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Lab 01: Manage Microsoft Entra ID Identities

Task 1: Create and configure user accounts

The screenshot shows the Microsoft Azure portal interface. On the left, the 'Default Directory | Overview' page is displayed. The 'Manage' section of the sidebar is expanded, and the 'Users' option is selected and highlighted with a red circle labeled '3'. In the center, a search bar at the top has 'Microsoft Entra ID' typed into it, with a red circle labeled '1' above it. Below the search bar, the 'Services' tab is selected in a navigation bar, and the 'Microsoft Entra ID' service is listed with a red circle labeled '2' around its icon. The right side of the screen shows a search results page for 'Microsoft Entra ID' with various service cards.

Microsoft Azure

Home > Default Directory | Overview

Overview Preview features Diagnose and solve problems Manage Add Manage tenants What's new Preview

Manage

- Users (3)
- Groups
- External Identities
- Roles and administrators
- Administrative units
- Delegated admin partners
- Enterprise applications
- Devices
- App registrations
- Identity Governance
- Application proxy
- Custom security attributes
- Licenses
- Cross-tenant synchronization
- Microsoft Entra Connect
- Custom domain names
- Mobility (MDM and WIP)
- Password reset

Microsoft Entra has a simpler, integrated experience for managing users and groups.

Overview Monitoring Properties Recommendations

Search your tenant

Basic information

Name	Default Directory
Tenant ID	12a29a79-350e-4d03-bfa3-2ecf8f25328
Primary domain	Liub0myroutlook.onmicrosoft.com
License	Microsoft Entra ID Free

Alerts

Migrate to the converged Authentication methods policy
Please migrate your authentication methods off the legacy MFA and SSPR policies by September 2025 to avoid any service impact
[Learn more](#)

My feed

Try Microsoft Entra admin center
Secure your identity environment with Microsoft Entra ID, permissions management and more.
[Go to Microsoft Entra](#)

Microsoft Entra ID

Azure CosmosDB for PostgreSQL Microsoft Entrad Service Principal

Continue searching in Microsoft Entra ID

Searching all subscriptions. Give feedback

JIN 95a0cf21-139d-4be1-9be6-f5490e358e1d Global Administrator View role information View profile

Score for Identity 0.00% Secure score updates can take up to 48 hours. View secure score

Microsoft Entra ID

All Services (59) Marketplace (10) More (4)

Ask Copilot

Copilot

Liub0myr@outlook.com DEFAULT DIRECTORY (LIUB0MYR..)

Microsoft Azure

Home > Users

Users Default Directory

Search: + New user Delete Download users Bulk operations Refresh Manage view Per-user MFA Got feedback?

All users

Create new user
Create a new internal user in your organization

ID	User principal name	User type	On-premises s...	Identities	Company name	Creation type
1	Liub0myr_outlook.com#E...	Member	No	MicrosoftAccount		

Audit logs
Sign-in logs
Diagnose and solve problems
Deleted users
Password reset
User settings
Bulk operation results
New support request

Microsoft Azure

Home > Default Directory | Users > Users >

Create new user

Create a new internal user in your organization

Basics Properties Assignments Review + create

Basics

User principal name az104-user1@Liub0myroutlook.onmicrosoft.com

Display name az104-user1

Mail nickname az104-user1

Password

Account enabled Yes

Properties

User type Member

Job title IT Lab Administrator

Department IT

Usage location United States

+ New user Delete Download users Bulk operations Refresh Manage view Per-user MFA Got feedback?

Azure Active Directory is now Microsoft Entra ID

Search Add filter

2 users found

	User principal name	User type	On-premises s...	Identities	Company name
<input type="checkbox"/>	az104-user1@Liub0myroutlook.onmicrosoft.com	Member	No	Liub0myroutlook.onmicrosoft.com	
<input type="checkbox"/>	Liub0myr_outlook.com#E...	Member	No	MicrosoftAccount	

Користувача успішно створено

Task 2: Create groups and add members

The screenshot shows the Microsoft Azure portal with the 'Default Directory' overview page open. On the left, the 'Groups' option under the 'Manage' section is highlighted with a red circle labeled '3'. In the center, there's a 'Migrate to the converged Authentication methods policy' warning message. On the right, a Copilot search bar at the top has 'Microsoft Entra ID' typed into it, with a red circle labeled '1'. Below the search bar, the 'Services' section lists 'Microsoft Entra ID' with a red circle labeled '2'. The 'Microsoft Entra ID' service page is shown on the right side of the interface.

Microsoft Azure

Home > Default Directory | Overview

Overview

Preview features

Diagnose and solve problems

Manage

- Users
- Groups** 3
- External identities
- Roles and administrators
- Administrative units
- Delegated admin partners
- Enterprise applications
- Devices
- App registrations
- Identity Governance
- Application proxy
- Custom security attributes
- Licenses
- Cross-tenant synchronization
- Microsoft Entra Connect
- Custom domain names
- Mobility (MDM and WiP)
- >Password reset

Microsoft Entra ID 1

Ask Copilot

All Services (59) Marketplace (10) More (4)

Microsoft Entra ID 2

Microsoft Entra ID Protection

Microsoft Entra ID risk detections

Microsoft Entra ID risky sign-ins

Microsoft Entra ID

Microsoft Entra ID solution for Sentinel

Microsoft Entra ID Protection

Omada Identity Cloud: Enhance Your Microsoft Entra ID Capabilities with Om...

Overview of Microsoft Entra Domain Services - Microsoft Entra ID

Azure identity & access security best practices

How Microsoft Entra device registration works - Microsoft Entra ID

How to find your tenant ID - Microsoft Entra

Microsoft Entra ID

Azure CosmosDB for PostgreSQL Microsoft Entralid Service Principal

Continue searching in Microsoft Entra ID

Try Microsoft Entra admin center

Secure your identity environment with Microsoft Entra ID, permissions management and more.

Go to Microsoft Entra

Search all subscriptions: 95a0cf21-139d-4be1-9be6-f5490e358e1d

Global Administrator

View role information

View profile

Give feedback

Score for Identity 0.00%

Secure score updates can take up to 48 hours.

View secure score

Microsoft Azure

Home > Default Directory | Groups > Groups

Groups | All groups

New group

Overview

All groups

Deleted groups

Diagnose and solve problems

Settings

- General
- Expiration
- Naming policy

Activity

Troubleshooting + Support

Search resources, services, and docs (G+)

Copilot

New group

Download groups Refresh Manage view Delete Got feedback?

Microsoft Entra has a simpler, integrated experience for managing all your Identity and Access Management needs. Try the new Microsoft Entra admin center!

Search

Add filter

Search mode Contains

0 groups found

Name ↑	Object Id	Group type	Membership type
No results.			

Microsoft Azure

Home > Default Directory | Groups > Groups | All groups >

New Group

Got feedback?

Group type *

Group name *

Group description

Membership type

Owners
1 owner selected

Members
1 member selected

Add members

Try changing or adding filters if

Search

102 results found

All Users Groups Devices

Name
Любомир NULL
AAD Request Verific
az104-user1
aciapi

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Liub0myr@outlook.com

DEFAULT DIRECTORY (LIUBOMYR...)

Home > Groups

Groups | All groups

Default Directory

New group Download groups Refresh Manage view Delete Got feedback?

Overview

All groups

Deleted groups

Diagnose and solve problems

Settings

General

Expiration

Naming policy

Activity

Troubleshooting + Support

Microsoft Entra has a simpler, integrated experience for managing all your identity and Access Management needs. Try the new Microsoft Entra admin center! [Learn more](#)

Search Add filter

Search mode Contains

1 group found

<input type="checkbox"/>	Name ↑	Object Id	Group type	Membership type	Email	Source
<input type="checkbox"/>	IT Lab Administrators	41ea2d53-5c91-4363-a1d6-d1cfb50a79b4	Security	Assigned		Cloud

Групу *IT Lab Administrators* з власником *Liub0myr_outlook.com#EXT#@Liub0myroutlook.onmicrosoft.com* та учасником *az104-user1@Liub0myroutlook.onmicrosoft.com* успішно створено

Лабораторна робота виконана

Lab 02a: Manage Subscriptions and RBAC

Task 1: Implement Management Groups

The screenshot shows the Microsoft Azure portal interface for managing management groups. On the left, the 'Management groups' blade is open, showing a list of subscriptions under 'Tenant Root Group'. A red box highlights the '+ Create' button, with a red number '3' above it. On the right, a 'Create management group' dialog box is displayed. A red box highlights the search bar at the top, with a red number '1' above it. Another red box highlights the 'Management groups' category in the service list, with a red number '2' above it. A red box highlights the 'Management group ID' input field, which contains 'az104-mg1', with a red number '4' above it. A red box highlights the 'Submit' button at the bottom right, with a red number '5' above it.

Microsoft Azure

Management groups

Default Directory

Search

+ Create

+ Add subscription

Refresh

Expand /

Use management groups to group subscriptions. Click on an existing g

Search by name or ID

Showing 1 subscriptions in 1 groups

Name

Tenant Root Group

Azure for Students

Management groups

Services (29)

Documentation (99+)

All

See more

Management groups

API Management services

Proximity placement groups

Groups

Documentation

Management groups - Cloud Adoption Framework

Quickstart: Create a management group with portal - Azure governance

Azure management groups documentation

Azure management groups documentation

Microsoft Entra ID

Azure Management Groups

Service Principal

Continue searching in Microsoft Entra ID

Searching all subscriptions.

Give feedback

Management groups

Copilot

More (4)

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

Management group ID (Cannot be updated after creation) *

az104-mg1

Management group display name

az104-mg1

Submit

Cancel

Liubomyr@outlook.com

DEFAULT DIRECTORY (LIUBOMYR...)

Task 2: Review and assign a built-in Azure role

Name	Type	ID
Tenant Root Group	Management group	12a29a79-350e-4d03-bfa3-2ecf8f25328f
Azure for Students	Subscription	3616b9f9-5e04-488f-87ac-d012d9d36a69
az104-mg1	Management group	az104-mg1

Microsoft Azure

Home > Management groups > az104-mg1

az104-mg1 | Access control (IAM) 1

Management group

Search

Add 2 Download role assignments Edit columns Refresh

Add role assignment assignments Roles Deny assignments

Add custom role

A role definition is a collection of permissions. You can use the built-in roles or you can

All Job function roles Privileged administrator roles

Search by role name, description, permission, or ID Type : All

Name ↑ Description ↑

- Owner Grants full access to management group
- Contributor Grants full access to management group
- Reader View all resources, but does not allow you to make any changes.
- Access Review Operator Service Role Lets you grant Access Review
- AcrDelete acr delete
- AcrImageSigner acr image signer
- AcrPull acr pull
- AcrPush acr push
- AcrQuarantineReader acr quarantine data reader
- AcrQuarantineWriter acr quarantine data writer
- Advisor Recommendations Contributor (Assessme... View assessment recommendations
- Advisor Reviews Contributor View reviews for a workload
- Advisor Reviews Reader View reviews for a workload
- AgFood Platform Dataset Admin Provides access to Dataset A
- AgFood Platform Sensor Partner Contributor Provides contribute access to
- AgFood Platform Service Admin Provides admin access to Ag
- AgFood Platform Service Contributor Provides contribute access to

Reader

BuiltInRole

Permissions JSON Assignments

```
1 {  
2   "id": "/providers/Microsoft.Authorization/roleDefinitions/acdd72a7-3385-48ef-bd42-f606fba81ae7",  
3   "properties": {  
4     "roleName": "Reader",  
5     "description": "View all resources, but does not allow you to make any changes.",  
6     "assignableScopes": [  
7       "/"  
8     ],  
9     "permissions": [  
10       {  
11         "actions": [  
12           "*/*read"  
13         ],  
14         "notActions": [],  
15         "dataActions": [],  
16         "notDataActions": []  
17       }  
18     ]  
19   }  
20 }
```

Add role assignment ...

[Role](#) [Members](#) • [Conditions](#) [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](#)

[Job function roles](#) [Privileged administrator roles](#)

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

Name	Description	Type	Category	Details
Classic Virtual Machine Contributor	Lets you manage classic virtual machines, but not access to them, and not the virtual network or storage account they're connected to.	BuiltinRole	Compute	View
Desktop Virtualization Power On Contributor	Provide permission to the Azure Virtual Desktop Resource Provider to start virtual machines.	BuiltinRole	None	View
Desktop Virtualization Power Off Contributor	Provide permission to the Azure Virtual Desktop Resource Provider to start and stop virtual machines.	BuiltinRole	None	View
Desktop Virtualization Virtual Machine Contributor	This role is in preview and subject to change. Provide permission to the Azure Virtual Desktop Resource Provider to create, delete, update, start, and stop ...	BuiltinRole	None	View
Service Fabric Cluster Contributor	Manage your Service Fabric Cluster resources. Includes clusters, application types, application type versions, applications, and services. You will need additi...	BuiltinRole	None	View
Virtual Machine Contributor	Lets you manage virtual machines, but not access to them, and not the virtual network or storage account they're connected to.	BuiltinRole	Compute	View

Showing 1 - 6 of 6 results.

3

[Review + assign](#)[Previous](#)[Next](#)[Feedback](#)

1

Type : All

Category : All

Name ↑↓

Description ↑↓

Type ↑↓

Category ↑↓

Details

2

Add role assignment ...

[Role](#) [Members](#) [Conditions](#) [Review + assign](#)**Role** Virtual Machine Contributor**Scope** /providers/Microsoft.Management/managementGroups/az104-mg1**Members**

Name	Object ID	Type
IT Lab Administrators	41ea2d53-5c91-4363-a1d6-d1cfb50a79b4	Group

Description No description**Condition** None

Примітка: замість створення ще однієї групи *helpdesk* я використав вже наявну групу з лабораторної роботи №1

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

Home > az104-mg1

az104-mg1 | Access control (IAM) ...

Management group

 Search

Download role assignments



Feedback

Overview

Subscriptions

Resource Groups

Resources

Activity Log

Access control (IAM)

> Governance

> Cost Management

Check access

Role assignments

Roles

Deny assignments

Privileged

1

[View assignments](#)

All

Job function (1)

Privileged (1)

 Search by name or email

Type : All

Role : All

Scope : All scopes

Group by : Role

2 items (1 Users, 1 Groups)

Name	Type	Role	Scope
Любомир NULL Liub0myr_outlook.com#EXT#@Liub0myroutl...	User	Owner	This resource
IT Lab Administrators 	Group	Virtual Machine Contributor	This resource



Task 3: Create a custom RBAC role

Microsoft Azure

Home > az104-mg1

az104-mg1 | Access control (IAM)

Management group

Search Add Download role assignments

Add role assignment Add custom role assignments Roles

Overview Subscriptions Resource Groups Resources Activity Log Access control (IAM) Governance Cost Management

Privileged 1 View assignments All Job function (1) Priv

Microsoft Azure

Home > az104-mg1 | Access control (IAM) >

Create a custom role

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 * Custom Support Request

Description A custom contributor role for support requests.

Baseline permissions Clone a role Start from scratch Start from JSON

Role to clone Support Request Contributor

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Lubomyr@outlook.com

DEFAULT DIRECTORY (LUBOMYR...)

Home > az104-mg1 | Access control (IAM) >

Create a custom role

Basics Permissions Assignable scopes JSON Review + create

+ 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
Microsoft.Authorization/*/read	--
Microsoft.Resources/subscriptions/resourceGroups/read	Gets or lists resource groups.
Microsoft.Support/*	--

Microsoft.Support permissions

All resource providers

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 Actions (radio button selected) Not Data Actions

Permission Description

Microsoft.Support

Other : Registers Support Resource Provider (checked) 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

Microsoft.Support/operationresults

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

Microsoft.Support/operationsstatus

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

Microsoft.Support/operations

Read : Lists operations Lists all operations available on Microsoft.Support resource provider

Microsoft.Support/services

Read : Reads Services Lists one or all Azure services available for support

Microsoft.Support/services/problemClassifications

Read : Reads Problem Classifications Lists one or all problem classifications for an Azure service

Microsoft.Support/supportTickets

Read : Reads Support Ticket Lists one or all support tickets

Add Cancel

Примітка: під 4 мається на увазі, що в результаті пошуку .Support зі списку було вибрано Microsoft.Support

Home > az104-mg1 | Access control (IAM) >

Create a custom role

Basics Permissions Assignable scopes **JSON** Review + create

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

Download 

```
1 "properties": {  
2     "roleName": "Custom Support Request",  
3     "description": "A custom contributor role for support requests.",  
4     "assignableScopes": [  
5         "/providers/Microsoft.Management/managementGroups/az104-mg1"  
6     ],  
7     "permissions": [  
8         {  
9             "actions": [  
10                 "Microsoft.Authorization/*/read",  
11                 "Microsoft.Resources/subscriptions/resourceGroups/read",  
12                 "Microsoft.Support/*"  
13             ],  
14             "notActions": [  
15                 "Microsoft.Support/register/action"  
16             ],  
17             "dataActions": [],  
18             "notDataActions": []  
19         }  
20     ]  
21 }  
22 }  
23 }
```

Home > 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

[Review + create](#)

[Previous](#)

[Next](#)

[Create](#)

[Previous](#)

Task 4: Monitor role assignments with the Activity Log

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Liub0myr@outlook.com
DEFAULT DIRECTORY (LIUB0MYR...)

Home > Management groups > az104-mg1

az104-mg1 | Activity Log

Management group

Activity Edit columns Refresh Export Activity Logs Download as CSV Insights Feedback Pin current filters Reset filters

Overview Subscriptions Resource Groups Resources Activity Log Access control (IAM) Governance Cost Management

Looking for Log Analytics? In Log Analytics you can search for performance, diagnostics, health logs, and more. Visit Log Analytics

Management Group : az104-mg1 Subscription : None Event severity : All Timespan : Last 6 hours Resource group : All resource groups Operation : 1 selected Add Filter

create role

Event initiated by

Operation name	Status	Time	Time stamp	Subscription	Event initiated by
>Create or update custom role definition	Succeeded	8 minutes ago	Tue Oct 22 ...		Liub0myr@outlook.com
>Create role assignment	Succeeded	52 minutes ago	Tue Oct 22 ...		Liub0myr@outlook.com
Create or Update	Succeeded	an hour ago	Tue Oct 22 ...		Liub0myr@outlook.com

Відфільтрована таблиця

4 items.

Operation name	Status	Time	Time stamp	Subscription	Event initiated by
>Create role assignment	Succeeded	57 minutes ago	Tue Oct 22 2024 11:23:10 GMT+0300 ...		Liub0myr@outlook.com
>Create role assignment	Started	57 minutes ago	Tue Oct 22 2024 11:23:07 GMT+0300 ...		Liub0myr@outlook.com
>Create role assignment	Succeeded	an hour ago	Tue Oct 22 2024 11:06:00 GMT+0300 ...		Azure Management Grou...
Create role assignment	Started	an hour ago	Tue Oct 22 2024 11:05:58 GMT+0300 ...		Azure Management Grou...

Lab 02b: Manage Governance via Azure Policy

Task 1: Assign tags via the Azure portal

Microsoft Azure Створено Resource group з тегом Cost Center який має значення 000

Home > Resource groups >

Create a resource group ...

Validation passed.

Basics Tags Review + create

Basics

Subscription	Azure for Students
Resource group	az104-rg2
Region	East US

Tags

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

Create < Previous Next > Download a template for automation

Task 2: Enforce tagging via an Azure Policy

The image shows two screenshots of the Microsoft Azure portal. The left screenshot displays the 'Policy | Definitions' page with a search bar containing 're a tag and its value on resources'. A red circle labeled '1' highlights the search bar. A red circle labeled '2' highlights the 'Policy' category in the search results. A red circle labeled '3' highlights the 'Authoring' section in the left sidebar. A red circle labeled '4' highlights the policy name 'Require a tag and its value on resources'. The right screenshot shows the detailed view of the selected policy, titled 'Require a tag and its value on resources'. It includes fields for Name, Version (preview), Description, Available Effects, and Category. A red circle labeled '5' highlights the 'Assign policy' button. Below the policy details is a code editor showing the JSON definition of the policy:

```
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 resources without the specified tag.",  
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  }  
29}
```

Assign policy

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

Scope

Scope *

Azure for Students/az104-rg2 1

[Learn more about setting the scope](#)

Exclusions

Resource selectors [\(Expand\)](#)

Basics

Policy definition *

Require a tag and its value on resources

Version (preview) *

1.0.*

Overrides [\(Expand\)](#)

Assignment name * ①

Require Cost Center tag with Default value 2

Description

Require Cost Center tag with default value for all resources in the resource group 3

Policy enforcement ④

Enabled

Previous

Next

Review + create

Assign policy

Basics **Parameters** Remediation Non-compliance messages

Search by parameter name

Only show parameters that need attention

Tag Name * ⑤

Cost Center

Tag Value * ⑥

000

Previous

Next

Review + create 7

Policy Review

Створення storage акаунта провалилось через призначену політику

Microsoft Azure

Home > Policy | Definitions > Require a tag and its value on resources >

Assign policy ...

Basics Parameters Remediation Non-compliance messages Review + create

Basics

Scope	Azure for Students/az104-rg2
Exclusions	--
Policy definition	Require a tag and its value on resources
Assignment name	Require Cost Center tag with Default value
Version (preview)	1.0.*
Description	Require Cost Center tag with default value for all resources in the resource group
Policy enforcement	Enabled
Assigned by	Любомир NULL

Advanced

Resource selectors	No selectors associated with this assignment.
Overrides	No overrides associated with this assignment.

Parameters

Tag Name	Cost Center
Tag Value	000

Remediation

Create a Managed Identity	No managed identity associated with this assignment.
---------------------------	--

Non-compliance messages

Non-compliance messages	No non-compliance messages associated with this assignment.
-------------------------	---

Previous

Next

Create

Microsoft Azure

Home > Storage accounts >

Create a storage account ...

Validation failed. Required information is missing or not valid.

Basics Advanced Networking Data protection Encryption Tags Review + create

Basics

Subscription	Azure for Students
Resource group	az104-rg2
Location	East US
Storage account name	az104rg2temp
Primary service	Azure Files
Performance	Standard
File share billing	Pay-as-you-go file shares
Replication	Locally-redundant storage (LRS)

Advanced

Enable hierarchical namespace	Disabled
Enable SFTP	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable large file shares	Enabled

Security

Secure transfer	Enabled
Blob anonymous access	Disabled
Allow storage account key access	Enabled
Default to Microsoft Entra authorization in the Azure portal	Disabled

Previous

Next

Create

Task 3: Apply tagging via an Azure policy

The screenshot shows two side-by-side Azure interfaces. On the left, the 'Policy | Assignments' page is displayed. The navigation bar includes 'Home > Policy'. The main area shows 'Total Assignments' (2) and 'Initiative Assignments' (1). The 'Assignments' tab is selected, highlighted by a red circle labeled '3'. A context menu is open over one of the assignments, with the 'Delete assignment' option circled in red and labeled '4'. On the right, a search results page for 'Policy' is shown. The search bar at the top has 'Policy' typed into it, circled in red and labeled '1'. The results list 'Policy' as the first item, also circled in red and labeled '2'. Other results include 'Firewall Policies', 'Route Policies (Operator Nexus)', 'Service endpoint policies', 'Web Application Firewall (WAF)', 'Firewall Policy', 'Service endpoint policy', and 'Aruba ClearPass Policy Manager (CPPM) 6.11.1'. The bottom of the search results page shows 'Searching all subscriptions.' and a 'Give feedback' link.

Минулу політику було видалено щоб створити нову, яка замість вимагання створення тегу у разі його відсутності підставлятиме тег з Resource group

Microsoft Azure

Search resources, services, and docs (G+)

Home > Policy | Assignments >

Assign policy

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

Scope **Scope *** Azure for Students\az104-rg2 **1** Learn more about setting the scope

Exclusions Optionally select resources to exclude from the policy assignment.

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 * **Inherit a tag from the resource group if missing** **2**

Version (preview) * 1.**

Overrides (Expand) Using overrides, you can change the effects or referenced versions of definitions for all or a subset of resources evaluated by this assignment. Expand to learn more.

Assignment name * **Inherit the Cost Center tag and its value 000 from the resource group if missing** **3**

Description **Inherit the Cost Center tag and its value 000 from the resource group if missing** **4**

Policy enforcement **Enabled**

Previous Next Review + create

Microsoft Azure

Search resources, services, and docs (G+)

Home > Policy | Assignments >

Assign policy

Basics **Parameters** **Remediation** Non-compliance messages

Search by parameter name Only show parameters

Tag Name * **Cost Center** **6**

Previous Next Review + create

Home > Policy | Assignments >

Assign policy

Basics

Parameters

Remediation

Non-compliance messages

Review + create

3

By default, this assignment will only take effect on newly created resources. Existing resources can be updated via a remediation **Basics**

For deployIfNotExists policies, the remediation task will deploy the specified template. For modify policies, the remediation task will update existing resources.

Create a remediation task

Policy to remediate

Inherit a tag from the resource group if missing

2

Managed Identity

Policies with the deployIfNotExists and modify effect types need the ability to deploy resources and edit tags on existing resources. Choose between an existing user assigned managed identity or creating a system assigned managed identity. [Learn more about Policy enforcement](#)

Create a Managed Identity ⓘ



System assigned managed identity

User assigned managed identity

System assigned identity location

(US) East US

Permissions

This identity will also be given the following permissions:

Contributor

i Role assignments (permissions) are created based on the role definitions specified in the policies.

Previous

Next

Review + create

Home > Policy | Assignments >

Assign policy

Basics

Parameters

Remediation

Non-compliance messages

Review + create

Basics

Scope

Azure for Students/az104-rg2

Exclusions

--

Policy definition

Inherit a tag from the resource group if missing

Assignment name

Inherit the Cost Center tag and its value 000 from the resource group if missing

Version (preview)

1.*

Description

Inherit the Cost Center tag and its value 000 from the resource group if missing

Policy enforcement

Enabled

Assigned by

Любомир NULL

Advanced

Resource selectors

No selectors associated with this assignment.

Overrides

No overrides associated with this assignment.

Parameters

Tag Name

Cost Center

Remediation

Create a Managed Identity

Yes

Type of Managed Identity

System assigned managed identity

System assigned identity location

eastus

Create a remediation task

Yes

Non-compliance messages

Non-compliance messages

No non-compliance messages associated with this assignment.

Previous

Next

Create

4

Як видно з
Review при
створенні
Storage
акаунта я не
вказував
жодного тегу

Microsoft Azure

Home > Storage accounts >

Create a storage account

Basics Advanced Networking Data protection Encryption

[View automation template](#)

Basics

Subscription	Azure for Students
Resource group	az104-rg2
Location	East US
Storage account name	az104rg2temp
Primary service	Azure Files
Performance	Standard
File share billing	Pay-as-you-go file shares
Replication	Locally-redundant storage (LRS)

Advanced

Enable hierarchical namespace	Disabled
Enable SFTP	Disabled
Enable network file system v3	Disabled
Allow cross-tenant replication	Disabled
Access tier	Hot
Enable large file shares	Enabled

Security

Secure transfer	Enabled
Blob anonymous access	Disabled
Allow storage account key access	Enabled
Default to Microsoft Entra authorization in the Azure portal	Disabled

Minimum TLS version	Version 1.2
Permitted scope for copy operations (preview)	From any storage account
Networking	
Network connectivity	Public endpoint (all networks)
Default routing tier	Microsoft network routing
Data protection	
Point-in-time restore	Disabled
Blob soft delete	Enabled
Blob retention period in days	7
Container soft delete	Enabled
Container retention period in days	7
File share soft delete	Enabled
File share retention period in days	7
Versioning	Disabled
Blob change feed	Disabled
Version-level immutability support	Disabled
Encryption	
Encryption type	Microsoft-managed keys (MMK)
Enable support for customer-managed keys	Blobs and files only
Enable infrastructure encryption	Disabled

Previous Next Create

[Home](#) > [Resource groups](#) > [az104-rg2](#) > [az104rg2temp](#)

az104rg2temp | Tags

Storage account

 Search Delete all

Feedback

[Overview](#)[Activity log](#)

Tags

[Diagnose and solve problems](#)[Access Control \(IAM\)](#)[Data migration](#)[Events](#)[Storage browser](#)[Storage Mover](#)[Partner solutions](#)[Data storage](#)[Security + networking](#)[Data management](#)[Settings](#)[Monitoring](#)[Monitoring \(classic\)](#)[Metrics \(classic\)](#)[Diagnostic settings \(classic\)](#)[Usage \(classic\)](#)[Automation](#)[Help](#)

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. 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.

Name ⓘ	Value ⓘ
Cost Center	: 000

[az104rg2temp \(Storage account\)](#)

Cost Center : 000

No changes

[Apply](#)[Discard changes](#)

Проте він автоматично з'явився після створення Storage акаунта

Task 4: Configure and test resource locks

Microsoft Azure

Home > Resource groups > az104-rg2

Resource groups 1

az104-rg2 | Locks

Resource group

Search

Add 4 Subscription Refresh

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Deployments

Security

Deployment stacks

Policies

Properties

Locks 3

Cost Management

Monitoring

Automation

Help

1 Delete resource group az104-rg2 failed

The resource group az104-rg2 is locked and can't be deleted. Click here to manage locks for this resource group.

a few seconds ago

Після встановлення замку на видалення при спробі видалення групи з'явилася помилка

Showing 1 - 10 of 10. auto

Lab 03: Manage Azure resources by using Azure Resource Manager

Templates

Task 1: Create an Azure Resource Manager template

Microsoft Azure

Home > Disks

Default Directory (Liub0myoutlook.onmicrosoft.com)

3 Create 2

1

Filter for any field... Subscription equals all Resource group equals all Location equals

Showing 1 to 3 of 3 records.

- Name ↑
- AMT_OsDisk_1_98d35e6c214b49b4b8aaea924fb1c6ab
- ubuntu_OsDisk_1_ce3de9c51bf149e983473c888893ca8b
- win22_disk1_db6fc12512464555bdacbe2013999f24

Services

- All Services (9) Markets
- Disks
- Disks (classic)
- Storage accounts
- Disk Accesses

Marketplace

- Managed Disks
- Disk (classic)
- Disk Access
- Disk Encryption Set

Documentation

- Configure storage - SQL Server on Azi
- Concepts - Storage in Azure Kuberne
- Use Azure Storage Explorer to manag
- Tutorial - Manage Azure disks with Azi

Microsoft Entra ID

- Managed Disks Resource Provider

Continue searching in Microsoft En

Searching all subscriptions.

< Previous Page 1 of 1 Next >

Microsoft Azure

Home > Disks > Create a managed disk

Basics

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 * Azure for Students

Resource group * (New) az104-rg3 Create new

Disk details

Disk name * az104-disk1

Region * (US) East US

Availability zone No infrastructure redundancy required

Source type None

Size * 32 GiB (P4 performance tier)
Standard HDD LRS
[Change size](#)

Review + create

[Home > Disks >](#)

Create a managed disk

Validation passed

Basics Encryption Networking Advanced Tags [Review + create](#)

Basics

Subscription	Azure for Students
Resource group	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
Storage type	Standard HDD LRS

Encryption

Encryption type	Platform-managed key
-----------------	----------------------

Advanced

Enable shared disk	No
--------------------	----

Networking

Network access	AllowAll
----------------	----------

Tags

[Create](#)

< Previous

Next >

Download a template for automation

[Home > Disks >](#)

Template

[Download](#) [Deploy](#) [Feedback](#)

[Template](#) [Parameters](#)

Automate deploying resources with Azure Resource Manager templates in a single, coordinated operation. Define resources and configurable input par...

- > [Parameters \(11\)](#)
- [Variables \(0\)](#)
- ▽ [Resources \(1\)](#)
 - [parameters('diskName')] (Microsoft.Compute/disks)

```
1  {
2    "$schema": "https://schema.management.azure.com/schemas/2015-01-01-deploymentTemplate.json#",
3    "contentVersion": "1.0.0.0",
4    "parameters": {
5      "diskName": {
6        "type": "string"
7      },
8      "location": {
9        "type": "string"
10     },
11     "sku": {
12       "type": "string"
13     },
14     "diskSizeGb": {
15       "type": "int"
16     },
17     "sourceResourceId": {
18       "type": "string"
19     },
20     "createOption": {
21       "type": "string"
22     },
23     "hyperVGeneration": {
24       "type": "string",
25       "defaultValue": "V1"
26     },
27     "diskEncryptionSetType": {
28       "type": "string"
29     }
}
```

Copy template

1

Task 2: Edit an Azure Resource Manager template and then redeploy the template

The screenshot shows the Microsoft Azure portal interface. On the left, the 'Custom deployment' page is displayed. It includes sections for 'Select a template', 'Common templates', and 'Start with a quickstart template or template spec'. A red circle labeled '1' highlights the search bar at the top right of the portal. A red circle labeled '2' highlights the 'Deploy a custom template' item in the search results. A red circle labeled '3' highlights the 'Build your own template in the editor' link on the left side of the page.

Microsoft Azure

Home >

Custom deployment

Deploy from a custom template

Select a template Basics Review + create

Automate deploying resources with Azure Resource Manager templates in a single, coordinated operation. Create, select a template below to get started. [Learn more about template deployment](#)

[Build your own template in the editor](#)

Common templates

- Create a Linux virtual machine
- Create a Windows virtual machine
- Create a web app
- Create a SQL database
- Azure landing zone

Start with a quickstart template or template spec

Template source Quickstart template Template spec

Quickstart template (disclaimer)

Deploy a custom template 1

All Services (99+) Marketplace (1) More (4)

Services

- [Deploy a custom template](#) 2
- Advisor
- Storage accounts
- Virtual machines

Marketplace

- [Template deployment \(deploy using custom templates\)](#)

Documentation

- [Deploy template - Azure portal - Azure Resource Manager](#)
- [Deploy resources with Azure portal - Azure Resource Manager](#)
- [Tutorial - Create and deploy template - Azure Resource Manager](#)
- [Azure deployment templates with Azure CLI – Azure Resource Manager - Azure R...](#)

Continue searching in Microsoft Entra ID

Searching all subscriptions. Give feedback

Microsoft Azure

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/
3      "contentVersion": "1.0.0.0",
4      "parameters": {
5          "diskName": {
6              "type": "string"
7          },
8          "location": {
9              "type": "string"
10         },
11         "sku": {
12             "type": "string"
13         },
14         "diskSizeGb": {
15             "type": "int"
16         },
17         "sourceResourceId": {
18             "type": "string"
19         },
20         "createOption": {
21             "type": "string"
22         },
23         "hyperVGeneration": {
24             "type": "string",
25             "defaultValue": "V1"
26         },
27         "diskEncryptionSetType": {
28             "type": "string"
29         },
30         "dataAccessAuthMode": {
31             "type": "string"
32         },
33         "networkAccessPolicy": {
34             "type": "string"
35         },
36         "publicNetworkAccess": {
37             "type": "string"
38         }
39     }
40 }
```

1

2

Save **Discard**

Microsoft Azure

Home >

Custom deployment

Deploy from a custom template

New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →

Select a template **Basics** Review + create

Template

Customized template 1 resource

Edit template **Edit paramet..** **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 * **Azure for Students**

Resource group * **Create new**

Instance details

Region * **East US**

Disk Name *

Location *

Sku *

Disk Size Gb *

Source Resource Id *

Create Option *

Hyper V Generation **V1**

Previous Next **Review + create**



Home >

Edit parameters

1

```
1 {  
2   "$schema": "https://schema.management.azure.com/providers/Microsoft.Resources/2018-05-01/draft  
3   "contentVersion": "1.0.0.0",  
4   "parameters": {  
5     "diskName": {  
6       "value": "az104-disk1"  
7     },  
8     "location": {  
9       "value": "eastus"  
10    },  
11    "sku": {  
12      "value": "Standard_LRS"  
13    },  
14    "diskSizeGb": {  
15      "value": 32  
16    },  
17    "sourceResourceId": {  
18      "value": ""  
19    },  
20    "hyperVGeneration": {  
21      "value": ""  
22    },  
23    "diskEncryptionSetType": {  
24      "value": "EncryptionAtRestWithCustomerKey"  
25    },  
26    "createOption": {  
27      "value": "empty"  
28    },  
29    "dataAccessAuthMode": {  
30      "value": "None"  
31    },  
32    "networkAccessPolicy": {  
33      "value": "AllowAll"  
34    },  
35    "publicNetworkAccess": {  
36      "value": "Enabled"  
37    }  
}
```

Save

Discard



Home >

Custom deployment

Deploy from a custom template

New! Deployment Stacks let you manage the lifecycle of your deployments. Try it now →

Select a template Basics Review + create

Template

Customized template 1 resource

Edit template

Edit param...

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 * 1

Azure for Students

Resource group * 1

az104-rg3

Create new

Instance details

Region * 1

(US) East US

Disk Name * 1

az104-disk2

Location *

eastus

Sku *

Standard_LRS

Disk Size Gb * 1

32

Source Resource Id * 1

az104-rg3

Create Option * 1

empty

Hyper V Generation

Previous

Next

Review + create

3

4

5

6

[Home > Resource groups >](#)

Resource groups

Default Directory (Liub0myroutlook.onmicrosoft.c...)

[Create](#) ... [Group by none](#)

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

- Name ↑
- AMT-v2
- az104-rg3
- azureapp-auto-alerts-9f9eb5-Liub
- DefaultResourceGroup-SUK
- NetworkWatcherRG
- sql
- storage
- tests
- ubuntu2204
- win22

az104-rg3

Resource group

[Search](#)[Create](#) [Manage view](#) [Delete resource group](#) [Refresh](#) [Export to CSV](#) [Open query](#) [Assign](#)

Overview

[Activity log](#)[Access control \(IAM\)](#)[Tags](#)[Resource visualizer](#)[Events](#)

Settings

[Deployments](#)[Security](#)[Deployment stacks](#)[Policies](#)[Properties](#)[Locks](#)[Cost Management](#)[Monitoring](#)[Automation](#)[Help](#)

Essentials

Subscription ([move](#)) : [Azure for Students](#)Deployments : [3 Su](#)

Subscription ID : 3616b9f9-5e04-488f-87ac-d012d9d36a69

Location : East

Tags ([edit](#)) : [Add tags](#)

Resources

Recommendations

 Filter for any field... Type equals all Location equals all Add filterShowing 1 to 2 of 2 records. Show hidden types Name ↑↓

Type ↑↓

 az104-disk1

Disk

 az104-disk2

Disk

Showing 1 - 10 of 10.

auto

Display count:

< Previous Page 1 of 1 Next >

[Home > Resource groups >](#)

Resource groups

Default Directory (Liub0myroutlook.onmicrosoft.c...

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

[Create](#) [...](#) [Group by none](#)

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

 Name ↑

Showing 1 - 10 of 10.

Display count: [auto](#)

- [Overview](#)
- [Activity log](#)
- [Access control \(IAM\)](#)
- [Tags](#)
- [Resource visualizer](#)
- [Events](#)
- [Settings](#)
- [Deployments](#)
- [Security](#)

[Create](#) [Manage view](#) [Delete resource group](#) [Refresh](#) [Export to CSV](#) [Open query](#)

Resources

 Filter for any field... [Type equals all](#) [Location equals all](#) [Add filter](#)Showing 1 to 3 of 3 records. Show hidden types

Name	Type
az104-disk1	Disk
az104-disk2	Disk
az104-disk3	Disk

[Switch to Bash](#) [Restart](#) [Manage files](#) [New session](#) [Editor](#) [Web preview](#) [Settings](#) [Help](#)

PS /home/liub0myr/lab03> dir

Directory: /home/liub0myr/lab03

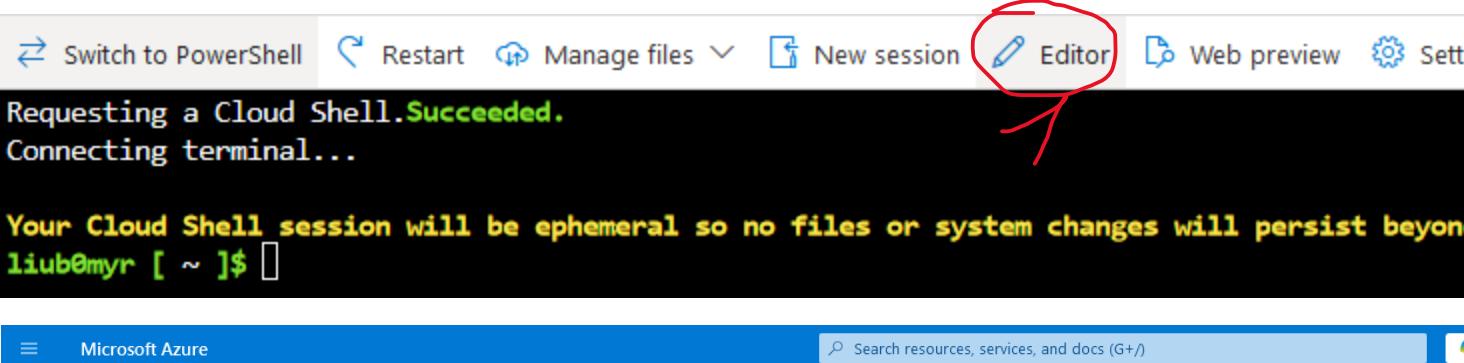
UnixMode	User	Group	LastWriteTime	Size	Name
-rw-r--r--	liub0myr	liub0myr	10/23/2024 12:55	934	parameters.json
-rw-r--r--	liub0myr	liub0myr	10/23/2024 12:55	1845	template.json

PS /home/liub0myr/lab03> nano ./parameters.json # забув змінити назву диску на az104-disk3

PS /home/liub0myr/lab03> New-AzResourceGroupDeployment -ResourceGroupName az104-rg3 -TemplateFile template.json -TemplateParameterFile parameters.json

DeploymentName	:	template
ResourceGroupName	:	az104-rg3
ProvisioningState	:	Succeeded
Timestamp	:	10/23/2024 12:58:07 PM
Mode	:	Incremental
TemplateLink	:	
Parameters	:	
Name	Type	Value
diskName	String	"az104-disk3"
location	String	"eastus"
sku	String	"Standard_LRS"
diskSizeGb	Int	32
sourceResourceId	String	""
createOption	String	"empty"

Task 4: Deploy a template with the CLI



Switch to Classic Cloud Shell

This feature is not available in the current user experience.
Would you like to go back to the previous experience?

Confirm **Cancel**

The screenshot shows the Azure Resource Groups blade for the 'az104-rg3' group. On the left, there's a sidebar with a message about a new browser experience. The main area shows an 'Overview' of resources, including four disks: 'az104-disk1', 'az104-disk2', 'az104-disk3', and 'az104-disk4'. The fourth disk is circled in green with a checkmark. The 'Bash' terminal at the bottom shows the command 'az deployment group create --resource-group az104-rg3 --template-file template.json --parameters parameters.json' being run. The terminal output shows the deployment process starting. Red numbers 1 through 5 are overlaid on the image: 1 points to the 'Editor' tab in the top bar; 2 points to the 'Confirm' button in the dialog; 3 points to the file navigation bar in the Bash terminal; 4 points to the 'parameters.json' file in the file list; and 5 points to the value 'az104-disk4' in the JSON code.

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

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.

```
liub0myr [ ~ ]$ cd lab03/
liub0myr [ ~/lab03 ]$ ls
parameters.json template.json
liub0myr [ ~/lab03 ]$ az deployment group create --resource-group az104-rg3 --template-file template.json --parameters parameters.json
{
  "id": "/subscriptions/3616b9f9-5e04-488f-87ac-d012d9d36a69/resourceGroups/az104-rg3/providers/Microsoft.Resources/deployments/template",
  "location": null,
  "name": "template",
  "properties": {
```

Task 5: Deploy a resource by using Azure Bicep

На жаль, я не знайшов файлу `azuredeploydisk.bicep`. Імовільно це пов'язано з тим, що я використовую свою підписку, а не якийсь sandbox, проте він знайшовся [тут](#).

The screenshot shows the Microsoft Azure Cloud Shell interface. The left sidebar displays the file structure:

- FILES
 - .azure
 - .Azure
 - .cache
 - .local
 - lab03
 - azuredeploydisk.bicep
 - parameters.json
 - template.json
 - Microsoft
 - .bash_history
 - .bash_logout
 - .bash_profile
 - .bashrc
 - .tmux.conf
 - .zshrc

The main area shows the contents of `azuredeploydisk.bicep`:

```
azurdeploydisk.bicep
1  @description('Name of the managed disk to be copied')
2  param managedDiskName string = 'Disk4'
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, the terminal output shows the deployment process:

```
Requesting a Cloud Shell. Succeeded.
Connecting terminal...
Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
liubomyr [ ~ ]$ mv azuredeploydisk.bicep lab03/
liubomyr [ ~ ]$ cd lab03/
liubomyr [ ~/lab03 ]$ az deployment group create --resource-group az104-rg3 --template-file azuredeploydisk.bicep
The configuration value of bicep.use_binary_from_path has been set to 'false'.
{
  "id": "/subscriptions/3616b9f9-5e04-488f-87ac-d012d9d36a69/resourceGroups/az104-rg3/providers/Microsoft.Resources/deployments/azurdeploydisk",
  "location": null,
  "name": "azurdeploydisk",
  "properties": {
    "correlationId": "1def6a35-8979-4025-8389-7b2451671ec4",
    "debugSetting": null,
    "dependencies": [],
    "duration": "PT9.3134354S",
    "...
```

[Home](#) > [Resource groups](#)

Resource groups

Default Directory (Liub0myroutlook.onmicrosoft.c...)

[+ Create](#) [...](#) [Group by none](#)

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

- Name ↑
- AMT-v2
- az104-rg3
- azureapp-auto-alerts-9f9eb5-Liub...
- DefaultResourceGroup-SUK
- NetworkWatcherRG
- sql
- storage
- tests
- ubuntu2204
- win22

az104-rg3

Resource group

[Search](#)

Overview

[Activity log](#)[Access control \(IAM\)](#)[Tags](#)[Resource visualizer](#)[Events](#)

Settings

[Deployments](#)[Security](#)[Deployment stacks](#)[Policies](#)[Properties](#)[Locks](#)[Cost Management](#)[Monitoring](#)[Automation](#)[Help](#)[+ Create](#) [Manage view](#) [Delete resource group](#) [Refresh](#) [Export to CSV](#) [Open query](#) [Assign ta...](#)

Essentials

Subscription ([move](#)) : [Azure for Students](#)Deployments : [5 Success](#)

Subscription ID : 3616b9f9-5e04-488f-87ac-d012d9d36a69

Location : East US

Tags ([edit](#)) : [Add tags](#)

Resources

Recommendations

 Filter for any field... Type equals all [X](#) Location equals all [X](#)[+ Add filter](#)Showing 1 to 5 of 5 records. Show hidden types [?](#) Name ↑↓

Type ↑↓

  az104-disk1

Disk

  az104-disk2

Disk

  az104-disk3

Disk

  az104-disk4

Disk

  Disk4

Disk

[< Previous](#) Page [1](#) of 1 [Next >](#)

Showing 1 - 10 of 10.

Display count:

auto [▼](#)

Обмеження CloudGuru Sandbox

Через помилку **You do not have permissions to create resource groups under subscription <id>** я не створюватиму Resource групи як це описано в лабораторних роботах, а використовуватиму вже наявні, які будуть надані у створених пісочницях разом з їхніми регіонами.

Lab 04: Implement Virtual Networking

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

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Home > Virtual networks >

Create virtual network

Basics IP addresses Security Tags Review + create

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

Learn more. ↗

Project details

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

Subscription * P4-Real Hands-On Labs

Resource group * 1-f4d3b7fb-playground-sandbox

Create new

Instance details

Virtual network name * CoreServicesVnet

Region * (US) South Central US

Deploy to an Azure Extended Zone

Create virtual network ...

Basics Security IP addresses Tags Review + create

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

10.20.0.0/16			
1	10.20.0.0	/16	Delete address space
	10.20.0.0 - 10.20.255.255	65 536 addresses	
Subnets	IP address range	Size	NAT gateway
default	10.20.0.0 - 10.20.0.255	/24 (256 addresses)	-
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](#)

template.json



parameters.json

CoreServicesVnet | Export template

Virtual network

Search

<>

Download

Deploy

Feedback

 Include parameters

Template Parameters

To export all resources in this resource group, navigate to the "Export template" experience under "Au...

```

1  "$schema": "https://schema.r...
2  "contentVersion": "1.0.0.0",
3  "parameters": {
4    "virtualNetworks_CoreSer...
5    "defaultValue": "Cor...
6    "type": "String"
7  },
8  "variables": {},
9  "resources": [
10   {
11     "type": "Microsoft.N...
12     "apiVersion": "2024-...
13     "name": "[parameters...
14     "location": "southce...
15     "properties": {
16       "addressSpace": {
17         "addressPrefix": ...
18       }
19     },
20     "encryption": {
21       "enabled": true,
22       "enforcement": ...
23     },
24   },
25   {
26     "type": "Microsoft.N...
27     "apiVersion": "2024-...
28     "name": "[parameters...
29     "location": "southce...
30     "properties": {
31       "addressSpace": {
32         "addressPrefix": ...
33       }
34     },
35     "encryption": {
36       "enabled": true,
37       "enforcement": ...
38     },
39   }
40 ],
41 ],
42 ],
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99 ],
100 ]

```

[Copy template](#)

> Help

Automation

CLI / PS

Tasks

[Export template](#)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Monitoring

Alerts

Metrics

Diagnostic settings

Logs

Virtual network flow logs

Diagram

Automation

CLI / PS

Tasks

[Export template](#)

3

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

За допомогою VS Code я змінив

- CoreServicesVnet → ManufacturingVnet 10.20.0.0 → 10.30.0.0
- SharedServicesSubnet → SensorSubnet1 10.20.10.0/24 → 10.30.20.0/24
- DatabaseSubnet → SensorSubnet2 10.20.20.0/24 → 10.30.21.0/24

The screenshot shows the VS Code interface with the 'template.json' file open in the main editor area. The file contains JSON code for creating a virtual network and subnets. A search results panel on the right shows two entries: '10.20.20.0/24' and '10.30.21.0/24'. The bottom status bar indicates the file is 48 lines long, 4 spaces wide, in UTF-8 encoding, and is a JSON file.

```
$schema: "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
contentVersion: "1.0.0.0",
parameters: {
    "virtualNetworks_ManufacturingVnet_name": {
        "defaultValue": "ManufacturingVnet",
        "type": "String"
    }
},
variables: {},
resources: [
    {
        "type": "Microsoft.Network/virtualNetworks",
        "apiVersion": "2024-01-01",
        "name": "[parameters('virtualNetworks_ManufacturingVnet_name')]",
        "location": "southcentralus",
        "properties": {
            "addressSpace": {
                "addressPrefixes": [
                    "10.30.0.0/16"
                ]
            },
            "encryption": {
                "enabled": false,
                "enforcement": "AllowUnencrypted"
            },
            "subnets": [
                {
                    "name": "default",
                    "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'default')]",
                    "properties": {
                        "addressPrefixes": [
                            "10.30.0.0/24"
                        ],
                        "delegations": [],
                        "privateEndpointNetworkPolicies": "Disabled",
                        "privateLinkServiceNetworkPolicies": "Enabled"
                    },
                    "type": "Microsoft.Network/virtualNetworks/subnets"
                },
                {
                    "name": "SensorSubnet1",
                    "id": "[resourceId('Microsoft.Network/virtualNetworks/subnets', parameters('virtualNetworks_ManufacturingVnet_name'), 'SensorSubnet1')]",
                    "properties": {
                        "addressPrefixes": [
                            "10.30.20.0/24"
                        ]
                    }
                }
            ]
        }
    }
]
```

Аналогічно до [Lab 03. Task 2](#) я задеплоїв кастомний шаблон

Microsoft Azure

Home >

Custom deployment

Deploy from a custom template

Select a template Basics **Review + create**

Summary

Customized template
4 resources

Terms

Azure Marketplace Terms | Azure Marketplace

By clicking "Create," I (a) agree to the applicable legal terms associated with the offering; (b) authorize Microsoft to charge or bill my current payment method for the fees associated the offering(s), including applicable taxes, with the same billing frequency as my Azure subscription, until I discontinue use of the offering(s); and (c) agree that, if the deployment involves 3rd party offerings, Microsoft may share my contact information and other details of such deployment with the publisher of that offering.

Microsoft assumes no responsibility for any actions performed by third-party templates and does not provide rights for third-party products or services. See the [Azure Marketplace Terms](#) for additional terms.

Deploying this template will create one or more Azure resources or Marketplace offerings. You acknowledge that you are responsible for reviewing the applicable pricing and legal terms associated with all resources and offerings deployed as part of this template. Prices and associated legal terms for any Marketplace offerings can be found in the [Azure Marketplace](#); both are subject to change at any time prior to deployment.

Neither subscription credits nor monetary commitment funds may be used to purchase non-Microsoft offerings. These purchases are billed separately.

If any Microsoft products are included in a Marketplace offering (e.g. Windows Server or SQL Server), such products are licensed by Microsoft and not by any third party.

Basics

Subscription	P4-Real Hands-On Labs
Resource group	1-f4d3b7fb-playground-sandbox
Region	South Central US
Virtual Networks_Manufacturing Vnet_n...	ManufacturingVnet

Previous Next **Create**

Microsoft Azure

Home > Microsoft.Template-20241023170840 | Overview > 1-f4d3b7fb-playground-sandbox > Manufactur

ManufacturingVnet | Subnets

Virtual network

Search

+ Subnet + Gateway subnet Refresh Manage

Search subnets

Name ↑↓	IPv4 ↑↓
default	10.30.0.0/24
SensorSubnet1	10.30.20.0/24
SensorSubnet2	10.30.21.0/24

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

Microsoft Azure

Home > Application security groups 1

Create an application security group 2

Basics Tags Review + create

Project details

Subscription * P4-Real Hands-On Labs

Resource group * 1-f4d3b7fb-playground-sandbox 3

Create new

Instance details

Name * asg-web 3

Region * South Central US

Review + create 4

< Previous Next : Tags > Download a template for automation

Microsoft Azure

Home > Network security groups 1

Create network security group 2

Validation passed

Basics Tags Review + create

Subscription P4-Real Hands-On Labs

Resource group 1-f4d3b7fb-playground-sandbox

Region South Central US

name myNSGSecure 3 4

Tags None

Create 5

< Previous Next > Download a template for automation

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_1cabc874...
PLURALSIGHT CLOUD (REALHAN...)

Home > Microsoft.NetworkSecurityGroup-20241023171454 | Overview > myNSGSecure

myNSGSecure | Subnets

Network security group

Search

+ Associate 2

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

1 Settings

Subnets 2

Inbound security rules

Outbound security rules

Network interfaces

Properties

Locks

Monitoring

Alerts

Diagnostic settings

Logs

NSG flow logs

Automation

Help

Associate subnet

myNSGSecure

Virtual network: CoreServicesVnet (1-f4d3b7fb-playground-sandbox) 3

Subnet *: SharedServicesSubnet 4

OK 5

No results.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Cloud User p_1cabcb874...
PLURALSIGHT CLOUD (REALHAN...)

Home > Microsoft.NetworkSecurityGroup-20241023171454 | Overview > myNSGSecure

myNSGSecure | Inbound 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 default security rules, but you can override them with rules that have a higher priority. [Learn more](#)

+ Add Hide default rules Refresh Delete Give feedback

Search

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Inbound security rules 1

Outbound security rules

Network interfaces

Subnets

Properties

Locks

Monitoring

Alerts

Diagnostic settings

Logs

NSG flow logs

Automation

Help

+ Add

Refresh

Delete

Give feedback

Source Application security group

Source application security groups

asg-web

No application security groups found

Source port ranges * Any

Destination Any

Service Custom

Destination port ranges * 80,443

Protocol TCP

Action Allow

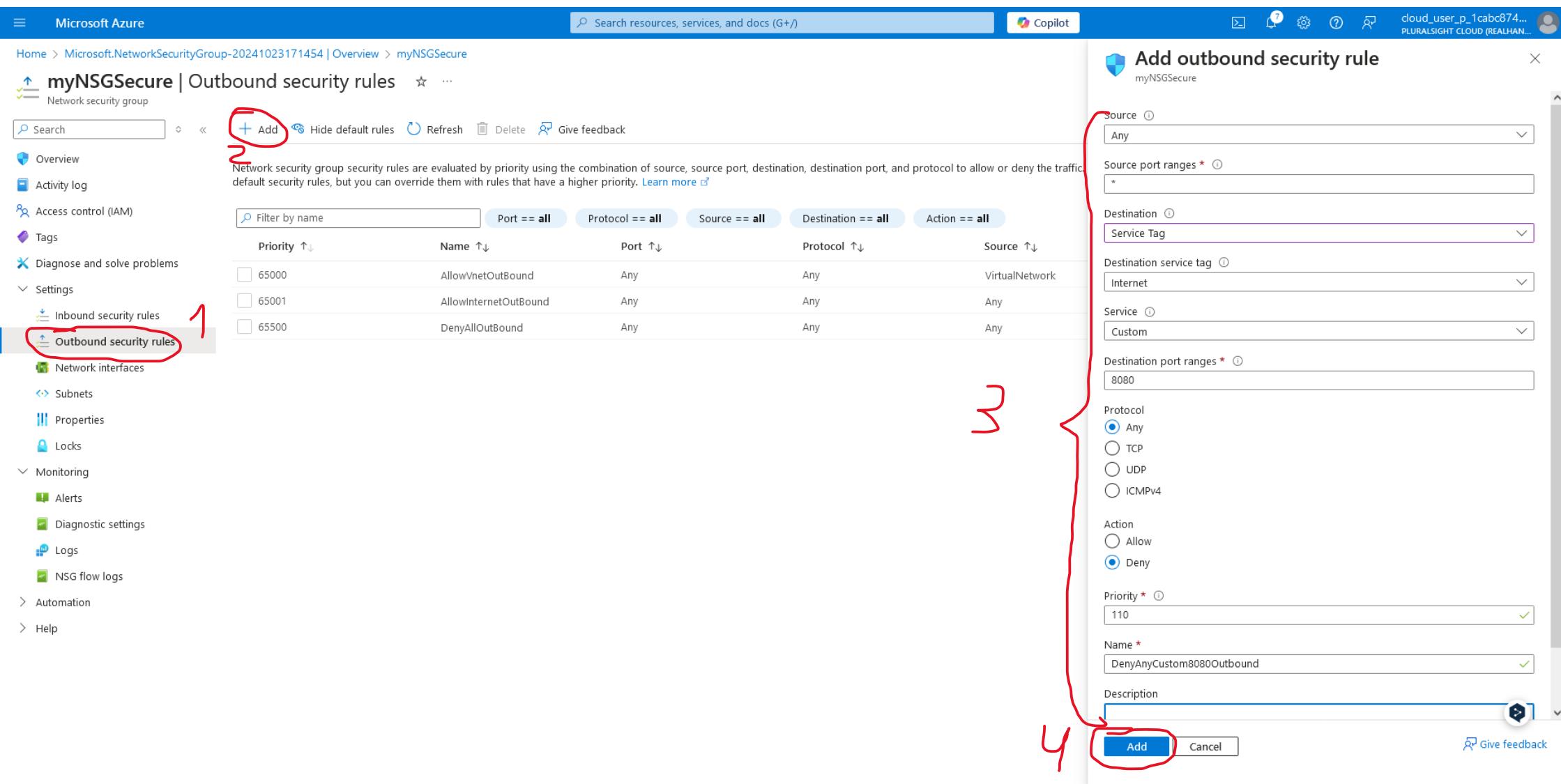
Priority * 100

Name * AllowASG

Add Cancel

Give feedback

The screenshot shows the Azure portal interface for managing Network Security Groups (NSGs). On the left, the navigation menu is visible with various options like Overview, Activity log, and Monitoring. The 'Inbound security rules' section is selected, indicated by a red circle labeled '1'. At the top of the main content area, there's a search bar, a 'Copilot' button, and several status icons. A red circle labeled '2' highlights the '+ Add' button, which is used to create a new security rule. To the right, a modal window titled 'Add inbound security rule' is open, showing fields for defining the rule. A large red bracket labeled '3' encompasses the entire modal window. Within the modal, a red circle labeled '4' highlights the 'Add' button at the bottom right, which is used to save the new rule. The modal also includes fields for Source (Application security group), Destination (Port range 80,443), Service (Custom), Protocol (TCP), Action (Allow), Priority (100), and Name (AllowASG).



Task 4: Configure public and private Azure DNS zones

Microsoft Azure Search

Home > **DNS zones** 1
Create a DNS Zone 2

Basics DNS Zone Editor Tags Review + Create

A DNS zone is used to host the DNS records for a particular domain. For example, the domain 'contoso.com' may contain a number of DNS records such as 'mail.contoso.com' (for a mail server) and 'www.contoso.com' (for a web site). Azure DNS allows you to host your DNS zone and manage your DNS records, and provides name servers that will respond to DNS queries from end users with the DNS records that you create. [Learn more](#)

Project details

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

Subscription * ⓘ P4-Real Hands-On Labs

Resource group * ⓘ 1-f4d3b7fb-playground-sandbox [Create new](#)

Instance details

This zone is a child of an existing zone already hosted in Azure DNS ⓘ

Name * ⓘ liub0myr.pp.ua 3

Resource group location * ⓘ (US) South Central US

Review + create 4 < Previous Next : DNS Zone Editor >

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Home > liub0myr.pp.ua

liub0myr.pp.ua | Recordsets

DNS zone

+ Add Refresh Delete

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](#)

Search

Fetched 2 record set(s).

Name	Type	TTL	Value
@	NS	172800	ns1-09.azure-dns.com. ns2-09.azure-dns.net. ns3-09.azure-dns.org. ns4-09.azure-dns.info.
@	SOA	3600	Email: azuredns-hostmaster.microsoft.com Host: ns1-09.azure-dns.com. Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 300 Serial number: 1

1

2

3

4

Add record set

liub0myr.pp.ua

Name: www

Type: A – Address record

Alias record set: No

TTL: 1

TTL unit: Hours

IP address: 10.1.1.4

0.0.0.0

Add Cancel

1

2

3

4

```
C:\Users\Liub0myr>nslookup www.liub0myr.pp.ua ns1-09.azure-dns.com.
Server: Unknown
Address: 13.107.236.9

Name: www.liub0myr.pp.ua
Address: 10.1.1.4 ✓
```

Microsoft Azure

Home > Private DNS zones >

Create Private DNS Zone

Validation passed

Basics Private DNS Zone Editor Tags Review + Create

[View automation template](#)

Basics

Subscription	P4-Real Hands-On Labs
Resource group	1-f4d3b7fb-playground-sandbox
Resource group location	South Central US
Name	1 private.liub0myr.pp.ua

DNS Zone Record Set(s)

Number of record sets	0 record set(s)
-----------------------	-----------------

2

Create

< Previous Next >

Microsoft Azure

Home > private.liub0myr.pp.ua

private.liub0myr.pp.ua | Virtual Network Links

Private DNS zone

Search Add Refresh Delete

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

Link Name

Settings DNS Management Recordsets Virtual Network Links Monitoring Automation Help

[Home](#) > [private.liub0myr.pp.ua | Virtual Network Links](#) >

Add Virtual Network Link

private.liub0myr.pp.ua

Link name *

manufacturing-link

Virtual network details

i Only virtual networks with Resource Manager deployment model are supported for linking with Private DNS zones. Virtual networks with Classic deployment model are not supported.

 I know the resource ID of virtual network ⓘ

Subscription *

P4-Real Hands-On Labs

Virtual Network *

ManufacturingVnet (1-f4d3b7fb-playground-sandbox)

Configuration

 Enable auto registration ⓘ

3

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_1cabcb874... PLURALSIGHT CLOUD

Home > private.liub0myr.pp.ua

private.liub0myr.pp.ua | Recordsets

Private DNS zone

Search Add Refresh Delete

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](#)

Fetched 1 record set(s).
0 record sets selected

Name	Type	TTL	Value	Auto register
@	SOA	3600	Email: azureprivatedns-host.microsoft.com Host: azureprivatedns.net Refresh: 3600 Retry: 300 Expire: 2419200 Minimum TTL: 10 Serial number: 1	False

1

2

3

4

Add record set

private.liub0myr.pp.ua

Name: sensorvm

Type: A – Address record

TTL*: 1

TTL unit: Hours

IP address: 10.1.1.4

0.0.0.0

Add Cancel

sensorvm	A	3600	10.1.1.4	False		
----------	---	------	----------	-------	--	--

Lab 06: Implement Traffic Management

Task 1: Use a template to provision an infrastructure

Аналогічно до [Lab 03. Task 2](#) я задеплоїв наданий кастомний шаблон

Screenshot of the Microsoft Azure Custom deployment interface.

The interface shows a "Customized template" with 11 resources. Key sections include:

- Project details:** Subscription is set to "P9-Real Hands-On Labs" and Resource group is "1-8c54c6ae-playground-sandbox". A red box labeled "1" highlights the resource group dropdown.
- Instance details:** Various VM and network settings are listed with green checkmarks indicating successful validation.
- Admin Password:** A password field containing a series of dots is shown, with a red box labeled "2" highlighting it.
- Buttons at the bottom:** "Previous", "Next", and a prominent blue "Review + create" button, which is also highlighted with a red box labeled "3".

Task 2: Configure an Azure Load Balancer

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

Home > Load balancing | Load Balancer >

Create load balancer

Basics Frontend IP configuration Backend pools Inbound rules Outbound rules Tags Review + create

Azure load balancer is a layer 4 load balancer that distributes incoming traffic among healthy virtual machine instances. Load balancers uses a hash-based distribution algorithm. By default, it uses a 5-tuple (source IP, source port, destination IP, destination port, protocol type) hash to map traffic to available servers. Load balancers can either be internet-facing where it is accessible via public IP addresses, or internal where it is only accessible from a virtual network. Azure load balancers also support Network Address Translation (NAT) to route traffic between public and private IP addresses. [Learn more.](#)

Project details

Subscription * P9-Real Hands-On Labs

Resource group * 1-8c54c6ae-playground-sandbox [Create new](#)

Instance details

Name * az104-lb

Region * South Central US

SKU * Standard (Recommended) Gateway Basic (Retiring soon)

Type * Public Internal

Tier * Regional Global

2

[Review + create](#) [Next : Frontend IP configuration >](#) Download a template for automation [Give feedback](#)

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_e4add3a5... PLURALSIGHT CLOUD (REALHAN...)

Home > Load balancing | Load Balancer >

Create load balancer

Basics Frontend IP configuration Backend pools Inbound rules Outbound rules Tags Review + create

A frontend IP configuration is an IP address used for inbound and/or outbound communication as defined within load balancing, inbound NAT, and outbound rules.

+ Add a frontend IP configuration 1

Name ↑
Add a frontend IP to get started

IP address ↑

Add frontend IP configuration

2

3

4

5

6

7

Add frontend IP configuration

Name * az104-fe

IP version IPv4 IPv6

IP type IP address IP prefix

Public IP address * (new) az104-lbpip [Create new](#)

Add a public IP address

Name * az104-lbpip

SKU Standard
Tier Regional

Static IPs are assigned at the time the resource is created and released when the resource is deleted. Dynamic IPs are assigned when associating the IP to a resource and is released when you stop, restart, or delete a resource. Dynamic is only available for Basic SKU.

Assignment Dynamic Static

Availability zone * Zone-redundant

Routing preference Microsoft network Internet

Save Cancel

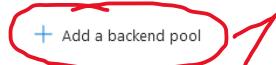
Review + create < Previous Next : Backend pools > Download a template for automation Give feedback

Give feedback

Create load balancer

Basics Frontend IP configuration Backend pools Inbound rules

A backend pool is a collection of resources to which your load balancer can :



Name Virtual network

Add a backend pool to get started

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

Copilot



Add backend pool

Name *

Virtual network

Backend Pool Configuration

az104-be

az104-06-vnet1 (1-8c54c6ae-playground-sandbox)

NIC

IP address

IP configurations

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



Resource Name

Resource group

Type

Review + create

< Previous

Next :>

Save

Cancel

Give feedback

Add IP configurations to backend pool

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

Filter by name... Location : southcentralus Virtual network : az104-06-vnet1 Add filter

Show resources that are not available for selection

Resource... Resource... Type IP config... IP Addr... Available... Tags

Virtual machine (3)

<input checked="" type="checkbox"/>	az104-0...	1-8c54c...	Virtual ...	ipconfig1	10.60.0.4	-	-
<input checked="" type="checkbox"/>	az104-0...	1-8c54c...	Virtual ...	ipconfig1	10.60.1.4	-	-
<input type="checkbox"/>	az104-0...	1-8c54c...	Virtual ...	ipconfig1	10.60.2.4	-	-

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250

251

Home > az104-lb

az104-lb | Load balancing rules

Load balancer



+ Add



A load balancer rule is used to pool. A load-balancing rule maps ports. An example would be a

Filter by name...

Name ↑↓

No results.



Settings

Load balancing rules

① Health probes are used to check the status of a backend pool instance. If the health probe fails to get a response from a backend instance then no new connections will be sent to that backend instance until the health probe succeeds again.

Name *

Protocol *

Port *

Interval (seconds) *

Used by *

Save**Cancel**

Home > az104-lb | Load balancing rules >

Add load balancing rule

az104-lb

 IPv4

 IPv6

Frontend IP address *

az104-fe (172.206.131.240)



Backend pool *

az104-be



Protocol

 TCP

 UDP

80

80

Port *

Backend port *

(new) az104-hp (TCP:80)

Create new



Session persistence

None

Idle timeout (minutes) *

4

Enable TCP Reset



Enable Floating IP

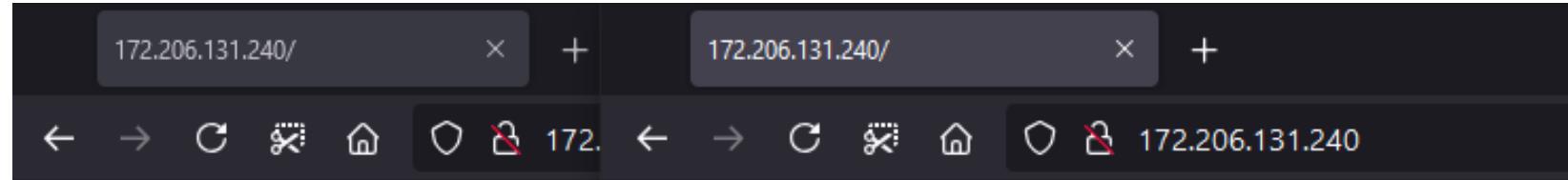


Outbound source network address translation (SNAT)

(Recommended) Use outbound rules to provide backend pool members access to the internet. [Learn more.](#)

Use default port allocation to provide backend pool members with a minimal set of SNAT ports. This is not recommended because it can cause SNAT port exhaustion. [Learn more.](#)

Save**Cancel**



Hello World from az104-06-vm0

Hello World from az104-06-vm1

Task 3: Configure an Azure Application Gateway

Microsoft Azure

Home > az104-06-vnet1 1

az104-06-vnet1 | Subnets Virtual network

Search Overview Activity log Access control (IAM) Tags Diagnose and solve problems Settings 2 Address space Connected devices Subnets 3 Bastion DDoS protection Firewall Microsoft Defender for Cloud Network manager DNS servers Peering Service endpoints Private endpoints Properties Locks Monitoring Automation CLI / PS Tasks

+ Subnet + Gateway subnet Refresh Manage users Delete

Search subnets

Name	IPv4	IPv6	Available IPs
subnet0	10.60.0.0/24	-	250
subnet1	10.60.1.0/24	-	250
subnet2	10.60.2.0/24	-	250

Add a subnet

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

Subnet purpose ① Default

Name * ② subnet-appgw

IPv4

Include an IPv4 address space IPv4 address range * ③ 10.60.0.0/22
10.60.0.0 - 10.60.3.255

Starting address * ④ 10.60.3.0

Size ⑤ /27 (32 addresses)
10.60.3.0 - 10.60.3.31

IPv6

Include an IPv6 address space This virtual network has no IPv6 address ranges.

Private subnet

Private subnets enhance security by not providing default outbound access. To enable outbound connectivity for virtual machines to access the internet, it is necessary to explicitly grant outbound access. A NAT gateway is the recommended way to provide outbound connectivity for virtual machines in the subnet. [Learn more](#)

Enable private subnet (no default outbound access)

Security

Simplify internet access for virtual machines by using a network address translation gateway. Filter subnet traffic using a network security group. [Learn more](#)

NAT gateway ⑥ None

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

5 Add Cancel Give feedback

The screenshot shows the Azure portal interface for managing a virtual network. A red box labeled '1' highlights the 'az104-06-vnet1' path in the navigation bar. A red box labeled '2' highlights the 'Subnets' option in the left sidebar under the 'Settings' section. A red box labeled '3' highlights the 'Subnets' link in the main content area. A red box labeled '4' highlights the 'Starting address' field. A red box labeled '5' highlights the 'Add' button. A red box labeled '6' highlights the 'NAT gateway' dropdown set to 'None'. Red annotations also show arrows pointing from the 'Name' field to the 'subnet-appgw' value and from the 'Size' dropdown to the '/27 (32 addresses)' value.

Microsoft Azure

Home > Load balancing 1

Load balancing | Application Gateway

Search x

Overview

Load Balancing Services 2

Application Gateway

Front Door and CDN profiles

Load Balancer

Traffic Manager

Create + Create Manage view

Filter for any field...

Showing 0 to 0 of 0 records.

Name ↑↓

1

2

3

Microsoft Azure

Home > Load balancing | Application Gateway >

Create application gateway

Basics 1 Frontends 2 Backends 3 Configuration 4 Tags 5 Review + create 6

An application gateway is a web traffic load balancer that enables you to manage traffic to your web application. [Learn about creating application gateway](#) ↗

Project details

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

Subscription * ⓘ P9-Real Hands-On Labs

Resource group * ⓘ 1-8c54c6ae-playground-sandbox Create new

Instance details

Application gateway name * az104-appgw

Region * ⓘ South Central US

Tier ⓘ Standard V2

Enable autoscaling Yes No

Instance count * 2

Availability zone * ⓘ Zones 1

IP address type ⓘ IPv4 only Dual stack (IPv4 & IPv6)

HTTP2 ⓘ Disabled Enabled

Configure virtual network

Virtual network * ⓘ az104-06-vnet1 Create new

Subnet * ⓘ 5 subnet-appgw (10.60.3.0/27) Manage subnet configuration

Previous Next : Frontends >

4

5

6

Create application gateway

✓ Basics

2 Frontends

3 Backends

4 Configuration

5 Tags

6 Review + create

Traffic enters the application gateway via its frontend IP address(es). An application gateway can use a public IP address, private IP address, or one of each type. ↗

Frontend IP address type ⓘ

 Public Private Both

Public IPv4 address *

Choose public IP address

Add new

1

Add a public IP

Name * az104-gwpip

SKU Basic Standard

Assignment Dynamic Static

Availability zone 1

3

OK Cancel

4

Previous

Next : Backends >

Create application gateway ...

✓ Basics ✓ Frontends ③ Backends ④ Configuration ⑤ Tags ⑥ Review + create

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualified domain names (FQDN). 

Add a backend pool 1

Backend pool Targets

No results

Add a backend pool.

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualified domain names (FQDN). 

Name * az104-appgwbe 

Add backend pool without targets Yes 

Backend targets

2 items

Target type	Target
Virtual machine	az104-06-nic1
Virtual machine	az104-06-nic2 (10.60.2.4)  
IP address or FQDN	<input type="text"/>

3

Add 

4

Previous **Next : Configuration >**

Add a backend pool.

X

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machines scale sets, IP addresses, domain names, or an App Service.

Name * ✓

Add backend pool without targets Yes No

Backend targets
1 item

Target type	Target
Virtual machine	az104-06-nic1 (10.60.1.4)
IP address or FQDN	

Add a backend pool.

X

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machines scale sets, IP addresses, domain names, or an App Service.

Name * ✓

Add backend pool without targets Yes No

Backend targets
1 item

Target type	Target
Virtual machine	az104-06-nic2 (10.60.2.4)
IP address or FQDN	

Add

Cancel

Add

Cancel

[Home](#) > [Load balancing | Application Gateway](#) >

Create application gateway

⚠ Changes you make on this tab may affect any configuration you've done on other tabs. Review all options prior to creating the application gateway.

✓ Basics ✓ Frontends ✓ **Backends** ④ Configuration ⑤ Tags ⑥ Review + create

A backend pool is a collection of resources to which your application gateway can send traffic. A backend pool can contain virtual machines, virtual machine scale sets, app services, IP addresses, or fully qualified domain names (FQDN). [? Help](#)

Add a backend pool

Backend pool	Targets	...
az104-appgwbe	✓ 2 targets	...
	az104-06-nic1	...
	az104-06-nic2	...
az104-imagebe	✓ 1 target	...
	az104-06-nic1	...
az104-videoobe	✓ 1 target	...
	az104-06-nic2	...

[Previous](#)[Next : Configuration >](#)

[Home > Load balancing | Application Gateway >](#)

Create application gateway

[✓ Basics](#) [✓ Frontends](#) [✓ Backends](#) **4 Configuration** [5 Tags](#) [6 Review + create](#)

Create routing rules that link your frontend(s) and backend(s). You can also add more backend pools, add a second frontend IP configuration if you haven't already, or edit previous

Frontends

+ Add a frontend IP

Public: (new) az104-gwpip

...

Routing rules

Add a routing rule

Add a routing rule

Configure a routing rule to send traffic from a given frontend IP address to one or more backend targets. A routing rule must contain a listener and at least one backend target.

Rule name ***** ✓

Priority ***** ✓

* Listener Backend targets

Choose a backend pool to which this routing rule will send traffic. You will also need to specify a set of Backend settings that define the behavior of the routing rule. ✓

Target type Backend pool Redirection

Backend target ***** az104-appgwbe [Add new](#)

Backend settings ***** [Add new](#)

az104-http

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](#)[Previous](#)[Next : Tags >](#)

5

Add Cancel

4

Home > az104-appgw

az104-appgw | Backend health

Application gateway

 Search[Overview](#)[Activity log](#)[Access control \(IAM\)](#)[Tags](#)[Diagnose and solve problems](#)[Settings](#)[Monitoring](#)[Alerts](#)[Metrics](#)[Diagnostic settings](#)[Logs](#)[Insights](#)[Backend health](#)[Connection troubleshoot](#)[Automation](#)[Help](#)

Backend health

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

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

[All](#) 4
out of 4[Healthy](#) 4
out of 4

Search backend health

Server (backend pool)	Status	Port (Backend setting)	Protocol	Details
10.60.1.4 (az104-imagebe)	Healthy	80 (az104-http)	Http	Success. Received status code
10.60.2.4 (az104-videoobe)	Healthy	80 (az104-http)	Http	Success. Received status code
10.60.1.4 (az104-appgwbe)	Healthy	80 (az104-http)	Http	Success. Received status code
10.60.2.4 (az104-appgwbe)	Healthy	80 (az104-http)	Http	Success. Received status code

Home >

 az104-appgw ⭐ ...
Application gateway

Search



Delete Refresh Feedback

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Essentials

Resource group (move) : [1-8c54c6ae-playground-sandbox](#)

Location : South Central US (Zone 1)

Subscription (move) : [P9-Real Hands-On Labs](#)

Subscription ID : 28e1e42a-4438-4c30-9a5f-7d7b488fd883

Virtual network/subnet : [az104-06-vnet1/subnet-appgw](#)

Frontend public IP address : [20.64.89.28 \(az104-gwpip\)](#)

Frontend private IP address : -

Tier : Standard V2

Availability zone : 1

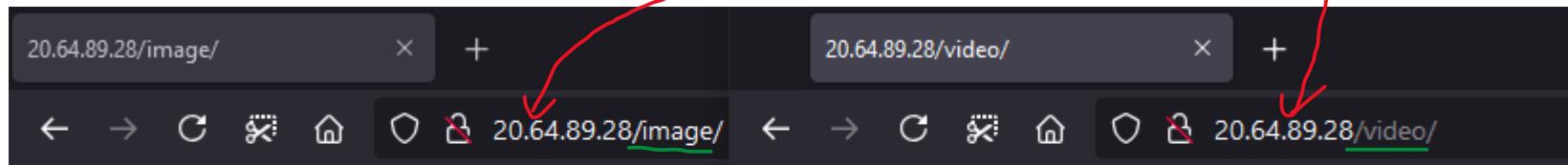


Image from: az104-06-vm1

Video from: az104-06-vm2

Lab 07: Manage Azure storage

Task 1: Create and configure a storage account

Microsoft Azure Search

Home > Storage accounts >

Create a storage account

Basics Advanced Networking Data protection Encryption Tags Review + create

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

Project details

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

Subscription * P9-Real Hands-On Labs

Resource group * 1-61a560fd-playground-sandbox [Create new](#)

Instance details

Storage account name * liub0myrlab7

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

Primary service * Select a primary service

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

Redundancy * Geo-redundant storage (GRS) Make read access to data available in the event of regional unavailability.

1

2

Previous Next Review + create

Microsoft Azure Search

Home >

Create a storage account

Basics Advanced Networking Data protection Encryption Tags 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

3

Private endpoint

Create a private endpoint to allow a private connection to this resource. Additional private endpoint connections can be created within the storage account or private link center.

+ Add private endpoint

Name	Subscription	Resource g...	Region	Target sub...	Subnet	Private DN...
Click on add to create a private endpoint						

4

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

[Home](#) > [liub0myrlab7_1729701567218 | Overview](#) > [liub0myrlab7](#)

liub0myrlab7 | Networking

Storage account

[Overview](#)[Activity log](#)[Tags](#)[Diagnose and solve problems](#)[Access Control \(IAM\)](#)[Data migration](#)[Events](#)[Storage browser](#)[Storage Mover](#)[Partner solutions](#)[Data storage](#)[Security + networking](#)[Networking](#)[Front Door and CDN](#)[Access keys](#)[Shared access signature](#)[Encryption](#)[Microsoft Defender for Cloud](#)[Data management](#)[Settings](#)[Monitoring](#)[Monitoring \(classic\)](#)[Metrics \(classic\)](#)[Diagnostic settings](#)[Firewalls and virtual networks](#)[Private endpoint connections](#)[Custom domain](#)[Save](#)[Discard](#)[Refresh](#)[Give feedback](#)

Firewall settings restricting access to storage services will remain in effect for up to a minute after saving updated settings allowing access.

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
No network selected.			

Firewall

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

 Add your client IP address ('')**Address range****Resource instances**

Specify resource instances that will have access to your storage account based on their system-assigned managed identity.

Resource type**Instance name****Exceptions** Allow Azure services on the trusted services list to access this storage account. All other IP addresses

Microsoft Azure

Home > liub0myrlab7_1729701567218 | Overview > liub0myrlab7

liub0myrlab7 | Lifecycle management

Storage account

Search

Add a rule Enable

Lifecycle management offers a complete. [Learn more](#)

List View Code View

Enable access tracking ⓘ

Name
No rules

1

1 Data management

- Storage tasks (preview)
- Redundancy
- Data protection
- Object replication
- Blob inventory
- Static website
- Lifecycle management** ★
- Azure AI Search

> Settings

> Monitoring

Monitoring (classic)

- Metrics (classic)
- Diagnostic settings (classic)
- Usage (classic)

> Automation

Microsoft Azure

Home > liub0myrlab7_1729701567218 | Overview > liub0myrlab7 | Lifecycle management >

Add a rule ...

1 Details 2 Base blobs

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

Rule name *

Movetocoool

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

Next

Add a rule

...

 Details 2 Base blobs

Lifecycle management uses your rules to automatically move blobs to cooler tiers or to delete them. If you create multiple rules, the associated actions must be implemented in tier order (from hot to cool storage, then archive, then deletion).

If

Base blobs were *

Last modified

Created

More than (days ago) *

30

Then

Move to cool storage

+ Add conditions



Previous

Add

2

Task 2: Create and configure secure blob storage

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_cd45878d...
PLURALSIGHT CLOUD (REALHAN...)

Home > liub0myrlab7_1729701567218 | Overview > liub0myrlab7

liub0myrlab7 | Containers

Storage account

Search

+ Container Change access level Restore containers Refresh Delete Give feedback

Search containers by prefix

Name Last modified Anonymous access level

Name	Last modified	Anonymous access level
\$logs	10/23/2024, 7:40:45 PM	Private

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Partner solutions

1 Data storage

Containers

File shares

Queues

Tables

> Security + networking

> Data management

> Settings

> Monitoring

> Monitoring (classic)

> Automation

> Help

New container

Name * data

Anonymous access level Private (no anonymous access)

The access level is set to private because anonymous access is disabled on this storage account.

Advanced

2 Create

Give feedback

Detailed description: This screenshot shows the Azure Storage account 'liub0myrlab7' interface. On the left, a sidebar lists various storage components like Data storage, File shares, Queues, and Tables. Under 'Data storage', 'Containers' is selected and highlighted with a red circle labeled '1'. The main area shows a list of existing containers, including '\$logs'. To the right, a 'New container' dialog is open. It has fields for 'Name' (containing 'data', circled with '2'), 'Anonymous access level' (set to 'Private (no anonymous access)'), and an info message about access levels. At the bottom of the dialog is a large blue 'Create' button, which is also circled with '3'.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Home > liub0myrlab7

liub0myrlab7 | Containers

Storage account

Search

+ Container Change access level Restore containers Refresh Delete ...

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Partner solutions

↓ Data storage

Containers

File shares

Queues

Tables

> Security + networking

> Data management

> Settings

> Monitoring

> Monitoring (classic)

> Automation

> Help

Search containers by prefix

Show deleted containers

Name	Last modified	Anonymous access...	Lease state
\$logs	10/23/2024, 7:40:45 ...	Private	Available
<input checked="" type="checkbox"/> data	10/23/2024, 7:52:57 ...	Private	Available

... Container properties Generate SAS Access policy Acquire lease Break lease Change access level Edit metadata Delete

Immutable Storage policy

Policy type: Time-based retention

Set retention period for * 180 days

Enable version-level immutability

In order to enable version-level immutability support, your storage account must have versioning turned on.

Allow protected append writes to:

- None (selected)
- Append blobs
- Block and append blobs

Save Cancel

1

2

3

4

The screenshot shows the Azure Storage account 'liub0myrlab7' interface. On the left sidebar, under 'Data storage', 'Containers' is selected and highlighted with a red circle and a red arrow pointing to it from the bottom-left. In the main content area, a container named 'data' is selected, indicated by a checked checkbox. A context menu is open over this container, showing options like 'Container properties', 'Generate SAS', 'Access policy' (which is circled in red), 'Acquire lease', 'Break lease', 'Change access level', 'Edit metadata', and 'Delete'. The 'Access policy' option is specifically highlighted with a red circle and a red arrow labeled '3'. To the right of the container list, a modal window titled 'Immutable Storage policy' is open. Inside, the 'Policy type' dropdown is set to 'Time-based retention', which is also circled in red and has a red arrow labeled '2' pointing to it. Below it, the 'Set retention period for *' input field contains the value '180', also circled in red with a red arrow labeled '3' pointing to it. At the bottom of the modal, there is a 'Save' button, which is circled in red with a red arrow labeled '4' pointing to it.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_cd45878d... PLURALSIGHT CLOUD (REALHAN...)

Home > liub0myrlab7 | Containers >

data Container

Search

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

Upload

Change access level

Refresh

Delete

Change tier

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

Location: data

Search blobs by prefix (case-sensitive)

Add filter

Name	Modified	Access tier
No results		

1

2

3

4

Upload blob

1 file(s) selected: template.json

Drag and drop files here or [Browse for files](#)

Overwrite if files already exist

Advanced

Blob type [ⓘ](#)
Block blob

Upload .vhdx files as page blobs (recommended)

Block size [ⓘ](#)
4 MiB

Access tier [ⓘ](#)
Hot (Inferred)

Upload to folder

Blob index tags [ⓘ](#)

Key	Value

Encryption scope

Use existing default container scope

Choose an existing scope

Retention policy [ⓘ](#)

Use container-level retention period: 180 day(s)

Choose custom retention period

Upload

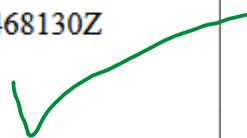
Give feedback

← → ⌂ ⌂ 🔍 🔒 https://liub0myrlab7.blob.core.windows.net/data/template.json



Схоже, цей XML-файл не має жодної пов'язаної інформації зі стилів. Нижче показано дерево елементів.

```
--<Error>
<Code>PublicAccessNotPermitted</Code>
-<Message>
    Public access is not permitted on this storage account. RequestId:0073c266-e01e-00c7-2671-257127000000 Time:2024-10-23T17:35:07.3468130Z
  </Message>
</Error>
```



Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Cloud User

Home > liub0myrlab7 | Containers > data >

data Container

Search

Overview

Diagnose and solve problems

Access Control (IAM)

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Access policy

Properties

Metadata

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

Location: data

Search blobs by prefix (case...)

Show deleted blobs

Add filter

Name

template.json

1

Generate SAS

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

Signing method

Account key User delegation key

Signing key

Key 1

Stored access policy

None

Permissions *

Read

Start and expiry date/time

Start

10/22/2024 8:36:27 PM
(UTC+03:00) --- Current Time Zone ---

Expiry

10/25/2024 4:36:27 AM
(UTC+03:00) --- Current Time Zone ---

Allowed IP addresses

for example, 168.1.5.65 or 168.1.5.65-168.1...

Allowed protocols

HTTPS only HTTPS and HTTP

2

3

Generate SAS token and URL

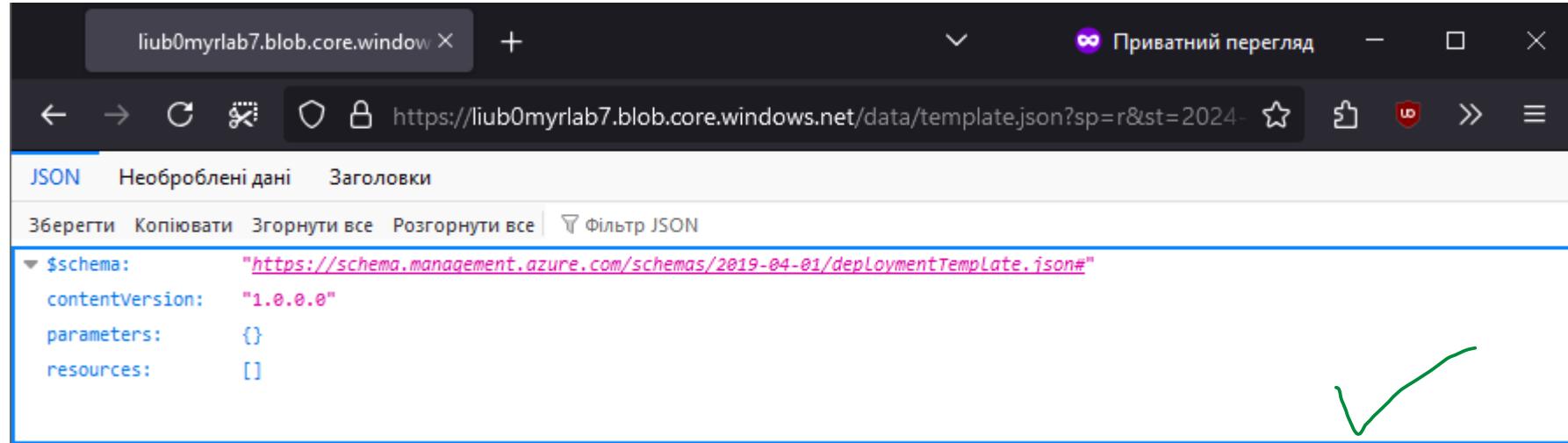
4

Blob SAS token

sp=r&st=2024-10-22T17:36:27Z&se=2024-10-25T01:36:27Z&spr=https&sv=2022-11-02&sr=b&sig=26XaH3HE5mYmmdqWyyalxcc1UVtOy4dOHqL8PdAjv0%...
Copy to clipboard

Blob SAS URL

<https://liub0myrlab7.blob.core.windows.net/data/template.json?sp=r&st=2024-10-22T17:36:27Z&se=2024-10-25T01:36:27Z&spr=https&sv=2022-11-02&sr=b>



liub0myrlab7.blob.core.windows X + Приватний перегляд

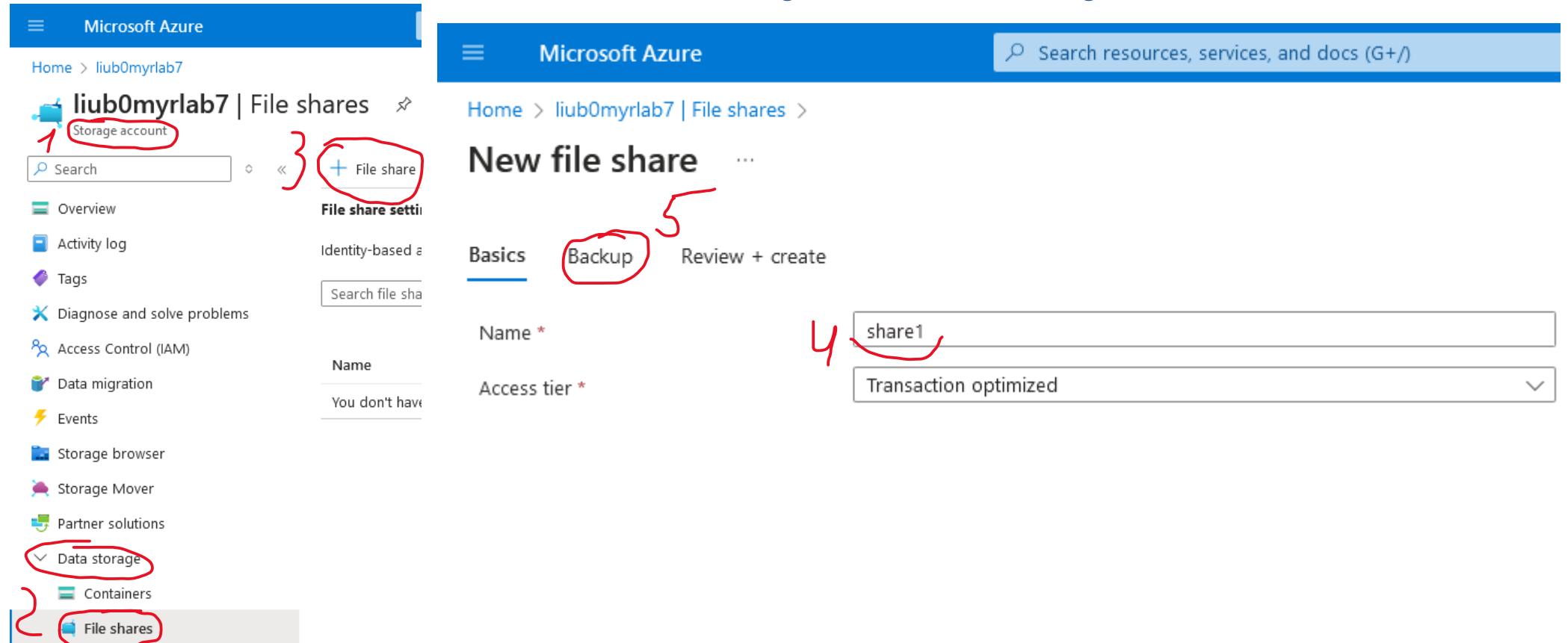
https://liub0myrlab7.blob.core.windows.net/data/template.json?sp=r&st=2024- Фільтр JSON

JSON Необроблені дані Заголовки

Зберегти Копіювати Згорнути все Розгорнути все

```
$schema: "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#"
contentVersion: "1.0.0.0"
parameters: {}
resources: []
```

Task 3: Create and configure an Azure File storage



Microsoft Azure

Home > liub0myrlab7

liub0myrlab7 | File shares

Storage account

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Partner solutions

Data storage

Containers

File shares

File share settings

+ File share

File share settings

Identity-based access

Search file share

Basics

Backup

Review + create

Name *

share1

Access tier *

Transaction optimized

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



Home > liub0myrlab7 | File shares >

New file share

Basics Backup Review + create 2

Azure Backup protects your file shares from accidental deletion or modification with granular restore and at-scale management capabilities. [Learn more](#)

Enable backup 1

This screenshot shows the Microsoft Azure Storage browser interface for the storage account "liub0myrlab7". The left sidebar includes options like Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage browser (circled in red with a number 3), and Storage Mover. The main area displays a file share named "share1". A red circle with the number 4 highlights the "File shares" section. A red circle with the number 5 highlights the "Upload" button. A red circle with the number 6 highlights the "Upload" button in the "Upload files" dialog box. The "Upload files" dialog shows a file named "parameters.json" selected for upload.

3

liub0myrlab7 | Storage browser

Storage account

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Events

Storage browser 3

Storage Mover

File shares 4

share1

Upload 5

Add directory Refresh

File shares > share1

Authentication method: Access key (Switch to)

Search files by prefix

Showing all 0 items

Name

No items found

Overwrite if files already exist

Upload 6

Upload files

1 file(s) selected: parameters.json

Drag and drop files here or [Browse for files](#)

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

Cloud User

Home > Resource groups > 1-61a560fd-playground-sandbox > liub0myrlab7

liub0myrlab7 | Storage browser

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Partner solutions

> Data storage

> Security + networking

> Data management

> Settings

> Monitoring

> Monitoring (classic)

> Automation

> Help

File shares > share1 > folder^_^

Upload files

Upload Add directory Refresh

Authentication method: Access key (Switch to)

Search files by prefix

Showing all 0 items

Name

[..]

Overwrite if files already exist

Upload

1

2



Home > Virtual networks >

Create virtual network ...

[Basics](#) [Security](#) [IP addresses](#) [Tags](#) [Review + create](#)

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

[Learn more.](#)**Project details**

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

Subscription *

P9-Real Hands-On Labs

Resource group *

1-61a560fd-playground-sandbox

[Create new](#)**Instance details**

Virtual network name *

vnet1

Region * ⓘ

(US) East US

[Deploy to an Azure Extended Zone](#)

2

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

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_cd45878d...
PLURALSIGHT CLOUD (REALHAN...)

Home > vnet1-1729706484085 | Overview > vnet1

vnet1 | Service endpoints

Virtual network

Search Add Refresh

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

Address space Connected devices Subnets Bastion DDoS protection Firewall Microsoft Defender for Cloud Network manager DNS servers Peerings Service endpoints Private endpoints Properties Locks Monitoring Automation CLI / PS Tasks

Filter service endpoints

Service	Subnet	Status
No service endpoints.		

Add service endpoints

Service * Microsoft.Storage

Service endpoint policies 0 selected

Subnets * default

With service endpoints, the source IP address for service traffic from this subnet will switch from using public IPv4 addresses to using private IPv4 address. Existing IP firewall rules using Azure public IP addresses will stop working with this switch. Please ensure IP firewall rules allow for this switch before setting up service endpoints. You may also experience temporary interruption to service traffic from this subnet while configuring service endpoints.

Add

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_cd45878d... PLURALSIGHT CLOUD (REALHAN...)

Home > Resource groups > 1-61a560fd-playground-sandbox > liub0myrlab7

liub0myrlab7 | Networking

Storage account

1

2

3

4

5

6

7

Firewalls and virtual networks Private endpoint connections Custom domain

Save Discard Refresh Give feedback

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
No network selected.				

Firewall

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

Address range

IP address or CIDR

Resource instances

Specify resource instances that will have access to your storage account based on their system-assigned managed identity.

Resource type	Instance name
Select a resource type	Select one or more instances

Exceptions

Allow Azure services on the trusted services list to access this storage account. [\(i\)](#)

Allow read access to storage logging from any network

Allow read access to storage metrics from any network

Network Routing

Add networks

Subscription * P9-Real Hands-On Labs

Virtual networks * vnet1

Subnets * default

Add

Microsoft Azure

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

Copilot

11

?

cloud_user_p_cd45878d...
PLURALSIGHT CLOUD (REALHAN...)

Home > Resource groups > 1-61a560fd-playground-sandbox > liub0myrlab7

liub0myrlab7 | Storage browser

Storage account

Search liub0myrlab7

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Partner solutions

Data storage

Security + networking

Networking

Front Door and CDN

Access keys

Shared access signature

Encryption

Microsoft Defender for Cloud

Data management

Settings

Monitoring

Monitoring (classic)

Automation

Help

liub0myrlab7

Favorites

Recently viewed

Blob containers

File shares

share1

View all

Queues

Tables

This request is not authorized to perform this operation.

Summary

Session ID: 39f6092acbe24770870432401a9f8415

Resource ID: /subscriptions/28e1e42a-4438-4c30-9a5f-7d7b488fd88...

Extension: Microsoft_Azure_Storage

Content: FilesBlade

Error code: 403

Storage Request ID: 9cbb6754-e01a-0051-5376-2578f6000000

Details

- This request is not authorized to perform this operation. RequestId:9cbb6754-e01a-0051-5376-2578f6000000 Time:2024-10-23T18:08:56.0648539Z
- This storage account's 'Firewalls and virtual networks' settings may be blocking access to storage services. Try adding your client IP address ('91.201.233.39') to the firewall exceptions, or by allowing access from 'all networks' instead of 'selected networks'. [Learn more](#)

liub0myrlab7.blob.core.windows.net

Приватний перегляд

Схоже, цей XML-файл не має жодної пов'язаної інформації зі стилів. Нижче показано дерево елементів.

```
<Error>
  <Code>AuthorizationFailure</Code>
  <Message>
    This request is not authorized to perform this operation. RequestId:6b49f54b-c01e-00a2-7976-25df63000000
    Time:2024-10-23T18:08:51.8590370Z
  </Message>
</Error>
```

Lab 08: Manage Virtual Machines

Task 1: Deploy zone-resilient Azure virtual machines by using the Azure portal

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_4921c7e0... PLURALSIGHT CLOUD (REALHAN...)

Home > Virtual machines > **Create a virtual machine**

Based on the number of availability zones selected, 2 virtual machines will be created. The following settings will be applied to each virtual machine unless specified otherwise.

Help me create a low cost VM | Help me create a VM optimized for high availability | Help me choose the right VM size for my workload

Basics Disks Networking Management Monitoring Advanced Tags Review + create

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

Project details

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

Subscription * P9-Real Hands-On Labs

Resource group * 1-9bde4d49-playground-sandbox [Create new](#)

Instance details

Virtual machine names az104-vm1, az104-vm2

2 virtual machines will be created with the names shown above. [Edit names](#)

Region * (US) East US

Availability options Availability zone

Self-selected zone
Choose up to 3 availability zones, one VM per zone

Azure-selected zone (Preview)
Let Azure assign the best zone for your needs

Using an Azure-selected zone is not supported in region 'East US'.

Availability zone * Zones 1, 2

Based on your zone selection, we will place 2 virtual machines, one in each

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

Give feedback

4



Home > Virtual machines >

Create a virtual machine



Based on the number of availability zones selected, 2 virtual machines will be created. The following settings will be applied to each virtual machine unless specified otherwise.

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

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more](#)

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](#)

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



Data disks for az104-vm1

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	Name	Size (GiB)	Disk type	Host cache...	Delete with VM
-----	------	------------	-----------	---------------	----------------

[Create and attach a new disk](#) [Attach an existing disk](#)

Previous

Next : Networking

[Review + create](#)

Give feedback



Home > Virtual machines >

Create a virtual machine

X

Based on the number of availability zones selected, 2 virtual machines will be created. The following settings will be applied to each virtual machine unless specified otherwise.

Help me create a low cost VM

Help me create a VM optimized for high availability

Help me choose the right VM size for my workload

2 public IPs will be created with the names shown above.

NIC network security group

- None
- Basic
- Advanced

Public inbound ports *

- None
- Allow selected ports

Select inbound ports

Select one or more ports

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

Delete public IP and NIC when VM is deleted



Enable accelerated networking



Load balancing

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

Load balancing options

None

- Azure load balancer
Supports all TCP/UDP network traffic, port-forwarding, and outbound flows.
- Application gateway
Web traffic load balancer for HTTP/HTTPS with URL-based routing, SSL termination, session persistence, and web application firewall.

3

< Previous

Next : Management >

Review + create

Give feedback

Home > Virtual machines >

Create a virtual machine



Based on the number of availability zones selected, 2 virtual machines will be created. The following settings will be applied to each virtual machine unless specified otherwise.

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

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

Configure management options for your VM.

Microsoft Defender for Cloud

Microsoft Defender for Cloud provides unified security management and advanced threat protection across hybrid cloud workloads. [Learn more](#)

Your subscription is protected by Foundational Cloud Security Posture Management Free Plan.

Identity

Enable system assigned managed identity

Microsoft Entra ID

Login with Microsoft Entra ID

RBAC role assignment of Virtual Machine Administrator Login or Virtual Machine User Login is required when using Microsoft Entra ID login. [Learn more](#)

Auto-shutdown

Enable auto-shutdown

Guest OS updates

Enable hotpatch

Hotpatch is not available for this image. [Learn more](#)

Patch orchestration options

Azure-orchestrated

Some patch orchestration options are not available for this image.

1

< Previous

Next : Monitoring >

Review + create

Give feedback



Home > Virtual machines >

Create a virtual machine



Based on the number of availability zones selected, 2 virtual machines will be created. The following settings will be applied to each virtual machine unless specified otherwise.

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

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

Configure monitoring options for your VM.

Alerts

Enable recommended alert rules

Diagnostics

Boot diagnostics

Enable with managed storage account (recommended)

Enable with custom storage account

Disable



Enable OS guest diagnostics

Health

Enable application health monitoring

Review + create



< Previous

Next : Advanced >

Give feedback

Task 2: Manage compute and storage scaling for virtual machines

Microsoft Azure Search resources, services, and docs (G+) Copilot Cloud User PLURALSIGHT CLOUD (REALHAN... User icon

Home > Resource groups > 1-9bde4d49-playground-sandbox > az104-vm1

az104-vm1 | Size Virtual machine ...

1 Search ...

2 Availability + scale

3 DS1_v2

4 Resize

5 Resize Cancel

If the virtual machine is currently running, changing its size will cause it to be restarted. Stopping the virtual machine may reveal additional sizes. →

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

Showing 423 VM sizes. Subscription: P9-Real Hands-On Labs Region: East US Current size: Standard_DS1_v2 Learn more about VM sizes Group by series

VM Size ↑	Type ↑	vCPUs ↑	RAM (GiB) ↑	Data disks ↑	Max IOPS ↑	Local storag
DS1_v2	General purpose	1	3.5	4	3200	7 (SCSI)
D2s_v3	General purpose	2	8	4	3200	16 (SCSI)
D2as_v4	General purpose	2	8	4	3200	16 (SCSI)
DS2_v2	General purpose	2	7	8	6400	14 (SCSI)
D4s_v3						32 (SCSI)
DS3_v2						28 (SCSI)
D8s_v3						64 (SCSI)
D-Series v5						
D-Series v4						
B-Series						
E-Series v5						
E-Series v4						
F-Series v2						
L-Series						
D-Series v3						

6 Resize this virtual machine

Do you want to resize to size 'Standard_DS1_v2'? If the virtual machine is currently running, changing its size will cause it to be restarted.

7 Resize Cancel

The 4th generation D family sizes for your general purpose needs

Ideal for workloads that do not need continuous full CPU performance

The 5th generation E family sizes for your high memory needs

The 4th generation E family sizes for your high memory needs

Up to 2X performance boost for vector processing workloads

High throughput, low latency, directly mapped to local NVMe storage

The 3rd generation D family sizes for your general purpose needs

8 Costs presented are estimates in US dollars and include only Azure infrastructure costs and any discounts for the subscription and location. The costs don't include any applicable software costs. Final charges will appear in your billing currency, calculated using this month's exchange rate, where applicable. View Azure pricing calculator. Learn more about Azure currencies

Give feedback

az104-vm1 | Disks

Virtual machine

Search



Refresh

Additional settings

Feedback

Troubleshoot

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Connect

Networking

Settings

Disks

Extensions + applications

Operating system

Configuration

Advisor recommendations

Properties

Locks

Availability + scale

Security

Backup + disaster recovery

Operations

Monitoring

Automation

Help

⚠️ The configuration of this virtual machine and its attached disk(s) does not allow for the disk(s) to utilize their full throughput performance. The current virtual machine size supports 48 MBps. The total for disk(s) attached to virtual machine 'az104-vm1' is 160 MBps. You can change the virtual machine size to support additional disk(s) throughput. [Learn more](#)

OS disk

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MBps)	Encryption	Host caching
az104-vm1_disk1_3db658eaed	Premium SSD LRS	127	500	100	SSE with PMK	Read/write

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)	Max IOPS	Max throughput (MBps)	Encryption
0	vm1-disk1	Standard HDD (L...	32	500	60	Platform-managed key

4

Discard changes

Apply

[Home](#) > az104-vm1

az104-vm1 | Disks

Virtual machine


↻ Refresh

⚙️ Additional settings

🔗 Feedback

💡 Troubleshoot

💻 Overview

📄 Activity log

🔗 Access control (IAM)

🏷️ Tags

✖️ Diagnose and solve problems

➢ Connect

➢ Networking

➢ Settings

💻 Disks

📦 Extensions + applications

💻 Operating system

🔧 Configuration

📍 Advisor recommendations

☰ Properties

🔒 Locks

➢ Availability + scale

➢ Security

➢ Backup + disaster recovery

➢ Operations

➢ Monitoring

➢ Automation

➢ Help

⚠️ The configuration of this virtual machine and its attached disk(s) does not allow for the disk(s) to utilize their full throughput performance. The current virtual machine size supports 48 MBps. The total for disk(s) attached to virtual machine 'az104-vm1' is 160 MBps. You can change the virtual machine size to support additional disk(s) throughput. [Learn more](#)

OS disk

⇄ Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MBps)	Encryption ⓘ	Host caching ⓘ
az104-vm1_disk1_3db658eaed	Premium SSD LRS	127	500	100	SSE with PMK	Read/write

Data disks

🔍 Filter by name

Showing 1 of 1 attached data disks

+ Create and attach a new disk
🔗 Attach existing disks

Storage type	Size (GiB)	Max IOPS	Max throughput (MBps)	Encryption ⓘ	Host caching ⓘ
Standard HDD LRS	32	500	60	SSE with PMK	Read-only



2



3

Apply

Discard changes

Home > Resource groups > 1-9bde4d49-playground-sandbox > vm1-disk1

vm1-disk1 | Size + performance

- Search
- Overview
- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems
- Settings
 - Configuration
 - Size + performance
- Encryption
- Networking
- Disk Export
- Properties
- Locks
- Monitoring
- Metrics
- Automation
- CLI / PS
- Tasks
- Export template

Storage type ⓘ Why are some options disabled?
Standard SSD (locally-redundant storage) ▾

Size	Disk tier	Provisioned IOPS	Provisioned throughput	Max Shares ⓘ	Max burst IOPS ⓘ	Max burst throughput ⓘ
4 GiB	E1	500	100	3	600	150
8 GiB	E2	500	100	3	600	150
16 GiB	E3	500	100	3	600	150
32 GiB	E4	500	100	3	600	150
64 GiB	E6	500	100	3	600	150
128 GiB	E10	500	100	3	600	150
256 GiB	E15	500	100	3	600	150
512 GiB	E20	500	100	3	600	150
1024 GiB	E30	500	100	5	1000	250
2048 GiB	E40	500	100	5	-	-
4096 GiB	E50	500	100	5	-	-
8192 GiB	E60	2000	400	10	-	-
16384 GiB	E70	4000	600	10	-	-
32767 GiB	E80	6000	750	10	-	-

Custom disk size (GiB) * ⓘ

32

Save

Discard

Give feedback

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

6 7 8 9 10 11 12

cloud_user_p_4921c7e0... PLURALSIGHT CLOUD (REALHAN...)

Home > Resource groups > 1-9bde4d49-playground-sandbox > az104-vm1

az104-vm1 | Disks

Virtual machine

Search Refresh Additional settings Feedback Troubleshoot

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Connect

Networking

Settings

Disks

Extensions + applications

Operating system

Configuration

Advisor recommendations

Properties

Locks

Availability + scale

Security

Backup + disaster recovery

Operations

Monitoring

Automation

Help

The configuration of this virtual machine and its attached disk(s) does not allow for the disk(s) to utilize their full throughput performance. The current virtual machine size supports 48 MBps. The total for disk(s) attached to virtual machine 'az104-vm1' is 200 MBps. You can change the virtual machine size to support additional disk(s) throughput. [Learn more](#)

OS disk

Swap OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MBps)	Encryption	Host caching
az104-vm1_disk1_3db658eaed	Premium SSD LRS	127	500	100	SSE with PMK	Read/write

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)	Max IOPS	Max throughput (MBps)	Encryption
0	vm1-disk1	Standard SSD LRS	32	500	100	SSE with PMK

Apply Discard changes

1

2

3

4

5

Task 3: Create and configure Azure Virtual Machine Scale Sets

Microsoft Azure Search resources, services, and docs (G+) Copilot 7 ? ? PLURALSIGHT CLOUD (REALHAN...) User icon

Home > Virtual machine scale sets > Create a virtual machine scale set

2 Basics Spot Disks Networking Management Health Advanced Tags Review + create

Azure virtual machine scale sets let you create and manage a group of load balanced VMs. The number of VM instances can automatically increase or decrease in response to demand or a defined schedule. Scale sets provide high availability to your applications, and allow you to centrally manage, configure, and update a large number of VMs.

[Learn more about virtual machine scale sets](#)

Project details

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

Subscription * P9-Real Hands-On Labs

Resource group * 1-9bde4d49-playground-sandbox [Create new](#)

Scale set details

Virtual machine scale set name * vmss1

Region * (US) East US

Availability zone ⓘ Zones 1, 2, 3

Autoscaling can help you respond to an outage by scaling out new instances in another zone.

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

Security type ⓘ Standard

< Previous Next : Spot > **Review + create** Give feedback

3

Home > Virtual machine scale sets >

Create a virtual machine scale set

Basics Spot Disks **Networking** Management Health Advanced Tags

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

[Learn more about VMSS networking](#)

Virtual network configuration

Azure Virtual Network (VNet) enables many types of Azure resources to securely communicate with each other and on-premises networks. [Learn more about VNets](#)

Virtual network * ⓘ

(New) 1-9bde4d49-playground-sandbox-vnet (recommended)
[Create virtual network](#)

Network interface

A network interface enables an Azure virtual machine to communicate with internet, Azure, and can have one or more network interfaces.

[+ Create new nic](#)

NAME	CREATE PUBLI...	SUBNET	NETWORK SECUR...
1-9bde4d49-playgrou...	No	default (10.1.0.0/20)	Basic

Load balancing

You can place this virtual machine in the backend pool of an existing Azure load balancing solution.

Load balancing options ⓘ

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

To allow traffic from your load balancing product, you must enable port configuration on your network security group.

< PreviousNext : Management >Review + create

Create virtual network

Virtual Network service enables Azure resources to securely communicate with each other in a virtual network which is a logical isolation of the Azure cloud dedicated to your subscription. You can connect virtual networks to other virtual networks, or your on-premises network.

[Learn more about virtual networks](#)

Name *

vmss-vnet

Resource group *

1-9bde4d49-playground-sandbox

[Create new](#)

Address space

The virtual network's address space specified as one or more address prefixes in CIDR notation (e.g. 10.0.0.0/16).

Address range	Addresses	Overlap
<input checked="" type="checkbox"/> 10.82.0.0/20	10.82.0.4 - 10.82.15.254 (4091 addresses)	None

Subnets

The subnet's address range in CIDR notation (e.g. 10.0.0.0/24). It must be contained by the address space of the virtual network.

Subnet name	Address range	Addresses
<input checked="" type="checkbox"/> subnet0	10.82.0.0/24	10.82.0.4 - 10.82.0.254 (251 addresses)

5

[OK](#) [Discard](#)

Home > Virtual machine scale sets >

Create a virtual machine scale set

Virtual network configuration

Azure Virtual Network (VNet) enables many types of Azure resources to securely communicate with each other, the internet, and on-premises networks. [Learn more about VNets](#)

Virtual network * ⓘ

[Create virtual network](#)

Network interface

A network interface enables an Azure virtual machine to communicate with internet, Azure, and on-premises resources. A VM can have one or more network interfaces.

[+ Create new nic](#)

NAME	CREATE PUBLI...	SUBNET	NETWORK SECURIT...	ACCELERATED NE...
vmss-vnet-nic01	Yes	subnet0 (10.82.0.0/24)	Advanced	On

Load balancing

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

Load balancing options ⓘ

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

To allow traffic from your load balancing product, please update the appropriate port configuration on your network security group associated with your network interface.

Select a load balancer * ⓘ

[Create a load balancer](#)[Next : Management >](#)[Review + create](#)

14

Create a load balancer

Details such as subscription and resource group will be inherited from the virtual machine that you're creating. A default IP, backend pool, and load balancer rule will be created on your behalf, though certain configurations can be changed if desired.

Load balancer name * ⓘ

11

Type * ⓘ

Public

Provides outbound connections for virtual machines inside your virtual network using public load balancers.

Internal

Used to load balance traffic inside a virtual network. A load balancer frontend can be accessed from an on-premises network in a hybrid scenario.

TCP

UDP

Rules

Rules

 Load balancer rule Inbound NAT rule

Load balancer rule

A load balancing rule distributes incoming traffic that is sent to a selected IP address and port combination across a group of backend pool instances. Only backend instances that the health probe considers healthy receive new traffic.

Port * ⓘ

Backend port * ⓘ

[Create](#)[Cancel](#)

12

Edit network interface

X

Network interface

Name *

vmss-vnet-nic01

Virtual network ⓘ

vmss-vnet

Subnet * ⓘ

subnet0 (10.82.0.0/24)

NIC network security group ⓘ

 None Basic Advanced

2

Configure network security group *

(new) vmss1-nsg

Create new

4

Public IP address ⓘ

 Disabled Enabled

3

Accelerated networking ⓘ

 Disabled Enabled

OK

Cancel

Give feedback

9

Create network security group

Name *

vmss1-nsg

Inbound rules ⓘ

1000: default-allow-ssh

Any
SSH (TCP/22)

+ Add an inbound rule

Outbound rules ⓘ

No results.

+ Add an outbound rule

OK

5

6

7

8

Y

Add inbound security rule

vmss1-nsg

Source ⓘ

Any

Source port ranges * ⓘ

*

Destination ⓘ

Any

Service ⓘ

HTTP

Destination port ranges ⓘ

80

Protocol

Any

TCP

UDP

ICMPv4

Action

Allow

Deny

Priority *

1010

Name *

allow-http

Description

Add Cancel

Give feedback



Home > Virtual machine scale sets >

Create a virtual machine scale set



Basics Spot Disks Networking Management Health Advanced Tags Review + create

Configure monitoring and management options for your virtual machine scale set instances.

Microsoft Defender for Cloud

Microsoft Defender for Cloud provides unified security management and advanced threat protection across hybrid cloud workloads. [Learn more](#)

Your subscription is protected by Foundational Cloud Security Posture Management Free Plan.

Upgrade policy

Upgrade mode *

Manual - Existing instances must be manually upgraded

Monitoring

Boot diagnostics

- Enable with managed storage account (recommended)
- Enable with custom storage account
- Disable

Enable notifications for instance termination



Enable notifications for OS image upgrades or re-image



Identity

There are two types of managed identity: system-assigned and user-assigned. System-assigned identities are directly linked to a single Azure resource. User-assigned identities can be associated with multiple Azure resources, and its lifecycle is independent of those resources.

Enable system assigned managed identity



Microsoft Entra ID

< Previous

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Review + create

Give feedback

Task 4: Scale Azure Virtual Machine Scale Sets

Microsoft Azure

Home > Microsoft.Template-20241023220911 | Overview > 1-9bde4d49-playground-sandbox > vmss1

1

2

3

4

5

6

Custom autoscale

Autoscale setting name *: vmss1-Autoscale-142

Resource group: 1-9bde4d49-playground-sandbox

Predictive autoscale: Mode: Disabled

Default *: Auto created default scale condition

Delete warning: The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale.

Scale mode: Scale based on a metric (radio button selected)

Rules: Scale is based on metric trigger rules but no rule(s) is defined; click Add a rule to example: 'Add a rule that increases instance count by 1 when CPU Percentage is defined, the resource will be set to default instance count.'

Instance limits: Minimum *: 2, Maximum *: 2, Default *: 2

Schedule: This scale condition is executed when none of the other scale condition(s)

+ Add a scale condition

Save Discard Refresh Logs Feedback

Criteria

Metric namespace *: Virtual Machine Host Metric name: Percentage CPU 1 minute time grain

Dimension Name Operator Dimension Values Add

VMName = 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.

Percentage CPU (Average): 19.02 %

Enable metric divide by instance count:

Operator *: Greater than Metric threshold to trigger scale action *: 70 %

Duration (minutes) *: 10 Time grain (minutes): 1

Time grain statistic *: Average Time aggregation *: Average

Action

Operation *: Increase percent by Cool down (minutes) *: 5

Percentage *: 20

Add

Search resources, services, and docs (G+)

Copilot

Cloud User

PLURALSIGHT CLOUD (REALHAN...)

Scale rule

Custom autoscale

Autoscale setting name *: vmss1-Autoscale-142

Resource group: 1-9bde4d49-playground-sandbox

Predictive autoscale: Mode: Disabled

Default *: Auto created default scale condition

Delete warning: The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale.

Scale mode: Scale based on a metric (radio button selected)

Rules: Scale is based on metric trigger rules but no rule(s) is defined; click Add a rule to example: 'Add a rule that increases instance count by 1 when CPU Percentage is defined, the resource will be set to default instance count.'

Instance limits: Minimum *: 2, Maximum *: 2, Default *: 2

Schedule: This scale condition is executed when none of the other scale condition(s)

+ Add a scale condition

Save Discard Refresh Logs Feedback

Criteria

Metric namespace *: Virtual Machine Host Metric name: Percentage CPU 1 minute time grain

Dimension Name Operator Dimension Values Add

VMName = 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.

Percentage CPU (Average): 19.02 %

Enable metric divide by instance count:

Operator *: Greater than Metric threshold to trigger scale action *: 70 %

Duration (minutes) *: 10 Time grain (minutes): 1

Time grain statistic *: Average Time aggregation *: Average

Action

Operation *: Increase percent by Cool down (minutes) *: 5

Percentage *: 20

Add

По суті, правило не працюватиме, бо макс=мін

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_4921c7e0... PLURALSIGHT CLOUD (REALHAN...)

Home > Microsoft.Template-20241023220911 | Overview > 1-9bde4d49-playground-sandbox > vmss1

vmss1 | Scaling

Virtual machine scale set

Save (highlighted with red circle 1) Discard Refresh Logs Feedback

Custom autoscale

Autoscale setting name: vmss1-Autoscale-142
 Resource group: 1-9bde4d49-playground-sandbox
 Instance count: 2
 Predictive autoscale: Mode: Disabled
 Pre-launch setup of instances (minutes): 10
 Enable Forecast only or Predictive autoscale: [Learn more about Predictive autoscale.](#)

Default* Auto created default scale condition

Delete warning: The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale.

Scale mode: Scale based on a metric (highlighted with red circle 2) Scale to a specific instance count

Rules: It is recommended to have at least one scale in rule. To create new rules, click [Add a rule](#)

Scale out: When: vmss1 (Average) Percentage CPU > 70 Increase percent: 20

+ Add a rule

Instance limits: Minimum * 2 Maximum * 2 Default * 2

Schedule: This scale condition is executed when none of the other scale condition(s) match

+ Add a scale condition

Scale rule

Criteria

Metric namespace * Virtual Machine Host Metric name Percentage CPU 1 minute time grain

Dimension Name Operator Dimension Values Add

VMName = 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 value individually.

Percentage CPU (Average)
 12.16 %

Enable metric divide by instance count:

Operator * Less than Metric threshold to trigger scale action * 30 %

Duration (minutes) * 10 Time grain (minutes) * 1

Time grain statistic * Average Time aggregation * Average

Action

Operation * Decrease percent by Cool down (minutes) * 5

Percentage * 20

Add (highlighted with red circle 3)

По суті, правило не працюватиме, бо макс=мін

vmss1 | Scaling

Virtual machine scale set

Save Discard Refresh Logs Feedback

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Instances Networking Settings Availability + scale Scaling Size Security Operations Monitoring Automation Help

Custom autoscale

Autoscale setting name: vmss1-Autoscale-142
 Resource group: 1-9bde4d49-playground-sandbox
 Instance count: 2
 Predictive autoscale: Mode: Disabled, Pre-launch setup of instances (minutes):
Enable Forecast only or Predictive autoscale. [Learn more about Predictive autoscale.](#)

Default* Auto created default scale condition

Delete warning The very last or default recurrence rule cannot be deleted. Instead, you can disable autoscale to turn off autoscale.

Scale mode: Scale based on a metric Scale to a specific instance count

Rules

When	vmss1	(Average) Percentage CPU > 70	Increase percent by 20
When	vmss1	(Average) Percentage CPU < 30	Decrease percent by 20

+ Add a rule

Instance limits

Minimum *	Maximum *	Default *
2	10	2

Schedule This scale condition is executed when none of the other scale condition(s) match

+ Add a scale condition

Task 5: Create a virtual machine using Azure PowerShell (option 1)

Microsoft Azure

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

Copilot

cloud_user_p_d2b1e42f...
PLURALSIGHT CLOUD (REALHAN...)

Home > Resource groups >

Resource groups

Pluralsight Cloud (realhandsonlabs.com)

+ Create ... Group by none

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

Name ↑

1-f547cece-playground-sandbox

Showing 1 - 1 of 1. Display 10 count:

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

Essentials

Subscription (move)
[P5-Real Hands-On Labs](#)

Subscription ID
80ea84e8-afce-4851-928a-9e2219724c69

Tags (edit)
[Add tags](#)

Deployments
No deploy Copied

Location
South Central US

Resources Recommendations

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

Showing 0 to 0 of 0 records. Show hidden types No grouping List view

Switch to Bash Restart Manage files New session Editor Web preview Settings Help

```
PS /home/cloud> New-AzVm
>> -ResourceGroupName 'az104-rg8'
>> -Name 'myPSVM'
>> -Location 'South Central US'
>> -Image 'Win2019Datacenter'
>> -Zone '1'
>> -Size 'Standard_D2s_v3'
>> -Credential (Get-Credential)

PowerShell credential request
Enter your credentials.
User: cloud_user_p_d2b1e42f@realhandsonlabs.com
Password for user cloud_user_p_d2b1e42f@realhandsonlabs.com: *****

You can reference https://aka.ms/findImagePS on how to find VM Images using PowerShell.
New-AzVm: The client 'cloud_user_p_d2b1e42f@realhandsonlabs.com' with object id 'bdd4d06b-5c78-496d-b04b-842224dc0e1c' does not have authorization to perform action 'Microsoft.Compute/virtualMachines/read' over scope '/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/az104-rg8/providers/Microsoft.Compute/virtualMachines/myPSVM' or the scope is invalid. If access was recently granted, please refresh your credentials.
PS /home/cloud> 
```

Я спробував перезапустити пісочницю оскільки у помилці вказано, що у мене немає доступу, але це не допомогло. Потім я звернув увагу на значення ResourceGroupName.

```
PS /home/cloud> New-AzVm
>> -ResourceGroupName '1-f547cece-playground-sandbox'
>> -Name 'myPSVM'
>> -Location 'South Central US'
>> -Image 'Win2019Datacenter'
>> -Zone '1'
>> -Size 'Standard_D2s_v3'
>> -Credential (Get-Credential)

PowerShell credential request
Enter your credentials.
User: superadmin
Password for user superadmin: *****

You can reference https://aka.ms/findImagePS on how to find VM Images using PowerShell.

ResourceGroupName      : 1-f547cece-playground-sandbox
Id                   : /subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/virtualMachines/myPSVM

PS /home/cloud> Get-AzVM
>> -ResourceGroupName '1-f547cece-playground-sandbox'
>> -Status

ResourceGroupName      Name       Location        VmSize   OsType          NIC Provisioning Zone PowerState MaintenanceAllowed
-----      ----       -----        -----   -----          ----  -----  -----  -----  -----
1-f547cece-playground-sandbox myCLIVM southcentralus Standard_DS1_v2   Linux myCLIVMMNic    Creating     VM running
1-f547cece-playground-sandbox myPSVM southcentralus Standard_D2s_v3 Windows   myPSVM    Succeeded   1 VM running

PS /home/cloud> Stop-AzVM
>> -ResourceGroupName '1-f547cece-playground-sandbox'
>> -Name 'myPSVM'

Virtual machine stopping operation
This cmdlet will stop the specified virtual machine. Do you want to continue?
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): y

OperationId : 470a018f-cdc6-462b-81d2-4afbed9dc7ac
Status      : Succeeded
StartTime   : 10/23/2024 7:43:15 PM
EndTime     : 10/23/2024 7:44:37 PM
Error       :

PS /home/cloud> []
```

Task 6: Create a virtual machine using the CLI (option 2)

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

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
cloud [ ~ ]$ az vm create --name myCLIVM --resource-group 1-f547cece-playground-sandbox --image Ubuntu2204 --admin-username localadmin --generate-ssh-keys
/usr/lib64/az/lib/python3.9/site-packages/paramiko/pkey.py:100: CryptographyDeprecationWarning: TripleDES has been moved to cryptography.hazmat.decrepit.ciphers
.algorithms.TripleDES and will be removed from this module in 48.0.0.
  "cipher": algorithms.TripleDES,
/usr/lib64/az/lib/python3.9/site-packages/paramiko/transport.py:259: CryptographyDeprecationWarning: TripleDES has been moved to cryptography.hazmat.decrepit.ci
phers.algorithms.TripleDES and will be removed from this module in 48.0.0.
  "class": algorithms.TripleDES,
SSH key files '/home/cloud/.ssh/id_rsa' and '/home/cloud/.ssh/id_rsa.pub' have been generated under ~/.ssh to allow SSH access to the VM. If using machines with
out permanent storage, back up your keys to a safe location.
[
  "fqdns": "",
  "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/virtualMachines/myCLIVM",
  "location": "southcentralus",
  "macAddress": "00-0D-3A-63-24-27",
  "powerState": "VM running",
  "privateIpAddress": "192.168.1.5",
  "publicIpAddress": "13.65.146.94",
  "resourceGroup": "1-f547cece-playground-sandbox",
  "zones": ""
}
cloud [ ~ ]$ az vm show --name myCLIVM --resource-group 1-f547cece-playground-sandbox --show-details
```

Результат виконання останньої команди:

```
{
  "additionalCapabilities": null,
  "applicationProfile": null,
  "availabilitySet": null,
  "billingProfile": null,
  "capacityReservation": null,
  "diagnosticsProfile": null,
  "etag": "\"1\"",
  "evictionPolicy": null,
  "extendedLocation": null,
  "extensionsTimeBudget": null,
  "fqdns": "",
  "hardwareProfile": {
    "vmSize": "Standard_DS1_v2",
    "vmSizeProperties": null
  },
  "identity": null,
  "image": {
    "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/images/ubuntu2204",
    "label": "Ubuntu 22.04 LTS (HVM, SSD) - Standard"
  },
  "ipConfigurations": [
    {
      "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Network/networkInterfaces/myCLIVM-Interface/ipConfigurations/Primary",
      "name": "Primary",
      "primary": true,
      "privateIpAddress": "192.168.1.5",
      "publicIpAddress": "13.65.146.94",
      "subnet": {
        "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Network/virtualNetworkSubnets/MySubnet"
      }
    }
  ],
  "location": "southcentralus",
  "managedDisk": {
    "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/disks/myCLIVM-disk",
    "lifecycleType": "Managed"
  },
  "memory": 2,
  "name": "myCLIVM",
  "osDisk": {
    "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/disks/myCLIVM-disk",
    "lifecycleType": "Managed"
  },
  "osType": "Linux",
  "platformFeatures": null,
  "platformUpdateConfiguration": null,
  "protectionStatus": "Normal",
  "resourceGroup": "1-f547cece-playground-sandbox",
  "storageProfile": {
    "osDisk": {
      "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/disks/myCLIVM-disk",
      "lifecycleType": "Managed"
    }
  },
  "tags": null,
  "timeZone": "UTC",
  "virtualMachineScaleSets": null}
```

```
"host": null,
"hostGroup": null,
"id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/virtualMachines/myCLIVM",
"identity": null,
"licenseType": null,
"location": "southcentralus",
"macAddresses": "00-0D-3A-63-24-27",
"managedBy": null,
"name": "myCLIVM",
"networkProfile": {
    "networkApiVersion": null,
    "networkInterfaceConfigurations": null,
    "networkInterfaces": [
        {
            "deleteOption": null,
            "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Network/networkInterfaces/myCLIVMVMNic",
            "primary": null,
            "resourceGroup": "1-f547cece-playground-sandbox"
        }
    ]
},
"osProfile": {
    "adminPassword": null,
    "adminUsername": "localadmin",
    "allowExtensionOperations": true,
    "computerName": "myCLIVM",
    "customData": null,
    "linuxConfiguration": {
        "disablePasswordAuthentication": true,
        "enableVmAgentPlatformUpdates": null,
        "patchSettings": {
            "assessmentMode": "ImageDefault",
            "automaticByPlatformSettings": null,
            "patchMode": "ImageDefault"
        },
        "provisionVmAgent": true,
        "ssh": {
            "publicKeys": [
                {
                    "keyData": "ssh-rsa
AAAAB3NzaC1yc2EAAAQABAAQCoefgDRHv7jGem0S7g60RLqn0I4PTQ+45rRPj6etgRtVo2A/8/V19WZ6nIN0chp/xswBlzPn4q8NdHK46/rFek4tL0kGFv0aK2c48INhMR5yRm5pGzPQX3Ji0XiT2JxsszlgQ31DF1uauQ3hmnn0VEB6p9Ek0+e2sL4Yf8A7uGuGuSeEH3rCWx543XIVcVrTsyhrL07ylsGbi+xF6NjeLxvwChYKtPJjsSt1Xz4FdR92XXk3mgFi7GaDqxp3nTZN8h6PwkUnnF6Ar1hbZXMOFzn3u1i0hyzgsZ7CbR23M8lrmpp0cMvD/Mr3H6I7SR54mgK5rQ5w8Serz2R9zBMSW2cl1z",
                    "path": "/home/localadmin/.ssh/authorized_keys"
                }
            ]
        }
    },
    "requireGuestProvisionSignal": true,
    "secrets": [],
    "windowsConfiguration": null
}
```

```
},
"plan": null,
"platformFaultDomain": null,
"powerState": "VM running",
"priority": null,
"privateIps": "192.168.1.5",
"provisioningState": "Succeeded",
"proximityPlacementGroup": null,
"publicIps": "13.65.146.94",
"resourceGroup": "1-f547cece-playground-sandbox",
"resources": null,
"scheduledEventsPolicy": null,
"scheduledEventsProfile": null,
"securityProfile": {
    "encryptionAtHost": null,
    "encryptionIdentity": null,
    "proxyAgentSettings": null,
    "securityType": "TrustedLaunch",
    "uefiSettings": {
        "secureBootEnabled": true,
        "vTpmEnabled": true
    }
},
"storageProfile": {
    "dataDisks": [],
    "diskControllerType": "SCSI",
    "imageReference": {
        "communityGalleryImageId": null,
        "exactVersion": "22.04.202410020",
        "id": null,
        "offer": "0001-com-ubuntu-server-jammy",
        "publisher": "Canonical",
        "sharedGalleryImageId": null,
        "sku": "22_04-lts-gen2",
        "version": "latest"
    },
    "osDisk": {
        "caching": "ReadWrite",
        "createOption": "FromImage",
        "deleteOption": "Detach",
        "diffDiskSettings": null,
        "diskSizeGb": 30,
        "encryptionSettings": null,
        "image": null,
        "managedDisk": {
            "diskEncryptionSet": null,
            "id": "/subscriptions/80ea84e8-afce-4851-928a-9e2219724c69/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/disks/myCLIVM_disk1_67e57fb5a706415ebd98ca8160db8817",
            "resourceGroup": "1-f547cece-playground-sandbox",
            "securityProfile": null,
            "storageAccountType": "Premium_LRS"
        },
        "name": "myCLIVM_disk1_67e57fb5a706415ebd98ca8160db8817",
        "osType": "Linux",
        "vhd": {
            "uri": "https://1-f547cece-playground-sandbox.vhdsuffix.net:443/1-f547cece-playground-sandbox/resourceGroups/1-f547cece-playground-sandbox/providers/Microsoft.Compute/disks/myCLIVM_disk1_67e57fb5a706415ebd98ca8160db8817.vhd"
        }
    }
}
```

```
"vhd": null,  
"writeAcceleratorEnabled": null  
}  
},  
"tags": {},  
"timeCreated": "2024-10-23T19:42:39.725172+00:00",  
"type": "Microsoft.Compute/virtualMachines",  
"userData": null,  
"virtualMachineScaleSet": null,  
"vmId": "6c524383-0e5e-4802-89d5-25fcda9da817",  
"zones": null  
}
```

Зупиняю VM використовуючи наступну команду

```
cloud [ ~ ]$ az vm deallocate --resource-group 1-f547cece-playground-sandbox --name myCLIVM  
cloud [ ~ ]$  
cloud [ ~ ]$
```

Обидві VM успішно створено та зупинено

Microsoft Azure

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

Home > 1-f547cece-playground-sandbox >

myPSVM Virtual machine

Search Connect Start Restart Stop Hibernate

Overview

Microsoft Azure

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

Home > Resource groups > 1-f547cece-playground-sandbox >

myCLIVM Virtual machine

Search Connect Start Restart Stop Hibernate

Overview

Lab 09a: Implement Web Apps

Task 1: Create and configure an Azure web app

The screenshot shows the 'Create Web App' wizard in the Microsoft Azure portal. Red annotations are present:

- Annotation 1:** A red bracket covers the 'App Services' link in the breadcrumb navigation.
- Annotation 2:** A red bracket covers the 'Create Web App' button.
- Annotation 3:** A large red curly brace groups the 'Subscription' and 'Resource Group' sections.
- Annotation 4:** A red circle highlights the 'Review + create' button at the bottom of the page.

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

Subscription * P9-Real Hands-On Labs
Resource Group * 1-454d0253-playground-sandbox
Create new

Instance Details
Name az104-rg9-liub0myr.azurewebsites.net
Try a unique default hostname (preview). [More about this update](#)
Publish * Code
Runtime stack * PHP 8.2
Operating System * Linux
Region * South Central US
Not finding your App Service Plan? Try a different region or select your App Service Environment.

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

Review + create < Previous Next : Database >

Спроба створення ресурсу була неуспішною, оскільки надана пісочниця має політику, яка не дозволяє задеплоїти Premium V3 P1V3.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_8faaf55... PLURALSIGHT CLOUD

Home > App Services >

Create Web App

deploymentName: Microsoft.Web-WebApp-Portal-94ec8baf-ba48
deploymentStatusCode: -1
details: {"code": "InvalidTemplateDeployment", "message": "The template deployment failed because of policy violation. Please see details for more information."}
{"code": "RequestDisallowedByPolicy", "target": "ASP-1454d0253playgroundsandbox-8760", "message": "Resource 'ASP-1454d0253playgroundsandbox-8760' v service\\\"\\\"providers/Microsoft.Management/managementGroups/84f1e4ea-8554-43e1-8709-f0b8589ea118/providers/Microsoft.Authorization/policyService\\\"\\\"providers/Microsoft.Management/managementGroups/84f1e4ea-8554-43e1-8709-f0b8589ea118/providers/Microsoft.Authorization/policyDefinitionDetails": {"evaluatedExpressions": [{"result": "True", "expressionKind": "Field", "expression": "type", "path": "type", "expressionValue": "Microsoft.Web/sites"}, {"result": "False", "expressionKind": "Field", "expression": "Microsoft.Web/serverfarms/sku.name", "path": "sku.name", "expressionValue": "P1V3"}, {"targetValue": ["F1", "B1", "B2", "B3", "S1", "Y1"]}], "policyAssignmentName": "allowed-web-app-service", "policyAssignmentEffect": "Deny", "policyAssignmentId": "/providers/Microsoft.Management/managementGroups/84f1e4ea-8554-43e1-8709-f0b8589ea118/providers/Microsoft.Authorization/policyDefinitions/allowed-web-app-service", "policyAssignmentScope": "/providers/Microsoft.Management/managementGroups/84f1e4ea-8554-43e1-8709-f0b8589ea118", "policyAssignmentParameters": {"listOfAllowedSKUs": ["F1", "B1", "B2", "B3", "S1", "Y1"]}], "policyAssignmentParameters": {"listOfAllowedSKUs": ["F1", "B1", "B2", "B3", "S1", "Y1"]}, "policyExemptionIds": []}, "message": "The template deployment failed because of policy violation. Please see details for more information."}
expected: true
location: southcentralus
notificationTimestamp: "2024-10-24T00:17:48.745Z"
resourceGroupName: 1-454d0253-playground-sandbox
stage: 6
subscriptionId: 28e1e42a-4438-4c30-9a5f-7d7b488fd883

Basics Database Deployment Networking Monitor + secure Tags Review + create

Summary

Web App by Microsoft

Premium V3 (P1V3) sku
Estimated price - 137.97 USD/Month

i Basic authentication for this app is currently disabled and may impact deployments. Click to learn more.

Details

Create < Previous Next > Download a template for automation

Errors

Summary Raw Error

```
Authorization/policyAssignments/allowed-web-app-service",  
50   "policyAssignmentName":  
51   "allowed-web-app-service",  
52   "policyAssignmentDisplayName":  
53   "allowed-web-app-service",  
54   "policyAssignmentScope": "/providers/  
55   Microsoft.Management/managementGroups/  
56   84f1e4ea-8554-43e1-8709-f0b8589ea118",  
57   "policyAssignmentParameters": {  
58     "listOfAllowedSKUs": [  
59       "F1",  
60       "B1",  
61       "B2",  
62       "B3",  
63       "S1",  
64       "Y1"  
65     ]  
66   },  
67   "policyExemptionIds": []  
68 },  
69   "message": "The template deployment failed because  
of policy violation. Please see details for more  
information."  
70 },  
71   "subscriptionId":  
72   "28e1e42a-4438-4c30-9a5f-7d7b488fd883",  
73   "resourceGroupName": "1-454d0253-playground-sandbox",  
74   "location": "southcentralus",  
75   "deploymentName": "Microsoft.  
Web-WebApp-Portal-94ec8baf-ba48",  
76   "details": {  
77     "code": "InvalidTemplateDeployment",  
78     "message": "The template deployment failed because  
of policy violation. Please see details for more
```

Give feedback

Tell us about your experience with the ARM Errors page

На жаль, інші дозволені SKU не підходять для виконання лабораторної роботи адже

- F1, B* — не мають deployment слотів
- Y1 — відсутній у Select App Service Pricing Plan
- S1 — не має autoscaling функції

Lab 09b - Implement Azure Container Instances

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

Microsoft Azure Search resources, services, and docs (G+/-) Copilot cloud_user_p_66ed0d35... PLURALSIGHT CLOUD

Home > Container instances > 1

Create container instance 2

Basics Networking Monitoring Advanced Tags Review + create

Azure Container Instances (ACI) allows you to quickly and easily run containers on Azure without managing servers or having to learn new tools. ACI offers per-second billing to minimize the cost of running containers on the cloud. [Learn more about Azure Container Instances](#)

Project details

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

Subscription * P9-Real Hands-On Labs ①

Resource group * 1-8f77d24a-playground-sandbox ① Create new

Container details

Container name * az104-c1 ①

Region * (US) East US ①

Availability zones (Preview) None ①

SKU Standard ①

Image source * Quickstart images ① Azure Container Registry Other registry

Run with Azure Spot discount ①
Spot containers are not available in the selected region. [Learn more](#)

Image * mcr.microsoft.com/azuredocs/aci-helloworld:latest (Linux) ①

Size * 1 vcpu, 1.5 GiB memory, 0 gpus ① Change size

Review + create < Previous Next : Networking > Give feedback



Home > Container instances >

Create container instance

Basics Networking Monitoring Advanced Tags

Review + create

Choose between three networking options for your container instance:

- **'Public'** will create a public IP address for your container instance.
- **'Private'** will allow you to choose a new or existing virtual network for your container instance.
- **'None'** will not create either a public IP or virtual network. You will still be able to access your container logs using the command line.

Networking type

Public Private None

DNS name label ⓘ

liub0myr

- ✓ This value is optional but if entered, must be between 5 and 63 characters long.
- ✓ Match found.
- ✓ The DNS name label itself or part of it matches a reserved word such as a trademark that cannot be used as or within the DNS name label.

DNS name label scope reuse * ⓘ

Tenant

Ports ⓘ

Ports Ports protocol

80

TCP



Review + create

< Previous

Next : Monitoring >

Give feedback

Task 2: Test and verify deployment of an Azure Container Instance

Welcome to Azure Container Instances!

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_66ed0d35... PLURALSIGHT CLOUD

Home > Microsoft.ContainerInstances-20241024034538 | Overview > az104-c1

az104-c1 | Containers

Container instances

Search Refresh Give feedback

Overview Activity log Access control (IAM) Tags Settings Containers 1

1 container and 0 init containers

Name	Image	State	Previous state	Start time	Restart count
az104-c1	mcr.microsoft.com/azuredocs/aci-h...	Running	-	2024-10-24T00:51:46.099Z	0

Events Properties Logs Connect

Logs

```
listening on port 80
::ffff:10.92.0.10 - - [24/Oct/2024:00:52:39 +0000] "GET / HTTP/1.1" 200 1663 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.11 - - [24/Oct/2024:00:52:40 +0000] "GET / HTTP/1.1" 200 1663 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.11 - - [24/Oct/2024:00:52:40 +0000] "GET /favicon.ico HTTP/1.1" 404 150 "http://liub0myr.hrdnb2e5hfcdhkx.eastus.azurecontainer.io/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.11 - - [24/Oct/2024:00:52:40 +0000] "GET / HTTP/1.1" 200 1663 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.11 - - [24/Oct/2024:00:52:40 +0000] "GET /favicon.ico HTTP/1.1" 404 150 "http://52.149.251.68/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.10 - - [24/Oct/2024:00:54:23 +0000] "GET / HTTP/1.1" 200 1663 "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.10 - - [24/Oct/2024:00:54:24 +0000] "GET /favicon.ico HTTP/1.1" 404 150 "http://liub0myr.hrdnb2e5hfcdhkx.eastus.azurecontainer.io/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.10 - - [24/Oct/2024:00:54:25 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.10 - - [24/Oct/2024:00:54:26 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
::ffff:10.92.0.10 - - [24/Oct/2024:00:54:27 +0000] "GET / HTTP/1.1" 304 - "-" "Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:131.0) Gecko/20100101 Firefox/131.0"
```

Lab 11: Implement Monitoring

Task 1: Use a template to provision an infrastructure

Аналогічно до [Lab 03. Task 2](#) я задеплоїв кастомний шаблон

The screenshot shows the Microsoft Azure 'Custom deployment' interface. At the top, there's a banner for 'Deployment Stacks'. Below it, tabs for 'Select a template', 'Basics', and 'Review + create' are visible, with 'Basics' being the active tab.

Template: A 'Customized template' is selected, containing 6 resources. Buttons for 'Edit template', 'Edit paramet...', and 'Visualize' are present.

Project details: The 'Subscription' dropdown is set to 'P9-Real Hands-On Labs'. The 'Resource group' dropdown is set to '1-8f77d24a-playground-sandbox', which is highlighted with a red border and has a red number '1' above it. A 'Create new' link is also visible.

Instance details: Configuration includes:

- Region: (US) East US
- Admin Username: localadmin
- Admin Password: (redacted)
- Vm Name Prefix: az104-vm
- Pip Name Prefix: az104-pip
- Nic Name Prefix: az104-nic
- Image Publisher: MicrosoftWindowsServer
- Image Offer: WindowsServer
- Image SKU: 2019-Datacenter

At the bottom, buttons for 'Previous', 'Next', and 'Review + create' are shown. The 'Review + create' button is circled with a red oval and has a red number '3' below it.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

cloud_user_p_66ed0d35... PLURALSIGHT CLOUD

Home > Monitor | Overview

1

Search

Overview

Activity log

Alerts

Metrics

Logs

Change Analysis

Service health

Workbooks

Investigator (preview)

2

Virtual Machines

Storage accounts

Containers

Networks

SQL (preview)

Azure Cosmos DB

Key Vaults

Azure Cache for Redis

Azure Data Explorer Clusters

Log Analytics workspaces

Azure Stack HCI

Service Bus (preview)

... Insights Hub

The Log Analytics agents, used by VM Insights, won't be supported as of August 31, 2024. Plan to migrate to VM Insights on Azure Monitor agent prior to this date.

Overview Tutorials

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](#)

Change Analysis
Investigate what changed to triage incidents.
[View](#)

Diagnostic Settings
Route monitoring metrics and logs to selected locations.
[View](#)

Home > Monitor

Monitor | Virtual Machines

 Search

Overview

Activity log

Alerts

Metrics

Logs

Change Analysis

Service health

Workbooks

Investigator (preview)

Insights

Applications

Virtual Machines

Storage accounts

Containers

Networks

SQL (preview)

Azure Cosmos DB

Key Vaults

Azure Cache for Redis

Azure Data Explorer Clusters

Log Analytics workspaces

Azure Stack HCI

Service Bus (preview)

Refresh Provide Feedback

Get started **Overview** Performance Map

Filter by name... Subscription : P9-Real Hands-On Labs Resource group : All resource groups

Monitored (0) Not monitored (1) Workspace configuration Other onboarding options

Name	Monitor Coverage
P9-Real Hands-On Labs	1 of 1
1-8f77d24a-playground-sandbox	1 of 1
az104-vm0	Not enabled Enable

1 2 3 4

Azure Monitor

Insights Onboarding

Get more visibility into the health and performance of your virtual machine

With an Azure virtual machine you get host CPU, disk and up/down state of your VMs out of the box. Enabling additional monitoring capabilities provides insights into the performance and dependencies for your virtual machines.

You will be billed based on the amount of data ingested and your data retention settings. It can take between 5-10 minutes to configure the virtual machine and the monitoring data to appear.



The map data set collected with Azure Monitor for VMs is intended to be infrastructure data about the resources being deployed and monitored. For details on data collected please [click here](#).

Enable

4

Having difficulties enabling Azure Monitors for VM? [Troubleshoot](#)

Have more questions?

- [Learn more about virtual machine monitoring](#)
- [What is VM Insights?](#)
- [Learn more about pricing](#)
- [Support Matrix](#)
- [FAQ](#)
- [Update Azure Agent](#)

Monitoring configuration

X

VM Insights now supports data collection using the Azure Monitor Agent and data collection rules.

Subscription *

P9-Real Hands-On Labs

Data collection rule ⓘ

(new) MSVMI-DefaultWorkspace-28e1e42a-4438-4c30-9a5f-7d7b488fd883-EUS

[Create New](#)

MSVMI-DefaultWorkspace-28e1e42a-4438-4c30-9a5f-7d7b488fd883-EUS

Guest performance

Enabled

Processes and dependencies (Map)

Disabled

Log Analytics workspace

DefaultWorkspace-28e1e42a-4438-4c30-9a5f-7d7b488fd883-EUS

i This will also enable System Assigned Managed Identity, in addition to existing User Assigned identities (if any).
Note: Unless specified in the request, the machine will default to using System Assigned Identity. [Learn More](#)

Currently, only resources in certain regions are supported. [Learn More](#)

Configure

Cancel

Після натискання на Configure фрейм без жодної помилки повертається на крок назад. Тоді я вирішив подивитись на відповідь сервера. З опису помилки можна дійти висновку, що воно пробує взаємодіяти з Resource group *DefaultResourceGroup-EUS*, яка, звичайно, недоступна для користувача-пісочниці.

Screenshot of Microsoft Azure Monitor Virtual Machines interface showing the 'Not monitored' section. A red arrow points from the error message in the browser's developer tools Network tab to the 'AuthorizationFailed' message in the response body.

Azure Monitor
Get more visibility into the health and performance of your virtual machine

With an Azure virtual machine you get host CPU, disk and up/down state of your VMs out of the box. Enabling additional monitoring capabilities provides insights into the performance and dependencies for your virtual machines.

You will be billed based on the amount of data ingested and your data retention settings. It can take between 5-10 minutes to configure the virtual machine and the monitoring data to appear.

Monitored (0) Not monitored (1) Worksp...

Name

- P9-Real Hands-On Labs
 - 1-8f77d24a-playground-sandbox
 - az104-vm0

Enable

The map data set collected with Azure Monitor for VMs is intended to be infrastructure data about the resources being deployed and monitored. For details on data collected please [click here](#).

Network Tab (Developer Tools)

Ст	Сп	Домен	Файл	Інци...	Ти	Пере...	Ро	Заголовки	Файли cookie	Запит	Відповідь	Розклад	Безпека	
200	PO!	...	batch?api-version=20	xhr	j...	2,02 кб	1,1	Властивості фільтра						Необроблене (raw)
403	GET	...	DefaultResourceGrou...	xhr	j...	1,29 кб	458	JSON						
403	GET	...	DefaultResourceGrou...	xhr	j...	1,29 кб	458		httpStatusCode: 403					
204	PO!	...	extensiontelemetry	xhr	pla	36,79...	0 Б		headers: Object { Pragma: "no-cache", "x-ms-failure-cause": "gateway", "x-ms-request-id": "a87c2f02-e71c-498c-8913-d23c4a740b43", ... }					
204	PO!	...	Telemetry	xhr	pla	55,69...	0 Б		content: Object { error: {} }					
204	PO!	...	metric	xhr	pla	11,19...	0 Б		error: Object { code: "AuthorizationFailed", message: "The client 'cloud_user_p_66ed0d35@realhandsonlabs.com' with object id '3fc462e9-461c-44a6-b05b-a9a848df3b52' does not have authorization to perform action 'Microsoft.Resources/subscriptions/resourcegroups/read' over scope '/subscriptions/28e1e42a-4438-4c30-9a5f-7d7b488fd883/resourcegroups/DefaultResourceGroup-EUS' or the scope is invalid. If access was recently granted, please refresh your credentials." }					
204	PO!	...	extensionclienttrace	xhr	pla	12,70...	0 Б		code: "AuthorizationFailed"					
204	PO!	...	Telemetry	xhr	pla	10,06...	0 Б		message: "The client 'cloud_user_p_66ed0d35@realhandsonlabs.com' with object id '3fc462e9-461c-44a6-b05b-a9a848df3b52' does not have authorization to perform action 'Microsoft.Resources/subscriptions/resourcegroups/read' over scope '/subscriptions/28e1e42a-4438-4c30-9a5f-7d7b488fd883/resourcegroups/DefaultResourceGroup-EUS' or the scope is invalid. If access was recently granted, please refresh your credentials."					

! AuthorizationFailed: The client 'cloud_user_p_66ed0d35@realhandsonlabs.com' with object id '3fc462e9-461c-44a6-b05b-a9a848df3b52' does not have authorization to perform action 'Microsoft.Resources/subscriptions/resourcegroups/read' over scope '/subscriptions/28e1e42a-4438-4c30-9a5f-7d7b488fd883/resourcegroups/DefaultResourceGroup-EUS' or the scope is invalid. If access was recently granted, please refresh your credentials.