** **Review + create**  [Give feedback](#)



Recovery

Protect your data from accidental or erroneous deletion or modification.

Enable point-in-time restore for containers

Use point-in-time restore to restore one or more containers to an earlier state. If point-in-time restore is enabled, then versioning, change feed, and blob soft delete must also be enabled. [Learn more](#)

Enable soft delete for blobs

Soft delete enables you to recover blobs that were previously marked for deletion, including blobs that were overwritten. [Learn more](#)

Days to retain deleted blobs ⓘ

7

Enable soft delete for containers

Soft delete enables you to recover containers that were previously marked for deletion. [Learn more](#)

Days to retain deleted containers ⓘ

7

Enable soft delete for file shares

Soft delete enables you to recover file shares that were previously marked for deletion. [Learn more](#)

Days to retain deleted file shares ⓘ

7

Tracking

Manage versions and keep track of changes made to your blob data.

Enable versioning for blobs

Use versioning to automatically maintain previous versions of your blobs. [Learn more](#)

Consider your workloads, their impact on the number of versions created, and the resulting costs. Optimize costs by automatically managing the data lifecycle. [Learn more](#)

Enable blob change feed

Keep track of create, modification, and delete changes to blobs in your account. [Learn more](#)

Keep all logs

Delete change feed logs after (in days)

Access control

Enable version-level immutability support

Allows you to set time-based retention policy on the account-level that will apply to all blob versions. Enable this feature to set a default policy at the account level. Without enabling this, you can still set a default policy at the container level or set policies for specific blob versions. Versioning is required for this property to be enabled. [Learn more](#)

Previous

Next

Review + create

Basics

Advanced

Networking

Data protection

Encryption

Tags

...

Encryption type * ⓘ

Microsoft-managed keys (MMK)

Customer-managed keys (CMK)

Enable support for customer-managed keys ⓘ

Blobs and files only

All service types (blobs, files, tables, and queues)

⚠ This option cannot be changed after this storage account is created.

Enable infrastructure encryption ⓘ

⚠ This option cannot be changed after this storage account is created.

Previous

Next

Review + create

Give feedback

Basics Advanced Networking Data protection **Review + create**

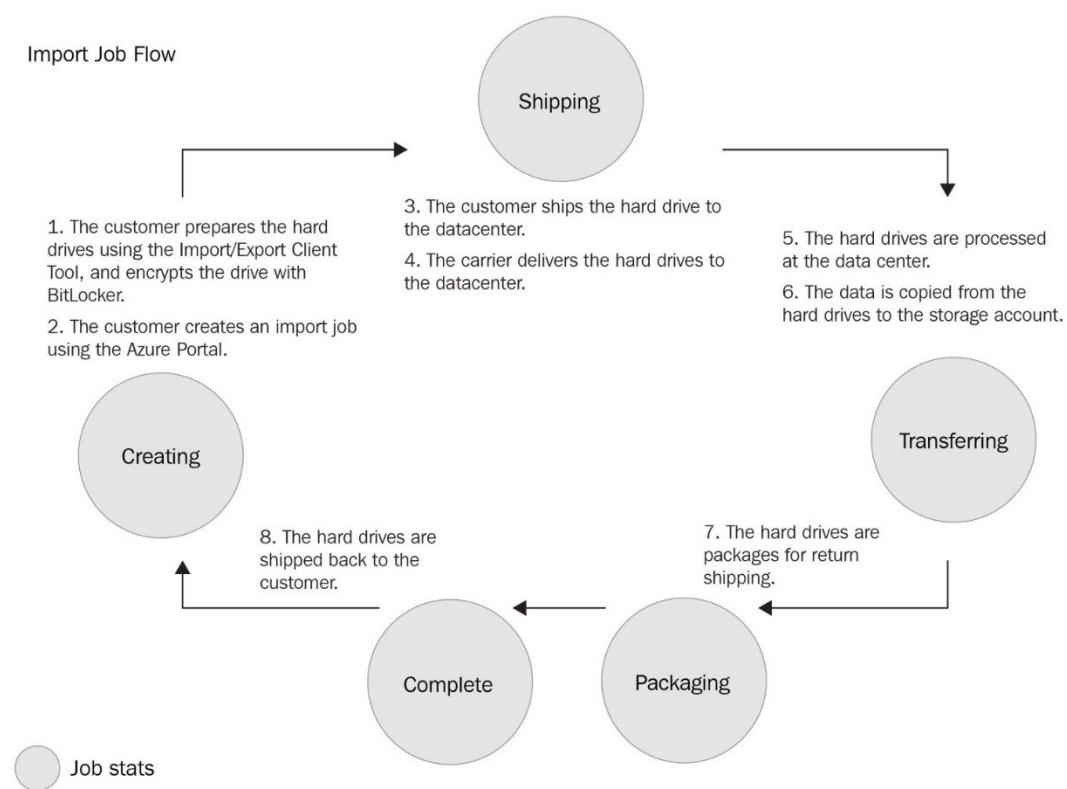
[View automation template](#)

Basics

Subscription	Visual Studio Enterprise Subscription
Resource group	AZ104-StorageAccounts
Location	North Europe
Storage account name	az104storageaccountdemo1
Performance	Standard
Replication	Locally-redundant storage (LRS)

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

Chapter 7:



Microsoft Azure

Azure services

Services

Azure Data Box

Azure Data Box Gateway

Azure Database for MySQL servers

SQL databases

Azure Data Box

Default Directory

Create Manage view Refresh



Get started with Data Box

Select where your data resides and the destination Azure region for data transfer.

Transfer Type



Import to Azure



Export from Azure

Subscription * ⓘ

Visual Studio Enterprise Subscription



Resource group *

AZ104-StorageAccounts



Source country/region *

South Africa



i This is where your data resides.

Destination Azure region *

North Europe



i This is where you want to transfer your data to.

Next



	Data Box - Disk 35 TB Total usable capacity per order	<ul style="list-style-type: none"> Up to 5 disks per order Available with BitLocker or Hardware Encryption (new) Supports Azure Blobs, Files, Managed Disks and ADLS Gen2 accounts Copy data to 1 storage account USB 3.1/SATA interface Learn more Device Specifications	Pricing details	Select
	Data Box 80 TB Total usable capacity per order	<ul style="list-style-type: none"> 10 day use at no extra cost Supports Azure Blobs, Files, Managed Disks and ADLS Gen2 accounts Copy data across 10 storage accounts 1x1/10 Gbps RJ45, 2x10 Gbps SFP+ interface Learn more Device Specifications	Pricing details	Select
	Data Box - Heavy 800 TB Total usable capacity per order	<ul style="list-style-type: none"> 20 day use at no extra cost Supports Azure Blobs, Files, Managed Disks and ADLS Gen2 accounts Copy data across 10 storage accounts 4x1 Gbps, 4x40 Gbps interface Learn more Device Specifications	Pricing details	Select
Import/Export Job 1 Tb Onwards			1 422 ZAR Handling fee per disk	Select

Basics [Job Details](#) [Security](#) [Return shipping](#) [Tags](#) [Review + Create](#)

Project details

The job will be created within the subscription and resource group selected.

Subscription	Visual Studio Enterprise Subscription
Resource group	AZ104-StorageAccounts

Order details

Import job name *

az104labimport ✓

[Review + Create](#) [<Previous: Basics](#) [Next: Job Details>](#)

Create job

Import/Export Job (Import to Azure)

Destination Azure region *

North Europe

STORAGE ACCOUNT(S)

Select the storage account(s) into which the data needs to be transferred. Shares will be created for each selected storage account(s).

Info: If you import a blob with the same name as an existing blob in the destination container, the imported blob will overwrite the existing blob.

Storage account(s) *

az104storageaccountdemo1

+ Create new storage account

Drive information

Prepare your disk drives and generate the journal files using WAImportExport tool.

Upload journal files * ⓘ

"sample.jrn"

Review + Create **<Previous: Basics** **Next: Security>**

Carrier details

Info: Select a "Carrier" for return shipment from the drop down list below. All storage media will be shipped back by Microsoft using one of the listed Return Carriers. Some datacenters may have additional security requirements. To learn more about the delivery process [click here](#)

Carrier * ⓘ

FedEx

Carrier account number *

101010101

Home >
Create job ...
Import/Export Job (Import to Azure)

Basics Job Details Security **Return shipping** Tags Review + Create

Carrier details

Select a "Carrier" for return shipment from the drop down list below. All storage media will be shipped back by Microsoft using one of the listed Return Carriers. Some datacenters may have additional security requirements. To learn more about the delivery process [click here](#)

Carrier * ⓘ FedEx

Carrier account number * 101010101

Return address

Provide the address where the disks need to be shipped back after job completion.

Ship to address * [+ Add Address](#)

Save this address and contact details for future jobs.

Add Address

Address *
Street address
Apartment, suite, unit, building, floor
Department, c/o
Zip / Postal code *
City
State / Province / Region
Country/Region *
South Africa
Work phone *
+27 / Phone number / Extension

[Add shipping address](#)

Review + Create **<Previous: Security** **Next: Tags>**

Notification

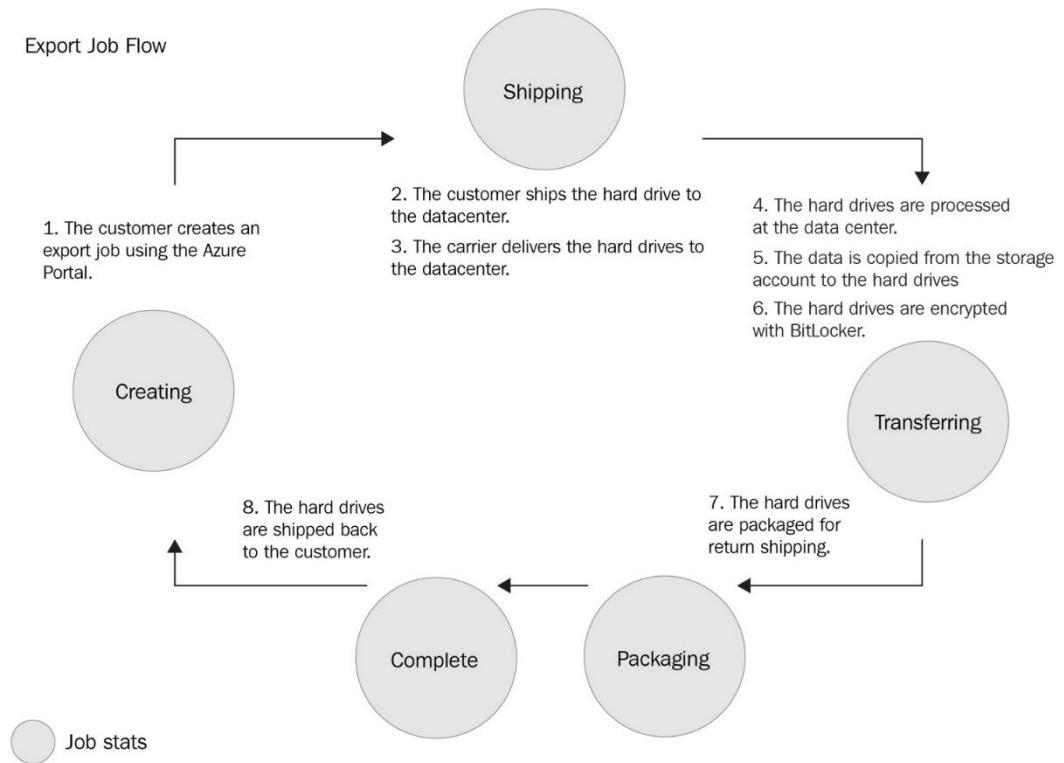
We will keep you updated regarding your order progress. Specify the email address(es) to receive updates regarding your order status. Enter up to 10 email addresses separated by semicolons.

Email *

someone@azureexpert.co.za;

Review + Create <Previous: Security Next: Tags>

I acknowledge that all the information provided is correct and agree to the terms and conditions above.





Get started with Data Box

Select the source Azure region where your data resides and the destination country/region for data transfer.

Transfer Type

Import to Azure Export from Azure

Subscription * [\(i\)](#)

Visual Studio Enterprise Subscription

Resource group *

AZ104-StorageAccounts

Next 



Get started with Data Box

Select the source Azure region where your data resides and the destination country/region for data transfer.

Transfer Type

Import to Azure Export from Azure

Subscription * [\(i\)](#)

Visual Studio Enterprise Subscription

Resource group *

AZ104-StorageAccounts

Source Azure region *

North Europe

i This is where your data resides.

Destination country/region *

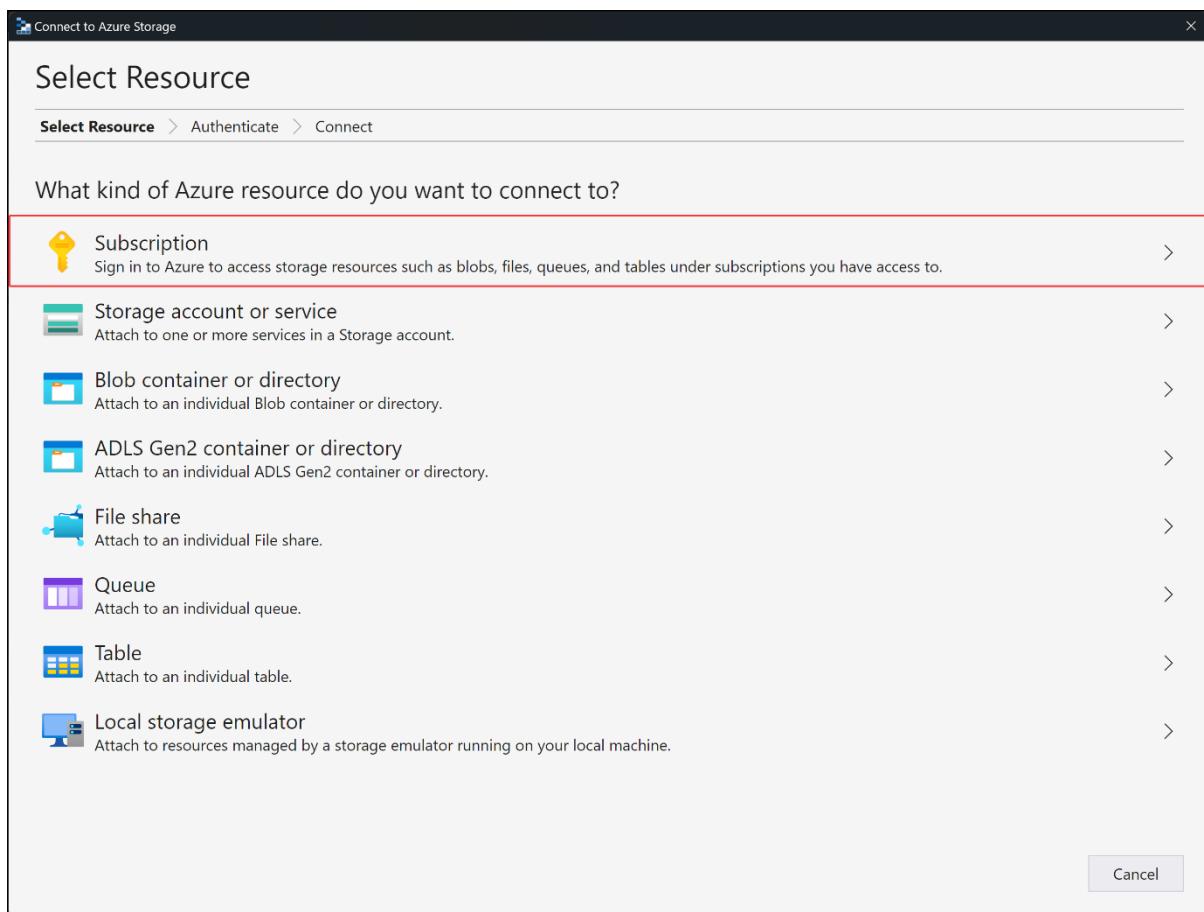
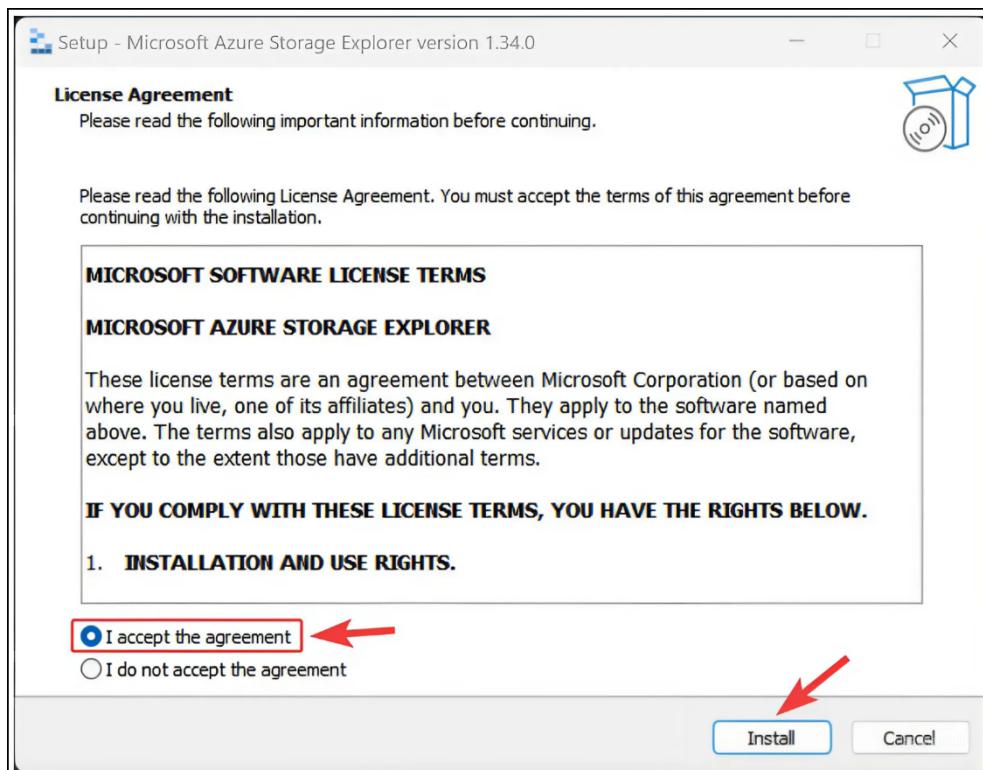
South Africa

i This is where you want to transfer your data to.

Next 

 Data Box 80 TB Total usable capacity per order	<ul style="list-style-type: none"> 10 day use at no extra cost Supports Azure Blobs and Files Export data from upto 10 storage accounts 1x1/10 Gbps RJ45, 2x10 Gbps SFP+ interface Pricing details Select
 Data Box - Heavy 800 TB Total usable capacity per order	<ul style="list-style-type: none"> 20 day use at no extra cost Supports Azure Blobs and Files Export data from upto 10 storage accounts 4x1 Gbps, 4x40 Gbps interface Pricing details Select
Import/Export Job 1 Tb Onwards	<ul style="list-style-type: none"> Send up to 10 disks per order Supports SATA/SSD disks. Supported hardware Supports Azure Blobs Export data from 1 storage account <p>1 422 ZAR Handling fee per disk</p> Pricing details Select

Basics	Job Details	Security	Return shipping	Tags	Review + Create
Source Azure region *	<input type="text" value="North Europe"/>				
Storage account *	<input type="text" value="az104storageaccountdemo1"/>				
Export Options					
Block blobs, Page blobs, and Append blobs will be exported. Learn more about supported storage types					
Blobs to export	<input checked="" type="radio"/> All objects <input type="radio"/> Selected containers and blobs <input type="radio"/> Export from blob list file (XML format)				
<input checked="" type="checkbox"/> Save verbose log in the 'databoxcopylog' blob container					
Review + Create		<Previous: Basics		Next: Security>	



Which Azure environment will you use to sign in?

- Azure
- Azure China
- Azure US Government
- Custom Environment:



Sign in

No account? [Create one!](#)

[Can't access your account?](#)

Back

Next



Sign-in options

ACCOUNT MANAGEMENT

Choose which tenants you want to load subscriptions from and the subscriptions you want to view resources from.

Azure Expert
someone@emailaddress.com Remove

✓ Azure Expert (home tenant)
azureexpert.co.za No subscriptions found.

Attach a resource...

> Default Directory

Sign in with Azure...

Activities

Clear completed Clear successful

EXPLORER

Search for resources

Collapse all Refresh all

✓ Visual Studio Enterprise Subscription

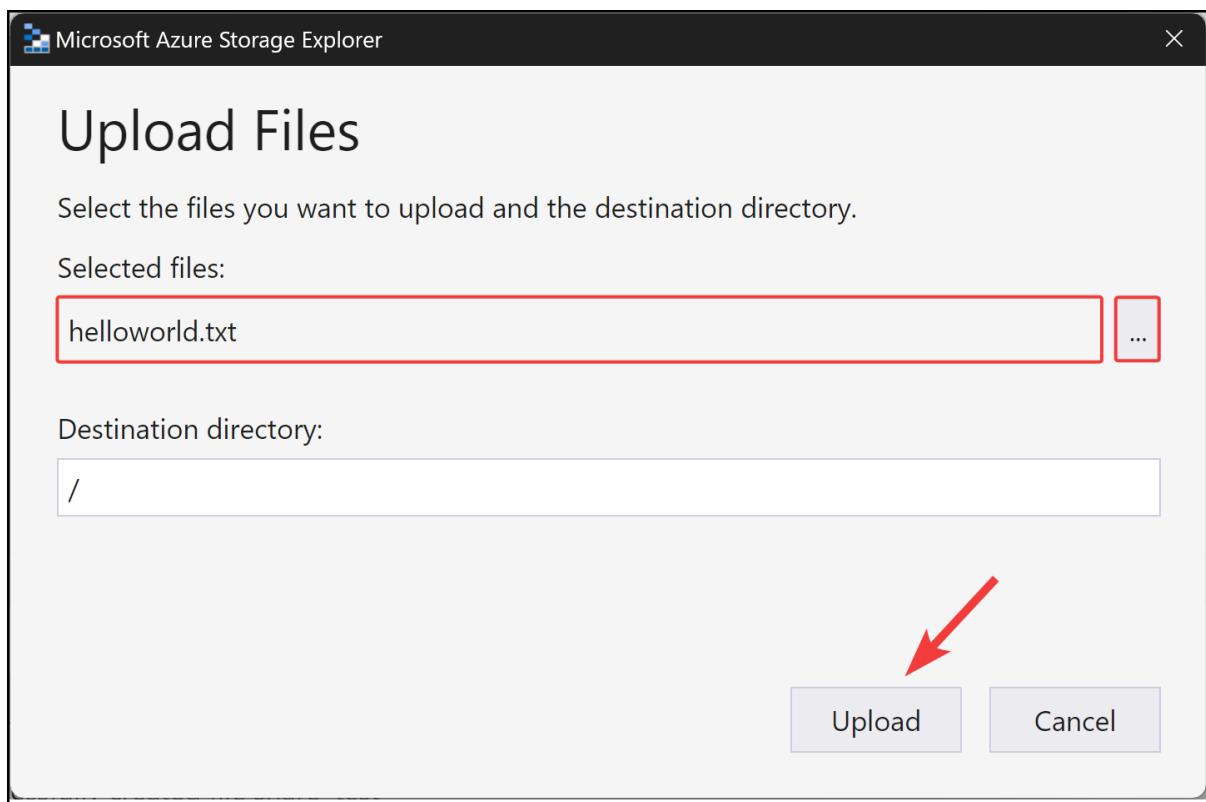
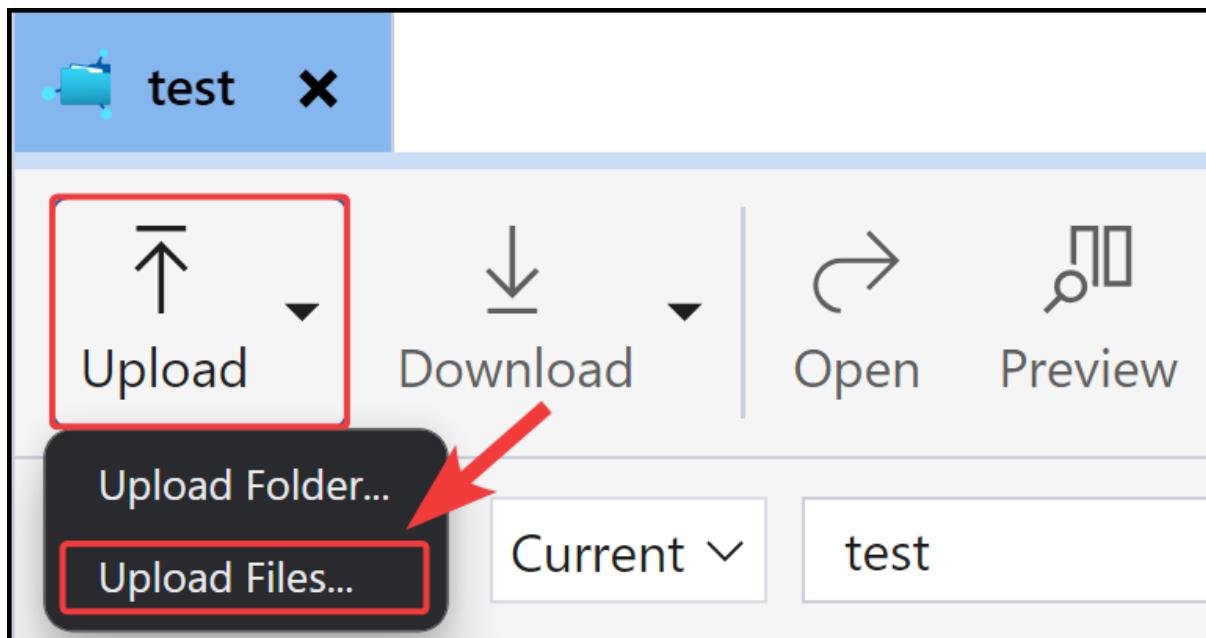
✓ Storage Accounts

✓ az104storageaccountdemo1

- > Blob Containers
- > File Shares
- > Queues
- > Tables

The screenshot shows the Azure Storage Explorer interface. On the left is a sidebar with icons for users, storage accounts, and settings. The main area is titled "EXPLORER" and contains a search bar. Below the search bar are two buttons: "Collapse all" and "Refresh all". The storage account "az104storageaccountdemo1" is expanded, showing its blob containers, file shares, queues, and tables. A context menu is open over the "File Shares" item, which is highlighted with a red border. The menu items are: "Create File Share" (with a red arrow pointing to it), "Open File Share by Name...", "Paste File Share", "Configure CORS Settings...", "Search From Here", and "Refresh". At the bottom of the main area are "Actions" and "Properties" tabs.

This screenshot shows the contents of a Blob Container. It lists "Blob Containers" and "File Shares". Under "File Shares", there is one entry named "test", which is also highlighted with a red border.



 az104storageaccountdemo1 | File shares

Storage account

Search File share Refresh Give feedback

File share settings

Identity-based access: Not configured Default share-level permissions

Soft delete: 7 days Maximum capacity: 100 TiB

Containers

File shares

Queues

Tables

Data storage

Security + networking

Data management

Settings

Name Modified

Name	Modified
 test	15/08/2024, 18:12:43

Show deleted shares

Search file shares by prefix (case-sensitive)

Red arrows point to the 'File shares' menu item and the 'test' file entry.

 test | Browse

SMB File share

Search Connect Upload Add directory Refresh Delete share

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

Overview

Diagnose and solve problems

Access Control (IAM)

Browse

Operations

Name Type Size

Name	Type	Size
 helloworld.txt	File	12 B

Red arrows point to the 'Browse' menu item and the 'helloworld.txt' file entry.

Home > az104storageaccountdemo1 | File shares > test

 test | Browse

SMB File share

A large red arrow points to the 'test' folder entry in the breadcrumb navigation.

File share settings

Identity-based access: Not configured Default share-level security: None

Soft delete: 7 days Maximum capacity: 100 TiB Secondary location: None

Search file shares by prefix (case-sensitive)

Show deleted shares

Name	Modified	Tier
test	15/08/2024, 18:12:43	Transaction optimized 100 TiB

⋮

Properties
Edit quota
Connect
Edit metadata
View snapshots
Delete share
⋮

Windows Linux macOS

To connect to this Azure file share from Windows, choose from the following authentication methods and run the PowerShell commands from a normal (not elevated) PowerShell terminal:

Drive letter

Z

Authentication method

Active Directory or Microsoft Entra

Storage account key

i 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

```
$connectTestResult = Test-NetConnection -ComputerName az104storageaccountdemo1.file.core.windows.net -Port 445
if ($connectTestResult.TcpTestSucceeded) {
    # Save the password so the drive will persist on reboot
```

[Collapse all](#) [Refresh all](#)

- >  Blob Containers
- ▽  File Shares
- test
- >  Queues
- >  Tables
- >  csa
- >  csb

- [Open](#)
- [Open New Tab](#)
- [Clone...](#)
- [Delete](#)



The screenshot shows the Azure Storage browser interface for the account 'az104storageaccountdemo1'. The left sidebar includes links for Storage browser (highlighted with a red box), Storage account, Storage mover, and Partner solutions. The main area displays the storage account name 'az104storageaccountdemo1' and a 'Favorites' section. Below this is a 'Recently viewed' section with a link to 'Blob containers' (also highlighted with a red box). The 'Blob containers' section lists '\$blobchangefeed' and '\$logs', with a 'View all' link. On the right, there are buttons for 'Add container' (highlighted with a red box) and 'Upload'. A search bar at the top is also visible.

New container

Name *

 ✓

Anonymous access level (i)

Private (no anonymous access) ▼

✓ Advanced

Create Give feedback 

Upload blob



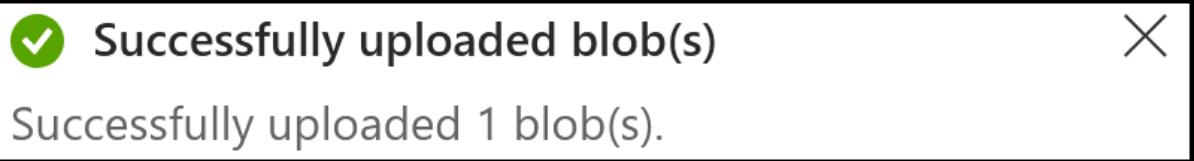
1 file(s) selected: helloworld.txt

Drag and drop files here or Browse for files 

Overwrite if files already exist

✓ Advanced

Upload  Give feedback 



Home > az104storageaccountdemo1 | Containers >

test ...
Container

Upload Change access level Refresh | Delete Change tier Acquire lease Break lease View snapshot

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

Search blobs by prefix (case-sensitive) Show

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size
<input checked="" type="checkbox"/> helloworld.txt	15/08/2024, 20:31:30	Hot (Inferred)		Block blob	12 B

View/edit
Download
Properties
Generate SAS
View versions
View snapshots
Create snapshot
Change tier
Acquire lease
Break lease
Delete

...

Red arrows point to the "Change tier" and "..." buttons in the context menu.

Change tier

helloworld.txt



Optimize storage costs by placing your data in the appropriate access tier. [Learn more ↗](#)

Access tier

Cool



Hot (Inferred)

Cool

Cold

Archive



Save

Cancel

Give feedback

Name	Modified	Access tier
<input type="checkbox"/> helloworld.txt	15/08/2024, 20:31:30	Cool

helloworld.txt ...

Blob

Save Discard Download Refresh Delete Change tier ...

ⓘ This blob is currently archived and can't be downloaded. Rehydrate the blob by copying and pasting it in the desired storage account to download or change the blob's tier to hot or cool. [Learn more ↗](#)



Change tier

helloworld.txt

Optimize storage costs by placing your data in the appropriate access tier. [Learn more ↗](#)

Access tier: Hot

Rehydrate priority: Standard

ⓘ Rehydrating a blob from Archive to Hot or Cool may take several hours to complete.

Access tier last modified: 15/08/2024, 8:44:47 pm

Save Cancel Give feedback 

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
<input type="checkbox"/> helloworld.txt	8/5/2023, 9:34:24 PM	Hot		Block blob	12 B	Available

Chapter 8:

Public network access

Enabled from all networks

Enabled from selected virtual networks and IP addresses

Disabled

[Configure network security for your storage accounts. Learn more ↗](#)

Virtual networks

+ Add existing virtual network + Add new virtual network

Create virtual network

1 Name * StorageVNET

2 Address space * 10.2.0.0/16 10.2.0.0 - 10.2.255.255 (65536 addresses)

3 Subscription * Visual Studio Enterprise Subscription

4 Resource group * AZ104-StorageAccounts

5 Location * West Europe

Subnet

Name * default

Address range * 10.2.0.0/24 10.2.0.0 - 10.2.0.255 (256 addresses)

DDoS protection Basic Standard

Service endpoint Microsoft.Storage

Firewall ①

Disabled Enabled

7 Create

The screenshot shows the 'Create virtual network' dialog box. The 'Name' field (1) contains 'StorageVNET'. The 'Address space' field (2) shows '10.2.0.0/16' with a note '10.2.0.0 - 10.2.255.255 (65536 addresses)'. The 'Subscription' field (3) is set to 'Visual Studio Enterprise Subscription'. The 'Resource group' field (4) is set to 'AZ104-StorageAccounts'. The 'Location' field (5) is set to 'West Europe'. Under 'Subnet', the 'Name' field (6) is 'default'. The 'Address range' field (6) shows '10.2.0.0/24' with a note '10.2.0.0 - 10.2.0.255 (256 addresses)'. The 'DDoS protection' section has 'Basic' selected. The 'Service endpoint' section shows 'Microsoft.Storage'. The 'Firewall' section has 'Disabled' selected. A red arrow points to the 'Create' button at the bottom left of the form.

Firewalls and virtual networks Private endpoint connections Custom domain

Public network access

Enabled from all networks
 Enabled from selected virtual networks and IP addresses
 Disabled

Configure network security for your storage accounts. [Learn more](#)

Virtual networks

+ Add existing virtual network + Add new virtual network

Virtual Network	Subnet	Address range	Endpoint Status	Resource Group
> StorageVNET	1			AZ104-StorageAccounts

Firewall

Add IP ranges to allow access from the internet or your on-premises networks. [Learn more](#).

Add your client IP address () [\(i\)](#)

Address range

Storage browser

Firewall

Add IP ranges to allow access from the internet or your on-premises networks. [Learn more](#).

Address range

[\(i\)](#)

IP address or CIDR



This request is not authorized to perform this operation.

Firewalls and virtual networks **Private endpoint connections** Custom domain

+ Private endpoint ✓ Approve ✗ Reject 🗑 Remove ⏪ Refresh

Filter by name... All connection states

Connection name Connection state Private endpoint

No results

1 Basics 2 Resource 3 Virtual Network 4 DNS 5 Tags 6 Review + create

Use private endpoints to privately connect to a service or resource. Your private endpoint must be in the same region as your virtual network, but can be in a different region from the private link resource that you are connecting to. [Learn more](#)

Project details

Subscription * ① Visual Studio Enterprise Subscription ✓
Resource group * ② AZ104-StorageAccounts ✓
[Create new](#)

Instance details

Name * ③ az104privateendpoint ✓
Network Interface Name * ④ az104privateendpoint-nic ✓
Region * ⑤ West Europe ✓

< Previous Next : Resource >

✓ Basics 2 Resource 3 Virtual Network 4 DNS 5 Tags 6 Review + create

Private Link offers options to create private endpoints for different Azure resources, like your private link service, a SQL server, or an Azure storage account. Select which resource you would like to connect to using this private endpoint. [Learn more](#)

Subscription Visual Studio Enterprise Subscription (67f1c882-3828-4386-9109-09b0df3c6d36)

Resource type Microsoft.Storage/storageAccounts

Resource az104storageaccountdemo1

Target sub-resource * ① file ✓

< Previous Next : Virtual Network >

✓ Basics ✓ Resource 3 Virtual Network 4 DNS 5 Tags 6 Review + create

Networking

To deploy the private endpoint, select a virtual network subnet. [Learn more](#)

Virtual network * ⓘ StorageVNET (AZ104-StorageAccounts) ▾

Subnet * ⓘ default ▾

Network policy for private endpoints Disabled ([edit](#))

Private IP configuration

Dynamically allocate IP address

Statically allocate IP address

Application security group

Configure network security as a natural extension of an application's structure. ASG allows you to group virtual machines and define network security policies based on those groups. You can specify an application security group as the source or destination in an NSG security rule [Learn more](#)

+ Create

Application security group

< Previous Next : DNS >



✓ Basics ✓ Resource ✓ Virtual Network 4 DNS 5 Tags 6 Review + create

Private DNS integration

To connect privately with your private endpoint, you need a DNS record. We recommend that you integrate your private endpoint with a private DNS zone. You can also utilize your own DNS servers or create DNS records using the host files on your virtual machines. [Learn more](#)

Integrate with private DNS zone Yes No

< Previous Next : Tags >



Network Routing

Determine how you would like to route your traffic as it travels from its source to an Azure endpoint. Microsoft routing is recommended for most customers.

Routing preference * ⓘ

Microsoft network routing Internet routing

Publish route-specific endpoints ⓘ

Microsoft network routing
 Internet routing

az104storageaccountdemo1 | Endpoints ⭐ ...

Storage account

Search Refresh Give feedback

Azure search	Provisioning state	Succeeded
Settings	Created	7/5/2023, 9:21:52 PM
Configuration	Storage account resource ID	/subscriptions/ /r... <input type="button" value=""/>
Data Lake Gen2 upgrade		
Resource sharing (CORS)		
Advisor recommendations		
Endpoints	Blob service	
	Resource ID	/subscriptions/ /r... <input type="button" value=""/>
	Blob service	https://az104storageaccountdemo1.blob.core.windows.net/ <input type="button" value=""/>
	File service	
	Resource ID	/subscriptions/ /r... <input type="button" value=""/>
	File service	https://az104storageaccountdemo1.file.core.windows.net/ <input type="button" value=""/>

az104storageaccountdemo1 | Access keys ⭐ ...

Storage account

Search Set rotation reminder Refresh Give feedback

Access keys authenticate your applications' requests to this storage account. Keep your keys in a secure location like Azure Key Vault, and replace them often with new keys. The two keys allow you to replace one while still using the other.

Remember to update the keys with any Azure resources and apps that use this storage account.
[Learn more about managing storage account access keys](#)

Storage account name: az104storageaccountdemo1

key1 Rotate key
Last rotated: 2023/07/05 (56 days ago)
Key:

Connection string:

key1 Rotate key

Last rotated: 2023/07/05 (56 days ago)

Key: Hide

key2



Rotate key



Last rotated: 2023/07/05 (56 days ago)

Regenerate access key

The current key will become immediately invalid and is not recoverable. Do you want to regenerate access key 'key2'?

Yes

No

Allowed services (i)



Blob



File



Queue



Table

Allowed resource types (i)



Service



Container



Object

Allowed permissions (i)



Read



Write



Delete



List



Add



Create



Update



Process



Immutable storage



Permanent delete

Blob versioning permissions (i)



Enables deletion of versions

Allowed blob index permissions (i)



Read/Write



Filter

Start and expiry date/time ⓘ

Start	2023/08/31	<input type="button" value="Calendar"/>	9:14:11 PM
End	2023/09/02	<input type="button" value="Calendar"/>	5:14:11 AM

(UTC+02:00) Harare, Pretoria

Allowed protocols ⓘ

HTTPS only HTTPS and HTTP

Preferred routing tier ⓘ

Basic (default) Microsoft network routing Internet routing

i Some routing options are disabled because the endpoints are not published.

Signing key ⓘ

key1	<input type="button" value="▼"/>	①
------	----------------------------------	----------

②

Connection string

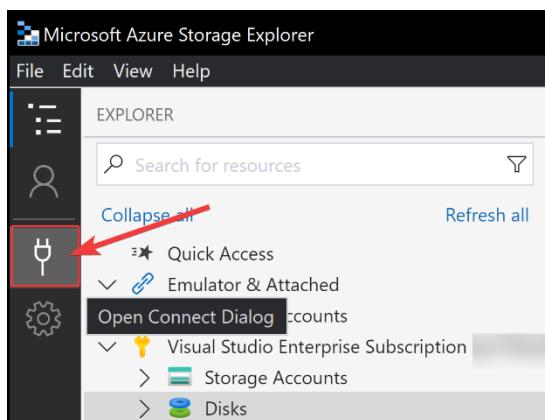
BlobEndpoint=https://az104storageaccountdemo1.blob.core.windows...

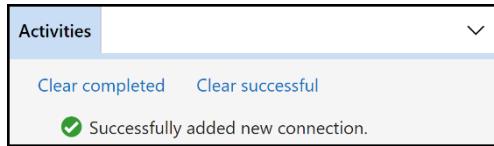
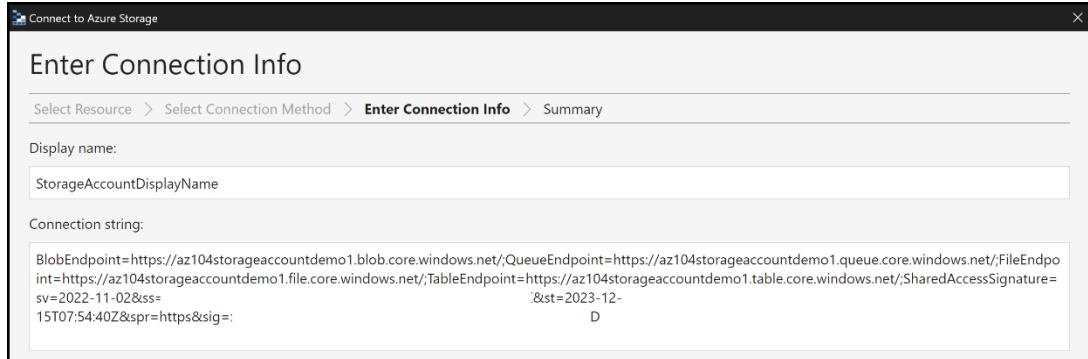
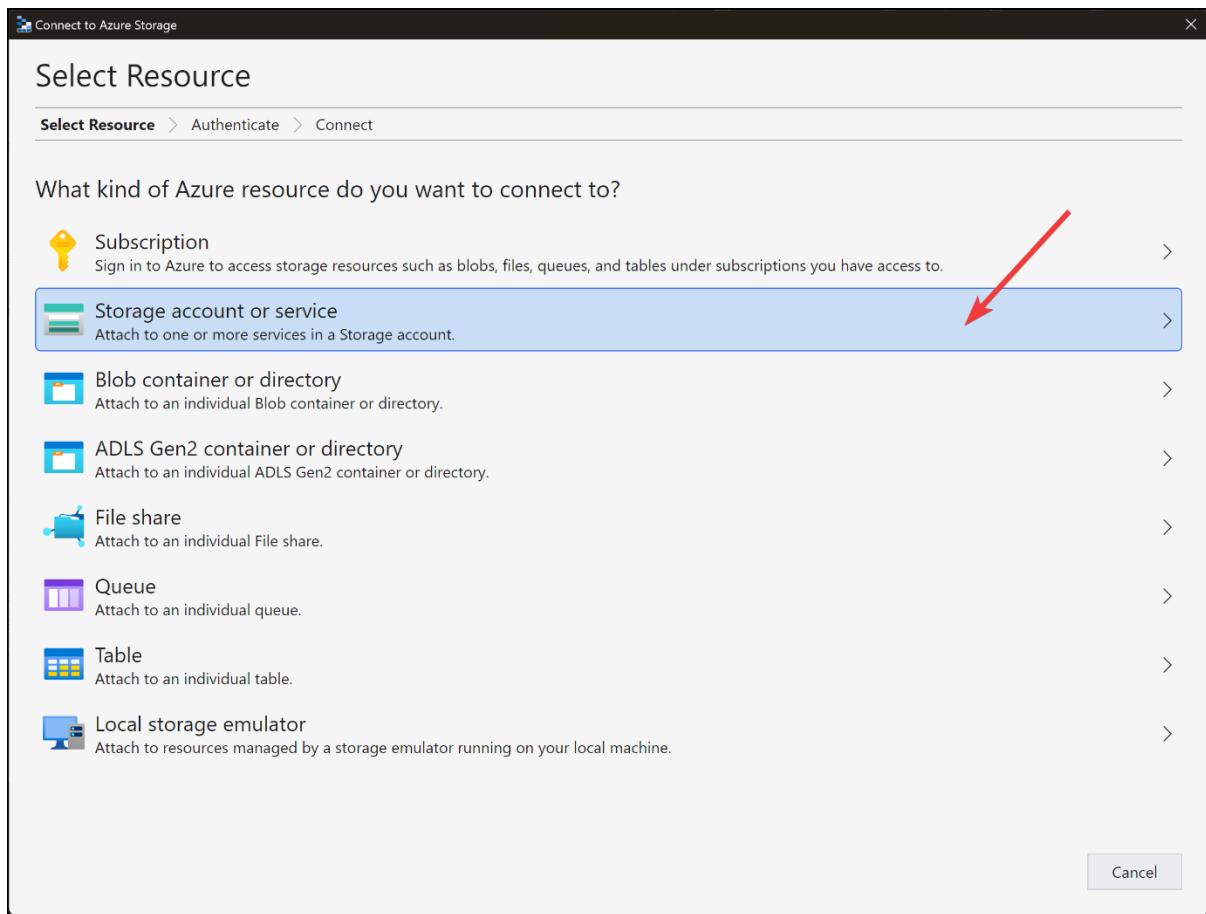
SAS token ⓘ

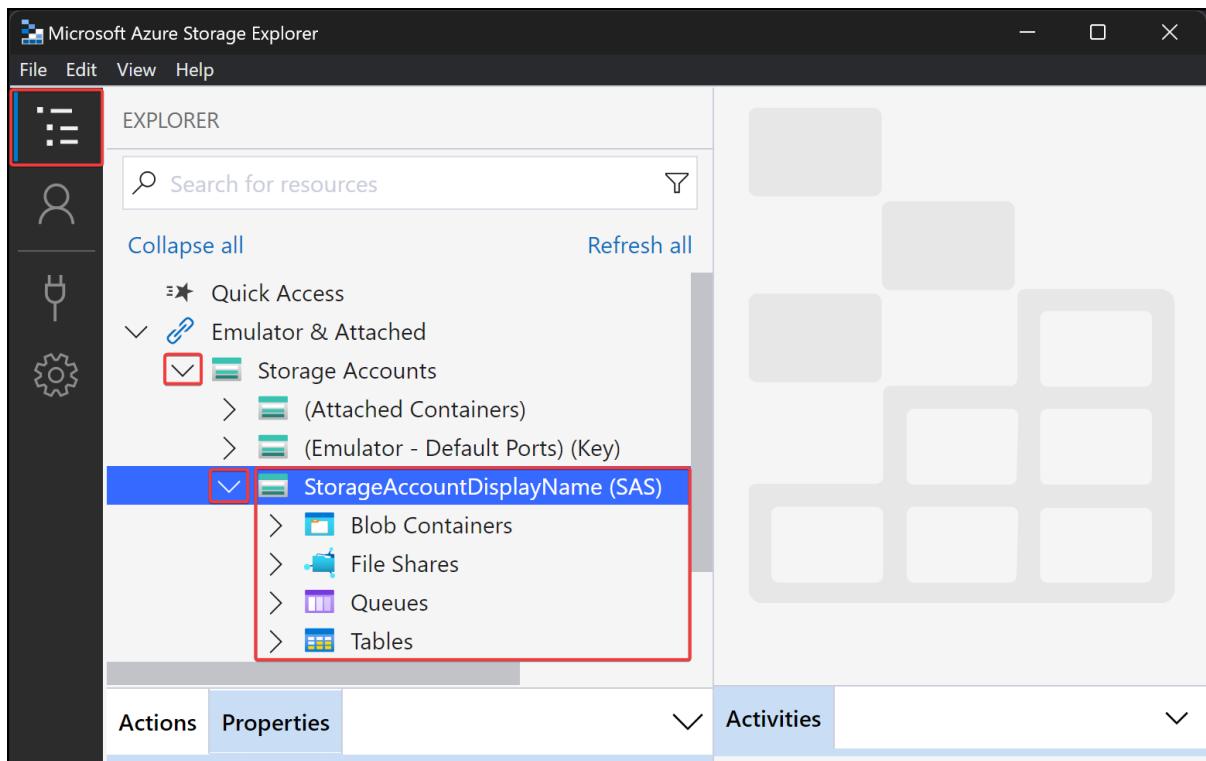
?sv=2022-11-02&ss= &srt=sc&sp= &se=2023-12-15 ...

Blob service SAS URL

[https://az104storageaccountdemo1.blob.core.windows.net/?sv=2022- ...](https://az104storageaccountdemo1.blob.core.windows.net/?sv=2022-)







The screenshot shows the Azure portal's 'Access policy' blade for a container named 'test'. The top navigation bar includes a key icon, the container name, and a '... More options' button. Below the navigation are 'Search' and 'Save' buttons. On the left, there are links for 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and a 'Settings' section with 'Shared access tokens', 'Access policy' (which is highlighted with a red box), 'Properties', and 'Metadata'. On the right, under 'Stored access policies', there is a table with columns 'Identifier' and 'Start time'. It shows one entry: 'Immutable blob storage' with a start time of '(None)'. There is also a '+ Add policy' button highlighted with a red box. Below this table, another table is shown with columns 'Identifier' and 'Scope', indicating 'No results'.

Add policy

Identifier *

Policy1

Permissions

2 selected

Start time

2023/12/14



00:00:00

Expiry time

2023/12/18



00:00:00

(UTC+02:00) Harare, Pretoria



(UTC+02:00) Harare, Pretoria



OK

Cancel

Identifier

Start time

Expiry time

Permissions

Policy1

14/12/2023, 12:00:00 am

18/12/2023



Edit



Immutable blob storage



Delete

Identifier

Start time

Expiry time

Permissions

Policy1

14/12/2023, 12:00:00 am

18/12/2023



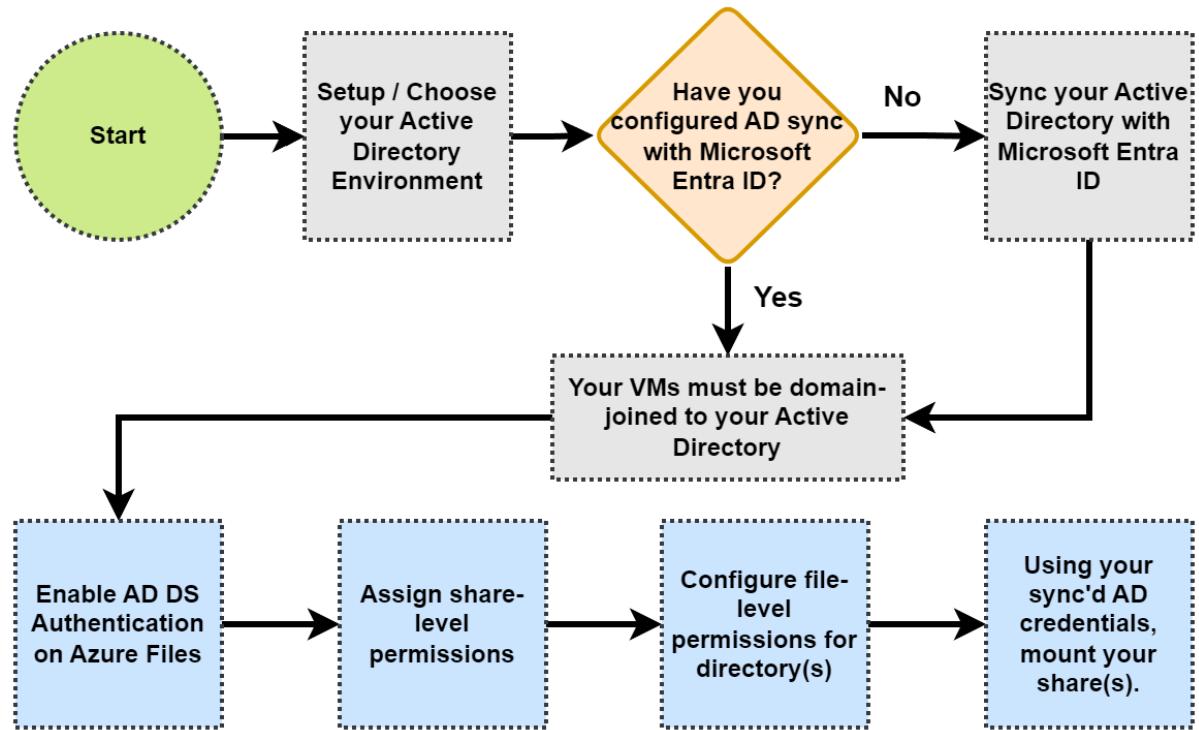
Edit



Immutable blob storage



Delete



Click the button below to deploy a forest to Azure.

Deploy to Azure

Deploy to Azure Gov

Visualize

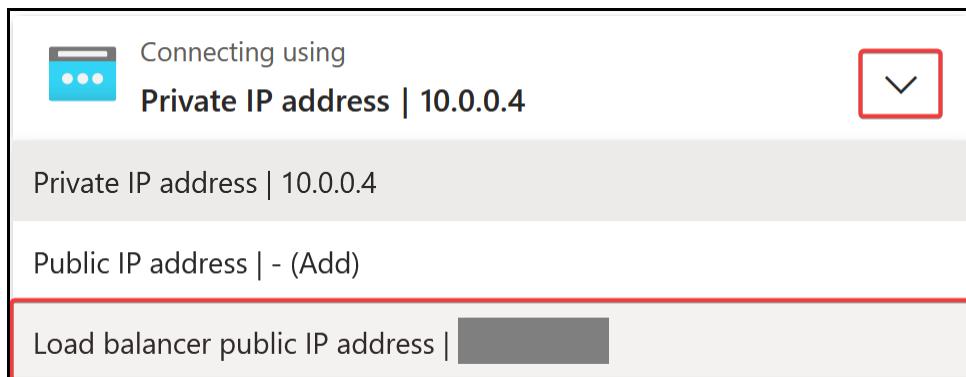
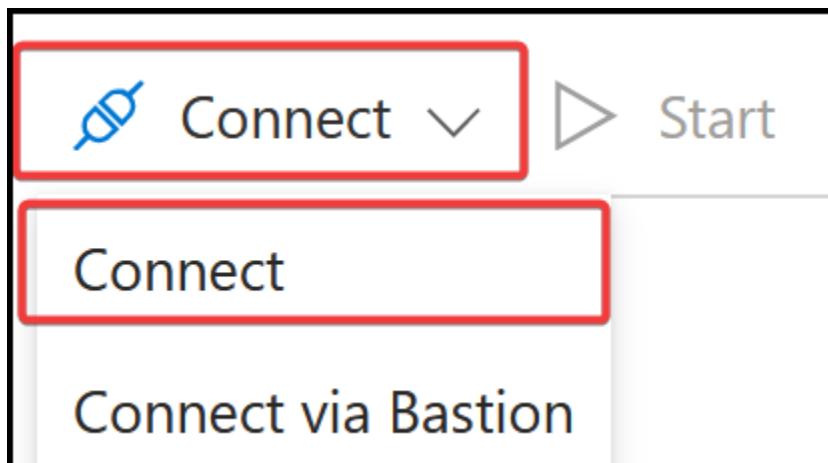
Project details

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

Subscription *	Visual Studio Enterprise Subscription
Resource group *	AZ104-StorageAccounts
	Create new

Instance details

Region *	(Europe) North Europe
Admin Username *	storagedemoadmin
Admin Password *	*****
Domain Name *	storagedemo.com
Dns Prefix *	storagedemo
	.northeurope.cloudapp.azure.com
Vm Size *	1x Standard D2s v3 2 vcpus, 8 GB memory Change size
_artifacts Location	[deployment().properties.templateLink.uri]



 Local machine

Native RDP

Connect via native RDP without any additional software needed. Recommended for testing only.

Load balancer public IP address ([REDACTED])



Select Download RDP file

 Remote Desktop Connection 

 The identity of the remote computer cannot be verified. Do you want to connect anyway?

The remote computer could not be authenticated due to problems with its security certificate. It may be unsafe to proceed.

Certificate name

 Name in the certificate from the remote computer:
adVM.storagedemo.com

Certificate errors

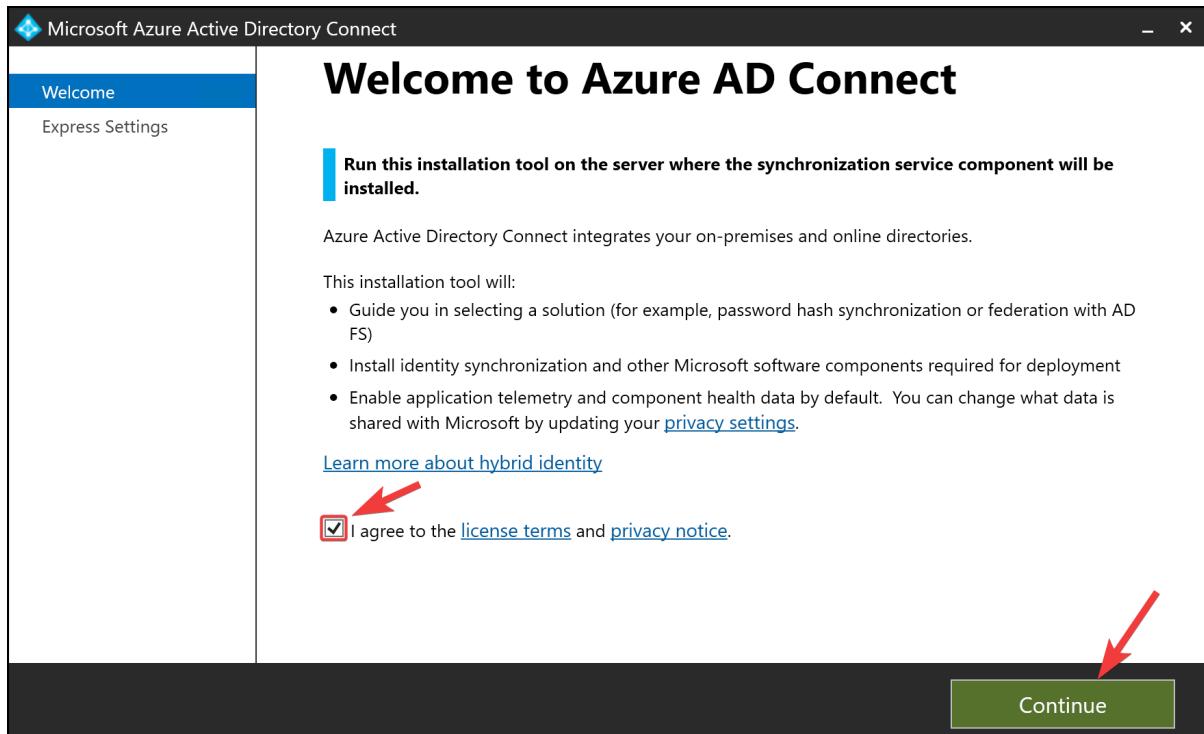
The following errors were encountered while validating the remote computer's certificate:

 The certificate is not from a trusted certifying authority.

Do you want to connect despite these certificate errors?

Don't ask me again for connections to this computer

[View certificate...](#) Yes No



This screenshot shows the 'Connect to Azure AD' screen. It prompts the user to enter Azure AD global administrator or hybrid identity administrator credentials. It includes fields for 'USERNAME' (with a red box around it) and 'PASSWORD' (with a red box around it). A question mark icon is available for help. The background is white with a thin black border around the form area.

Internet Explorer

X



Content within this application coming from the website listed below is being blocked by Internet Explorer Enhanced Security Configuration.

[Close](#)

<https://login.microsoftonline.com>

[Learn more about Internet Explorer's Enhanced Security Configuration...](#)



If you trust this website, you can lower security settings for the site by adding it to the Trusted sites zone. If you know this website is on your local intranet, review help for instructions on adding the site to the local intranet zone instead.

[Add...](#)

Important: adding this website to the Trusted sites zone will lower the security settings for all content from this web site for all applications, including Internet Explorer.

Connect to AD DS

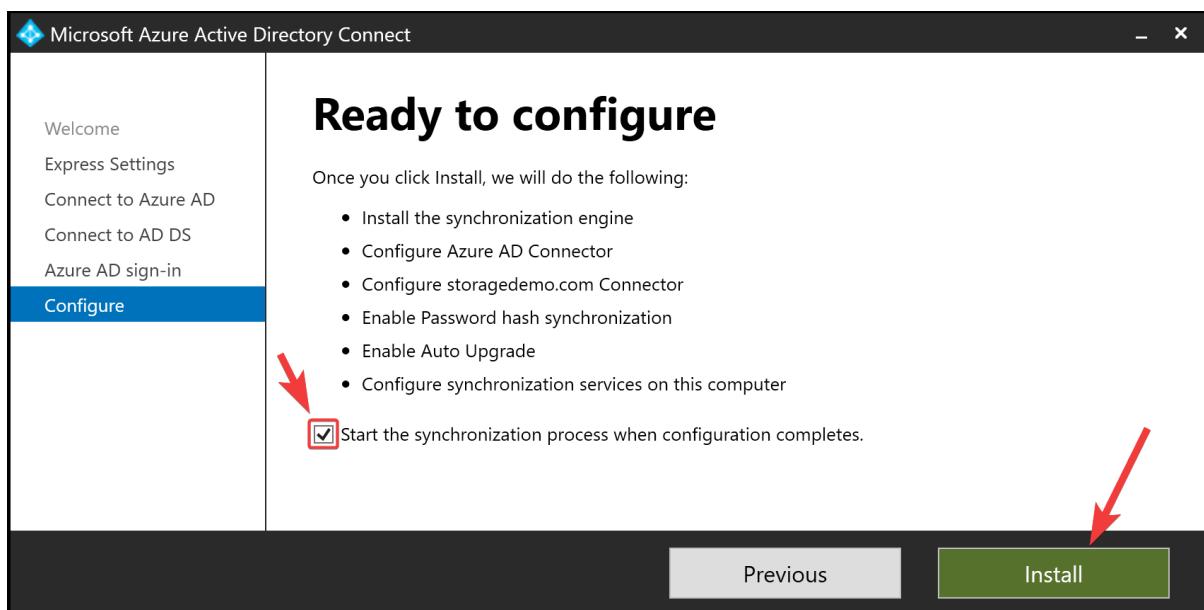
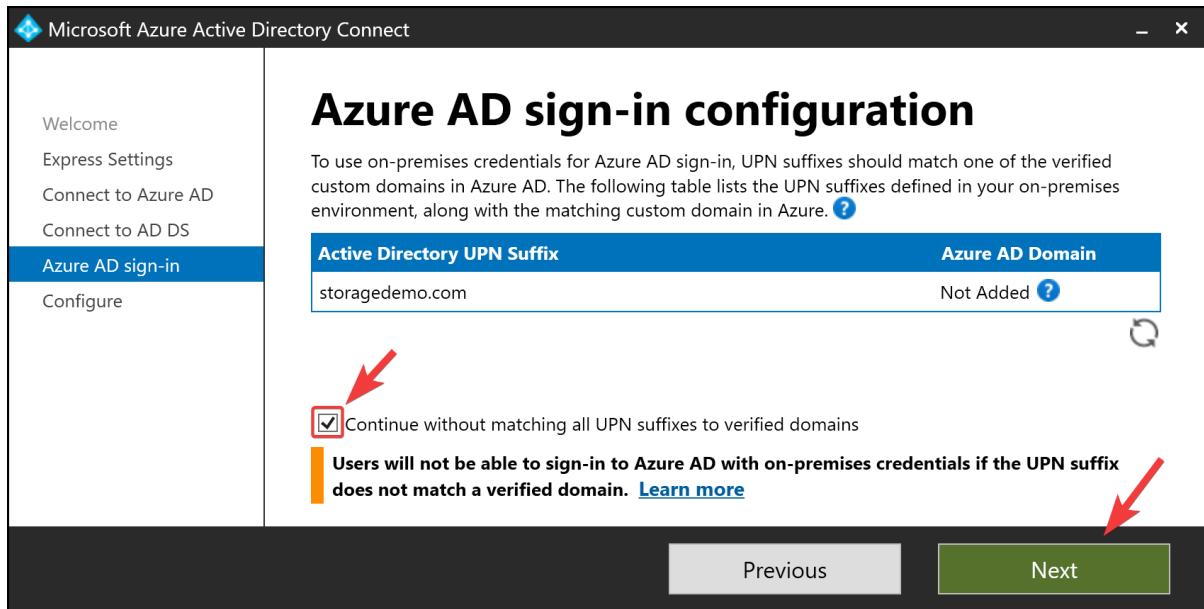
Enter the Active Directory Domain Services enterprise administrator credentials: [?](#)

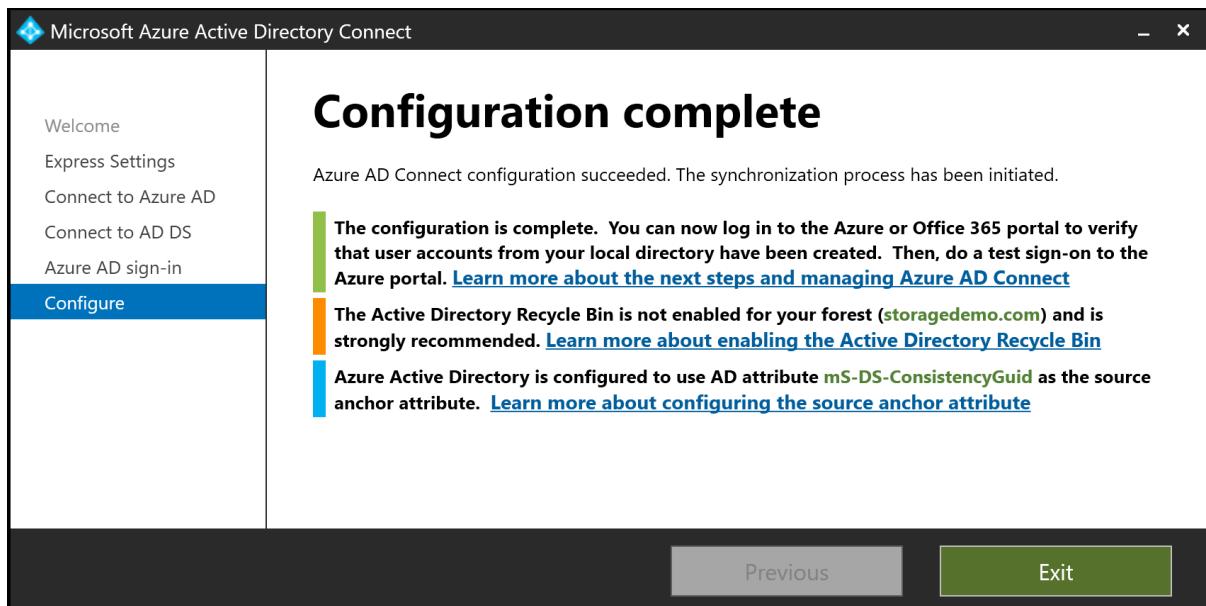
USERNAME

storagedemoadmin@storagedemo.com

PASSWORD

••••••••••••





Vm Size *	1x Standard A2 v2 2 vcpus, 4 GB memory Change size
Existing Vnet Name	adVNET ✓
Public IP Address Name	[format('{0}-pip', parameters('dnsLabelPrefix'))]
Existing Subnet Name	adSubnet ✓
Dns Label Prefix	[toLowerCase(concat('VM1',utcNow('yyyyMMddHHmm')))]
Domain To Join	storagedemo.com ✓
Domain Username	storagedemoadmin ✓
Domain Password *	••••••••••••••✓
Ou Path	
Domain Join Options	3 ✓
Admin Username	storagedemoadmin ✓
Admin Password *	••••••••••••••✓
Storage Account Name	[uniqueString(resourceGroup().id, deployment().name)]
Location	[resourceGroup().location]

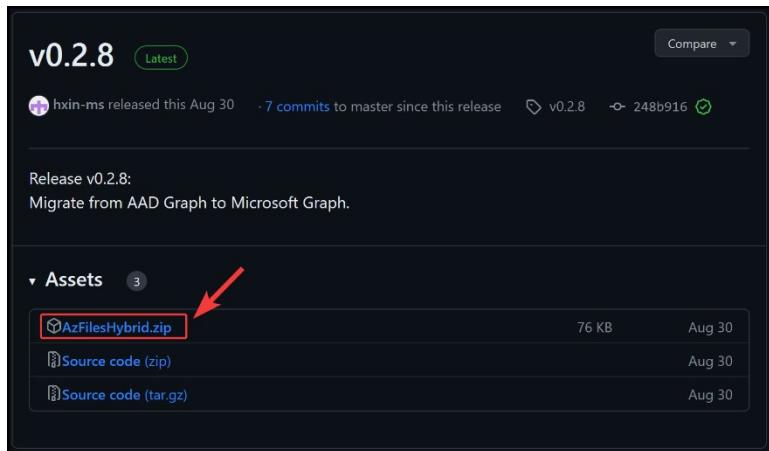
v0.2.8 Latest

hxin-ms released this Aug 30 · 7 commits to master since this release · v0.2.8 · 248b916

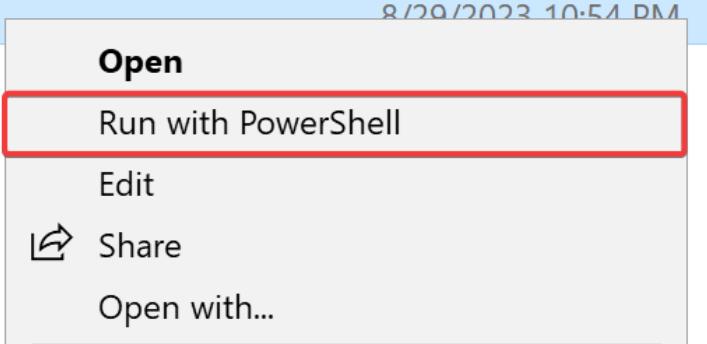
Release v0.2.8:
Migrate from AAD Graph to Microsoft Graph.

Assets 3

	76 KB	Aug 30
AzFilesHybrid.zip		
Source code (zip)		Aug 30
Source code (tar.gz)		Aug 30



Name	Date modified
AzFilesHybrid	8/29/2023 10:54 PM
AzFilesHybrid	8/29/2023 10:54 PM
CopyToPSPPath	8/29/2023 10:54 PM



Open

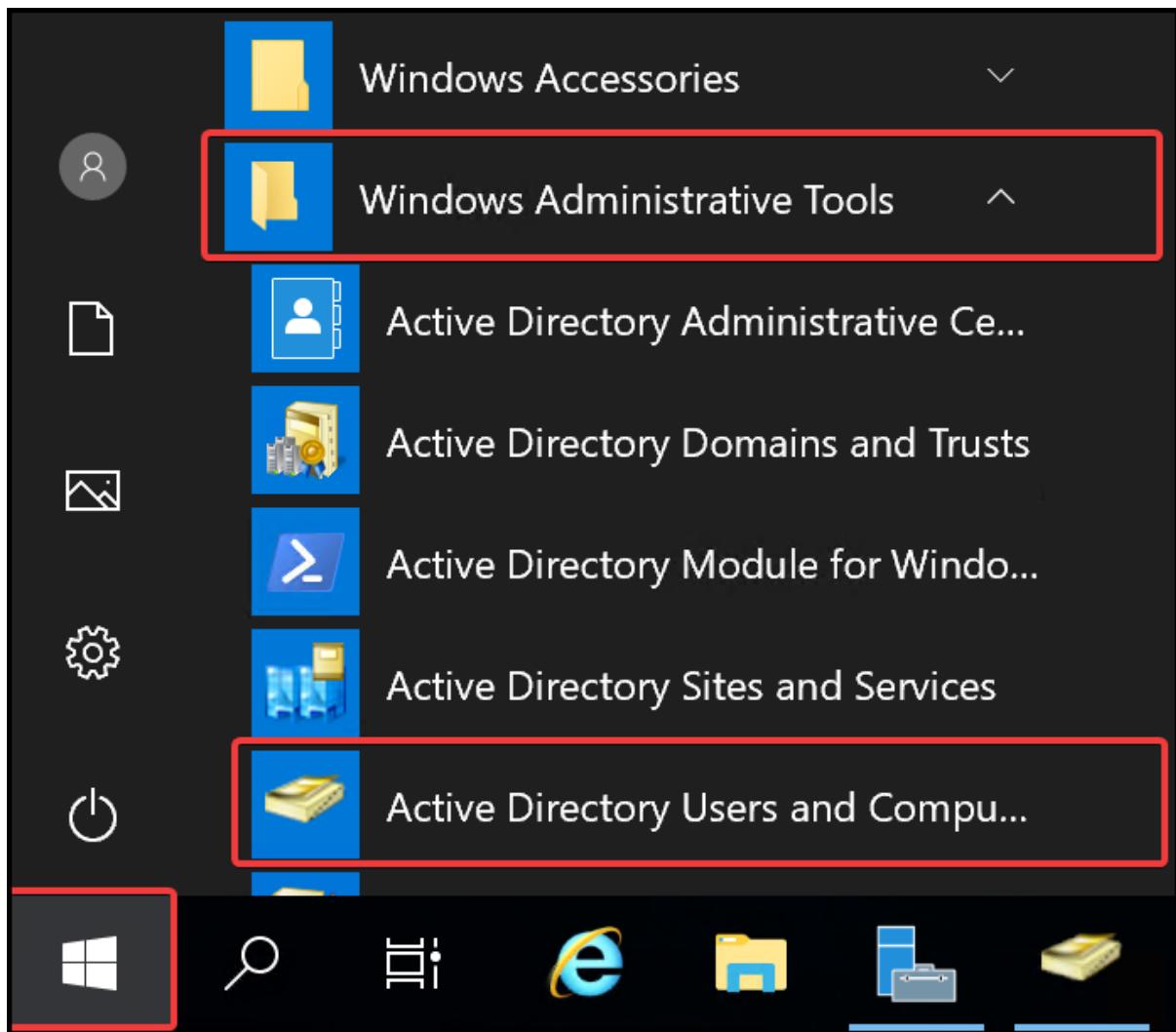
Run with PowerShell

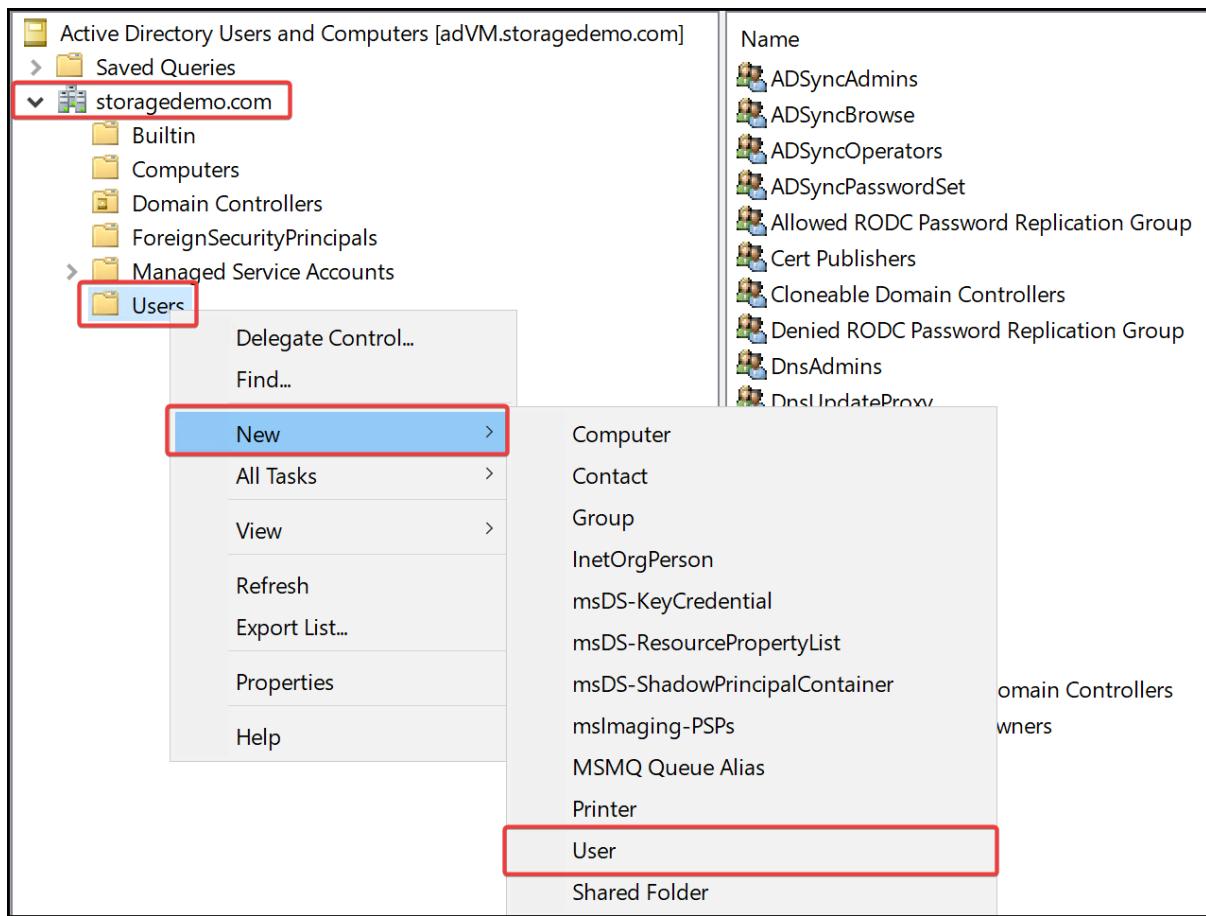
Edit

Share

Open with...

Set password on AD object somefileshdszbx\$ for somefileshare16122023 to value of kerb2.
This action will change the password for the indicated AD object from kerb1 to kerb2. This is intended to be a two-stage process: rotate from kerb1 to kerb2 (kerb2 will be regenerated on the storage account before being set), wait several hours, and then rotate back to kerb1 (this cmdlet will likewise regenerate kerb1).
[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend
[?] Help(default is "Y"): A





New Object - User



Create in: storagedemo.com/Users

First name: Initials:

Last name:

Full name:

User logon name:

@storagedemo.com

User logon name (pre-Windows 2000):

< Back

Next >

Cancel



New Object - User

X



Create in: storagedemo.com/Users

Password:

Confirm

- User must change password at next logon
- User cannot change password
- Password never expires
- Account is disabled



< Back

Next >

Cancel

storageuser1 Properties

?

X

Remote control		Remote Desktop Services Profile			COM+
General	Address	Account	Profile	Telephones	Organization
Member Of		Dial-in	Environment		Sessions

Member of:

Name Active Directory Domain Services Folder

Domain Users storagedemo.com/Users

Add...

Remove

Primary group: Domain Users

Set Primary Group

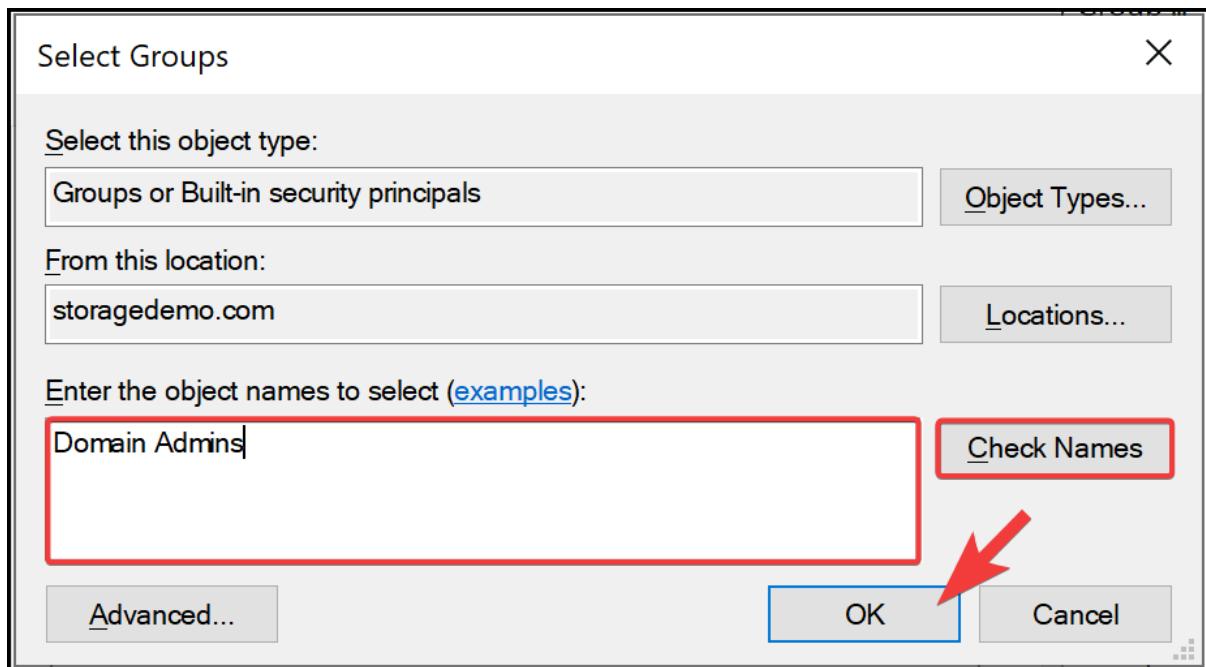
There is no need to change Primary group unless you have Macintosh clients or POSIX-compliant applications.

OK

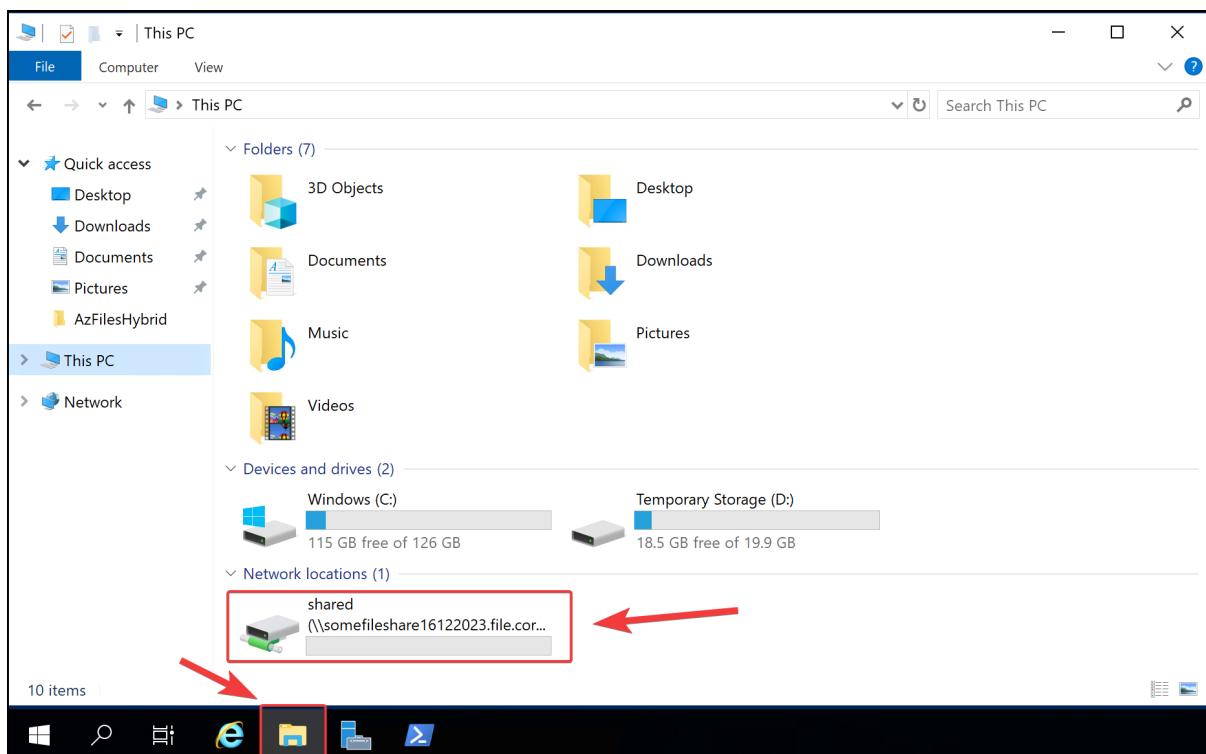
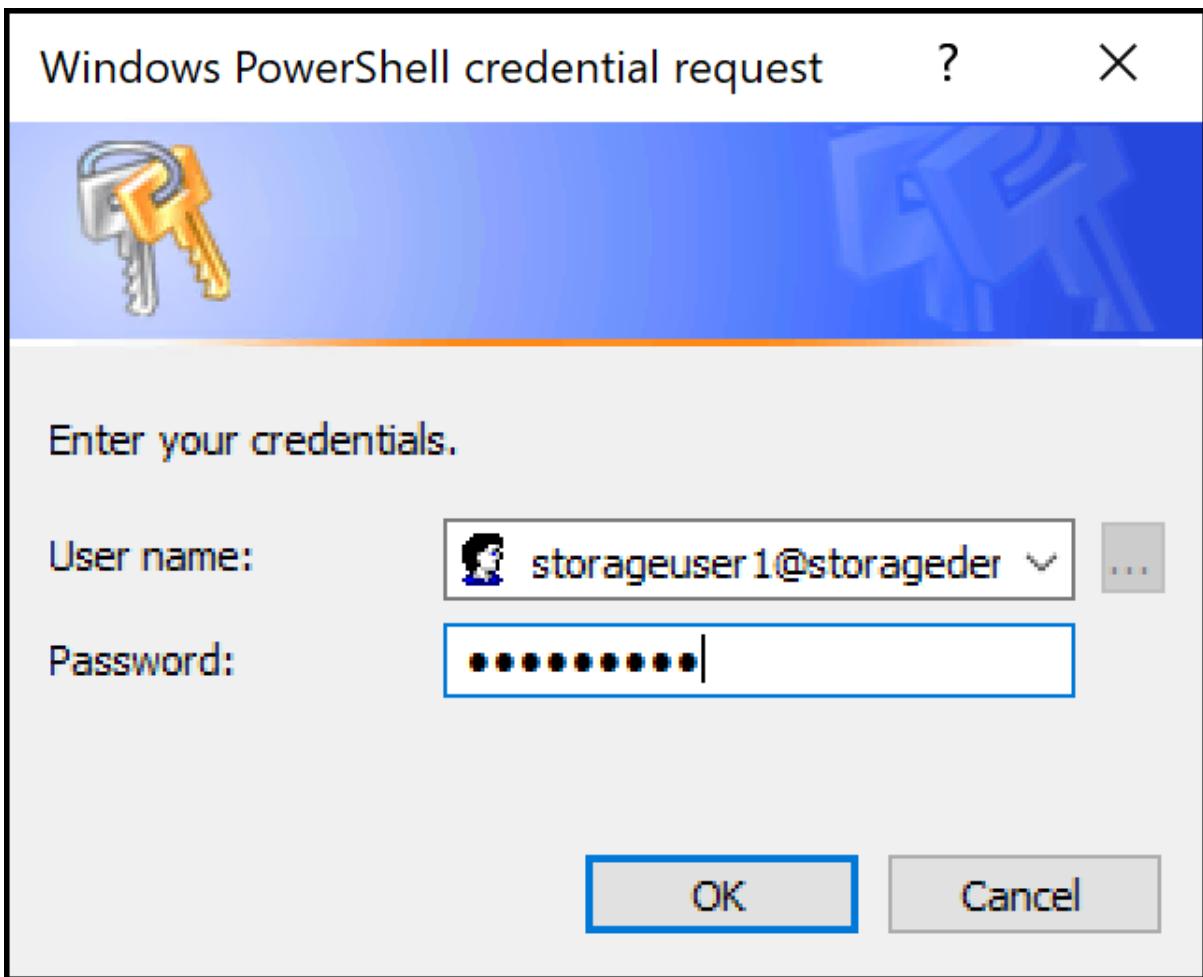
Cancel

Apply

Help



The screenshot shows the 'shared | Access Control (IAM)' page for an SMB File share. At the top, there's a search bar and 'Add' and 'Download role assignments' buttons. Below that, there are links for 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and 'Browse'. The 'Access Control (IAM)' link is highlighted with a red box. A dropdown menu is open over the 'Add' button, showing 'Add role assignment' (which is also highlighted with a red box) and 'Add co-administrator'. To the right of the dropdown, there are tabs for 'Assignments' and 'Roles'. Below the dropdown, there's a section titled 'My access' with the sub-instruction 'View my level of access to this resource.' and a 'View my access' button.



Public network access

- Enabled from all networks
- Enabled from selected virtual networks and IP addresses

- Disabled

i Configure network security for your storage accounts. [Learn more ↗](#)

Virtual networks

+ Add existing virtual network

+ Add new virtual network

Create virtual network

Name *

1

StorageVNET



Address space * ⓘ

2

10.2.0.0/16



10.2.0.0 - 10.2.255.255 (65536 addresses)

Subscription *

3

Visual Studio Enterprise Subscription



Resource group *

4

AZ104-StorageAccounts



[Create new](#)

Location *

5

West Europe



Subnet

Name *

default

Address range * ⓘ

6

10.2.0.0/24



10.2.0.0 - 10.2.0.255 (256 addresses)

DDoS protection ⓘ

Basic Standard

Service endpoint ⓘ

Microsoft.Storage

Firewall ⓘ

Disabled Enabled

7

[Create](#)



Firewalls and virtual networks Private endpoint connections Custom domain

Public network access

Enabled from all networks
 Enabled from selected virtual networks and IP addresses
 Disabled

Configure network security for your storage accounts. [Learn more](#)

Virtual networks

+ Add existing virtual network + Add new virtual network

Virtual Network	Subnet	Address range	Endpoint Status	Resource Group
> StorageVNET	1			AZ104-StorageAccounts

Firewall

Add IP ranges to allow access from the internet or your on-premises networks. [Learn more](#).

Add your client IP address () [\(i\)](#)

Address range

Storage browser

Firewall

Add IP ranges to allow access from the internet or your on-premises networks. [Learn more](#).

Address range

[\(i\)](#)

IP address or CIDR



This request is not authorized to perform this operation.

Firewalls and virtual networks **Private endpoint connections** Custom domain

+ Private endpoint ✓ Approve ✗ Reject 🗑 Remove ⏪ Refresh

Filter by name... All connection states

Connection name Connection state Private endpoint

No results

1 Basics 2 Resource 3 Virtual Network 4 DNS 5 Tags 6 Review + create

Use private endpoints to privately connect to a service or resource. Your private endpoint must be in the same region as your virtual network, but can be in a different region from the private link resource that you are connecting to. [Learn more](#)

Project details

Subscription * ① Visual Studio Enterprise Subscription ✓
Resource group * ② AZ104-StorageAccounts ✓
[Create new](#)

Instance details

Name * ③ az104privateendpoint ✓
Network Interface Name * ④ az104privateendpoint-nic ✓
Region * ⑤ West Europe ✓

< Previous Next : Resource >

✓ Basics 2 Resource 3 Virtual Network 4 DNS 5 Tags 6 Review + create

Private Link offers options to create private endpoints for different Azure resources, like your private link service, a SQL server, or an Azure storage account. Select which resource you would like to connect to using this private endpoint. [Learn more](#)

Subscription Visual Studio Enterprise Subscription (67f1c882-3828-4386-9109-09b0df3c6d36)

Resource type Microsoft.Storage/storageAccounts

Resource az104storageaccountdemo1

Target sub-resource * ① file ✓

< Previous Next : Virtual Network >

✓ Basics ✓ Resource 3 Virtual Network 4 DNS 5 Tags 6 Review + create

Networking

To deploy the private endpoint, select a virtual network subnet. [Learn more](#)

Virtual network * ⓘ StorageVNET (AZ104-StorageAccounts) ▾

Subnet * ⓘ default ▾

Network policy for private endpoints Disabled ([edit](#))

Private IP configuration

Dynamically allocate IP address

Statically allocate IP address

Application security group

Configure network security as a natural extension of an application's structure. ASG allows you to group virtual machines and define network security policies based on those groups. You can specify an application security group as the source or destination in an NSG security rule [Learn more](#)

+ Create

Application security group

< Previous Next : DNS >



✓ Basics ✓ Resource ✓ Virtual Network 4 DNS 5 Tags 6 Review + create

Private DNS integration

To connect privately with your private endpoint, you need a DNS record. We recommend that you integrate your private endpoint with a private DNS zone. You can also utilize your own DNS servers or create DNS records using the host files on your virtual machines. [Learn more](#)

Integrate with private DNS zone Yes No

< Previous Next : Tags >



Network Routing

Determine how you would like to route your traffic as it travels from its source to an Azure endpoint. Microsoft routing is recommended for most customers.

Routing preference * ⓘ

Microsoft network routing Internet routing

Publish route-specific endpoints ⓘ

Microsoft network routing
 Internet routing

az104storageaccountdemo1 | Endpoints ⭐ ...

Storage account

Search Refresh Give feedback

Azure search	Provisioning state	Succeeded
Settings	Created	7/5/2023, 9:21:52 PM
Configuration	Storage account resource ID	/subscriptions/ /r... <input type="button" value=""/>
Data Lake Gen2 upgrade		
Resource sharing (CORS)		
Advisor recommendations		
Endpoints	Blob service	
	Resource ID	/subscriptions/ /r... <input type="button" value=""/>
	Blob service	https://az104storageaccountdemo1.blob.core.windows.net/ <input type="button" value=""/>
	File service	
	Resource ID	/subscriptions/ /r... <input type="button" value=""/>
	File service	https://az104storageaccountdemo1.file.core.windows.net/ <input type="button" value=""/>

az104storageaccountdemo1 | Access keys ⭐ ...

Storage account

Search Set rotation reminder Refresh Give feedback

Access keys authenticate your applications' requests to this storage account. Keep your keys in a secure location like Azure Key Vault, and replace them often with new keys. The two keys allow you to replace one while still using the other.

Remember to update the keys with any Azure resources and apps that use this storage account.
[Learn more about managing storage account access keys](#)

Storage account name: az104storageaccountdemo1

key1 Rotate key
Last rotated: 2023/07/05 (56 days ago)
Key:

Connection string:

key1 Rotate key

Last rotated: 2023/07/05 (56 days ago)

Key:

key2



Rotate key



Last rotated: 2023/07/05 (56 days ago)

Regenerate access key

The current key will become immediately invalid and is not recoverable. Do you want to regenerate access key 'key2'?

Yes

No

Allowed services (i)



Blob



File



Queue



Table

Allowed resource types (i)



Service



Container



Object

Allowed permissions (i)



Read



Write



Delete



List



Add



Create



Update



Process



Immutable storage



Permanent delete

Blob versioning permissions (i)



Enables deletion of versions

Allowed blob index permissions (i)



Read/Write



Filter

Start and expiry date/time ⓘ

Start	2023/08/31	<input type="button" value="Calendar"/>	9:14:11 PM
End	2023/09/02	<input type="button" value="Calendar"/>	5:14:11 AM

(UTC+02:00) Harare, Pretoria

Allowed protocols ⓘ

HTTPS only HTTPS and HTTP

Preferred routing tier ⓘ

Basic (default) Microsoft network routing Internet routing

i Some routing options are disabled because the endpoints are not published.

Signing key ⓘ

key1	<input type="button" value="▼"/>	①
------	----------------------------------	----------

②

Connection string

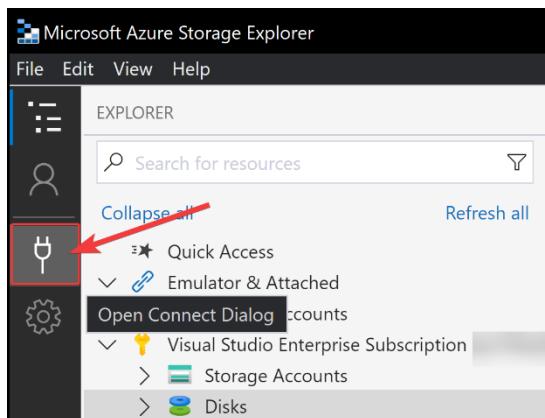
BlobEndpoint=https://az104storageaccountdemo1.blob.core.windows...

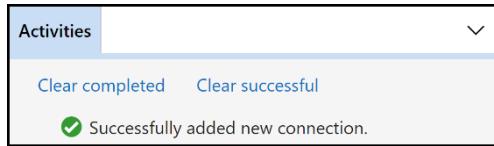
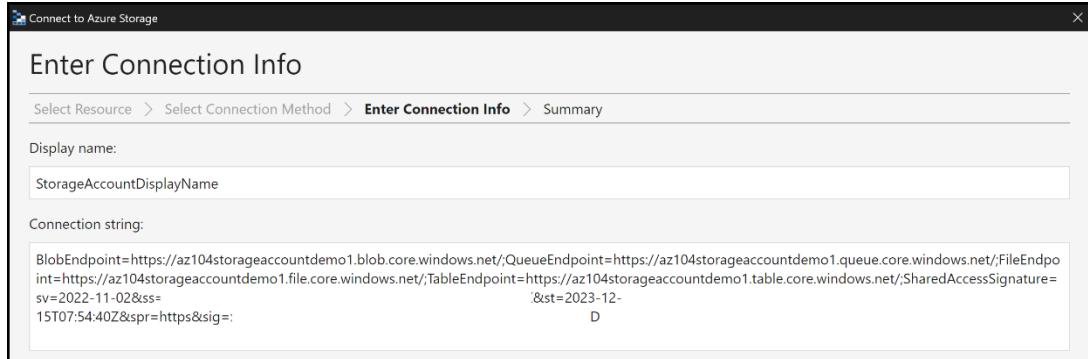
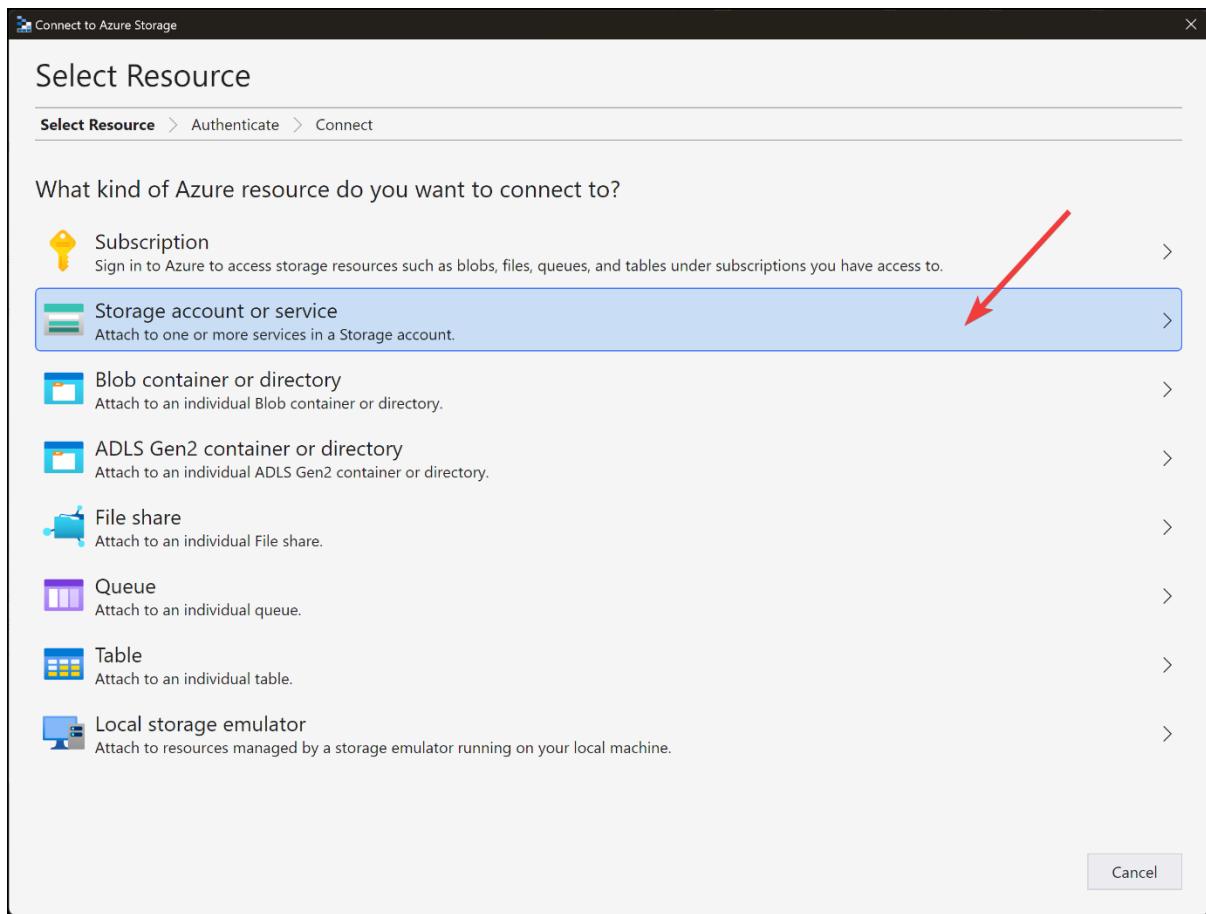
SAS token ⓘ

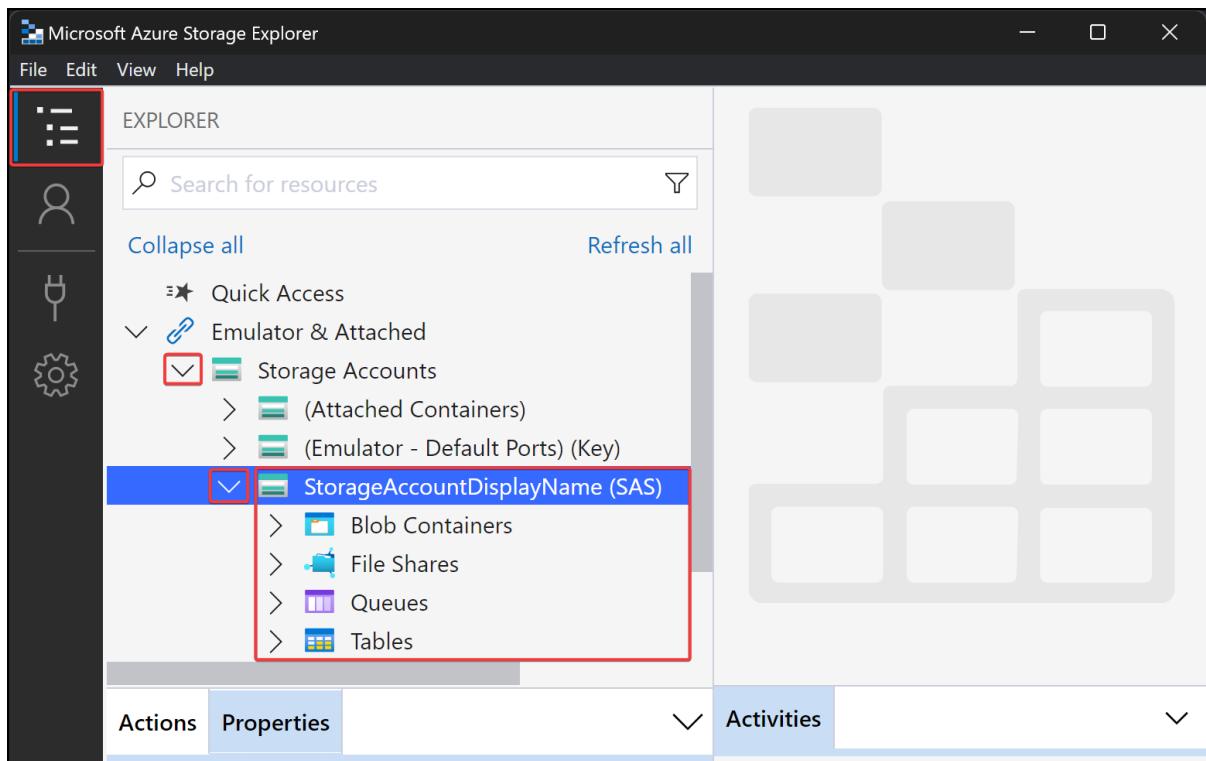
?sv=2022-11-02&ss= &srt=sc&sp= &se=2023-12-15 ...

Blob service SAS URL

[https://az104storageaccountdemo1.blob.core.windows.net/?sv=2022- ...](https://az104storageaccountdemo1.blob.core.windows.net/?sv=2022-)







A screenshot of the Azure portal showing the 'test | Access policy' page for a container. The left sidebar lists 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', 'Settings' (with 'Shared access tokens', 'Access policy' (which is selected and highlighted with a red box), 'Properties', and 'Metadata'), and 'Stored access policies'. The main content area shows a table for 'Stored access policies' with columns 'Identifier' and 'Start time'. It displays one entry: 'Immutable blob storage' with a start time of 'No results'. There is also a '+ Add policy' button. The bottom section shows another table for 'Scope' with 'Identifier' and 'Scope' columns, also showing 'No results'.

Add policy

Identifier *

Policy1

Permissions

2 selected

Start time

2023/12/14



00:00:00

Expiry time

2023/12/18



00:00:00

(UTC+02:00) Harare, Pretoria



(UTC+02:00) Harare, Pretoria



OK

Cancel

Identifier

Start time

Expiry time

Permissions

Policy1

14/12/2023, 12:00:00 am

18/12/2023



Edit



Immutable blob storage



Delete

Identifier

Start time

Expiry time

Permissions

Policy1

14/12/2023, 12:00:00 am

18/12/2023



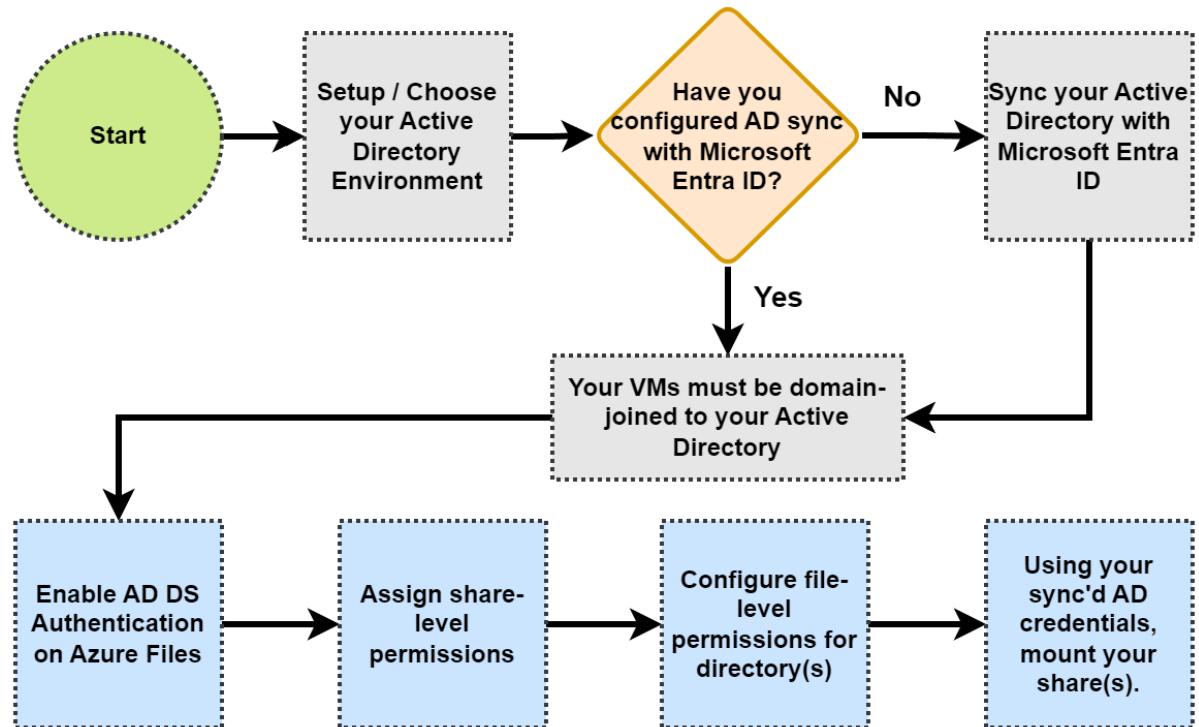
Edit



Immutable blob storage



Delete



Click the button below to deploy a forest to Azure.

 Deploy to Azure

 Deploy to Azure Gov



Visualize

Project details

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

Subscription * ⓘ

Visual Studio Enterprise Subscription

Resource group * ⓘ

AZ104-StorageAccounts

[Create new](#)

Instance details

Region * ⓘ

(Europe) North Europe

Admin Username * ⓘ

storagedemoadmin

Admin Password * ⓘ

••••••••••••••••

Domain Name * ⓘ

storagedemo.com

Dns Prefix * ⓘ

storagedemo

.northeurope.cloudapp.azure.com

Vm Size * ⓘ

1x Standard D2s v3

2 vcpus, 8 GB memory

[Change size](#)

_artifacts Location ⓘ

[deployment().properties.templateLink.uri]



Connect



Start

Connect

Connect via Bastion



Connecting using

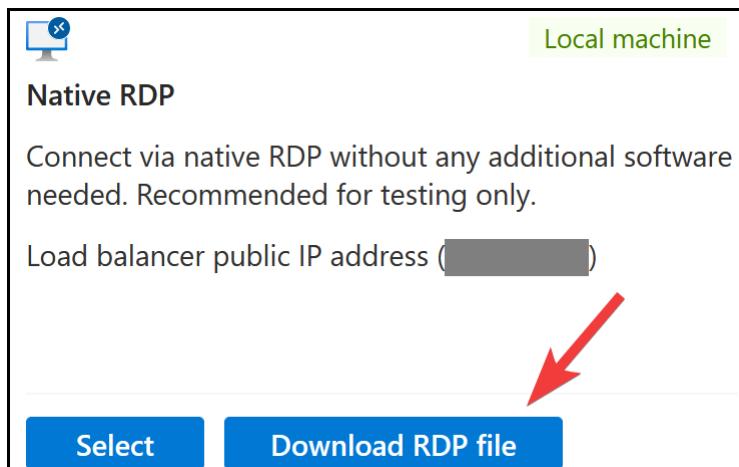
Private IP address | 10.0.0.4

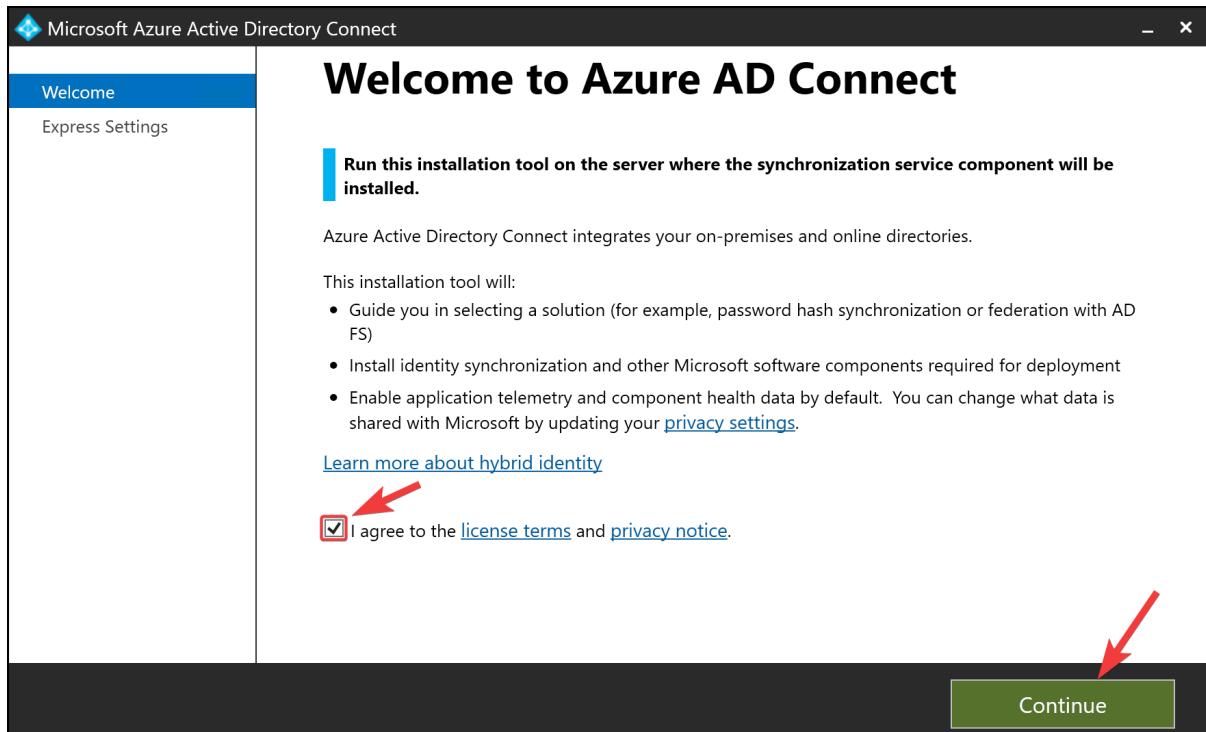


Private IP address | 10.0.0.4

Public IP address | - (Add)

Load balancer public IP address |





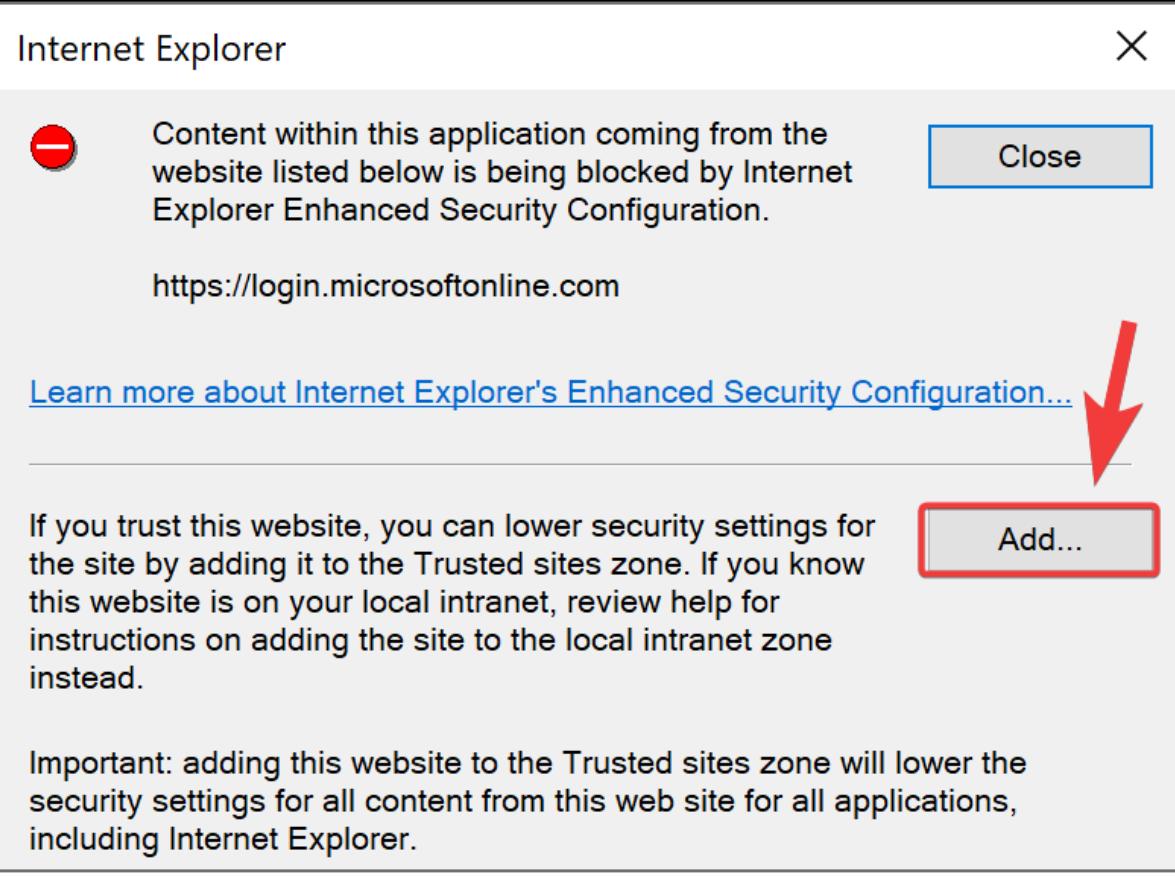
The screenshot shows the 'Connect to Azure AD' screen. It prompts the user to enter Azure AD global administrator or hybrid identity administrator credentials. It includes fields for 'USERNAME' and 'PASSWORD', both of which are highlighted with red boxes. A question mark icon is located next to the password field. A green 'Continue' button is at the bottom right, with a red arrow pointing to it.

Enter your Azure AD global administrator or hybrid identity administrator credentials. ?

USERNAME

PASSWORD

Continue



Connect to AD DS

Enter the Active Directory Domain Services enterprise administrator credentials: [?](#)

USERNAME

PASSWORD

 Microsoft Azure Active Directory Connect

Welcome
Express Settings
Connect to Azure AD
Connect to AD DS
Azure AD sign-in
Configure

Azure AD sign-in configuration

To use on-premises credentials for Azure AD sign-in, UPN suffixes should match one of the verified custom domains in Azure AD. The following table lists the UPN suffixes defined in your on-premises environment, along with the matching custom domain in Azure. [?](#)

Active Directory UPN Suffix	Azure AD Domain
storagedemo.com	Not Added ?

Continue without matching all UPN suffixes to verified domains

Users will not be able to sign-in to Azure AD with on-premises credentials if the UPN suffix does not match a verified domain. [Learn more](#)

Previous **Next**

 Microsoft Azure Active Directory Connect

Welcome
Express Settings
Connect to Azure AD
Connect to AD DS
Azure AD sign-in
Configure

Ready to configure

Once you click Install, we will do the following:

- Install the synchronization engine
- Configure Azure AD Connector
- Configure storagedemo.com Connector
- Enable Password hash synchronization
- Enable Auto Upgrade
- Configure synchronization services on this computer

Start the synchronization process when configuration completes.

Previous **Install**

 Microsoft Azure Active Directory Connect

Welcome
Express Settings
Connect to Azure AD
Connect to AD DS
Azure AD sign-in
Configure

Configuration complete

Azure AD Connect configuration succeeded. The synchronization process has been initiated.

The configuration is complete. You can now log in to the Azure or Office 365 portal to verify that user accounts from your local directory have been created. Then, do a test sign-on to the Azure portal. [Learn more about the next steps and managing Azure AD Connect](#)

The Active Directory Recycle Bin is not enabled for your forest (storagedemo.com) and is strongly recommended. [Learn more about enabling the Active Directory Recycle Bin](#)

Azure Active Directory is configured to use AD attribute mS-DS-ConsistencyGuid as the source anchor attribute. [Learn more about configuring the source anchor attribute](#)

Previous **Exit**

Vm Size *	1x Standard A2 v2 2 vcpus, 4 GB memory Change size
Existing Vnet Name	adVNET ✓
Public IP Address Name	[format('{0}-pip', parameters('dnsLabelPrefix'))]
Existing Subnet Name	adSubnet ✓
Dns Label Prefix	[toLowerCase(concat('VM1',utcNow('yyyyMMddHHmm')))]
Domain To Join	storagedemo.com ✓
Domain Username	storagedemoadmin ✓
Domain Password *	•••••••••••••• ✓
Ou Path	
Domain Join Options	3 ✓
Admin Username	storagedemoadmin ✓
Admin Password *	•••••••••••••• ✓
Storage Account Name	[uniqueString(resourceGroup().id, deployment().name)]
Location	[resourceGroup().location]

v0.2.8 Latest

 hxin-ms released this Aug 30 . 7 commits to master since this release ⏺ v0.2.8 ⏺ 248b916 ✓

Release v0.2.8:
Migrate from AAD Graph to Microsoft Graph.

▼ Assets 3

 AzFilesHybrid.zip	76 KB	Aug 30
 Source code (zip)		Aug 30
 Source code (tar.gz)		Aug 30



Name	Date modified
AzFilesHybrid	8/29/2023 10:54 PM
AzFilesHybrid	8/29/2023 10:54 PM
CopyToPSPPath	8/29/2023 10:54 PM

Open

Run with PowerShell

Edit

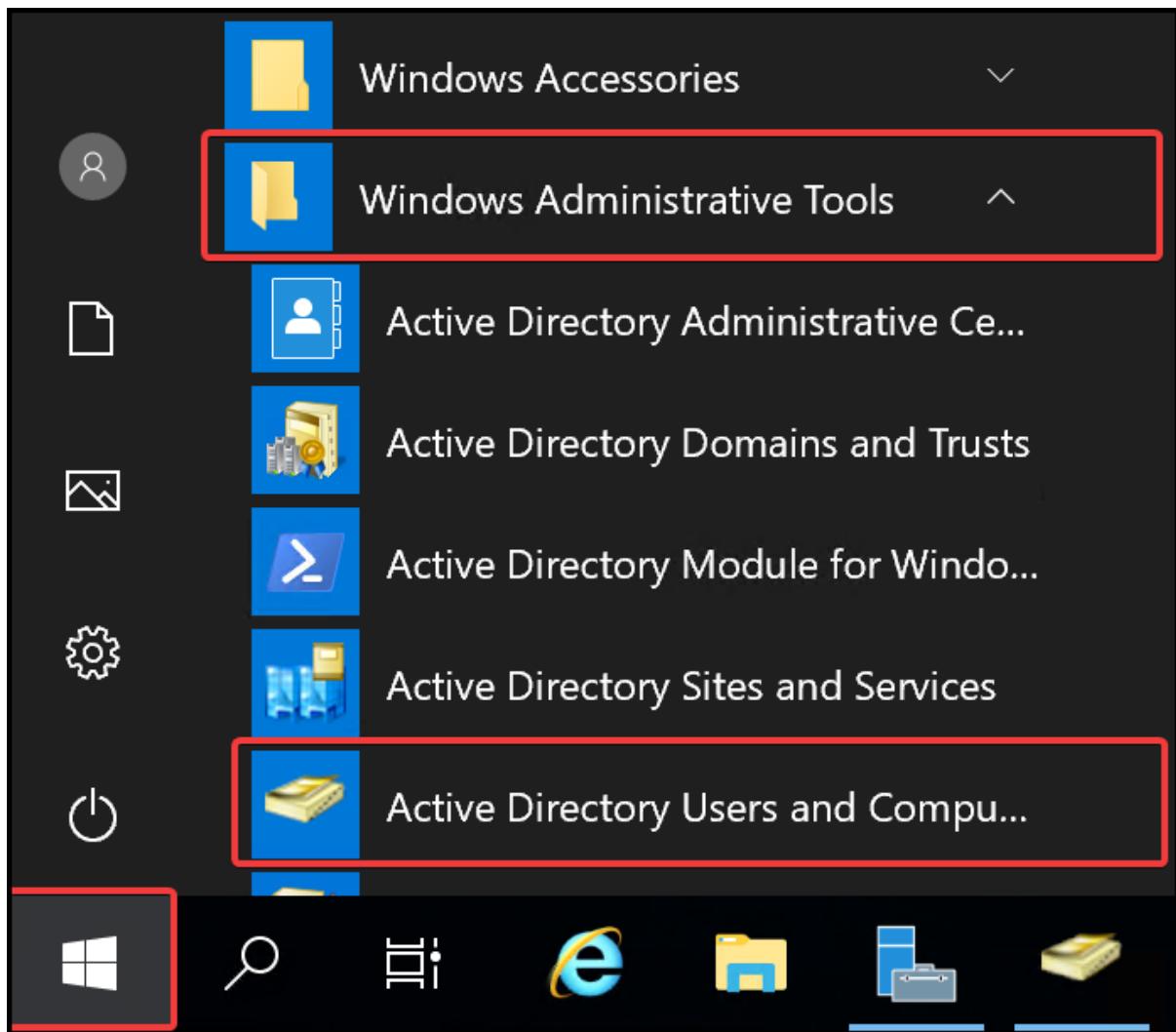
Share

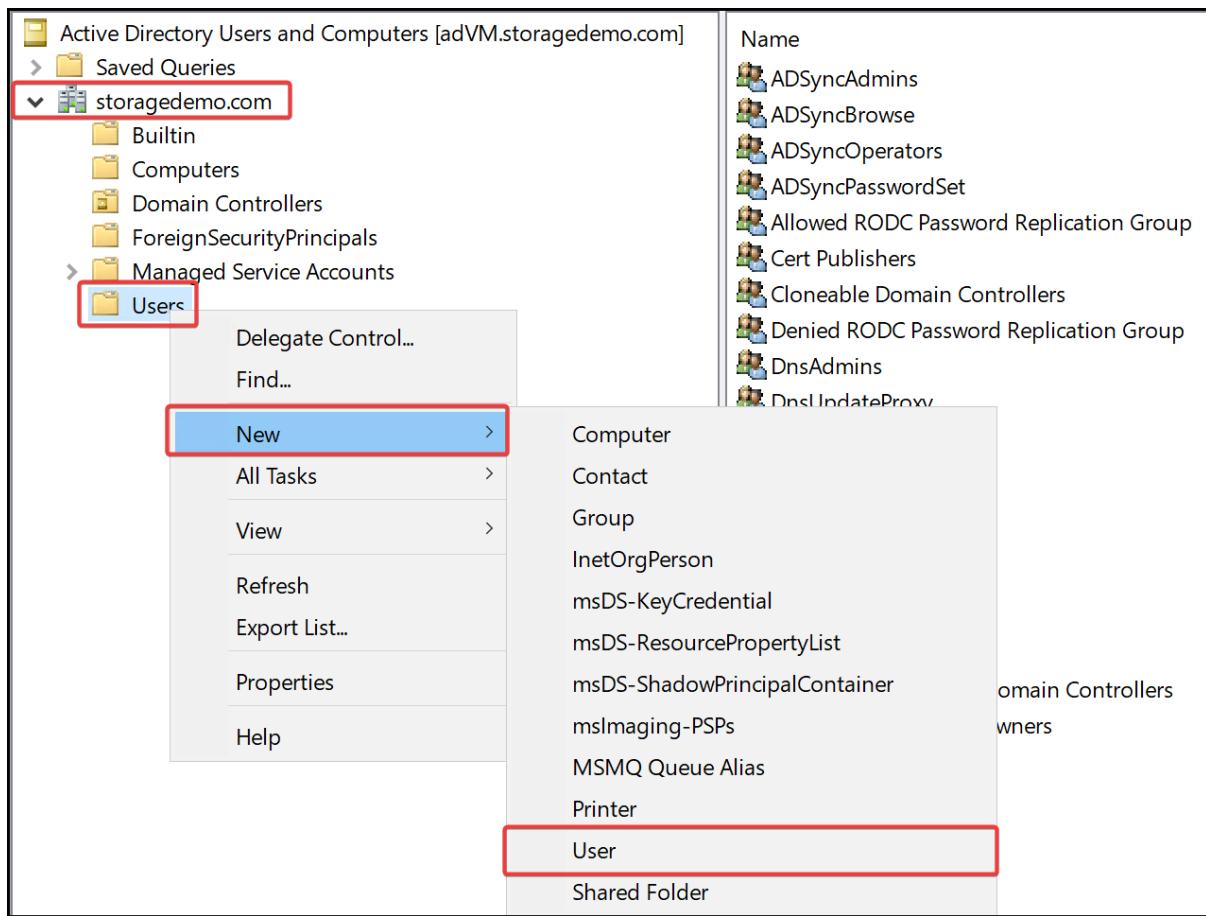
Open with...

Set password on AD object somefileshdszbx\$ for somefileshare16122023 to value of kerb2.

This action will change the password for the indicated AD object from kerb1 to kerb2. This is intended to be a two-stage process: rotate from kerb1 to kerb2 (kerb2 will be regenerated on the storage account before being set), wait several hours, and then rotate back to kerb1 (this cmdlet will likewise regenerate kerb1).

[Y] Yes [A] Yes to All [N] No [L] No to All [S] Suspend
[?] Help(default is "Y"): A





New Object - User



Create in: storagedemo.com/Users

First name: Initials:

Last name:

Full name:

User logon name:

@storagedemo.com

User logon name (pre-Windows 2000):

< Back

Next >

Cancel



New Object - User



Create in: storagedemo.com/Users

Password:

Confirm

- User must change password at next logon
- User cannot change password
- Password never expires
- Account is disabled



< Back

Next >

Cancel

storageuser1 Properties

?

X

Remote control		Remote Desktop Services Profile			COM+
General	Address	Account	Profile	Telephones	Organization
Member Of		Dial-in	Environment		Sessions

Member of:

Name Active Directory Domain Services Folder

Domain Users storagedemo.com/Users

Add...

Remove

Primary group: Domain Users

Set Primary Group

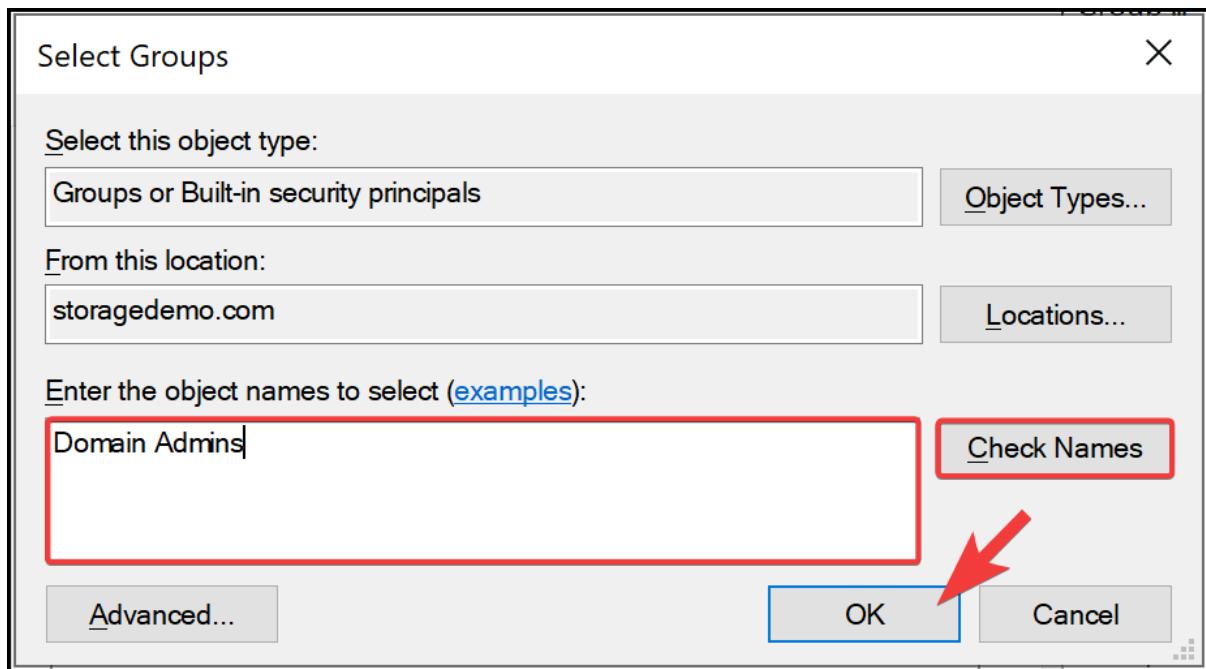
There is no need to change Primary group unless you have Macintosh clients or POSIX-compliant applications.

OK

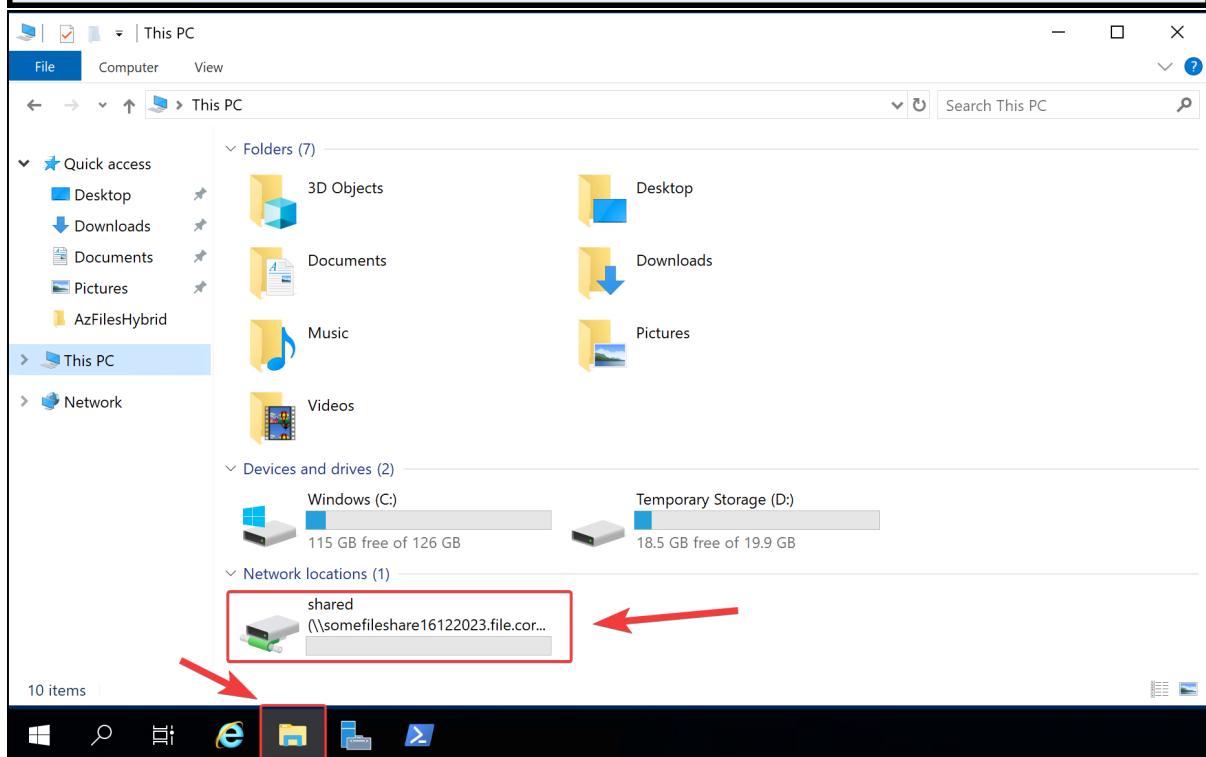
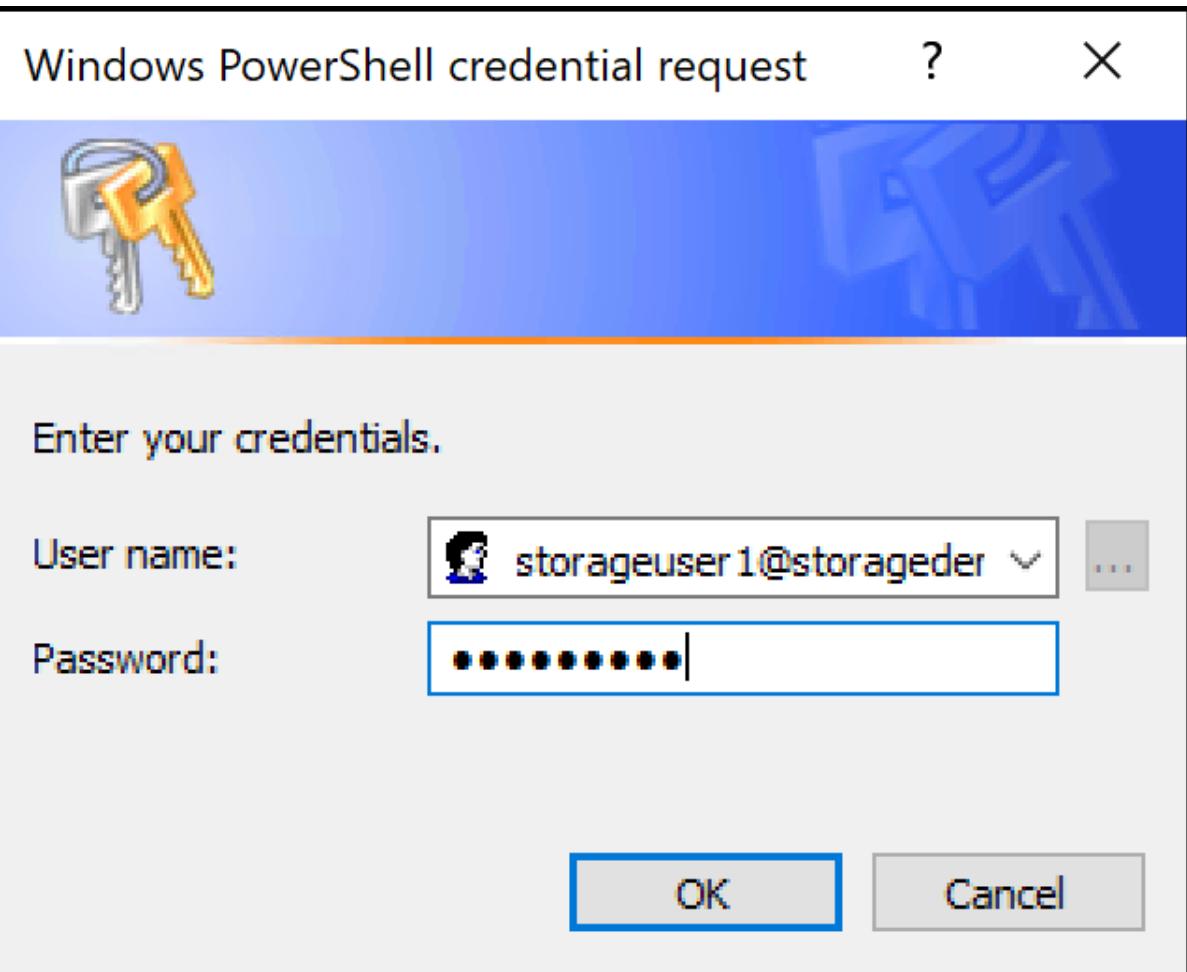
Cancel

Apply

Help



The screenshot shows the 'shared | Access Control (IAM)' page. At the top, it says 'shared | Access Control (IAM)' and 'SMB File share'. Below that is a search bar 'Search' and a navigation menu with 'Overview', 'Diagnose and solve problems', 'Access Control (IAM)', and 'Browse'. The 'Access Control (IAM)' item is highlighted with a red box. To the right, there are buttons for 'Add' (with a plus sign) and 'Download role assignments' (with a download icon). A dropdown menu is open over the 'Add' button, showing 'Add role assignment' (highlighted with a red box), 'Add co-administrator', and 'My access'. Below the dropdown, it says 'View my level of access to this resource.' and has a 'View my access' button. A red arrow points from the 'Add role assignment' option in the dropdown towards the 'View my access' button.



Chapter 9:

```
pwsh> cd C:\AzCopy\  
pwsh>
```

Allowed services ⓘ

Blob File Queue Table

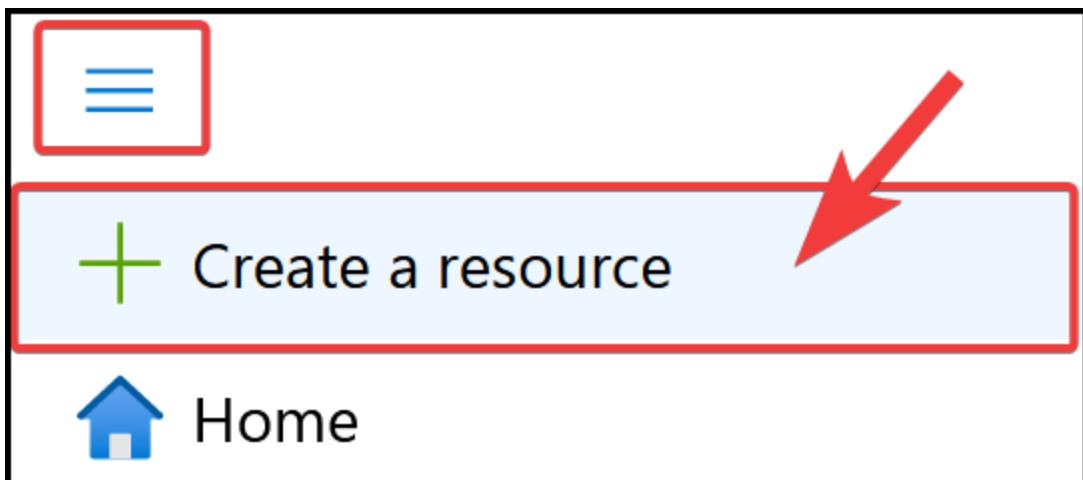
Allowed resource types ⓘ

Service Container Object

Allowed permissions ⓘ

Read Write Delete List Add
 Create Update Process
 Immutable storage Permanent delete

```
Job c33██████████ 3a78 summary  
Elapsed Time (Minutes): 0.0335  
Number of File Transfers: 1  
Number of Folder Property Transfers: 0  
Number of Symlink Transfers: 0  
Total Number of Transfers: 1  
Number of File Transfers Completed: 1  
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  
TotalBytesTransferred: 19  
Final Job Status: Completed
```



A screenshot of the Azure search results for "Azure File Sync". The search bar at the top contains the query "Azure File Sync". Below the search bar is a checkbox labeled "Azure services only". The search results show 20 of 28 results. The first result is highlighted with a red box and a red arrow pointing to its thumbnail icon (a cloud with a sync arrow). The result card for "Azure File Sync" includes the following details:

- Azure File Sync** (with a cloud icon)
- Microsoft**
- Azure Service**
- Centralize file services in Azure through sync and local server caching.**
- Create** (with a dropdown arrow) and a blue heart icon.

The second result card, which belongs to NetApp, includes the following details:

- Cloud Sync Service** (with a NetApp logo)
- NetApp**
- SaaS**
- Cloud Sync is a simple, secure service for moving data to a variety of different storage platforms.**
- Starts at Free**
- Subscribe** (with a dropdown arrow) and a blue heart icon.

* 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](#)



Storage Sync Service

Microsoft

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 *	Visual Studio Enterprise Subscription
Resource group *	AZ104-StorageAccounts
	Create new
Storage sync service name *	az104syncservice
Region *	West Europe
Review + Create	
Previous	
Next: Networking >	



az104syncservice | Sync groups

Storage Sync Service

Search

+ Sync group Refresh Move ...

Network Locks

Sync

Sync groups Registered servers

Sync groups

Sync group name ↑ ↓ Health ↑ ↓ Region

No items to display.

Have feedback on Azure File Sync? Fill out this quick Azure File Sync survey.

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 *

az104syncgroup ✓

Cloud endpoint

Subscription *

Visual Studio Enterprise Subscription ✓

Storage account *

Select storage account ↙

/subscriptions/ 9... ✓

Azure File Share

az104fileshare ✓

 Create

 Cancel

 Give feedback



Internet Explorer Enhanced Security Configuration



Internet Explorer Enhanced Security Configuration (IE ESC) reduces the exposure of your server to potential attacks from Web-based content.

Internet Explorer Enhanced Security Configuration is enabled by default for Administrators and Users groups.

Administrators:

On (Recommended)

Off

Users:

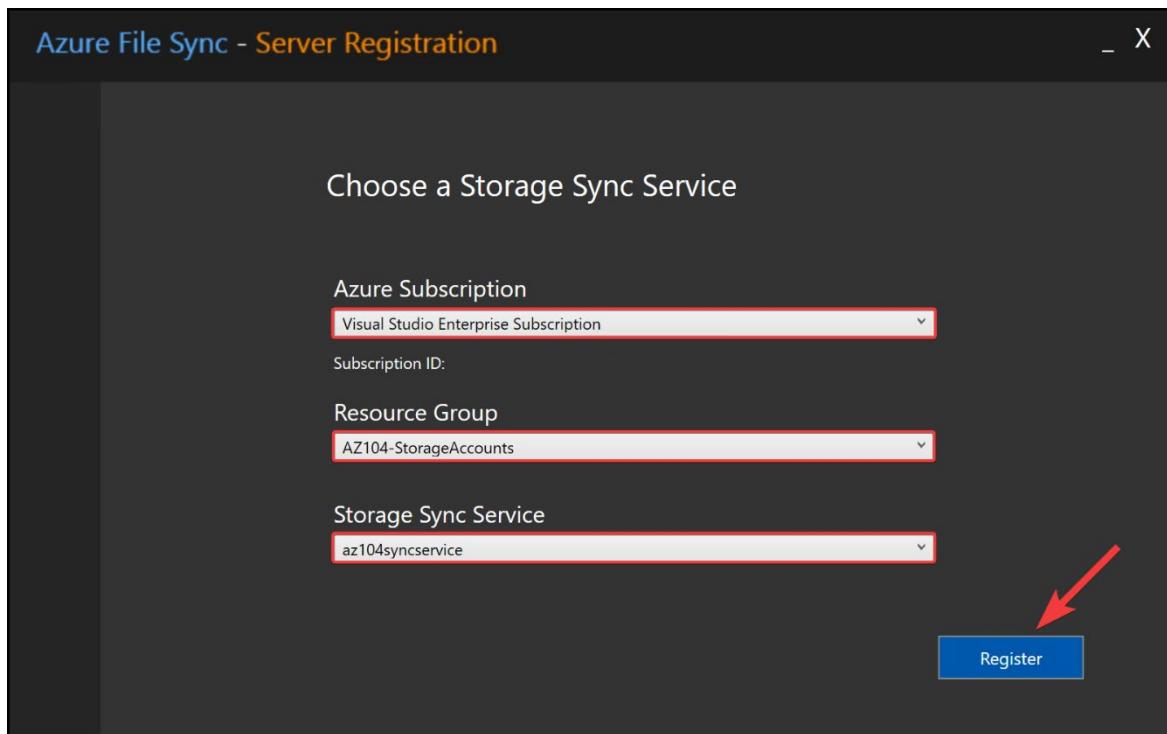
On (Recommended)

Off

[More about Internet Explorer Enhanced Security Configuration](#)

OK

Cancel



Server endpoints

+ Add server endpoint

Server name + path	Health
No items found	

A red arrow points from the 'Add server endpoint' button towards the 'Server name + path' column.

^ Cloud Tiering

Disabled

Cloud Tiering

Disable cloud tiering

I just want to sync my files between the server and the cloud. I want full copies of all my files available on my local server.

Enable cloud tiering

Cloud tiering transforms your server endpoint into a cache for your files in the Azure file share. Different policies help you fine tune your cache behavior.

[Learn more](#)

Volume Free Space Policy

Always preserve the specified percentage of free space on the volume: [\(i\)](#)

20

Date Policy

Enabled Disabled

Only cache files that were accessed or modified within the specified number of days: [\(i\)](#)

↖ Initial Sync

Initial Upload

Select how the server initially uploads the Azure file share data. [Learn more](#)

Merge the content of this server path with the content in the Azure file share. Files with the same name and path will lead to conflicts if their content is different. Both versions of those files will be stored next to each other. If your server path or Azure file share are empty, always choose this option.

Authoritatively overwrite files and folders in the Azure file share with content in this server's path. This option avoids file conflicts.

- Files in the cloud share will be updated to match the server.
- Files in the cloud share will be deleted if they do not exist in this server's path.
- Permissions and other metadata of files in the cloud share will be updated to match the server.

i When you used DataBox or other methods to seed the Azure file share [from this server's path](#), select this option. Changes might have occurred on the server while DataBox was in transit and this option will catch-up the Azure file share with the latest changes. [Learn more](#)

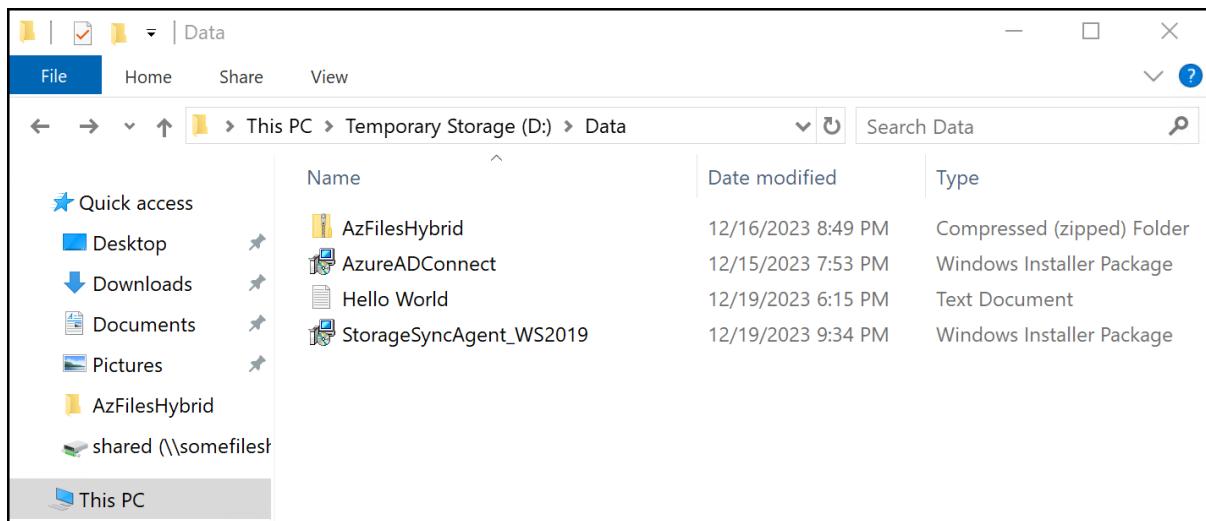
Initial Download

Select how the server initially downloads the Azure file share data. "Namespace" stands for the file and folder structure without the file content. File content of "tiered files" is recalled from the cloud to the server by local access or policy. [Learn more](#)

- Download the namespace first.
- Then recall the file content, as much as will fit on the local disk.

- Download the namespace only.
- File content will be recalled when accessed.

- Avoid tiered files.
- Files will only appear on the server once they are fully downloaded.



A screenshot of the 'az104fileshare | Browse' interface. The left sidebar has sections for Overview, Diagnose and solve problems, Access Control (IAM), and operations (Browse, Snapshots, Backup). The 'Browse' section is selected. The main area shows a list of files in the share:

Name	Type	Size
.SystemShareInformation	Directory	
AzFilesHybrid.zip	File	76.01 KiB
AzureADConnect.msi	File	144.41 MiB
Hello World.txt	File	14 B
MyFile.txt	File	14 B

az104storageaccountdemo1 | Redundancy

Storage account

Save 

Discard Prepare for failover Refresh Give feedback

Tables

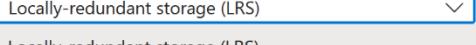
Azure Storage redundancy copies your data so that it is protected from transient hardware failures, network or power outages, and natural disasters. [Learn more about storage account failover](#)

Security + networking

- Networking
- Front Door and CDN
- Access keys
- Shared access signature
- Encryption
- Microsoft Defender for Cloud

Data management

- Redundancy** 
- Data protection
- Object replication
- Blob inventory
- Static website
- Lifecycle management
- Azure AI Search

Locality-redundant storage (LRS) 

Locally-redundant storage (LRS)

Geo-redundant storage (GRS)

Read-access geo-redundant storage (RA-GRS)

Zone-redundant storage (ZRS)

Geo-zone-redundant storage (GZRS) 

Read-access geo-zone-redundant storage (RA-GZRS) 

Location: West Europe Data center: Primary



az104storageaccountdemo1 | Object replication

Storage account

Search Create replication rules  Upload replication rules 

Redundancy

Data protection

Object replication 

Blob inventory

When object replication is enabled, blobs are copied asynchronously from a source storage account to a destination account. Cross-tenant policies will appear under "Other accounts", along with policies on accounts not in an active subscription or on deleted accounts. The storage accounts may be in different Azure regions. [Learn more](#)

Source container	Destination contai...	Filters	Copy over
azcopysource 	azcopydestination 	0 (add) 	Only new objects (change) 

Prefix match

Azure



Enter a prefix

Save

Cancel

Source container

Destination container

Filters

Copy over

azcopysource



azcopydestination



1 (add)

Only new objects (change)



Copy over



Everything



Only new objects



Custom

Save

Cancel

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



Blob prefix

 *

Enter a prefix or file path such as "mycontainer/prefix"

Blob index match

If you have indexed items in containers with keys and values, you can filter for them.

[Previous](#)[Add](#)[List View](#)[Code View](#)

```
1  {
2   "rules": [
3    {
```



List View Code View

```
1  {
2      "rules": [
3          {
4              "enabled": true,
5              "name": "move-to-cool",
6              "type": "Lifecycle",
7              "definition": {
8                  "actions": {
9                      "baseBlob": {
10                         "tierToCool": {
11                             "daysAfterModificationGreaterThanOr": 1
12                         }
13                     }
14                 },
15                 "filters": {
16                     "blobTypes": [
17                         "blockBlob"
18                     ],
19                     "prefixMatch": [
20                         "files/log"
21                     ]
22                 }
23             }
24         }
25     ]
26 }
```

<input checked="" type="checkbox"/>	Name	Status	Blob type
<input checked="" type="checkbox"/>	move-to-cool	Enabled	Block

[Add a rule](#) [Enable](#) [Disable](#) [Refresh](#) [Delete](#)

▽ Enable point-in-time restore for containers

^ Enable soft delete for blobs

Soft delete enables you to recover blobs that were previously marked for deletion, including blobs that were overwritten. [Learn more ↗](#)

Keep deleted blobs for (in days) * ⓘ

7

^ Enable soft delete for containers

Soft delete enables you to recover containers that were previously marked for deletion.

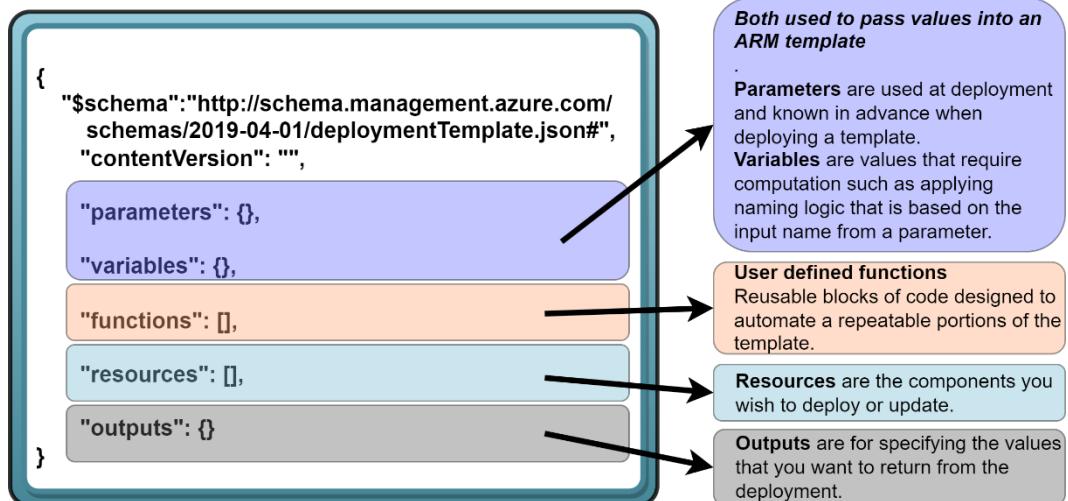
[Learn more ↗](#)

Keep deleted containers for (in days) * ⓘ

7

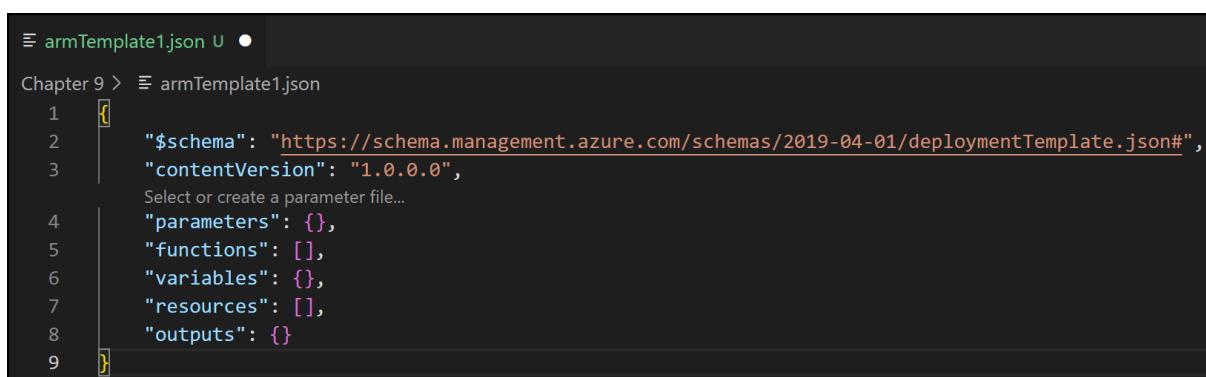
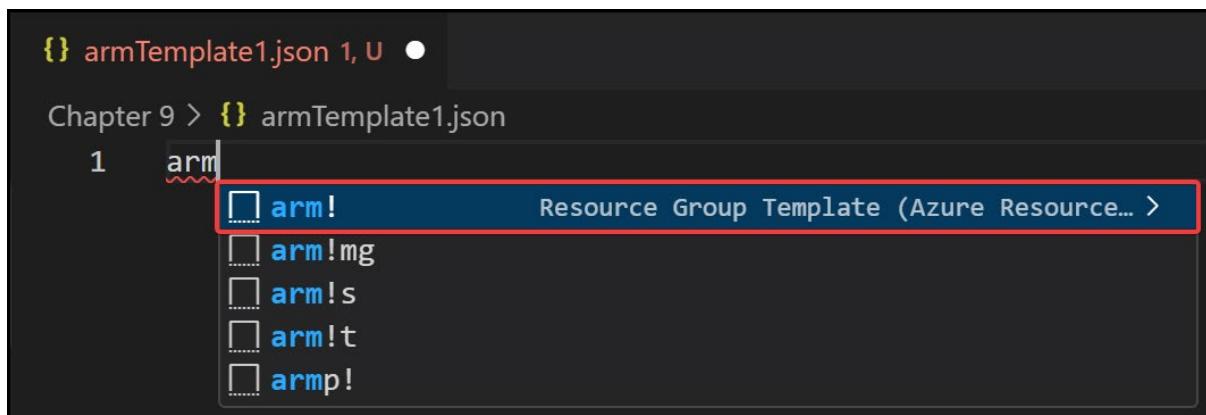
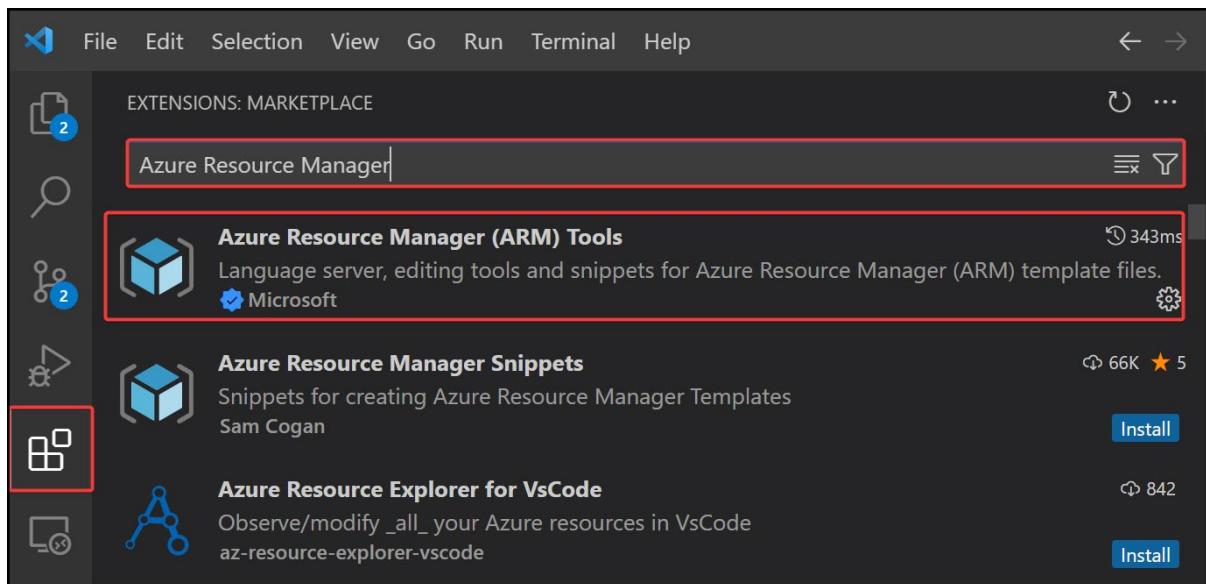
▽ Enable permanent delete for soft deleted items

Chapter 10:



```
{
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#"
  "contentVersion": "1.0.0.0",
  "parameters": {
    "storageAccountName": {
      "type": "string",
      "metadata": {
        "description": "Enter a unique storage account name."
      }
    },
    "accountType": {
      "type": "string",
      "defaultValue": "Standard_LRS",
      "allowedValues": [
        "Standard_LRS",
        "Standard_GRS",
        "Standard_RAGRS",
        "Standard_ZRS"
      ],
      "metadata": {
        "description": "Select the storage account type."
      }
    }
  },
  "variables": {},
  "resources": [
    {
      "type": "Microsoft.Storage/storageAccounts",
      "apiVersion": "2021-04-01",
      "name": "[parameters('storageAccountName')]",
      "location": "[resourceGroup().location]",
      "sku": {
        "name": "[parameters('accountType')]"
      },
      "kind": "StorageV2"
    }
  ],
  "outputs": {
    "storageAccountConnectionString": {
      "type": "string",
      "value": "[concat('DefaultEndpointsProtocol=https;AccountName=', parameters('storageAccountName'), ';AccountKey=', listKeys(resourceId('Microsoft.Storage/storageAccounts', parameters('storageAccountName')), '2021-04-01').keys[0].value)]"
    }
  }
}
```

Parameters**Variables****Resources****Outputs**



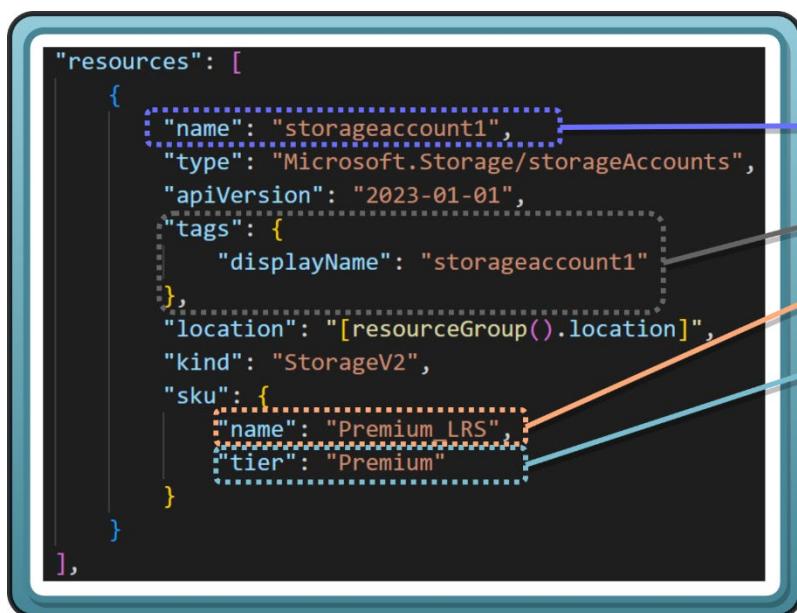
```

"resources": [
    ~ arm-storage
],
"outputs": {}

```

The screenshot shows a dropdown menu from a code editor highlighting the 'arm-storage' resource. The menu lists several options under 'Storage Account (Azure Resource Manager T...)':

- arm-storage
- arm-storage-blob-container
- arm-cosmos-tablestorage-table
- arm-automanage-custom-profile
- arm-container-registry
- arm-app-security-group
- arm-automanage-bp-prod-assignment
- arm-cosmos-gremlin-database
- arm-app-insights
- arm-log-analytics-workspace
- arm-automanage-bp-devtest-assignment
- arm-automanage-custom-assignment



```

"name": "[parameters('storageAccountName')]",
"type": "Microsoft.Storage/storageAccounts",
"apiVersion": "2023-01-01",
"tags": {
    "displayName": "[parameters('storageAccountName')]"
}

```

```

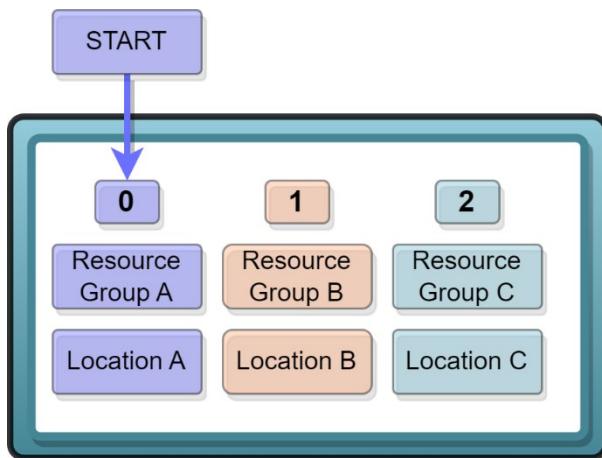
"$schema": "https://schema.management.azure.com/schemas/2018-05-01/
subscriptionDeploymentTemplate.json#",

```

```

"resources": [
  {
    "name": "[parameters('resourceGroups')[copyIndex('rgCopy')].name]",
    "type": "Microsoft.Resources/resourceGroups",
    "apiVersion": "2022-09-01",
    "location": "[parameters('resourceGroups')[copyIndex('rgCopy')].location]",
    "dependsOn": [],
    "tags": "[parameters('resourceTags')]",
    "copy": {
      "name": "rgCopy",
      "count": "[length(parameters('resourceGroups'))]"
    }
  }
],

```



```

"copy": {
  "name": "rgCopy",
  "count": "[length(parameters('resourceGroups'))]"
}

```

```

"name": "[parameters('resourceGroups')[copyIndex('rgCopy')].name]",
"type": "Microsoft.Resources/resourceGroups",
"apiVersion": "2022-09-01",
"location": "[parameters('resourceGroups')[copyIndex('rgCopy')].location]"

```

```
1  {
2      "$schema": "https://schema.management.azure.com/schemas/2018-05-01/
subscriptionDeploymentTemplate.json#",
3      "contentVersion": "1.0.0.0",
4      Select or create a parameter file to enable full validation...
5      "parameters": {
6          "resourceGroups": {
7              "type": "array",
8              "metadata": {
9                  "description": "Name and location"
10             }
11         },
12         "resourceTags": {
13             "type": "object",
14             "metadata": {
15                 "description": "Tags to be applied"
16             },
17             "defaultValue": {
18                 "Function": "To learn how to edit a template"
19             }
20         }
21     },
22     "functions": [],
23     "variables": {},
24     "resources": [
25         {
26             "name": "[parameters('resourceGroups')[copyIndex('rgCopy')].name]",
27             "type": "Microsoft.Resources/resourceGroups",
28             "apiVersion": "2022-09-01",
29             "location": "[parameters('resourceGroups')[copyIndex('rgCopy')].location]",
30             "dependsOn": [],
31             "tags": "[parameters('resourceTags')]",
32             "copy": {
33                 "name": "rgCopy",
34                 "count": "[length(parameters('resourceGroups'))]"
35             }
36         ],
37         "outputs": {}
38     }
```

Cut Ctrl+X

Copy Ctrl+C

Paste Ctrl+V

Command Palette... Ctrl+Shift+P

Select/Create Parameter File...

Open Parameter File

Sort Template...

Insert Item...

Select a parameter file for "Modifying_Existing_Template.json"

∅ None Current

{ } modifying_existing_template.parameters.json Matching filename

📄 New...

📁 Browse...

```
1  {
2      "$schema": "https://schema.management.azure.com/schemas/2019-04-01/
3          deploymentParameters.json#",
4      "contentVersion": "1.0.0.0",
5      "parameters": {
6          "resourceGroups": {
7              "value": [
8                  // TODO: Fill in parameter value
9              ],
10         },
11         "resourceTags": {
12             "value": {
13                 "Function": "To learn how to edit a template"
14             }
15         }
16     }
17 }
```

```
1  {
2      "$schema": "https://schema.management.azure.com/schemas/2019-04-01/
3          deploymentParameters.json#",
4      "contentVersion": "1.0.0.0",
5      "parameters": {
6          "resourceGroups": {
7              "value": [
8                  {
9                      "name": "ResourceGroupA",
10                     "location": "westeurope"
11                 },
12                 {
13                     "name": "ResourceGroupB",
14                     "location": "westeurope"
15                 }
16             ],
17         },
18         "resourceTags": {
19             "value": {
20                 "Environment": "Production",
21                 "Managed By": "Azure Support L3",
22                 "Function": "To learn how to edit a template"
23             }
24         }
25     }
26 }
```

```
"resourceGroups": {  
    "value": [  
        {  
            "name": "ResourceGroupA",  
            "location": "northeurope"  
        },  
        {  
            "name": "ResourceGroupB",  
            "location": "northeurope"  
        }  
    ]  
},
```

A screenshot of the Azure portal interface. At the top, there is a search bar containing the placeholder text "deploy a custom template". Below the search bar is a horizontal navigation menu with four items: "All", "Services (99+)", "Marketplace (1)", and "Documentation (99+)". Underneath the menu, there is a section titled "Microsoft Entra ID (0)". Further down, there is a "Services" section with a "Deploy a custom template" button highlighted with a red box and a red arrow pointing to it. To the right of the button is an "Activity log" link.

A screenshot of the "Select a template" step in the Azure Resource Manager template deployment wizard. The "Select a template" tab is active, showing the text: "Automate deploying resources with Azure Resource Manager templates in a single, coordinated operation. Create or select a template below to get started." Below this text is a blue button labeled "Build your own template in the editor", which is also highlighted with a red box and a red arrow pointing to it. Other tabs visible include "Basics" and "Review + create".

Select a template **Basics** Review + create

Template

 **Customized template** ↗
1 resource

 Edit template  Edit parameters  Visualize

Subscription * ⓘ Visual Studio Enterprise Subscription ↘

Instance details

Region * ⓘ North Europe ↘

Resource Groups * ⓘ [{"name": "ResourceGroupA", "location": "northeuro ..."}]

Resource Tags ⓘ {"Environment": "Production", "Managed By": "Azur ..."}

Previous Next **Review + create**



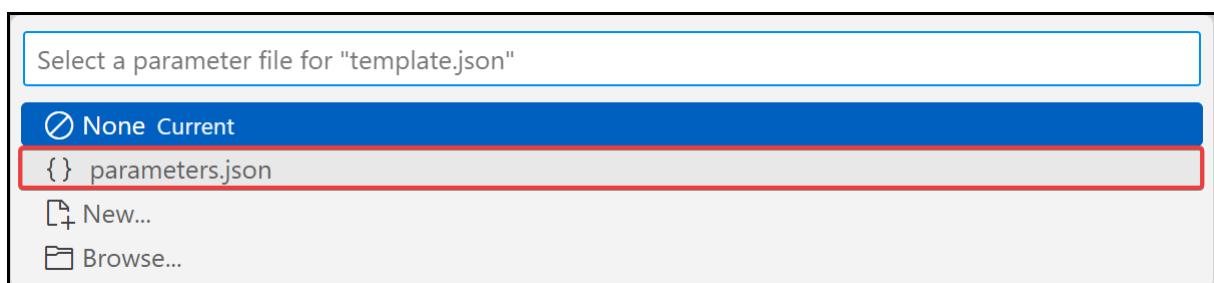
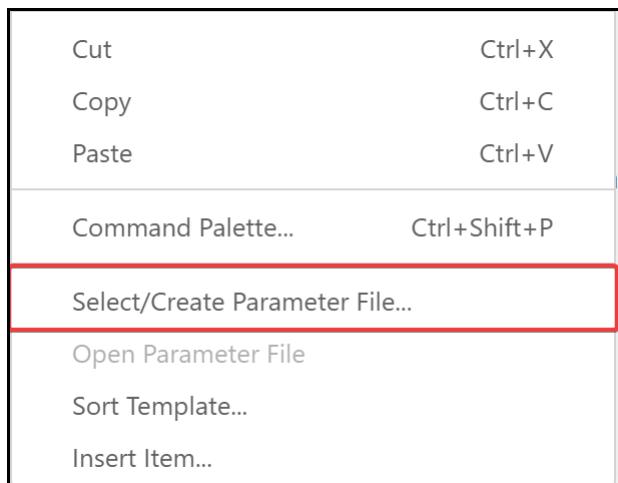
Create < Previous Next > **Download a template for automation**

Template

...

 **Download**  Add to library  Deploy





```
"parameters": {  
    Value: "northeurope"  
    "location": {  
        "type": "string"  
    },  
    Value: "teststorage2301223"  
    "storageAccountName": {  
        "type": "string"  
    },  
    Value: "Standard_LRS"  
    "accountType": {  
        "type": "string"  
    },
```

Resource groups

Default Directory

+ Create Manage view Refresh Export to CSV Open query Assign tags

Filter for any field... Subscription equals all Location equals all Add filter

Showing 1 to 27 of 27 records.

Name
VNETS
Tagging_Test
SFTP_VM_TEST
RG_VNET_UAT
ResourceGroupB
ResourceGroupA

A red arrow points to the "ResourceGroupA" entry in the list.

Automation

 Export template

 Help

 Support + Troubleshooting

A red arrow points from the "Help" link to the "Export template" button.

ResourceGroupA | Export template

Resource group

 Download  Add to library  Deploy  Visualize template

ResourceGroupA | Export template

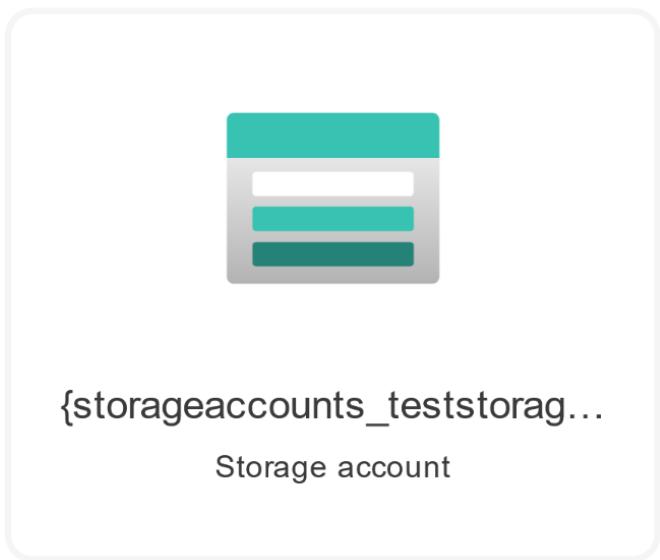
Resource group

 Download  Add to library  Deploy  Visualize template

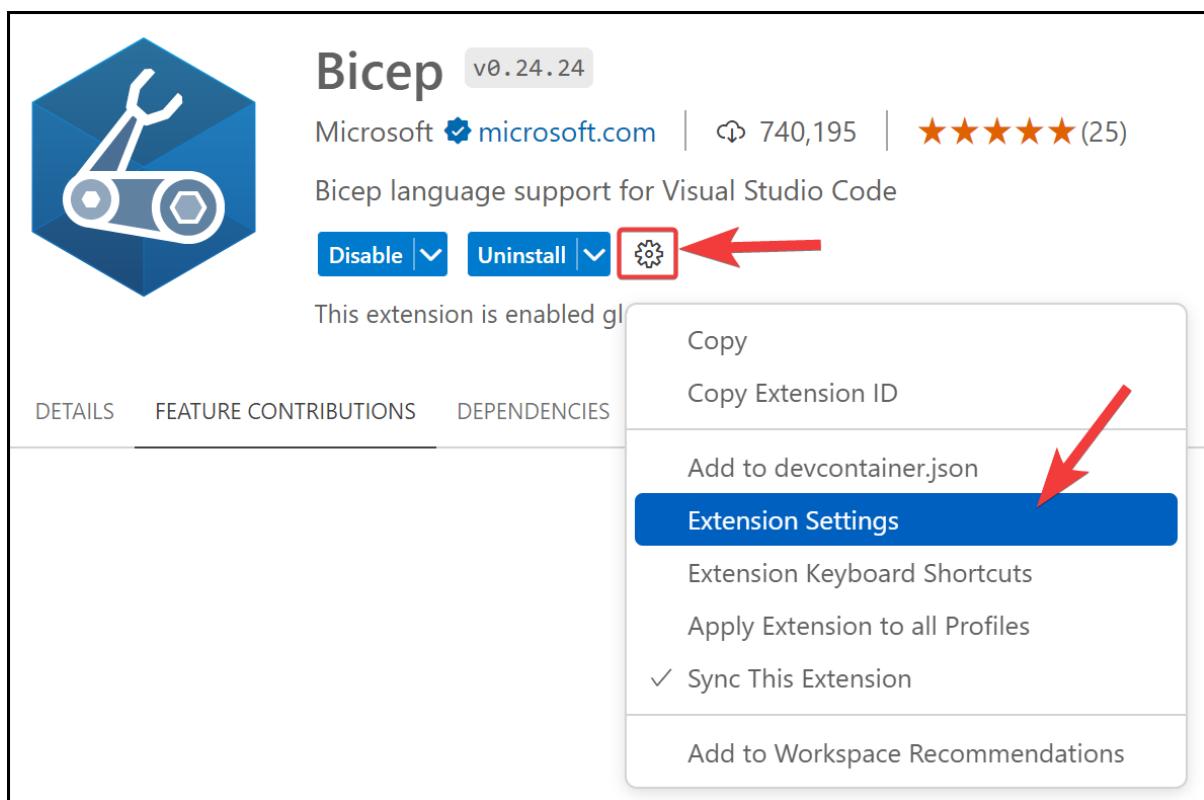
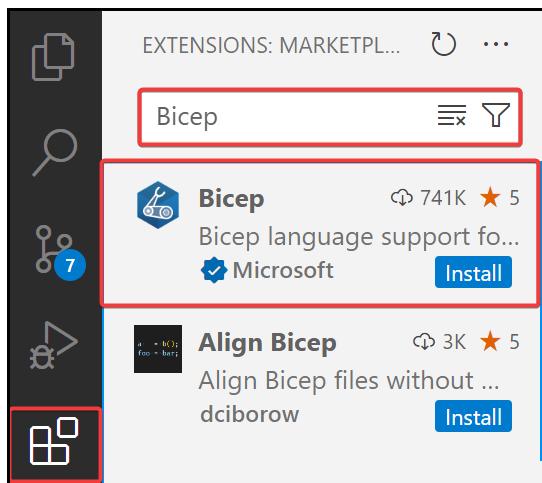
Resource visualizer

X

 Reset diagram  Zoom to fit  Export  Feedback



Chapter 11:



```

metadata <metadata-name> = ANY
targetScope = '<scope>'

type <user-defined-data-type-name> = <type-expression>

func <user-defined-function-name> (<argument-name> <data-type>, <argument-name> <data-type>, ...) <function-data-type> => <expression>

@<decorator>(<argument>)
param <parameter-name> <parameter-data-type> =
<default-value>

var <variable-name> = <variable-value>

resource <resource-symbolic-name> '<resource-type>@<api-version>' = {
  <resource-properties>
}

module <module-symbolic-name> '<path-to-file>' = {
  name: '<linked-deployment-name>'
  params: {
    <parameter-names-and-values>
  }
}

output <output-name> <output-data-type> = <output-value>

```

User defined functions
Reusable blocks of code designed to automate a repeatable portions of the template.

Parameters are used for items that change per deployment.
Variables are values that require computation such as applying naming logic that is based on the input name from a parameter.
Decorators are special annotations added to parameters that define constraints, validation rules, or additional metadata to enhance the accuracy and customization of input values during deployment.

Resources are the components you wish to deploy or update.

A Bicep module is a reusable piece of code that encapsulates a set of related Azure resources or configurations.

Outputs are for specifying the values that you want to return from the deployment.

Chapter 9 > Storage_Account_Bicep.bicep

1 storage

└ res-storage

Storage Account

```

resource storageaccount 'Microsoft.Storage/storageAccounts@' = {
  name: 'name'
  location: location
  kind: 'StorageV2'
  sku: {
    name: 'Premium_LRS'
  }
}

```

The screenshot shows a dropdown menu for selecting a storage account SKU. The menu lists the following options:

- 2023-01-01
- 2022-09-01
- 2022-05-01
- 2021-09-01
- 2021-08-01
- 2021-06-01
- 2021-04-01
- 2021-02-01
- 2021-01-01
- 2020-08-01-preview
- 2019-06-01
- 2019-04-01

```

3  @description('Enter a unique storage account name between 5 and 15 characters in length.')
4  @minLength(5)
5  @maxLength(15)
6  param storageAccountName string

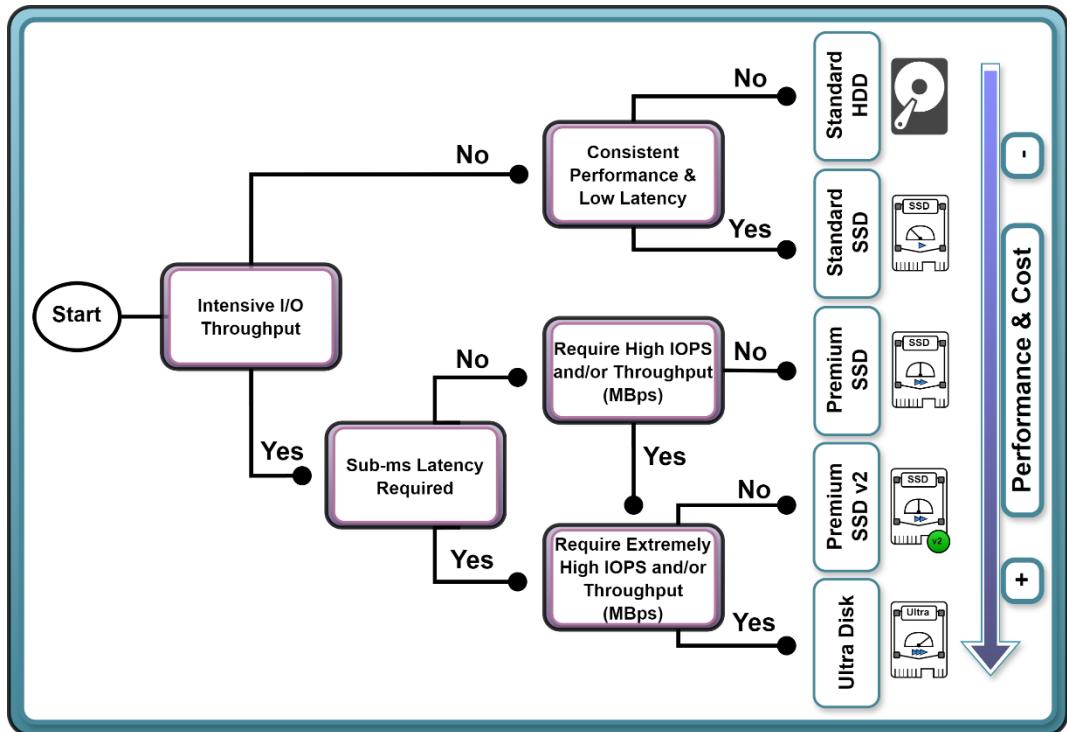
```

Outputs :	Name	Type	Value
	=====	=====	=====
	name	String	"teststor0312231"
	sku	String	"Standard_LRS"

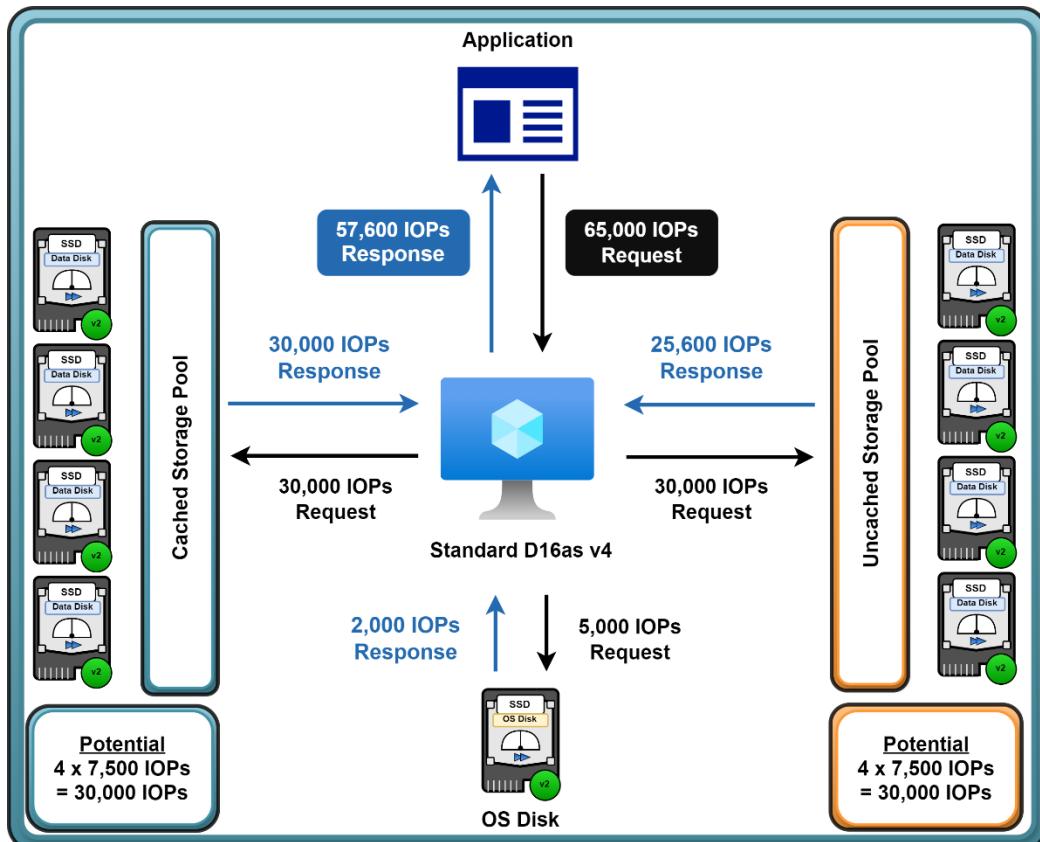
Bicep: Decompile On Paste

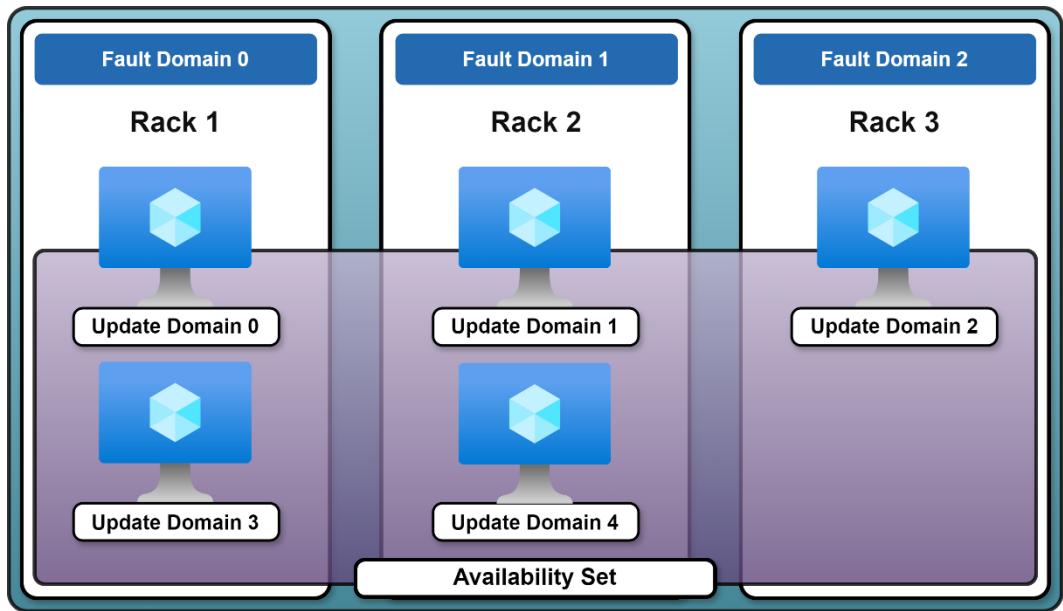
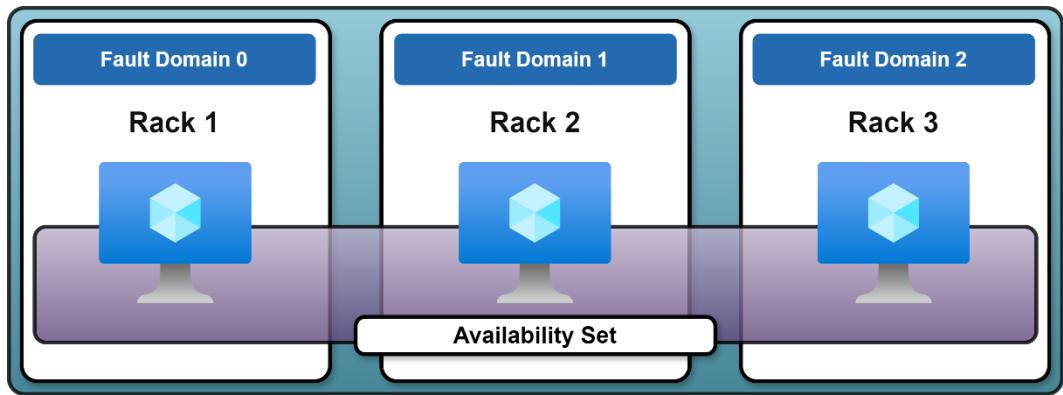
- Automatically convert pasted JSON values, JSON ARM templates or resources from a JSON ARM template into Bicep (use Undo to revert)

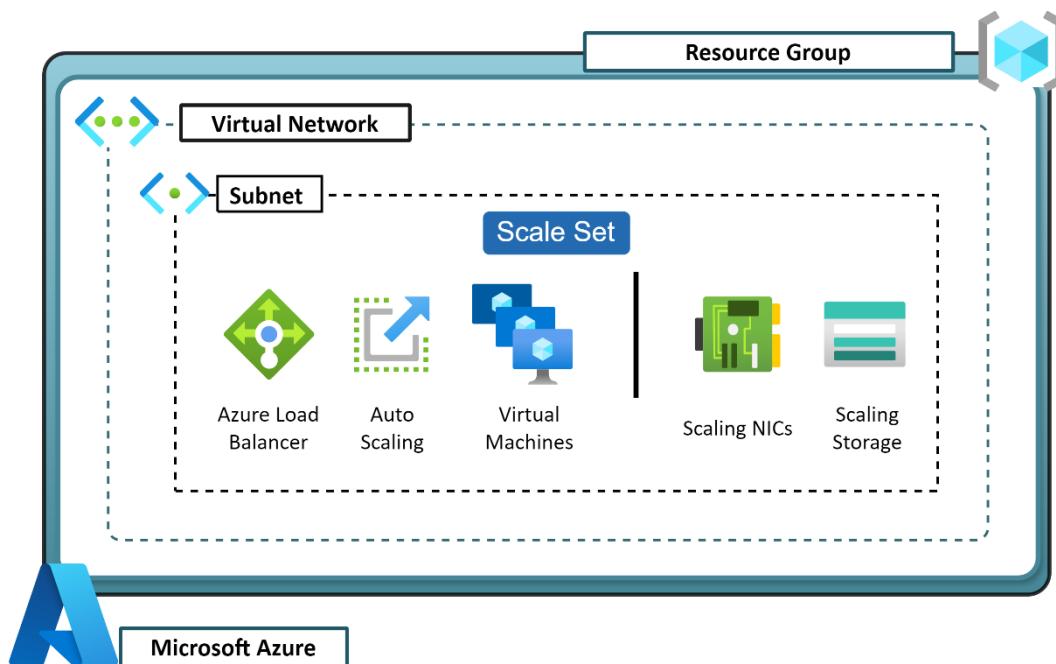
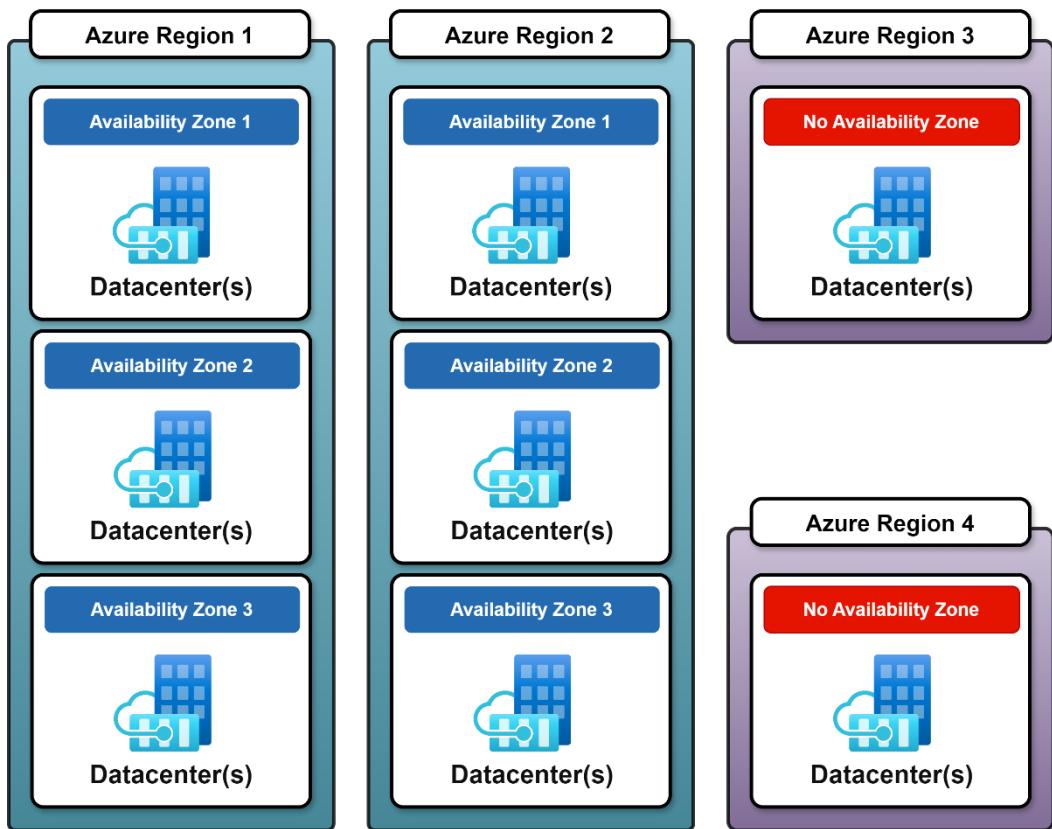
Chapter 12:

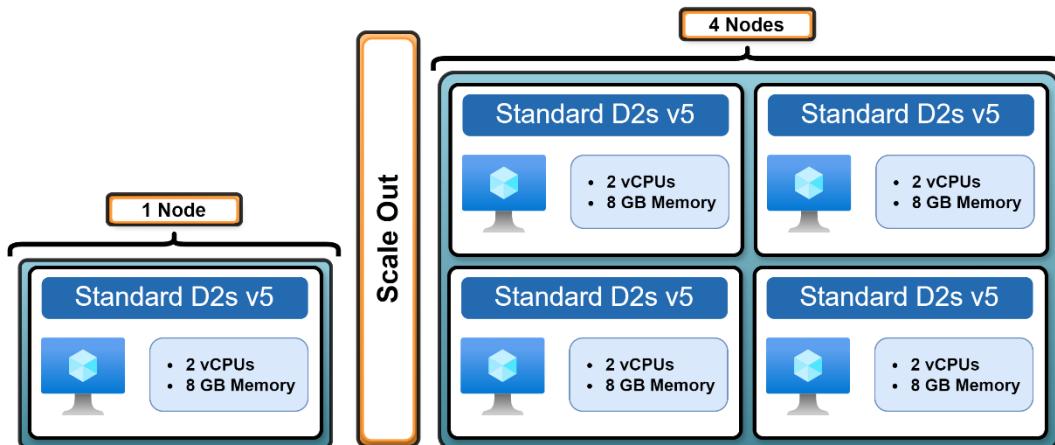
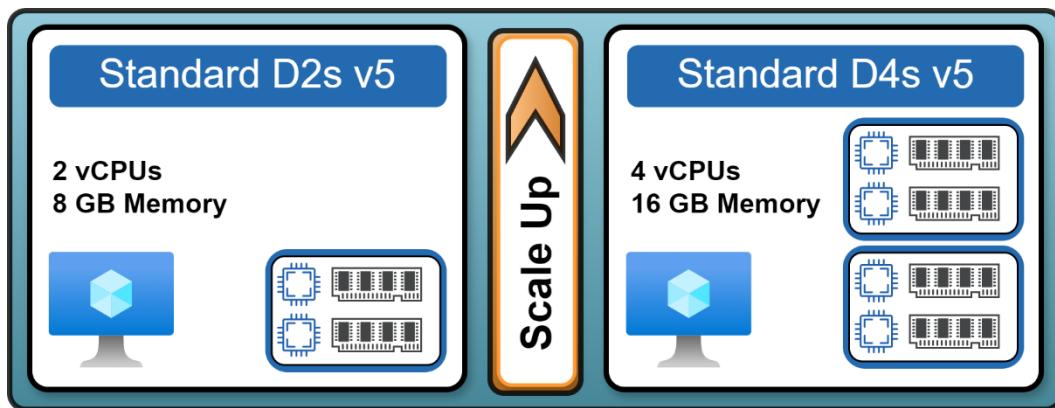


LUN ⓘ	Disk name	Storage type	Encryption ⓘ	Host caching ⓘ
0	testvm_DataDisk_0	Premium SSD LRS	SSE with PMK	Read-only
1	testvm_DataDisk_1	Premium SSD LRS	SSE with PMK	Read/write









Categories

virtual machine ×

Compute (3217) Azure services only

IT & Management Tools (2504) Showing 1 to 20 of 10198 results for 'virtual machine'. [Clear search](#)

Developer Tools (2294)

Security (1570)

Web (1505)

DevOps (1347)

Analytics (1048)

Databases (984)

Networking (960)

 Virtual machine

Microsoft

Azure Service

Azure Virtual Machines provide on-demand, high-scale, secure and virtualized infrastructure using either Linux or Windows operating systems.

 Data Science Virtual Machine - Ubuntu 20.04

Microsoft

Virtual Machine

Data Science Virtual Machine - Ubuntu 20.04

A red arrow points from the "Compute (3217)" category to the "Virtual machine" result card.

Project details

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

Subscription * ⓘ

Visual Studio Enterprise Subscription

Resource group * ⓘ

AZ104-VirtualMachines

[Create new](#)

Instance details

Virtual machine name * ⓘ

demovm01

Region * ⓘ

(Europe) North Europe

Availability options ⓘ

No infrastructure redundancy required

Security type ⓘ

Trusted launch virtual machines

[Configure security features](#)

Image * ⓘ

Windows Server 2019 Datacenter - x64 Gen2

[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_D2ds_v5 - 2 vcpus, 8 GiB memory (ZAR 1,635.40/month)

[See all sizes](#)

Enable Hibernation (preview) ⓘ

ⓘ To enable Hibernation, you must register your subscription. [Learn more](#)

Administrator account

Username * ⓘ

demovmadmin

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)

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

Licensing

Save up to 49% with a license you already own using Azure Hybrid Benefit. [Learn more ↗](#)

Would you like to use an existing Windows Server license? ⓘ

[Review Azure hybrid benefit compliance ↗](#)



[Review + create](#)

< Previous

Next : Disks >

VM disk encryption

Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.

Encryption at host ⓘ

 Encryption at host is not registered for the selected subscription.
[Learn more about enabling this feature ↗](#)

OS disk

OS disk size ⓘ

Image default (127 GiB)

OS disk type * ⓘ

Premium SSD (locally-redundant storage)

Delete with VM ⓘ

Key management ⓘ

Platform-managed key

Enable Ultra Disk compatibility ⓘ

Ultra disk is supported in Availability Zone(s) 1,2,3 for the selected VM size Standard_D2ds_v5.

[Advanced](#)

Use managed disks [\(i\)](#)



Gallery package requires managed disks.

Ephemeral OS disk [\(i\)](#)



OS cache placement



Temp disk placement

i The selected image is too large for the OS cache and temp disk of the selected instance.

Network interface

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

Virtual network ***** [\(i\)](#)

(new) demovm01-vnet



[Create new](#)

Subnet ***** [\(i\)](#)

(new) default (10.0.0.0/24)



Public IP [\(i\)](#)

(new) demovm01-ip



[Create new](#)

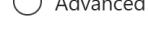
NIC network security group [\(i\)](#)



None



Basic



Advanced

Public inbound ports ***** [\(i\)](#)



None



Allow selected ports

Select inbound ports *****

RDP (3389)



Alerts

Enable recommended alert rules [\(i\)](#)



Diagnostics

Boot diagnostics [\(i\)](#)



Enable with managed storage account (recommended)



Enable with custom storage account



Disable

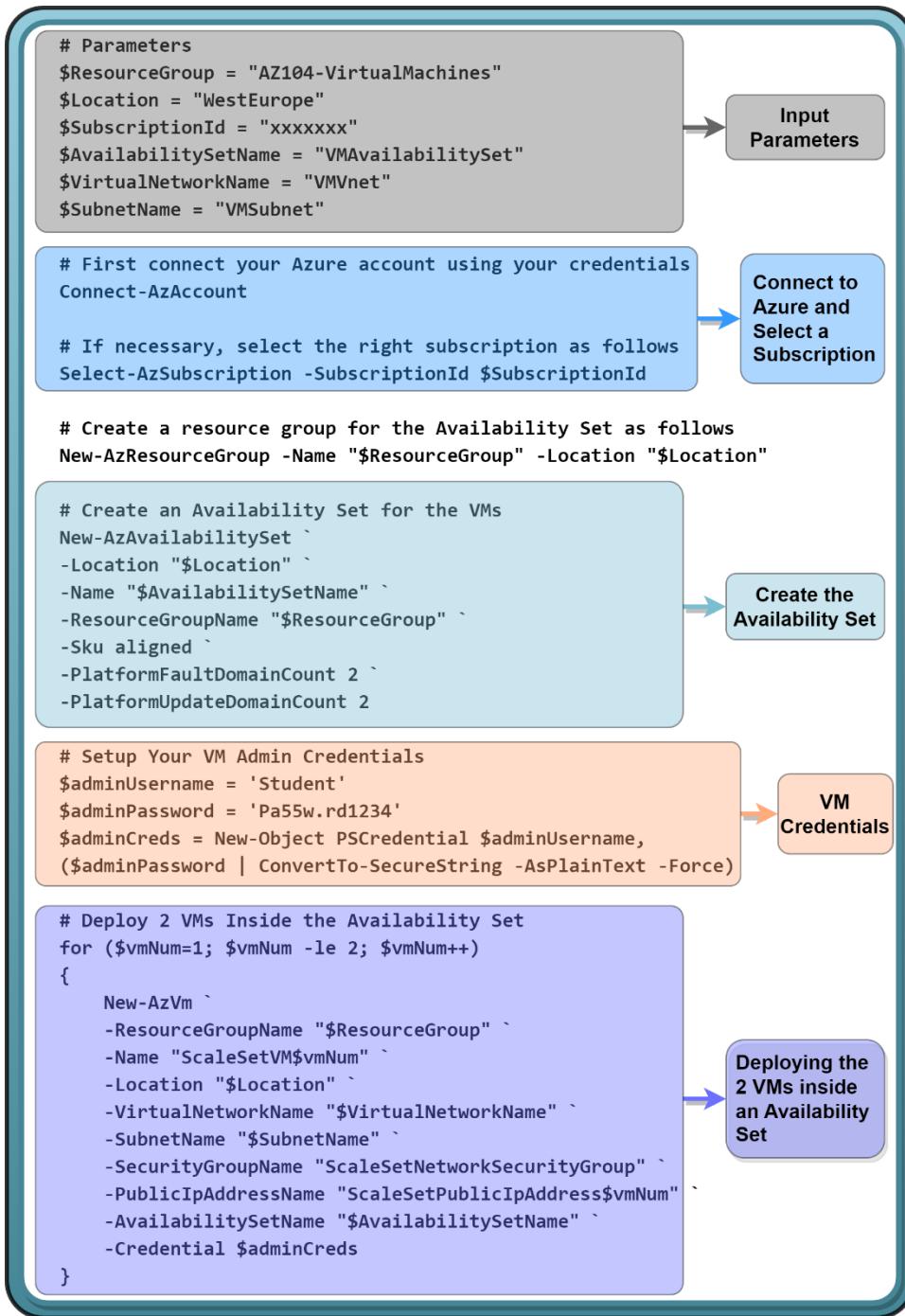
Enable OS guest diagnostics [\(i\)](#)



Health

Enable application health monitoring [\(i\)](#)





Project details

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

Subscription * ⓘ

Visual Studio Enterprise Subscription

Resource group * ⓘ

AZ104-VirtualMachines

[Create new](#)

Scale set details

Virtual machine scale set name *

 ✓

Region *

 ✓

Availability zone ⓘ

 ✓

 Improve your availability by selecting multiple zones

Orchestration

A scale set has a "scale set model" that defines the attributes of virtual machine instances (size, number of data disks, etc). As the number of instances in the scale set changes, new instances are added based on the scale set model.

[Learn more about the scale set model](#)

Orchestration mode * ⓘ

Flexible: achieve high availability at scale with identical or multiple virtual machine types

Uniform: optimized for large scale stateless workloads with identical instances

Security type ⓘ

Instance details

Image * ⓘ

 Windows Server 2019 Datacenter - x64 Gen2

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

 This image is compatible with additional security features. [Click here to swap to the Trusted launch security type.](#)

VM architecture ⓘ

Arm64

x64

 Arm64 is not supported with the selected image.

Run with Azure Spot discount ⓘ

Size * ⓘ

✓

[See all sizes](#)

Enable Hibernation (preview) ⓘ

Chapter 13:

Availability + scale

 Size

 Availability + scaling

Search by VM size... vCPUs : **2** RAM (GiB) : All Display cost : Monthly Add filter

Showing 64 of 477 VM sizes. Subscription: Visual Studio Enterprise Subscription | Region: West Europe | Current size: Standard_D2s_v3

VM Size ↑↓	Type ↑↓	vCPUs ↑↓	RAM (GiB) ↑↓
D2s_v3 ↗	General purpose	2	8
D2as_v4 ↗	General purpose	2	8
B2s ↗	General purpose	2	4
B2ms ↗	General purpose	2	8
DS2_v2 ↗	General purpose	2	7

| Learn more about VM sizes ↗ Group by series ✓

Local storage (GiB) ↑↓ Premium disk ↑↓ Cost/month ↑↓

8 (SCSI)	Supported	ZAR 623.01
16 (SCSI)	Supported	ZAR 1,246.02
16 (SCSI)	Supported	ZAR 1,492.63
16 (SCSI)	Supported	ZAR 1,557.53
14 (SCSI)	Supported	ZAR 1,765.20

The screenshot shows the Azure portal interface. At the top, there's a blue header bar with several icons: a square with a right-pointing arrow, a filter icon, a bell icon with a '3' notification, a gear icon, a question mark icon, and a user profile icon. Below the header is a toolbar with icons for power, help, settings, and file operations. A dropdown menu is open, showing 'Bash' selected. The main content area displays a message: 'Requesting a Cloud Shell. **Succeeded.** Connecting terminal...'. The entire terminal area is highlighted with a red border.

Disk details

Disk name * ⓘ scalesetvm1_datadisk2 ✓

Region * ⓘ (Europe) West Europe ✓

Availability zone No infrastructure redundancy required ✓

Source type ⓘ None ✓

Size * ⓘ 32 GiB (P4 performance tier)
Premium SSD LRS
[Change size](#)

Data disks

Filter by name

Showing 1 of 1 attached data disks

+ Create and attach a new disk ⚡ Attach existing disks

LUN ⓘ	Disk name	Storage type	Size (GiB)
0	scalesetvm1_data ... ✓	Standard HDD (... ✓)	32 ✓

+ Create and attach a new disk	Attach existing disks	
LUN ⓘ	Disk name	Storage type
0	scalesetvm1_datadisk1	Standard HDD LRS

1 ▾ scalesetvm1_datadisk2 ▾ Premium SSD LRS

 Network interface / IP configuration
ScaleSetVM1 (primary) / ScaleSetVM1 (primary) ✓

↖ Essentials

Network interface : [ScaleSetVM1](#)
Virtual network / subnet : [VMVnet / VMSubnet](#)
Public IP address : [ScaleSetPublicIpAddress1](#)
Private IP address : 192.168.1.4

Connect

[Connect](#) Most common

- [Bastion](#)
- [Windows Admin Center](#)

Networking

- [Network settings](#)
- [Load balancing](#)
- [Application security groups](#)
- [Network manager](#)

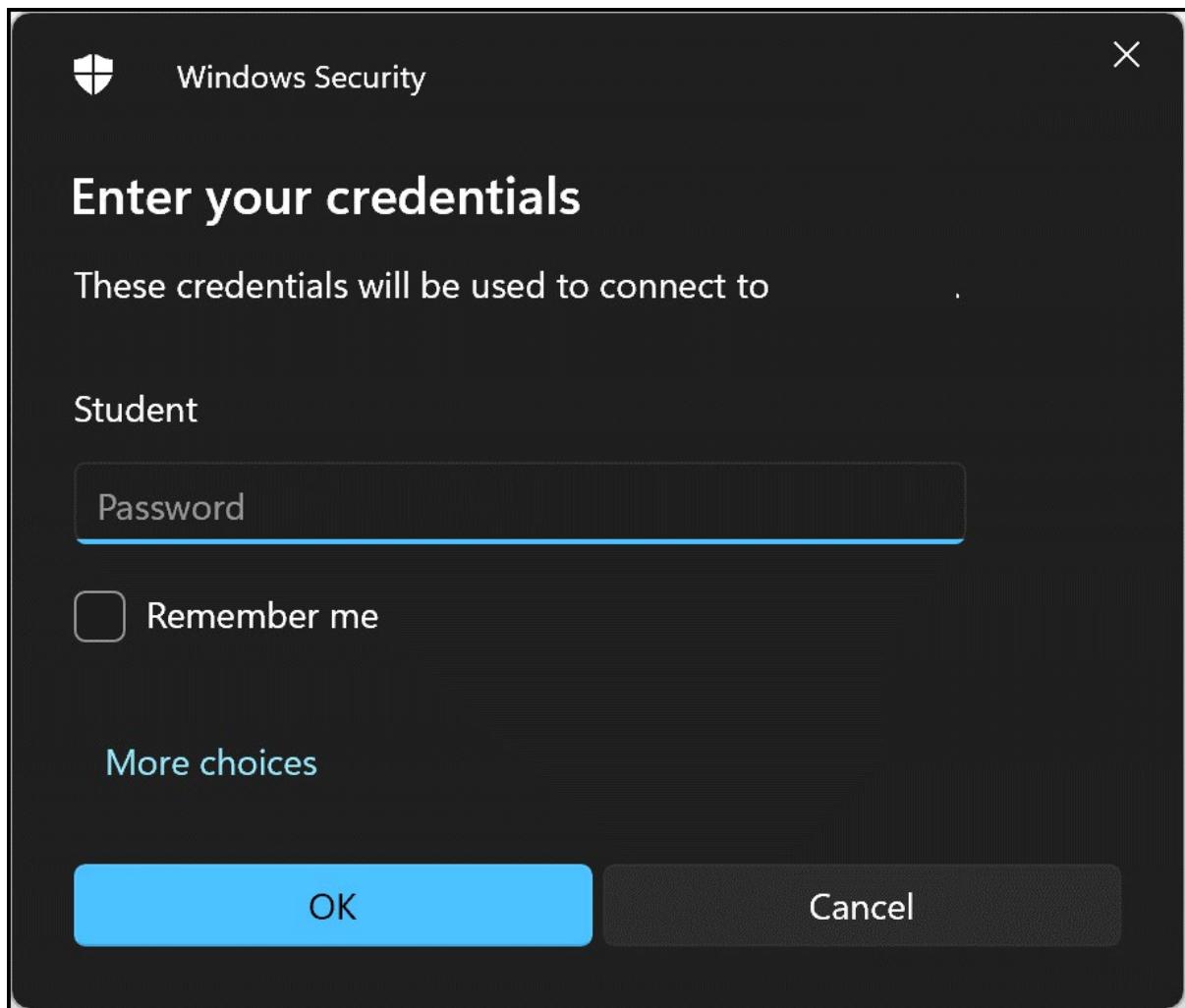
 Local machine

Native RDP
Connect via native RDP without any additional software needed. Recommended for testing only.

Public IP address ()

Select [Download RDP file](#) 



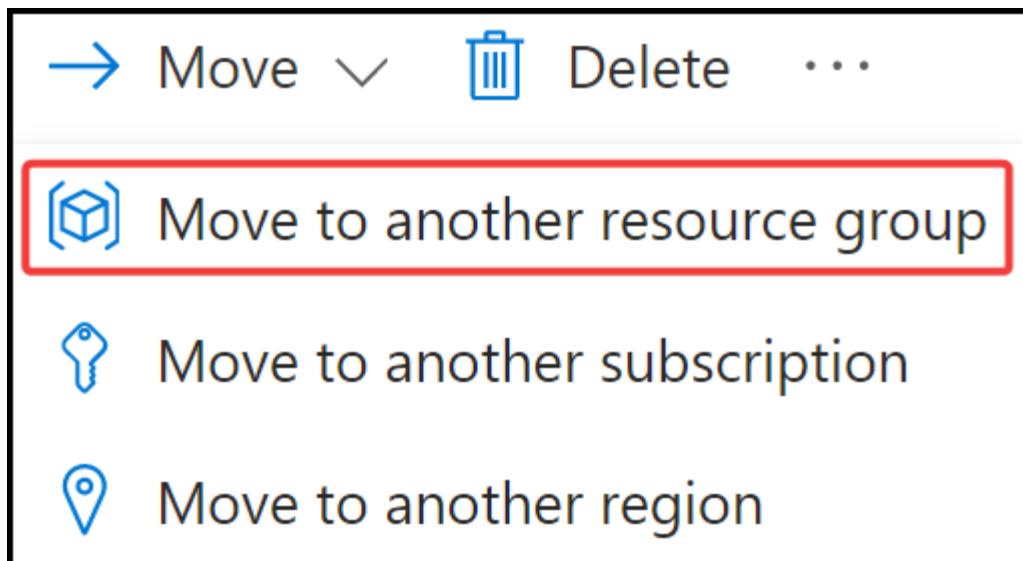


A screenshot of the Azure portal showing the "AZ104-VirtualMachines" resource group. The "Overview" tab is selected. Key details include:

- Subscription (move) : Visual Studio Enterprise Subscription
- Subscription ID :
- Deployments : No deployments
- Location : West Europe
- Tags (edit) : Add tags

The "Resources" section lists 11 records:

Name	Type	Location
ScaleSetNetworkSecurityGroup	Network security group	West Europe
ScaleSetPublicIpAddress1	Public IP address	West Europe
ScaleSetPublicIpAddress2	Public IP address	West Europe
ScaleSetVM1	Virtual machine	West Europe



Move resources

AZ104-VirtualMachines

1 Source + target 2 Resources to move 3 Review

To move a resource, select a source and a destination. The source and destination resource groups will both be locked during the move. [Learn more](#)

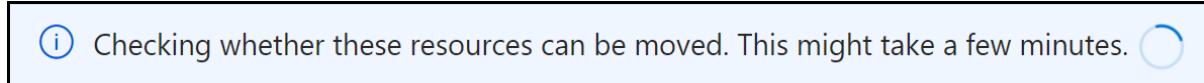
Source

Subscription	Visual Studio Enterprise Subscription
Resource group	AZ104-VirtualMachines

Target

Subscription	Visual Studio Enterprise Subscription
Resource group *	<input type="text" value="AZ104-VirtualMachines-Migration"/> ▼
Create new	

[Previous](#) [Next](#)



- 1 Source + target
- 2 Resources to move**
- 3 Review

Name	Type	Resource type	Validation status
ScaleSetNetworkSecurityGroup	Network security group	microsoft.network/networksecuritygroups	✓ Succeeded
ScaleSetPublicIpAddress1	Public IP address	microsoft.network/publicipaddresses	✓ Succeeded
ScaleSetPublicIpAddress2	Public IP address	microsoft.network/publicipaddresses	✓ Succeeded
ScaleSetVM1	Virtual machine	microsoft.compute/virtualmachines	✓ Succeeded
ScaleSetVM1	Network interface	microsoft.network/networkinterfaces	✓ Succeeded
ScaleSetVM1_OsDisk_1_9a007883b3154d8eb...	Disk	microsoft.compute/disks	✓ Succeeded
ScaleSetVM2	Virtual machine	microsoft.compute/virtualmachines	✓ Succeeded

[Previous](#) [Next](#)



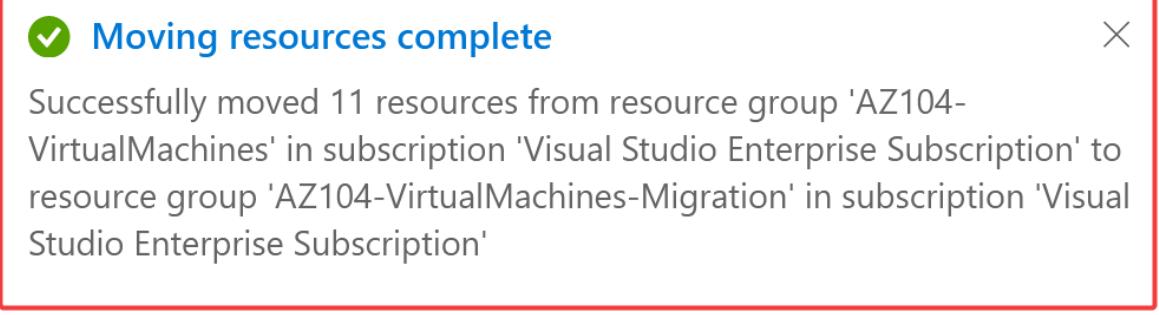
Notifications

[More events in the activity log →](#) [Dismiss all](#)

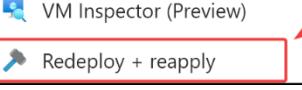
✓ **Moving resources complete**

Successfully moved 11 resources from resource group 'AZ104-VirtualMachines' in subscription 'Visual Studio Enterprise Subscription' to resource group 'AZ104-VirtualMachines-Migration' in subscription 'Visual Studio Enterprise Subscription'

5 minutes ago




Help	Virtual machine	
Resource health	Computer name	ScaleSetVM1
Boot diagnostics	Operating system	Windows (Windows Server 2016 Datacenter)
Serial console	Image publisher	MicrosoftWindowsServer
Reset password	Image offer	WindowsServer
Connection troubleshoot	Image plan	2016-Datacenter
Performance diagnostics	VM generation	V1
VM Inspector (Preview)	VM architecture	x64
Redeploy + reapply	Agent status	Ready
	Agent version	2.7.41491.1102
	Hibernation	Disabled




Redeploy

Try redeploying your virtual machine, which will migrate it to a new Azure host. If you continue, the virtual machine will be restarted and you will lose any data on the temporary drive. While the redeployment is in progress, the virtual machine will be unavailable. [Learn more about Redeploy](#)

Redeploy



... Redeploying virtual machine



Redeploying the virtual machine 'ScaleSetVM1'...

Successfully redeployed virtual machine



Successfully redeployed the virtual machine 'ScaleSetVM1'.

a few seconds ago



PowerShell ▾ | ⚡ ? 🛡 { } 🔍

ScaleSetVM1 | Disks

Virtual machine



...

🔍 Search

⟳ Refresh

⚙️ Additional settings

Disks

Extensions + applications

Configuration

OS disk

⇄ Swap OS disk



Encryption settings

Azure Disk Encryption (ADE) provides volume encryption for the OS and data disks. [Learn more](#)

Disks to encrypt ⓘ

OS and data disks

Azure Disk Encryption is integrated with Azure Key Vault to help manage encryption keys. As a prerequisite, you need to have an existing key vault with encryption permissions set. For additional security, you can create or choose an optional key encryption key to protect the secret.

Key vault *

Select a key vault

[Create new](#)



Resource access



Azure Virtual Machines for deployment ⓘ



Azure Resource Manager for template deployment ⓘ



Azure Disk Encryption for volume encryption ⓘ

Create a key

Name * ⓘ

diskencrypt



Key type ⓘ

RSA

EC

RSA key size

2048

3072

4096

Set activation date ⓘ



Set expiration date ⓘ



Enabled



[Create](#)

[Cancel](#)



Disk name	Storage type	Size (GiB)	Max IOPS	Encryption ⓘ
ScaleSetVM1_OsDisk_1_9a007	Premium SSD LRS	127	500	SSE with PMK & ADE



Microsoft Antimalware

Microsoft Corp.

Microsoft Antimalware for Azure Virtual Machines

Create Review + create

Excluded files and locations [\(i\)](#)

Excluded file extensions [\(i\)](#)

Excluded processes [\(i\)](#)

Real-time protection [\(i\)](#) Enable Disable

Run a scheduled scan [\(i\)](#) Enable Disable

Scan type [\(i\)](#) Quick Full

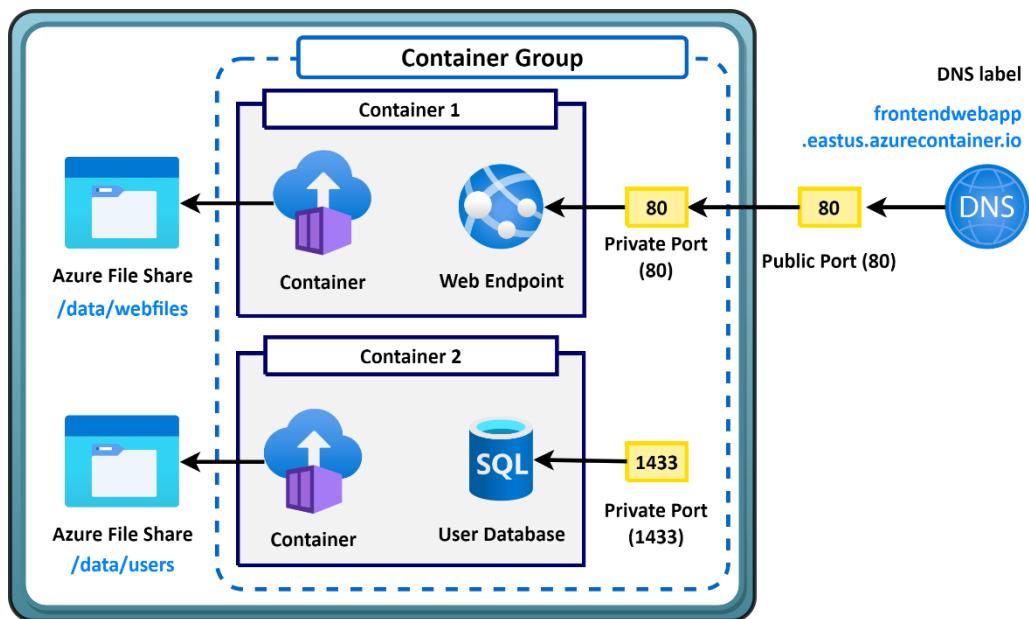
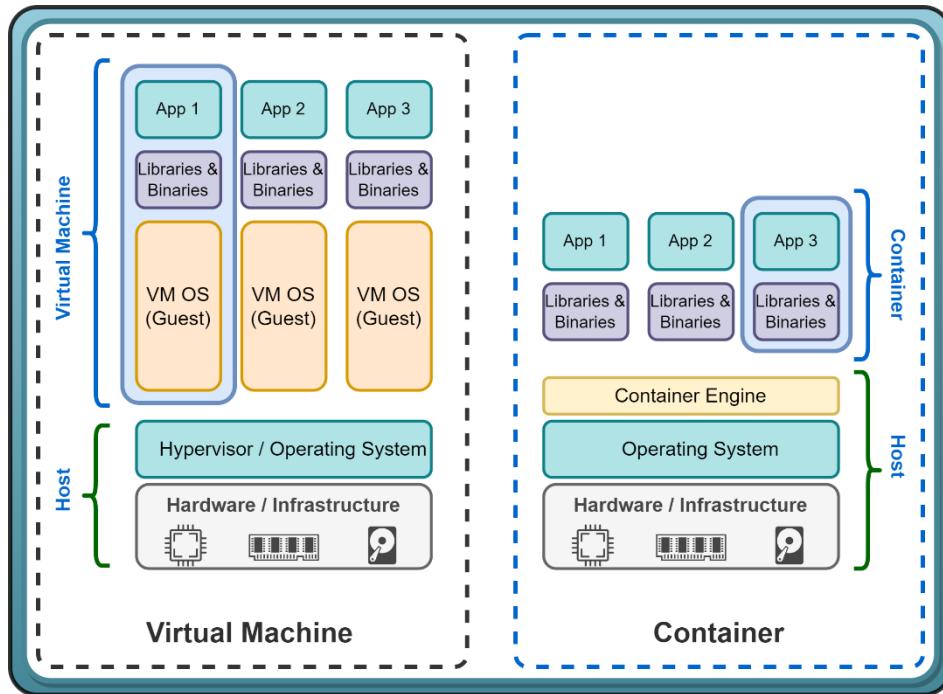
Scan day [\(i\)](#) Saturday

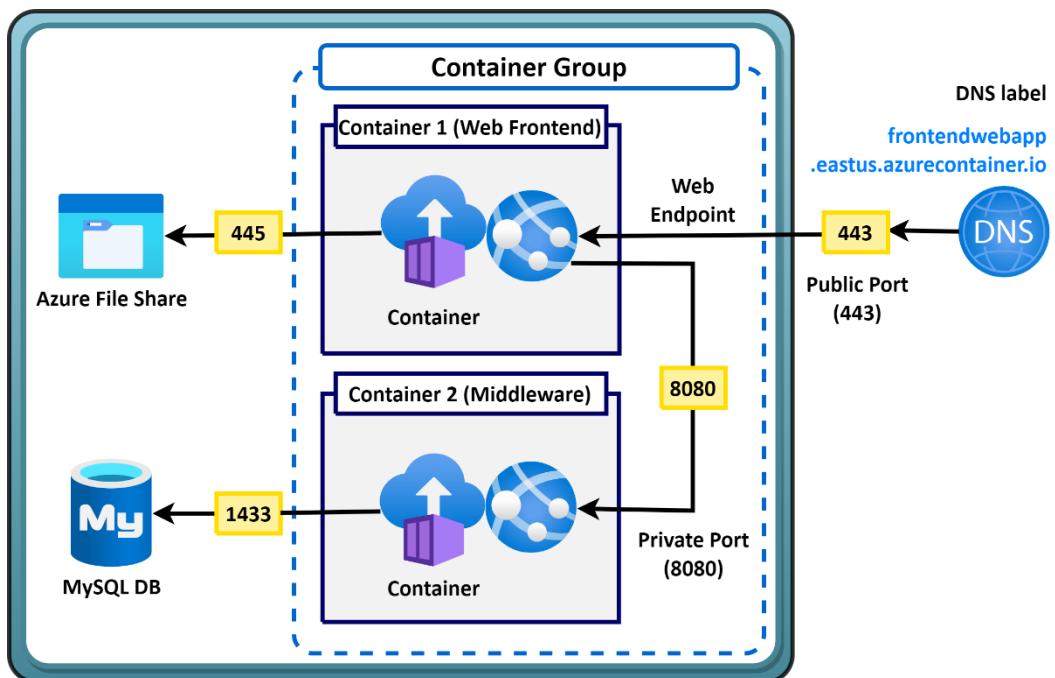
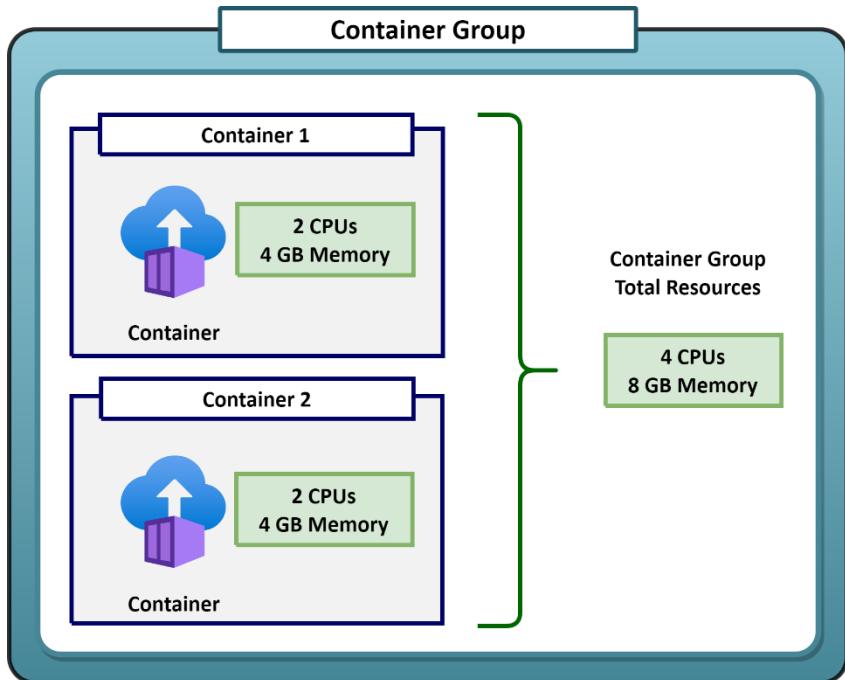
Scan time [\(i\)](#) 120

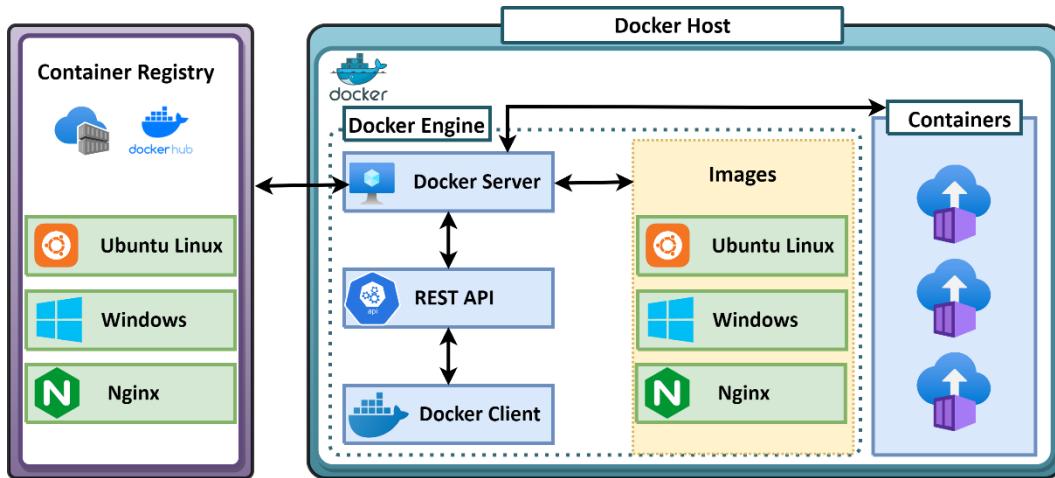
Name	Type
AzureDiskEncryption	Microsoft.Azure.Security.AzureDiskEncryption
IaaSAntimalware	Microsoft.Azure.Security.IaaSAntimalware

```
{  
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",  
  "contentVersion": "1.0.0.0",
```

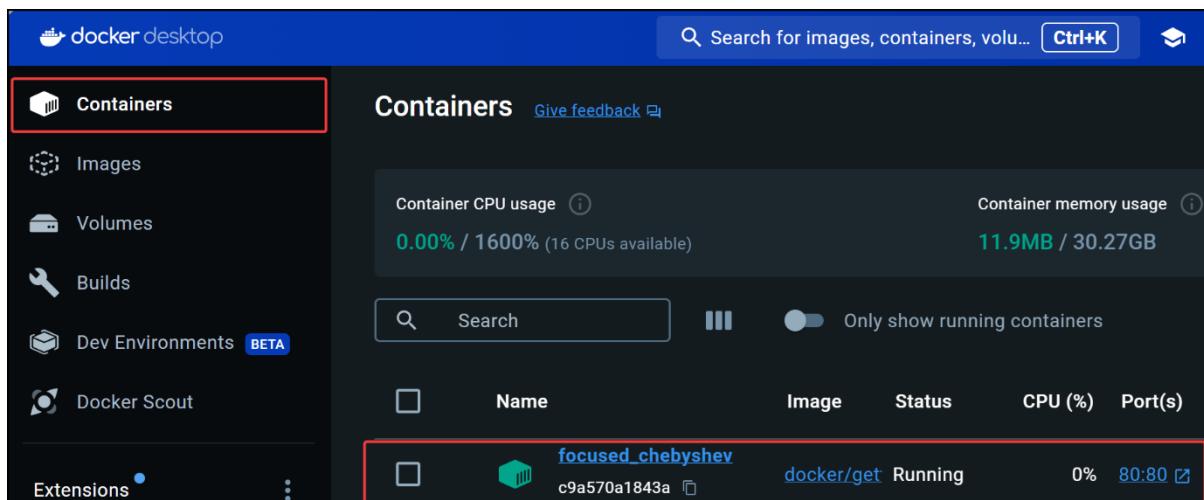
Chapter 14:







```
pwsh> docker run -d -p 80:80 docker/getting-started
Unable to find image 'docker/getting-started:latest' locally
latest: Pulling from docker/getting-started
c158987b0551: Pull complete
1e35f6679fab: Pull complete
cb9626c74200: Pull complete
b6334b6ace34: Pull complete
f1d1c9928c82: Pull complete
9b6f639ec6ea: Pull complete
ee68d3549ec8: Pull complete
33e0cbbb4673: Pull complete
4f7e34c2de10: Pull complete
Digest: sha256:d79336f4812b6547a53e
Status: Downloaded newer image for docker/getting-started:latest
c9a570a1843a57c7aeabb4cd69677396aa877c5f6791c35a02a2adb348f5cf0a
```



A screenshot of a web browser displaying a Docker tutorial page. The URL is `localhost/tutorial/`. The page has a blue header with the Docker Labs logo and the title "Getting Started". On the left, there's a sidebar with a "Getting Started" section containing links like "Our Application", "Updating our App", and "Sharing our App". The main content area has a heading "Getting Started" and a sub-section "The command you just ran". It shows the command `docker run -d -p 80:80 docker/getting-started`. Below it, a "Pro tip" box suggests combining flags: `docker run -dp 80:80 docker/getting-started`. To the right, there's a "Table of contents" sidebar with links to "The command you just ran", "The Docker Dashboard", "What is a container?", and "What is a container image?".

A screenshot of the Docker Hub "Create repository" interface. At the top, there are tabs for "Explore", "Repositories" (which is highlighted with a red border), and "Organizations". The main form has fields for "Namespace" (set to "someuser") and "Repository Name*" (set to "myfirstrepo"). There's also a "Short description" field with the placeholder "My First Repo". A note below says: "A short description to identify your repository. If the repository is public, this description is used to index your content on Docker Hub and in search engines, and is visible to users in search results." Under "Visibility", there are two options: "Public" (selected, shown with a red border) and "Private" (unselected). A red arrow points to the "Create" button at the bottom right. Other buttons include "Cancel" and "Get more".

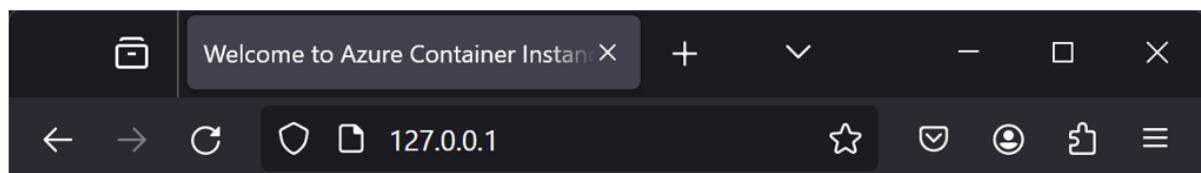
```
pwsh> docker pull mcr.microsoft.com/azuredocs/aci-helloworld
Using default tag: latest
latest: Pulling from azuredocs/aci-helloworld
6d987f6f4279: Pulling fs layer
a1b9769c94cd: Pulling fs layer
ea13ff2dbf08: Pulling fs layer
```

```
pwsh> docker images
REPOSITORY                                     TAG      IMAGE ID
docker/welcome-to-docker                      latest   c1f619b6477e
docker/getting-started                         latest   3e4394f6b72f
mcr.microsoft.com/azuredocs/aci-helloworld     latest   7367f3256b41
```

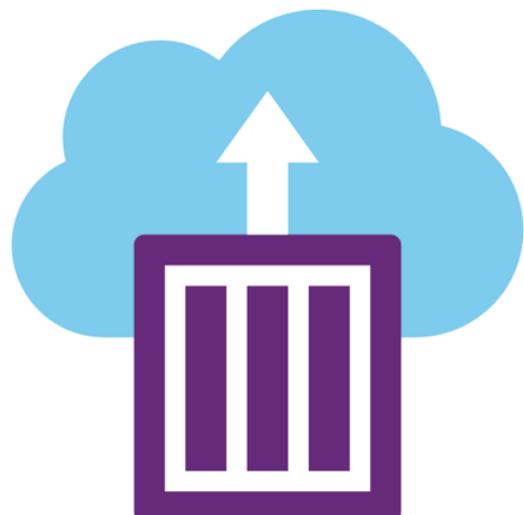
```
pwsh> docker ps
CONTAINER ID   IMAGE           COMMAND                  CREATED             STATUS              PORTS               NAMES
c9a570a1843a   docker/getting-started   "/docker-entrypoint..."   42 minutes ago    Up 42 minutes   0.0.0.0:80→80/tcp   focused_chebyshev
pwsh> docker stop focused_chebyshev
pwsh> docker ps
CONTAINER ID   IMAGE           COMMAND             CREATED             STATUS              PORTS               NAMES
```

```
pwsh> docker images
REPOSITORY                                     TAG      IMAGE ID
docker/welcome-to-docker                      latest   c1f619b6477e
docker/getting-started                         latest   3e4394f6b72f
mcr.microsoft.com/azuredocs/aci-helloworld     latest   7367f3256b41
```

```
pwsh> docker run -d -p 80:80 mcr.microsoft.com/azuredocs/aci-helloworld
7d8154da130653c7e92608e2744ae198102          31245d0f45393
pwsh> docker ps
CONTAINER ID   IMAGE           COMMAND
 NAMES
7d8154da1306   mcr.microsoft.com/azuredocs/aci-helloworld   "/bin/sh -c"
```



Welcome to Azure Container Instances!



REPOSITORY	TAG
docker/welcome-to-docker	latest
docker/getting-started	latest
mcr.microsoft.com/azuredocs/aci-helloworld	latest
someuser /myfirstrepo	latest

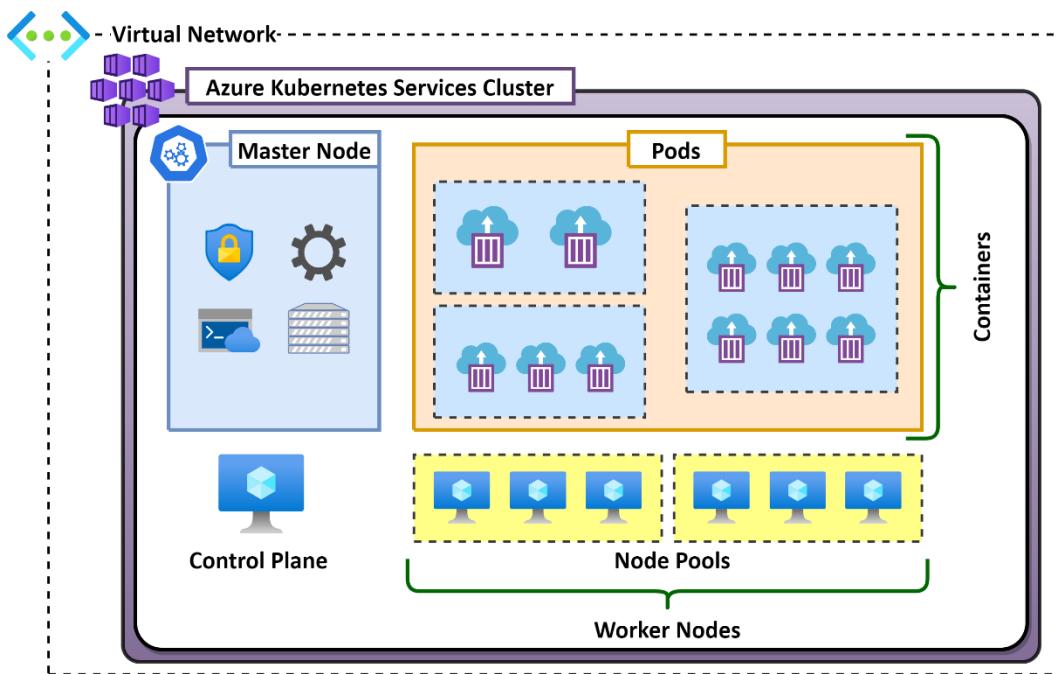
someuser /myfirstrepo 

Created 2 minutes ago

My First Repo 

Docker commands
To push a new tag to this repository:

```
docker push someuser /myfirstrepo:tagname
```



 Container Registry  Add to Favorites

Microsoft | Azure Service

★ 4.3 (368 ratings)

Plan

Container Registry 

Create 

Create container registry

Basics Networking Encryption Tags Review + create

Azure Container Registry allows you to build, store, and manage container images and artifacts in a private registry for all types of container deployments. Use Azure container registries with your existing container development and deployment pipelines. Use Azure Container Registry Tasks to build container images in Azure on-demand, or automate builds triggered by source code updates, updates to a container's base image, or timers. [Learn more](#)

Project details

Subscription * Visual Studio Enterprise Subscription

Resource group * AZ104-Containers [Create new](#)

Instance details

Registry name * az104myfirstregistry13032024 .azurecr.io

Location * West Europe

Use availability zones ⓘ i Availability zones are activated on premium registries and in regions that support availability zones. [Learn more](#)

Pricing plan * Standard

Review + create < Previous Next: Networking >

Registry name	az104myfirstregistry13032024	
Login server	az104myfirstregistry13032024.azurecr.io	
Admin user ⓘ	<input checked="" type="checkbox"/>	
Username	az104myfirstregistry13032024	
Name	password	Regenerate
	somepassword	
password2	somepassword	Regenerate

```
pwsh> docker login az104myfirstregistry13032024.azurecr.io
Username: az104myfirstregistry13032024
Password:

Login Succeeded
```

Search to filter repositories ...

Repositories ↑↓ Cache Rule

myimages/containerdemo

Container details

Container name *	<input type="text" value="myfirstcontainerinstance"/>	<input checked="" type="checkbox"/>
Region *	<input type="text" value="(Europe) West Europe"/>	<input type="button" value="▼"/>
Availability zones (Preview)	<input type="text" value="None"/>	<input type="button" value="▼"/>
SKU	<input type="text" value="Standard"/>	<input type="button" value="▼"/>
Image source *	<input type="radio"/> Quickstart images <input checked="" type="radio"/> Azure Container Registry <input type="radio"/> Other registry	
Run with Azure Spot discount	<input type="checkbox"/>	
Registry *	<input type="text" value="az104myfirstregistry13032024"/>	
<small>i If you do not see your Azure Container Registry, ensure you have been assigned the Reader Role for the Azure Container Registry or select an Azure Container Registry in a different subscription. Learn more ↗</small>		
Image *	<input type="text" value="myimages/containerdemo"/>	
Image tag *	<input type="text" value="latest"/>	
OS type	Linux	
Size *	1 vcpu, 1.5 GiB memory, 0 gpus Change size	
Networking type	<input checked="" type="radio"/> Public <input type="radio"/> Private <input type="radio"/> None	
DNS name label	<input type="text" value="myfirstcontainerinstance"/>	
DNS name label scope reuse *	<input type="text" value="Tenant"/>	
Ports	Ports <input type="text" value="80"/> Ports protocol <input type="text" value="TCP"/>	



Switch to PowerShell Restart ...

Requesting a Cloud Shell. **Succeeded.**
Connecting terminal...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

azure [~]\$ `code azuredeploy.json`



```
{  
  "$schema": "https://schema.management.azure.com/schemas/2019-04-  
01/deploymentTemplate.json#",  
  "contentVersion": "1.0.0.0",
```

```
  "parameters": {  
    "containerGroupName": {  
      "type": "string",  
      "defaultValue": "myfirstcontainergroup",  
      "metadata": {  
        "description": "My First Container Group"  
      }  
    },  
  },
```

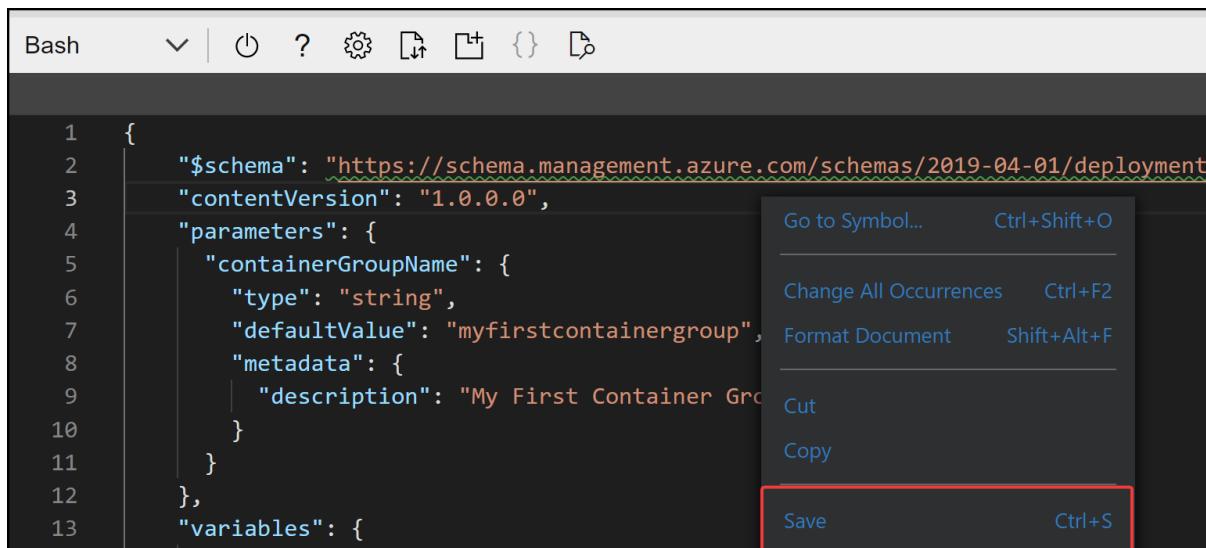
Parameters

```
  "variables": {  
    "container1name": "aci-tutorial-app",  
    "container1image": "mcr.microsoft.com/azuredocs/aci-helloworld:latest",  
    "container2name": "aci-tutorial-sidecar",  
    "container2image": "mcr.microsoft.com/azuredocs/aci-tutorial-sidecar"  
  },
```

Variables

```
"resources": [
  {
    "name": "[parameters('containerGroupName')]",
    "type": "Microsoft.ContainerInstance/containerGroups",
    "apiVersion": "2019-12-01",
    "location": "[resourceGroup().location]",
    "properties": {
      "containers": [
        {
          "name": "[variables('container1name')]",
          "properties": {
            "image": "[variables('container1image')]",
            "resources": {
              "requests": {
                "cpu": 1,
                "memoryInGb": 1.5
              }
            },
            "ports": [
              {
                "port": 80
              },
              {
                "port": 8080
              }
            ]
          }
        },
        {
          "name": "[variables('container2name')]",
          "properties": {
            "image": "[variables('container2image')]",
            "resources": {
              "requests": {
                "cpu": 1,
                "memoryInGb": 1.5
              }
            }
          }
        }
      ],
      "osType": "Linux",
      "ipAddress": {
        "type": "Public",
        "ports": [
          {
            "protocol": "tcp",
            "port": 80
          },
          {
            "protocol": "tcp",
            "port": 8080
          }
        ]
      }
    }
  }
]
```

Resources



```
1 {  
2     "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deployment  
3     "contentVersion": "1.0.0.0",  
4     "parameters": {  
5         "containerGroupName": {  
6             "type": "string",  
7             "defaultValue": "myfirstcontainergroup",  
8             "metadata": {  
9                 "description": "My First Container Gro  
10            }  
11        }  
12    },  
13    "variables": {
```

Save Ctrl+S

Resource group (move) : AZ104-Containers	SKU : Standard
Status : Running	OS type : Linux
Location : West Europe	IP address (Public) : 10.10.10.10
Subscription (move) : Visual Studio Enterprise Subscription	FQDN : ---
Subscription ID :	Container count : 2

myfirstcontainergroup | Containers

Container instances

Search Refresh Give feedback

Overview Activity log Access control (IAM) Tags

2 containers and 0 init containers

Name	Image	State
aci-tutorial-app	mcr.microsoft.com/azuredoc...	Running
aci-tutorial-sidecar	mcr.microsoft.com/azuredoc...	Running

Settings

Containers

Size * ⓘ

1 vcpu, 1.5 GiB memory, 0 gpus

Change size

Change container ...

X

Configure the resource requirements for your container. The available values are based on region, OS type, and networking options.

[Learn more about resource requirements in ACI](#)



Number of CPU cores * ⓘ

1-8

Memory (GiB) * ⓘ

1-32

GPU type (preview) * ⓘ



Ok

Discard



Give feedback

GPU type (preview) *



V100



GPU count *



1



Azure Kubernetes Service (AKS)



Microsoft | Azure Service

★ 4.1 (469 ratings)

Plan

Azure Kubernetes Service (AKS)



Create

Kubernetes cluster name * ⓘ	myfirstakscluster
Region * ⓘ	(Europe) West Europe
Availability zones ⓘ	None
AKS pricing tier ⓘ	Standard
Kubernetes version * ⓘ	1.27.9 (default)
Automatic upgrade ⓘ	Disabled
Automatic upgrade scheduler <small>Add schedule</small>	
Node security channel type ⓘ	None
Security channel scheduler <small>Add schedule</small>	
Choose between local accounts or Azure AD for authentication and Azure RBAC or Kubernetes RBAC for your authorization needs.	
Authentication and Authorization ⓘ	Azure AD authentication with Azure RBAC
Scale method ⓘ	<input type="radio"/> Manual <input checked="" type="radio"/> Autoscale - Recommended <small>This option is recommended so that the cluster is automatically sized correctly for the current running workloads.</small>
Minimum node count * ⓘ	2
Maximum node count * ⓘ	5
<small>The maximum node count allowed for an AKS cluster is 1000 per node pool and 5000 nodes across all node pools in this cluster.</small>	

Container networking

Network configuration

Kubenet
Best for smaller node pools. Each pod is assigned a logically different IP address from the subnet for simpler setup

Azure CNI
Best for larger node pools. Each node and pod is assigned a unique IP for advanced configurations

Bring your own virtual network

DNS name prefix *

Network policy *

None
Allow all ingress and egress traffic to the pods

Calico
Open-source networking solution. Best for large-scale deployments with strict security requirements

Azure
Native networking solution. Best for simpler deployments with basic security and networking requirements

 Calico network policy is recommended for dev/test configuration.

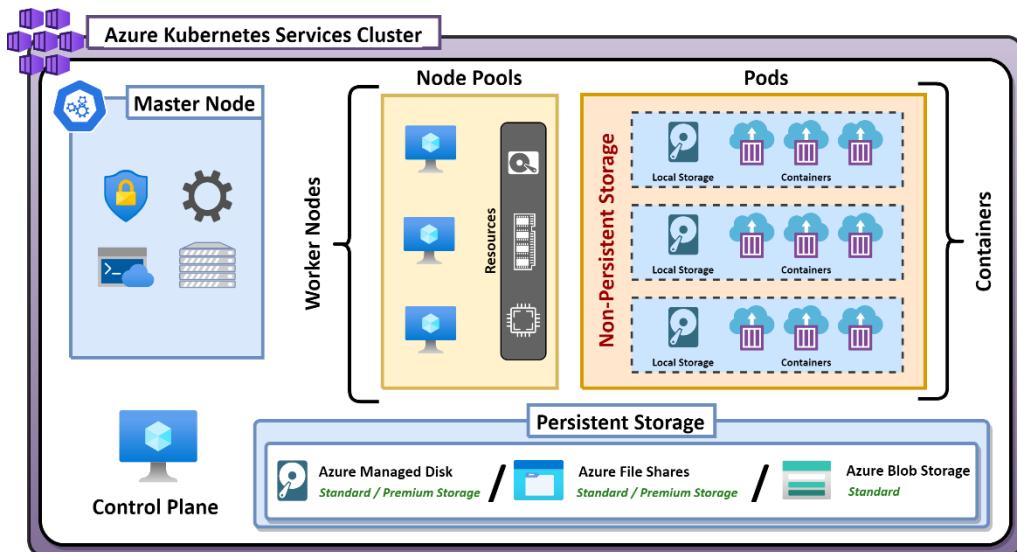
 The Azure network policy is not compatible with kubenet networking.

Azure Container Registry

Connect your cluster to an Azure Container Registry to enable seamless deployments from a private image registry.
[Learn more](#)

Container registry

[Create new](#)



The screenshot shows the AKS dashboard under the 'Kubernetes resources' section. The 'Persistent volume claims' tab is selected, highlighted with a red border. Other tabs include 'Persistent volumes' and 'Storage classes'. On the left, a sidebar lists 'Namespaces', 'Workloads', 'Services and ingresses', 'Storage' (which is also highlighted with a red border), and 'Configuration'. Below the tabs, there are two filter inputs: 'Filter by persistent volume claim name' and 'Filter by namespace', both with dropdown menus. A search bar at the top left contains the placeholder 'Search'. At the bottom, there are checkboxes for 'Name' and 'Namespace'.

This screenshot shows the 'Starter application' section. It features a large 'Create' button with a red border, a 'Delete' button, a 'Refresh' button, and a 'Show labels' icon. Below these buttons, the text reads 'Starter application' and 'Create a basic web or single-image application.' At the bottom, there is a large red-bordered box containing the heading 'Apply a YAML' and the text 'A blank box where a YAML definition can be specified to deploy to the cluster.'

The screenshot shows the 'Persistent volume claims' list page. The 'Persistent volume claims' tab is selected. The table has columns for 'Name', 'Namespace', 'Status', and 'Volume'. One row is visible, showing 'azurefile' in the Name column, 'default' in the Namespace column, 'Bound' in the Status column (with a green checkmark icon), and 'azurefile' in the Volume column.

Name	Namespace	Status	Volume
azurefile	default	Bound	azurefile

Persistent volume claims	Persistent volumes	Storage classes			
Filter by persistent volume name					
<input type="checkbox"/>	Name	Capacity	Access modes	Reclaim policy	Status
<input type="checkbox"/>	azurefile	5Gi	ReadWriteMany	Retain	Bound

myfirstakscluster | Node pools

Kubernetes service

Search Add node pool Refresh Start Stop Upgrade

Settings Cluster configuration Networking Extensions + applications Backup Service mesh - Istio Open Service Mesh GitOps Automated deployments (preview)

Node pools Nodes

Node pools provide space for applications to run. Node pools of different sizes can be scaled and upgraded, or node pools that are no longer needed can be deleted.

Autoscale events Autoscale warnings

Node pool ↑	Provisioning state ⓘ	Power state ⓘ
agentpool	Succeeded	Running

agentpool | Overview

Node pool

Search Upgrade Kubernetes Update image Scale node pool

Overview Nodes Configuration

Essentials

Provisioning state ⓘ : Succeeded
Power state ⓘ : Running (2/2 nodes ready)

Scale node pool

X

agentpool

You can scale the number of nodes in your cluster to increase the total amount of cores and memory available for your container applications. [Learn more ↗](#)

Scale method ⓘ

Manual

Autoscale - **Recommended**

🚀 This option is recommended so that the cluster is automatically sized correctly for the current running workloads.

Minimum node count * ⓘ

2

Maximum node count * ⓘ

5



The maximum node count allowed for an AKS cluster is 1000 per node pool and 5000 nodes across all node pools in this cluster.

Scale node pool

X

agentpool

You can scale the number of nodes in your cluster to increase the total amount of cores and memory available for your container applications. [Learn more ↗](#)

Scale method ⓘ

Manual

Autoscale - **Recommended**

🚀 This option is recommended so that the cluster is automatically sized correctly for the current running workloads.

Node count * ⓘ

2



The maximum node count allowed for an AKS cluster is 1000 per node pool and 5000 nodes across all node pools in this cluster.

Upgrade

You can upgrade your cluster to a newer version of Kubernetes or configure automatic upgrade settings. If you upgrade your cluster, you can choose whether to upgrade only the control plane or to also upgrade all node pools. To upgrade individual node pools, go to the 'Node pools' menu item instead.

[Learn more about upgrading your AKS cluster ↗](#)

[View the Kubernetes changelog ↗](#)

[View the AKS changelog ↗](#)

Kubernetes version

1.27.9

Automatic upgrade type: Disabled

[Upgrade version](#)

AKS pricing tier ⓘ

Standard

Automatic upgrade ⓘ

Disabled

Kubernetes version ⓘ

1.28.3

Upgrade scope ⓘ

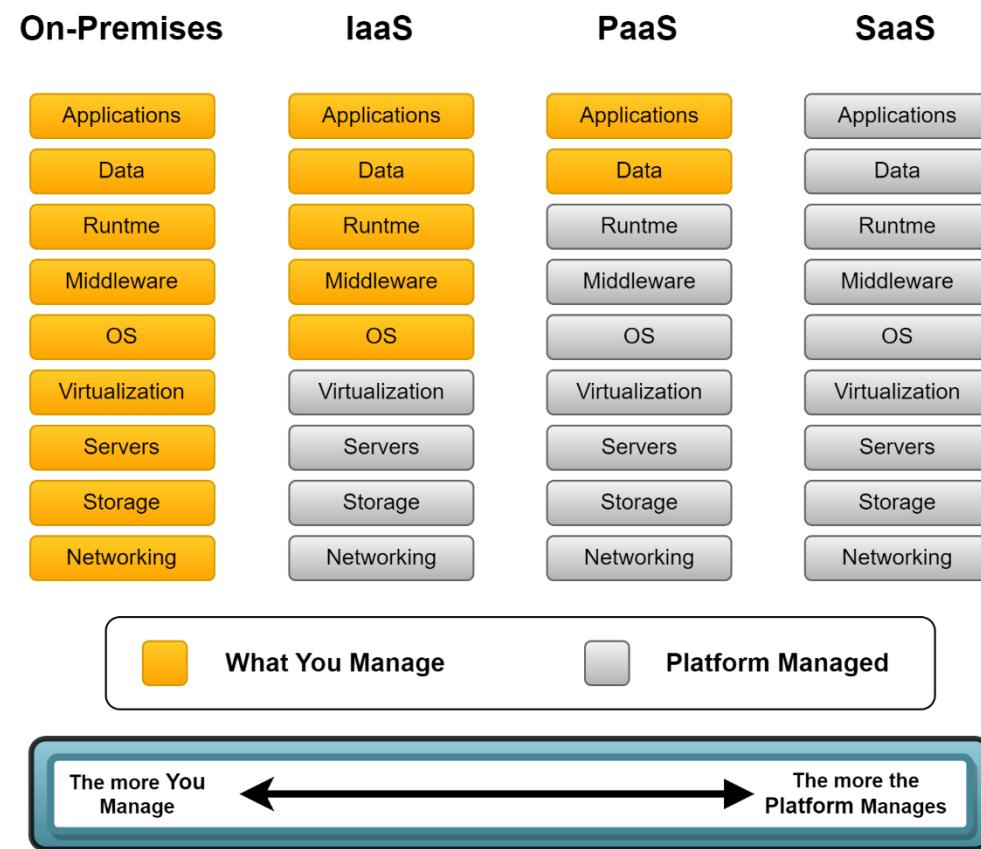
Upgrade control plane + all node pools

Upgrade control plane only

Force upgrade



Chapter 15:



App Service Plan Add to Favorites

Microsoft | Azure Service

★ 4.0 (57 ratings)

Plan

App Service Plan ▼

Create

A red arrow points to the 'Create' button.

App Service Plan details

Name *	myappserviceplan	✓
Operating System *	<input type="radio"/> Linux <input checked="" type="radio"/> Windows	
Region *	West Europe	▼

Pricing Tier

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app. [Learn more ↗](#)

Pricing plan

Standard S1 (100 total ACU, 1.75 GB memory, 1 vCPU) 

[Explore pricing plans](#)

Web Apps (603) [See more](#)

IT & Management Tools (4372)

Compute (3856)

Security (2766)

Developer Tools (2612)

Analytics (2468)

Web (1965)

AI + Machine Learning (1842)



Web App

Microsoft

Azure Service

Enjoy secure and flexible development, deployment, and scaling options for your web app

Instance Details

Name *

myfirstwebapp200324 

.azurewebsites.net

Publish *

Code Docker Container Static Web App

Runtime stack *

.NET 8 (LTS) 

Operating System *

Linux Windows

Region *

West Europe 

Pricing plans

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app. [Learn more ↗](#)

Windows Plan (West Europe) * 

myappserviceplan (S1) 

[Create new](#)

Pricing plan

Standard S1 (100 total ACU, 1.75 GB memory, 1 vCPU)

GitHub Actions settings

If you choose to disable basic authentication and enable continuous deployment, we will automatically create a user-assigned identity in your resource group, federate GitHub as an authorized client, and authenticate with OpenID Connect.

Continuous deployment

Disable Enable

Basics Database Deployment **Networking** Monitoring ...

Web Apps can be provisioned with the inbound address being public to the internet or isolated to an Azure virtual network. Web Apps can also be provisioned with outbound traffic able to reach endpoints in a virtual network, be governed by network security groups or affected by virtual network routes. By default, your app is open to the internet and cannot reach into a virtual network. These aspects can also be changed after the app is provisioned. [Learn more](#)

Enable public access *

On Off

Enable network injection *

On Off

Application Insights

Enable Application Insights *

No Yes

Resource group ([move](#))

[AZ104-AppServices](#)

Default domain

[myfirstwebapp200324.azurewebsites.net](#)

Status

App Service Plan

Running

[myappserviceplan \(S1: 1\)](#)

Your web app is running and waiting for your content

Your web app is live, but we don't have your content yet. If you've already deployed, it could take up to 5 minutes for your content to show up, so come back soon.



 Supporting Node.js, Java, .NET and more

```
# First connect your Azure account using your credentials  
Connect-AzAccount
```

```
# Parameters  
$ResourceGroup = "AZ104-AppServices"  
$Location = "WestEurope"  
$WebAppName = "mysecondwebapp10101"  
$AppServicePlanName = "mylinuxappserviceplan10101"
```

Input
Parameters

```
# If necessary, select the right subscription as follows  
$SubscriptionId = "xxxxxxxx"  
Select-AzSubscription -SubscriptionId $SubscriptionId
```

```
# Create a resource group for the Availability Set as  
follows  
New-AzResourceGroup -Name "$ResourceGroup" -Location  
"$Location"
```

```
# Create an App Service Plan for Linux  
New-AzAppServicePlan -Name $AppServicePlanName -Tier  
Standard -Location $Location -Linux -NumberofWorkers 1 -  
WorkerSize Small -ResourceGroupName $ResourceGroup
```

App Service
Plan

```
# Create a Web App  
New-AzWebApp -Name $WebAppName -ResourceGroupName  
$ResourceGroup -Location $Location -AppServicePlan  
$AppServicePlanName
```

App Service
(Web App)

▼ Dev/Test (For less demanding workloads)

Free F1

60 minutes/day



Basic B1

100

Scale out method

Manual

Maintain a constant instance count for your application

Automatic (preview)

Platform managed scale up and down based on traffic

Automatic scaling requires a Premium v2 or Premium v3 App Service Plan. Upgrade your App Service Plan to enable this feature.

[See recommended pricing plan](#)

Rules Based

User defined rules to scale on a schedule or based on any app metric

Instance count

2

Scale out method

- Manual
Maintain a constant instance count for your application
- Automatic (preview)
Platform managed scale up and down based on traffic
- Rules Based
User defined rules to scale on a schedule or based on any app metric

⚠ Rule based scaling will be ignored if Automatic scaling is enabled. [Manage rules based scaling](#) 

Choose how to scale your resource

- Manual scale**
Maintain a fixed instance count
- Custom autoscale**
Scale on any schedule, based on any metrics

Custom autoscale

Autoscale setting name *	mylinuxappserviceplan10101-Autoscale-230
Resource group	AZ104-AppServices
Instance count	1

Default*	Auto created default scale condition	 
Delete warning i The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale to turn off autoscale.		
Scale mode	<input checked="" type="radio"/> Scale based on a metric <input type="radio"/> Scale to a specific instance count	
Rules	⚠ Scale is based on metric trigger rules but no rule(s) is defined; click Add a rule to create a rule. For example: 'Add a rule that increases instance count by 1 when CPU Percentage is above 70%'. If no rules is defined, the resource will be set to default instance count. 	
Instance limits	Minimum * <input type="text" value="1"/> 	Maximum * <input type="text" value="2"/> 
Schedule	This scale condition is executed when none of the other scale condition(s) match	

Scale rule

Metric source
Current resource (myappserviceplan)

Resource type
App Service plans
Resource
myappserviceplan

Criteria

Time aggregation * ⓘ
Average

Metric namespace * ⓘ
App Service plans standard metrics

Metric name
CPU Percentage

1 minute time grain

Dimension Name	Operator	Dimension Values	Add
Instance	=	All values	+

If you select multiple values for a dimension, autoscale will aggregate the metric across the selected values, not evaluate the metric for each values individually.

CpuPercentage (Average)
3.78 %

Action

Operation * ⓘ
Increase count by

Cool down (minutes) * ⓘ
5

instance count *

1 ✓

Scale out

When mylinuxappserviceplan... (Average) CpuPercentage > 70 Increase count by 1

+ Add a rule

Operator *	Metric threshold to trigger scale action * ⓘ
Less than	30 %
Duration (minutes) * ⓘ</td <td>Time grain (minutes) ⓘ</td>	Time grain (minutes) ⓘ
10	1
Time grain statistic * ⓘ	Time aggregation * ⓘ
Average	Average
Action	
Operation *	Cool down (minutes) * ⓘ
Decrease count by	5
instance count *	1

```
# Parameters
$ResourceGroup = "AZ104-AppServices"
$Location = "WestEurope"
$WebAppName = "mysecondwebapp10101"
$AppServicePlanName = "mylinuxappserviceplan10101"
```

Input
Parameters

```
# If necessary, select the right subscription as follows
$SubscriptionId = "xxxxxx"
Select-AzSubscription -SubscriptionId $SubscriptionId
```

Autoscale Rule

```
# Retrieve the App Service Plan for Linux
$AppServicePlan = Get-AzAppServicePlan -Name $AppServicePlanName `
```

```
-ResourceGroupName $ResourceGroup
```

```
# Create an Autoscale Rule
$AutoScaleRule = New-AzAutoscaleScaleRuleObject -MetricTriggerMetricName "CpuPercentage" `
```

```
-MetricTriggerOperator "Greater Than" -MetricTriggerStatistic "Average" `
```

```
-MetricTriggerThreshold 70 -MetricTriggerTimeAggregation "Average" `
```

```
-MetricTriggerTimeGrain "00:01:00" -MetricTriggerTimeWindow "00:10:00" `
```

```
-MetricTriggerMetricResourceUri $AppServicePlan.Id `
```

```
-ScaleActionCooldown 00:10:00 `
```

```
-ScaleActionDirection Increase `
```

```
-ScaleActionType ChangeCount `
```

```
-ScaleActionValue 1
```

```
# Create an Autoscale Profile
```

```
$AutoScaleProfile = New-AzAutoscaleProfileObject -Name "Default" `
```

```
-CapacityDefault 1 -CapacityMaximum 2 -CapacityMinimum 1 `
```

```
-Rule $AutoScaleRule
```

App Service
(Web App)

```
# Assign the Autoscale Profile to the App
New-AzAutoscaleSetting -Location $Location -Name "default" `
```

```
-ResourceGroupName $ResourceGroup -TargetResourceUri $AppservicePlan.Id `
```

```
-Profile $AutoScaleProfile -PropertiesName "default" -Enabled
```

App settings

Connection strings



Search



Add



Refresh

SCM Basic Auth Publishi...

On Off

FTP Basic Auth Publishi...

On Off

i Disable basic authentication for FTP and SCM access.

FTP state

FTPS only



i FTP based deployment can be disabled

HTTPS Only

On Off

i Enable this feature to redirect all HTTP traffic to HTTPS.

Minimum Inbound TLS Versi...

1.2



i Select the minimum TLS encryption version

Minimum Inbound TLS Cip... TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 ([change](#))

i Select the minimum TLS cipher suite to disable less secure

End-to-end TLS encrypt...

On Off

Client certificate mode

Require Allow Optional Ignore



Refresh



Save



Discard



Leave Feedback



Add an identity provider

Choose an identity provider to manage the user identities and authentication flow for your application.
Providers include Microsoft, Facebook, Google, and Twitter.

[Learn more about identity providers](#)

[Add identity provider](#)



Identity provider *	Microsoft	▼
Choose a tenant for your application and its users		
A tenant contains applications and a directory for user accounts. Choose a tenant based on whether it's configured for workforce users (employees and business guests) or external users. Learn more		
<input checked="" type="radio"/> Workforce configuration (current tenant) Manage employees and business guests		
<input type="radio"/> External configuration (Preview) Manage external users		

App registration type *	<input checked="" type="radio"/> Create new app registration <input type="radio"/> Pick an existing app registration in this directory <input type="radio"/> Provide the details of an existing app registration
Name * ⓘ	mysecondwebapp10101
Supported account types *	<input checked="" type="radio"/> Current tenant - Single tenant <input type="radio"/> Any Microsoft Entra directory - Multi-tenant <input type="radio"/> Any Microsoft Entra directory & personal Microsoft accounts <input type="radio"/> Personal Microsoft accounts only

Client application requirement *	<input checked="" type="radio"/> Allow requests only from this application itself <input type="radio"/> Allow requests from specific client applications <input type="radio"/> Allow requests from any application (Not recommended)
Identity requirement *	<input checked="" type="radio"/> Allow requests from any identity <input type="radio"/> Allow requests from specific identities
Tenant requirement *	<input checked="" type="radio"/> Allow requests only from the issuer tenant (5b0e3813-06bb-4766-97ea-77f05fb65c) <input type="radio"/> Allow requests from specific tenants <input type="radio"/> Use default restrictions based on issuer

Restrict access *	<input checked="" type="radio"/> Require authentication <input type="radio"/> Allow unauthenticated access
Unauthenticated requests *	<input checked="" type="radio"/> HTTP 302 Found redirect: recommended for websites <input type="radio"/> HTTP 401 Unauthorized: recommended for APIs <input type="radio"/> HTTP 403 Forbidden <input type="radio"/> HTTP 404 Not found
Redirect to	Microsoft <input type="button" value="▼"/>
Token store ⓘ	<input checked="" type="checkbox"/>

System assigned

User assigned

A system assigned managed identity is restricted to one per authenticated with Microsoft Entra ID, so you don't have to



Save



Discard



Refresh



Troubleshoot

Status ⓘ

Off

On

Enable system assigned managed identity

'mysecondwebapp10101' will be registered with Microsoft Entra ID. Once it is registered, 'mysecondwebapp10101' can be granted permissions to access resources protected by Microsoft Entra ID. Do you want to enable the system assigned managed identity for 'mysecondwebapp10101'?

Yes

No

Permissions (i)

Azure role assignments



Inbound traffic configuration

Public network access

Enabled with no access restrictions

Public network access (i)

Enabled from all networks (This will clear all current access restrictions)

Enabled from select virtual networks and IP addresses

Disabled

Unmatched rule action

Allow

Deny

+ Add

- Delete

General settings

Name ⓘ

 ✓

Action

AllowDeny

Priority *

 ✓

Description

Source settings

Type

 ▼

IP Address Block *

 ✓



Inbound traffic configuration

Public network access

Enabled with access restrictions

App assigned address

Not configured



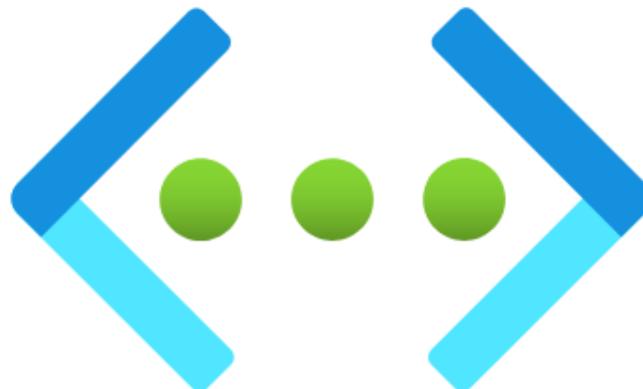
Outbound traffic configuration

Virtual network integration

Not configured

Hybrid connections

Not configured



No virtual network integration configured

[Add virtual network integration](#)



[Learn more](#)

Add virtual network integration

X

mysecondwebapp10101

App Service Plan connections

New connection

Subscription

Visual Studio Enterprise Subscription



Virtual Network

AppServiceVNET



Subnet

AppServiceSubnet (10.0.1.0 - 10.0.1.255)



 Connect

 Cancel



Virtual network routing

Network security group

[Configure](#)

Route table

[Configure](#)

NAT gateway

None



Outbound traffic configuration

Virtual network integration

AppServiceVNET



Hybrid connections

Not configured





CORS

Cross-Origin Resource Sharing (CORS) allows JavaScript code running in a browser on an external host to interact with your backend. Specify the origins that should be allowed to make cross-origin calls (for example: `http://example.com:12345`). To allow all, use "*" and remove all other origins from the list. Slashes are not allowed as part of domain or after TLD. [Learn more](#)

Request Credentials

Enable Access-Control-Allow-Credentials (i)

Allowed Origins

Type	Host	Value
CNAME	mysecondwebapp 10101	mysecondwebapp10101.azurewe sites.net
TXT	asuid.mysecondwe bapp10101	625A956EC25C69FB14837299E326 AB10EDF250344D1AABB45DFEB1 A4E17C0B79

Domain validation

To validate your domain ownership, copy the hostname records below and enter them with your domain provider. [Learn more](#)

 Export to CSV

Type	Host	Value	Status
CNAME	mysecondwebapp10101	mysecondwebapp10101.azurewebsites.net	
TXT	asuid.mysecondwebapp10101	625A956EC25C69FB14837299E326	

 App Service Managed Certificate only supports alphanumeric, dash, and period characters. If you need to use special characters for your custom domain, select "Add certificate later" and secure it with another trusted certificate.

Validate

Add

Cancel

Type	Host	Value	Status
CNAME	mysecondwebapp10101	mysecondwebapp10101.azurewebsites.net	
TXT	asuid.mysecondwebapp10101	625A956EC25C69FB14837299E326	

 Validation passed. Select **Add** to finish up.

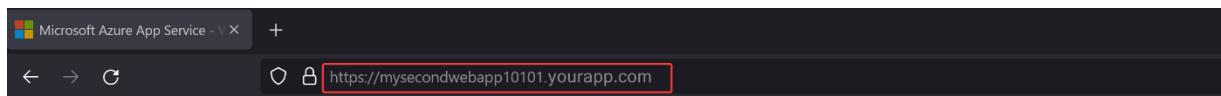
 App Service Managed Certificate only supports alphanumeric, dash, and period characters. If you need to use special characters for your custom domain, select "Add certificate later" and secure it with another trusted certificate.

Validate

Add

Cancel

mysecondwebapp10101.yourapp.co.za	600	CNAME	0	mysecondwebapp10101.azurewebsites.net	 
asuid.mysecondwebapp10101.yourapp.co.za	600	TXT	0	625A956EC25C69FB14837299E326	 



Your web app is running and waiting for your content

Your web app is live, but we don't have your content yet. If you've already deployed, it could take up to 5 minutes for your content to show up, so come back soon.



Built with PHP

Storage account * <small>(i)</small>	csa10	<small>▼</small>
Create new 		

Set schedule

Configure the exact time and recurrence for your backups.

Set schedule

Repeats every *

1 Day ▼

Start time *

2024/03/23  07:00:00

Time zone *

UTC

Local (UTC+2:00)

Preview

Backup every 1 Day at Local (07:00:00) starting 2024/03/23

Retention

Keep your backup files for up to 60 days, or enter 0 to keep them indefinitely.

Days *

60

Keep at least one backup at all times



Backup time ↓	Status ↑	Type ↑
2024/03/23, 09:44:06	✓ Succeeded	Custom
2024/03/23, 09:07:55	✓ Succeeded	Automatic
2024/03/23, 08:07:54	✓ Succeeded	Automatic

[Backup Now](#)[Configure custom backups](#)[Reset custom backups](#)[Restore](#)

Inbound traffic configuration

Public network access

Enabled with no access restrictions

App assigned address

Not configured

Private endpoints

0 private endpoints



Private Endpoint connections

[+ Add](#)[Refresh](#)[Troubleshoot](#)[Express](#)[Advanced](#)

Add Private Endpoint

X

Name *

mysecondwebapp10101



Subscription *

Visual Studio Enterprise Subscription



Virtual network *

AppServiceVNET



Subnet *

default



Integrate with private DNS zone ⓘ

No Yes

i Your private endpoint will be integrated with the private DNS zone 'privatelink.azurewebsites.net' in the resource group of the selected subnet. If the private DNS zone does not exist, it will be created automatically. [Learn more](#)

OK



Private Endpoint connections

Private access to services hosted on the Azure platform, keeping your data on the Microsoft network [Learn more](#)

Filter by name or description

All connection states



Connection name ↑↓

Connection state ↑↓

Private endpoint ↑↓

Description

mysecondwebapp101... Approved

mysecondwebapp10101



Customer Visible FQDNs

DNS records visible to the customer

Network Interface	IP addresses	FQDN
mysecondwebapp10101...	10.0.0.4	mysecondwebapp10101.azurewebsites.net
		mysecondwebapp10101.yourapp.com
		mysecondwebapp10101.scm.azurewebsites.net

Custom DNS records

To be configured correctly, the following FQDNs are required in your private DNS setup. [Learn more](#)

FQDN

mysecondwebapp10101.yourapp.com

Configuration name FQDN

privatelink-azurewebsites-net

mysecondwebapp10101.privatelink.azurewebsites.net

mysecondwebapp10101.scm.privatelink.azurewebsites.net

Add a slot



Name

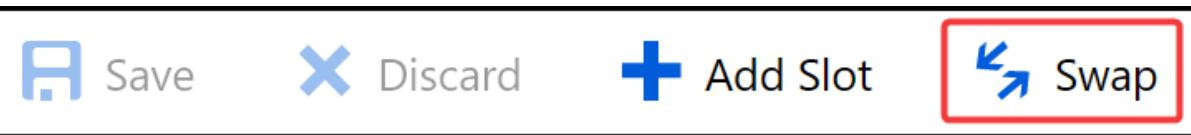
TEST

mysecondwebapp10101-TEST.azurewebsites.net

Clone settings from:

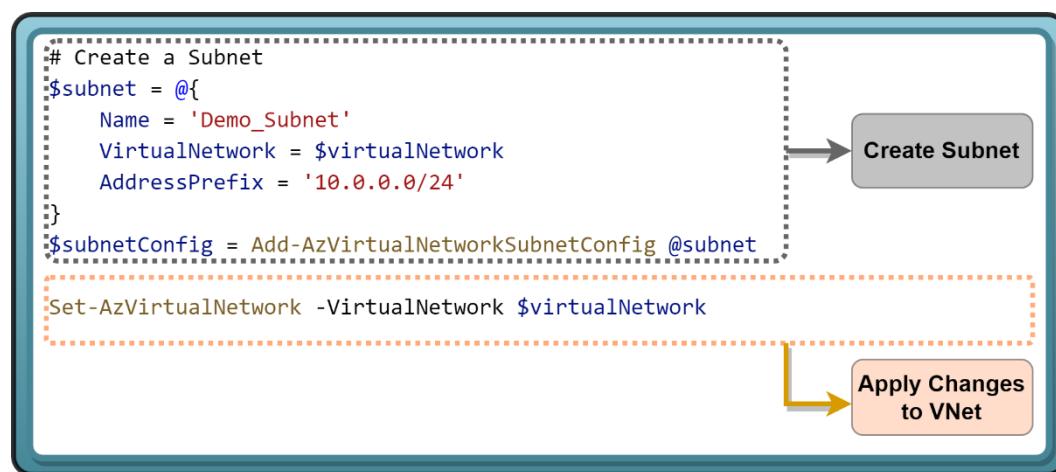
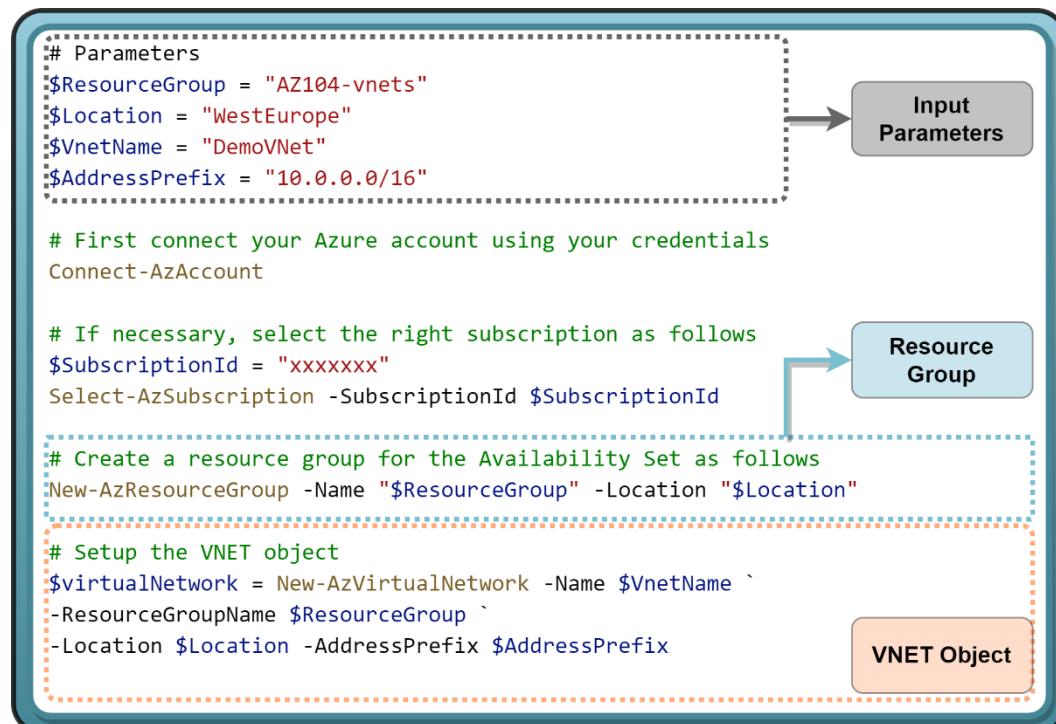
Do not clone settings





Source*	<div style="border: 1px solid #ccc; padding: 5px; width: 100%;"> Select code source <div style="margin-top: 10px;"> Continuous Deployment (CI/CD) <ul style="list-style-type: none"> GitHub Bitbucket Local Git Azure Repos <hr/> Manual Deployment (Push) <ul style="list-style-type: none"> External Git </div> </div>
---------	---

Chapter 16:



DemoVNet | Subnets

Virtual network

Search Subnet Gateway subnet Refresh

Address space Connected devices Subnets Bastion

Name ↑↓	IPv4 ↑↓
Demo_Subnet	10.0.0.0/24

The screenshot shows the Azure portal interface for managing subnets. The title is "DemoVNet | Subnets". Below it, it says "Virtual network". There are navigation links for "Address space", "Connected devices", "Subnets", and "Bastion". On the left, there's a search bar and a refresh button. On the right, there are buttons for "Subnet" and "Gateway subnet". Below these are links for "Address space" and "Connected devices". The "Subnets" section is highlighted with a red box. It contains a table with two columns: "Name ↑↓" and "IPv4 ↑↓". A single row is shown: "Demo_Subnet" and "10.0.0.0/24".

```

# First connect your Azure account using your credentials
Connect-AzAccount

# Setup the VNET object
$vnet = @{
    Name = 'DemoVNet_2'
    ResourceGroupName = 'AZ104-vnets'
    Location = 'WestEurope'
    AddressPrefix = '192.168.0.0/24'
}
$virtualNetwork = New-AzVirtualNetwork @vnet

# Create a Subnet
$subnet = @{
    Name = 'Demo_Subnet'
    VirtualNetwork = $virtualNetwork
    AddressPrefix = '192.168.0.0/24'
}
$subnetConfig = Add-AzVirtualNetworkSubnetConfig @subnet

# Apply VNet Configurations
Set-AzVirtualNetwork -VirtualNetwork $virtualNetwork

```

VNET Object

Resource Group

Input Parameters

	Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/>	DemoVNet	Virtual network	West Europe
<input type="checkbox"/>	DemoVNet_2	Virtual network	West Europe

DemoVNet | Peerings ...

Virtual network

Search Filter by name...

+ Add Refresh

Network manager

DNS servers

Peerings

Name ↑↓

Add a peering to get started

This virtual network

Peering link name *

DemoVNet_to_DemoVNet2



Allow 'DemoVNet' to access the peered virtual network ⓘ

Allow 'DemoVNet' to receive forwarded traffic from the peered virtual network ⓘ

Allow gateway or route server in 'DemoVNet' to forward traffic to the peered virtual network ⓘ

Enable 'DemoVNet' to use the peered virtual networks' remote gateway or route server ⓘ

Remote virtual network

Peering link name *

DemoVNet2_to_DemoVNet



Virtual network deployment model ⓘ

Resource manager

Classic

I know my resource ID ⓘ

Subscription *

Visual Studio Enterprise Subscription



Virtual network *

DemoVNet_2



Allow 'DemoVNet_2' to access 'DemoVNet' ⓘ

Allow 'DemoVNet_2' to receive forwarded traffic from 'DemoVNet' ⓘ

Allow gateway or route server in 'DemoVNet_2' to forward traffic to 'DemoVNet' ⓘ

Enable 'DemoVNet_2' to use 'DemoVNet's' remote gateway or route server ⓘ

Add

<input type="text"/> Filter by name...	Peering status == all
<input type="checkbox"/> Name ↑↓	Peering status ↑↓
<input type="checkbox"/> DemoVNet_to_DemoVNet2	Connected

```

# Parameters
$ResourceGroup = "AZ104-vnets"
$Location = "WestEurope"
$VnetName = "DemoVNet"
$AddressPrefix = "10.0.0.0/16"
$SubnetName = "Demo_Subnet"

# First connect your Azure account using your credentials
Connect-AzAccount

# If necessary, select the right subscription as follows
$SubscriptionId = "xxxxxxxx"
Select-AzSubscription -SubscriptionId $SubscriptionId

# Setup Your VM Admin Credentials
$adminUsername = 'Student'
$adminPassword = 'Pa55w.rd1234'
$adminPassword = ($adminPassword | ConvertTo-SecureString -AsPlainText -Force)
$adminCreds = New-Object PSCredential $adminUsername, $adminPassword

# Create a VM in DemoVNet
New-AzVM -VirtualNetworkName $VnetName -SubnetName $SubnetName ` 
-ResourceGroupName $ResourceGroup -Location $Location -Name 'DemoVM1' ` 
-Credential $adminCreds -PublicIpAddressName 'DemoVM1PublicIP'

# Create a VM in DemoVNet_2
New-AzVM -VirtualNetworkName 'DemoVNet_2' -SubnetName $SubnetName ` 
-ResourceGroupName $ResourceGroup -Location $Location -Name 'DemoVM2' ` 
-Credential $adminCreds -PublicIpAddressName 'DemoVM2PublicIP'

```

Input Parameters

Credentials

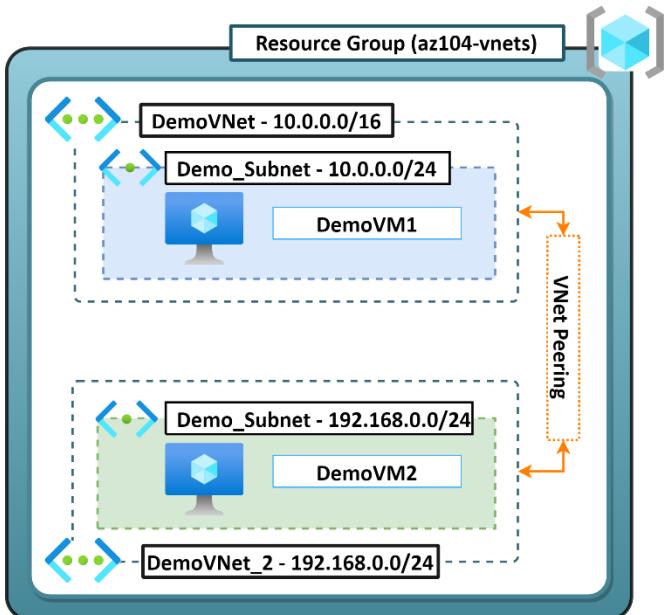
Virtual Machines

```

PS C:\Users\Student> Test-NetConnection -ComputerName "192.168.0.4" -Port 3389

ComputerName      : 192.168.0.4
RemoteAddress    : 192.168.0.4
RemotePort       : 3389
InterfaceAlias   : Ethernet
SourceAddress     : 10.0.0.4
TcpTestSucceeded : True

```



Windows Admin Center

Networking

- Network settings**
- Load balancing
- Application security groups
- Network manager

Settings

Network interface / IP configuration

DemoVM1 (primary) / DemoVM1 (primary)

Essentials

Network interface : **DemoVM1**

Virtual network / subnet : **DemoVNet / Demo_Subnet**

Public IP address :

Private IP address : 10.0.0.4

Name	IP Version	Type
DemoVM1	IPv4	Primary

Private IP address settings

Allocation

Dynamic

Static

Private IP address

10.0.0.5

```
# First connect your Azure account using your credentials
Connect-AzAccount

# Create the public IP address
$ip = @{
    Name = 'myStandardPublicIP'
    ResourceGroupName = 'AZ104-vnets'
    Location = 'WestEurope'
    Sku = 'Standard'
    AllocationMethod = 'Static'
   IpAddressVersion = 'IPv4'
    Zone = 1,2,3
}

New-AzPublicIpAddress @ip
```

Public IP Configuration Settings

Create the Public IP Resource

<input type="checkbox"/> Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/> myStandardPublicIP	Public IP address	West Europe
<input type="checkbox"/> DemoVNet_2	Virtual network	West Europe
<input type="checkbox"/> DemoVNet	Virtual network	West Europe



Route table

Add to Favorites

Microsoft | Azure Service

★ 4.8 (21 ratings)

Plan

Route table

Create

Subscription * ⓘ Visual Studio Enterprise Subscription ▾

Resource group * ⓘ AZ104-vnets ▾
Create new

Instance details

Region * ⓘ West Europe ▾

Name * ⓘ myFirstRouteTable ✓

Propagate gateway routes * ⓘ Yes
 No

myFirstRouteTable | Routes

Route table

Search Add Refresh

Diagnose and solve problems

Name ↑↓

No results.

Settings

Configuration

Routes



Route name *

DemoRoute



Destination type * ⓘ

IP Addresses



Destination IP addresses/CIDR ranges * ⓘ

108.177.119.113/32



Next hop type * ⓘ

Internet



Name ↑↓

Address prefix ↑↓

Next hop type ↑↓

DemoRoute

108.177.119.113/32

Internet

myFirstRouteTable | Subnets

Route table

 Search

 Tags

 Diagnose and solve problems

Settings

 Configuration

 Routes

 Subnets

 Associate

 Search

Name ↑↓

No results.

Virtual network 

DemoVNet (AZ104-vnets) 

Subnet * 

Demo_Subnet 

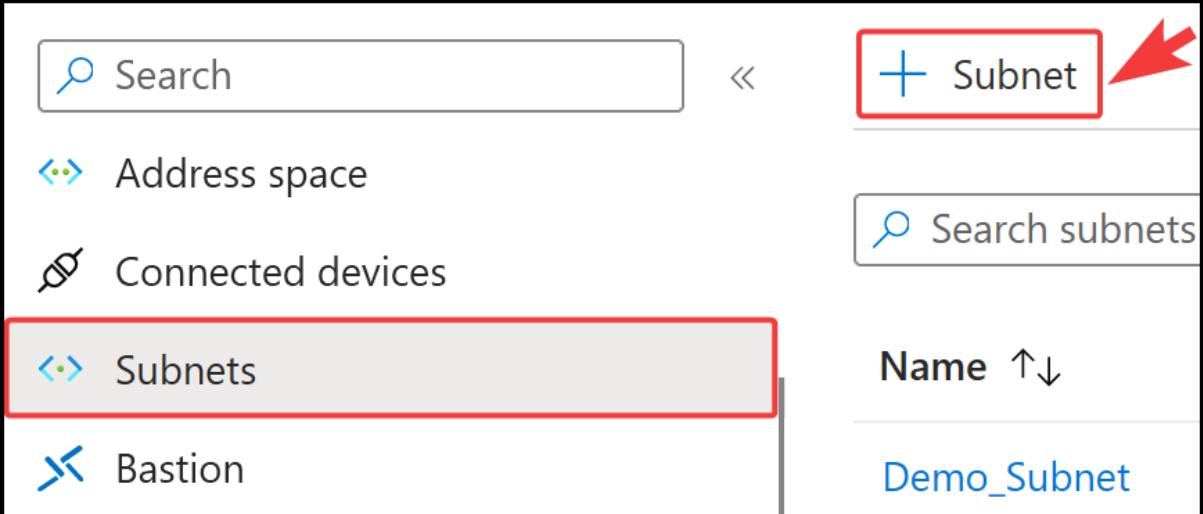
 OK 

 Give feedback

Search << + Subnet

Address space
Connected devices
Subnets
Bastion

Search subnets
Name ↑↓
Demo_Subnet



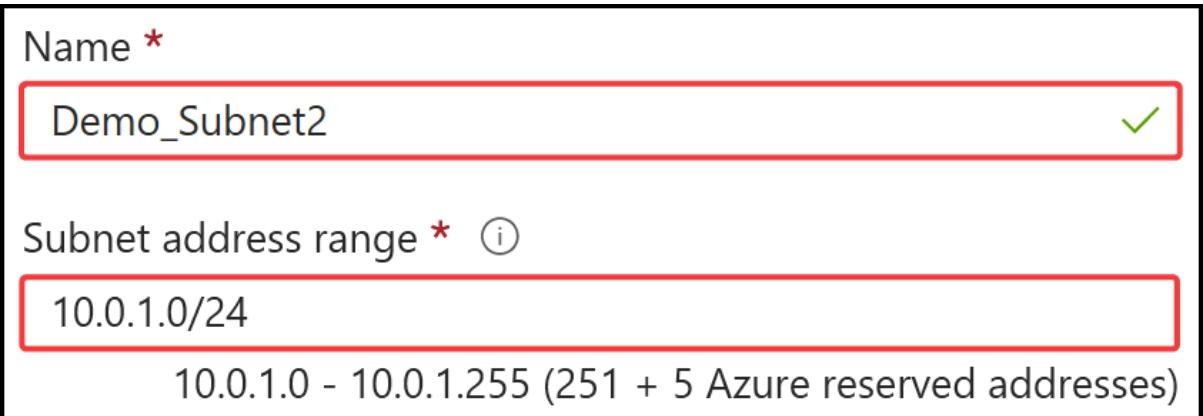
Name *

Demo_Subnet2 ✓

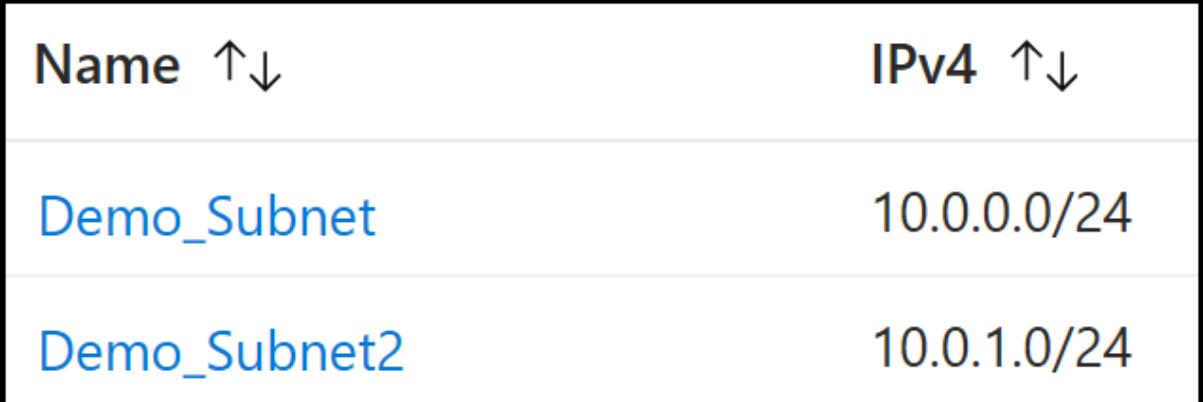
Subnet address range * ⓘ

10.0.1.0/24

10.0.1.0 - 10.0.1.255 (251 + 5 Azure reserved addresses)



Name ↑↓	IPv4 ↑↓
Demo_Subnet	10.0.0.0/24
Demo_Subnet2	10.0.1.0/24



```

# Parameters
$ResourceGroup = "AZ104-vnets"
$Location = "WestEurope"
$SQLServerName = "az104sqlserver300320241"
$DBName = "az104db"

# First connect your Azure account using your credentials
Connect-AzAccount

# Setup Your SQL Admin Credentials
$adminUsername = 'Student'
$adminPassword = 'Pa55w.rd1234'
$adminPassword = ($adminPassword | ConvertTo-SecureString -AsPlainText -Force)
$adminCreds = New-Object PSCredential $adminUsername, $adminPassword

# Create the SQL Server resource
New-AzSqlServer -ServerName $SQLServerName -Location $Location ` 
-ResourceGroupName $ResourceGroup -SqlAdministratorCredentials $adminCreds

# Create the SQL Database resource
New-AzSqlDatabase -DatabaseName $DBName -ResourceGroupName $ResourceGroup ` 
-ServerName $SQLServerName

```

Parameters**SQL Server Credentials****SQL Server and DB**

SERVICE ENDPOINTS

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. [Learn more](#)

Services ⓘ

Microsoft.Sql



az104sqlserver30032024 | Networking ☆ ⋮ X

SQL server

« Feedback

Import/Export history

Security

Networking

Microsoft Defender for Cloud

Transparent data encryption

Public access Private access Connectivity

Public network access

Public Endpoints allow access to this resource through the internet using a public IP address. An application or resource that is granted access with the following network rules still requires proper authorization to access this resource. [Learn more](#)

[Public access](#)[Private access](#)[Connectivity](#)

Public network access

Public Endpoints allow access to this resource through the internet using a public IP address. An application or resource that is granted access with the following network rules still requires proper authorization to access this resource. [Learn more](#)

Public network access

Disable

Selected networks

Secured by perimeter

i Connections from the IP addresses configured in the Firewall rules section below will have access to this database. By default, no public IP addresses are allowed. [Learn more](#)

Virtual networks

Allow virtual networks to connect to your resource using service endpoints. [Learn more](#)

[+ Add a virtual network rule](#)



Name * i

SQLTrafficRule



provide vnet rule name

Subscription * i

Visual Studio Enterprise Subscription



Virtual network * i

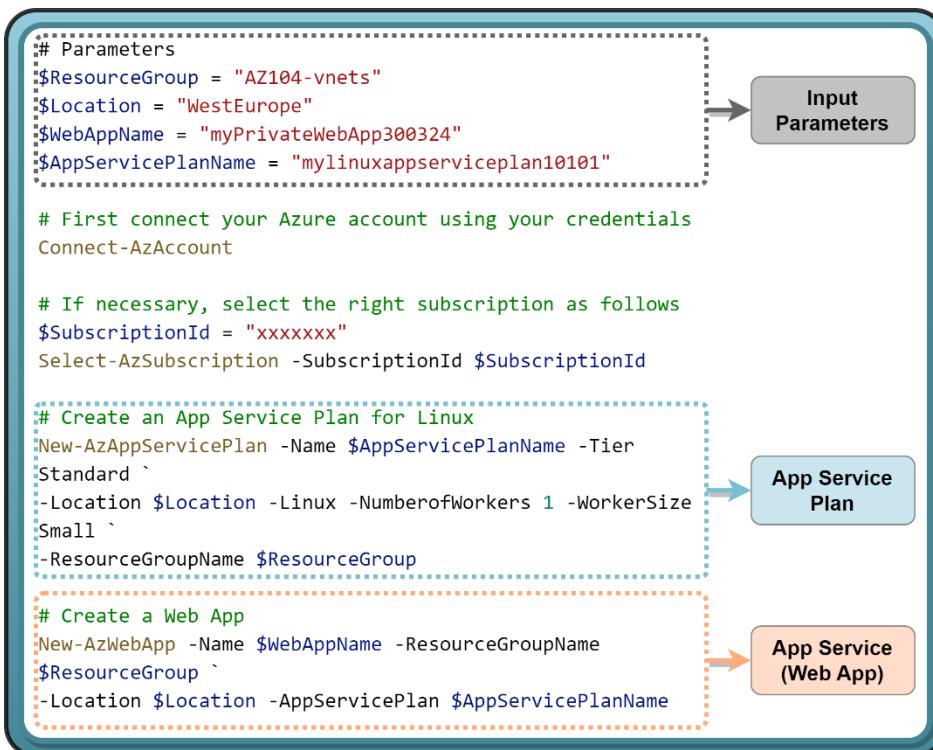
DemoVNet



Subnet name / Address prefix * i

SQL_Subnet / 10.0.2.0/24





SUBNET DELEGATION

Delegate subnet to a service ⓘ

Microsoft.Web/serverFarms



Private Link Add to Favorites

Microsoft | Azure Service

★ 4.6 (22 ratings)

Plan

Private Link

Create

A red arrow points from the 'Create' button towards the bottom right corner of the screenshot.

Private Link Center

Overview

Pending connections

Private endpoints

Private link services

Azure Arc private link scopes

Azure Monitor private link scopes

Resources

Active connections

Supported resources

Build a private connection to a service

Create a private endpoint to privately connect to a service. [Learn more](#)

Create private endpoint

Expose your own service so others can connect

Create a private link service to enable private connections to an existing service. Your existing service must be behind a standard load balancer. [Learn more](#)

Create private link service

```
graph LR; Client[Client] --> PE[Private Endpoint]; PE --> PLS[Private Link Service]; PL[Private Link Service] --> Cloud[Cloud Provider];
```

Instance details

Name * DemoPrivateLink ✓

Network Interface Name * DemoPrivateLink-nic ✓

Region * West Europe ✓

Connection method Connect to an Azure resource in my directory.

Connect to an Azure resource by resource ID or alias.

Subscription * Visual Studio Enterprise Subscription ✓

Resource type * Microsoft.Web/sites ✓

Resource * myPrivateWebApp300324 ✓

Target sub-resource * sites ✓

Networking

To deploy the private endpoint, select a virtual network subnet. [Learn more](#)

Virtual network <small>(i)</small>	DemoVNet (AZ104-vnets) <small>▼</small>
Subnet <small>* (i)</small>	Demo_Subnet <small>▼</small>
Network policy for private endpoints	Disabled (edit)
Private IP configuration	
<input checked="" type="radio"/> Dynamically allocate IP address	
<input type="radio"/> Statically allocate IP address	

Resource group (move) : AZ104-vnets	Virtual network/subnet : DemoVNet/Demo_Subnet
Location : West Europe	Network interface : DemoPrivateLink-nic
Subscription (move) : Visual Studio Enterprise Subscription	Private link resource : myPrivateWebApp300324
Subscription ID :	Target sub-resource : sites
Provisioning state : Succeeded	Connection status : Approved

↔ Outbound traffic configuration

Virtual network integration	Not configured
Hybrid connections	Not configured

Subscription

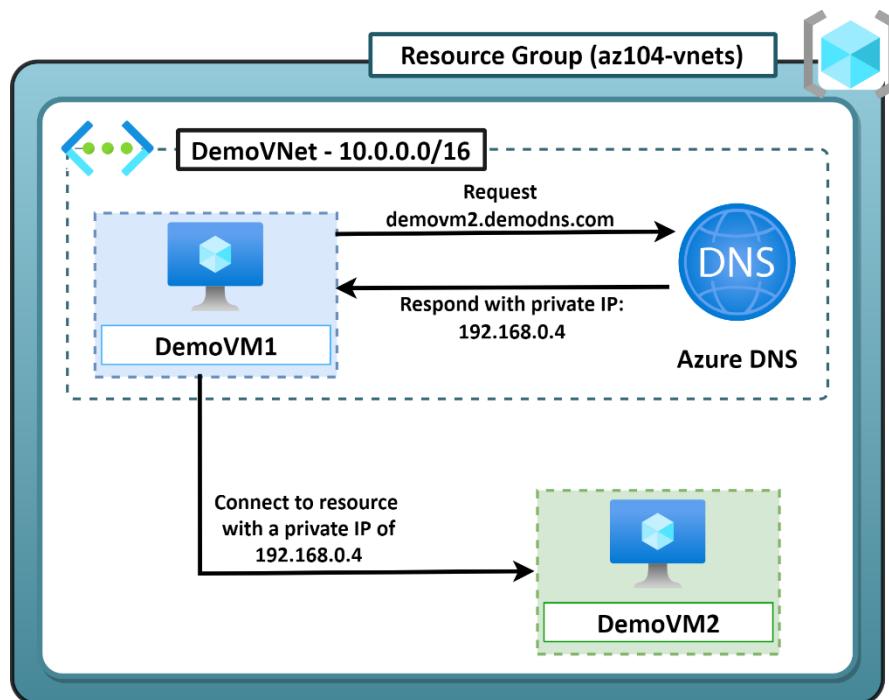
Visual Studio Enterprise Subscription

Virtual Network

DemoVNet

Subnet

AppService_Subnet (10.0.3.0 - 10.0.3.255)



```
# First connect your Azure account using your credentials  
Connect-AzAccount
```

New DNS Zone
- demo.com

```
# Create a Private DNS Zone  
New-AzPrivateDnsZone -Name demo.com -ResourceGroupName 'AZ104-vnets'
```

Link to
DemoVNet

```
# Link the Private DNS Zone to the DemoVNet  
$VNet = Get-AzVirtualNetwork -ResourceGroupName 'AZ104-vnets'`  
-Name 'DemoVNet'  
New-AzPrivateDnsVirtualNetworkLink -ZoneName demo.com`  
-ResourceGroupName 'AZ104-vnets' -Name "DemoVNet" `  
-VirtualNetwork $VNet -EnableRegistration
```

Link to
DemoVNet_2

```
# Link the Private DNS Zone to DemoVNet_2  
$VNet = Get-AzVirtualNetwork -ResourceGroupName 'AZ104-vnets'`  
-Name 'DemoVNet_2'  
New-AzPrivateDnsVirtualNetworkLink -ZoneName demo.com`  
-ResourceGroupName 'AZ104-vnets' -Name "DemoVNet_2" `  
-VirtualNetwork $VNet -EnableRegistration
```

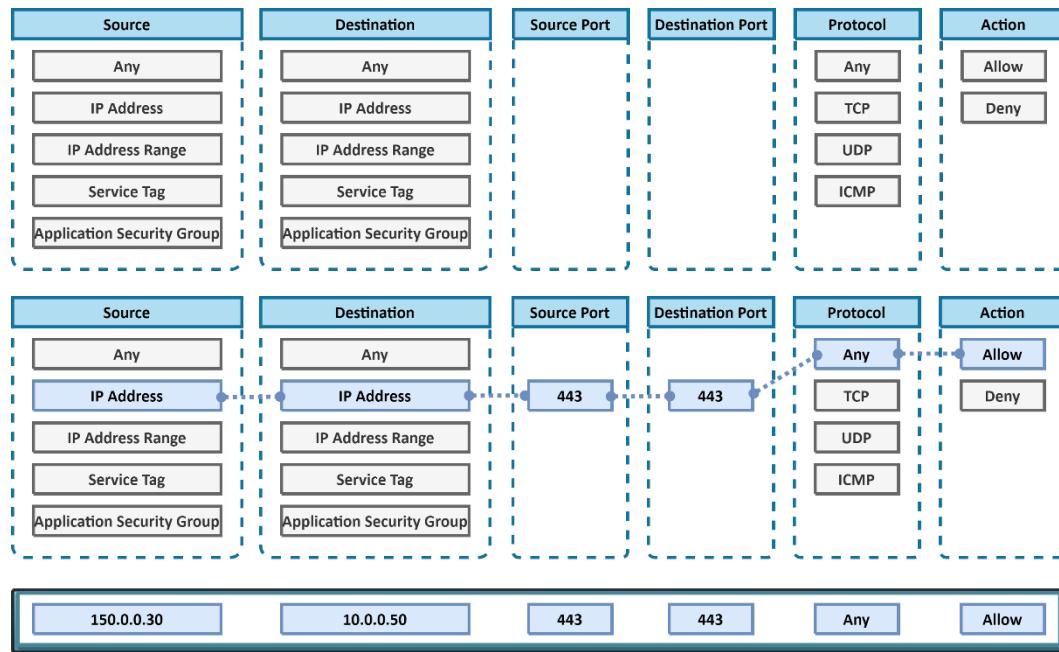
```
pwsh> Get-AzPrivateDnsZone -ResourceGroupName 'AZ104-vnets'
```

```
Name : demo.com  
ResourceId : /subscriptions/ /resourceGroups  
ResourceGroupName : az104-vnets
```

Name	Type	TTL	Value
@	SOA	3600	Email: azureprivatedns-host.microsoft.com Host: azureprivatedns.net Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 10 Serial number: 1
demovm1	A	10	10.0.0.5
demovm2	A	10	192.168.0.4

Non-authoritative answer:
Name: demovm2.demo.com
Address: 192.168.0.4

Chapter 17:



Create network security group

X

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

Project details

Subscription * Visual Studio Enterprise Subscription

Resource group * AZ104-vnetsecurity [Create new](#)

Instance details

Name * DemoNSG ✓

Region * West Europe ✓

 **DemoNSG** | Subnets 🔗 ⭐ ⋮

Network security group

« + Associate

 Outbound security rules

 Network interfaces

 Subnets Name ↑↓

No results.



Virtual network ⓘ

▼

Subnet * ⓘ

▼

 + Create a resource

 Home

 Dashboard

 All services

 **FAVORITES**

 Microsoft Entra ID

 All resources 

network security group Subscription equals all

 0 Recommendations  0 Unsecure resources

Name ↑↓ Type ↑↓

<input type="checkbox"/>  DemoNSG	Network security group
<input type="checkbox"/>  VM1-nsg	Network security group

DemoNSG | Inbound security rules

Network security group

Search << Add Hide default rules Refresh

Diagnose and solve problems

Settings

Inbound security rules Filter by name

Outbound security rules

Network interfaces

Priority ↑↓ Name ↑↓

Priority	Name
<input type="checkbox"/> 65000	AllowVnetInBound

Source ⓘ

Service Tag

Source service tag * ⓘ

Internet

Source port ranges * ⓘ

*

Destination ⓘ

Any

Service ⓘ

RDP

Destination port ranges ⓘ

3389

Protocol

Any

TCP

UDP

ICMP

Action

Allow

Deny

Priority * ⓘ

100

Name *

DenyTagRDPIbound

Remote Desktop Connection



Remote Desktop can't connect to the remote computer for one of these reasons:

- 1) Remote access to the server is not enabled
- 2) The remote computer is turned off
- 3) The remote computer is not available on the network

Make sure that the remote computer is turned on and connected to the network and that remote access is enabled.

▼ See details

OK

Priority ↑↓	Name ↑↓	Port ↑↓
<input type="checkbox"/> 100	! AllowTagRDPIbound	3389
<input type="checkbox"/> 110	DenyTagRDPIbound	3389
<input type="checkbox"/> 65000	AllowVnetInBound	Any
<input type="checkbox"/> 65001	AllowAzureLoadBalancerInBound	Any

Scope

Network security group (DemoNSG)

Virtual machine

DemoVM1



Network interface

DemoVM1



DemoNSG

Inbound rules

Name	↑↓	Priority	↑↓	Source
AllowTagRDPI inbound		100		Internet (282 prefixes)
DenyTagRDPI inbound		110		Internet (282 prefixes)
AllowVnetInBound		65000		Virtual network (2 prefixes)
AllowAzureLoadBalancerInBound		65001		Azure load balancer (2 prefixes)
DenyAllInBound		65500		0.0.0.0/0,0.0.0.0/0

Outbound rules

Name	↑↓	Priority	↑↓	Source
AllowVnetOutBound		65000		Virtual network (2 prefixes)
AllowInternetOutBound		65001		0.0.0.0/0,0.0.0.0/0
DenyAllOutBound		65500		0.0.0.0/0,0.0.0.0/0

Target resource

Virtual machine * ⓘ

DemoVM1



Select virtual machine

Network interface *

DemoVM1



Packet details

Protocol



Direction

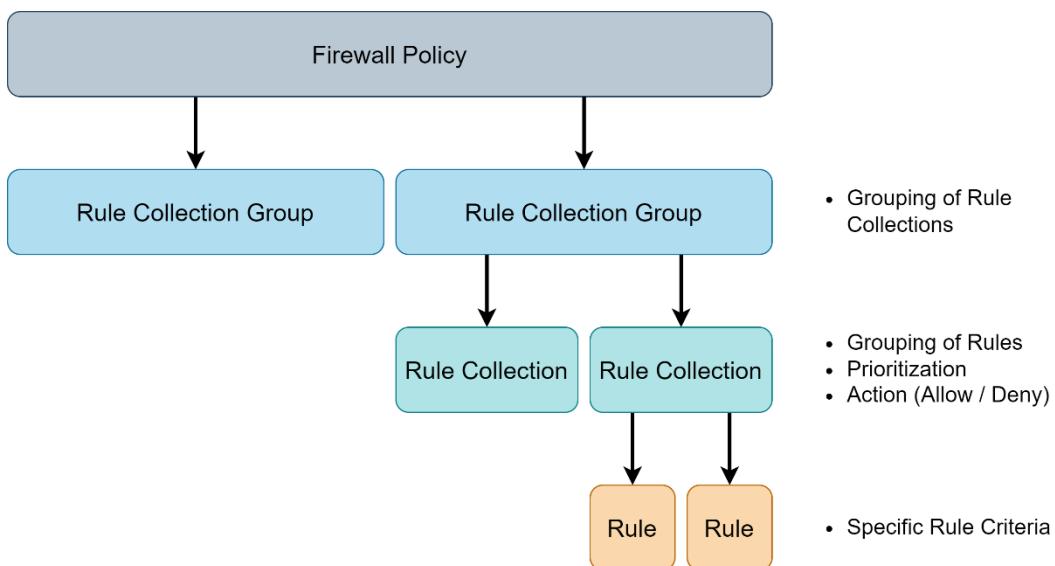


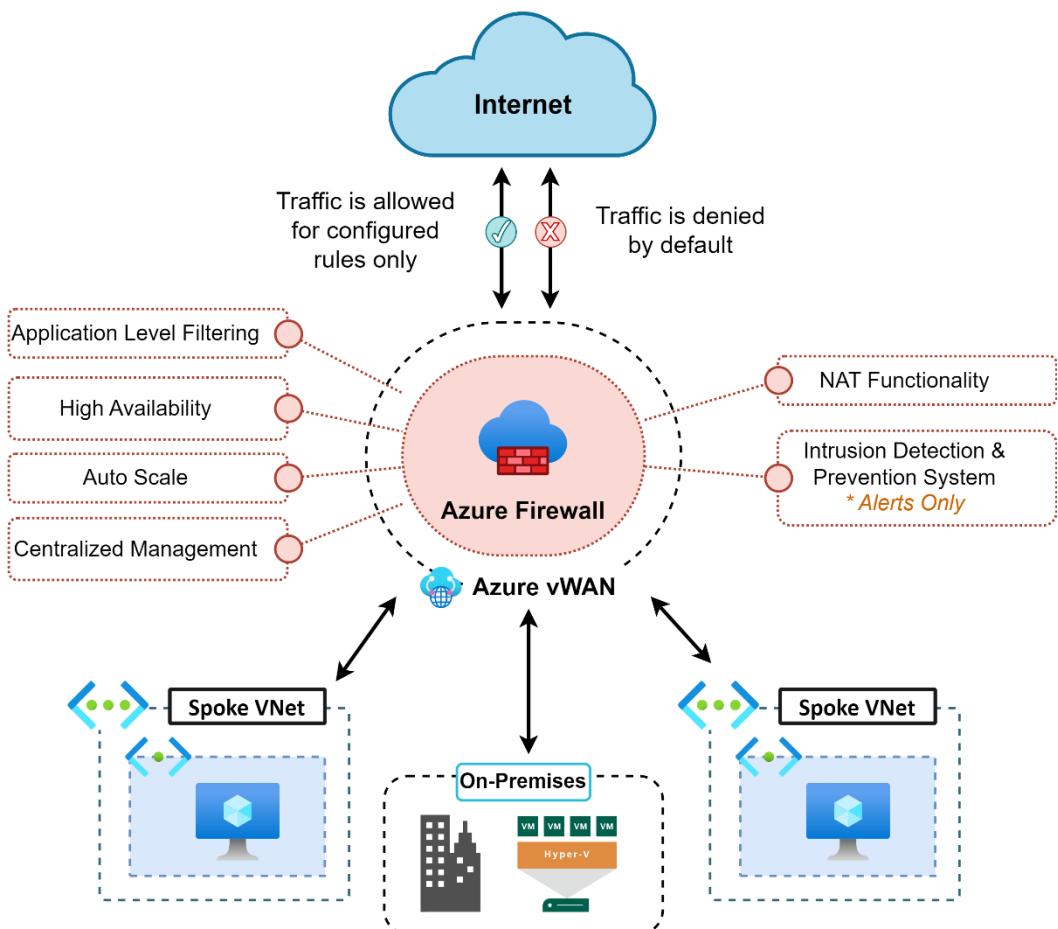
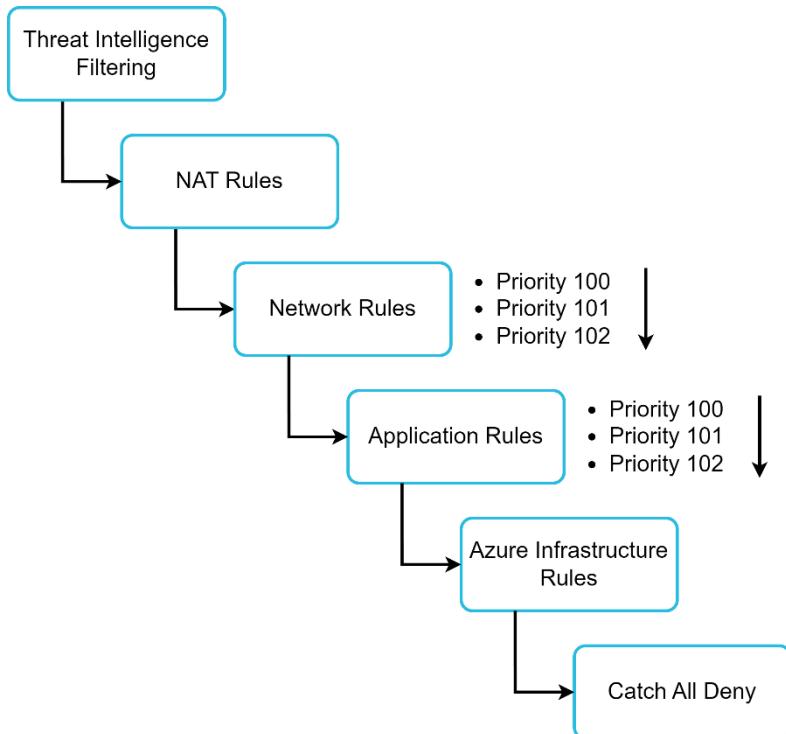
Local IP address * ⓘ	10.0.0.4
Local port * ⓘ	3389
Remote IP address * ⓘ	1.0.0.0
Remote port * ⓘ	3389

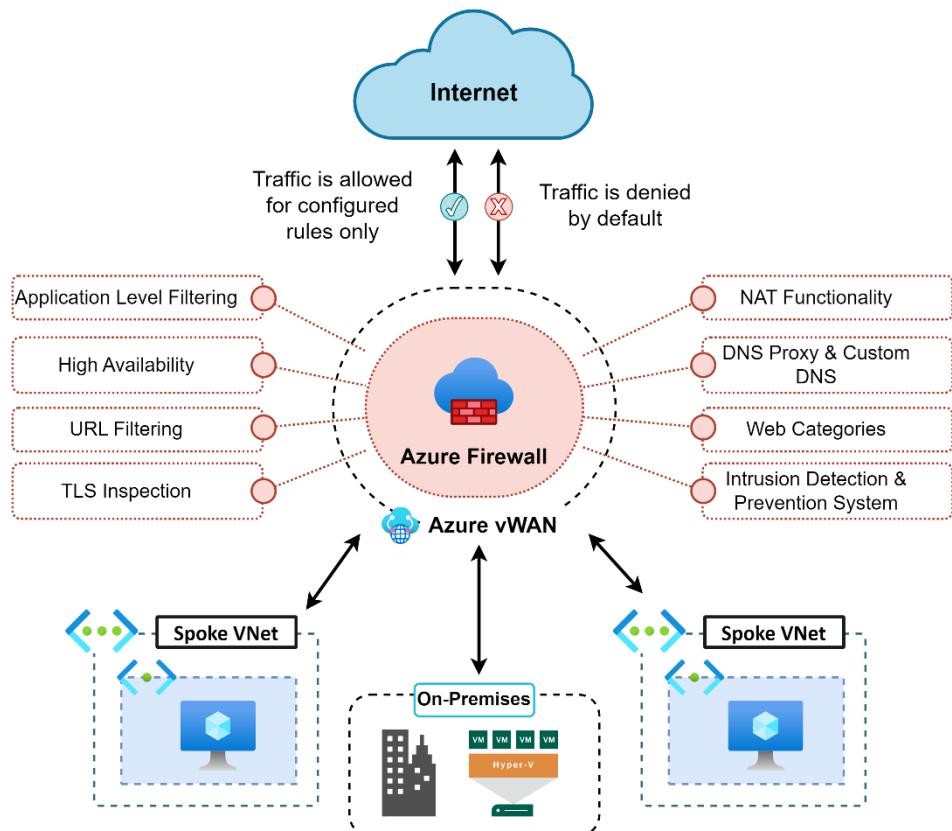
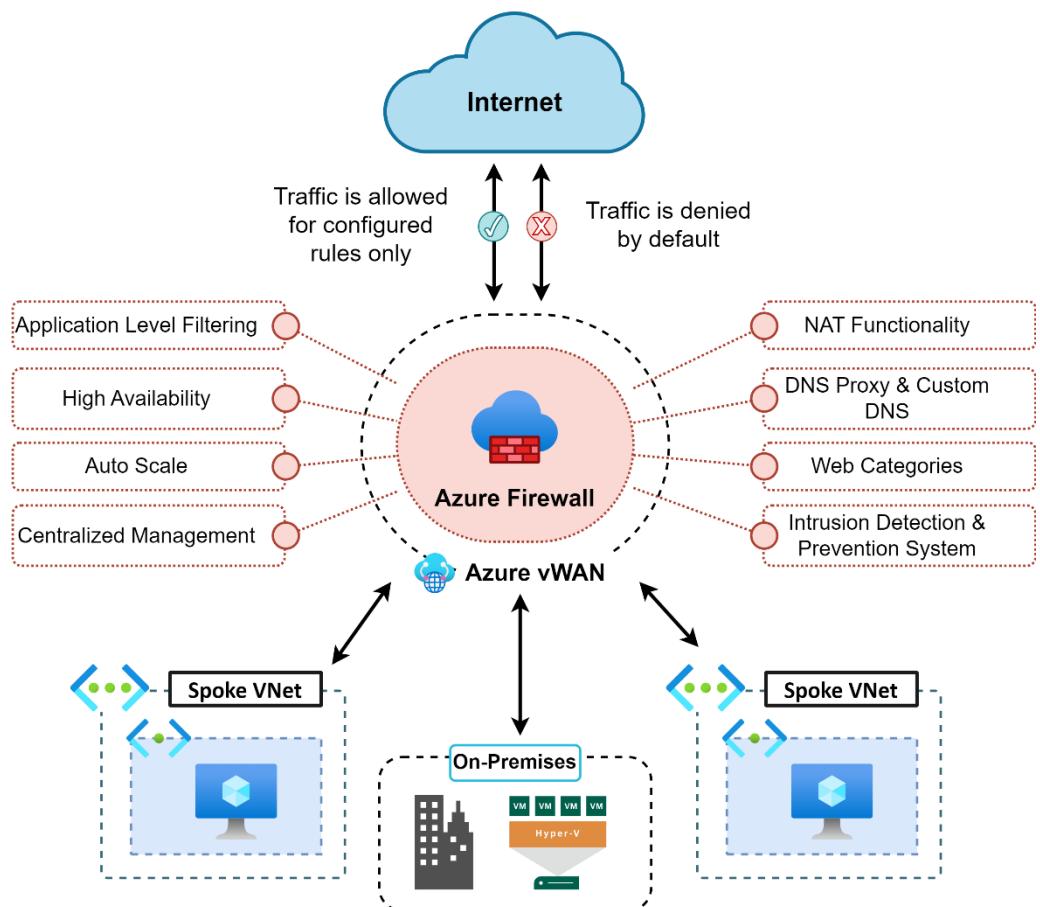
Results

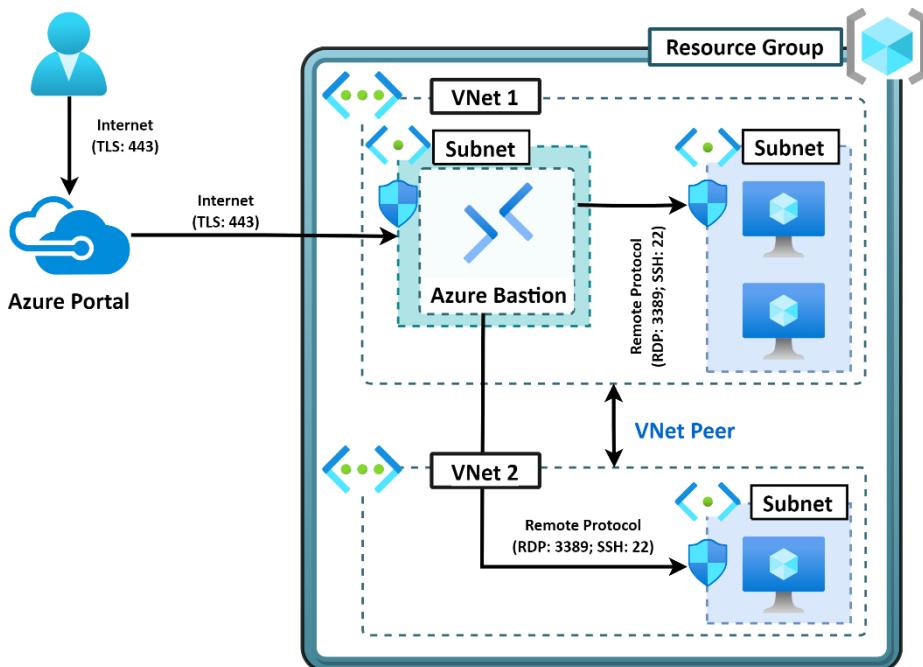
Access allowed

Security Rule	Network Security Group
AllowTagRDPI inbound	DemoNSG









```
# Parameters
$ResourceGroup = "AZ104-vnetsecurity"
$Location = "WestEurope"
$VnetName = "DemoVNet"
$SubnetName = "default"

# Get VNet Resource
$VirtualNetwork = Get-AzVirtualNetwork -ResourceGroupName $ResourceGroup
-Name $VnetName

# Create 2 Subnets for this exercise in DemoVNet
Add-AzVirtualNetworkSubnetConfig -Name 'AzureBastionSubnet'
-AddressPrefix '10.0.1.0/27' -VirtualNetwork $VirtualNetwork
Add-AzVirtualNetworkSubnetConfig -Name 'AzureFirewallSubnet'
-AddressPrefix '10.0.1.64/26' -VirtualNetwork $VirtualNetwork
Set-AzVirtualNetwork -VirtualNetwork $VirtualNetwork
```

Input Parameters

Resource Group

Subnets

Name ↑↓	IPv4 ↑↓	IPv6 ↑↓	Available IPs ↑↓
default	10.0.0.0/24	-	250
AzureFirewallSubnet	10.0.1.64/26	-	59
AzureBastionSubnet	10.0.1.0/27	-	25

<input type="checkbox"/> Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/> Bastion-01	Bastion	West Europe
<input type="checkbox"/> Bastion-pip	Public IP address	West Europe
<input type="checkbox"/> DemoNSG	Network security group	West Europe

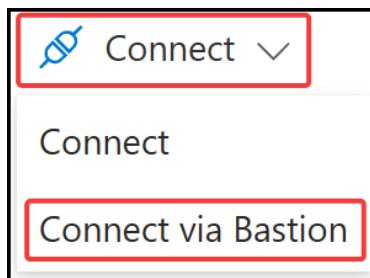
<input type="checkbox"/> Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/> Firewall-pip	Public IP address	West Europe
<input type="checkbox"/> Firewall-01	Firewall	West Europe
<input type="checkbox"/> DemoVNet	Virtual network	West Europe

<input type="checkbox"/> Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/> Firewall-RT	Route table	West Europe
<input type="checkbox"/> Firewall-pip	Public IP address	West Europe

NAT rule collection	Network rule collection	Application rule collection	
+ Add application rule collection			
Priority	Name	Action	Rules
200	App-Coll01	Allow	✓ 1 rule.
200			Allow-Google

name	Source type	Source	Protocol:Port	Target FQDNs
Allow-Google	IP address	10.0.0.0/24	Http:80,Https:443	www.google.com

Priority	Name	Action	Rules
200	GoogleDNS	Allow	✓ 1 rule.
200			Allow-GoogleDNS



A screenshot of a connection configuration dialog. It includes fields for 'Authentication Type' (set to 'VM Password'), 'Username' (set to 'Student'), 'VM Password' (empty), and a 'Show' password button. A checked checkbox labeled 'Open in new browser tab' is present. A red arrow points to the blue 'Connect' button at the bottom left.

```
PS C:\Users\Student> nslookup www.google.com
Server: dns.google
Address: 8.8.8.8
```

```
Non-authoritative answer:
Name: www.google.com
Addresses: 2a00:1450:400e:80f::2004
          142.251.36.4
```

```
PS C:\Users\Student> nslookup www.microsoft.com
Server: dns.google
Address: 8.8.8.8
```

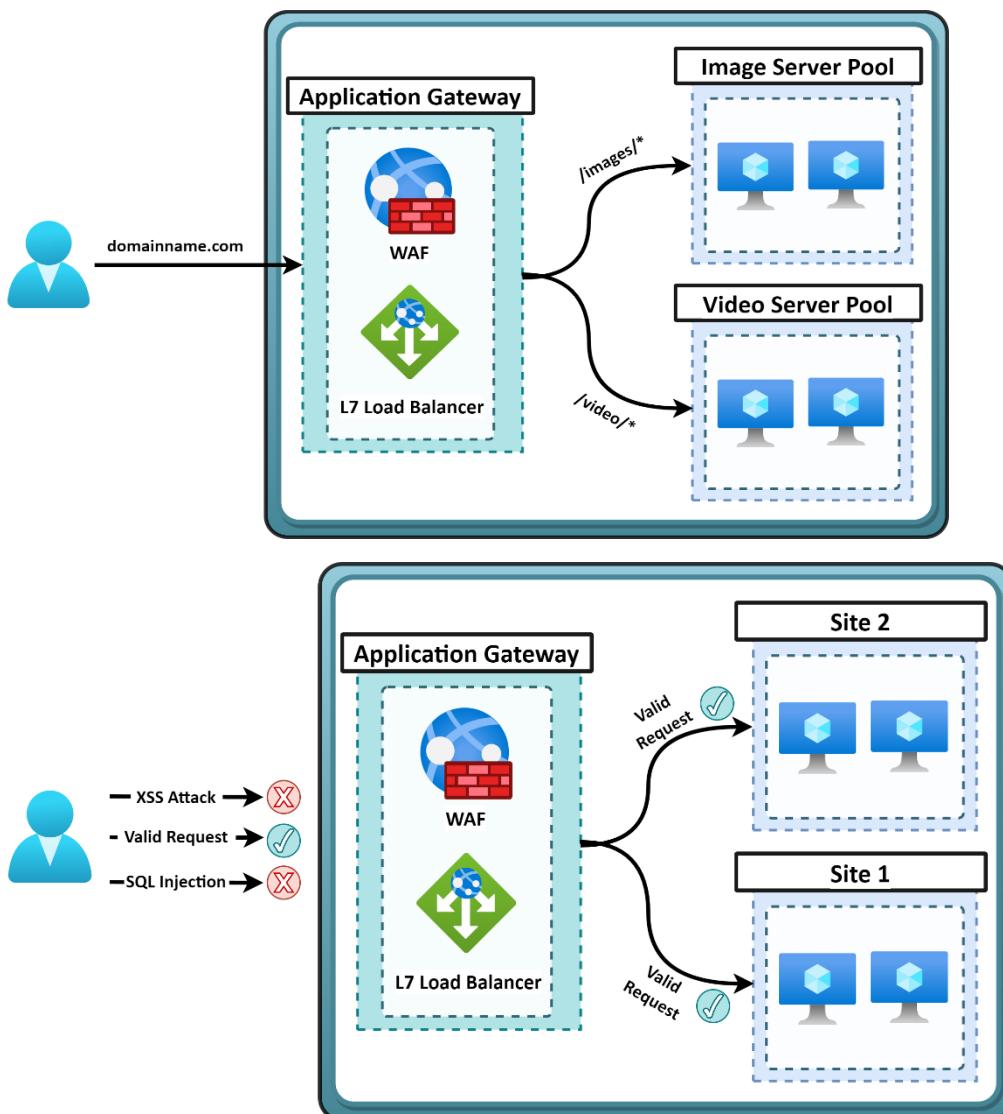
```
Non-authoritative answer:
Name: e13678.dscc.akamaiedge.net
Addresses: 2a02:26f0:f4:2aa::356e
          2a02:26f0:f4:2a8::356e
          2a02:26f0:f4:2af::356e
          23.200.189.225
Aliases: www.microsoft.com
         www.microsoft.com-c-3.edgekey.net
         www.microsoft.com-c-3.edgekey.net.globalredir.akadns.net
```

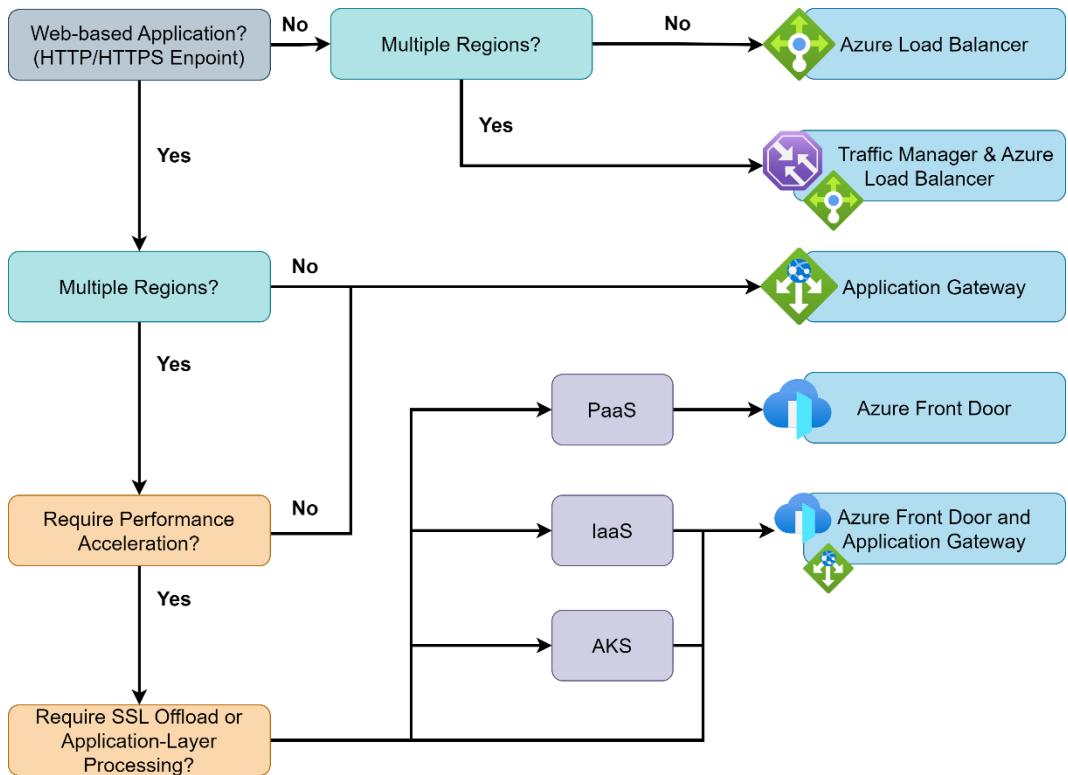
```
PS C:\Users\Student> Invoke-WebRequest -Uri https://www.google.com

StatusCode      : 200
StatusDescription : OK
Content         : <!doctype html><html itemscope="" itemtype="http://www.w3.org/1999/xhtml">
RawContent      : HTTP/1.1 200 OK
```

```
PS C:\Users\Student> Invoke-WebRequest -Uri https://www.microsoft.com
Invoke-WebRequest : The underlying connection was closed: An unexpected error occurred on a send.
```

Chapter 18:





Load Balancer

Add to Favorites

Microsoft | Azure Service

★ 4.6 (119 ratings)

Plan

Load Balancer
▼
Create

Project details

Subscription *

Visual Studio Enterprise Subscription

Resource group *

AZ104-InternalLoadBalancer

[Create new](#)



Instance details

Name *

InternalLoadBalancer



Region *

West Europe



SKU * ⓘ

Standard (Recommended)

Gateway

Basic (Retiring soon)

Public

Internal

Regional

Global

Type * ⓘ

Tier *

Add frontend IP configuration

X

InternalLoadBalancer

Name *	FrontendIP
IP version	<input checked="" type="radio"/> IPv4 <input type="radio"/> IPv6
Virtual network *	LoadBalancerVNet (AZ104-InternalLoadBal... ▾)
Subnet *	BackendSubnet (192.168.1.0/24) ▾
Assignment	<input checked="" type="radio"/> Dynamic <input type="radio"/> Static
Availability zone * ⓘ	No Zone ▾

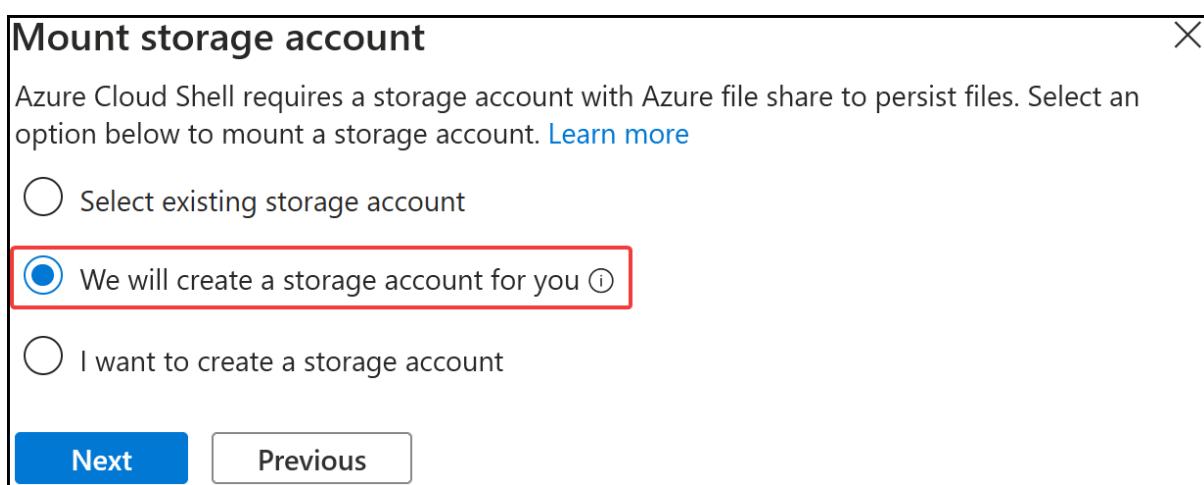
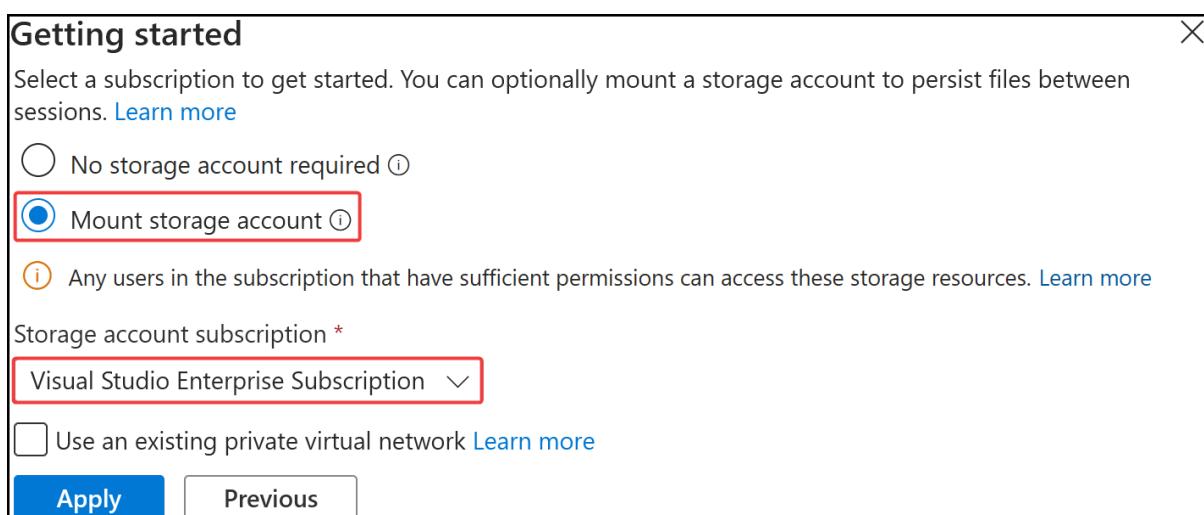
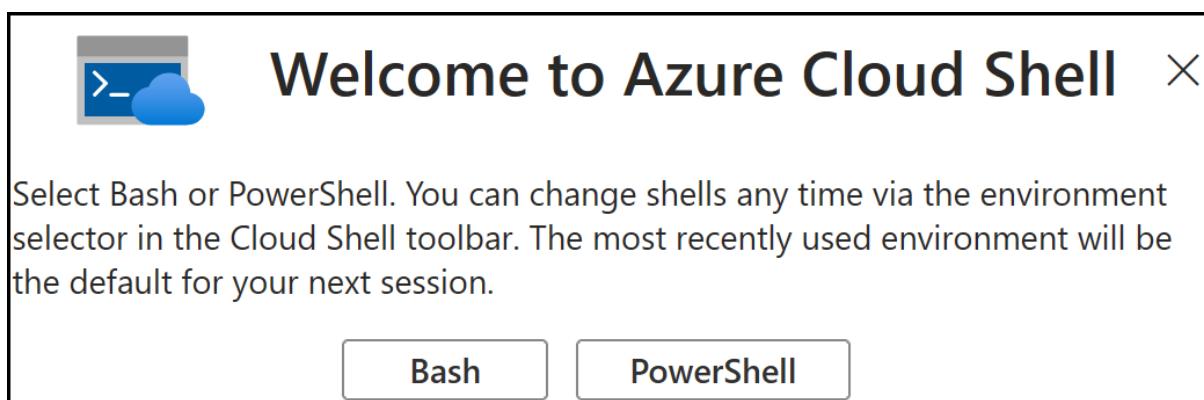
Resource Name	Resource group	Type
▼ Virtual machine (3)		
<input checked="" type="checkbox"/> BackendVM1	AZ104-InternalLoadBalancer	Virtual machine
<input checked="" type="checkbox"/> BackendVM2	AZ104-InternalLoadBalancer	Virtual machine
 Add	Cancel	

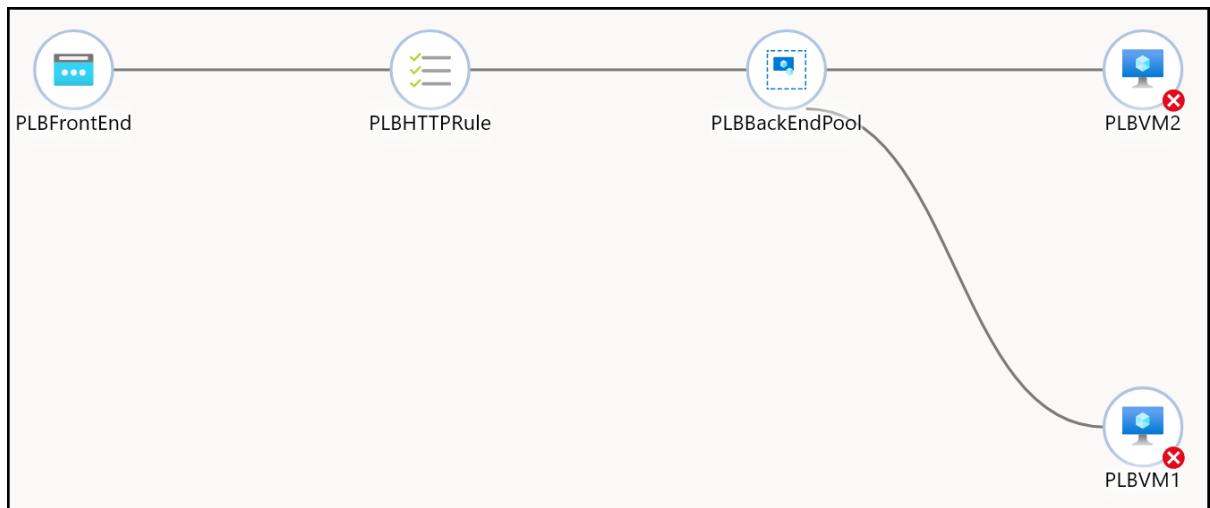
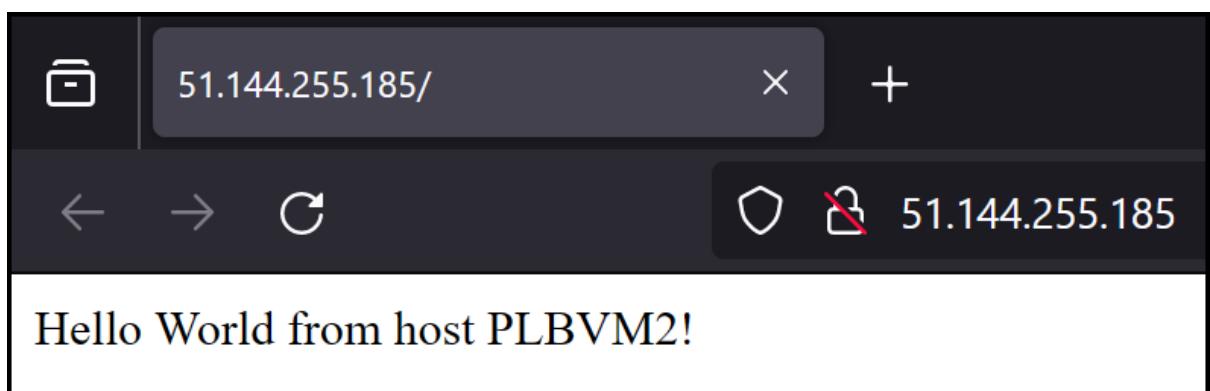
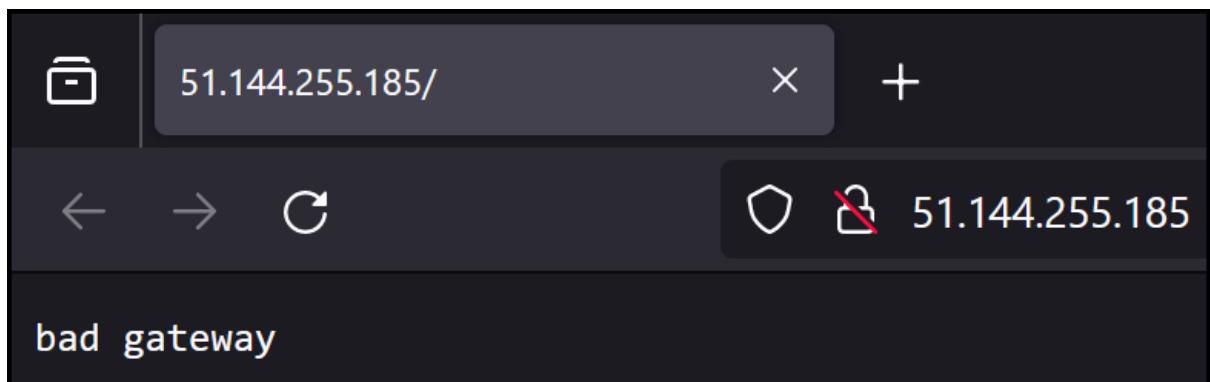
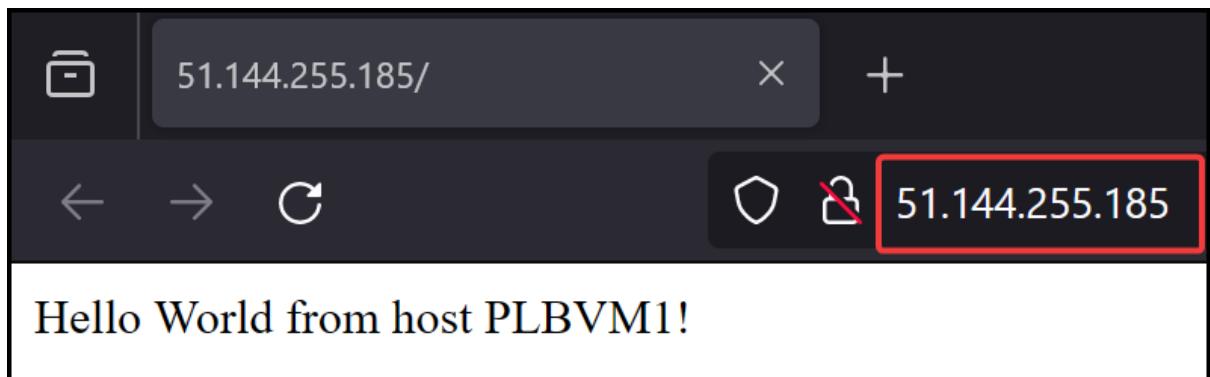
Name *	BackendHealthProbe
Protocol *	HTTP
Port * ⓘ	80
Path * ⓘ	/
Interval (seconds) * ⓘ	5

Name *	WebTrafficRule
IP Version *	<input checked="" type="radio"/> IPv4 <input type="radio"/> IPv6
Frontend IP address * ⓘ	FrontendIP (172.16.0.7) ▾
Backend pool * ⓘ	BackendPool ▾
High availability ports ⓘ	<input type="checkbox"/>
Protocol	<input checked="" type="radio"/> TCP <input type="radio"/> UDP
Port *	80 ▾
Backend port * ⓘ	80 ▾
Health probe * ⓘ	BackendHealthProbe (HTTP:80) ▾ Create new
Session persistence ⓘ	None ▾
Idle timeout (minutes) * ⓘ	4 ▾
Enable TCP Reset	<input type="checkbox"/>
Enable Floating IP ⓘ	<input type="checkbox"/>

Frontend IP configuration	
<input type="checkbox"/> Frontend IP configuration	<input type="checkbox"/> Filter by name...
<input type="checkbox"/> Backend pools	Name ↑ ↓
<input type="checkbox"/> Health probes	IP address ↑ ↓

FrontendIP 172.16.0.7







Application Gateway

Microsoft | Azure Service

★ 4.4 (218 ratings)

Plan

Application Gateway

Create



Subscription * ⓘ Visual Studio Enterprise Subscription

Resource group * ⓘ AZ104-ApplicationGateway [Create new](#)

Instance details

Application gateway name * ApplicationGateway ✓

Region * West Europe

Tier Standard V2

Enable autoscaling Yes No

Minimum instance count * ⓘ 0

Maximum instance count 2 ✓

Availability zone * ⓘ Zones 1

HTTP2 Disabled Enabled

IP address type ⓘ IPv4 only Dual stack (IPv4 & IPv6)

Configure virtual network

Virtual network * ⓘ ApplicationGatewayVNET [Create new](#)

Subnet * ⓘ default (10.1.0.0/24) [Manage subnet configuration](#)

Public IPv4 address *

Choose public IP address

Add new

Add a public IP

Name *

SKU Basic Standard

Assignment Dynamic Static

Availability zone 1

Name *

Add backend pool without targets

Rule name *

Priority *

Listener name *

Frontend IP *

Protocol HTTP HTTPS

Port *

Listener type Basic Multi site

Backend settings	<input type="text" value="httpset1"/>	
name *		
Backend protocol	<input checked="" type="radio"/> HTTP <input type="radio"/> HTTPS	
Backend port *	<input type="text" value="80"/>	

Host name

By default, the Application Gateway sends the same HTTP host header to the backend as it receives from the client. If your backend application/service requires a specific host value, you can override it using this setting.

Yes No

Override with new host name

Info: If the backend service is a multi-tenant Azure service such as App Services, Functions, or Portal Apps, we recommend using [Custom domain method](#), instead of overriding the hostname. Using override host name with default domains (azurewebsites.net, azuremicroservices.io, etc.) is good only for the basic tests and operations.

Pick host name from backend target Override with specific domain name

Host name override

Yes No

Backend targets

1 item

Target type	Target
IP address or FQDN	azwebapp12341234.azurewebsites.net
IP address or FQDN	<input type="text"/>

Save **Cancel**

Backend pool	HTTP setting	Status
> backendpool	httpset1	
Browse	Stop	Swap Restart

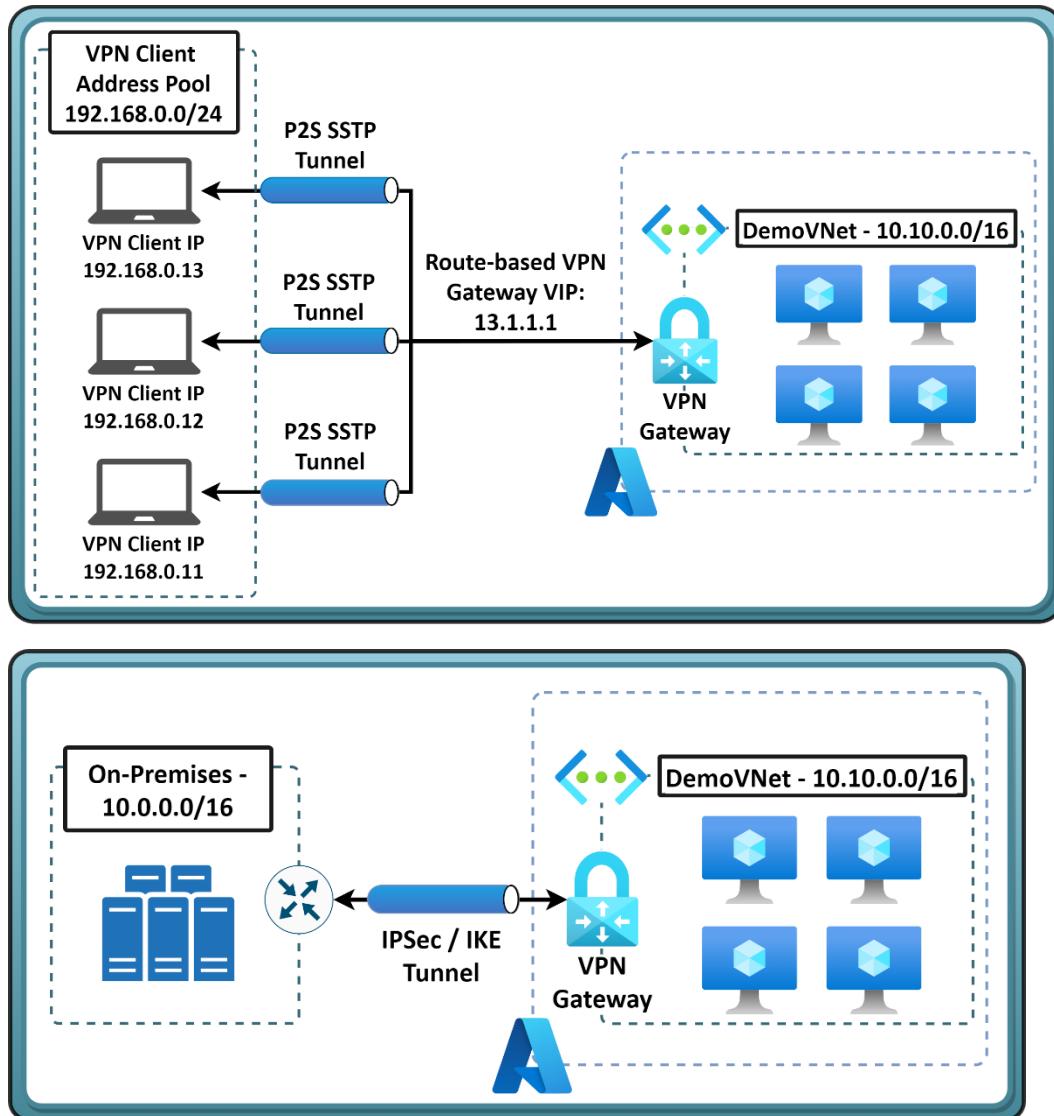
Error 403 - This web app stopped.

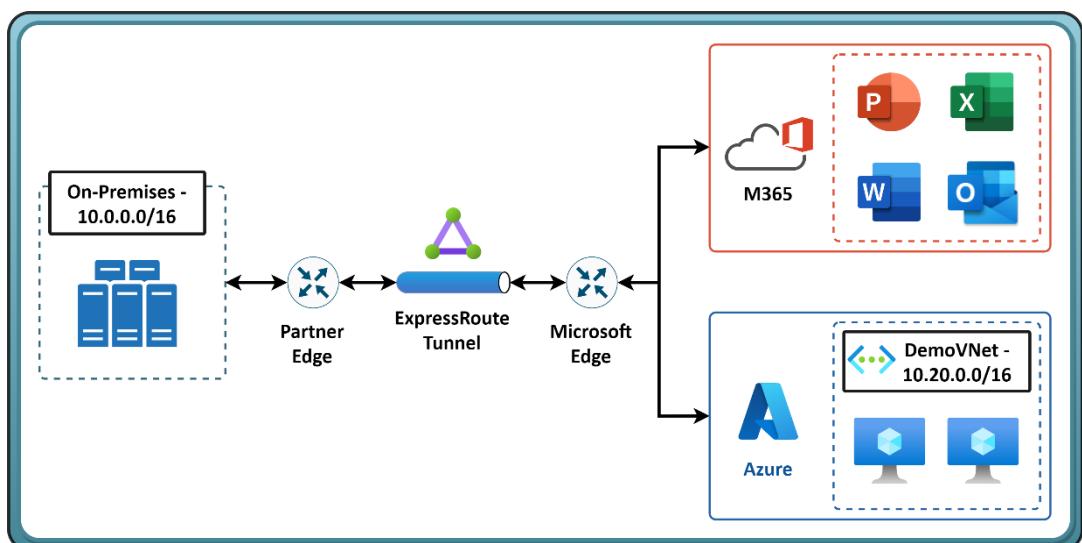
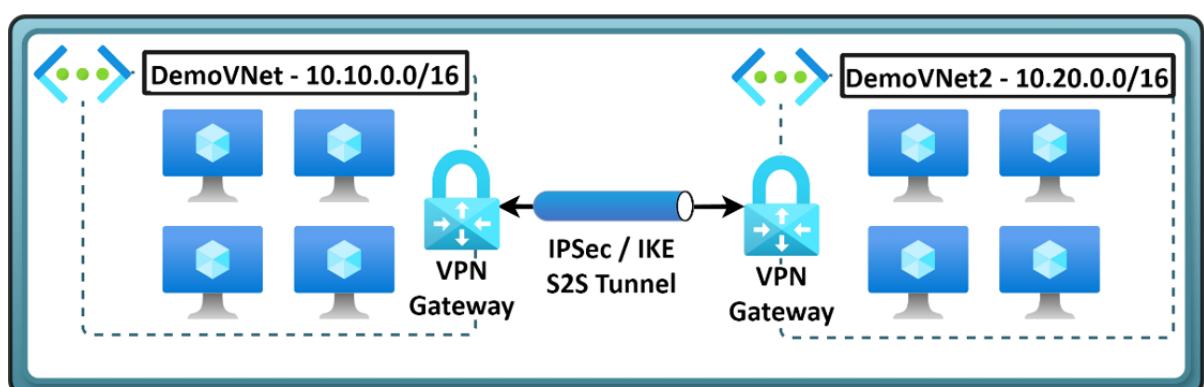
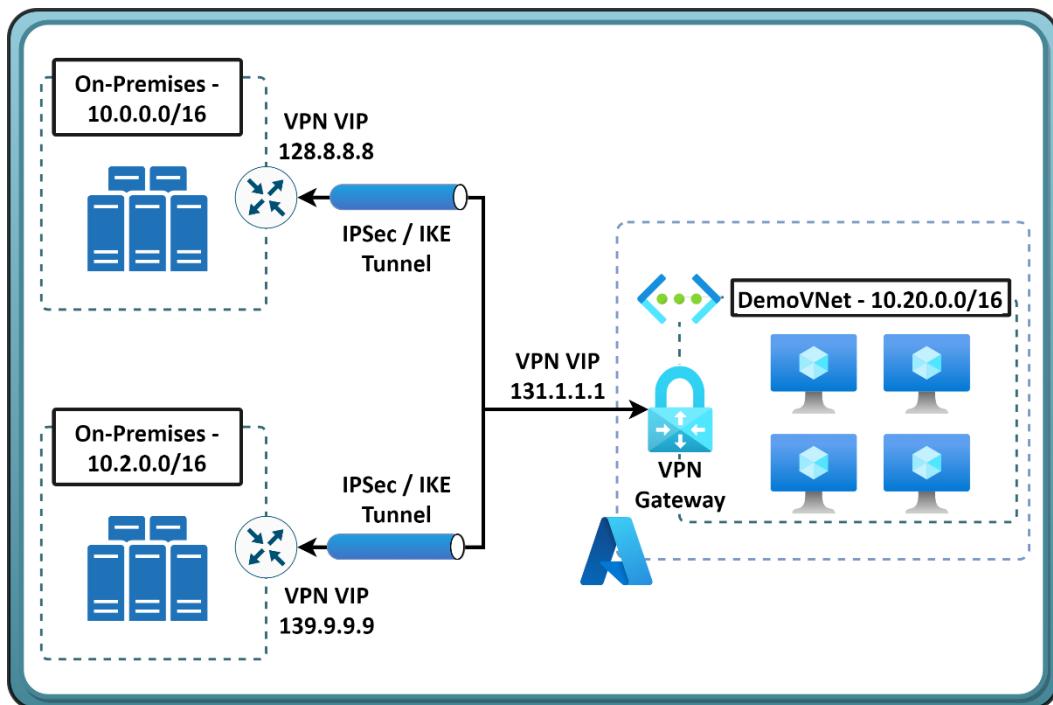
The web app you have attempted to reach is currently stopped and does not accept any requests. Please try to reload the page or visit it again soon.

If you are the web app administrator, please find the common 403 error scenarios and resolution [here](#). For further troubleshooting tools and recommendations, please visit [Azure Portal](#).

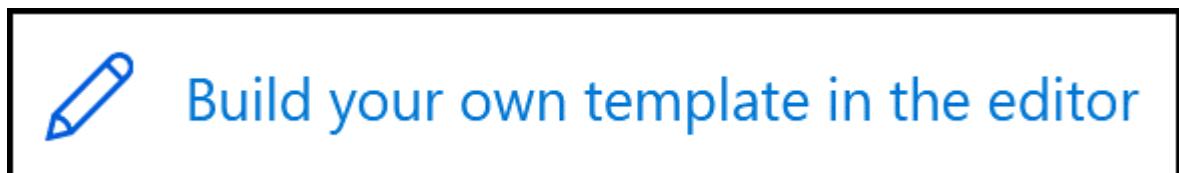
Server (backend pool)	↑↓	Status	↑↓	Port (Backend setting)
azwebapp12341234.azurewebsites.net (bac...)		! Unhealthy		80 (httpset1)

Chapter 19:





The screenshot shows the Microsoft Azure Virtual network gateway service page. At the top right, there is a blue 'Add to Favorites' button with a red arrow pointing towards it. Below it, the service name 'Virtual network gateway' is displayed in large bold letters, followed by a star rating of '★ 3.9 (27 ratings)'. A dropdown menu labeled 'Plan' is open, showing 'Virtual network gateway' selected. To the right of the dropdown is a blue 'Create' button.



The screenshot shows the Microsoft Server Manager dashboard. On the left, there is a navigation bar with 'Dashboard' selected. In the center, there is a 'WELCOME TO SERVER MANAGER' section with a 'QUICK START' button. To the right, there is a numbered list of steps: 1. Configure this local server (with a red circle), 2. Add roles and features (with a red box and arrow), 3. Add other servers to manage, 4. Create a server group, and 5. Connect this server to cloud services. There is also a 'Hide' link at the bottom right.

-
- The screenshot shows a list of services to be installed. The 'Remote Access' checkbox is checked, while 'Network Policy and Access Services', 'Print and Document Services', 'Remote Desktop Services', and 'Volume Activation Services' are unchecked.
- Network Policy and Access Services
 - Print and Document Services
 - Remote Access
 - Remote Desktop Services
 - Volume Activation Services

View installation progress



Feature installation



Configuration required. Installation succeeded on az104vpnserver.

Remote Access

DirectAccess and VPN (RAS)

Configure the role

[Open the Getting Started Wizard](#)



Computer Management

Windows PowerShell

Windows PowerShell (Admin)

Task Manager

Settings

File Explorer

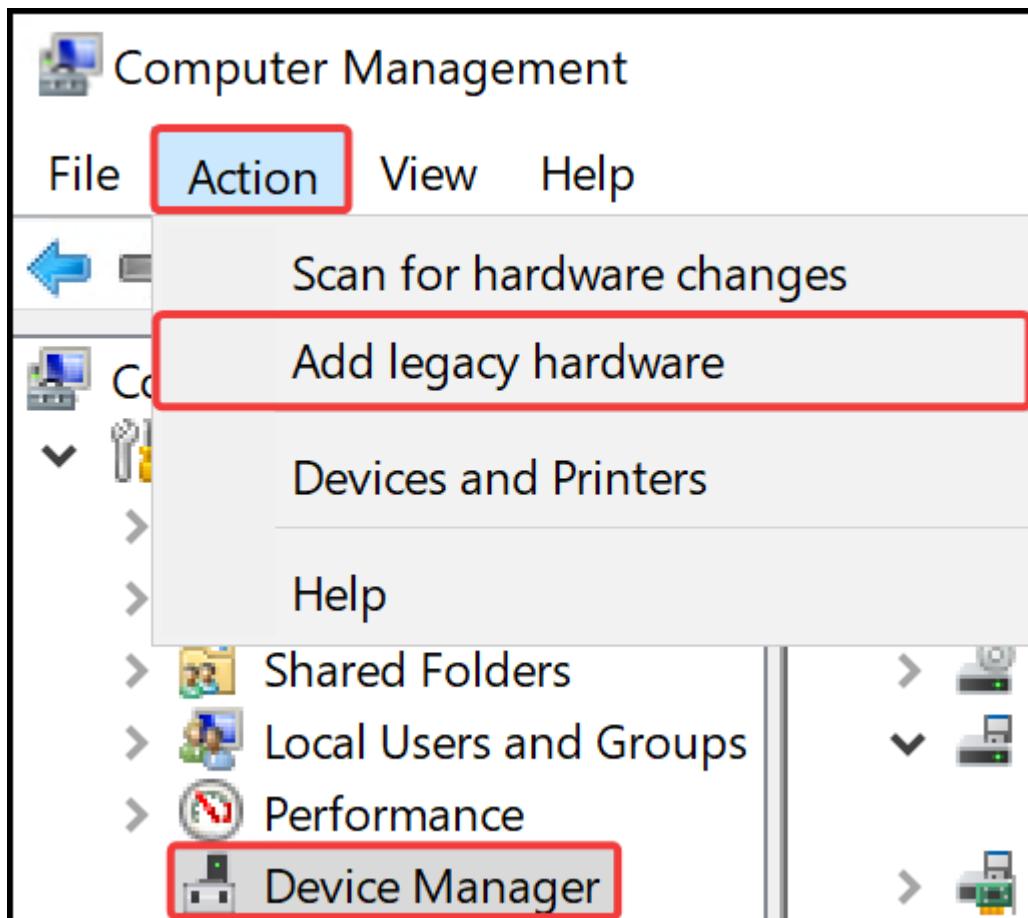
Search

Run

Shut down or sign out >

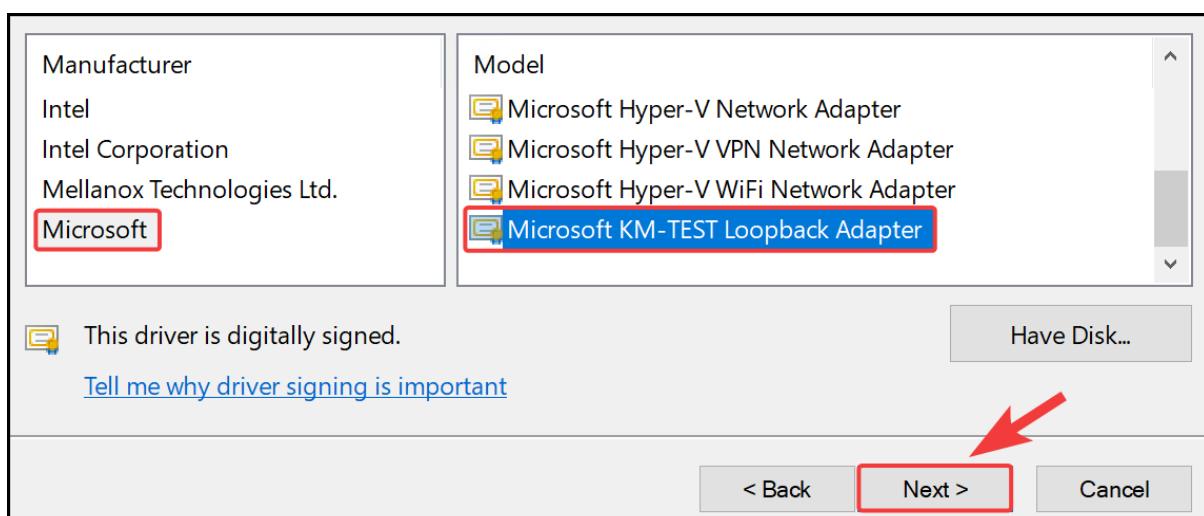
Desktop

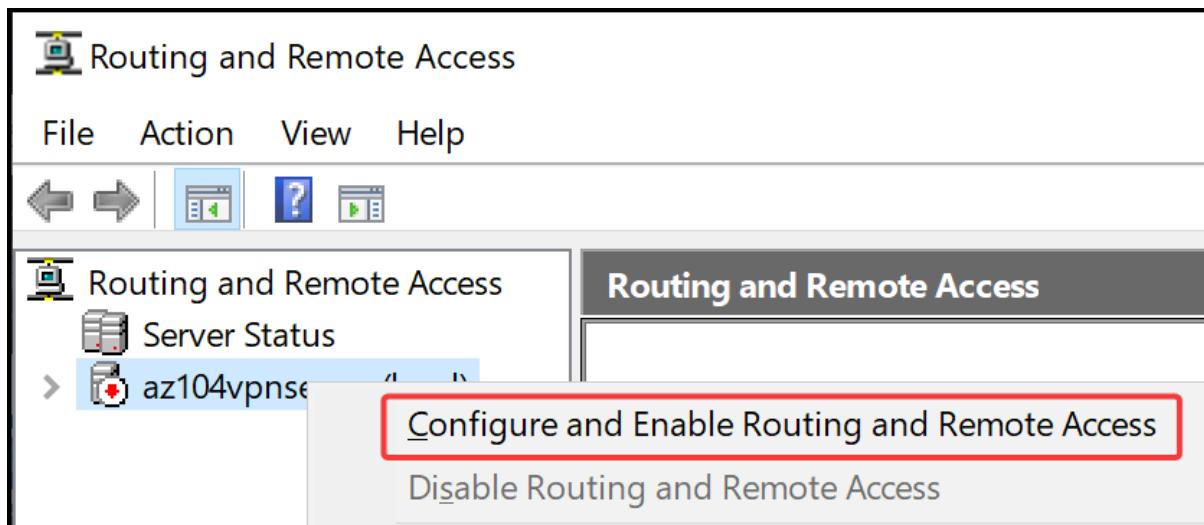




What do you want the wizard to do?

- Search for and install the hardware automatically (Recommended)
- Install the hardware that I manually select from a list (Advanced)





Network address translation (NAT)
Allow internal clients to connect to the Internet using one public IP address.

Virtual private network (VPN) access and NAT
Allow remote clients to connect to this server through the Internet and local clients to connect to the Internet using a single public IP address.

Secure connection between two private networks
Connect this network to a remote network, such as a branch office.

Network interfaces:

Name	Description	IP Address
Ethernet	Microsoft Hyper-V Netw...	99.0.0.4 (DHCP)
Ethernet 2	Microsoft KM-TEST Loo...	0.0.0.0 (DHCP)

How do you want IP addresses to be assigned to remote clients?

- Automatically
If you use a DHCP server to assign addresses, confirm that it is configured properly.
If you do not use a DHCP server, this server will generate the addresses.
- From a specified range of addresses

New IPv4 Address Range

?

X

Type a starting IP address and either an ending IP address or the number of addresses in the range.

Start IP address:

98 . 0 . 0 . 0

End IP address:

98 . 0 . 0 . 255

Number of addresses:

256

OK

Cancel

Do you want to set up this server to work with a RADIUS server?

- No, use Routing and Remote Access to authenticate connection requests
- Yes, set up this server to work with a RADIUS server

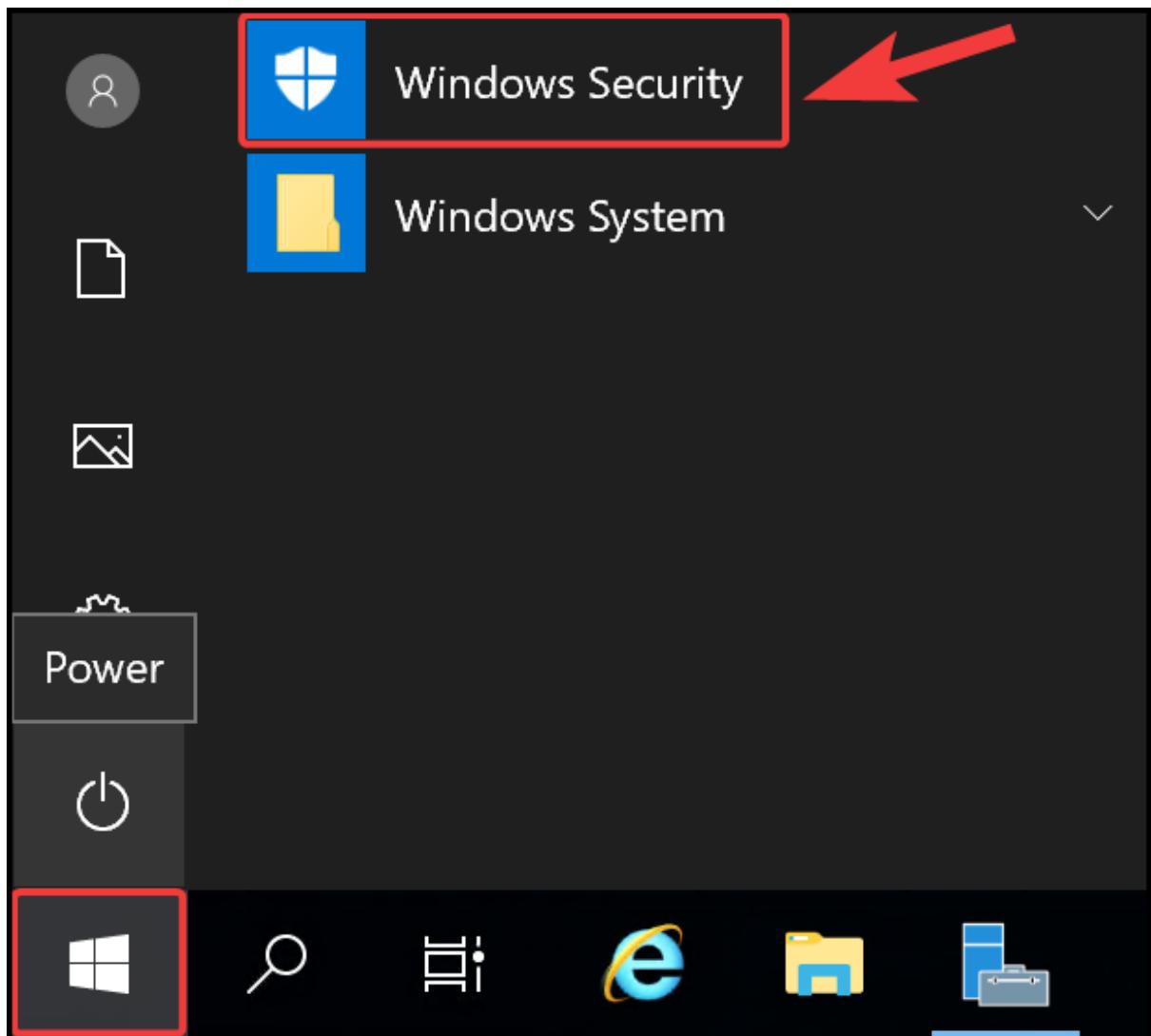
Routing and Remote Access

X

To support the relaying of DHCP messages from remote access clients, you must configure the properties of the DHCP Relay Agent with the IP address of your DHCP server.

OK

Help



Home

Virus & threat protection

Firewall & network protection

App & browser control

Device security

Domain network

Firewall is on.

Private network

Firewall is on.

Public network (active)

Firewall is on.

Allow an app through firewall

Network and Internet troubleshooter

Firewall notification settings

Advanced settings



Windows Defender Firewall with Advanced Security

Inbound Rules

Outbound Rules

Connection Security Rules

Monitoring

Inbound Rules	Actions
Name	Inbound Rules
AllJoyn Router (TCP-In)	New Rule...
AllJoyn Router (UDP-In)	Filter by Profile
BranchCache Content Retrieval (HTTP-In)	Filter by State
BranchCache Hosted Cache Server (HTTP-In)	

Does this rule apply to TCP or UDP?

TCP

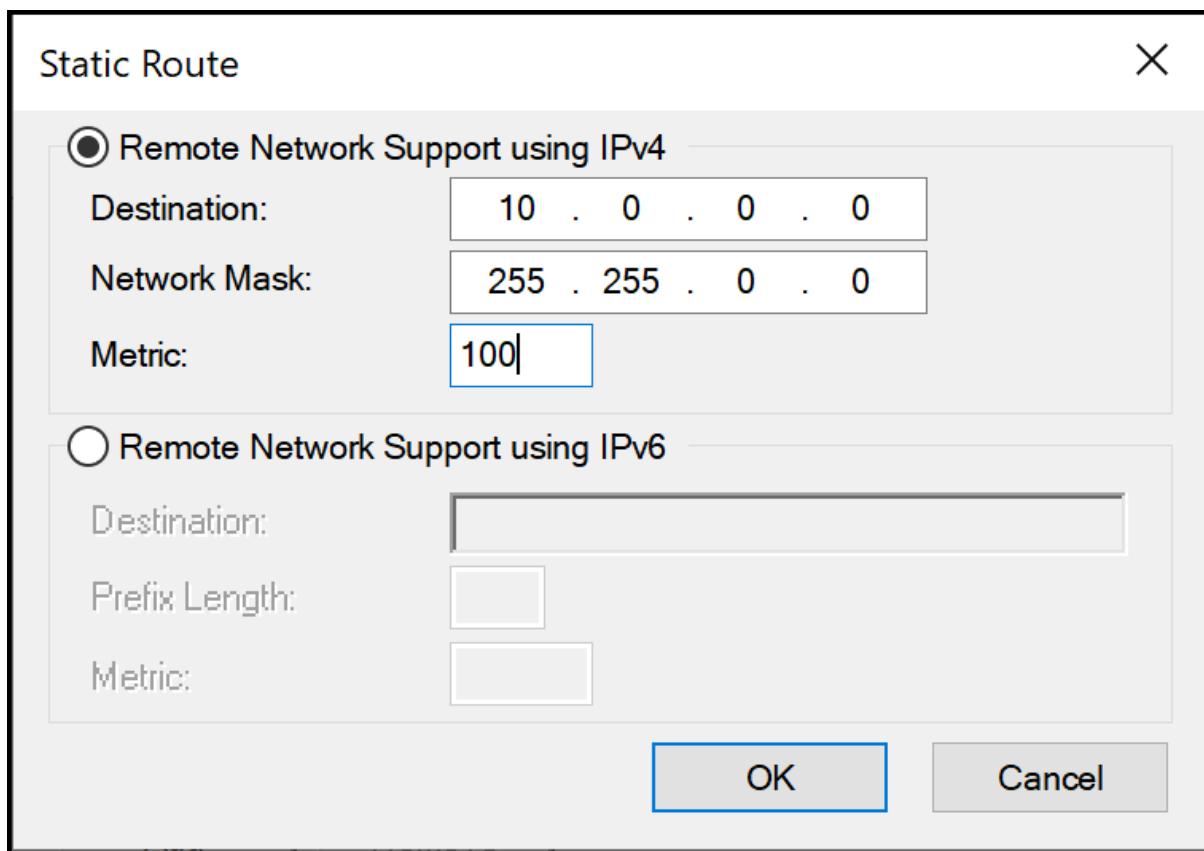
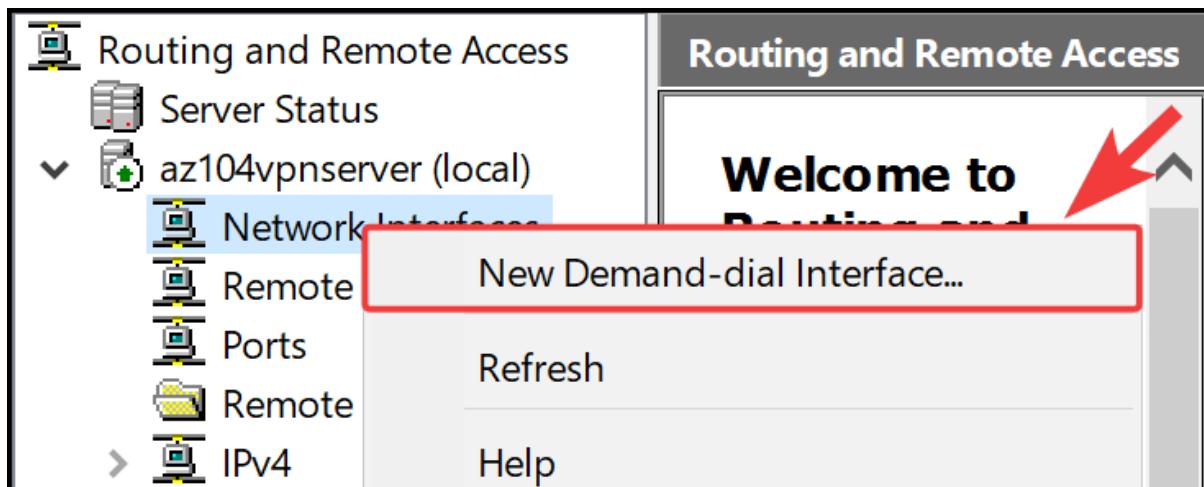
UDP

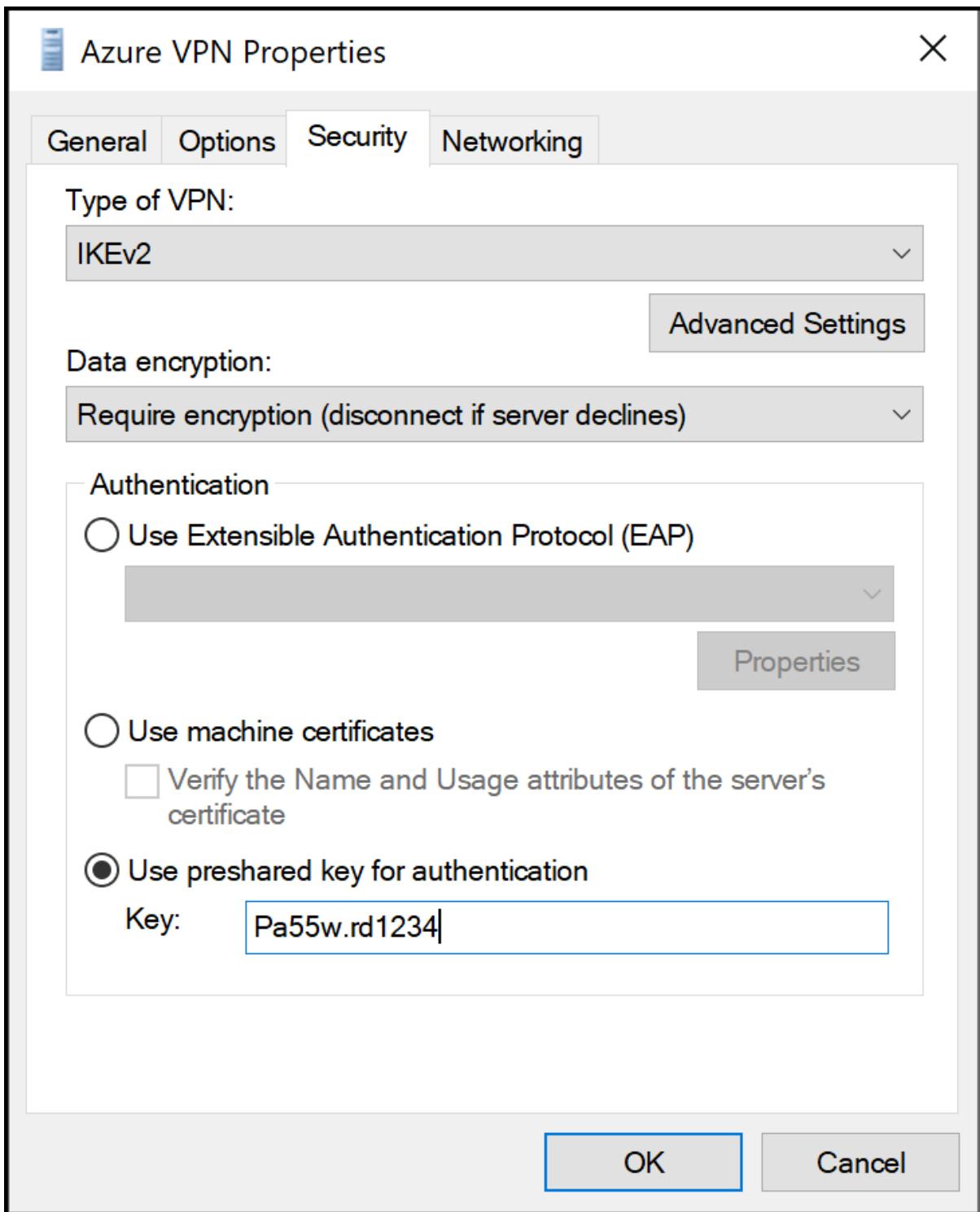
Does this rule apply to all local ports or specific local ports?

All local ports

Specific local ports:

Example: 80, 443, 5000-5010







Local network gateway

Add to Favorites

Microsoft | Azure Service

★ 4.0 (3 ratings)

Plan

Local network gateway

Create

Ethernet	Dedicated	Enabled	Connected
Azure VPN	Demand-dial	Enabled	Connected

Name	Status	Connection type	Peer
AzuretoVM	Connected	Site-to-site (IPsec)	VPNServer

X

All Services (11) Marketplace (5) More (4)

Services See more

 ExpressRoute circuits

Circuit Details

Region *

North Europe

Circuit name * ⓘ

az104expressroute



ExpressRoute circuits can connect to Azure through a service provider or directly to Azure at a global peering location. [Learn more about circuit types ↗](#)

Port type ⓘ

Provider

Direct

Provider * ⓘ

▼

Peering location * ⓘ

London



Bandwidth * ⓘ

200Mbps



SKU ⓘ

Local

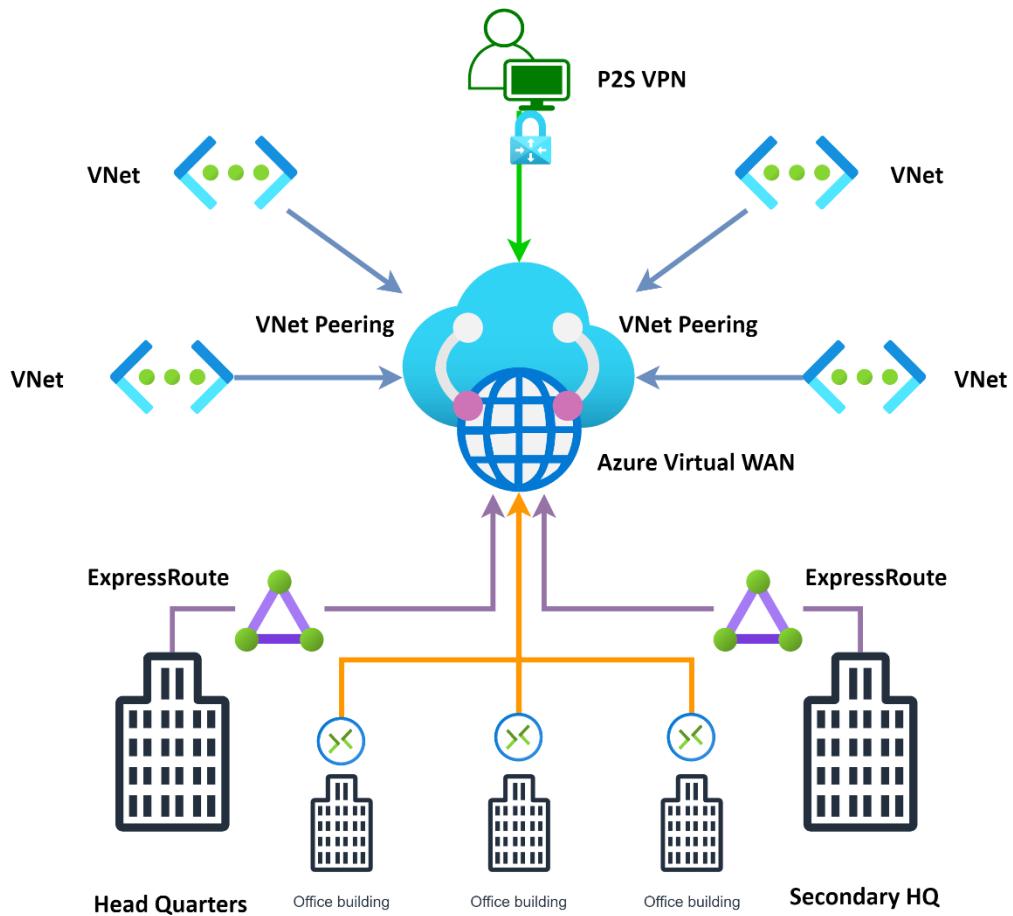
Standard

Premium

Billing model ⓘ

Metered

Unlimited



Virtual WAN Add to Favorites

Microsoft | Azure Service

★ 3.7 (6 ratings)

Plan

Virtual WAN ▼ Create

Virtual Hub Details

Region *	North Europe
Name *	vwanhub
Hub private address space * ⓘ	110.0.0.0/24
Virtual hub capacity * ⓘ	2 Routing Infrastructure Units
Hub routing preference * ⓘ	VPN

Do you want to create a Site to site (VPN gateway)?

Yes

No

Hub association : **Connected to this hub** X + Add filter

Create new VPN site	Connect VPN sites	Disconnect VPN sites	Refresh
Page: 1			
<hr/>			
Site name	↑↓	Location	↑↓ Cloud provider
<input checked="" type="checkbox"/> Windows_RRAS		northeurope	
<hr/>			
Site name	↑↓	Location	↑↓ Cloud provider
<input type="checkbox"/> Windows_RRAS		northeurope	> 1 link ✓ Succeeded

Gateway configuration

1 scale unit - 500 Mbps x 2 ([View/Configure](#))

VPN Gateway Instance 0

Public IP Address ⓘ

52.23

Static Route

X

Remote Network Support using IPv4

Destination: 110 . 0 . 0 . 0

Network Mask: 255 . 255 . 255 . 0

Metric: 200

Remote Network Support using IPv6

Destination:

Prefix Length:

Metric:

OK

Cancel

 Azure VWAN VPN

Demand-dial

Enabled

Connected

 Azure VPN

Demand-dial

Enabled

Disconnected

Chapter 19:

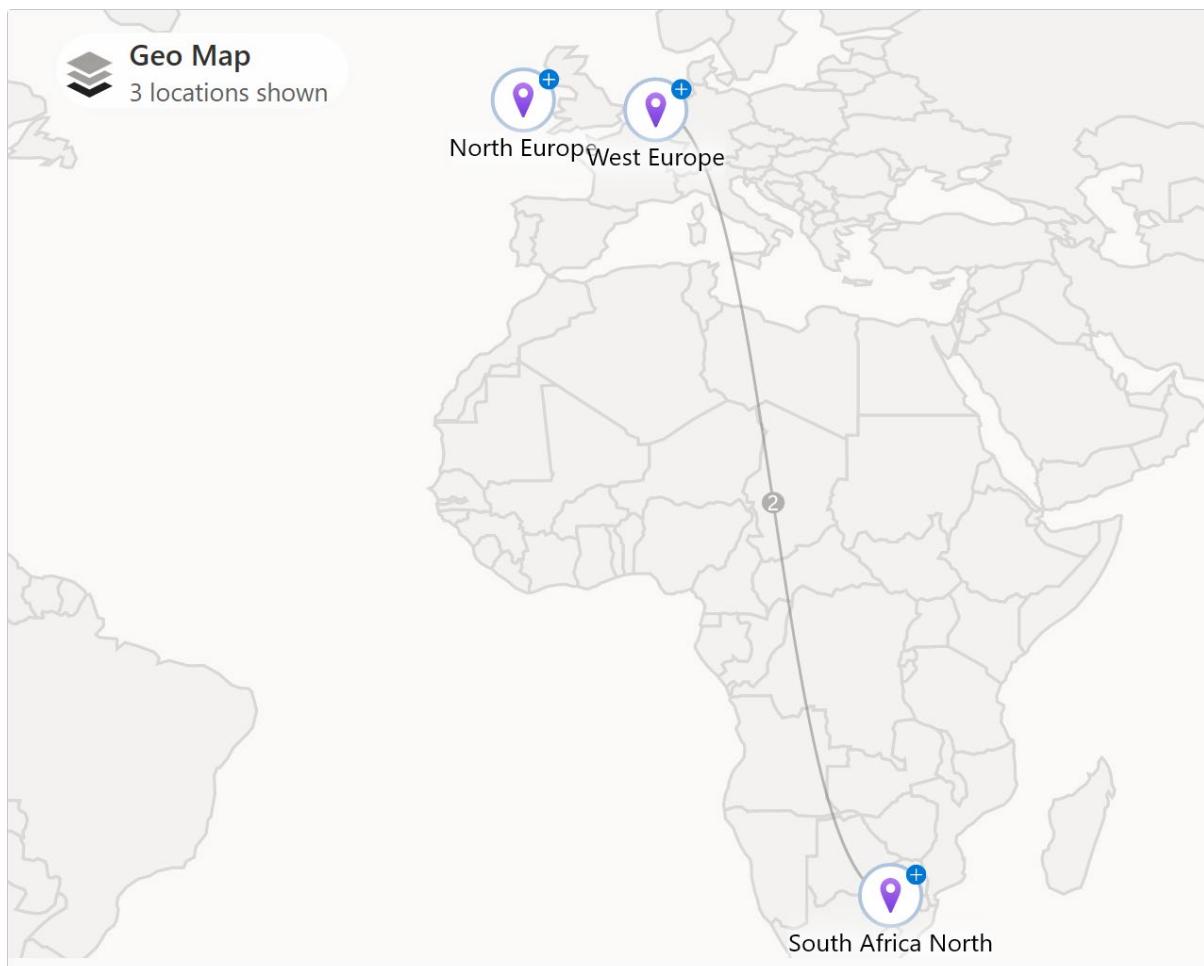
Monitoring



Topology



Connection monitor

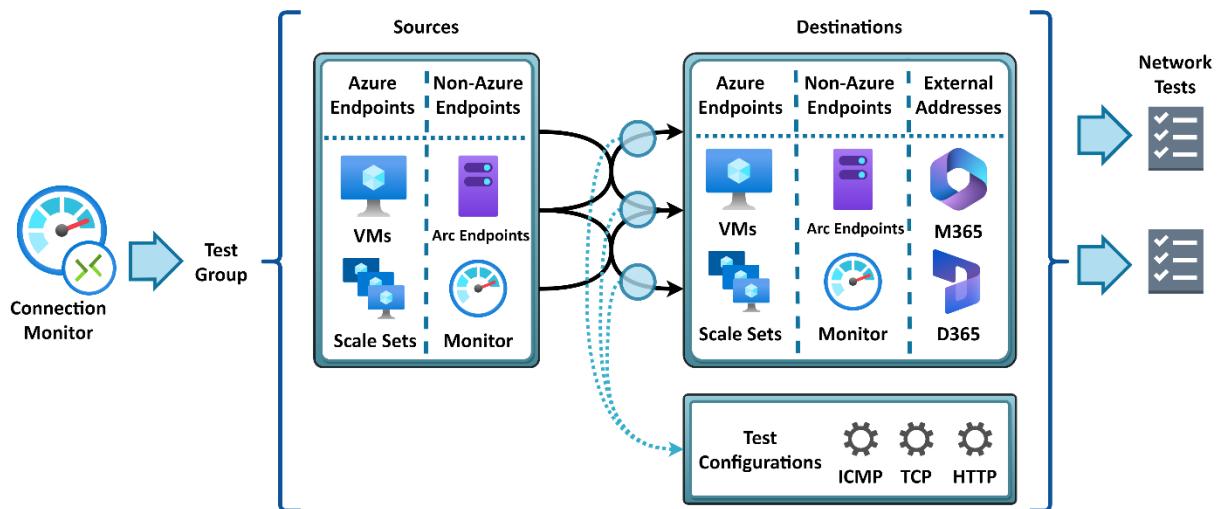


Filter on type : **4 selected** Scope : **3 Subscriptions & 1 Locations**

Fail	Warning	Indeterminate	Not running
0 X out of 1	0 ! out of 1	1 ? out of 1	0 □ out of 1

Connection Monitor ↑↓ Test configurati... Alerts ↑↓ Protocol ↑↓

- VM1-VM2-Test 1 -
- VM1-VM2-Test VM1-VM2-Test-Config -
- networkwatcher1(A...) VM1-VM2-Test-Config TCP



Target resource

Virtual machine * ⓘ Select virtual machine

Network interface *

Packet details

Protocol TCP UDP

Direction Inbound Outbound

Local IP address * ⓘ

Local port * ⓘ

Remote IP address * ⓘ

Remote port * ⓘ

Results

Traffic will be allowed if all NSGs allow it.

Traffic status:  Denied

NSG name	Applied to	Applied action	Additional info
Site1VM	Site1VM	 Deny	View details

Result

Next hop type
VirtualNetworkPeering

IP address

Route table ID

System Route



Site1VM												
Inbound rules												
Name	↑↓	Priority	↑↓	Source	Source Ports	↑↓	Destination	Destination Ports	↑↓	Protocol	↑↓	Access ↑↓
Site1VM3389		1000		0.0.0.0/0.0.0.0/0	0-65535		0.0.0.0/0.0.0.0/0	3389-3389		TCP		Allow
Site1VM5985		1001		0.0.0.0/0.0.0.0/0	0-65535		0.0.0.0/0.0.0.0/0	5985-5985		TCP		Allow
AllowVnetInBound		65000		Virtual network (3 prefixes)	0-65535		Virtual network (3 prefixes)	0-65535		All		Allow
AllowAzureLoadBalancerInBound		65001		Azure load balancer (2 prefixes)	0-65535		0.0.0.0/0.0.0.0/0	0-65535		All		Allow
DenyAllInBound		65500		0.0.0.0/0.0.0.0/0	0-65535		0.0.0.0/0.0.0.0/0	0-65535		All		Deny
Outbound rules												
Name	↑↓	Priority	↑↓	Source	Source Ports	↑↓	Destination	Destination Ports	↑↓	Protocol	↑↓	Access ↑↓
AllowVnetOutBound		65000		Virtual network (3 prefixes)	0-65535		Virtual network (3 prefixes)	0-65535		All		Allow
AllowInternetOutBound		65001		0.0.0.0/0.0.0.0/0	0-65535		Internet (282 prefixes)	0-65535		All		Allow
DenyAllOutBound		65500		0.0.0.0/0.0.0.0/0	0-65535		0.0.0.0/0.0.0.0/0	0-65535		All		Deny

Quota name	Region	Subscription	Current Usage ↓		
Usage at or near quota (3)					
Network Watchers	North Europe	AzureTraining	<div style="width: 100%;"><div style="width: 100%;"> </div></div> 100%	1 of 1	
Network Watchers	South Africa North	AzureTraining	<div style="width: 100%;"><div style="width: 100%;"> </div></div> 100%	1 of 1	
Network Watchers	West Europe	AzureTraining	<div style="width: 100%;"><div style="width: 100%;"> </div></div> 100%	1 of 1	
No usage (Showing 97 of 1889)					
Virtual Networks	Australia Central	AzureTraining	<div style="width: 0%;"><div style="width: 0%;"> </div></div> 0%	0 of 1	
Custom Ip Prefixes	Australia Central	AzureTraining	<div style="width: 0%;"><div style="width: 0%;"> </div></div> 0%	0 of 5	

 NetworkWatcher1 | Extensions + applications

Virtual machine

Search < Extensions VM Applications

Disks

Extensions + applications (highlighted with a red box)

Add Refresh Feedback

Configuration

Advisor recommendations

Search to filter items...

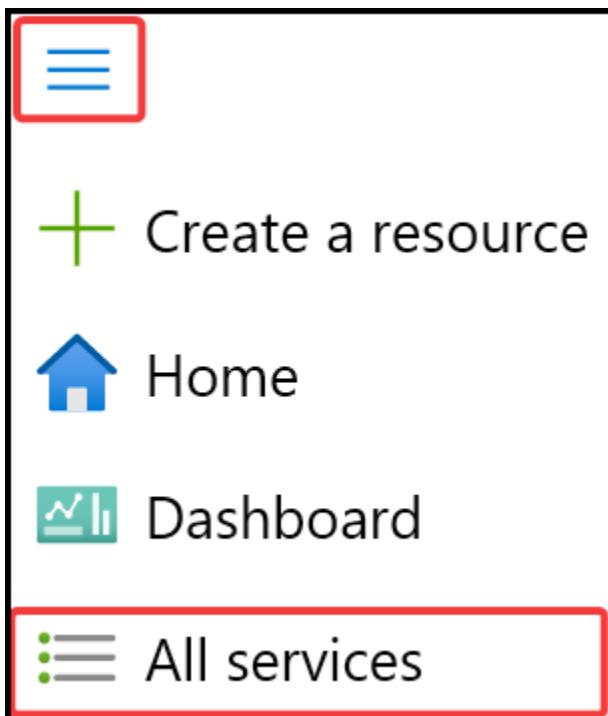
Showing all 0 items

 network watcher 

 **Network Watcher Agent for Windows**

Microsoft Corp.

Azure Network Watcher is a network performance monitoring, diagnostic and analytics service that enables you to monitor your network in Azure



All services

All

network watcher X

Network Watcher

<input type="checkbox"/> Name ↑↓	Subscription ↑↓
<input type="checkbox"/> NetworkWatcher_westeurope	Visual Studio Enterprise

Subscription *

AzureTraining

Region * ⓘ

(US) East US

Connection Monitor Name *

NetworkWatcher1-NetworkWatcher2 ✓

Subscription *

Visual Studio Enterprise Subscription ✓

Don't see a subscription? [Open Directory + Subscription settings](#)

Region *

West Europe

Test group name *

NetworkWatcher1-NetworkWatcher2 ✓

Sources ⓘ 0 Items



Add sources

Test configurations ⓘ 0 Items



Add Test configuration

Destinations ⓘ 0 Items



Add destinations

Name ↑↓ IP



✓ ↳ NetworkWatcherVnet



✓ ↳ NetworkWatcherSubnet 192.168.1.0/24



NetworkWatcher1

Any



NetworkWatcher2

Any

Name	↑↓	IP
<input type="checkbox"/>   NetworkWatcherVnet		
<input checked="" type="checkbox"/>   NetworkWatcherSubnet	192.168.1.0/24	
<input type="checkbox"/>  NetworkWatcher1	Any	
<input checked="" type="checkbox"/>  NetworkWatcher2	Any	

New configuration

Choose existing

Test configuration name *

NetworkWatcher1-NetworkWatcher2-Cfg 

Protocol 

TCP 

Disable traceroute 

Destination port *

3389 

Listen on port 

Test Frequency 

Every 30 seconds 

Success Threshold 

Checks failed (%) *

5 

Fail 

0 

out of 1

Warning 

0 

out of 1

Indeterminate 

0 

out of 1

Not running 

0 

out of 1

Pass 

1 

out of 1

Connection Monitor

↑↓

Alerts ↑↓

Protocol ↑↓

Status ↑↓

>  NetworkWatcher1-NetworkWatcher2

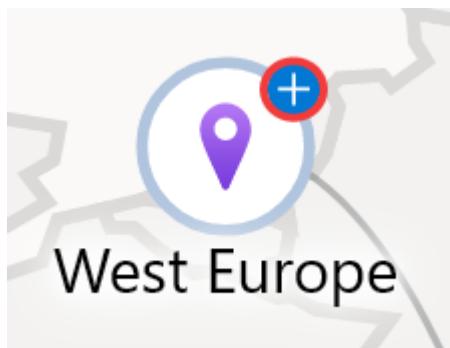
1

-



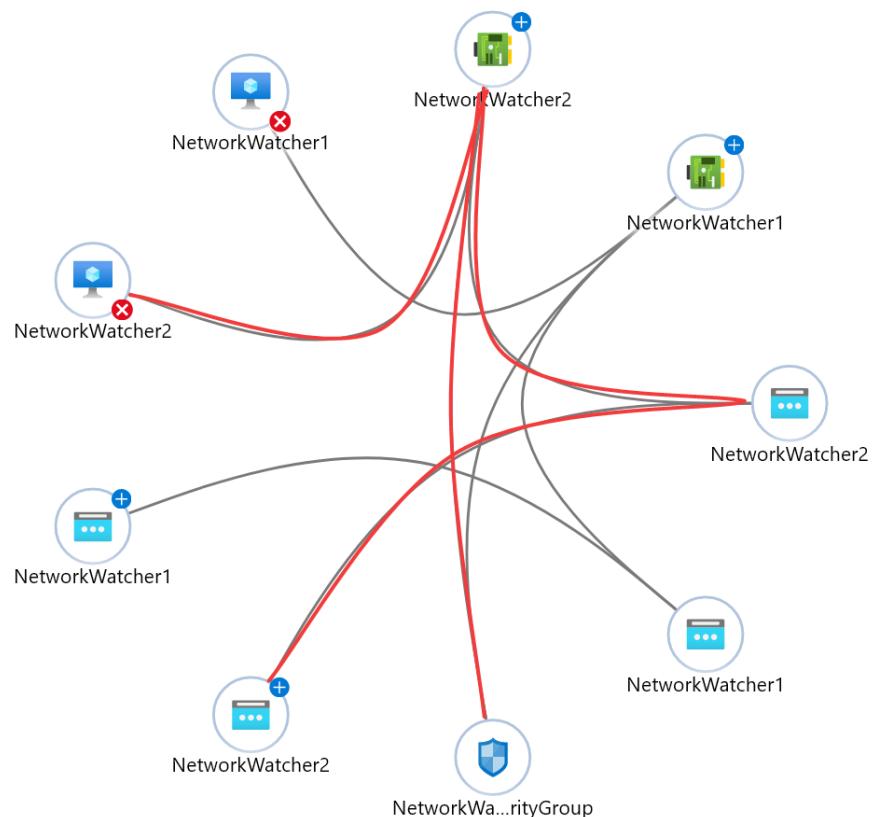
Scope : 1 subscription & 2 locati...

Resource type : All



NetworkWatcherVnet
VIRTUAL NETWORK

NetworkWatcherSubnet
SUBNET



Reset topology



Feedback



Download topology

Result

Next hop type

Internet

IP address

-

Route table ID

System Route



Result

Next hop type

VirtualNetwork

IP address

-

Route table ID

System Route



Checkbox	Name	↑↓	Troubleshooting...↑↓	Resource status ↑↓
<input type="checkbox"/>	NetworkWatcherVPN		Not started	Succeeded

 Start troubleshooting

Network Watcher VPN Troubleshoot diagnoses the health of the virtual network gateway or connection. This request is a long running transaction, and the results are returned once the diagnosis is complete. You can select multiple gateways or connections to troubleshoot simultaneously. [Learn more.](#)

Subscription 

Resource group 

Location 

Visual Studio Enterprise Subscription 

AZ104-NetworkWatcher 



Select storage account

Checkbox

Name

 Troubleshooting status

 Resource status



 NetworkWatcherVPN

Not started

Succeeded



 NetworkWatcherVPNNettoNetw...

Not started

Updating

Checkbox

Name

 Troubleshooting status





 NetworkWatcherVPN

 Unhealthy



 NetworkWatcherVPNNettoNetworkWatcher1

Not started

Checkbox

Name

 Troubleshooting status



 NetworkWatcherVPN

 Healthy



 NetworkWatcherVPNNettoNet...

Not started

Status Action

Resetting the VPN gateway

If you are having problems with the VPN gateway, try resetting the VPN gateway. [Learn more.](#)
Contact support

If you are experiencing problems you believe are caused by Azure, [contact support](#).

Results

 Access allowed

Security Rule

AllowInternetOutBound

Results

 Access denied

Security Rule

DenyAllInBound

NetworkWatcherSecurityGroup

Inbound rules

Name	↑↓	Priority	↑↓	Source	Source Ports
NetworkWatcherSecurityGroup...		1000		0.0.0.0/0,0.0.0.0/0	0-65535
AllowVnetInBound		65000		Virtual network (2 prefixes)	0-65535
AllowAzureLoadBalancerInBound		65001		Azure load balancer (2 prefixes)	0-65535
DenyAllInBound		65500		0.0.0.0/0,0.0.0.0/0	0-65535

Outbound rules

Name	↑↓	Priority	↑↓	Source	Source Ports
AllowVnetOutBound		65000		Virtual network (2 prefixes)	0-65535
AllowInternetOutBound		65001		0.0.0.0/0,0.0.0.0/0	0-65535
DenyAllOutBound		65500		0.0.0.0/0,0.0.0.0/0	0-65535

Results

Test(s) ran: Connectivity, NSG diagnostic, Next hop, Port scanner

Source: [NetworkWatcher1](#) Destination: www.microsoft.com

[Export to CSV](#)

Diagnostic tests

Test	Status	Details	
Connectivity test	✓ Reachable	Probes sent: 13, probes failed: 12 Average latency (ms): 1, minimum latency (ms): 1, maximum latency (ms): 1	See details
Source port accessible	⌚ Timeout		

Results

Test(s) ran: Connectivity, NSG diagnostic, Next hop, Port scanner

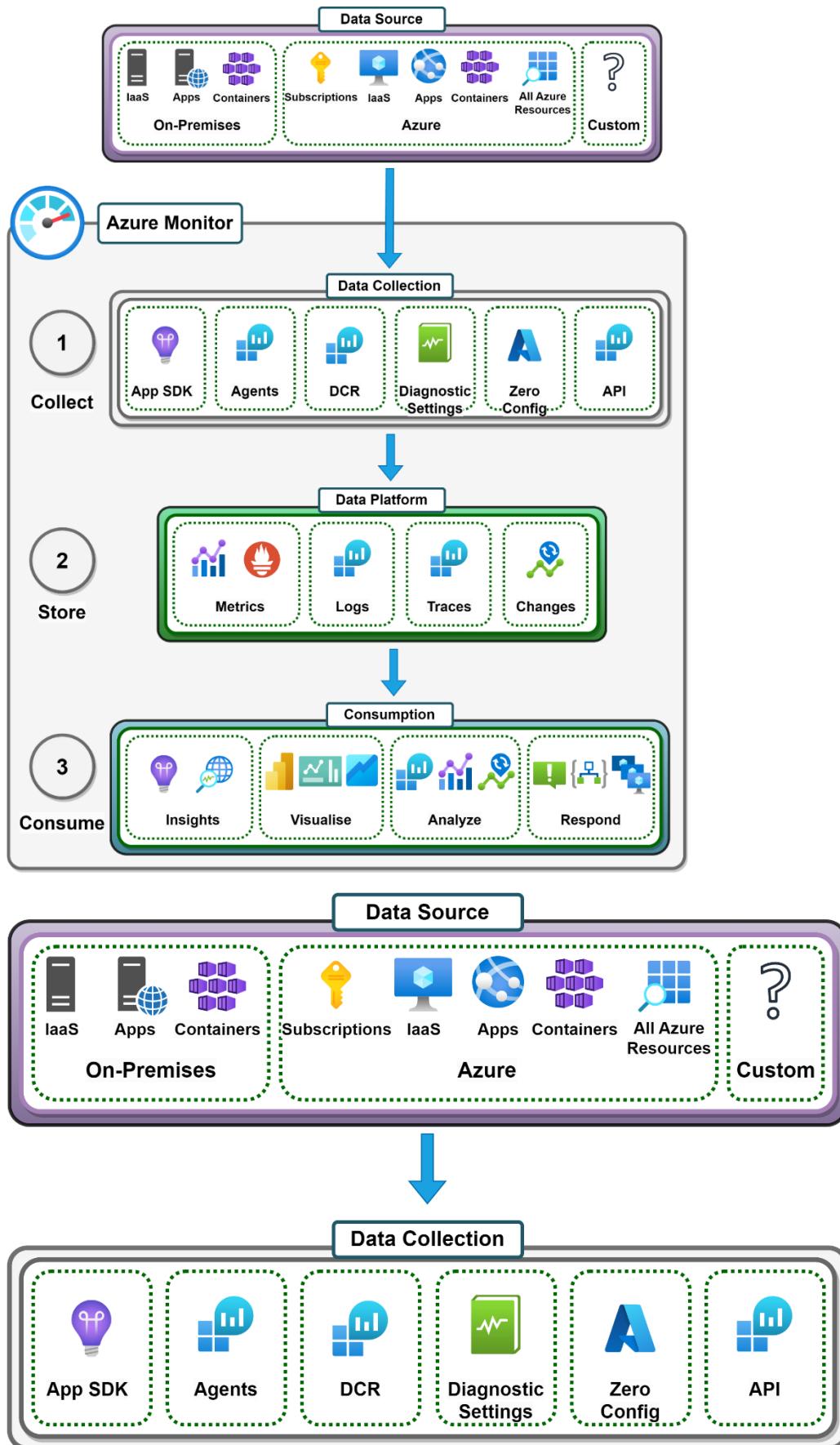
Source: [NetworkWatcher1](#) Destination: [NetworkWatcher2](#)

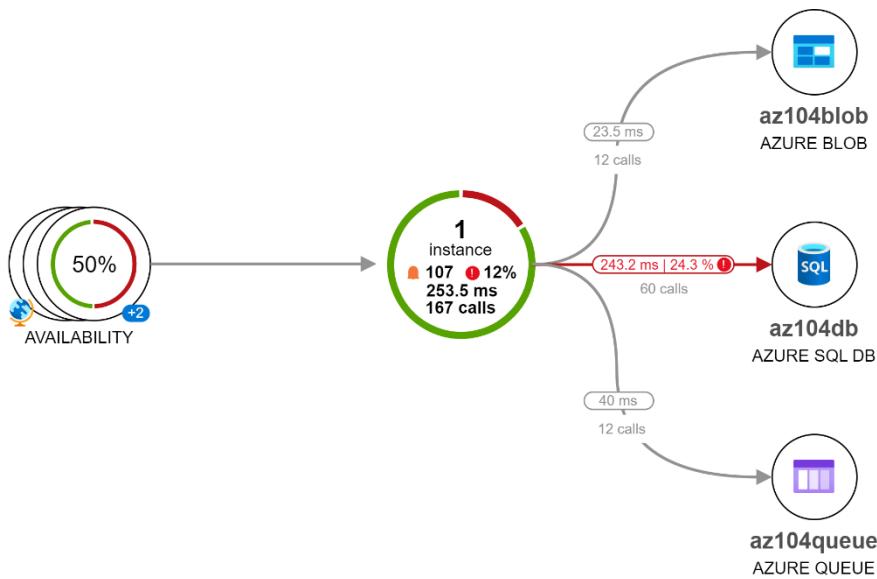
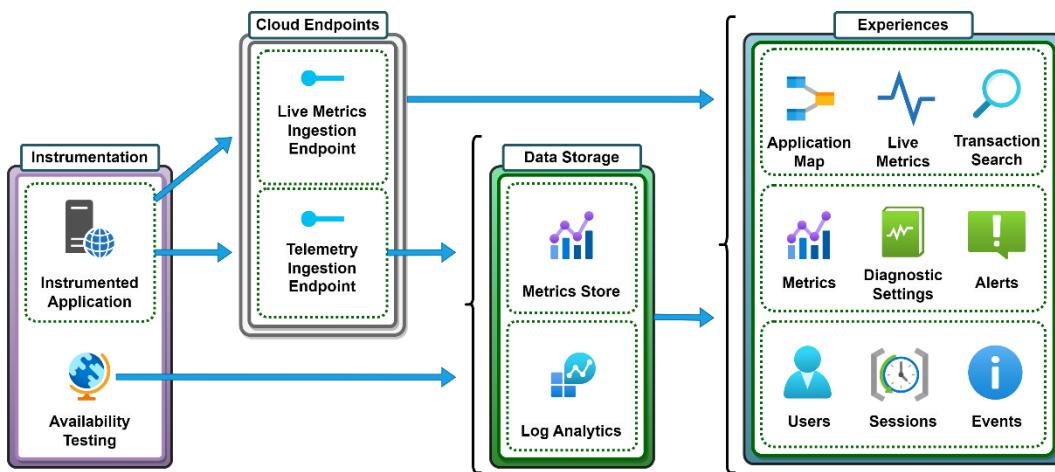
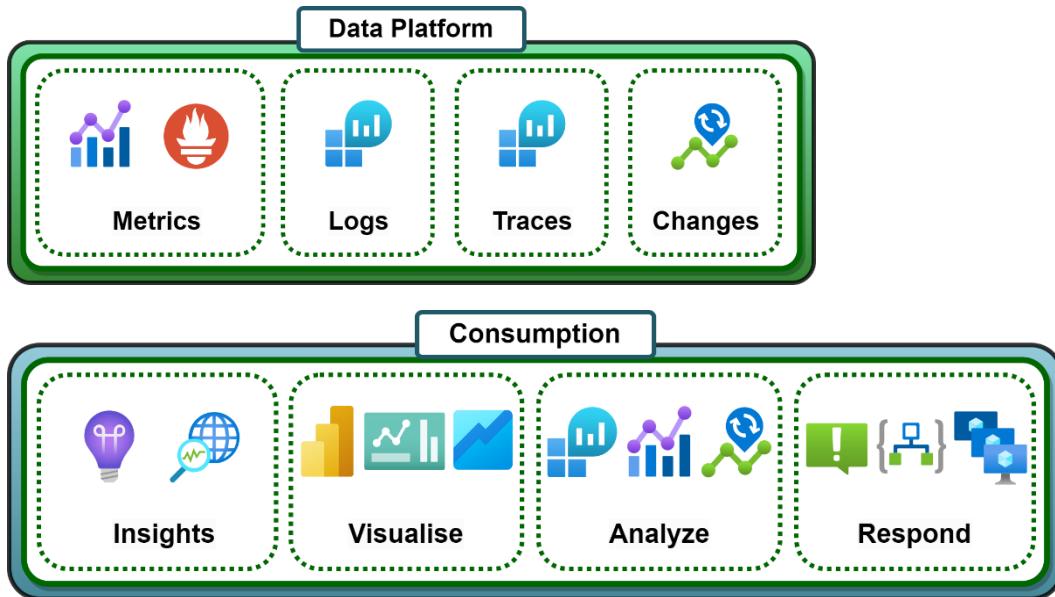
[Export to CSV](#)

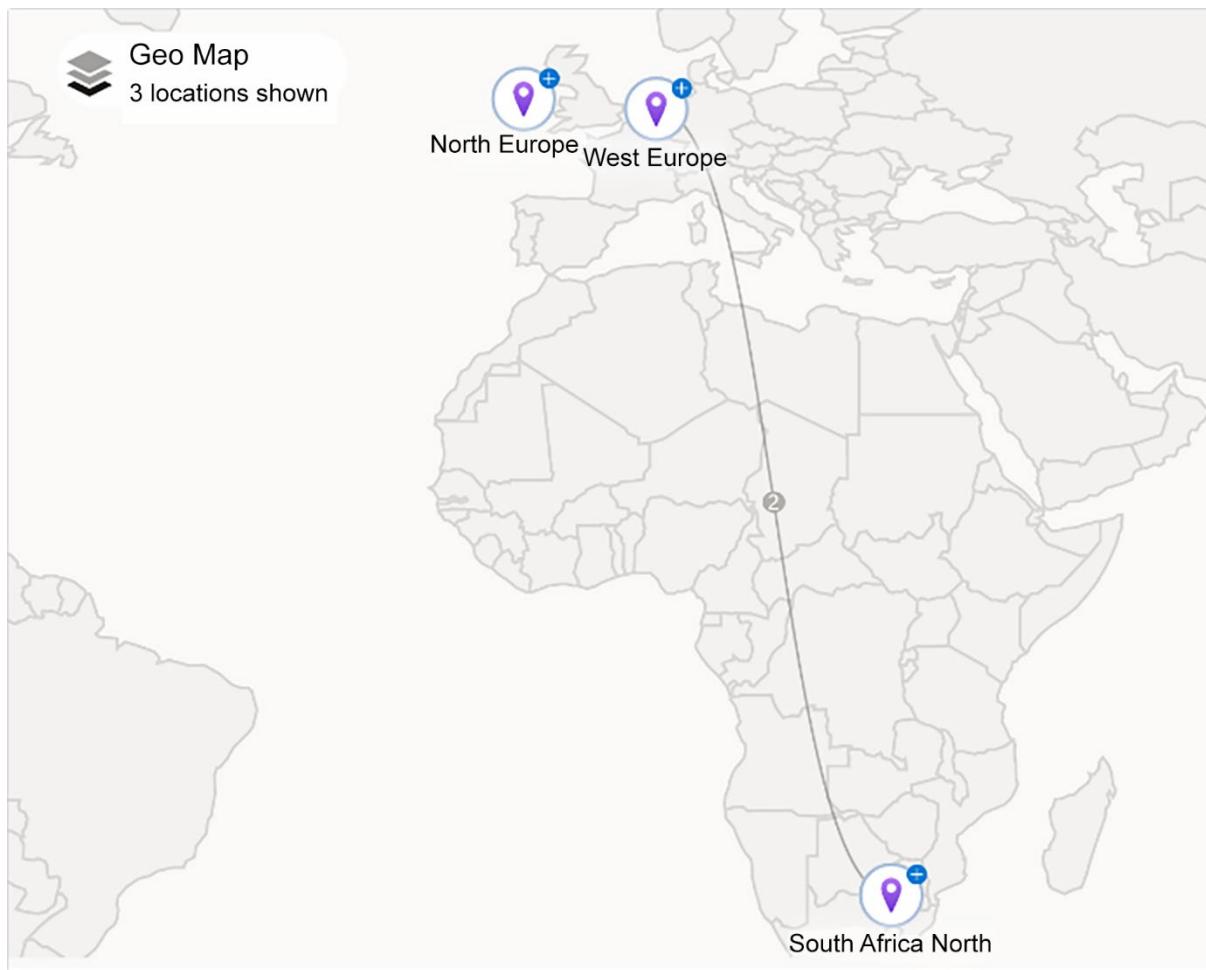
Diagnostic tests

Test	Status	Details	
Connectivity test	✗ Unreachable	Probes sent: 3, probes failed: 3	See details
Outbound NSG diagnostic	✓ Allow	Outbound communication to destination is allowed	See details
Inbound NSG diagnostic	✓ Allow	Inbound communication to destination is allowed	See details
Next hop (from source)	✓ Success	Next hop type: Virtual Network Route table: System Route	
Source port accessible	⌚ Timeout		
Destination port accessible	⌚ Timeout		

Chapter 21:







Operation name	Status	Time	Time stamp	Subscription
> i Delete Storage Account	Succeeded	15 hours ago	Tue Apr 30 2024...	AzureTraining
> i List Storage Account Keys	Succeeded	15 hours ago	Tue Apr 30 2024...	AzureTraining
> ! Check Backup Status for Vault	Failed	15 hours ago	Tue Apr 30 2024...	AzureTraining
> i List Storage Account Keys	Succeeded	15 hours ago	Tue Apr 30 2024...	AzureTraining
> i Delete Connection Monitor	Succeeded	5 days ago	Fri Apr 26 2024 ...	AzureTraining
> i Delete Storage Sync Services	Succeeded	a week ago	Mon Apr 22 202...	AzureTraining

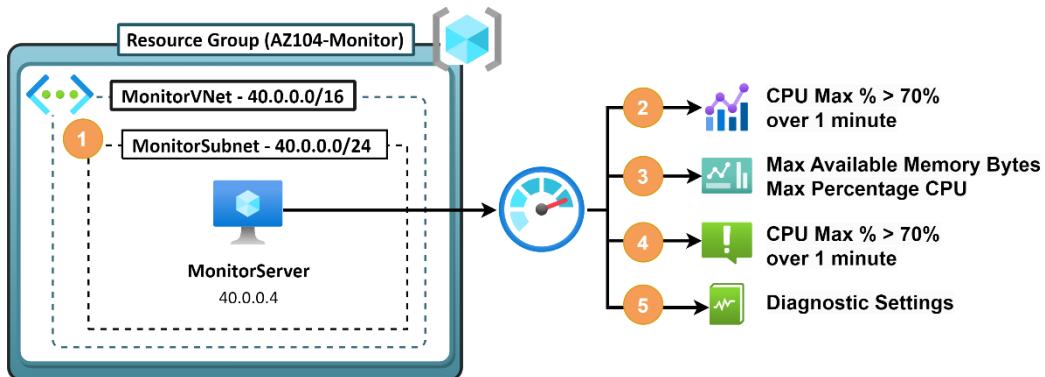
Issue name	Tracking ID	Event type	Services
Action required: Update firewall configurati...	B_ZH-HCZ	Health Advisory	Logic Apps
End of Routine Planned Maintenance for Ap...	RS62-RZG	Planned Maintenance	App Service
Post Incident Review (PIR) - Network connec...	VT60-RPZ	Service Issue	Network Infrastructure

[Download as PDF](#) [Track issue on mobile](#) [Create a support request](#) [Create service health alert](#) [Send feedback](#)

Summary	Impacted Services	Issue Updates	
Tracking ID	RS62-RZG	Status	Resolved
Shareable link	https://app.azure.com/h/RS62-RZG/67fd36	Health Event Type	Planned Maintenance
Impacted service(s)	App Service	Start time	2024/03/28 23:06:29 (1 month ago)
Impacted region(s)	West Europe	End Time	2024/04/07 23:06:29 (23 days ago)
Last update	This notification is for previously scheduled maintenance to your Azure App Service instance(s) in West Europe. The maintenance has now completed. During this time, your Azure App Service application(s) may have seen a brief drop in connectivity for a few seconds. Please see frequently asked questions for maintenance notifications: Routine maintenance for App Service . For maximum availability and minimal disruption to your service, follow our list of best practices outlined here: The Ultimate Guide to Running Healthy Apps in the Cloud . Feel free to refer to your portal for more information (https://aka.ms/servicehealthpm) and for any additional questions, please contact support . To view your resource list in the region, click here . See all updates		

Subscription [\(i\)](#) Resource type [\(i\)](#)

AzureTraining	Storage account		
↑↓ Resource Name ↑↓	Type	↑↓ Location	↑↓ Subscription
csb100320015b2437...	Storage account	westeurope	AzureTraining



Monitor

All Services (17) Resources (7) More (4)

Services See more

Monitor (highlighted with a red arrow)

Azure Native New Relic Service
Keywords: **monitoring**; Resource type: NewRelic.Observability/**monitors**

Insights

Use curated monitoring views for specific Azure resources. [View all insights](#)

Application insights

Monitor your app's availability, performance, errors, and usage.

[View](#) [More](#)

Container Insights

Gain visibility into the performance and health of your controllers, nodes, and containers.

[View](#) [More](#)

VM Insights

Monitor the health, performance, and dependencies of your VMs and VM scale sets.

[View](#) [More](#)

Network Insights

View the health and metrics for all deployed network resources.

[View](#) [More](#)

Detection, triage, and diagnosis

Visualize, analyze, and respond to monitoring data and events. [Learn more about monitoring](#)

Metrics

Create charts to monitor and investigate the usage and performance of your Azure resources.

[View](#) [More](#)

Alerts

Get notified and respond using alerts and actions.

[View](#) [More](#)

Logs

Analyze and diagnose issues with log queries.

[View](#) [More](#)

Workbooks

View, create and share interactive reports.

[View](#) [More](#)

Change Analysis

Investigate what changed to triage incidents.

[View](#) [More](#)

Diagnostic Settings

Route monitoring metrics and logs to selected locations.

[View](#) [More](#)

Azure Monitor SCOM managed instance

SCOM managed instance monitors workloads running on cloud and on-prem.

[View](#) [More](#)

Managed Prometheus

Collect Prometheus metrics from your containerized workloads to monitor their health and performance.

[View](#) [More](#)

Browse Recent

Subscription: Visual Studio Enterprise... | Resource types: Virtual machines | Locations: West Europe

Search to filter items...

Scope	Resource type	Location
<input type="checkbox"/> Visual Studio Enterprise Subscription	Subscription	-
<input type="checkbox"/> AZ104-Monitor	Resource group	-
<input checked="" type="checkbox"/> MonitorServer	Virtual machine	West Europe

Scope	Metric Namespace	Metric	Aggregation
<input type="text"/> MonitorServer	<input type="text"/> Virtual Machine Host	<input type="text"/> Percentage CPU	<input type="text"/> Max

Local Time: Last 24 hours (Automatic - 5 minutes)

Time range

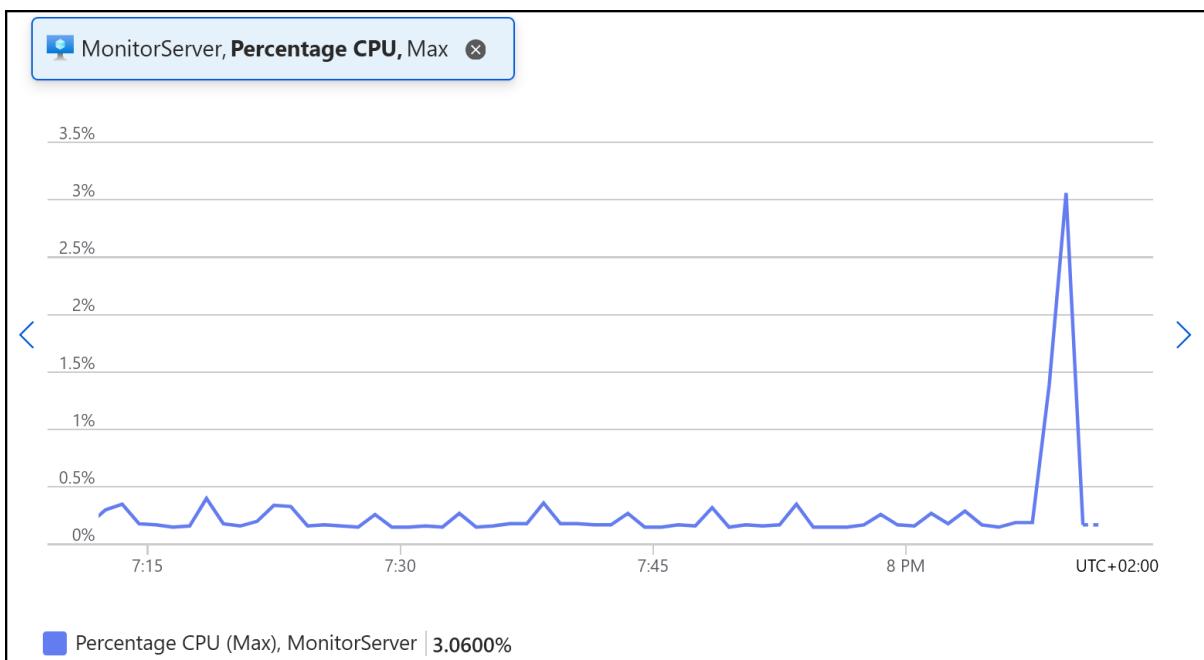
Last 30 minutes Last hour Last 4 hours Last 12 hours Last 24 hours Last 48 hours Last 3 days Last 7 days Last 30 days Custom

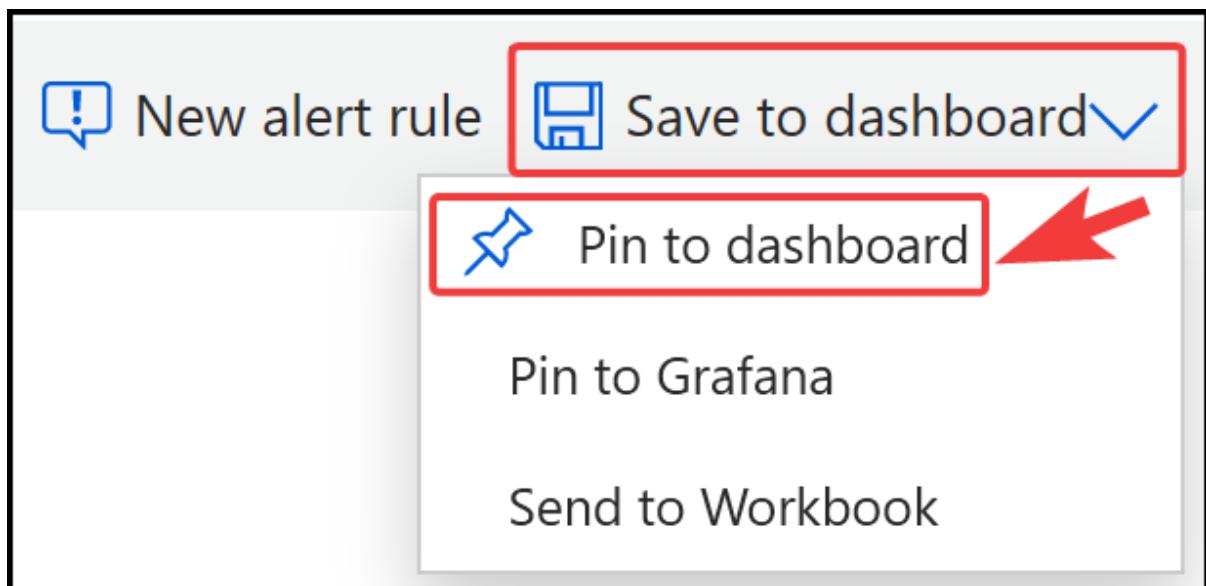
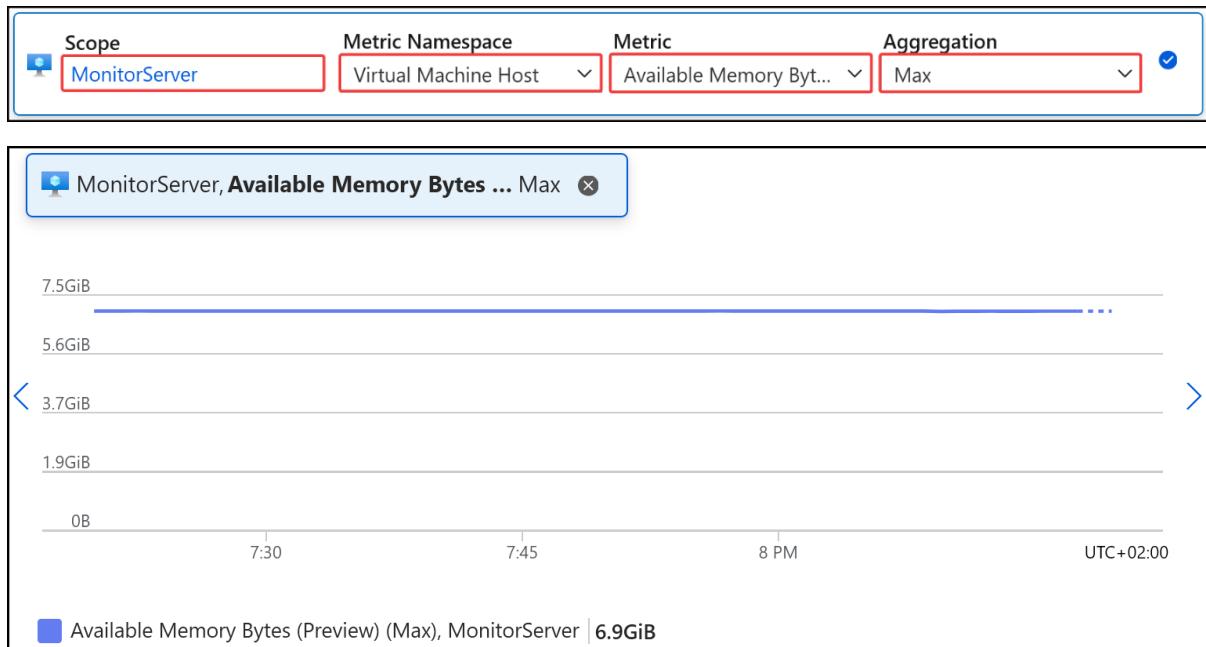
Time granularity

Automatic

Show time as

UTC/GMT Local





Existing

Create new

Type ⓘ

Private

Shared

Dashboard name *

MyFirstDashboard



Existing

Create new

Type ⓘ

Private

Shared

Dashboard

MyFirstDashboard



Microsoft Azure



Create a resource

Home

Dashboard

All services

My Dashboard

Private dashboard

MyFirstDashboard



My Dashboard

Showing recent shared dashboards from 1 subscription

[Browse all dashboards](#)

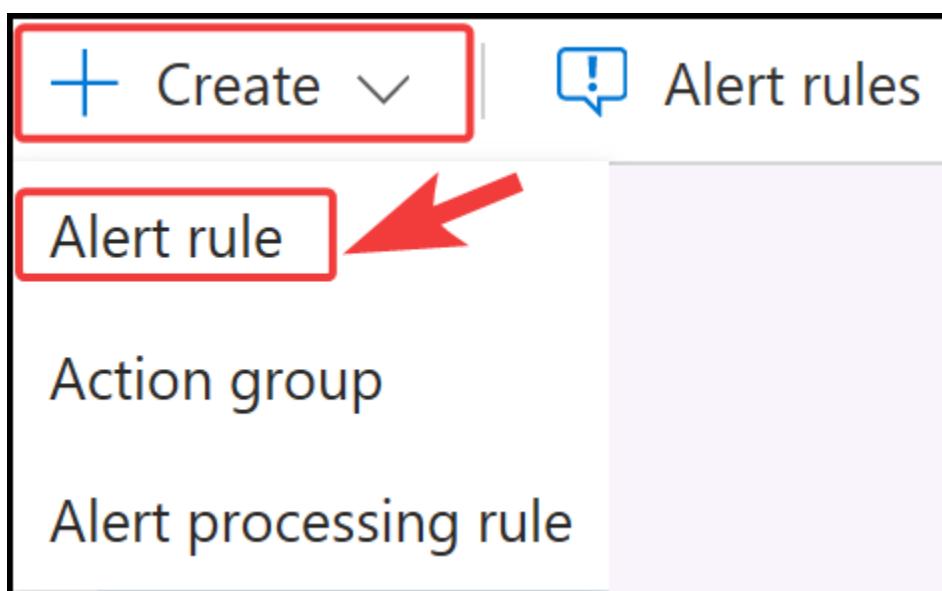
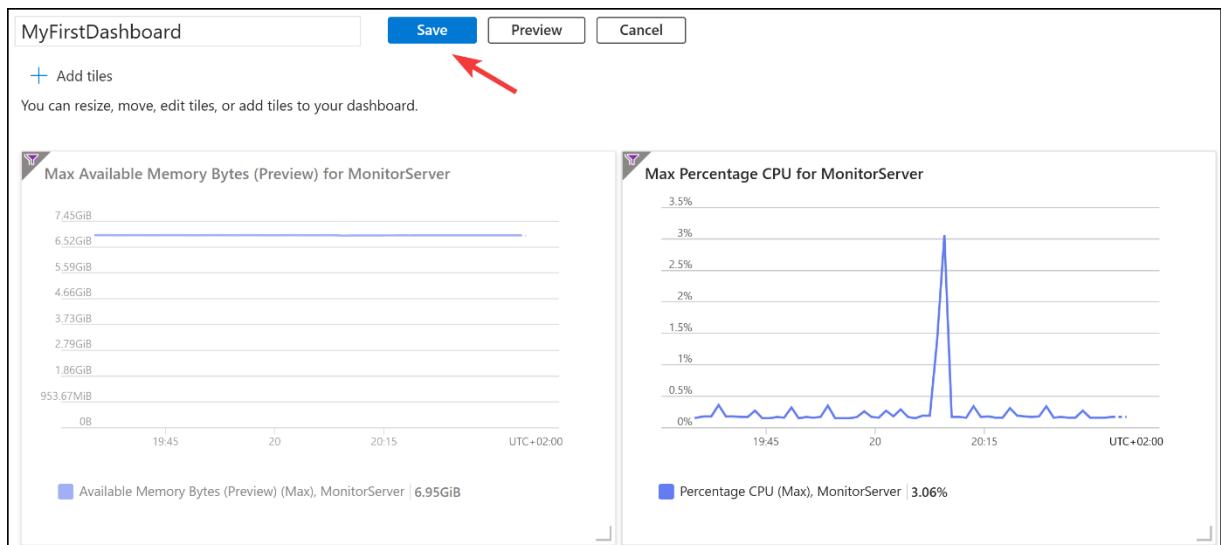
Create

Upload

Refresh

Full screen

Edit



Subscription	Resource types	Locations
Visual Studio Enterprise...	Virtual machines	All locations
<input type="text"/> Search to filter items...		
Resource		
<input type="checkbox"/> Visual Studio Enterprise Subscription	Subscription	-
<input type="checkbox"/> AZ104-Monitor	Resource group	-
<input checked="" type="checkbox"/> MonitorServer	Virtual machine	West Europe

Alert logic

i We have set the condition configuration automatically based on popular settings for this metric. Please review and make changes as needed.

Threshold i

Static Dynamic

Aggregation type i

Average ✓

Operator i

Greater than ✓

Threshold value * i

80

When to evaluate

Check every i

1 minute ✓

Lookback period i

5 minutes ✓

Details

Action group name * i

emailme

Display name * i

emailme

Actions

Email i

youremail@domain.com

Email Azure Resource Manager Role

Select an Azure Resource Manager role ✓

Azure mobile app notification i

Alert rule details

Severity * ⓘ

3 - Informational

Alert rule name * ⓘ

highcpu

Scope	Metric Namespace	Metric	Aggregation
MonitorServer	Guest (classic)	\LogicalDisk(_Total)\Avg. Disk sec/Read	Select aggregation
		\LogicalDisk(_Total)\Avg. Disk sec/Transfer	
		\LogicalDisk(_Total)\Avg. Disk sec/Write	
		\LogicalDisk(_Total)\Avg. Disk Write Queue...	
		\LogicalDisk(_Total)\Disk Bytes/sec	
		\LogicalDisk(_Total)\Disk Read Bytes/sec	
		\LogicalDisk(_Total)\Disk Reads/sec	
		\LogicalDisk(_Total)\Disk Transfers/sec	

Windows Defender

Real-Time Protection: On

Feedback & Diagnostics

Settings

IE Enhanced Security Configuration

On



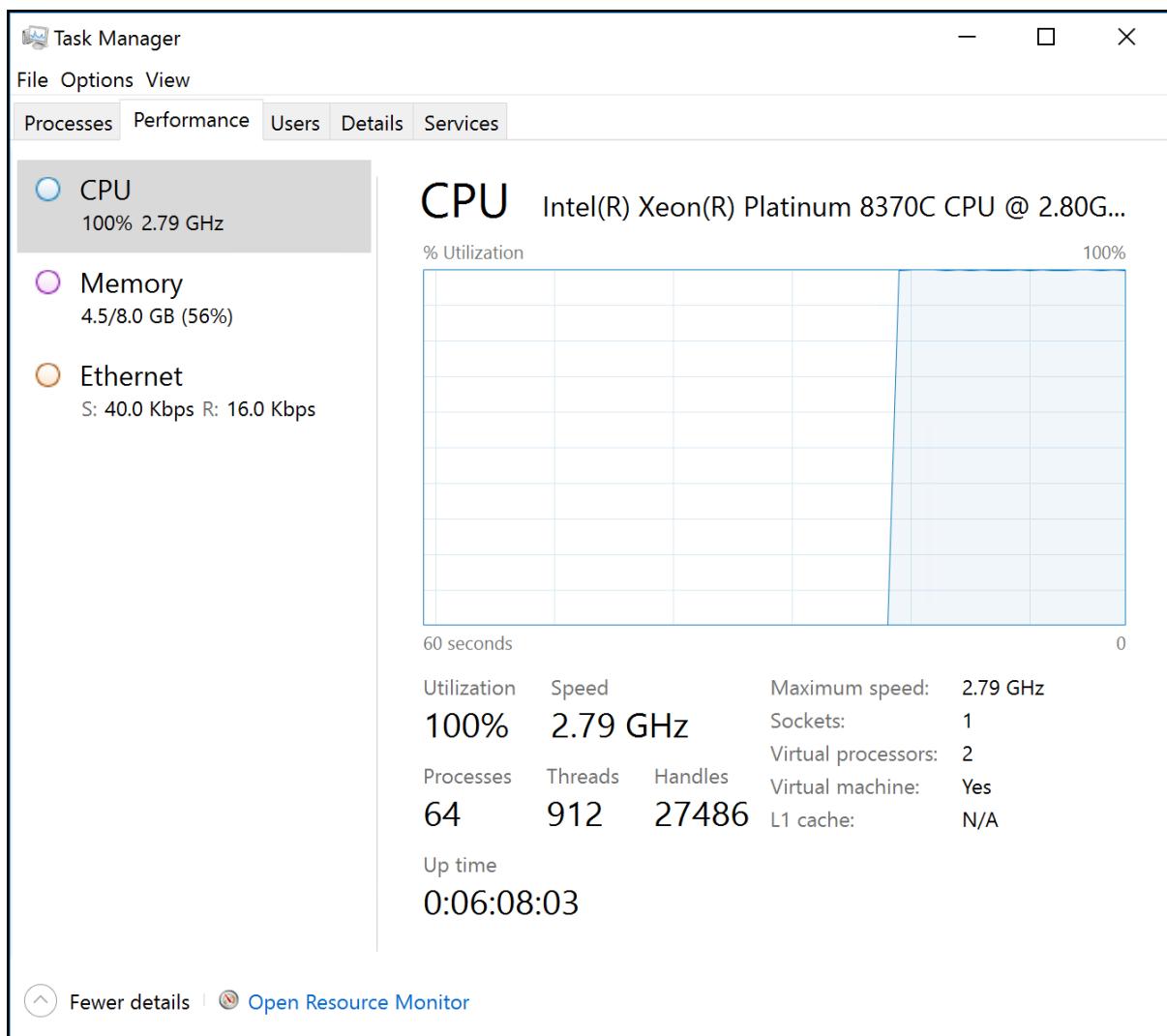
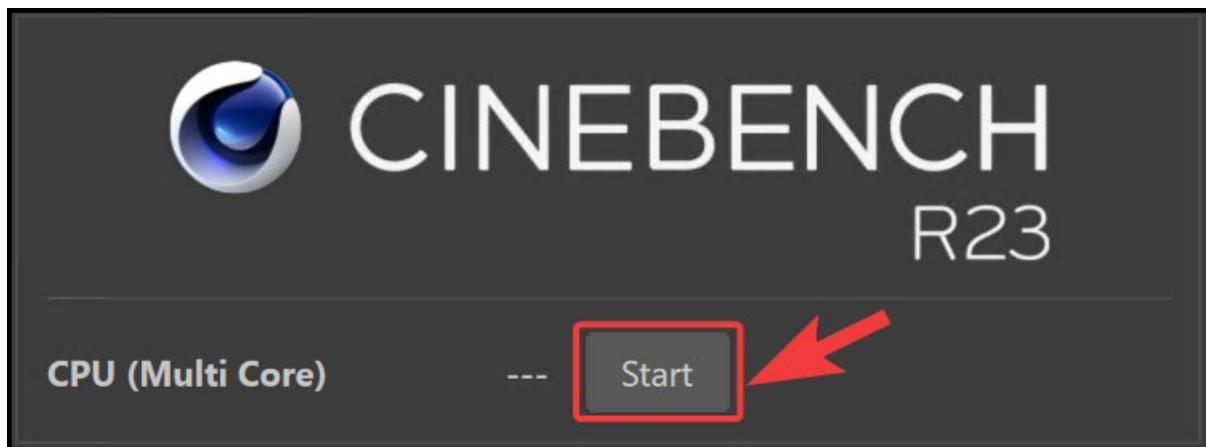
Time zone

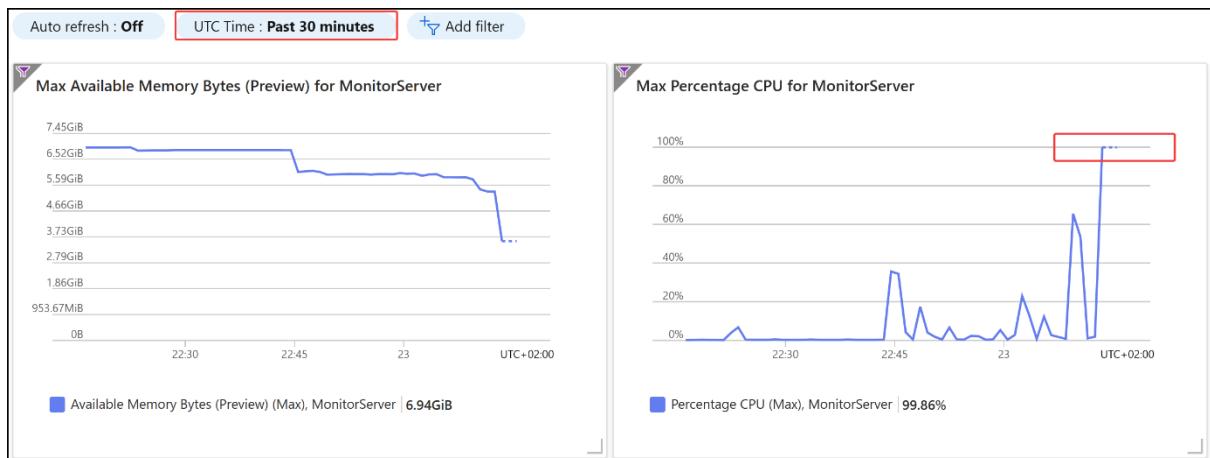
(UTC) Coordinated Universal Time

Product ID

00376-40000-00000-AA947 (activated)

Name	Date modified
CinebenchR23	
FurMark_2.2.0.1_Setup_x64	





Name ↑↓	Severity ↑↓	Affected resource ↑↓	Alert condition ↑↓
<input type="checkbox"/> highcpu	3 - Informational	monitorserver	⚠ Fired

Log Analytics Workspace [Add to Favorites](#)

Microsoft | Azure Service

★ 3.0 (54 ratings)

Plan

[Create](#)

Logs Demo

New Query 1 + Run Time range : Last 24 hours Save Share New alert rule ...

Tables Queries Functions ...

Search Filter Group by: Solution

Collapse all Active Directory Health Check Azure Monitor for VMs

1 Type your query here or click one of the queries to start

Query Space

← Schema and Filters

Results and Visualizer Pane

Collapse all

Favorites

You can add favorites by clicking on the icon

- ▶ Active Directory Health Check
- ◀ Azure Monitor for VMs
 - ▶ InsightsMetrics
 - ▶ HealthStateChangeEvent
 - ▶ VMBoundPort
 - ▶ VMComputer
 - ▶ VMConnection
 - ▶ VMProcess
- ▶ AzureResources
- ▶ Change Tracking

InsightsMetrics

[Use in editor](#)

Description

Table that stores metrics. 'Perf' table also stores many metrics and over time they all will converge to InsightsMetrics for Azure Monitor Solutions

Tags

Useful links

[InsightsMetrics](#)

[See preview data](#)

Run Time range : Last 24 hours | Save ...

1 InsightsMetrics

...

Results Chart 🔍

ℹ️ Showing the first 30,000 results. [Learn more](#) on how to narrow down the result set. X

TimeGenerated [UTC]	Computer	Origin	Namespace	Columns
> 03/05/2024, 07:58:26.535	RETAILVM01	vm.azm.ms	LogicalDisk	
> 03/05/2024, 07:58:26.535	RETAILVM01	vm.azm.ms	LogicalDisk	
> 03/05/2024, 07:58:26.535	RETAILVM01	vm.azm.ms	Computer	

t SourceSystem (string)

t Tags (string)

⌚ TimeGenerated (datetime)

t Type (string)

Val (real)

t Value (string)

Results

Chart

Computer

> DC00

> JBOX10

> JBOX00

> CH1-UBNTVM

> DC11.na.contosohotels.com

Results

Chart

AlertName

count_

> Test1MinuteWindowSize	14862
> alertrulelsazuremetricsmultipledimensions01	1

► Run

Time range : Last 24 hours

Results

Chart

AlertName

alertrulelsazurem...

0 10,000 20,000 30,000 40,000 50,000 60,000 70,000 80,000 90,000 100,000 110,000

count_

Results

Chart

20,000

15,000

10,000

5,000

0

26 Apr 27 Apr 28 Apr 29 Apr 30 Apr 1 May 2 May 3 May

TimeGenerated [UTC]

🚀 Onboard to Azure Monitors for VM

The VM selected is currently not onboarded to Azure Monitors for VMs. Please click the below button to onboard.

Onboard



This Workbook has no content.



Use the add button below to add items.



Add



Run Metrics

Resource (i) (change)

BCDRVM1

Split by (i)

Time Range (i)

Last hour

Time Granularity (i)

Visualization (i)

Size (i)

Color palette (i)

Auto



Line chart



Medium



Auto



Add metric



Select Metric Settings

Metrics Filters

Namespace ⓘ

Virtual Machine Host



Metric ⓘ

Percentage CPU



Aggregation ⓘ

Max



Display name (optional) ⓘ



PROJECT DETAILS

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

Subscription * ⓘ

Visual Studio Enterprise Subscription ▾



Resource Group * ⓘ

AZ104-Monitor ▾

[Create new](#)

INSTANCE DETAILS

Name * ⓘ

az104monitorappinsights ✓

Region * ⓘ

(Europe) West Europe ▾

WORKSPACE DETAILS

Subscription * ⓘ

Visual Studio Enterprise Subscription ▾



Log Analytics Workspace * ⓘ

az104loganalytics [westeurope] ▾

Enable Application Insights without redeploying your code

[Turn on Application Insights](#)

Application Insights

Collect application monitoring data using Application Insights

[Enable](#)

[Disable](#)

ⓘ

Feedback ▾

Select existing resource

select a subscription *

Visual Studio Enterprise Subscription



Search to find more resources

Top 5 relevant resources - Relevance is determined by resource group, location, or in alphabetical order.

Only resources with write permission are selectable here.

Name	Resource Group	Location
az104monitorappinsights	AZ104-Monitor	West Europe

Apply monitoring settings

We will now apply changes to your app settings and install our tools to link your Application Insights resource to the web app. This will restart the site. Do you want to continue?

Yes

No

Chapter 22:

AZ104-BCDR

Resource group

Search

Create Manage view Delete resource group Refresh

Overview

Activity log Access control (IAM) Tags Resource visualizer Events

Subscription (move) : Visual Studio Enterprise Subscription
Subscription ID : 67f1c882-3828-4386-9109-09b0df3c6d36
Tags (edit) : Add tags

Resources Recommendations

Filter for any field... Type equals all Location equals all

Showing 1 to 1 of 1 records. Show hidden types

Name ↑ Az104RecoveryServicesVault

Az104RecoveryServicesVault

Recovery Services vault

Search

+ Backup + Enable Site Recovery Delete

Overview Activity log

Try our new Business Continuity Center for the at scale BCDR management of your resources protected across Azure Backup and Site Recovery.

Where is your workload running?

Azure

What do you want to backup?

Virtual machine

Step: Configure Backup

Backup

<input type="radio"/> Enhanced	<input checked="" type="radio"/> Standard
✓ Multiple backups per day	✓ Once-a-day backup
✓ Up to 30 days operational tier retention	✓ Up to 5 days operational tier retention
✓ Support for Trusted Launch Azure VM	
✓ Support for VMs with Ultra Disks and Premium SSD v2	

Policy name i ✓

Backup schedule

Frequency * ▾ Time * ▾ Timezone * ▾

Instant restore i

Retain instant recovery snapshot(s) for Day(s) i ✓

Retention range

- Retention of daily backup point

At

For

08:00

30

Day(s)

- Retention of weekly backup point

Not Configured

- Retention of monthly backup point

Not Configured

- Retention of yearly backup point

Not Configured

Azure Backup Resource Group (Optional) i

Enter The Name

n

Suffix (Optional)

Virtual machine name

Resource Group



BCDRVM1

az104-bcdr



BCDRVM2

az104-bcdr

BACKUP MANAGEMENT TYPE	BACKUP ITEM COUNT
Azure Virtual Machine	1
Azure Backup Agent	0
Azure Backup Server	0
DPM	0
Azure Storage (Azure Files)	0
SQL Database in Azure VM	0
SAP HANA in Azure VM	0

✓ All data fetched from the service.

Filter items ...

Name ↑↓	Resource Group ↑↓	Backup Pre-Check	Last Backup Status
BCDRVM1	AZ104-BCDR	✓ Passed	⚠ Warning (Initial backup pending)

backup center X

All Services (14) Documentation (99+) ▼ More (4)

Services See more

 [Backup center](#)

BCDRVM1 ... X

Backup Item Backup now Restore VM File Recovery Stop backup Resume backup ...

Try our new Business Continuity Center for the at scale BCDR management of your resources protected across Azure Backup and Site Recovery. →

^ Essentials JSON View

Recovery services vault Az104RecoveryServicesVault	Backup Pre-Check Passed
Subscription (move) Visual Studio Enterprise Subscription	Last backup status Warning (Initial backup pending)

BCDRVM1

Backup Item Restore VM Backup now File Recovery Stop backup

Try our new Business Continuity Center for the at scale BCDR management

^ Essentials

Recovery services vault : [Az104RecoveryServicesVault](#)

Subscription ([move](#)) : [Visual Studio Enterprise Subscription](#)

Restore allows you to restore VM/disks from a selected Restore Point.

Restore point *

No Restore Point Selected

Select

CRASH CONSISTENT

APPLICATION CONSISTENT

FILE-SYSTEM CONSISTENT

Time

Consistency

Recovery Type

Time	Consistency	Recovery Type
04/05/2024, 10:41:08 pm	Application Consistent	Snapshot

Restore configuration

- Create new
 Replace existing

i The disk(s) from the selected restore point will replace the disk(s) in your existing VM. You can find the existing disks retained under their original resource group. [Learn more about In-Place Restore.](#)

Restore Type [\(i\)](#)

Replace Disk(s) [▼](#)

Staging Location * [\(i\)](#)

bcdr040520241105 (StandardGRS) [▼](#)

[Can't find your storage account ?](#)

i The identities listed here are based on the MSI configurations in the corresponding Recovery services vault. [Learn more.](#)

Identities [\(i\)](#)

Disabled

Restore

 [Feedback](#)



Az104RecoveryServicesVault

Recovery Services vault

 [Search](#)

◇ <<

 [Backup](#)

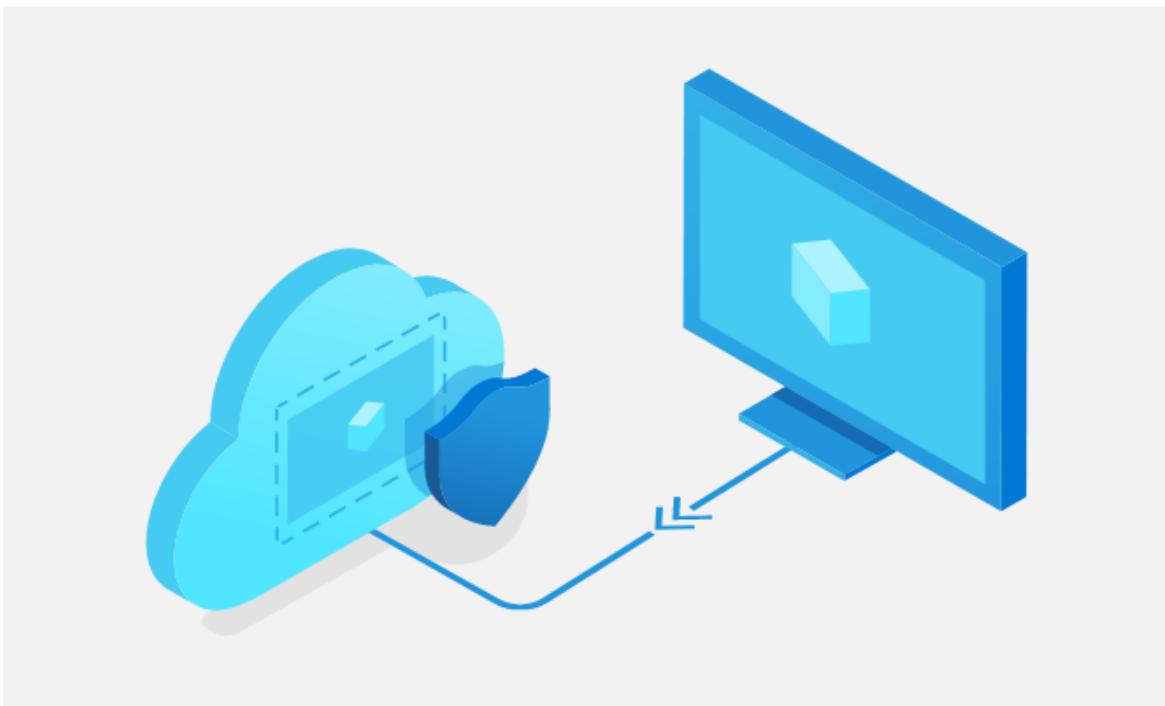
 [Enable Site Recovery](#)



[Overview](#)



[Try our new Business Continuity Center](#)



Azure virtual machines

Protect your Azure virtual machines for disaster recovery by replicating to another Azure region.

[1: Enable replication](#)

[2: Manage recovery plans](#)

1 Source

2 Virtual machines

3 Replication settings

Region * ⓘ West US 2

Subscription * ⓘ Visual Studio Enterprise Subscript... ▾

Resource group * ⓘ AZ104-BCDR-Recovery ▾

Virtual machine deployment model * ⓘ Classic Resource Manager

Disaster recovery between availability zones? * ⓘ Yes No

Name	Virtual network
<input checked="" type="checkbox"/> BCDRVM2	BCDRVnet2

Location and Resource group

Target location * ⓘ East US

Target subscription * ⓘ Visual Studio Enterprise Subscription

Target resource group * ⓘ AZ104-BCDR [Create new](#)

Network

Failover virtual network * ⓘ BCDRVnet [Create new](#)

Failover subnet * ⓘ BCDRSubnet (192.168.1.0/24)

Essentials

Overview

Backup

Site Recovery

Overview

Backup

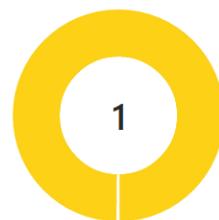
Site Recovery

Replication health [\(View all VMs\)](#)



- Critical 1
- Healthy 0
- Warning 0
- Not Applicable...

Failover health [\(i\)](#)



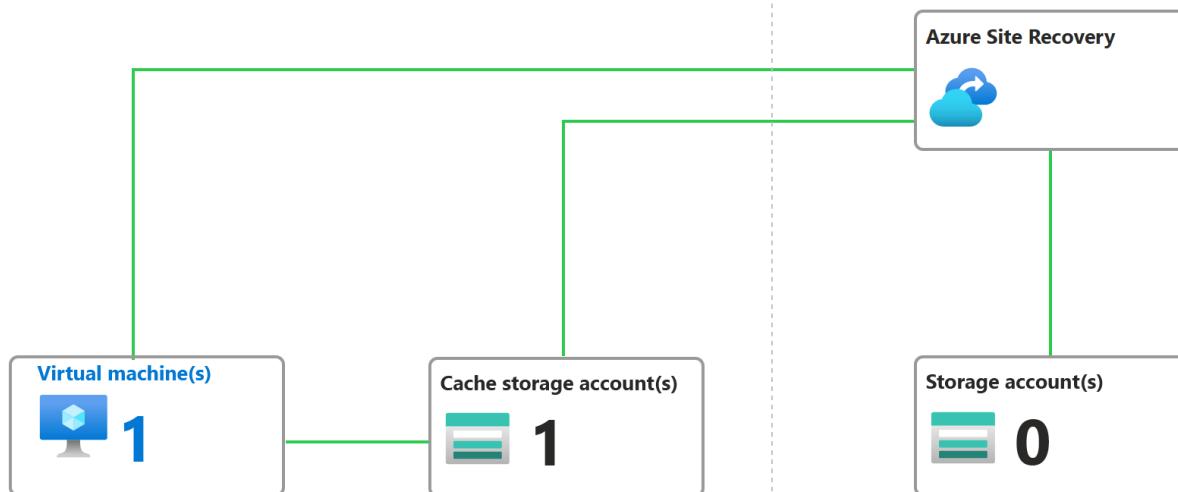
- Critical 0
- Healthy 0
- Warning 1
- Not applicable...

Infrastructure view (machines replicating to Azure)

Azure virtual machine(s) VMware Hyper-V

Primary

Recovery



Health and status

Replication Health

Status

Protected

RPO

-



Failover



Test Failover

Test failover direction

Source ⓘ West US 2

Destination ⓘ East US

Test failover settings

Recovery point * ⓘ Latest processed (lowest RTO) (06/05/2024, ... ▾)

Azure virtual network * ⓘ BCDRVnet (mapped) ▾

 It is recommended that the networks selected for test failover and failover operations are different. [Learn more about DR Drills](#) ▾

Failover direction

Source ⓘ West US 2

Destination ⓘ East US

Failover settings

Recovery point * ⓘ Latest processed (lowest RTO) (07/05/... ▾)

Shut down machine before beginning the failover

<input type="checkbox"/> Name ↑↓	Type ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓
<input type="checkbox"/>  BCDRVM2	Virtual machine	Visual Studio Enterprise...	AZ104-BCDR-Recovery	West US 2
<input checked="" type="checkbox"/>  BCDRVM2	Virtual machine	Visual Studio Enterprise...	AZ104-BCDR	East US
<input type="checkbox"/>  BCDRVM1	Virtual machine	Visual Studio Enterprise...	az104-bcdr	East US

Project details

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

Subscription * ⓘ

Visual Studio Enterprise Subscription ▾

Resource group * ⓘ

AZ104-BCDR ▾

[Create new](#)

Instance details

Name * ⓘ

BackupLAW ✓

Region * ⓘ

East US ▾

Monitoring

 Alerts

 Metrics

 Diagnostic settings

Diagnostic settings

Name	Storage account
------	-----------------

No diagnostic settings defined

[+ Add diagnostic setting](#)

Categories

Azure Backup Reporting Data

Core Azure Backup Data

Addon Azure Backup Job Data

Addon Azure Backup Alert Data

Addon Azure Backup Policy Data

Addon Azure Backup Storage Data

Addon Azure Backup Protected Instance Data

Destination details

Send to Log Analytics workspace

Subscription

Visual Studio Enterprise Subscription

Log Analytics workspace

BackupLAW (eastus)

Destination table (i)

Azure diagnostics Resource specific

Select Log Analytics Workspace

How to configure vault diagnostic settings for backup reports

Subscriptions (i)

All

Workspaces (i)

BackupLAW

Key Parameters by Backup Solution

Backup Instances

1

Protected Instances

0.5

Cloud Storage (GB)

10.56

Jobs Created

0

...

Backup Solution

↑↓ Backup Instances

↑↓ Job Success %

↑↓ Cloud Storage (GB) ↑↓

Azure Virtual Machine Backup

1

-

10.56

Key Parameters by Backup Solution

Backup Instances

1

Protected Instances

0.5

Cloud Storage (GB)

10.56

Jobs Created

0

Backup Solution

↑↓ Backup Instances

↑↓ Job Success %

↑↓ Cloud Storage (GB) ↑↓

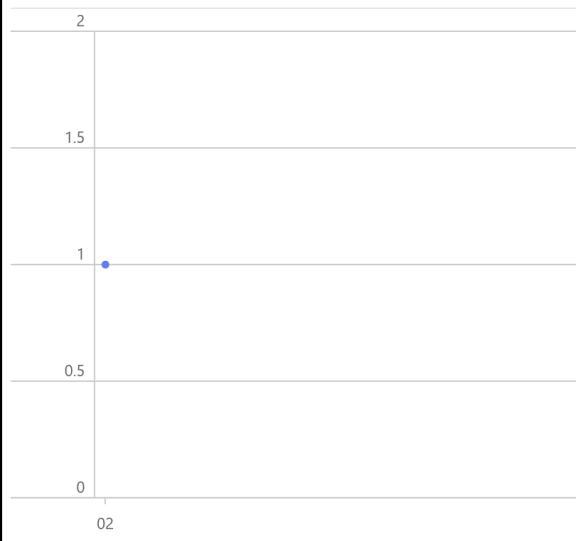
Azure Virtual Machine Backup

1

-

10.56

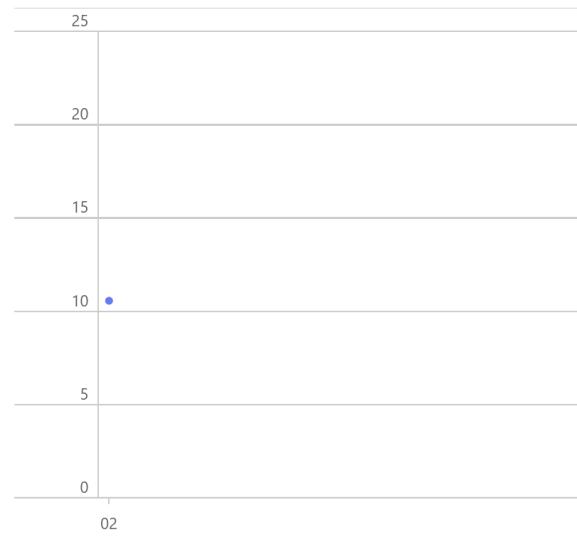
Backup Instances Trend



Backup Instances (Last)

1

Cloud Storage Trend



Cloud Storage (GB) (Last)

10.6

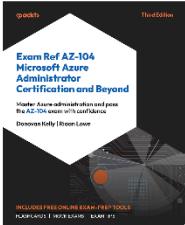
Chapter 23:

kp Practice Resources

REPORT ISSUE

UNLOCK YOUR PRACTICE RESOURCES

You're about to unlock the free online content that came with your book. Make sure you have your book with you before you start, so that you can access the resources in minutes.



Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond

Book ISBN: 9781805122852
Donovan Kelly • Sep 2024 • pages

Do you have a Packt account?

Yes, I have an existing Packt account No, I don't have a Packt account

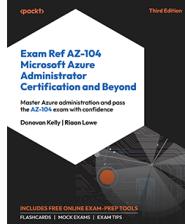
PROCEED

kp Practice Resources

REPORT ISSUE

UNLOCK YOUR PRACTICE RESOURCES

You're about to unlock the free online content that came with your book. Make sure you have your book with you before you start, so that you can access the resources in minutes.



Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond

Book ISBN: 9781805122852
Donovan Kelly • Sep 2024 • pages

ENTER YOUR PURCHASE DETAILS

Enter Unique Code *

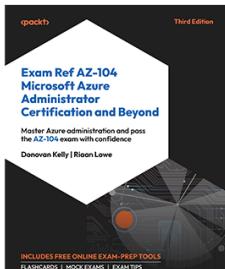
 (? [Where To Find This?](#))

Get notifications about feature updates and exclusive offers on our certification books directly in your inbox.

REQUEST ACCESS

PACKT PRACTICE RESOURCES

You've just unlocked the free online content that came with your book.



Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond

 Book ISBN: 9781805122852

Donovan Kelly • Sep 2024 • pages

 **Unlock Successful**

Click the following link to access your practice resources at any time.

Pro Tip: You can switch seamlessly between the ebook version of the book and the practice resources. You'll find the ebook version of this title in your [Owned Content](#)

[OPEN PRACTICE RESOURCES](#) 

DASHBOARD



Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond

Master Azure administration and pass the AZ-104 exam with confidence

 Mock Exams

 Hands-On Activities

 Exam Readiness Drills

 Flashcards

 Exam Tips

[BACK TO THE BOOK](#)



Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond - Third Edition

Donovan Kelly

Practice Resources

SHARE FEEDBACK

DASHBOARD

Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond
Master Azure administration and pass the AZ-104 exam with confidence.

Mock Exams

Hands-On Activities

Exam Readiness Drills

Flashcards

Exam Tips

BACK TO THE BOOK

 Exam Ref AZ-104 Microsoft Azure Administrator Certification and Beyond - Third Edition
Donovan Kelly

S

```
{
    "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentParameters.json#",
    "contentVersion": "1.0.0.0",
    "parameters": {
        "adminUsername": {
            "value": "az104admin"
        },
        "adminPassword": {
            "value": "MyPasswordIslong!"
        },
        "dnsLabelPrefix": {
            "value": "az104-demo-server"
        },
        "publicIpName": {
            "value": "myPublicIP"
        },
        "publicIPAllocationMethod": {
            "value": "Dynamic"
        },
        "publicIpSku": {
            "value": "Basic"
        },
        "OSVersion": {
            "value": "2019-Datacenter"
        },
        "vmSize": {
            "value": "Standard_D2_v3"
        },
        "location": {
            "value": "northeurope"
        },
        "vmName": {
            "value": "demo-server"
        }
    }
}
```