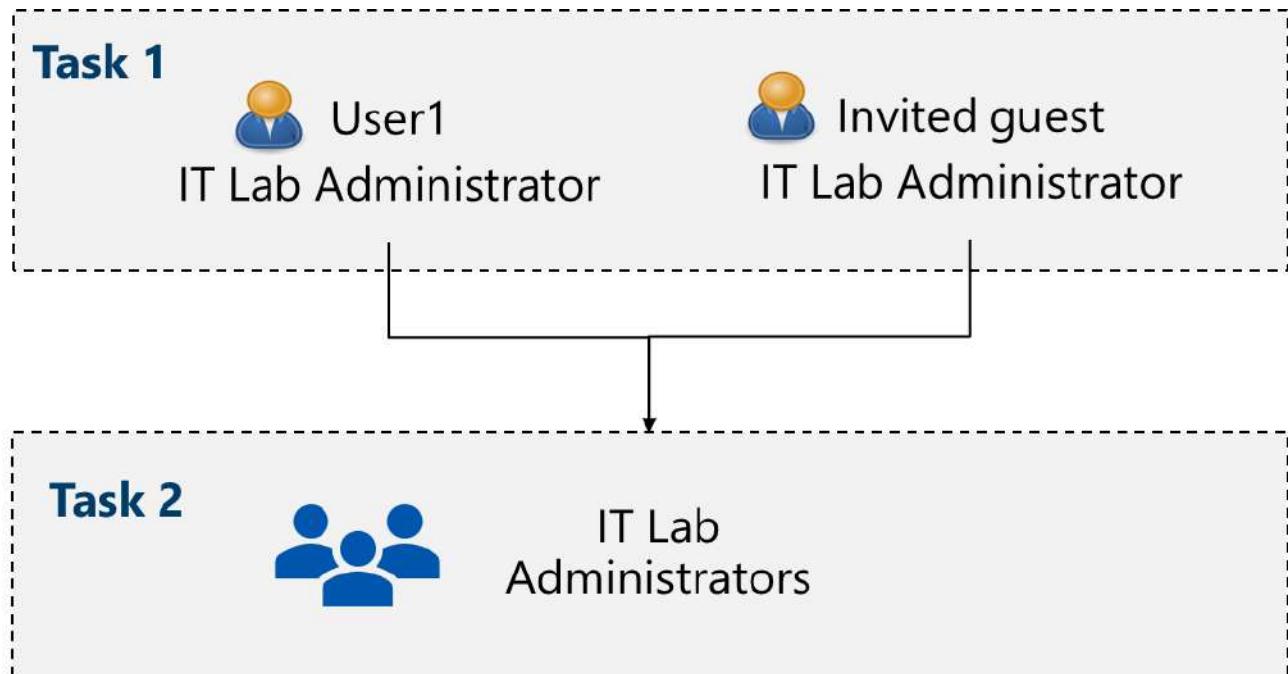


Lab 01 - Manage Microsoft Entra ID Identities

Lab scenario

Your organization is building a new lab environment for pre-production testing of apps and services. A few engineers are being hired to manage the lab environment, including the virtual machines. To allow the engineers to authenticate by using Microsoft Entra ID, you have been tasked with provisioning users and groups. To minimize administrative overhead, membership of the groups should be updated automatically based on job titles.

Architecture diagram



Job skills

- Task 1: Create and configure user accounts.
- Task 2: Create groups and add members.

Task 1: Create and configure user accounts

Noto624879

Create new user

Create a new internal user in your organization

Basics

User principal name	az104-user1@kosarsofia0909gmail.onmicrosoft.com	
Display name	az104-user1	
Mail nickname	az104-user1	
Password	*****	
Account enabled	Yes	

Properties

Country or region	United States
User type	Member
Job title	IT Lab Administrator
Department	IT
Usage location	United States

Assignments

Administrative units

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

2 users found

<input type="checkbox"/>	Display name ↑	User principal name ↓	User type	Is Agent	On-premises sync	Idle since
<input type="checkbox"/>	A az104-user1	az104-user1@kos...		Member	No	No
<input type="checkbox"/>	Софія Косар	kosarsofia0909_g...		Member	No	Mi

Invite external user

Invite an external user to collaborate with your organization

Basics Properties Assignments **Review + invite**

Basics

Email	romanwdwd@gmail.com
Display name	Roman
Send invite message	Yes
Message	Welcome to Azure and our group project
Cc recipient	
Invite redirect URL	https://myapplications.microsoft.com/?tenantid=dc8e1fa9-78a0-4c7f-aabb-56aba4175e7f

Properties

User type	Guest
Job title	IT Lab Administrator
Department	IT
Usage location	United States

Assignments

Invite

< Previous

Next >

<input type="checkbox"/>	Display name	User principal name	User type	Is Agent	On-premises syn...	Identities	Company name	Created
<input type="checkbox"/>	A az104-user1	az104-user1@kos...	Member	No	No	kosarsofia0909@gmail.on...		In
<input type="checkbox"/>	R Roman	romanwdwd_gmai...	Guest	No	No	kosarsofia0909@gmail.on...		In
<input type="checkbox"/>	София Косар	kosarsofia0909.g...	Member	No	No	MicrosoftAccount		In

Task 2: Create groups and add members

<input type="checkbox"/>	Name	Object Id	Group type	Membership type	Email
<input type="checkbox"/>	IT Lab Administrators	e4c84715-c15d-4240-a93f-4adadd8afa9c	Security	Assigned	

Basic information

IT Lab Administrators 

Administrators that manage the IT lab

Membership type	Assigned	Total direct members	2
Source	Cloud	User(s)	2
Type	Security	Group(s)	0
Object ID	e4c84715-c15d-4240-a93f-4adadd8afa9c 	Device(s)	0
Created on	12/3/2025, 10:00 PM	Other(s)	0

Feed

 Group memberships
0 

 Owners
1 

 Total members
2 

Lab 02a - Manage Subscriptions and RBAC

Lab introduction

In this lab, you learn about role-based access control. You learn how to use permissions and scopes to control what actions identities can and cannot perform. You also learn how to make subscription management easier using management groups.

This lab requires an Azure subscription. Your subscription type may affect the availability of features in this lab. You may change the region, but the steps are written using **East US**.

Name	Type	ID	Total subscriptions
Tenant Root Group	Management group	dc8e1fa9-78a0-4c7f-aabb-56aba4175e7f	1
Azure subscription 1	Subscription	b29d18bc-0e3d-4b78-857a-dec951168752	
az104-mg1	Management group	az104-mg1	0

Check access **Role assignments** Roles Deny assignments

Search by name or email    

Name	Type	Role	Scope	Condition
Owner (1)	User	Owner	This resource	Add
IT Lab Administrators (1)	Group	Classic Virtual Machine Contributor	This resource	Add
User Access Administrator (1)	User	User Access Administrator	Root (Inherited)	None

Microsoft Azure Upgrade Search resources, services, and docs (S+)

Home > Resource Manager | Management groups > az104-mg1 Microsoft.Support permissions

Create a custom role ...

Basics Permissions Assignable scopes JSON Review

+ Add permissions + Exclude permissions

Click Add permissions to select the permissions you want to add. To add a wildcard (*) permission, you must manually add the permission. To exclude specific permissions from a wildcard permission, click Not Actions.

Permission	Description
Microsoft.Authorization/*/read	
Microsoft.Resources/subscriptions/resourceGroups/read	
Microsoft.Support/*	

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.

Support Not Data Actions

Other : Registers Support Resource Provider Registers Support Resource Provider

Other : Look Up Resource Id Looks up resource Id for resource type

Other : Check Name Availability Checks that name is valid and not in use for resource type

Other : List Classify Services Lists one or all classified services

Read : Get Operation Result Gets the result of the asynchronous operation

Read : Get Operation Status Gets the status of the asynchronous operation

Microsoft.Support/operations

Add **Cancel**

Show Microsoft Cloud menu [Resource Manager](#) | [Management groups](#) > [az104-mg1](#) | Access control (IAM) >

Create a custom role

You have successfully created the custom role "Custom Support Request". It may take the system a few minutes to display your role everywhere.

OK

Role name Custom Support Request

Role description A custom contributor role for support requests.

Permissions

Action	Microsoft.Authorization/*/read
Action	Microsoft.Resources/subscriptions/resourceGroups/read
Action	Microsoft.Support/*
NotAction	Microsoft.Support/register/action

Assignable Scopes

Scope /providers/Microsoft.Management/managementGroups/az104-mg1

Looking for Log Analytics? In Log Analytics you can search for performance, diagnostics, health logs, and more. [Visit Log Analytics](#)

Search Quick Insights

Management Group : az104-mg1 Subscription : None Event severity : All Timespan : Last 6 hours Add Filter

2 items.

Operation name	Status	Time	Time stamp	Subscription	Event initiated by
> Create role assignment	Succeeded	4 minutes ago	Wed Dec 03...		kosarsofia0909@gmail.com
> Create or Update	Succeeded	9 minutes ago	Wed Dec 03...		kosarsofia0909@gmail.com

Lab 02b - Manage Governance via Azure Policy

Lab introduction

In this lab, you learn how to implement your organization's governance plans. You learn how Azure policies can ensure operational decisions are enforced across the organization. You learn how to use resource tagging to improve reporting.

This lab requires an Azure subscription. Your subscription type may affect the availability of features in this lab. You may change the region, but the steps are written using **East US**.

Task 1: Assign tags via the Azure portal

All services >

Create a resource group

Basics Tags Review + create

Automation Link

Basics

Subscription	Azure subscription 1
Resource group name	az104-rg2
Region	East US

Tags

Cost Center	000
-------------	-----

Microsoft Azure Copilot ...

All services > Policy | Definitions >

Require a tag and its value on resources

Policy definition X

Assign policy Edit definition Duplicate definition Select version (preview) Delete definition

Essentials

Name	Definition location
Require a tag and its value on resources	--
Version (preview)	Definition ID
1.0.1	/providers/Microsoft.Authorization/policyDefinitions/1e30110...
Description	Type
Enforces a required tag and its value. Does not apply to resour...	Built-in
Available Effects	Mode
Deny	Indexed
Category	
Tags	

Definition Assignments (0) Parameters (2)

```
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 grou  
7     "metadata": {  
8       "tags": [{"  
9         "key": "tag-key",  
10        "value": "tag-value"  
11      }]  
12    }  
13  }  
14}
```

Give feedback

Microsoft Azure Search resources, services, and docs (G+/-) Copilot

All services > Show portal menu > **Require a tag and its value on resources**

Policy definition

Creating policy assignment succeeded
Creating policy assignment 'Require Cost Center tag and its value on resources' in 'Azure subscription 1' was successful. Please note that the assignment takes around 5-15 minutes to take effect.

Assign policy **Edit definition** **Duplicate definition** **Select version (previous)**

Essentials

Name	Definition location
Require a tag and its value on resources	--
Version (preview)	Definition ID
1.0.1	/providers/Microsoft.Authorization/policyDefinitions/1e30110...
Description	Type
Enforces a required tag and its value. Does not apply to resource...	Built-in
Available Effects	Mode
Deny	Indexed
Category	
Tags	

Definition Assignments (0) Parameters (2)

```
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 group",  
7     "metadata": {  
8       "category": "Cost Center",  
9       "tags": ["Cost Center"]  
10    }  
11  }  
12}
```

<https://portal.azure.com/?quickstart=True#> Give feedback

Microsoft Azure Search resources, services, and docs (G+) Copilot

All services > Storage center | Blob Storage > Errors Create a storage account

Validation failed. View error details →

Basics Advanced Networking

View automation template

Basics

Subscription	Azure sub
Resource group	az104-n
Location	East US
Storage account name	laba
Preferred storage type	Standard
Performance	Standard
Replication	Read-across

Advanced

Enable hierarchical namespace	Disabled
Enable SFTP	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled

Previous Next Create

Summary Raw Error Copy Full Error

ERROR VIEW

Preflight validation failed. Please refer to the details for the specific errors. (Code: PreflightValidationCheckFailed)

The storage account named laba is already taken. (Code: StorageAccountAlreadyTaken, Target: laba)

WAS THIS HELPFUL?

Explain with Copilot

Troubleshooting Options

New Support Request

Give Feedback

Tell us about your experience with the Errors page

Microsoft Azure Search resources, services, and docs (G+) Copilot

All services > Policy

Policy | Assignments

Search X <>

Assign policy Assign initiative

Overview Compliance Remediation Events Authoring

Search Filter by name or ID...

Scope : Azure subscription 1 Definition type : All definition types

Total Assignments ① Initiative Assignments ①

Successfully deleted assignment

Successfully deleted 'Require Cost Center tag and its value on resources' from 'Azure subscription 1'. Please note that the change takes around 30 minutes to take effect.

All services > Policy

Policy | Assignments

Search X

Assign policy Assign initiative ...

Overview Compliance Remediation Events Authoring Definitions Assignments Machine Configuration Exemptions

Search Filter by name or ID...

Scope : Azure subscription 1 Definition

Total Assignments 1

Policy Assignments 1

Edit columns Export to CSV

Remediation task creation succeeded
Creating remediation task 'fe0694a7bb124c618cef0388' was successful.

Role Assignments creation succeeded
All role assignments were created successfully.

Creating policy assignment succeeded
Creating policy assignment 'Inherit the Cost Center tag and its value 000 from the resource group if missing' in 'Azure subscription 1' was successful. Please note that the assignment takes around 5-15 minutes to take effect.

Microsoft Azure Search resources, services, and docs (G+/) Copilot ...

Home > laba2_1764797502088 | Overview ...

Deployment Search Delete Cancel Redeploy Go to resource Pin to dashboard

Deployment succeeded
Deployment 'laba2_1764797502088' to resource group 'az104-rg2' was successful.

Your deployment is complete

Deployment n... Start time: 12/3/2025,...
Subscription:... Correlation ID: 0656bb2
Resource gro...

Deployment details

Next steps

Go to resource

[Give feedback](#) [Tell us about your experience with deployment](#)

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Add or remove favorites by pressing **Ctrl+Shift+F**

Lock name	Lock t...	Scope	Notes
rg-lock	Delete	[az104-rg2]	Edit

Microsoft Azure Copilot ...

Delete a resource group

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

Resource group to be deleted

[] az104-rg2

1 resources being deleted across 1 subscriptions, 1 resource groups
All dependent resources, including hidden types, are shown

Name	Resource type	Subscription	Resource Group
laba2	Storage account	Azure subscription 1	az104-rg2

> C Enter resource group name to confirm deletion *

> M az104-rg2

> A

> H

Add or

Lab 03 - Manage Azure resources by using Azure Resource Manager Templates

Task 1: Create an Azure Resource Manager template

Microsoft Azure  Search resources, services, and docs (G+/?)  Copilot ... 

Home > Storage center | Azure Disks >

Create a managed disk

 Validation passed

Basics Encryption Networking Advanced Tags Review + create

Basics

Subscription	Azure subscription 1
Resource group	(new) az104-rg3
Region	East US
Disk name	az104-disk1
Availability zone	No infrastructure redundancy required
Source type	None
VM architecture	x64

Size

Size	32 GiB
Performance tier	P4 - 120 IOPS, 25 MB/s (default)
Storage type	Premium SSD LRS

Encryption

[Create](#) [< Previous](#) [Next >](#) Download a template for automation [Give feedback](#)

Налаштування й керування Google Chrome

Search resources, services, and docs (G+/)

Copilot ...

Home > CreateDiskBlade-20251203233948 | Overview > az104-disk1

az104-disk1 | Export template

Disk

Search Download Copy content Deploy Feedback

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings Monitoring Automation CLI / PS Tasks Export template Help

ARM Template Bicep Terraform

Include parameters ⓘ

Template Parameters

To export all resources in this resource group, navigate to the "Export template" experience under "Automation" on the left menu of the resource group.

```
1 {  
2   "$schema": "https://schema.management.azure.com/schemas/  
3   2015-01-01/deploymentParameters.json#",  
4   "contentVersion": "1.0.0.0",  
5   "parameters": {  
6     "disks_az104_disk1_name": {  
7       "value": null  
8     }  
9   }  
}
```

Add or remove favorites by pressing *Ctrl+Shift+F*

Microsoft Azure Copilot ...

Home > Custom deployment >

Edit template

Edit your Azure Resource Manager template

+ Add resource ↑ Quickstart template ⌂ Load file ⌂ Download

```
1  {
2      "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3      "contentVersion": "1.0.0.0",
4      "parameters": {
5          "disk_name": {
6              "defaultValue": "az104-disk2",
7              "type": "String"
8          }
9      },
10     "variables": {},
11     "resources": [
12         {
13             "type": "Microsoft.Compute/disks",
14             "apiVersion": "2025-01-02",
15             "name": "[parameters('disk_name')]",
16             "location": "eastus",
17             "sku": [
18                 {
19                     "name": "Premium_LRS",
20                     "tier": "Premium"
21                 }
22             ],
23             "properties": {
24                 "creationData": {
25                     "createOption": "Empty"
26                 },
27                 "diskSizeGB": 32
28             }
29         }
30     ]
31 }
```

Save **Discard**

Microsoft Azure Search resources, services, and docs (G+/)

Copilot

Home > Microsoft.Template-20251203234920 | Overview Deployment

Deployment succeeded Deployment 'Microsoft.Template-20251203234920' to resource group 'az104-rg3' was successful.

Search Delete Cancel Redeploy Pin to dashboard Go to resource gr...

Overview Inputs Outputs Template

Deployment is in progress

Deployment name : Microsoft.Template-20251203234920
Subscription : Azure subscription 1
Resource group : az104-rg3
Start time : 12/3/2025, 11:49:20 PM
Correlation ID : 5c9a1a77-ccb2-425b-aeeef-80085df419da

Deployment details

Resource	Type	Status
az104-disk2	Disk	OK

Give feedback Tell us about your experience with deployment

Microsoft Defender for Cloud Secure your apps and infrastructure

https://portal.azure.com/?quickstart=True#home

az104-rg3 Resource group

Generate Bicep code to duplicate this resource group. +2

Search Create Manage view Delete resource group Group by none JSON View

Overview Activity log Access control (IAM) Tags Resource visualizer Events Settings Deployments Security Deployment stacks

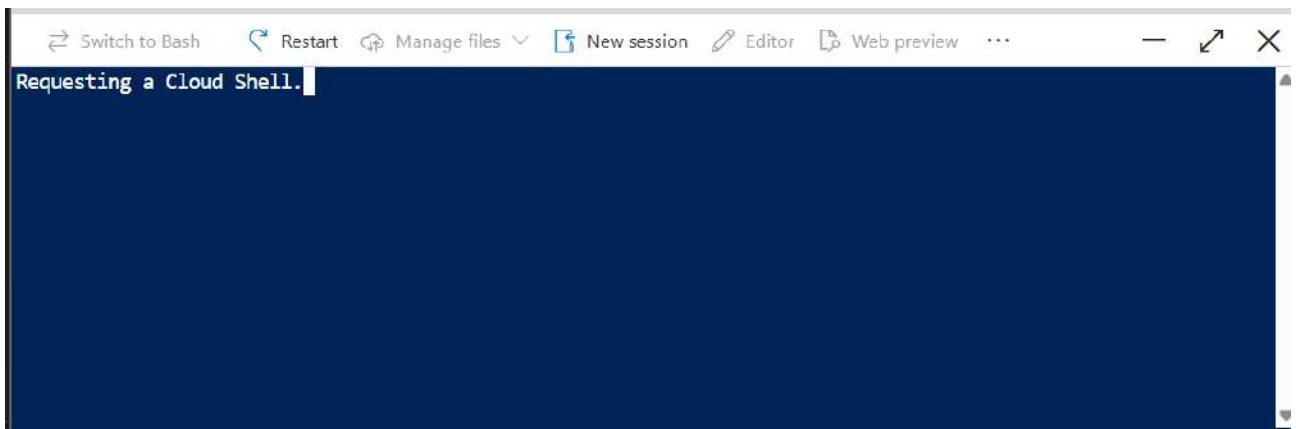
Essentials

Resources Recommendations

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

Name ↑	Type	Location
az104-disk1	Disk	East US
az104-disk2	Disk	East US

Task 3: Configure the Cloud Shell and deploy a template with PowerShell



Microsoft Azure Search resources, services, and docs (G+/)

Copilot

Hi enni, see what more you can get from your Azure free account.

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PowerShell

```
PS /home/enni> New-AzResourceGroupDeployment -ResourceGroupName az104-rg3 -TemplateFile template.json -TemplateParameterFile parameters.json

DeploymentName      : template
ResourceGroupName   : az104-rg3
ProvisioningState   : Succeeded
Timestamp          : 12/3/2025 10:00:40 PM
Mode                : Incremental
TemplateLink        :
Parameters          :
    Name           Type           Value
    ============== =============== ======
    az104-disk3   String         "az104-disk1"

Outputs            :
DeploymentLogLevel : 

PS /home/enni> 

PS /home/enni> Get-AzDisk | ft

ResourceGroupName ManagedBy ManagedByExtended Sku Zone
-----          -----          -----          -----
AZ104-RG3          {}          Microsoft.Azure.Management.Compute.Models.DiskSku
AZ104-RG3          {}          Microsoft.Azure.Management.Compute.Models.DiskSku
```

Task 4: Deploy a template with the CLI

```

}
enni [ ~ ]$ az disk list --resource-group az104-rg3 --output table
Name      ResourceGroup    Location   Zones   Sku        SizeGb  ProvisioningState
-----  -----
az104-disk1  az104-rg3      eastus          Premium_LRS  32       Succeeded
az104-disk2  az104-rg3      eastus          Premium_LRS  32       Succeeded
enni [ ~ ]$ [Terminal container button]

```

Task 5: Deploy a resource by using Azure Bicep

The screenshot shows the Microsoft Cloud Shell interface. At the top, there are tabs for 'Home - Microsoft Azure' and 'Home - Microsoft Azure'. Below the tabs, the URL is 'portal.azure.com/?quickstart=True#home'. The main area is a terminal window titled 'Bash'. The terminal content displays the Bicep code for deploying a managed disk:

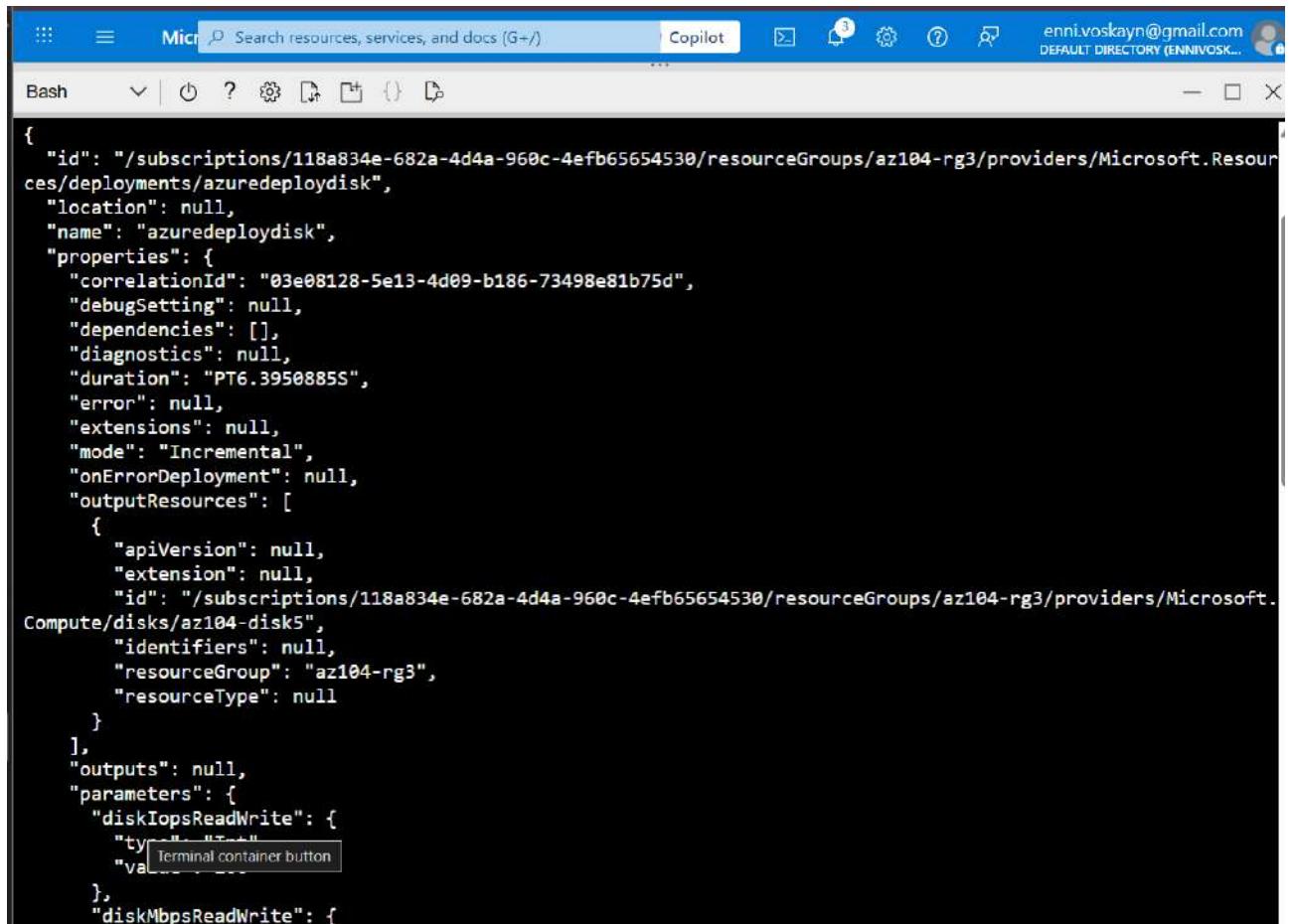
```

azuredisk.bicep
1 @description('Name of the managed disk to be copied')
2 param managedDiskName string = 'az104-disk5'
3
4 @description('Disk size in GiB')
5 @minValue(4)
6 @maxValue(65536)
7 param diskSizeInGiB int = 32
8
9 @description('Disk IOPS value')
10 @minValue(100)
11 @maxValue(160000)
12 param diskIopsReadWrite int = 100
13
14 @description('Disk throughput value in MBps')
15 @minValue(1)
16 @maxValue(2000)
17 param diskMbpsReadWrite int = 10
18
19 @description('Location for all resources.')
20 param location string = resourceGroup().location
21
22 resource managedDisk 'Microsoft.Compute/disks@2020-09-30' = {
23     name: managedDiskName
24     location: location
25     sku: {
26         name: 'StandardSSD_LRS'
27     }

```

Below the code, a message reads: 'Connecting terminal...'. At the bottom, a warning message is displayed:

Storage fileshare subscription 118a834e-682a-4d4a-960c-4efb65654530 is not registered to Microsoft.CloudShell Namespace. Please follow these instructions "<https://aka.ms/RegisterCloudShell>" to register. In future, unregistered subscriptions will have restricted access to CloudShell service.



A screenshot of a Microsoft Azure Cloud Shell terminal window. The title bar shows "Bash" and the Azure logo. The search bar contains "Search resources, services, and docs (G+/-)". The top right includes "Copilot", a notification icon (3), settings, help, and user info for "ennivoskayn@gmail.com". The main area displays a JSON object representing a deployment manifest. The JSON includes fields like "id", "location", "name", "properties" (containing "correlationId", "debugSetting", "dependencies", "diagnostics", "duration", "error", "extensions", "mode", "onErrorDeployment", and "outputResources"), "outputs", "parameters" (with "diskIopsReadWrite" and "diskMbpsReadWrite" sections), and "resources". A tooltip for "Terminal container button" is visible over a button in the "diskIopsReadWrite" section.

```
{
  "id": "/subscriptions/118a834e-682a-4d4a-960c-4efb65654530/resourceGroups/az104-rg3/providers/Microsoft.Resources/deployments/azuredeploydisk",
  "location": null,
  "name": "azuredeploydisk",
  "properties": {
    "correlationId": "03e08128-5e13-4d09-b186-73498e81b75d",
    "debugSetting": null,
    "dependencies": [],
    "diagnostics": null,
    "duration": "PT6.3950885S",
    "error": null,
    "extensions": null,
    "mode": "Incremental",
    "onErrorDeployment": null,
    "outputResources": [
      {
        "apiVersion": null,
        "extension": null,
        "id": "/subscriptions/118a834e-682a-4d4a-960c-4efb65654530/resourceGroups/az104-rg3/providers/Microsoft.Compute/disks/az104-disk5",
        "identifiers": null,
        "resourceGroup": "az104-rg3",
        "resourceType": null
      }
    ],
    "outputs": null,
    "parameters": {
      "diskIopsReadWrite": {
        "type": "int"
        "value": 100
      },
      "diskMbpsReadWrite": {
        "type": "int"
        "value": 10
      }
    }
  }
}
```

Lab 04 - Implement Virtual Networking

Task 1: Create a virtual network with subnets using the portal

Create virtual network

X

Basics Security IP addresses Tags Review + create

 Allocate using IP address pools. [Learn more](#)[+ Add a subnet](#)

10.20.0.0/16		Delete address space	
10.20.0.0 /16			
10.20.0.0 - 10.20.255.255		65 536 addresses	
Subnets	IP address range	Size	NAT gateway
SharedServicesSubnet	10.20.10.0 - 10.20.10.255	/24 (256 addresses)	-
DatabaseSubnet	10.20.20.0 - 10.20.20.255	/24 (256 addresses)	-

[Add IPv4 address space](#)[Previous](#)[Next](#)[Review + create](#)[Give feedback](#)

Microsoft Azure Search resources, services, and docs (G+?) Copilot

Home > CoreServicesVnet-1764800813181 | Overview

[Deployment](#)

[Search](#) [Delete](#) [Cancel](#) [Redeploy](#) [Download](#) [Refresh](#)

[Overview](#) [Inputs](#) [Outputs](#) [Template](#)

Your deployment is complete

Deployment name : CoreServicesVnet-1764800813181
 Subscription : Azure subscription 1
 Resource group : az104-rg4
 Start time : 12/4/2025, 12:27:23 AM
 Correlation ID : 329158e3-81a0-4f1f-8d48-9cc2dbac14a0

[Deployment details](#)

[Next steps](#)

[Go to resource](#)

[Give feedback](#)

[Tell us about your experience with deployment](#)

 Cost management
Get notified to stay within your budget and prevent unexpected charges on your bill.

Add or remove favorites by pressing **Ctrl+Shift+F**

Task 2: Create a virtual network and subnets using a template

Edit template

...



Edit your Azure Resource Manager template

[+ Add resource](#) [↑ Quickstart template](#) [↑ Load file](#) [↓ Download](#)

```
1  {
2      "$schema": "https://schema.management.azure.com/schemas/2019-04-01/
3          deploymentTemplate.json#",
4      "contentVersion": "1.0.0.0",
5      "parameters": {
6          "virtualNetworks_ManufacturingVnet_name": {
7              "defaultValue": "ManufacturingVnet",
8              "type": "String"
9          }
10     },
11     "variables": {},
12     "resources": [
13         {
14             "type": "Microsoft.Network/virtualNetworks",
15             "apiVersion": "2024-07-01",
16             "name": "[parameters('virtualNetworks_ManufacturingVnet_name')]",
17             "location": "eastus",
18             "properties": {
19                 "addressSpace": {
20                     "addressPrefixes": [
21                         "10.30.0.0/16"
22                     ]
23                 },
24                 "encryption": {
25                     "enabled": false.
26                 }
27             }
28         }
29     ]
30 }
```

[Save](#)[Discard](#)

Microsoft Azure  Search resources, services, and docs (G+/-) Copilot 

Home > Microsoft.Template-20251204004 Deployment

 Deployment succeeded Deployment 'Microsoft.Template-20251204004' to resource group 'az104-rg4' was successful.

 Search  Delete  Cancel  Pin to dashbo...  Go to resource gr...

 Overview  Inputs  Outputs  Template

 Your deployment is complete

Deployment name : Microsoft.Template-20251204004747
Subscription : Azure subscription 1
Resource group : az104-rg4
Start time : 12/4/2025, 12:47:51 AM
Correlation ID : fd37f7c9-1200-405d-971f-4992b92c7a35

 Deployment details  Next steps

 Go to resource group

[Give feedback](#)  [Tell us about your experience with deployment](#)

Add or remove favorites by pressing *Ctrl+Shift+F*

 Cost management
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Task 3: Create and configure communication between an Application Security Group and a Network Security Group

Show portal menu Search resources, services, and docs (G+/)

Copilot

Home > **CreateApplicationSecurityGroupBladeViewModel | Ov...**

Deployment

Search x << Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

Your deployment is complete

Deployment name : CreateApplicationSecurityGroupBladeViewModel
Subscription : Azure subscription 1
Resource group : az104-rg4
Start time : 12/4/2025, 12:50:07 AM
Correlation ID : 72e6ec31-c90a-4216-8549-572731526013

Deployment details Next steps

Go to resource

Give feedback Tell us about your experience with deployment

Cost management
Get notified to stay within your budget and prevent unexpected charges on your bill

<https://portal.azure.com/?quickstart=True#F>

Microsoft Azure Copilot

Home > CreateNetworkSecurityGroupBladeV2-2025120400511...

 Deployment

X < Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

 Your deployment is complete

Deployment name : CreateNetworkSecurityGroupBladeV2-2025120...
Subscription : Azure subscription 1
Resource group : az104-rg4
Start time : 12/4/2025, 12:51:42 AM
Correlation ID : 5914523d-aedc-4c82-b3b0-6ce12ac33de9

Deployment details Next steps

Go to resource

[Give feedback](#) [Tell us about your experience with deployment](#)

Add or remove favorites by pressing **Ctrl+Shift+F**

Microsoft Azure Copilot

Home > CreateNetworkSecurityGroupBladeV2-2025120400511...

 myNSGSecure | Subnets X ☆ ...

Network security group

Associate

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

 Search subnets

Name	Address range	Virtual network	...
SharedServicesSubnet	10.20.10.0/24	CoreServicesVnet	

 Give feedback

Home > CreateNetworkSecurityGroupBladeV2-20251204005112

myNSGSecure | Inbound security

Network security group

Created security rule
Successfully created security rule 'AllowASG'.

Search Add Hide default rules Refresh Delete ...

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings

Inbound security rules Outbound security rules

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Filter by name

Port == all Protocol == all Source == all

Destination == all Action == all

Priority ↑↓	Name ↑↓	Port ↑↓
<input type="checkbox"/> 100	i AllowASG	80,443

Microsoft Azure Search resources, services, and docs (G+/-)

Copilot

Home > CreateNetworkSecurityGroupBladeV2-20251204005112

myNSGSecure | Outbound security

Network security group

Created security rule
Successfully created security rule 'DenyInternetOutbound'.

Search Add Hide default rules Refresh Delete ...

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings

Inbound security rules Outbound security rules

Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

Filter by name

Port == all Protocol == all Source == all

Destination == all Action == all

Priority ↑↓	Name ↑↓	Port ↑↓
<input type="checkbox"/> 4096	DenyInternetOutbound	Any

Task 4: Configure public and private Azure DNS zones

Microsoft Azure  Search resources, services, and docs (G+/)

Deployment succeeded
Deployment 'contosoc.com_1764802625901' to resource group 'az104-rg4' was successful.

Home > contosoc.com_1764802625901 | C Deployment

Search  Delete  Cancel Go to resource Go to resource group

Overview Inputs Outputs Template

Your deployment is complete

Deployment name : contosoc.com_1764802625901
Subscription : Azure subscription 1
Resource group : az104-rg4
Start time : 12/4/2025, 12:57:10 AM
Correlation ID : 15091f67-9f28-4b2b-85c3-ae5ac91b4cc2

> Deployment details

Next steps

Go to resource

ns1-02.azure-dns.com.

Home > contosoc.com_1764802625901 | Overview > contosoc.com | Recordsets ☆ ...

Create record set
Successfully created record set 'www'

contosoc.com | Recordsets DNS zone

Search  Add  Refresh  Delete 

Overview Activity log Access control (IAM)

A record set is a collection of records in a zone that have the same name and are the same type. You can search for record sets that have been loaded on this page. If you don't see what you're looking for, you can try scrolling to allow more record sets to load. [Learn more](#)

```
PS /home/enni> nslookup www.contosoc.com ns1-02.azure-dns.com
Server:      ns1-02.azure-dns.com
Address:     13.107.236.2#53

Name:  www.contosoc.com
Address: 10.1.1.4

PS /home/enni>
```

Microsoft Azure  Search resources, services, and docs (G+/)

Copilot 

Home > **private.contoso.com_1764803205** Deployment

 Deployment succeeded 

Deployment 'private.contoso.com_1764803205117' to resource group 'az104-rg4' was successful.

 Search  Delete  Cancel  Go to resource  Go to resource group

 Overview  Inputs  Outputs  Template

 Your deployment is complete

Deployment name : private.contoso.com_1764803205117
Subscription : Azure subscription 1
Resource group : az104-rg4
Start time : 12/4/2025, 1:06:49 AM
Correlation ID : 3c32c7ef-248a-47da-85a8-c03433f72b79

 Deployment details  Next steps



 Add  Refresh Upgrade to a Pay-As-You-Go subscription.

 Search virtual network links

Fetched 1 virtual Network link(s).

0 Virtual Network links selected

Link Name	Link Status	Virtual Network
manufacturing-link	InProgress	ManufacturingVnet

Home > private.contoso.com

private.contoso.com | Recordsets

Private DNS zone

Search Add Refresh Delete Give feedback

A record set is a collection of records in a zone that have the same name and are the same type. Record Sets will be automatically fetched in batches of 100 as you scroll through the existing record sets. [Learn more](#)

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings DNS Management Records

Fetched 2 record set(s). 0 record sets selected

Name	Type	TTL	Value
sensorvm	A	3600	10.1.1.4
@	SOA	3600	Email: azu host.micro Host: azu Refresh: 3 Retry: 300 Expire: 24 Minimum Serial number

Virtual Network Links Monitoring Automation Help

Create record set

Successfully created record set 'sensorvm'

Lab 05 - Implement Intersite Connectivity

Task 1: Create a core services virtual machine and virtual network

Zxc123@zxCzxC

Home >



CreateVm-MicrosoftWindowsServer

Deployment

X <<

Delete

Cancel

✓ Deployment succeeded

Deployment 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20251204104423' to resource group 'az104-rg5' was successful.

X

Overview

Inputs

Outputs

Template

✓ Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe...

Subscription: Azure subscription 1

Resource group: az104-rg5

Start time: 12/4/2025, 10:50:17 AM

Correlation ID: 9a98c58f-975f-47d8-a1ee-976eee7adfe0



✓ Deployment details

^ Next steps

Setup auto-shutdown Recommended

Monitor VM health, performance and network dependencies Recommended

Run a script inside the virtual machine Recommended

Go to resource

Create another VM

Task 2: Create a virtual machine in a different virtual network

Microsoft Azure Search resources, services, and docs (G+/-) Copilot

Home > CreateVm-MicrosoftWindowsServer

Deployment

Search X << Delete Cancel

Overview Inputs Outputs Template

Deployment succeeded
Deployment 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20251204105158' to resource group 'az104-rg5' was successful.

Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe...
Subscription: Azure subscription 1
Resource group: az104-rg5
Start time: 12/4/2025, 10:55:10 AM
Correlation ID: 8f5d19c2-3a48-4fd8-860c-c0c8de39db5d

Deployment details

Next steps

Setup auto-shutdown Recommended
Monitor VM health, performance and network dependencies Recommended
Run a script inside the virtual machine Recommended

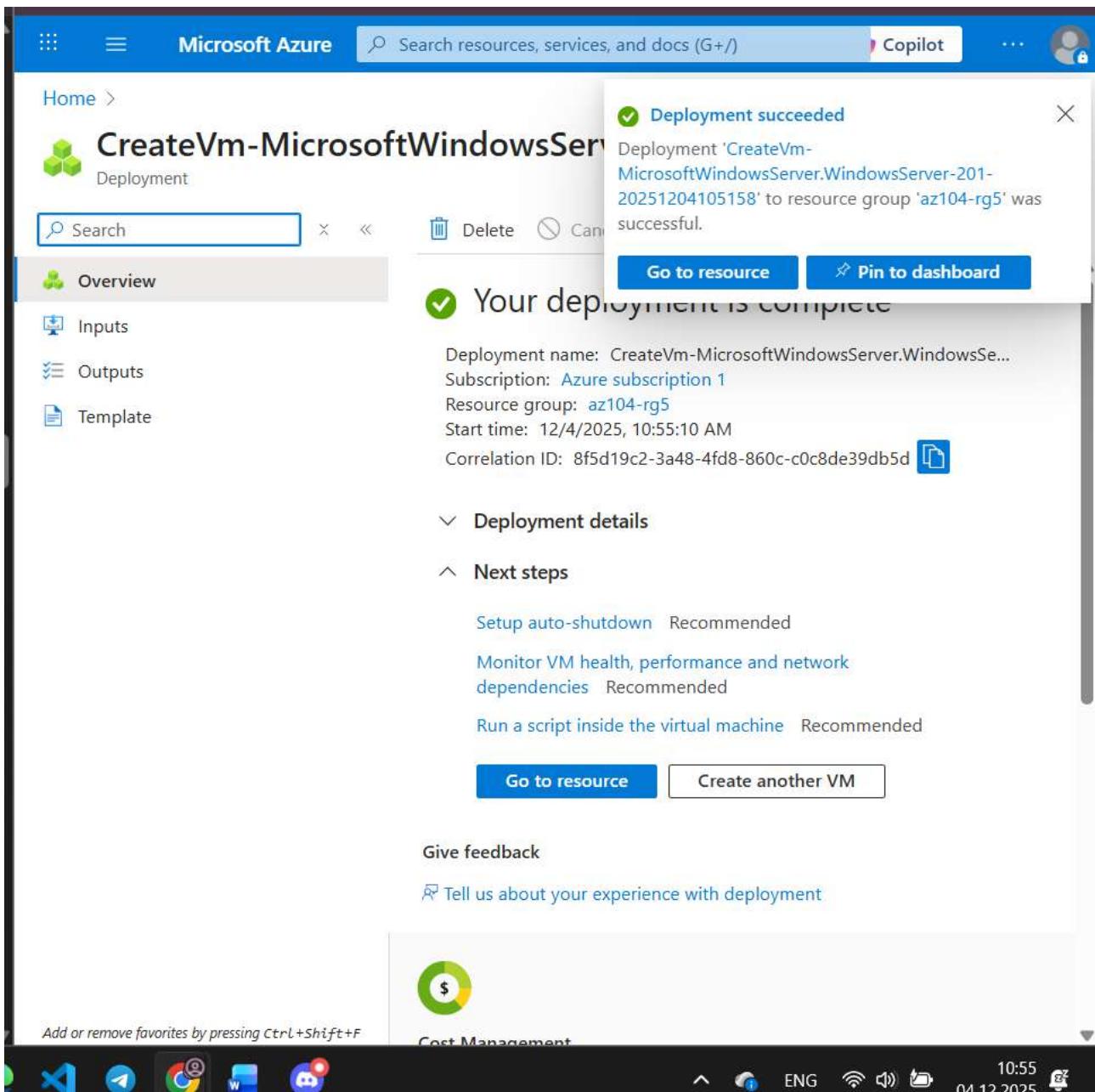
Go to resource Create another VM

Give feedback
Tell us about your experience with deployment

Add or remove favorites by pressing **Ctrl+Shift+F**

Cost Management

10:55 04.12.2025 ENG



Task 3: Use Network Watcher to test the connection between virtual machines

Results

Test(s) ran: Connectivity, NSG diagnostic, Next hop, Port scanner

Source: [CoreServicesVM](#) Destination: [ManufacturingVM](#)

[Export to CSV](#)

Diagnostic tests

Test	Status	Details
Connectivity ...	- Unreachable	Probes sent: 316, p See details
Outbound N...	- Deny	There are failed tests See details <ul style="list-style-type: none">• CoreServicesVM
Inbound NS...	- Deny	There are failed tests See details <ul style="list-style-type: none">• ManufacturingVM
Next hop (fr...	✓ Success	Next hop type: None Route table: System
Destination ...	✓ Reachable	

Connectivity test shows **Unreachable**. This makes sense because the virtual machines are in different virtual networks.

Microsoft Azure Search resources, services, and docs (G+/-) Copilot

Home > CoreServicesVnet

CoreServicesVnet | Peerings

Virtual network

Search Add Refresh Export to CSV Delete Sync

Settings

- Address space
- Connected devices
- Subnets
- Bastion
- DDoS protection
- Firewall
- Microsoft Defender for Cloud
- Network manager
- DNS
- Peerings

Virtual network peering enables you to seamlessly connect two or more virtual networks in Azure. The virtual networks appear as one for connectivity purposes. [Learn more](#)

Filter by name... Showing all 1 items

Name	Peering status	Peer IP range	Remote IP range	Virtual network
CoreSer...	Fully Synchronized	Connected	Manufact...	ManufacturingVnet

Home > ManufacturingVnet

ManufacturingVnet | Peerings

Virtual network

Search Add Refresh Export to CSV Delete Sync

Tags

Diagnose and solve problems

Resource visualizer

Settings

- Address space
- Connected devices
- Subnets
- Bastion
- DDoS protection

Virtual network peering enables you to seamlessly connect two or more virtual networks in Azure. The virtual networks appear as one for connectivity purposes. [Learn more](#)

Filter by name... Showing all 1 items

Name	Peering status	Peer IP range	Remote IP range	Virtual network
Manufac...	Fully Synchronized	Connected	CoreSer...	CoreServicesVnet

Task 5: Use Azure PowerShell to test the connection between virtual machines

Private IP address

10.0.0.4

Run Command Script

X

RunPowerShellScript

i Script execution complete

PowerShell Script

```
1 | Test-NetConnection 10.0.0.4 -port 3389
```

Run

Output

```
ComputerName      : 10.0.0.4
RemoteAddress     : 10.0.0.4
RemotePort        : 3389
InterfaceAlias    : Ethernet
SourceAddress     : 172.16.0.4
TcpTestSucceeded  : True
```

Task 6: Create a custom route

<input type="checkbox"/>	Name ↑	IPv4	IPv6	Available IF
<input type="checkbox"/>	Core	10.0.0.0/24	-	250
<input type="checkbox"/>	perimeter	10.0.1.0/24	-	251

Microsoft ... Search resources, services, and docs (G+/) Copilot

Home > Microsoft.RouteTable-20251204111203 | Overview

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

✓ Your deployment is complete

Deployment name : Microsoft.RouteTable-20251204111203
Subscription : Azure subscription 1
Resource group : az104-rg5
Start time : 12/4/2025, 11:12:51 AM
Correlation ID : 341aa520-ee94-446c-a16b-616e2ef195bc

> Deployment details

Next steps

Go to resource

Microsoft ... Search resources, services, and docs (G+/) Copilot

Home > Microsoft.RouteTable-20251204111203 | Overview > a

rt-CoreServices | Routes

Route table

✓ Successfully added route

Successfully added route 'PerimetertoCore' to route table 'rt-CoreServices'.

Search routes

Name ↑↓	Address prefix ↑↓	Next hop type ↑↓
PerimetertoCore	10.0.0.0/16	VirtualAppliance

Search Add Refresh Give feedback

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings Configuration

Microsoft ...

Search resources, services, and docs (G+/)

Copilot

Home > Microsoft.RouteTable-20251204111203 | Overview > rt-CoreServices | Subnets

(rt-CoreServices | Subnets) Route table

Search Associate

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer

Search subnets

Name ↑↓	Address range ↑↓	Virtual network ↑↓	Se
Core	10.0.0.0/24	CoreServicesVnet	-

Lab 06 - Implement Network Traffic Management

Task 1: Use a template to provision an infrastructure

Home >

**Microsoft.Template-20251204095**

Deployment

 Search

X

<<



Delete



Cancel

Deployment succeeded

Deployment 'Microsoft.Template-20251204095619' to resource group 'az104-rg6' was successful.

[Pin to dashboard](#)[Go to resource group](#)

Overview



Inputs



Outputs



Template

**Your deployment is complete**

Deployment name : Microsoft.Template-20251204095619

Subscription : Azure subscription 1

Resource group : az104-rg6

Start time : 12/4/2025, 9:56:23 AM

Correlation ID : 0ed7ee88-d258-40b8-9c86-9e6702630d39

[Deployment details](#)[Next steps](#)[Go to resource group](#)[Give feedback](#)[Tell us about your experience with deployment](#)**Cost management**

Get notified to stay within your budget and prevent unexpected charges on

Add or remove favorites by pressing CTRL + SHIFT + F

Task 2: Configure an Azure Load Balancer

Add backend pool



Name *

az104-be

Virtual network ⓘ

az104-06-vnet1 (az104-rg6)

 The dropdown only shows virtual networks in the same subscription and location as the load balancer. If you don't see the one you're looking for, it's either in another subscription or location or you don't have access to it.

Backend Pool Configuration



IP configurations

IP configurations associated to virtual machines and virtual machine scale sets must be in same location as the load balancer and be in the same virtual network.

| 

Resource Name	Resourc...	Type	IP config...	IP Addr...	Availabi...	
<input type="checkbox"/> az104-06-vm0	az104-rg6	Virtual mach...	ipconfig1	10.60.0.4	-	
az104-06-vm1	az104-rg6	Virtual mach...	ipconfig1	10.60.1.4	-	

 Save|  Cancel Give feedback

Microsoft Azure Search resources, services, and docs (G+/) Copilot

Home > CreateLoadBalancerBladeV2-20251204100431 Deployment

Deployment succeeded Deployment 'CreateLoadBalancerBladeV2-20251204100431' to resource group 'az104-rg6' was successful.

Search Delete Cancel Go to resource Pin to dashboard

Overview Inputs Outputs Template

Your deployment is complete

Deployment name : CreateLoadBalancerBladeV2-20251204100431
Subscription : Azure subscription 1
Resource group : az104-rg6
Start time : 12/4/2025, 10:08:12 AM
Correlation ID : 25e2b9df-a381-4ea4-ae02-8159afebf73e

Deployment details Next steps

Give feedback Tell us about your experience with deployment

Microsoft Azure Search resources, services, and docs (G+/) Copilot

Home > CreateLoadBalancerBladeV2-20251204100431 | Overview

az104-lb | Load balancing rules Saved load balancer rule Successfully saved load balancer rule 'az104-lbrule'.

Add or remove favorites by pressing *Ctrl+Shift+F*

Search Add Refresh Export to CSV Delete

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings Frontend IP configuration

A load balancer rule is used to define how incoming traffic is distributed to all the instances within the backend pool. A load-balancing rule maps a given frontend IP configuration and port to multiple backend IP addresses and ports. An example would be a rule created on port 80 to load balance web traffic. [Learn more](#).

Filter by name...

	Name ↑	Prot... ↑	Backen... ↑	Health ... ↑	Heal...
<input type="checkbox"/>	az104-lbrule..	TCP/80	az104-be	az104-hp	View det



Task 3: Configure an Azure Application Gateway

Microsoft Azure Search resources, services, and docs (G+ /) Copilot

Home > Network foundation | Virtual networks > az104-06-vnet1

az104-06-vnet1 | Subnets

Virtual network

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

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

	Name ↑	IPv4	IPv6	Available IP
<input type="checkbox"/>	subnet0	10.60.0.0/24	-	250
<input type="checkbox"/>	subnet1	10.60.1.0/24	-	250
<input type="checkbox"/>	subnet2	10.60.2.0/24	-	250
<input type="checkbox"/>	subnet-ap...	10.60.3.224/27	-	27

Path-based routing

You can route traffic from this rule's listener to different backend targets based on the URL path of the request. You can also apply a different set of Backend settings based on the URL path.

Path based rules

Path	Target name	Backend setting name	Backend pool	...
/image/*	images	az104-http	az104-imagebe	...
/video/*	videos	az104-http	az104-videoobe	...

Add multiple targets to create a path-based rule

Add Cancel

Microsoft Azure Search resources, services, and docs (G+) Copilot

Home > Microsoft.ApplicationGateway-20 Deployment

Deployment succeeded
Deployment 'Microsoft.ApplicationGateway-20251204101426' to resource group 'az104-rg6' was successful.

Search Delete Cancel Pin to dashboard... Go to resource group...

Overview Inputs Outputs Template

✓ Your deployment is complete

Deployment name : Microsoft.ApplicationGateway-20251204101426
Subscription : Azure subscription 1
Resource group : az104-rg6
Start time : 12/4/2025, 10:22:35 AM
Correlation ID : 12fa46e1-5e78-4b03-aa3b-954f875b610f

> Deployment details Next steps

Go to resource group

Give feedback

Tell us about your experience with deployment

az104-appgw | Backend health

Application gateway

Search Refresh Feedback

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Resource visualizer Settings Monitoring Alerts Metrics Diagnostic settings Logs Advisor recommendations Insights Backend health Connection troubleshoot

By default, Azure Application Gateway probes backend servers to check their health and whether they're ready to serve requests. You can also create custom [Health Probes](#) to mention a specific hostname and path to be probed or a response code to be accepted as Healthy.

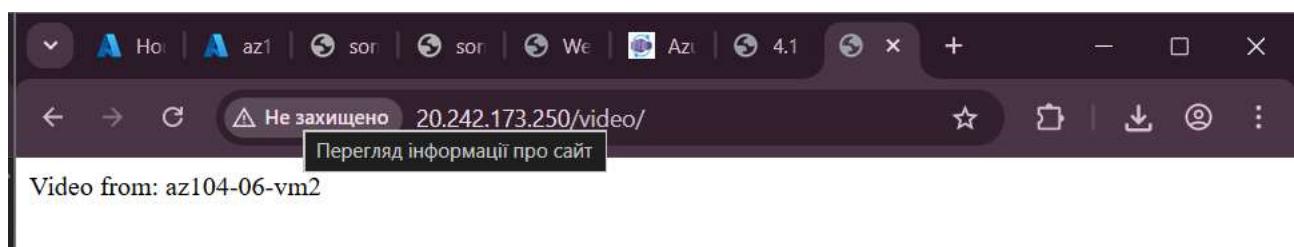
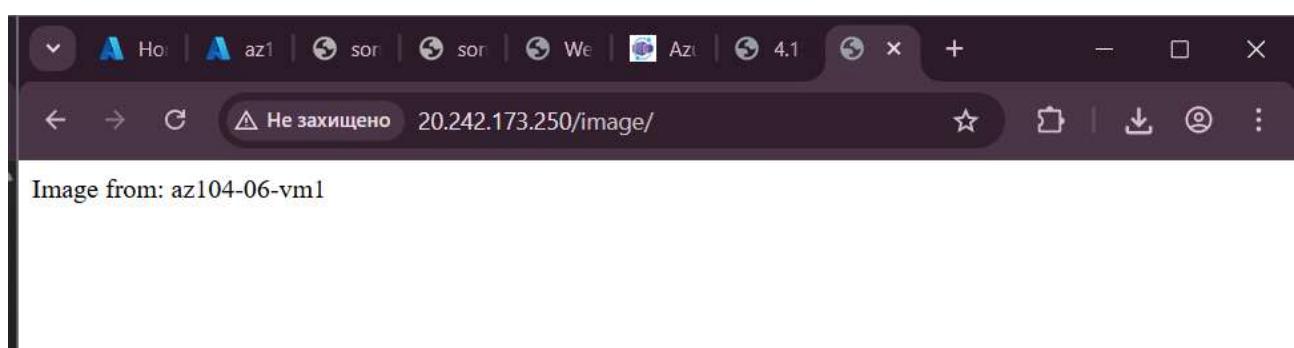
The Backend health report is updated based on the respective probe's refresh interval and doesn't depend on the page refresh.

All	Healthy
4 out of 4	4 out of 4

Search backend health

Server (backend...)	Status	Port (Backend s...)	Pr...
10.60.1.4 (az104-app...)	Healthy	80 (az104-http)	Htt...
10.60.2.4 (az104-app...)	Healthy	80 (az104-http)	Htt...
10.60.2.4 (az104-vid...)	Healthy	80 (az104-http)	Htt...
10.60.1.4 (az104-ima...)	Healthy	80 (az104-http)	Htt...

<https://portal.azure.com/?quickstart=True#/>



Lab 07 - Manage Azure Storage

Task 1: Create and configure a storage account.

Home > **sonya_1764808105451 | Overview**

Deployment

Search X < Delete Cancel Go to resource Pin to dashboard

Overview Inputs Outputs Template

Your deployment is complete

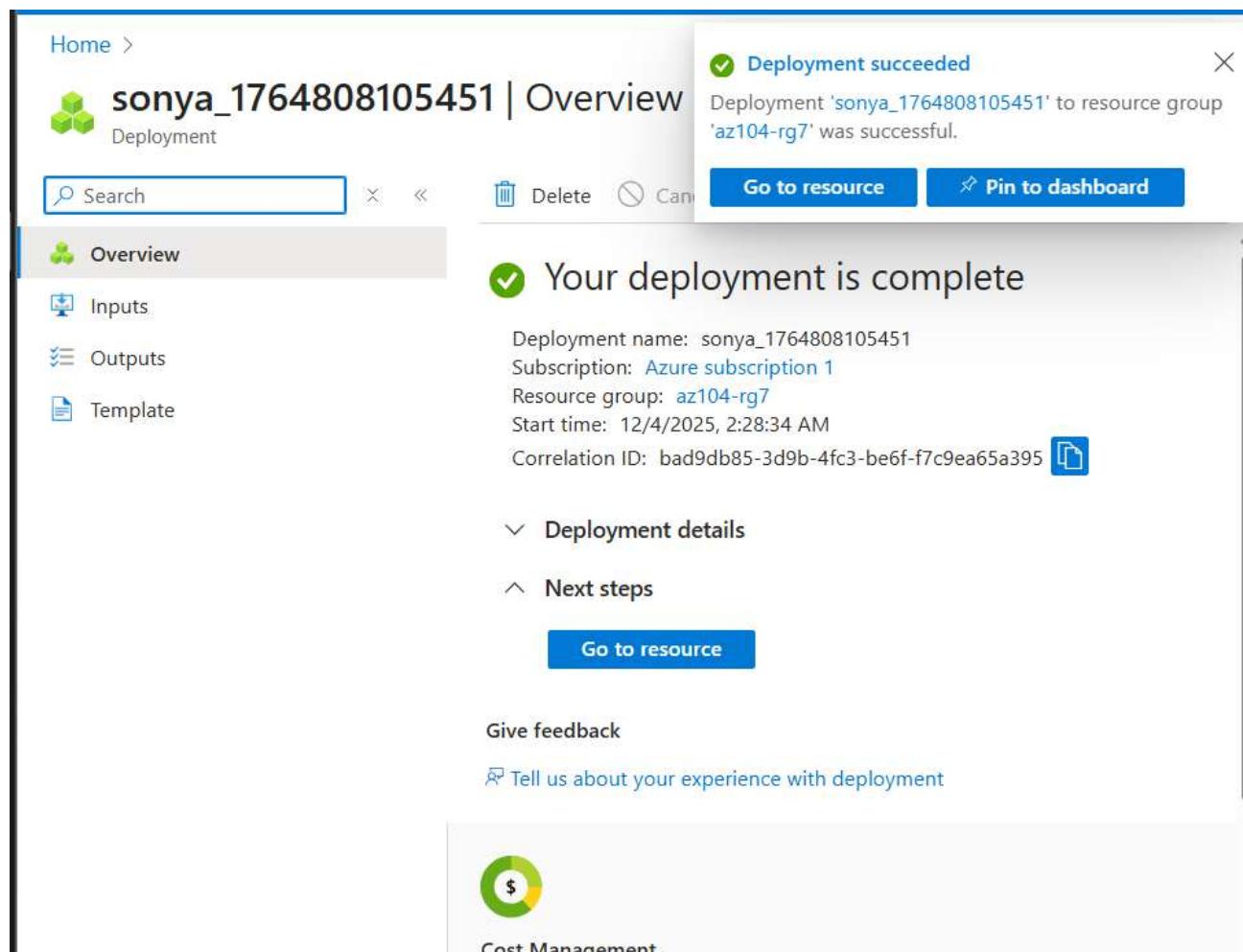
Deployment name: sonya_1764808105451
Subscription: Azure subscription 1
Resource group: az104-rg7
Start time: 12/4/2025, 2:28:34 AM
Correlation ID: bad9db85-3d9b-4fc3-be6f-f7c9ea65a395

Deployment details Next steps

Go to resource

Give feedback Tell us about your experience with deployment

Cost Management



Home > sonya_1764808105451 | Overview > sonya

sonya | Lifecycle management ★

Storage account

Search Access keys Shared access signature Encryption Microsoft Defender for Cloud Data management Storage Actions Redundancy Data protection Object replication Blob inventory Static website

Add a rule Enable Disable Refresh Delete ...

Successfully updated lifecycle management policy

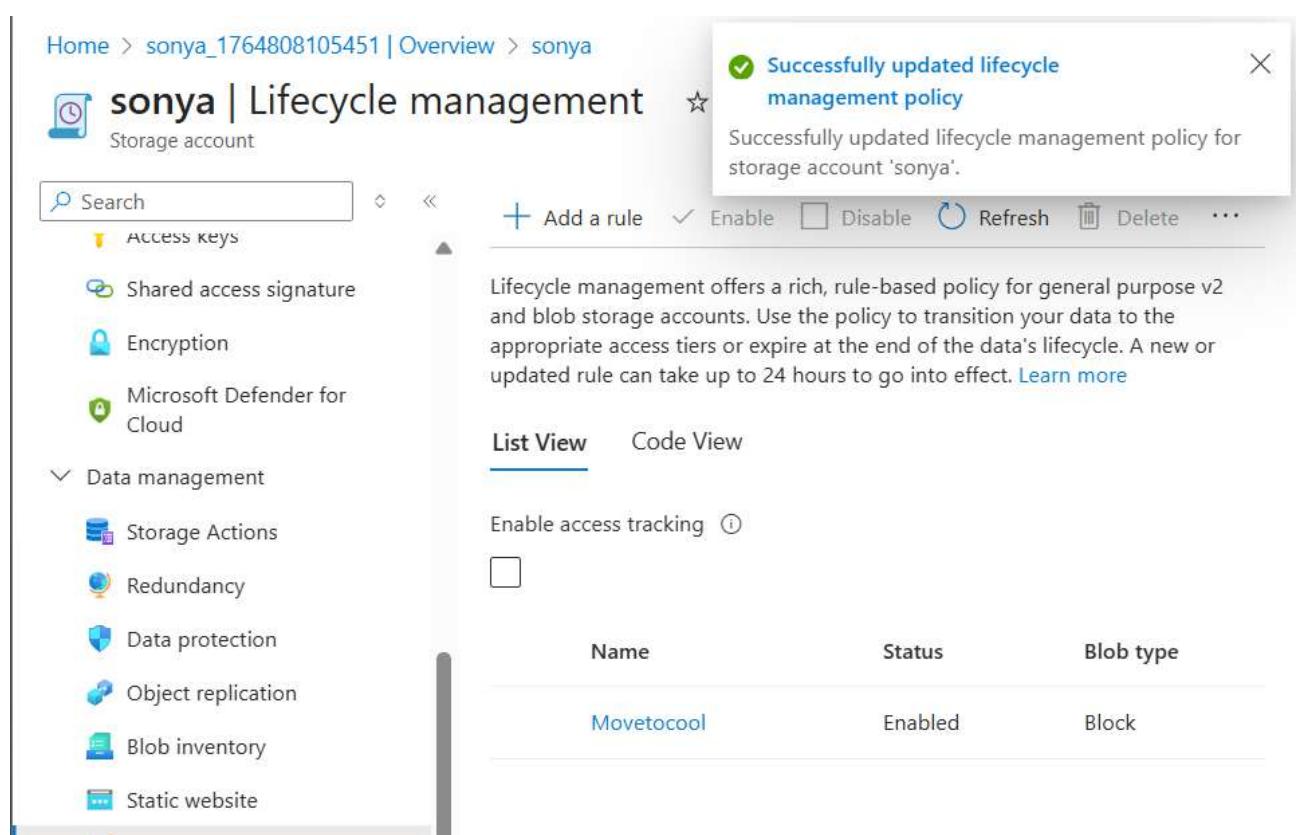
Successfully updated lifecycle management policy for storage account 'sonya'.

Lifecycle management offers a rich, rule-based policy for general purpose v2 and blob storage accounts. Use the policy to transition your data to the appropriate access tiers or expire at the end of the data's lifecycle. A new or updated rule can take up to 24 hours to go into effect. [Learn more](#)

List View Code View

Enable access tracking ⓘ

Name	Status	Blob type
Movetocool	Enabled	Block



Search containers by prefix Only show active containers

Showing all 2 items

<input type="checkbox"/>	Name	Last modified	Anonymous
<input type="checkbox"/>	\$logs	04.12.2025, 02:29:00	Private
<input type="checkbox"/>	data	04.12.2025, 02:33:46	Private

Add policy

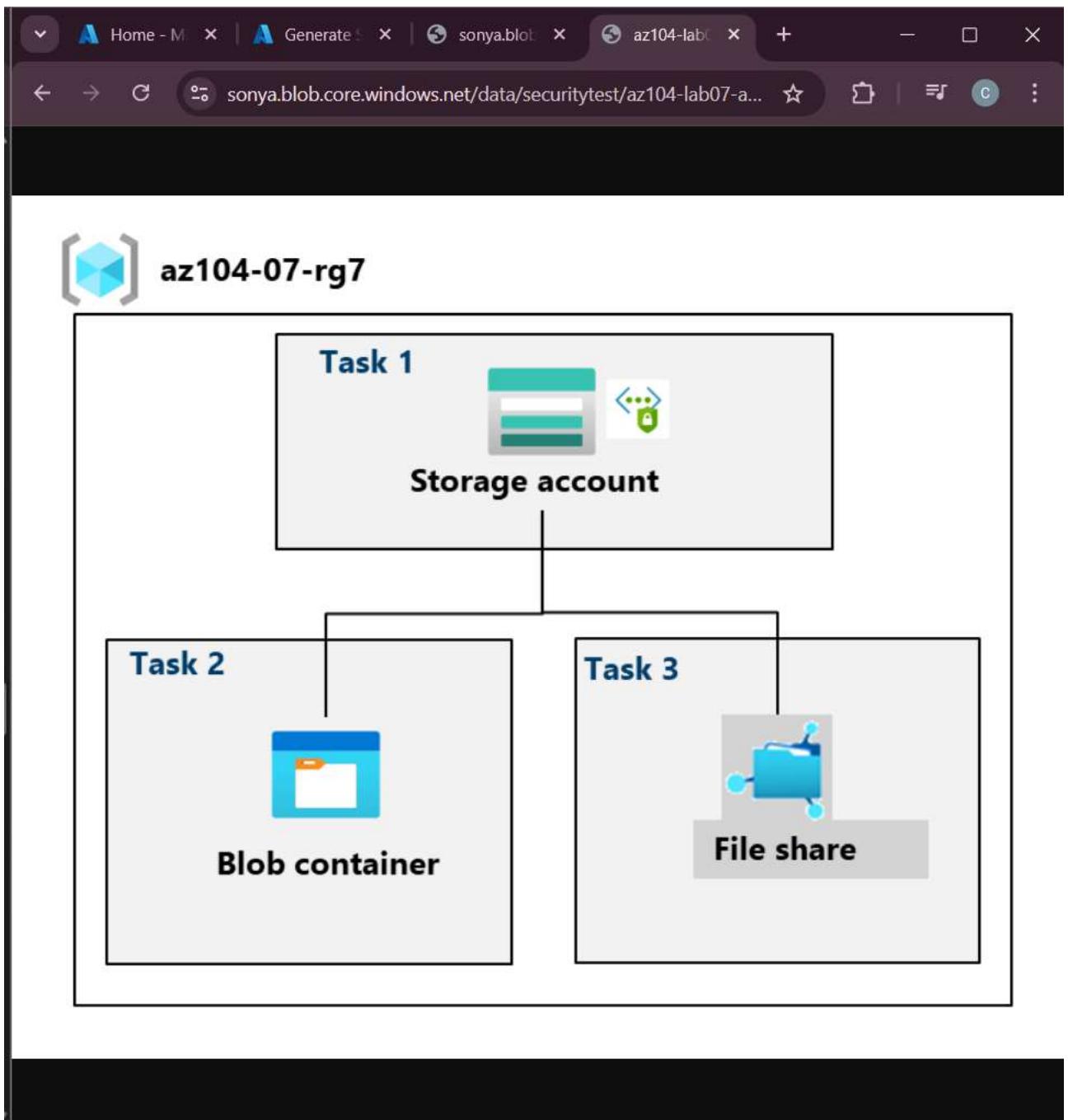
Identifier	Scope	Retention interval	State
Time-based retention	Container	180 days	Unlocked

The screenshot shows a Microsoft Edge browser window with three tabs open. The active tab is titled 'sonya.blob.core.windows.net' and displays an XML error response. The error message is as follows:

```
<Error>
  <Code>PublicAccessNotPermitted</Code>
  <Message>Public access is not permitted on this storage account. RequestId:77bb3e65-501e-0014-2cb6-649700000000 Time:2025-12-04T00:38:17.0274353Z</Message>
</Error>
```

Below the error message, there is a note in both Ukrainian and English: "This XML document does not appear to have any style information associated with it. The document tree is shown below."

<https://sonya.blob.core.windows.net/data/securitytest/az104-lab07-architecture-diagram.png?sp=r&st=2025-12-03T00:23:56Z&se=2025-12-05T08:38:56Z&spr=https&sv=2024-11-04&sr=b&sig=fAsQJwCeciPqmB3dURbKzVNWet26GhH51oBipn6SD%2Bo%3D>



Task 3: Create and configure an Azure File storage

Screenshot of the Azure portal showing the creation of a new file share named "share1". The share is identified as an "SMB File share". A success message indicates "Successfully created storage file share". A note states "Backup is not enabled for file share 'share1'. Click here to enable." Navigation links include "Search", "Connect", "Upload", "Refresh", "Add directory", and "Overview". Other options like "Diagnose and solve problems" and "Access Control (IAM)" are also visible.

Upload files

✓ Successfully uploaded file(s)

Successfully uploaded 1 file(s).

X



Drag and drop files here

or

Browse for files

Overwrite if files already exist

Upload

Current uploads

Dismiss: [Completed](#) [All](#)

az104-lab07-architecture... ✓ 33.08 KiB / 33.08 KiB

Home >

Microsoft Azure

Search resources, services, and docs (G+/-)

Copilot

X



vnet1-1764809131848 | Overview

Deployment

Search

X

<<

Delete

Cancel

Go to resource

Pin to dashboard

Overview

Inputs

Outputs

Template

✓ Deployment succeeded

Deployment 'vnet1-1764809131848' to resource group 'az104-rg7' was successful.

✓ Your deployment is complete

Deployment name : vnet1-1764809131848

Subscription : Azure subscription 1

Resource group : az104-rg7

Start time : 12/4/2025, 2:45:35 AM

Correlation ID : 779feed8-5d26-4775-82eb-e829aab661da

> Deployment details

< Next steps

Go to resource

vnet1 | Service endpoints

Virtual network

✓ Updated virtual network

Successfully saved service endpoint 'Microsoft.Storage' for virtual network 'vnet1'

Search

◇ ◀

+ Add Refresh

Address space

Connected devices

Subnets

Bastion

DDoS protection

Filter service endpoints

Service	Subnet	Status
> Microsoft.Storage	1	

sonya | Storage browser

Storage account

Search

◇ ◀

>

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Partner solutions

Resource visualizer

Data storage

Containers

File shares

Queues

Tables

Security + networking

Add or remove favorites by pressing **Ctrl+Shift+F**



This request is not authorized to perform this operation.

Summary

Session ID
908b7dd02a7f4314b6fd7513eb567a16

Resource ID
[/subscriptions/118a834e-682a-4d4a-.../](#)

Extension
Microsoft_Azure_Storage

Content
BlobsBlade

Error code
403

Storage Request ID
42a599bc-c01e-0016-2cb8-6429b800000...

Details

- This request is not authorized to perform this operation.
RequestId:42a599bc-c01e-0016-2cb8-6429b8000000

Lab 08 - Manage Virtual Machines

Home > Compute infrastructure | Virtual machines > Create a virtual machine >

Select a VM size

X

Search by VM size...

vCPUs : 0-1 RAM (GiB) : All Display cost : Monthly Add filter

Showing 15 of 1091 VM sizes. Subscription: Azure subscription 1 Region: East US

Image: Windows Server 2019 Datacenter | Learn more about VM sizes Group by series

VM Size ↑↓	Type ↑↓	vCPUs ↑↓	RAM (GiB) ↑↓	Data disks ↑↓
Size not available			See the info bubble next to a size for details on availability	
Unsupported availability zone			Sizes are not supported in zone 1,2. Change your availability zone	
DC1ds_v3 ⓘ	Confidential compute	1	8	4
DC1s_v3 ⓘ	Confidential compute	1	8	4

Lab 09a - Implement Web Apps

Task 1: Create and configure an Azure web app

Microsoft Azure Search resources, services, and docs (G+/) Copilot ...

Home > Microsoft.Web-WebApp-Portal-d83e34b5-94b9 | Overview

Deployment

Search X << Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

✓ Your deployment is complete

Deployment name : Microsoft.Web-WebApp-Portal-d83e34b5-94b9
Subscription : Azure subscription 1
Resource group : az104-rg9
Start time : 12/4/2025, 1:21:32 PM
Correlation ID : be10af95-3471-41a5-ace0-cba61d3c52a6

Deployment details Next steps

Go to resource





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

Home > sonya

sonya | Deployment slots ☆ ... X

Save Discard Add Swap Logs Refresh ...

Deployment slots are live apps with their own hostnames. App content and configurations elements can be swapped between two deployment slots, including the production slot.

Name	Status	App service plan	Traffic
sonya PRODUCTION	Running	ASP-az104rg9-9c26	100
sonya-staging	Running	ASP-az104rg9-9c26	0

Search Overview Activity log Access control (IAM) Tags Diagnose and solve problems Microsoft Defender for Cloud Events (preview)

staging (sonya/staging) | Deployment Center App Service (Slot)

Search Save Discard Refresh Browse Sync Send us your feedback

Settings Containers (new) Logs FTPS Credentials

Environment variables Configuration (preview) Instances Authentication Identity Backups Custom domains Certificates Networking WebJobs Service Connector Locks Performance App Service plan Development Tools

Deploy and build code from your preferred source and build provider. [Learn more](#)

Source External Git [Disconnect](#)

Repository <https://github.com/Azure-Samples/php-docs-hello-world>

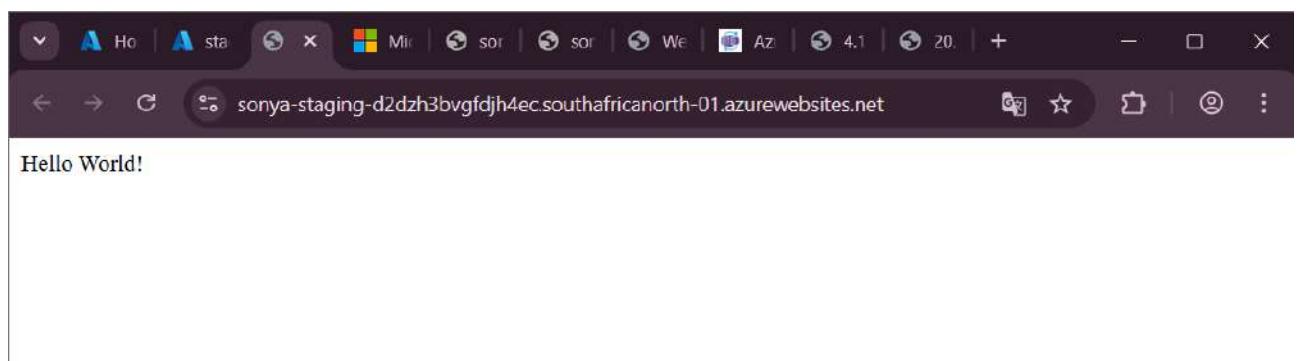
Branch master

Build

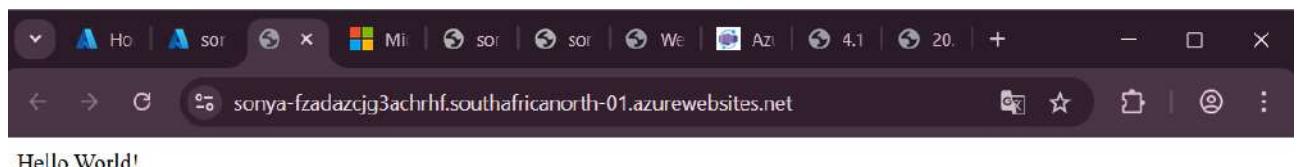
Build provider App Service Build Service

Runtime stack PHP

Version 8.2



Task 4: Swap deployment slots



Home > App Services > sonya

sonya | Scale out

Web App

Search Refresh Send us your feedback

Scaling

When scaling demand changes, you can manually scale your resource to a specific instance count, or via a custom Autoscale rule based policy that scales based on metric(s) thresholds, or schedule instance count which scales during designated time windows. You can also use Automatic Scaling features which enables platform managed scale in and scale out for your apps based on incoming HTTP traffic. [Learn more about Azure Autoscale](#), [Automatic Scaling](#) or [view the how-to video](#).

Deployment slots

Deployment Center

Settings

Performance

App Service plan

App Service plan

Scale up

Scale out

Development Tools

API

Monitoring

Instance count

Save Discard

https://portal.azure.com/?quickstart=True#f

Scale out method

Manual
Maintain a constant instance count for your application

Automatic
Platform managed scale out and in 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

1

Home >

Microsoft.CloudNativeTesting176484885184

Deployment

Search Delete Cancel Redeploy

Deployment succeeded

Deployment 'Microsoft.CloudNativeTesting176484885184' to resource group 'az104-rg9' was successful.

Go to resource Go to resource group

Overview

Inputs Outputs Template

Your deployment is complete

Deployment name : Microsoft.CloudNativeTesting1764848851841
Subscription : Azure subscription 1
Resource group : az104-rg9
Start time : 12/4/2025, 1:47:52 PM
Correlation ID : 74f00fa6-c7c5-4c38-a706-42a37a789229

Deployment details

Next steps

Go to resource

Create Web App

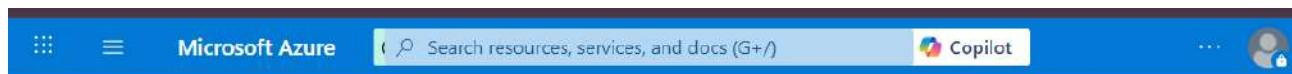
[X](#)

X deploymentName: Microsoft.Web-WebApp-Portal-d8f55ee8-b282
deploymentStatusCode: -1
details: {"code":"InvalidTemplateDeployment","message":"The template deployment 'Microsoft.Web-WebApp-Portal-d8f55ee8-b282' is not valid according to the validation procedure. The tracking id is 'ee5729af-307c-470b-a150-8f0c03361304'. See inner errors for details."}, "details": [{"code":"ValidationForResourceFailed", "message": "Validation failed for a resource. Check 'Error.Details[0]' for more information."}, {"code": "SubscriptionIsOverQuotaForSku", "message": "Operation cannot be completed without additional quota."}
\nAdditional details - Location: \r\nCurrent Limit (PremiumMV3 VMs): 0 \r\nCurrent Usage: 0\r\nAmount required for this deployment (PremiumMV3 VMs): 1 \r\n(Minimum) New Limit that you should request to enable this deployment: 1.
\r\nNote that if you experience multiple scaling operations failing (in addition to this one) and need to accommodate the aggregate quota requirements of these operations, you will need to request a higher quota limit than the one currently displayed."}]}, "error: {"code": "InvalidTemplateDeployment", "details": [{"code": "ValidationForResourceFailed", "message": "Validation failed for a resource. Check 'Error.Details[0]' for more information."}, {"code": "SubscriptionIsOverQuotaForSku", "message": "Operation cannot be completed without additional quota."}
\r\nAdditional details - Location: \r\nCurrent Limit (PremiumMV3 VMs): 0 \r\nCurrent Usage: 0\r\nAmount required for this deployment (PremiumMV3 VMs): 1 \r\n(Minimum) New Limit that you should request to enable this deployment: 1.
\r\nNote that if you experience multiple scaling operations failing (in addition to this one) and need to accommodate the aggregate quota requirements of these operations, you will need to request a higher quota limit than the one currently displayed."}], "message": "The template deployment 'Microsoft.Web-WebApp-Portal-d8f55ee8-b282' is not valid according to the validation procedure. The tracking id is 'ee5729af-307c-470b-a150-8f0c03361304'. See inner errors for details."}
expected: true
location: East US
notificationTimestamp: "2025-12-04T01:12:16.048Z"
resourceGroupName: az104-rg9
stage: 6
subscriptionId: 118a834e-682a-4d4a-960c-4efb65654530

[Basics](#) [Database](#) [Deployment](#) [Networking](#) [Monitor + secure](#) [Tags](#) [Review + create](#)

Summary

[Create](#)[< Previous](#)[Next >](#)[Download a template for automation](#)



Dashboard > All resources > sonya >

TestRun_12/4/2025_1:54:00 PM

X

Last updated by: enni.voskayn@gmail.com | Initiated on: 04.12.2025, 13:54:01

[View all test runs](#) | [Stop](#) [Delete](#) | [Configure server side metrics](#) | [Download](#) | [Share](#) | ...

ⓘ Test run feedback How was your experience running a load test with Azure Load Testing? [Like](#) [Comment](#) X

Executing

Start time : 04.12.2025, 13:54:04 Engine instances : 1 Test run ID : 38d95d58-1b3b-47ee-8150-66d67d8bf030
End time : -- Virtual users (Max) : 1 Baseline : Set baseline
Duration : -- Virtual user hours : --

AI insights

Client side metrics

Server side metrics

Engine health

ⓘ AI summary and insights : AI-powered insights will be available after the test run is completed and artifacts are available. [Learn more](#) X

ⓘ Server-side metrics aren't configured. [Configure them now](#) to unlock deeper AI-based insights and results. [Learn more](#) X

Client-side metrics

Requests : Request1 Aggregation : P90 Error Type : None Group by : 10s

Virtual Users (Max)

Response time (successful responses)

60

800ms

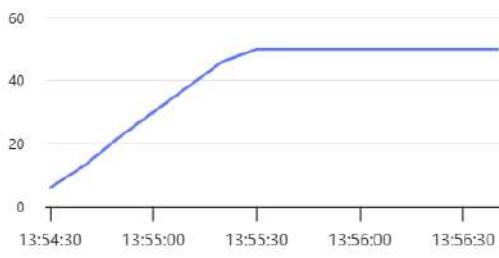
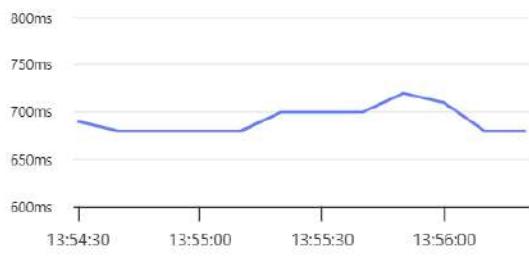
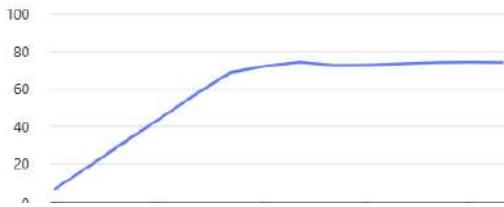
TestRun_12/4/2025_1:54:00 PM ...

X

Last updated by: enni.voskayn@gmail.com | Initiated on: 04.12.2025, 13:54:01

[View all test runs](#) [Stop](#) [Delete](#) [Configure server side metrics](#) [Download](#) [Share](#) ...[All insights](#) [**Client side metrics**](#) [Server side metrics](#) [Engine health](#)

Requests : Request1 Aggregation : P90 Error Type : None Group by : 10s

Virtual Users (Max)■ Request1 | 50**Response time (successful responses)**■ Request1 P90 | 691,67ms**Requests/sec (Avg)****Errors (total)**

Lab 09b - Implement Azure Container Instances

Task 1: Deploy an Azure Container Instance using a Docker image

Home >

Microsoft.ContainerInstances-20251204031851

Deployment

Search X < > Delete Cancel Go to resource Pin to dashboard

Overview Inputs Outputs Template

Your deployment is complete

Deployment name : Microsoft.ContainerInstances-20251204031851
Subscription : Azure subscription 1
Resource group : az104-rg9
Start time : 12/4/2025, 3:21:17 AM
Correlation ID : 89df4b3b-3c0b-40aa-8d04-04b52676c304

> Deployment details

Next steps

Go to resource

Give feedback

Tell us about your experience with deployment



Cost management

Get notified to stay within your budget and prevent unexpected charges on your bill

Add or remove favorites by pressing **Ctrl+Shift+F**

Home > Microsoft.ContainerInstances-20251204031851 | Overview >

az104-c1 ⚡ ⭐ ...

Container instances

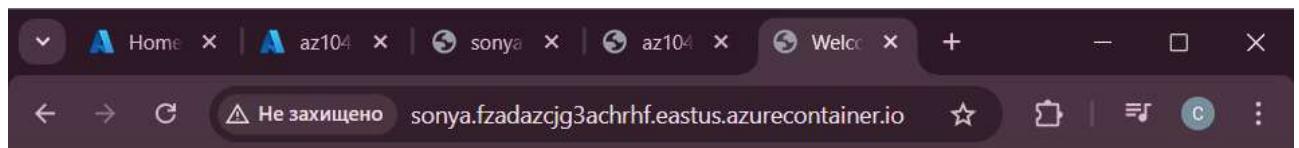
Search X < > Start Restart Stop Delete Refresh ...

Overview Activity log Access control (IAM) Tags Resource visualizer

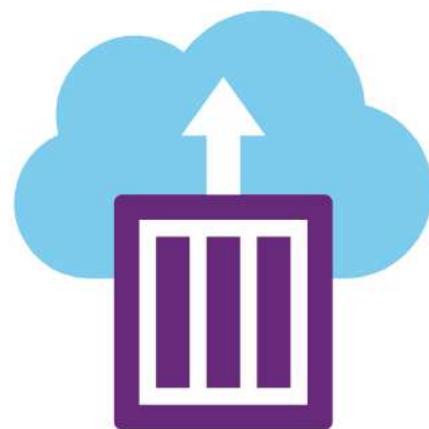
⚠ Please be aware that Docker Hub has recently introduced a pull rate limit on Docker images. When specifying an image from the Docker Hub registry, this may impact your container instance. [Learn more](#)

Essentials JSON View

Resource group ([move](#)) : az104-rg9
Status : Running



Welcome to Azure Container Instances!



Home > Microsoft.ContainerInstances-20251204031851 | Overview > az104-c1

az104-c1 | Containers

Container instances

Search Refresh Give feedback

Overview 1 container and 0 init containers

Activity log

Access control (IAM)

Tags

Resource visualizer

Settings

Containers

Identity Properties Locks

Monitoring Automation Help

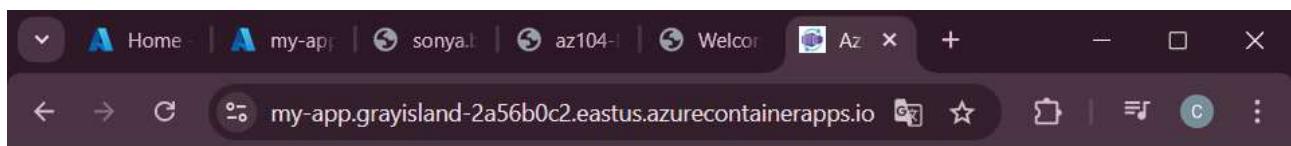
64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36"
::ffff:10.92.0.5 - - [04/Dec/2025:01:24:54 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36"
::ffff:10.92.0.5 - - [04/Dec/2025:01:24:55 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36"
::ffff:10.92.0.4 - - [04/Dec/2025:01:25:02 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36"
::ffff:10.92.0.4 - - [04/Dec/2025:01:25:04 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/142.0.0.0 Safari/537.36"

<https://portal.azure.com/?quickstart=True#...>

Lab 09c - Implement Azure Container Apps

Task 1: Create and configure an Azure Container App and environment

The screenshot shows the Microsoft Azure portal interface. At the top, there's a navigation bar with icons for Home, Search, and Copilot. Below the navigation bar, the title is "Microsoft.App-ContainerApp-Portal-18691503-ae30 | ...". On the left, a sidebar menu includes "Overview" (selected), "Inputs", "Outputs", and "Template". The main content area displays a green checkmark icon and the message "Your deployment is complete". It provides deployment details: Deployment name: Microsoft.App-ContainerApp-Portal-18691503..., Subscription: Azure subscription 1, Resource group: az104-rg9, Start time: 12/4/2025, 3:28:42 AM, and Correlation ID: 5f8e6d4f-a1ad-44f4-bf35-ed0e0df3dbcf. There are two expandable sections: "Deployment details" and "Next steps", and a blue "Go to resource" button.



Your container app is running with a Hello World image

Azure Container Apps is a serverless container solution for apps and microservices that helps you:

- Simplify your container deployments
- Manage less infrastructure
- Scale automatically on demand

[Learn more.](#)

Lab 10 - Implement Data Protection

Task 1: Use a template to provision an infrastructure

The screenshot shows the Microsoft Azure portal interface. At the top, there is a navigation bar with icons for Home, Microsoft A..., a search bar labeled "Search resources, services, and docs (G+)", and a Copilot button. Below the navigation bar, the page title is "Microsoft.Template-2025121100" under the "Deployment" section. To the right of the title, a green checkmark icon indicates "Deployment succeeded" with the message: "Deployment 'Microsoft.Template-20251211005204' to resource group 'az104-rg-region1' was successful." Below the title, there is a search bar, a "Delete" button, and two buttons: "Pin to dashboard..." and "Go to resource group...". On the left side, there is a sidebar with navigation links: "Overview" (which is selected and highlighted in grey), "Inputs", "Outputs", and "Template". The main content area displays a summary of the deployment details:

Your deployment is complete	
	Deployment name : Microsoft.Template-20251211005204
	Subscription : Azure subscription 1
	Resource group : az104-rg-region1
	Start time : 12/11/2025, 12:52:10 AM
	Correlation ID : ad7be659-8232-4e9a-8105-bde7cf8c3268

Below the deployment details, there are two expandable sections: "Deployment details" (indicated by a blue chevron icon) and "Next steps" (indicated by a blue chevron icon pointing down). A blue "Go to resource group" button is located below these sections. At the bottom of the main content area, there is a "Give feedback" link and a "Tell us about your experience with deployment" link, each accompanied by a small icon.

At the very bottom of the page, there is a "Cost management" section featuring a green circle with a white dollar sign icon. The text "Cost management" is followed by the instruction "Get notified to stay within your budget and prevent unexpected charges". There is also a note: "Add or remove favorites by pressing Ctrl+Shift+F".

Microsoft A... Search resources, services, and docs (G+/) Copilot ...

Home > Microsoft.RecoveryServicesV2-1765407333697 | Ove... X

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview Inputs Outputs Template

✓ Your deployment is complete

Deployment name : Microsoft.RecoveryServicesV2-1765407333...
Subscription : Azure subscription 1
Resource group : az104-rg-region1
Start time : 12/11/2025, 12:56:01 AM
Correlation ID : b32bca33-9340-4270-b22f-81b4ac81d6d1

> Deployment details

Next steps

Go to resource

Microsoft Azure Search resources, services, and docs (G+) Copilot

Home > ConfigureProtection-1765407695209 | Overview Deployment

Deployment succeeded
Deployment 'ConfigureProtection-1765407695209' to resource group 'az104-rg-region1' was successful.

Search X < Delete Cancel Redeploy Go to resource Go to resource group

Overview Inputs Outputs Template

Your deployment is complete

Deployment name : ConfigureProtection-1765407695209
Subscription : Azure subscription 1
Resource group : az104-rg-region1
Start time : 12/11/2025, 1:01:39 AM
Correlation ID : 69455050-76ac-45d1-b059-8710c0bf2928

Deployment details Next steps

Go to resource

 Cost management
Get notified to stay within your budget and prevent unexpected charges on your bill.
[Set up cost alerts >](#)

Microsoft Azure | Search resources, services, and docs (G+) | Copilot

Home > sonya_1765407931163 | Overview Deployment

Deployment succeeded
Deployment 'sonya_1765407931163' to resource group 'az104-rs-region1' was successful.

Search | Delete | Cancel | Redeploy | Go to resource | Pin to dashboard

Overview | Inputs | Outputs | Template

Your deployment is complete

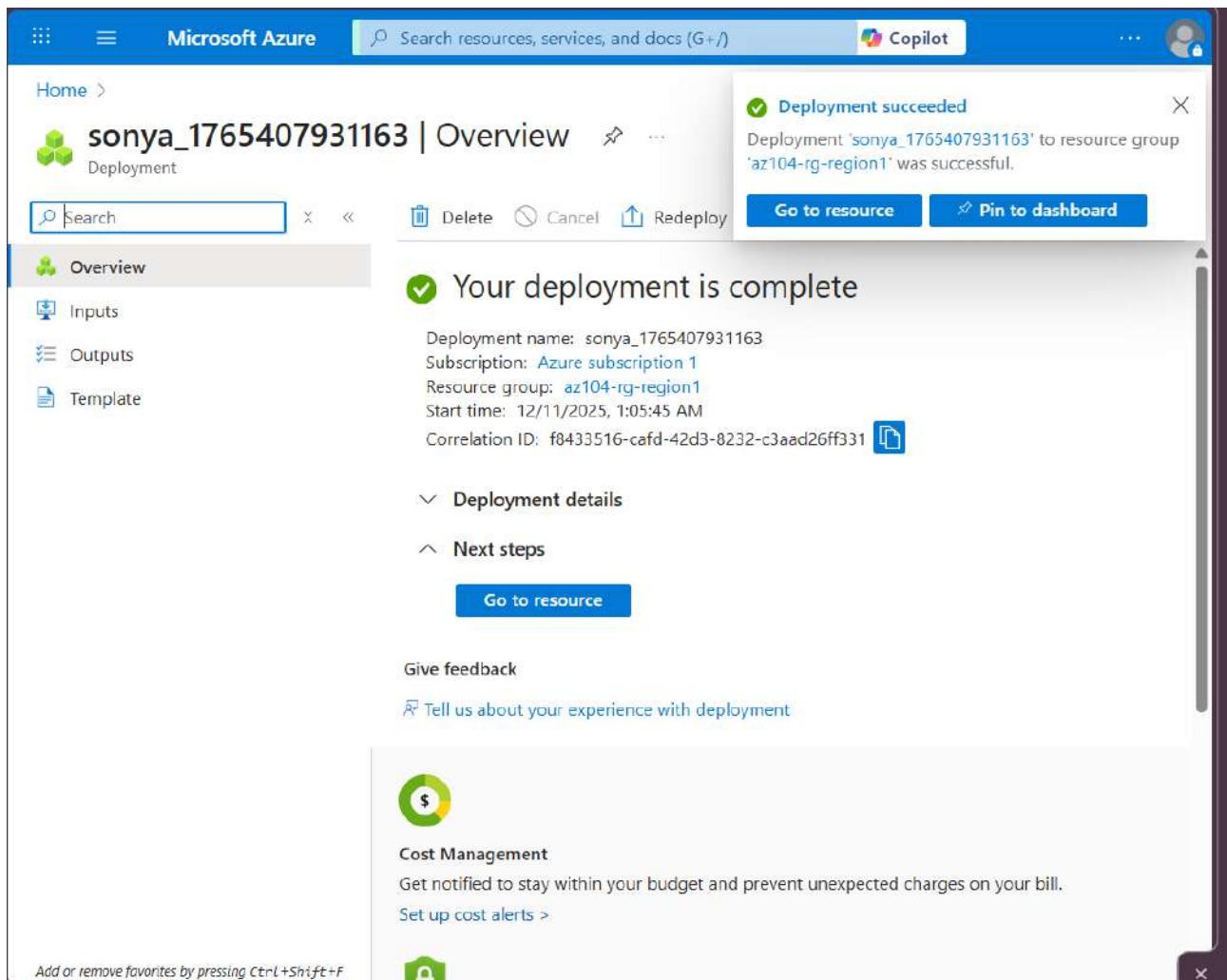
Deployment name: sonya_1765407931163
Subscription: Azure subscription 1
Resource group: az104-rs-region1
Start time: 12/11/2025, 1:05:45 AM
Correlation ID: f8433516-cafd-42d3-8232-c3aad26ff331

Deployment details | Next steps

Give feedback | Tell us about your experience with deployment

Cost Management: Get notified to stay within your budget and prevent unexpected charges on your bill. Set up cost alerts >

Add or remove favorites by pressing Ctrl+Shift+F



Home > Recovery Services vaults > az104-rsv-region2

az104-rsv-region2 | Replicated items | Recovery Services vault

Search | Refresh | Replicate | Columns | Filter | Feedback

Last refreshed at: 12/11/2025, 1:31:31 AM

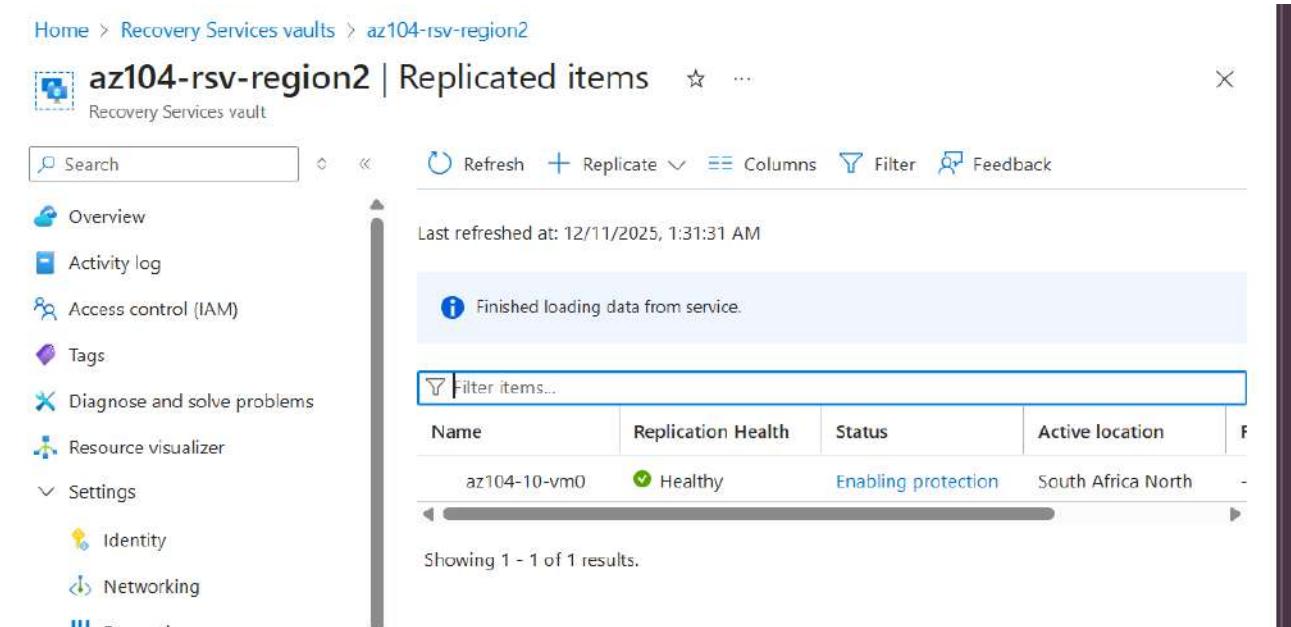
Finished loading data from service.

Filter items...

Name	Replication Health	Status	Active location
az104-10-vm0	Healthy	Enabling protection	South Africa North

Showing 1 - 1 of 1 results.

Overview | Activity log | Access control (IAM) | Tags | Diagnose and solve problems | Resource visualizer | Settings | Identity | Networking | ...



Lab 11 - Implement Monitoring

Task 1: Use a template to provision an infrastructure

Microsoft ... Search resources, services, and docs (G+/?) Copilot

Home > Microsoft.Template-20251211014446 | Overview Deployment

Search

Deployment succeeded Deployment 'Microsoft.Template-20251211014446' to resource group 'az104-rg11' was successful.

Overview Inputs Outputs Template

Your deployment is complete

Deployment name : Microsoft.Template-20251211014446
Subscription : Azure subscription 1
Resource group : az104-rg11
Start time : 12/11/2025, 1:44:53 AM
Correlation ID : a33c95f8-30fe-4ff7-8ad1-99fd209d43dd

Deployment details Next steps

[Go to resource group](#)

Give feedback Tell us about your experience with deployment

Cost management Get notified to stay within your budget and prevent unexpected charges on your bill.

Add or remove favorites by pressing **Ctrl+Shift+F**

Microsoft ... Up Search resources, services, and docs (G+/)

Home > Monitor | Alerts >

Create an alert rule

Actions

An action group is a set of actions that can be applied to an alert rule. [Learn more](#)

Select actions

Use quick actions (preview)
Select one or more of the quick actions.

Use action groups
Add an existing action group or create a new one.

None

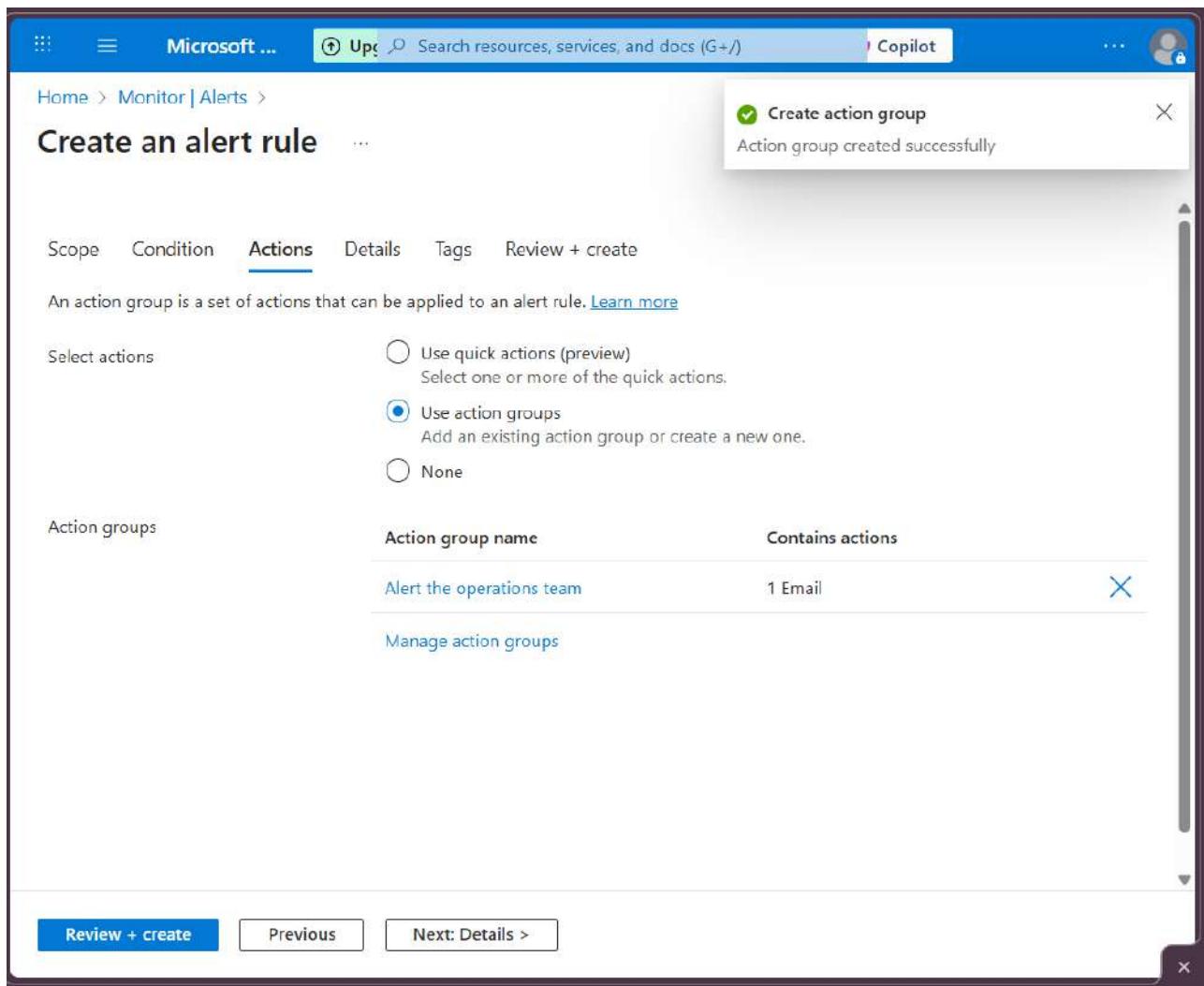
Action groups

Action group name	Contains actions
Alert the operations team	1 Email

[Manage action groups](#)

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

Create action group
Action group created successfully



Microsoft ... Up Search resources, services, and docs (G+/)

Home > Monitor

Monitor | Alerts

Microsoft

Search

Overview

Activity log

Alerts

Issues (preview)

Metrics

Logs

Change Analysis

Service health

Workbooks

Dashboards with Grafana (preview)

View as timeline (preview)

+ Create

Alert rules

Action groups

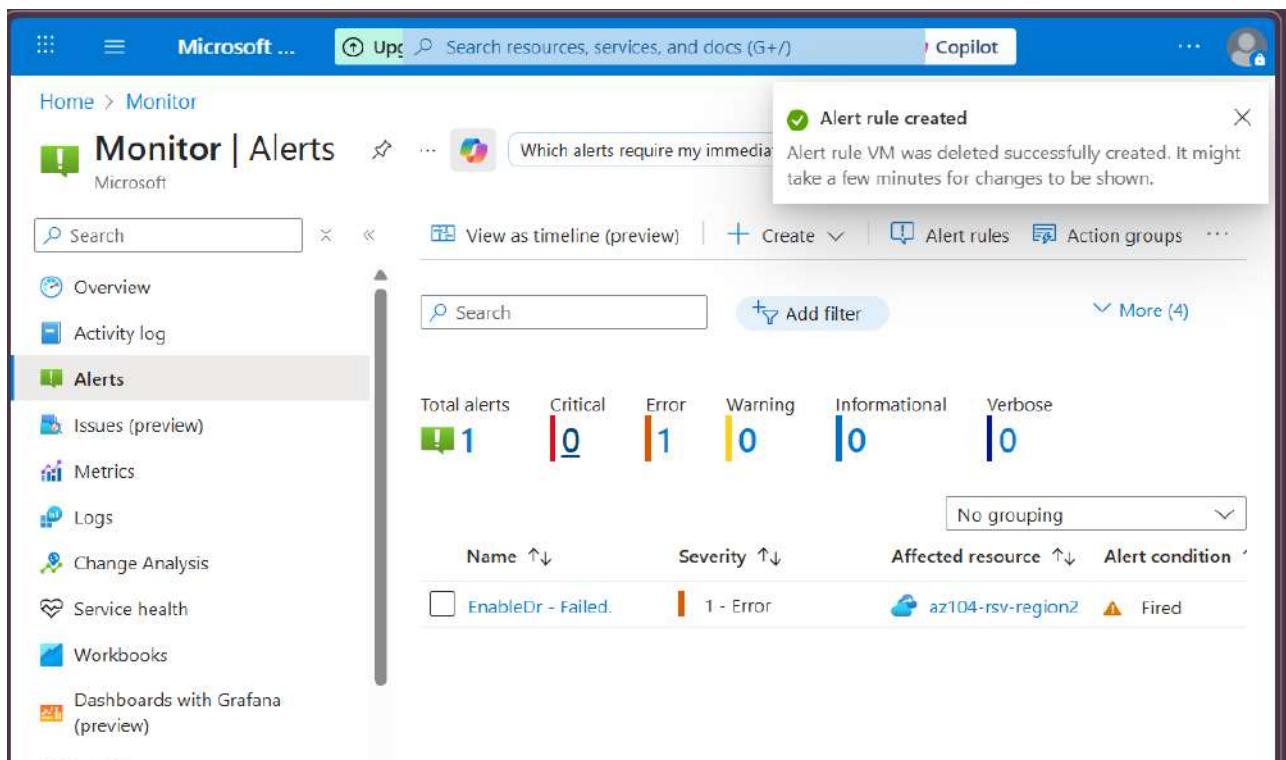
Which alerts require my immediate attention?

Total alerts: 1 Critical: 0 Error: 1 Warning: 0 Informational: 0 Verbose: 0

Name ↑ Severity ↑ Affected resource ↑ Alert condition ↑

Name	Severity	Affected resource	Alert condition
EnableDr - Failed.	1 - Error	az104-rsv-region2	Fired

Alert rule created
Alert rule VM was deleted successfully created. It might take a few minutes for changes to be shown.



Important notice: Azure Monitor alert VM was deleted was activated

Microsoft Azure <azure-noreply@microsoft.com> Скасувати підписку

Схоже, мова цього повідомлення – англійська
Перекласти такою мовою: українська

Azure Monitor alert 'VM was deleted' was activated for 'az104-10-vm0' at December 10, 2025 23:46 UTC

You're receiving this notification as a member of the AlertOpsTeam action group because an Azure Monitor alert was activated.

Activity log alert VM was deleted

Time December 10, 2025 23:46 UTC

Category Administrative

VM was deleted

Activity log alert details

Copy link Go to alert rule Investigate (review)

Summary History

General details

Severity	Fired time	Affected resource	Monitor service	Alert condition	User response
4 - Verbose	12/11/2025, 1:57 AM	az104-10-vm0	ActivityLog Administrative	⚠ Fired	New

The target resource az104-10-vm0 has been moved or deleted.

Why did this alert fire?

The following event occurred: Microsoft.Compute/virtualMachines/delete

Event level	Category	Initiated by
Informational	Administrative	enni.voskayn@gmail.com

Additional details

Home >

Alert processing rules

\$197.61 credit remaining

Subscription 'Azure subscription 1' has a remaining credit of \$197.61.

X

+ Create Columns Refresh Open query | Delete Enable

[Upgrade to a Pay-As-You-Go subscription.](#)

Search

Add tag filter

More (5)

Name ↑↓	Scope	Filter	Rule type ↑↓	Scheduling	Status ↑↓
<input type="checkbox"/> Planned Maintenance	Azure subscription 1		Suppression	At a specific time	<input checked="" type="checkbox"/> Enabled