

Practical Task 1: Install and Configure Azure CLI and PowerShell

1) Install Azure CLI and Azure PowerShell on your local machine

I have installed azured cli previously via UI installer.

```
C:\Users\Anatoly>az --version
azure-cli          2.68.0

core              2.68.0
telemetry         1.1.0

Dependencies:
msal              1.31.1
azure-mgmt-resource 23.1.1

Python location 'C:\Program Files\Microsoft SDKs\Azure\CLI2\python.exe'
Extensions directory 'C:\Users\Anatoly\.azure\cliextensions'

Python (Windows) 3.12.8 (tags/v3.12.8:2dc476b, Dec  3 2024, 19:30:04) [MSC v.1942 64 bit (AMD64)]

Legal docs and information: aka.ms/AzureCliLegal

Your CLI is up-to-date.
```

```
C:\Users\Anatoly>
PS D:\Azure\task5> $PSVersionTable.PSVersion
Major  Minor  Build  Revision
-----  -----  -----  -----
5      1       19041  5369

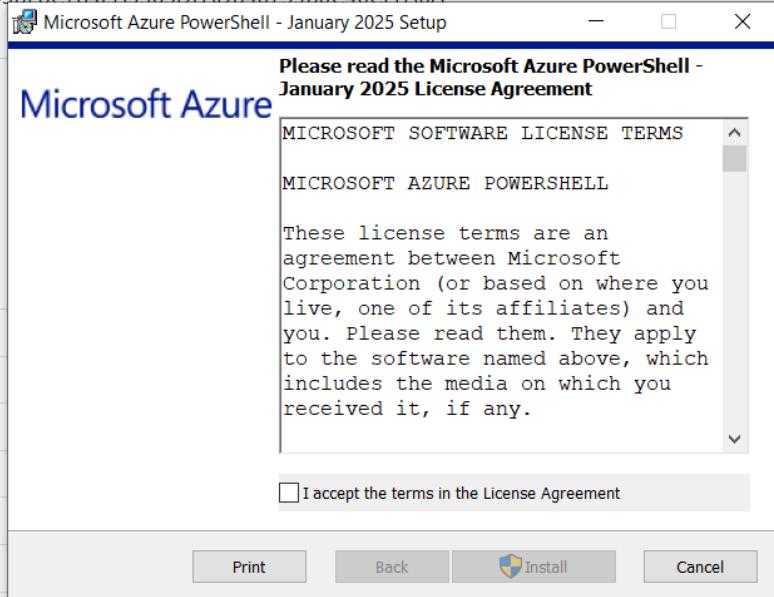
PS D:\Azure\task5> Get-ExecutionPolicy -List
Scope ExecutionPolicy
-----
MachinePolicy Undefined
UserPolicy     Undefined
Process        Undefined
CurrentUser    Undefined
LocalMachine   Unrestricted

PS D:\Azure\task5> Set-ExecutionPolicy -ExecutionPolicy RemoteSigned -Scope CurrentUser
Изменение политики выполнения
Политика выполнения защищает компьютер от неизвестных сценариев. Изменение политики выполнения может поставить под угрозу безопасность системы, как описано в разделе справки, вызываемом командой about_Execution_Policies и расположенным по адресу https://go.microsoft.com/fwlink/?LinkId=255170 . Вы хотите изменить политику выполнения?
{Y} да {N} нет для всех > A [A] Нет < N [L] Нет для всех < L [S] Присвоение = S [?] Справка (значением по умолчанию является "N"); Y
PS D:\Azure\task5>
```

release artifacts

.tar.gz

A3911B1F32BFB3BF8C7842A5565DFADRB40739B0C40CFFA0A



ebalinaroy

4.msi

last

5.msi

last

gz

last

last

last

I had problems to check version and use azure powershell

But then I updated powershell to 7.5.0

```
Administrator: C:\Program Files\PowerShell\7\pwsh.exe
PowerShell 7.5.0
PS C:\Windows\System32> Get-Module -ListAvailable -Name Az

    Directory: C:\Program Files (x86)\WindowsPowerShell\Modules

ModuleType Version      PreRelease Name
---- -- -- -- 
Script     13.1.0          Az

PS C:\Windows\System32>
```

And it started to work

Log in to your Azure account using both Azure CLI and PowerShell

```
PS C:\Users\Anatoly> az login --tenant be098e76-f2f0-41f0-8292-f151f67b6729
Select the account you want to log in with. For more information on login with Azure CLI, see https://go.microsoft.com/fwlink/?linkid=2271136
Retrieving subscriptions for the selection...
[Tenant and subscription selection]
No   Subscription name   Subscription ID           Tenant
--- -- -- -- 
[1] *  Azure for Students  3a612e70-8e22-4425-b3ea-29f6acf32428  be098e76-f2f0-41f0-8292-f151f67b6729

The default is marked with an *; the default tenant is 'be098e76-f2f0-41f0-8292-f151f67b6729' and subscription is 'Azure for Students' (3a612e70-8e22-4425-b3ea-29f6acf32428).

Select a subscription and tenant (Type a number or Enter for no changes):
Tenant: be098e76-f2f0-41f0-8292-f151f67b6729
Subscription: Azure for Students (3a612e70-8e22-4425-b3ea-29f6acf32428)

[Announcements]
With the new Azure CLI login experience, you can select the subscription you want to use more easily. Learn more about it and its configuration at https://go.microsoft.com/fwlink/?linkid=2271236

If you encounter any problem, please open an issue at https://aka.ms/azclibug

[Warning] The login output has been updated. Please be aware that it no longer displays the full list of available subscriptions by default.

PS C:\Users\Anatoly>
```

```

powershell / (x86)
PowerShell 7.5.0
PS C:\Users\Anatoly> Import-Module AZ -verbose
VERBOSE: Loading module from path 'C:\Program Files (x86)\W...

```

VERBOSE: Exporting function: Get-ManagedEnvironment .

PS C:\Users\Anatoly> Connect-AzAccount

Please select the account you want to login with.

Retrieving subscriptions for the selection...

WARNING: Unable to acquire token for tenant 'be098e76-f2f0-41f0-8292-f151f67b6729' with error 'Authentication failed against tenant be098e76-f2f0-41f0-8292-f151f67b6729. User interaction is due to the conditional access policy settings such as multi-factor authentication (MFA). If you need to access subscriptions in that tenant, please rerun 'Connect-AzAccount' with additional parameters.'.

WARNING: Unable to acquire token for tenant 'be098e76-f2f0-41f0-8292-f151f67b6729' with error 'Authentication failed against tenant be098e76-f2f0-41f0-8292-f151f67b6729. User interaction is due to the conditional access policy settings such as multi-factor authentication (MFA). If you need to access subscriptions in that tenant, please rerun 'Connect-AzAccount' with additional parameters.'

[Announcements]

with the new Azure PowerShell login experience, you can select the subscription you want to use more easily. Learn more about it and its configuration at <https://go.microsoft.com/fwlink/?linkid=848928>

If you encounter any problem, please open an issue at: <https://aka.ms/azpsissue>

Subscription name Tenant

PS C:\Users\Anatoly>

```

Connect-AzAccount: Missing an argument for parameter 'Tenant'. Specify a parameter of type 'System.String' and
PS C:\Users\Anatoly> Connect-AzAccount -Tenant be098e76-f2f0-41f0-8292-f151f67b6729
Please select the account you want to login with.

```

Retrieving subscriptions for the selection...

```

Subscription name Tenant
-----
Azure for Students be098e76-f2f0-41f0-8292-f151f67b6729

```

PS C:\Users\Anatoly>

List all available subscriptions in your Azure account using both tools.

```

az>> account list --query "[].{name:name,id:id}"
[
  {
    "id": "3a612e70-8e22-4425-b3ea-29f6acf32428",
    "name": "Azure for Students"
  }
]
az>>

```

```

az>> account list --query "[].{name:name,id:id}" -o tsv
Azure for Students      3a612e70-8e22-4425-b3ea-29f6acf32428
az>>

```

```

PS C:\Users\Anatoly> Get-AzContext

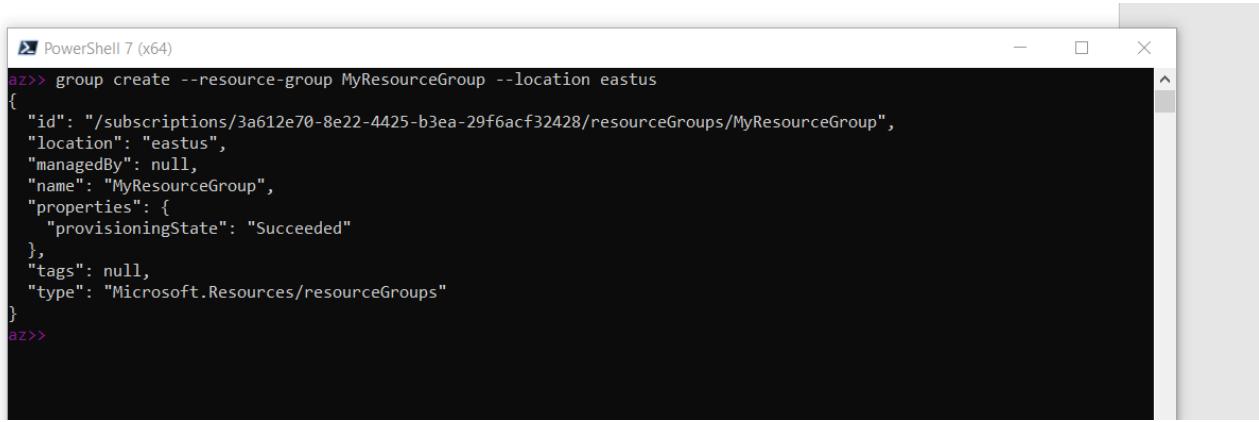
Tenant: be098e76-f2f0-41f0-8292-f151f67b6729

SubscriptionName   SubscriptionId          Account           Environment
-----            -----              goldyakub@kpi.ua  AzureCloud
Azure for Students 3a612e70-8e22-4425-b3ea-29f6acf32428

```

Practical Task 2: Create and Manage Resource Groups

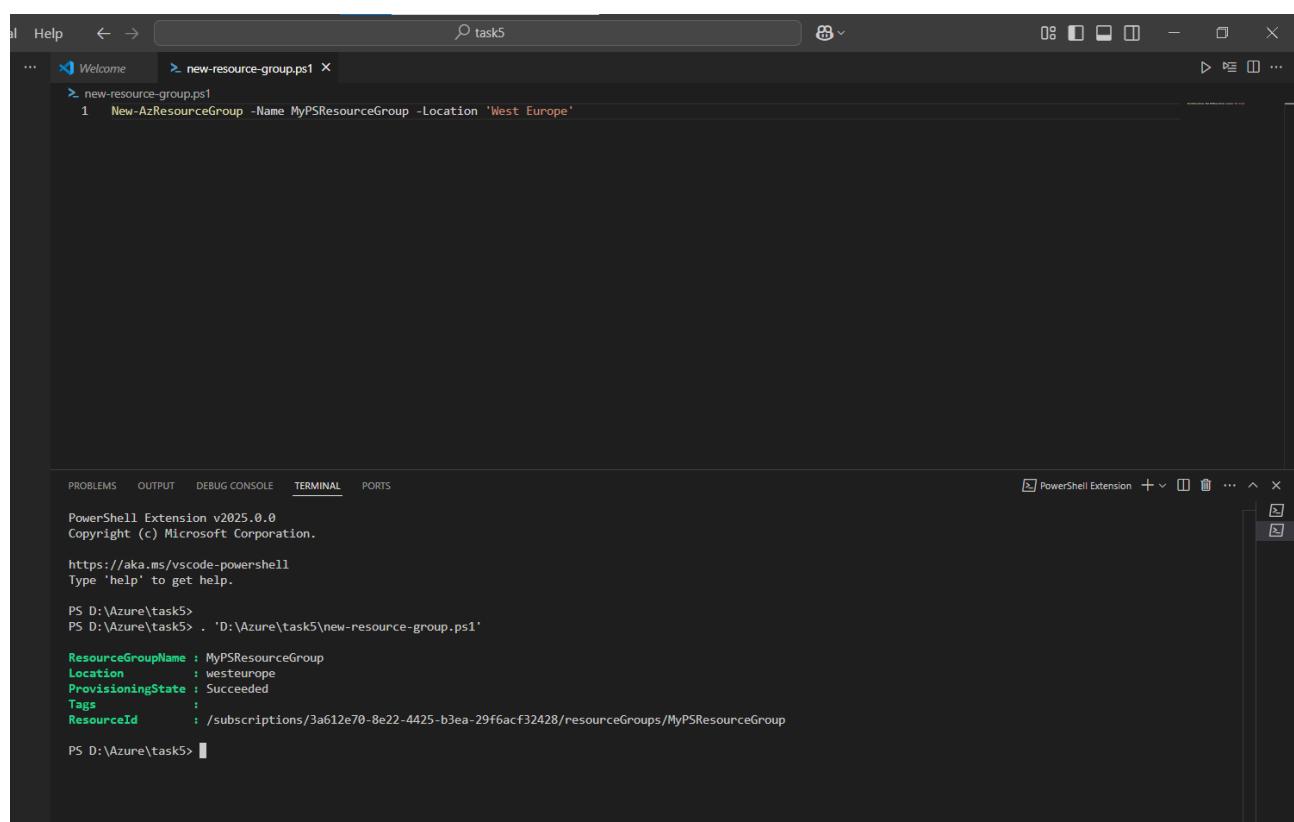
Use Azure CLI to create a new resource group named MyResourceGroup in the East US region



```
PowerShell 7 (x64)
az>> group create --resource-group MyResourceGroup --location eastus
{
  "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/MyResourceGroup",
  "location": "eastus",
  "managedBy": null,
  "name": "MyResourceGroup",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
az>>
```

Checked on portal correctness

Use Azure PowerShell to create a new resource group named MyPSResourceGroup in the West Europe region.



```
al Help ← → task5
... ➜ Welcome ➜ new-resource-group.ps1 ✘
➤ new-resource-group.ps1
1 New-AzResourceGroup -Name MyPSResourceGroup -Location 'West Europe'

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PowerShell Extension v2025.0.0
Copyright (c) Microsoft Corporation.

https://aka.ms/vscode-powershell
Type 'help' to get help.

PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\new-resource-group.ps1'

ResourceGroupName : MyPSResourceGroup
Location          : westeurope
ProvisioningState : Succeeded
Tags              :
ResourceId        : /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/MyPSResourceGroup

PS D:\Azure\task5>
```

List all resource groups in your subscription using both CLI and PowerShell.

The screenshot shows the VS Code interface with two tabs open: 'list-all-resource-groups.ps1' and 'list-all-resource-groups.ps1'. The terminal window displays the output of the PowerShell command 'Get-AzResourceGroup | Format-Table'. The output lists three resource groups: 'MyPSResourceGroup', 'Sample', and 'MyResourceGroup', along with their details like Location and ProvisioningState. Below the terminal, the PowerShell extension's interface is visible, showing the same command and its results.

```
ResourceId : /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample
ResourceGroupName : MyResourceGroup
Location : eastus
ProvisioningState : Succeeded
Tags :
ResourceId : /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/MyResourceGroup
PS D:\Azure\task5> PS D:\Azure\task5> . 'D:\Azure\task5\list-all-resource-groups.ps1'
MyPSResourceGroup
Sample
MyResourceGroup
PS D:\Azure\task5> PS D:\Azure\task5> . 'D:\Azure\task5\list-all-resource-groups.ps1'
ResourceGroupName Location ProvisioningState Tags TagsTable ResourceId ManagedBy
-----      -----      -----      -----      -----      -----
MyPSResourceGroup westeurope Succeeded {} /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/MyPSResourceGroup
Sample          eastus     Succeeded   {} /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample
MyResourceGroup eastus     Succeeded   {} /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/MyResourceGroup
```

Delete the resource group MyResourceGroup using Azure CLI.

The screenshot shows a terminal window with the command 'az group delete --name MyResourceGroup' entered. A confirmation prompt 'Are you sure you want to perform this operation? (y/n):' is displayed, followed by the response 'y'.

```
az>> group delete --name MyResourceGroup
Are you sure you want to perform this operation? (y/n): y
az>>
```

The screenshot shows the PowerShell extension's interface with the command 'Remove-AzResourceGroup -Name MyPSResourceGroup' entered. A confirmation dialog box asks 'Are you sure you want to remove resource group 'MyPSResourceGroup'? [Y] Yes [N] No [S] Suspend [?] Help (default is "Y")'. The user selects 'Y'.

```
az>> Remove-AzResourceGroup -Name MyPSResourceGroup
Confirm
Are you sure you want to remove resource group 'MyPSResourceGroup'
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): Y
True
PS D:\Azure\task5>
```

The screenshot shows the Microsoft Azure portal's 'Resource groups' page. It displays a single resource group named 'Sample' under the 'Subscription equals all' filter. The group is located in 'East US'.

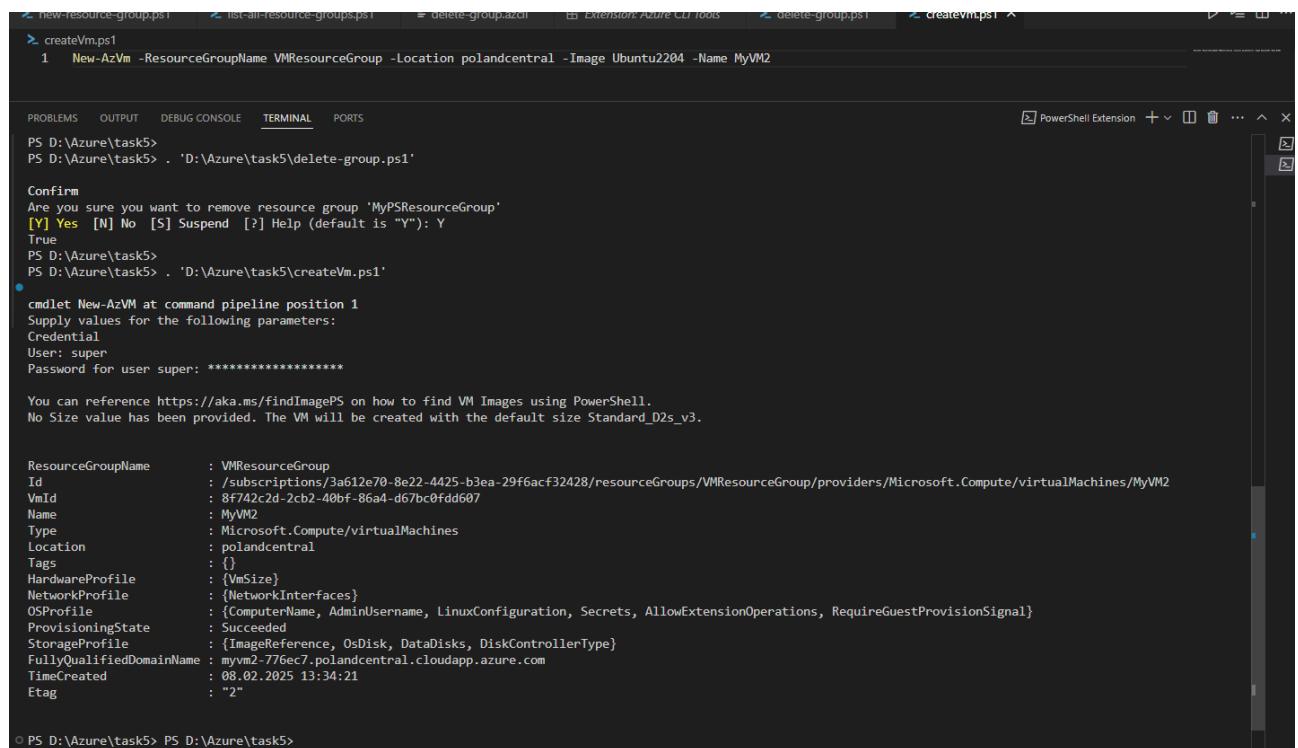
Name	Subscription	Location
Sample	Azure for Students	East US

Practical Task 3: Deploy and Manage Virtual Machines using Azure CLI and PowerShell

Use Azure CLI to create a new virtual machine named MyVM1 in a new resource group VMResourceGroup.

```
az>> az group create --name VMResourceGroup --location polandcentral
{
  "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/VMResourceGroup",
  "location": "polandcentral",
  "managedBy": null,
  "name": "VMResourceGroup",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
az>> az vm create --name MyVm1 --resource-group VMResourceGroup --location polandcentral
Admin Password:
Confirm Admin Password:
Passwords do not match.
Admin Password:
Confirm Admin Password:
Passwords do not match.
Admin Password:
Confirm Admin Password:
{
  "fqdns": "",
  "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/VMResourceGroup/providers/Microsoft.Compute/virtualMachines/MyVm1",
  "location": "polandcentral",
  "macAddress": "██████████",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "74.248.136.246",
  "resourceGroup": "VMResourceGroup",
  "zones": ""
}
az>>
```

Use Azure PowerShell to create another virtual machine named MyVM2 in the same resource group.



The screenshot shows the Azure PowerShell interface with several tabs open at the top: 'new-resource-group.ps1', 'list-all-resource-groups.ps1', 'delete-group.ps1', 'Extension/Azure CLI tools', 'delete-group.ps1', and 'createVm.ps1'. The 'TERMINAL' tab is active, displaying the command history and output of a PowerShell session. The session starts with creating a new resource group 'VMResourceGroup' and then creating a new VM named 'MyVM2' in that group. It prompts for a password and shows the VM's properties. Finally, it lists all VMs in the group.

```
PS D:\Azure\task5> . 'D:\Azure\task5\createVm.ps1'

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS PowerShell Extension + ×

PS D:\Azure\task5> New-AzVm -ResourceGroupName VMResourceGroup -Location polandcentral -Image Ubuntu2204 -Name MyVM2

Confirm
Are you sure you want to remove resource group 'MyPSResourceGroup'
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): Y
True
PS D:\Azure\task5> PS D:\Azure\task5> . 'D:\Azure\task5\delete-group.ps1'

cmdlet New-AzVM at command pipeline position 1
Supply values for the following parameters:
Credential
User: super
Password for user super: *****
You can reference https://aka.ms/findImagePS on how to find VM Images using PowerShell.
No Size value has been provided. The VM will be created with the default size Standard_D2s_v3.

ResourceGroupName : VMResourceGroup
Id : /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/VMResourceGroup/providers/Microsoft.Compute/virtualMachines/MyVM2
VmId : 8f742c2d-2cb2-40bf-86a4-d67bc0fd607
Name : MyVM2
Type : Microsoft.Compute/virtualMachines
Location : polandcentral
Tags : {}
HardwareProfile : {VmSize}
NetworkProfile : {NetworkInterfaces}
OSProfile : {ComputerName, AdminUsername, LinuxConfiguration, Secrets, AllowExtensionOperations, RequireGuestProvisionSignal}
ProvisioningState : Succeeded
StorageProfile : {ImageReference, OsDisk, DataDisks, DiskControllerType}
FullyQualifiedDomainName : myvm2-776ec7.polandcentral.cloudapp.azure.com
TimeCreated : 08.02.2025 13:34:21
Etag : "2"

PS D:\Azure\task5> PS D:\Azure\task5>
```

Resources			Recommendations (1)
<input type="text"/> Filter for any field... Type equals all Location equals all Add filter			No grouping List view
Showing 1 to 11 of 11 records. <input type="checkbox"/> Show hidden types			
<input type="checkbox"/>	Name ↑↓	Type ↑↓	Location ↑↓
<input type="checkbox"/>	MyVm1	Virtual machine	Poland Central
<input type="checkbox"/>	MyVm1_OsDisk_1_7b243f04158942c68484dc876fe939a7	Disk	Poland Central
<input type="checkbox"/>	MyVm1NSG	Network security group	Poland Central
<input type="checkbox"/>	MyVm1PublicIP	Public IP address	Poland Central
<input type="checkbox"/>	MyVm1VMnic	Network Interface	Poland Central
<input type="checkbox"/>	MyVm1VNET	Virtual network	Poland Central
<input type="checkbox"/>	MyVM2	Virtual machine	Poland Central
<input type="checkbox"/>	MyVM2	Network Interface	Poland Central
<input type="checkbox"/>	MyVM2	Network security group	Poland Central
<input type="checkbox"/>	MyVM2	Virtual network	Poland Central
<input type="checkbox"/>	MyVM2_OsDisk_1_c002f42b3f90433cb1891f6066d253d	Disk	Poland Central

```

az vm list --o table
Name  ResourceGroup  Location   Zones
MyVm1  VMRESOURCEREGROUP  polandcentral
MyVm2  VMRESOURCEREGROUP  polandcentral

az vm list -o tsv
Name  None  None  None  None  None  "2"  None  None  None  None  MyVm1  None  None  /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/VMRESOURCEREGROUP/providers/Microsoft.Compute/virtualMachines/MyVm1
025-02-08T13:23:46.274168+00:00 Microsoft.Compute/virtualMachines  None  None  c88631b1-b77b-4150-bd8b-cc9230b9ad3  None  None  /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/VMRESOURCEREGROUP/providers/Microsoft.Compute/virtualMachines/MyVm1
025-02-08T13:23:46.274168+00:00 Microsoft.Compute/virtualMachines/MyVm2  None  None  None  None  None  "2"  None  None  None  None  MyVm2  None  None  /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/VMRESOURCEREGROUP/providers/Microsoft.Compute/virtualMachines/MyVm2
025-02-08T13:34:21.268066+00:00 Microsoft.Compute/virtualMachines  None  None  8f742c2d-2cb2-40bf-86a4-d7bc0fd607  None

```

```
az>> vm stop --name MyVm1 -g VMResourceGroup
About to power off the specified VM...
It will continue to be billed. To deallocate a VM, run: az vm deallocate.
az>>
az>>
```

```

source-group.ps1      list-all-resource-groups.ps1    delete-group.azcli    Extension: Azure CLI Tools    delete-group.ps1    createVm.ps1    get-vm.ps1    stop-vm.ps1    ...
> stop-vm.ps1
1 Stop-AzVm -ResourceGroupName VMResourceGroup -Name MyVM2

PROBLEMS   OUTPUT   DEBUG CONSOLE   TERMINAL   PORTS
PS D:\Azure\task5> . 'D:\Azure\task5\get-vm.ps1'

ResourceGroupName Name Location VmSize OsType NIC ProvisioningState Zone
-----  -----  -----  -----  -----  -----  -----
VMRESOURCEGROUP MyVm1 polandcentral Standard_DS1_v2 Windows MyVm1VMNic Succeeded
VMRESOURCEGROUP MyVM2 polandcentral Standard_D2s_v3 Linux MyVM2 Succeeded

PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\delete-vm.ps1'

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"): N
PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\stop-vm.ps1'

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 : dee44b50-a6f1-4362-ba08-2420156bb507
Status       : Succeeded
StartTime    : 08.02.2025 15:51:13
EndTime     : 08.02.2025 15:51:58
Error        :

PS D:\Azure\task5> []

```

Microsoft Azure

Home > Resource groups > VMResourceGroup >

MyVm1 Virtual machine

Search ...

Help me copy this VM in any region.

Connect Start Stop Hibernate Capture Refresh Open in mobile Feedback CLI / PS

Essentials

Resource group (move)	: VMRESOURCEGROUP
Status	: Stopped
Location	: Poland Central
Subscription (move)	: Azure for Students
Subscription ID	: 3a612e70-8e22-4425-b3ea-29f6acf32428
Operating system	: Windows
Size	: Standard DS1 v2 (1 vcpu, 3.5 GB memory)
Public IP address	: 74.248.136.246
Virtual network/subnet	: MyVm1VNET/MyVm1Subnet
DNS name	: Not configured
Health state	: -
Time created	: 2/8/2025, 1:23 PM UTC

JSON View

Microsoft Azure

Home > Resource groups > VMResourceGroup >

MyVM2 Virtual machine

Search ...

Help me copy this VM in any region.

Connect Start Restart Stop Hibernate Capture Refresh Open in mobile Feedback CLI / PS

Essentials

Resource group (move)	: VMRESOURCEGROUP
Status	: Stopped (deallocated)
Location	: Poland Central
Subscription (move)	: Azure for Students
Subscription ID	: 3a612e70-8e22-4425-b3ea-29f6acf32428
Operating system	: Linux
Size	: Standard D2s v3 (2 vcpus, 8 GiB memory)
Public IP address	: -
Virtual network/subnet	: MyVM2/MyVM2
DNS name	: -
Health state	: -
Time created	: 2/8/2025, 1:34 PM UTC

JSON View

Delete the virtual machines using the respective tools.

```
az>> vm delete --name MyVm1 -g VMResourceGroup  
Are you sure you want to perform this operation? (y/n): y  
az>>
```

The terminal window shows the execution of several PowerShell scripts:

- `list-all-resource-groups.ps1`: Lists all resource groups.
- `delete-group.ps1`: Deletes a resource group.
- `Extension: Azure CLI Tools`: An extension for the terminal.
- `delete-group.ps1`: Deletes a resource group.
- `createVm.ps1`: Creates a new VM.
- `get-vm.ps1`: Gets information about a VM.
- `stop-vm.ps1`: Stops a VM.
- `delete-vm.ps1`: Deletes a VM.

The output of the `delete-vm.ps1` command is shown in detail:

```
PS D:\Azure\task5> Remove-AzVM -Name MyVm2 -ResourceGroupName VMResourceGroup  
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"): N  
PS D:\Azure\task5>  
PS D:\Azure\task5> . 'D:\Azure\task5\stop-vm.ps1'  
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 : dee44b50-aef1-4362-ba08-2420156bb507  
Status : Succeeded  
StartTime : 08.02.2025 15:51:13  
EndTime : 08.02.2025 15:51:58  
Error :  
PS D:\Azure\task5>  
PS D:\Azure\task5> . 'D:\Azure\task5\delete-vm.ps1'  
Virtual machine removal operation  
This cmdlet will remove the specified virtual machine. Do you want to continue?  
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): Y  
OperationId : 1e442a4d-7894-4c0a-bbff-6bdbfd853d65  
Status : Succeeded  
StartTime : 08.02.2025 16:03:48  
EndTime : 08.02.2025 16:04:03  
Error :  
PS D:\Azure\task5>
```

The Azure portal shows the details of the `VMResourceGroup` resource group:

- Overview**: Shows the subscription (`Azure for Students`), subscription ID (`3a612e70-8e22-4425-b3ea-29f6acf32428`), location (`Poland Central`), and tags (`Add tags`).
- Resources**: Lists the resources associated with the group, including:
 - `MyVm1_OsDisk_1_7b243f04158942c68484dc87fe939a7`: Disk, Type: Disk, Location: Poland Central
 - `MyVm1NSG`: Network security group, Type: Network security group, Location: Poland Central
 - `MyVm1PublicIP`: Public IP address, Type: Public IP address, Location: Poland Central
 - `MyVm1VNET`: Network interface, Type: Network Interface, Location: Poland Central
 - `MyVm2`: Virtual network, Type: Virtual network, Location: Poland Central
 - `MyVM2`: Network security group, Type: Network security group, Location: Poland Central
 - `MyVM2`: Virtual network, Type: Virtual network, Location: Poland Central
 - `MyVm2_OsDisk_1_c002f42b3f90433cb1891f6066d25c3d`: Disk, Type: Disk, Location: Poland Central

Vms deleted but I will delete resource group to delete associated resources too.

```
az>> group delete --name VMResourceGroup
Are you sure you want to perform this operation? (y/n): y
az>>
```

Practical Task 4: Manage Storage Accounts using Azure CLI and PowerShell

Use Azure CLI to create a new storage account named mystoragecli in the East US region (Geo-redundant)

```
[]
az>> az storage account create --name mystoragecliakubshyn --location eastus --resource-group Sample
{
  "accessTier": "Hot",
  "accountMigrationInProgress": null,
  "allowBlobPublicAccess": false,
  "allowCrossTenantReplication": false,
  "allowSharedKeyAccess": null,
  "allowedCopyScope": null,
  "azureFilesIdentityBasedAuthentication": null,
  "blobRestoreStatus": null,
  "creationTime": "2025-02-08T19:14:02.997136+00:00",
  "customDomain": null,
  "defaultToOAuthAuthentication": null,
  "dnsEndpointType": null,
  "enableExtendedGroups": null,
  "enableHttpsTrafficOnly": true,
  "enableNfsV3": null,
  "encryption": {
    "encryptionIdentity": null,
    "keySource": "Microsoft.Storage",
    "keyVaultProperties": null,
    "keyType": "Storage"
  }
}
```

Use Azure PowerShell to create a new storage account named mystorageps in the West Europe region

The screenshot shows the Azure PowerShell interface with a terminal window. The command `New-AzStorageAccount -Name mystoragepsyakubshyn -Location 'West Europe' -ResourceGroupName Sample -SkuName Standard_GZRS` is being run. A tooltip appears over the command, stating: "cmdlet New-AzStorageAccount at command pipeline position 1 Supply values for the following parameters: (Type !? for Help.) SkuName: PS D:\Azure\task5> PS D:\Azure\task5> . 'D:\Azure\task5\create-storage-account.ps1' New-AzStorageAccount: D:\Azure\task5\create-storage-account.ps1:1:1 Line | 1 | New-AzStorageAccount -Name mystorageps -Location 'West Europe' -Resou ... | | The storage account named mystorageps is already taken. (Parameter 'Name')". Below the command, a table lists existing storage accounts:

StorageAccountName	ResourceGroupName	PrimaryLocation	SkuName	Kind	AccessTier	CreationTime	ProvisioningState	EnableHttpsTrafficOnly	LargeFileShares
mystoragepsyakubshyn	Sample	westeurope	Standard_GZRS	StorageV2	Hot	08.02.2025 19:27:42	Succeeded	True	

List all storage accounts in the subscription using both CLI and PowerShell.

```
az>> az storage account list --query "[].name"
[
  "mystoragecliakubshyn",
  "mystoragepsyakubshyn"
]
az>>
```

StorageAccountName	ResourceGroupName	PrimaryLocation	SkuName	Kind	AccessTier	CreationTime	ProvisioningState	EnableHttpsTrafficOnly	LargeFileShares
mystoragecliyakubshyn	Sample	eastus	Standard_RAGRS	StorageV2	Hot	08.02.2025 19:14:02	Succeeded	True	
mystoragepsyakubshyn	Sample	westeurope	Standard_GZRS	StorageV2	Hot	08.02.2025 19:27:42	Succeeded	True	

Retrieve the connection string for the mystoragecli storage account using Azure CLI.

```
az storage account show-connection-string --name mystoragecliyakubshyn
{
  "connectionString": "DefaultEndpointsProtocol=https;EndpointSuffix=core.windows.net;AccountName=mystoragecliyakubshyn;AccountKey=0QOb7EQ5jF5PLYHfubUBaINtgrEPH/iI8PYTQNSNgna+j4gQa+UK0hajUcy7F/tMbxOsJCM3XkYw+AS
tAXJ4Zg==;BlobEndpoint=https://mystoragecliyakubshyn.blob.core.windows.net;;FileEndpoint=https://mystoragecliyakubshyn.file.core.windows.net;;QueueEndpoint=https://mystoragecliyakubshyn.queue.core.windows.net
;;TableEndpoint=https://mystoragecliyakubshyn.table.core.windows.net/"
}
az>>
```

Retrieve the connection string for the mystorageps storage account using Azure PowerShell.

```
group.ps1 > createVm.ps1 > get-vm.ps1 > stop-vm.ps1 > delete-vm.ps1 > create-storage-account.ps1 > list-storage-account.ps1 > Retrieve-connection-string.ps1 > ...
```

```
PS D:\Azure\task5> .\Retrieve-connection-string.ps1 Sample mystoragepsyakubshyn
BlobEndpoint=https://mystoragepsyakubshyn.blob.core.windows.net;;QueueEndpoint=https://mystoragepsyakubshyn.queue.core.windows.net;;TableEndpoint=https://mystoragepsyakubshyn.table.core.windows.net;;FileEndpoint=https://mystoragepsyakubshyn.file.core.windows.net;;AccountName=mystoragepsyakubshyn;AccountKey=6sjcvN0dokoGeL+Xx82rw7Nbza
pSbiHjobjnjqN0mX/5KZ3Z54yvKxSo36Yx/JRHrSBdg1pbT0+AStlUK6CJQ==
```

```
az>> az storage account delete --name mystoragecliyakubshyn
Are you sure you want to perform this operation? (y/n): y
az>>
```

Delete both storage accounts using the respective tools

```
delete-storage-account.ps1
1 Remove-AzStorageAccount -Name "mystoragepsyakubyshyn" -ResourceGroupName Sample -Force
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS D:\Azure\task5> ./Retrieve-connection-string.ps1 Sample mystoragepsyakubyshyn
BlobEndpoint=https://mystoragepsyakubyshyn.blob.core.windows.net;QueueEndpoint=https://mystoragepsyakubyshyn.queue.core.
ubshyn.table.core.windows.net;FileEndpoint=https://mystoragepsyakubyshyn.file.core.windows.net;AccountName=mystorageps
Sb1NjobejnqcNDmX/5KZ3ZS4yvKxSo36Yx/JRHrSBdg1pbT0+AStUK6CJQ==
PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\delete-storage-account.ps1'

cmdlet Remove-AzStorageAccount at command pipeline position 1
Supply values for the following parameters:
(Type !? for Help.)
ResourceGroupName: PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\delete-storage-account.ps1'

Confirm
Remove Storage Account 'mystoragepsyakubyshyn' and all content in it
[Y] Yes [N] No [S] Suspend [?] Help (default is "Y"): PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\delete-storage-account.ps1'
```

```
az>> az storage account list --query "[].name"
[]
az>>
```

Practical Task 5: Assign Role-Based Access Control (RBAC) Roles

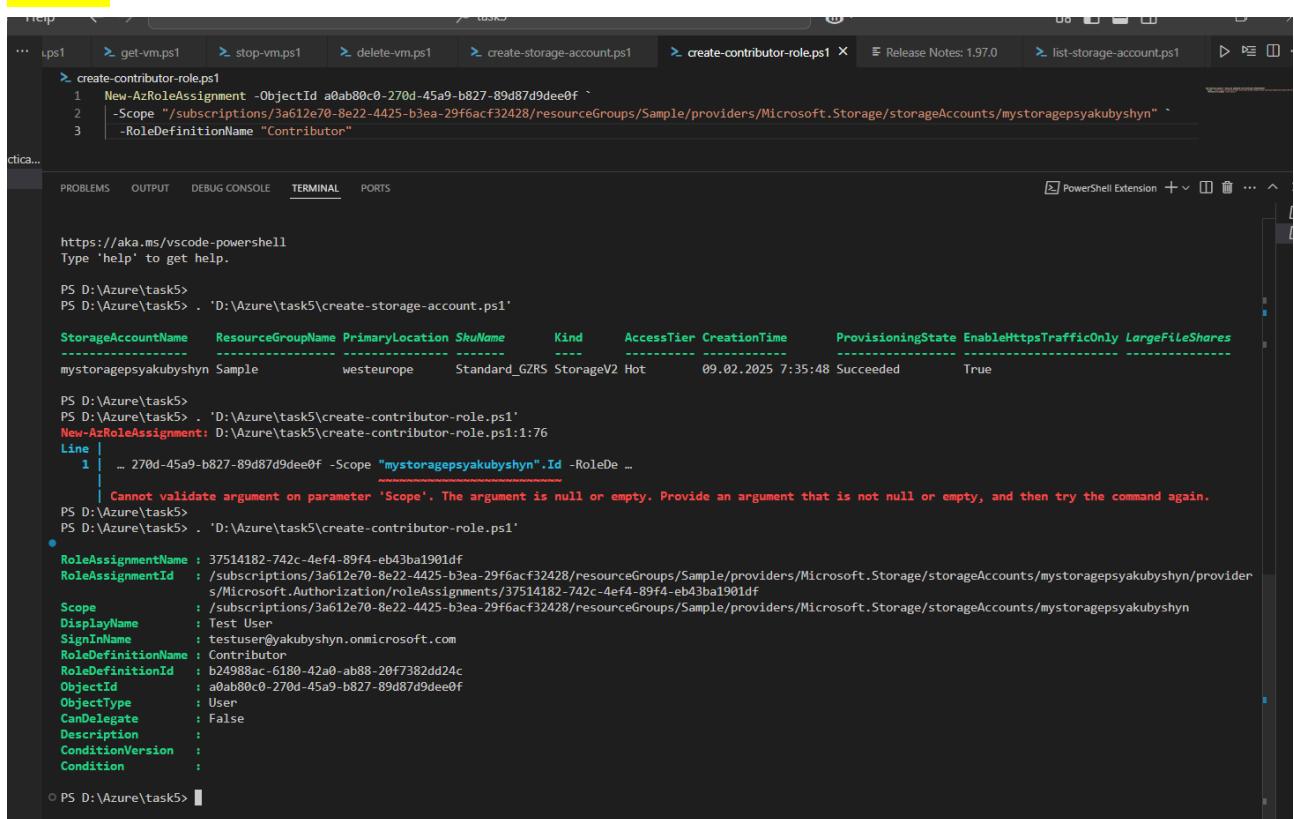
Create a new Azure Active Directory user named testuser@example.com using Azure CLI.

```
az>> az user create --display-name "Test User" --user-principal-name testuser@yakubshyn.onmicrosoft.com --password "pasYErme.77we)88we" --force-change-password-next-sign-in true
{
  "@odata.context": "https://graph.microsoft.com/v1.0/$metadata#users/$entity",
  "businessPhones": [],
  "displayName": "Test User",
  "givenName": null,
  "id": "a0ab80c0-270d-45a9-b827-89d87d9dee0f",
  "jobTitle": null,
  "mail": null,
  "mobilePhone": null,
  "officeLocation": null,
  "preferredLanguage": null,
  "surname": null,
  "userPrincipalName": "testuser@yakubshyn.onmicrosoft.com"
}
az>>
```

Assign the Reader role to testuser@example.com for a specific resource group using Azure CLI.

```
az>> role assignment create --assignee testuser@yakubshyn.onmicrosoft.com --role "Reader" --scope
   /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample
{
  "condition": null,
  "conditionVersion": null,
  "createdBy": null,
  "createdOn": "2025-02-09T07:32:35.182Z",
  "delegatedManagedIdentityResourceId": null,
  "description": null,
  "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Authorization/roleAssignments/817f001b-fe23-4369-9f1a-bb5b57c26ec2",
  "name": "817f001b-fe23-4369-9f1a-bb5b57c26ec2",
  "principalId": "a0ab80c0-270d-45a9-b827-89d87d9dee0f",
  "principalType": "User",
  "resourceGroup": "Sample",
  "roleDefinitionId": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/providers/Microsoft.Authorization/roleDefinitions/acdd72a7-3385-48ef-bd42-f606fba81ae7",
  "scope": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample",
  "type": "Microsoft.Authorization/roleAssignments",
  "updatedBy": "4e615916-b648-4451-a57a-77a0d0cc3d3d",
  "updatedOn": "2025-02-09T07:32:37.413905+00:00"
}
az>>
```

Use Azure PowerShell to assign the Contributor role to testuser@example.com for a specific storage account.



```
task>
... ips1 > get-vm.ps1 > stop-vm.ps1 > delete-vm.ps1 > create-storage-account.ps1 > create-contributor-role.ps1 > Release Notes: 1.97.0 > list-storage-account.ps1 > PowerShell Extension + ...
```

The screenshot shows the VS Code terminal with several PowerShell scripts listed in the tabs. The current tab is 'create-contributor-role.ps1'. The command being run is:

```
New-AzRoleAssignment -ObjectId a0ab80c0-270d-45a9-b827-89d87d9dee0f -Scope "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystoragepsiyakubshyn" -RoleDefinitionName "Contributor"
```

Below the command, the output shows the creation of a storage account and a role assignment error:

```
PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\create-storage-account.ps1'
StorageAccountName ResourceGroupName PrimaryLocation SkuName Kind AccessTier CreationTime ProvisioningState EnableHttpsTrafficOnly LargeFileShares
mystoragepsiyakubshyn Sample westeurope Standard_GZRS StorageV2 Hot 09.02.2025 7:35:48 Succeeded True

PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\create-contributor-role.ps1'
New-AzRoleAssignment: D:\Azure\task5\create-contributor-role.ps1:1:76
Line | 1 | ... 270d-45a9-b827-89d87d9dee0f -Scope "mystoragepsiyakubshyn".Id -RoleDe ...
|     |
|     | Cannot validate argument on parameter 'Scope'. The argument is null or empty. Provide an argument that is not null or empty, and then try the command again.
PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\create-contributor-role.ps1'
```

The error message indicates that the 'Scope' parameter is null or empty, which is required for the role assignment command.

Verify that the user has been assigned the correct roles using both CLI and PowerShell.

```
>>> az role assignment list --assignee testuser@yakubshyn.onmicrosoft.com --all --output table
Principal          Role      Scope
testuser@yakubshyn.onmicrosoft.com Reader    /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample
testuser@yakubshyn.onmicrosoft.com Contributor /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystorageps/yakubshyn
>>>
```

Remove the user's role assignments using the respective tools.

```
>>> az role assignment delete --assignee testuser@yakubshyn.onmicrosoft.com --role Reader --scope /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample  
>>> az role assignment list --assignee testuser@yakubshyn.onmicrosoft.com --all --output table  
Principal           Role          Scope  
  
testuser@yakubshyn.onmicrosoft.com  Contributor   /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystoragepsiyakubshyn  
>>> -
```

```
get-vm.ps1 stop-vm.ps1 delete-vm.ps1 create-storage-account.ps1 create-contributor-role.ps1 get-role-assignment.ps1 delete-role-assignment.ps1
1 Remove-AzRoleAssignment -ObjectId (Get-AzADUser -UserPrincipalName testuser@yakubshyn.onmicrosoft.com).Id `
2 -RoleDefinitionName "Contributor" `
3 -Scope /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystoragepsyakubshyn

...
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS PowerShell Extension + ... x
Description : 
ConditionVersion : 
Condition : 

RoleAssignmentName : 37514182-742c-4ef4-89f4-eb43ba1901df
RoleAssignmentId : /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystoragepsyakubshyn/provider
Scope : /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystoragepsyakubshyn
DisplayName : Test User
SignInName : testuser@yakubshyn.onmicrosoft.com
RoleDefinitionName : Contributor
RoleDefinitionId : b24988ac-6180-42a0-ab88-20f7382dd24c
ObjectId : a0ab80c0-270d-45a9-b827-89d87d9dee0f
ObjectType : User
● CanDelegate : False
● Description : 
● ConditionVersion : 
● Condition : 

PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\get-role-assignment.ps1'
○ RoleAssignmentName          RoleAssignmentId
-----
817f001b-fe23-4369-9f1a-bb5b57c26ec2 /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Authorization/roleAssignments/817f001...
37514182-742c-4ef4-89f4-eb43ba1901df /subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Storage/storageAccounts/mystoragepsy...
PS D:\Azure\task5> PS D:\Azure\task5> . 'D:\Azure\task5\delete-role-assignment.ps1'
Successfully removed role assignment for AD object 'a0ab80c0-270d-45a9-b827-89d87d9dee0f' on scope '/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sam...
ple/providers/Microsoft.Storage/storageAccounts/mystoragepsyakubshyn' with role definition 'Contributor'
○ PS D:\Azure\task5> ■
```

Removed user:

```
] az>> ad user delete --id a0ab80c0-270d-45a9-b827-89d87d9dee0f
az>> az user list
Unable to load extension 'ad: cannot access local variable 'command'
```

Practical Task 6: Set Up a Scalable Web Server with VM, Storage, and Networking

Create a Resource Group • Use Azure CLI to create a resource group named WebServerGroup in the East US region.

```
Help > get-role-assignment.ps1 > p1.ps1 > task5
subtasks > p1.ps1
1 az group create --resource-group WebServerGroup --location eastus

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS PowerShell Extension + x
```

PS D:\Azure\task5>
PS D:\Azure\task5> . 'D:\Azure\task5\get-role-assignment.ps1'
PS D:\Azure\task5> . 'D:\Azure\task5\subtask6\p1.ps1'
{
 "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/WebServerGroup",
 "location": "eastus",
 "managedBy": null,
 "name": "WebServerGroup",
 "properties": {
 "provisioningState": "Succeeded"
 },
 "tags": null,
 "type": "Microsoft.Resources/resourceGroups"
}
PS D:\Azure\task5>

• Deploy a Virtual Network (VNet) and Subnet • Use Azure CLI to create a virtual network named WebVNet in WebServerGroup. • Add a subnet named WebSubnet.

```
get-role-assignment.ps1 > p1.ps1 > p2.ps1 > task5
subtask6 > p2.ps1
1 az network vnet create --name WebVNet --resource-group WebServerGroup --location eastus --subnet-name WebSubnet
2

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS PowerShell Extension + x
```

Line | 2 | --name WebVNet \
| |
| Missing expression after unary operator '--'.
○ PS D:\Azure\task5>
○ PS D:\Azure\task5> . 'D:\Azure\task5\subtask6\p2.ps1'
● {
 "newVNet": {
 "addressSpace": {
 "addressPrefixes": [
 "10.0.0.0/16"
]
 },
 "enableDdosProtection": false,
 "etag": "W/"24f0ae5f-47e3-445e-9c20-fc9375b585ef"",
 "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/WebServerGroup/providers/Microsoft.Network/virtualNetworks/WebVNet",
 "location": "eastus",
 "name": "WebVNet",
 "privateEndpointVNetPolicies": "Disabled",
 "provisioningState": "Succeeded",
 "resourceGroup": "WebServerGroup",
 "resourceGuid": "e7b843c7-a8ae-468d-90a1-093ec3b423c9",
 "subnets": [
 {
 "addressPrefix": "10.0.0.0/24",
 "delegations": [],
 "etag": "W/"24f0ae5f-47e3-445e-9c20-fc9375b585ef"",
 "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/WebServerGroup/providers/Microsoft.Network/virtualNetworks/WebVNet/subnets/WebSubnet",
 "name": "WebSubnet",
 "privateEndpointNetworkPolicies": "Disabled",
 "privateLinkServiceNetworkPolicies": "Enabled",
 "provisioningState": "Succeeded",
 "resourceGroup": "WebServerGroup",
 "type": "Microsoft.Network/virtualNetworks/subnets"
 }
],
 "type": "Microsoft.Network/virtualNetworks",
 "virtualNetworkPeerings": []
 }
}
○ PS D:\Azure\task5>

- Create a Storage Account for Logs • Use Azure PowerShell to create a storage account named webserverlogs in WebServerGroup. • Enable blob storage and set up a container named logs for storing application logs

The screenshot shows two terminal panes in the Azure PowerShell Extension. The top pane (subtask6) runs the command `New-AzStorageAccount -Name webserverlogsyakubshyn -Location 'East US' -ResourceGroupName WebServerGroup -SkuName Standard_GZRS`. It then lists the storage account created:

StorageAccountName	ResourceGroupName	PrimaryLocation	SkuName	Kind	AccessTier	CreationTime	ProvisioningState	EnableHttpsTrafficOnly	LargeFileShares
webserverlogsyakubshyn	WebServerGroup	eastus	Standard_GZRS	StorageV2	Hot	09.02.2025 8:44:06	Succeeded	True	

The bottom pane (subtask6) runs a script to create a storage container named 'logs' in the 'webserverlogsyakubshyn' account:

```

1 $storageAccount = Get-AzStorageAccount -ResourceGroupName WebServerGroup -Name webserverlogsyakubshyn
2 $context = $storageAccount.Context
3 New-AzStorageContainer -Name logs -Context $context
4

```

Deploy a Virtual Machine as a Web Server

- Use Azure CLI to create a virtual machine named WebVM in WebServerGroup. • Configure WebVM to use the WebVNet and WebSubnet. • Open port 80 on the VM for web traffic.

The screenshot shows a terminal pane (subtask6) running the Azure CLI command `az vm create --resource-group WebServerGroup --name WebVM --image Ubuntu2204 --vnet-name WebVNet --subnet WebSubnet --admin-username azureuser --generate-ssh-keys`. The output shows the creation of the VM and its details:

```

{
  "fqdns": "",
  "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/WebServerGroup/providers/Microsoft.Compute/virtualMachines/WebVM",
  "location": "eastus",
  "macAddress": "00-0D-3A-9A-5D-9E",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "74.235.20.119",
  "resourceGroup": "WebServerGroup",
  "zones": ""
}

```

```

PS D:\Azure\task5> az vm open-port --resource-group WebServerGroup --name WebVM --port 80
1
2

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS D:\Azure\task5> PS D:\Azure\task5> . 'D:\Azure\task5\subtask6\p4_1.ps1'

```

{
    "fqdns": "",
    "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/WebServerGroup/providers/Microsoft.Compute/virtualMachines/WebVM",
    "location": "eastus",
    "macAddress": "00-0D-3A-9A-5D-9E"
}

```

• Install and Configure Nginx on the VM

```

subtask6 > p5.ps1
1 az vm run-command invoke --resource-group WebServerGroup --name WebVM `
2   --command-id RunShellScript --scripts "sudo apt update && sudo apt install -y nginx"
3

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

deb ...\\nUnpacking libnginx-mod-http-geoip2 (1.18.0-6ubuntu14.5) ...\\nSelecting previously unselected package libnginx-mod-http-image-filter.\\r\\nPreparing to unpack .../13-libnginx-mod-http-image-filter_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking libnginx-mod-http-image-filter (1.18.0-6ubuntu14.5) ...\\r\\nSelecting previously unselected package libnginx-mod-http-xslt-filter.\\r\\nPreparing to unpack .../14-libnginx-mod-http-xslt-filter_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking libnginx-mod-http-xslt-filter (1.18.0-6ubuntu14.5) ...\\r\\nSelecting previously unselected package libnginx-mod-mail.\\r\\nPreparing to unpack .../15-libnginx-mod-mail_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking libnginx-mod-mail (1.18.0-6ubuntu14.5) ...\\r\\nSelecting previously unselected package libnginx-mod-stream.\\r\\nPreparing to unpack .../16-libnginx-mod-stream_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking libnginx-mod-stream (1.18.0-6ubuntu14.5) ...\\r\\nSelecting previously unselected package libnginx-mod-stream-geoip2.\\r\\nPreparing to unpack .../17-libnginx-mod-stream-geoip2_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking libnginx-mod-stream-geoip2 (1.18.0-6ubuntu14.5) ...\\r\\nSelecting previously unselected package nginx-core.\\r\\nPreparing to unpack .../18-nginx-core_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking nginx-core (1.18.0-6ubuntu14.5) ...\\r\\nSelecting previously unselected package nginx.\\r\\nPreparing to unpack .../19-nginx_1.18.0-6ubuntu14.5_amd64.deb ...\\r\\nUnpacking nginx (1.18.0-6ubuntu14.5) ...\\r\\nSetting up libdeflate0:amd64 (1.10-2) ...\\r\\nSetting up nginx-common (1.18.0-6ubuntu14.5) ...\\r\\nSetting up libdebconf: unable to initialize frontend: Dialog\\r\\nSetting up libdebconf: (Dialog frontend will not work on a dumb terminal, an emacs shell buffer, or without a controlling terminal.)\\r\\nSetting up libdebconf: falling back to frontend: Readline\\r\\nCreated symlink /etc/systemd/system/multi-user.target.wants/nginx.service → /lib/systemd/system/nginx.service.\\r\\nSetting up libjbig0:amd64 (2.1-3.1ubuntu0.22.04.1) ...\\r\\nSetting up libnginx-mod-http-xslt-filter (1.18.0-6ubuntu14.5) ...\\r\\nSetting up fonts-dejavu-core (2.37-2build1) ...\\r\\nSetting up libjpeg-turbo8:amd64 (2.1.2-0ubuntu1) ...\\r\\nSetting up libwebp7:amd64 (1.2.2-0ubuntu0.22.04.2) ...\\r\\nSetting up libnginx-mod-http-geoip2 (1.18.0-6ubuntu14.5) ...\\r\\nSetting up libjp
8

```

• Enable Diagnostics and Store Logs in Storage Account • Use Azure PowerShell to enable diagnostics on WebVM, directing logs to webserverlogs storage account.

- I have not managed with this task

```

subtask6 > p8.ps1
1 az vm list-ip-addresses --resource-group WebServerGroup --name WebVM --output table
2

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS D:\Azure\task5\subtask6>
PS D:\Azure\task5\subtask6> . 'D:\Azure\task5\subtask6\p6.ps1'

cmdlet Set-AzVMDiagnosticsExtension at command pipeline position 1
Supply values for the following parameters:
(Type !? for Help.)
DiagnosticsConfigurationPath: D:\Azure\task5\subtask6\diagnostic.config
Set-AzVMDiagnosticsExtension: D:\Azure\task5\subtask6\p6.ps1:5:1
Line |
5 | Set-AzVMDiagnosticsExtension -ResourceGroupName WebServerGroup `

No DiagnosticMonitorConfiguration element defined in the configuration file.
PS D:\Azure\task5\subtask6>
PS D:\Azure\task5\subtask6> . 'D:\Azure\task5\subtask6\p8.ps1'
VirtualMachine PublicIPAddresses PrivateIPAddresses
-----
WebVM 74.235.20.119 10.0.0.4
PS D:\Azure\task5\subtask6>
Fwd-i-search:

```

Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.

• Clean Up Resources

```

PS D:\Azure\task5> az group delete --name WebServerGroup --yes
| Running ...

```

Practical Task 7: Create and Run an Azure Automation Runbook

Create an Azure Automation Account named MyAutomationAccount in the East US region using Azure CLI.

```
az>> automation account create --automation-account-name "MyAutomationAccount" --location "East US 2" --sku "Free" --resource-group "Sample"
Resource provider 'Microsoft.Automation' used by this operation is not registered. We are registering for you.
Registration succeeded.
{
  "automationHybridServiceUrl": "https://d51dfdc8-ea50-458e-a4a4-703e331ab63e.jrds.eus2.azure-automation.net/automationAccounts/d51dfdc8-ea50-458e-a4a4-703e331ab63e",
  "creationTime": "2025-02-09T10:52:20.600000+00:00",
  "description": null,
  "disableLocalAuth": false,
  "encryption": {
    "identity": {
      "userAssignedIdentity": null
    },
    "keySource": "Microsoft.Automation",
    "keyVaultProperties": null
  },
  "etag": null,
  "id": "/subscriptions/3a612e70-8e22-4425-b3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Automation/automationAccounts/MyAutomationAccount",
  "identity": null,
  "lastModifiedBy": null,
  "lastModifiedTime": "2025-02-09T10:52:20.600000+00:00",
  "location": "eastus2",
  "name": "MyAutomationAccount",
  "privateEndpointConnections": null,
  "publicNetworkAccess": null,
  "resourceGroup": "Sample",
  "sku": {
    "capacity": null,
    "family": null,
    "name": "Basic"
  },
  "state": "Ok",
  "systemData": {
    "createdAt": "2025-02-09T10:52:20.600000+00:00",
    "createdBy": null,
    "createdByType": null,
    "lastModifiedAt": "2025-02-09T10:52:20.600000+00:00",
    "lastModifiedBy": null,
    "lastModifiedByType": null
  },
  "tags": {},
  "type": "Microsoft.Automation/AutomationAccounts"
}
az>>
```

Create a PowerShell Runbook named StartAzureVMRunbook inside MyAutomationAccount.

The screenshot shows the Azure portal interface for the 'MyAutomationAccount' automation account. The left sidebar lists navigation options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Process Automation, Configuration Management, Update management, Shared Resources, Related Resources, Account Settings, Settings, Monitoring, Automation, and Help. The main content area displays the account's details: Resource group (Sample), Location (East US 2), Subscription (Azure for Students), and Status (Active). It also shows the last modified date (2/9/2025, 12:52:20 PM). Below this, there's a summary section about simplifying Azure Resource Management and In-guest management of Azure Virtual Machines and Off-Azure Machines with Process Automation. Three buttons are available: 'Create a runbook', 'Manage a runbook', and 'Manage hybrid environment'. At the bottom, there are links for 'Create a runbook', 'Manage a runbook', and 'Set up Hybrid Workers'.

Create a runbook

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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Home > Sample > MyAutomationAccount >

Create a runbook

Validation passed

Basics Tags Review + Create

Basics

Name StartAzureVMRunbook
Runbook type PowerShell
Runtime version 7.2
Description

Tags (none)

Create Previous Next

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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Home > Sample > MyAutomationAccount >

Create a runbook

Basics Tags Review + Create

Name * StartAzureVMRunbook

Runbook type * PowerShell

Runtime version * 7.2 (recommended)

Description

During runbook execution, PowerShell modules targeting 7.2 runtime version will be used. Please make sure the required PowerShell modules are present in 7.2 runtime version.

Runbook is considered as a draft version until it is published. Before publishing a runbook, it is recommended to test it to ensure it works properly and as intended. When you test a runbook, the draft version is executed and performs the action against resources defined in the runbook. [Learn more](#)

Review + Create Previous Next

Edit the Runbook to start a specified Azure Virtual Machine when executed.

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

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Home > Sample > MyAutomationAccount | Runbooks > StartAzureVMRunbook (MyAutomationAccount/StartAzureVMRunbook) >

Edit PowerShell Runbook

RUNBOOKS ASSETS

```
Param(
    [Parameter (Mandatory = $true)]
    [String] $VmName,
    [Parameter (Mandatory = $true)]
    [String] $rg
)
$vm = Get-AzVM -ResourceGroupName $rg -Name $VmName -ErrorAction SilentlyContinue
if (-not $vm) {
    Write-Host "Vm is not found. Creating Vm"
    New-AzVm -ResourceGroupName $rg -Location polandcentral -Image Ubuntu2204 -Name MyVm2
} else {
    Start-AzVm -ResourceGroupName $rg -Name $VmName
}
```

Successfully saved runbook

Successfully saved the runbook 'StartAzureVMRunbook'.

Test the Runbook manually by executing it and verifying that the VM starts.

Microsoft Azure

Home > MyAutomationAccount

MyAutomationAccount | Identity

System assigned User assigned

A system assigned managed identity is restricted to one per resource and is tied to the lifecycle of this resource. You can grant permissions to the managed identity by using Azure role-based access control (Azure RBAC). The managed identity is authenticated with Microsoft Entra ID, so you don't have to store any credentials in code.

Status: On

Object (principal) ID: 44fa506e-2413-4b2d-8285-59f6b71e3367

Permissions: Azure role assignments

This resource is registered with Microsoft Entra ID. The managed identity can be configured to allow access to other resources. Be careful when making changes to the access settings for the managed identity because it can result in failures. [Learn more](#)

Microsoft Azure

Home > MyAutomationAccount | Identity >

Azure role assignments

+ Add role assignment (Preview) Refresh

If this identity has role assignments that you don't have permission to read, they won't be shown in the list. [Learn more](#)

Subscription: Azure for Students

Role	Resource Name	Resource Type
No role assignments found for the selected subscription.		

Add role assignment (Preview)

Scope: Subscription

Subscription: Azure for Students

Role: Contributor

Learn more about RBAC

Microsoft Azure

Home > MyAutomationAccount | Runbooks > StartAzureVMRunbook (MyAutomationAccount/StartAzureVMRunbook) >

Edit PowerShell Runbook

StartAzureVMRunbook

Save Publish Revert to published Edit in VS Code Feedback

```
Param(
    [Parameter(Mandatory = $true)]
    [String]$VName,
    [Parameter(Mandatory = $true)]
    [String]$Rg,
    [Parameter(Mandatory = $false)]
    [String]$UserName = "adminUser", # Default username if not provided
    [Parameter(Mandatory = $false)]
    [String]$Password
)

# Ensures you do not inherit an AzContext in your runbook
Disable-AzContextAutosave -Scope Process

# Connect to Azure with system-assigned managed identity
$AzureContext = (Connect-AzAccount -Identity).context

# Set and store context
Set-AzContext -SubscriptionName $AzureContext.Subscription -DefaultProfile $AzureContext

# Convert password to SecureString
$SecurePassword = ConvertTo-SecureString -String $password -AsPlainText -Force
$Credential = New-Object System.Management.Automation.PSCredential ($username, $SecurePassword)

# Check if VM exists
$vm = Get-AzVM -ResourceGroupName $rg -Name $vname -ErrorAction SilentlyContinue
if (-not $vm) {
    Write-Host "VM not found. Creating VM"
    New-AzVM -ResourceGroupName $rg -Location "polandcentral" -Image "Ubuntu2204" -Name $vname -Credential $credential
} else {
    Write-Host "Starting existing VM"
    Start-AzVM -ResourceGroupName $rg -Name $vname
}
```

The screenshot shows the Microsoft Azure Runbook Test interface. The runbook 'Vm1' has completed successfully. The parameters are set to 'Vm1' for VmName, 'azuserme' for Username, and 'password77w8Swe' for Password. The run settings indicate it's running on Azure.

Now I will stop VM1 and check if it will start it

```

1 #> $Param
2     [Parameter (Mandatory = $true)]
3     [String] $VmName,
4
5     [Parameter (Mandatory = $true)]
6     [String] $rg,
7
8     [Parameter (Mandatory = $false)]
9     [String] $username = "adminuser", # Default username if not provided
10    [Parameter (Mandatory = $false)]
11    [String] $password
12
13
14
15 # Ensures you do not inherit an AzContext in your runbook
16 Disable-AzContextAutosave -Scope Process
17
18 # Connect to Azure with system-assigned managed identity
19 $AzureContext = (Connect-AzAccount -Identity).context
20
21 # Set and store context
22 Set-AzContext -SubscriptionName $AzureContext.Subscription -DefaultProfile $AzureContext
23
24 # Check if VM exists
25 $vm = Get-AzVM -ResourceGroupName $rg -Name $VmName -ErrorAction SilentlyContinue
26
27 if (-not $vm) {
28     # Create a password for securing the VM
29     $SecurePassword = ConvertTo-SecureString -String $password -AsPlainText -Force
30     $Credential = New-Object System.Management.Automation.PSCredential ($username, $SecurePassword)
31
32     Write-Host "VM is not found. Creating VM"
33     New-AzVM -ResourceGroupName $rg -Location "polandcentral" -Image "Ubuntu2004" -Name $VmName -Credential $Credential
34 }
35 else {
36     Write-Host "Starting existing VM"
37     Start-AzVM -ResourceGroupName $rg -Name $VmName
38 }

```

Fix

The screenshot shows the Microsoft Azure Runbook Test interface. The runbook 'Vm1' has completed successfully. The parameters are set to 'Vm1' for VmName, 'azuserme' for Username, and 'password77w8Swe' for Password. The run settings indicate it's running on Azure.

Vm1

Overview

Essentials

- Status: Running
- Location: Poland Central
- Subscription: Azure for Students
- Subscription ID: 3e612ef0-8e22-4425-a3ea-299fc524242
- Operating system: Linux (Ubuntu 22.04)
- Size: Standard D2s v3 (2 vcpus, 8 GB memory)
- Public IP address: 10.0.0.4
- Virtual network/subnet: Vm1/Vm1
- DNS name: Vm1.Vm1
- Health state: 1+
- Time created: 2/9/2023, 12:07 PM UTC

Status running

So, it works

Publish the Runbook and set up a schedule to automatically run it every day at 6:00 AM.

```

1 Parameter [Mandatory = $true]
2 [String]$VmName,
3
4 [Parameter (Mandatory = $true)]
5 [String]$Rp
6
7 $Vm = Get-AzVM -Name $VmName
8 Start-AzVM -ResourceGroupName $Rp

```

Publish

StartAzureVMRunbook (MyAutomationAccount/StartAzureVMRunbook) | Tasks

Automation Tasks

Schedule tasks or get notified of changes and take automation actions

Add task

New Schedule

Name: StartVm

Description:

Starts: 02/10/2023 6:00 AM

Time zone: Ukraine - Eastern European Time

Recurrence: Once

Recur every: 1 Day

Set expiration: No

Expires: Never

The screenshot shows two pages from the Microsoft Azure portal:

- Runbook Details Page:** The URL is [https://portal.azure.com/#blade/Microsoft_Automation/RunbooksBlade/resource/Subscriptions/3e112e70-8e22-4423-a3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Automation/runbooks/StartAzureVMRunbook](#). The page displays the runbook's properties, including its account, location, subscription, and runtime version. It also shows a 'Link to schedule' button.
- Schedule Runbook Configuration Page:** The URL is [https://portal.azure.com/#blade/Microsoft_Automation/RunbooksBlade/resource/Subscriptions/3e112e70-8e22-4423-a3ea-29f6acf32428/resourceGroups/Sample/providers/Microsoft.Automation/runbooks/StartAzureVMRunbook/schedule](#). This page shows the 'Schedule' tab selected, with the 'StartVm' action configured. It indicates that 4 of 4 actions are configured to run on Azure.

Deleting all resources

Practical Task 8: Automate Resource Cleanup Using a PowerShell Runbook

Create a new Runbook named CleanupOldResources in MyAutomationAccount.

The screenshot shows the 'Create a runbook' wizard in the Azure portal. The 'Name' field is set to 'CleanupOldResources'. The 'Runbook type' is selected as 'PowerShell'. The 'Runtime version' is set to '7.2 (recommended)'. A note at the bottom states: 'During runbook execution, PowerShell modules targeting 7.2 runtime version will be used. Please make sure the required PowerShell modules are present in 7.2 runtime version.' Another note says: 'Runbook is considered as a draft version until it is published. Before publishing a runbook, it is recommended to test it to ensure it works properly and as intended. When you test a runbook, the draft version is executed and performs the action against resources defined in the runbook.' The 'Description' field is empty.

- Write a PowerShell script that:
 - o Lists all resource groups that have not been used in the past 30 days.
 - o Deletes unused resource groups after user confirmation.
- Test the Runbook in Azure Automation.
- Publish the Runbook and configure a webhook to trigger it on demand.
- Call the webhook using Azure CLI and verify the cleanup process.

The screenshot shows the 'Edit PowerShell Runbook' page. The script code is as follows:

```
param ([int]$DaysInactive = 30)

# Ensures you do not inherit an AzContext in your runbook
Disable-AzContextAutosave -Scope Process

# Connect to Azure with system-assigned managed identity
$AzureContext = (Connect-AzAccount -Identity).context

# Set and store context
Set-AzContext -SubscriptionName $AzureContext.Subscription -DefaultProfile $AzureContext

# Get all resource groups
$ResourceGroups = Get-AzResourceGroup

# Calculate the threshold date
$ThresholdDate = (Get-Date).AddDays(-$DaysInactive)

# Filter resource groups with no recent activity
$OldResourceGroups = @()
foreach ($rg in $ResourceGroups) {
    $activity = Get-AzLog -ResourceGroupName $rg.ResourceGroupName -StartTime $ThresholdDate
    if (-not $activity) {
        $OldResourceGroups += $rg.ResourceGroupName
    }
}

if ($OldResourceGroups.Count -eq 0) {
    Write-Output "No unused resource groups found."
    exit 0
}

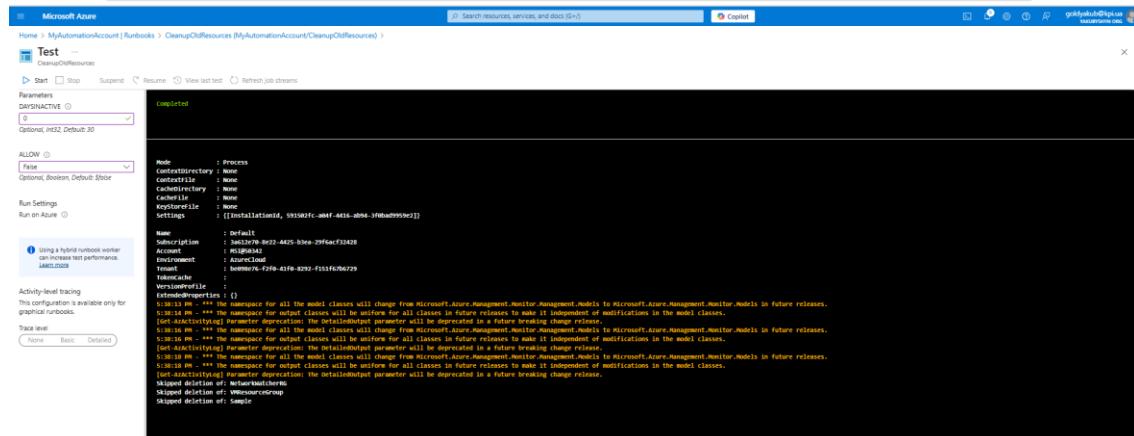
# Ask for confirmation before deletion
foreach ($rgname in $OldResourceGroups) {
    $confirmation = Read-Host "Delete resource group $rgname? (yes/no)"
    if ($confirmation -eq "yes") {
        Remove-AzResourceGroup -Name $rgname -Force
        Write-Output "Deleted resource group: $rgname"
    } else {
        Write-Output "Skipped deletion of: $rgname"
    }
}
```

The screenshot shows the 'Test' results for the runbook. The 'Parameters' section shows 'DAYSIACTIVE' set to 'Default will be used'. The 'Run Settings' section shows 'Run on Azure' selected. The 'Trace level' is set to 'Basic'. The output window shows the PowerShell script execution and the results of the cleanup process. It includes several warning messages about namespace changes in future releases.

It doesn't allow user's input

```
1 < param (
2     [int]$DaysInactive = 30,
3     [bool]$Allow = $false
4 )
5
6 # Ensures you do not inherit an AzContext in your runbook
7 Disable-AzContextAutosave -Scope Process
8
9 # Connect to Azure with system-assigned managed identity
10 $AzureContext = (Connect-AzAccount -Identity).context
11
12 # Set and store context
13 Set-AzContext -SubscriptionId $AzureContext.Subscription.Id -DefaultProfile $AzureContext
14
15 # Get all resource groups
16 $resourceGroups = Get-AzResourceGroup
17
18 # Calculate the threshold date
19 $thresholdDate = (Get-Date).AddDays(-$DaysInactive)
20
21 # Filter resource groups with no recent activity
22 $oldResourceGroups = @()
23 foreach ($rg in $resourceGroups) {
24     $activity = Get-AzLog -ResourceGroupName $rg.ResourceGroupName -StartTime $thresholdDate
25     if ($activity.Count -eq 0) {
26         $oldResourceGroups += $rg.ResourceGroupName
27     }
28 }
29
30 if ($oldResourceGroups.Count -eq 0) {
31     Write-Output "No unused resource groups found."
32     exit 0
33 }
34
35 # Delete resource groups based on confirmation or auto-approval
36 foreach ($rgName in $oldResourceGroups) {
37     if ($Allow) {
38         Remove-AzResourceGroup -Name $rgName -Force
39         Write-Output "Deleted resource group: $rgName"
40     } else {
41         Write-Output "Skipped deletion of: $rgName"
42     }
43 }
44
```

Rewrote script



Microsoft Azure

CleanupOldResources (MyAutomationAccount/CleanupOldResources)

Overview

Activity log

Tags

Diagnose and solve problems

Resources

Jobs

Schedules

Webhooks

Runbook settings

Start View Link to schedule Add webhook Delete Export Feedback Refresh

Subscription ID : 3a612e70-8e22-4425-b3ea-29f6acf52428
Status : Published
Runbook type : PowerShell
Runtime version : 7.2
Last modified : 2/9/2025, 7:39 PM

JSON View

Microsoft Azure

Home > CleanupOldResources (MyAutomationAccount/CleanupOldResources) | Webhooks >

Add Webhook

Start a runbook via a simple HTTP POST to a URL.

Webhook

Create new webhook

Parameters and run settings

Configure parameters and run settings

Microsoft Azure

Home > MyAutomationAccount | Runbooks > CleanupOldResources (MyAutomationAccount/CleanupOldResources) | Webhooks >

Add Webhook

Start a runbook via a simple HTTP POST to a URL.

Webhook

CleanWebHook

Parameters and run settings

1 of 2 configured to run on Azure

```
PS C:\Users\Anatoly> az rest --method post --uri https://d51fdc8-ea50-458e-a4a4-703e331ab63e.webhook.eus2.azure-automation.net/webhooks?token=ZM6BymWTouVf1o5uQj2d%2bnKqJLRik%2bKr5mH6GqXGqA%3d
Can't derive appropriate Azure AD resource from --url to acquire an access token. If access token is required, use --resource to specify the resource
{
  "JobIds": [
    "2811e0a3-6286-43db-9b3a-3e38b612cd9f"
  ]
}
PS C:\Users\Anatoly>
```

Microsoft Azure

Home > MyAutomationAccount | Runbooks > CleanupOldResources (MyAutomationAccount/CleanupOldResources) | Jobs >

CleanupOldResources 2/9/2025, 7:54 PM

Job

Resume Stop Suspend Feedback Refresh Export output

Essentials

ID : 2811e0a3-6286-43db-9b3a-3e38b612cd9f
Status : Completed
Run on : Azure
Run As : User

Created : 2/9/2025, 7:54:39 PM
Last Update : 2/9/2025, 7:56:03 PM
Runbook : CleanupOldResources
Source snapshot : View source snapshot

Input Output Errors Warnings All Logs Exception

Mode : PROCESS
ContextDirectory : None
ContextFile : None
Category : None
ExcludeFile : None
KeystoreFile : None
Settings : [{"InstallationId : zaf02d62-f9fb-45f5-b57a-dec07d3c16d}]

Name : Default
Description : 3a612e70-8e22-4425-b3ea-29f6acf52428
Access : MicrosoftAD
Environment : AzureCloud
Tenant : bebe07e7-f2f0-41f0-a292-f151f67a6729
Webhooks :
Version : 1
VersionHistory :
ExtendedProperties : {}

No unused resource groups found.

Practical Task 9: Implement Desired State Configuration (DSC) to Enforce VM Settings

Create a new Azure Automation DSC Configuration named MyDSCConfig.

The screenshot shows the Azure portal's State configuration (DSC) blade. At the top, there are tabs for 'Desired state' (selected), 'Compose configuration', 'Refresh', and 'Reset filters'. Below this, a message box says: 'A new configuration service is now generally available, with features like control over drift correction, assigning multiple configurations per machine, increased configuration size, machine resource ID in reports, and PowerShell support for Linux. Learn more'. The main area has sections for 'Nodes' (0), 'Configurations' (0), 'Compiled configurations' (0), and 'Gallery' (0). There are also sections for 'Configuration status' (0 Total, 0 Not compliant, 0 Pending, 0 In progress, 0 Compliant) and 'Status' (0 selected). On the right, there are links for 'Learn more', 'About State Configuration', 'Add non-Azure machine', and 'Supported operating systems'. At the bottom, there are filters for 'Node configuration' (All), 'Last seen', and 'Version'.

```
Configuration MyDSCConfig
{
    Import-DscResource -ModuleName PSDesiredStateConfiguration

    Node "localhost"
    {
        # Ensure IIS (Web-Server) is installed
        WindowsFeature IIS
        {
            Name = "Web-Server"
            Ensure = "Present"
        }

        # Ensure the config.xml file exists with predefined content
        File Configfile
        {
            DestinationPath = "C:\inetpub\wwwroot\config.xml"
            Contents = "<settings><value>MyConfig</value></settings>"
            Ensure = "Present"
            Type = "File"
        }

        # Ensure the w3svc service (IIS) is running
        Service IISService
        {
            Name = "w3svc"
            State = "Running"
            Ensure = "Present"
        }
    }

    # Generate MOF file
    MyDSCConfig
}
```

The screenshot shows the Azure portal's Configuration blade for 'MyDSCConfig'. It displays the configuration details: 'Configuration' (MyDSCConfig), 'Compiled Configuration Count' (0), and 'Last Modified' (2/9/2025, 8:19 PM). There is a 'More' button at the end of the row.

The screenshot shows the Azure portal's Virtual Machines blade for 'WindowsIIS'. It displays the VM status: 'Power State' (VM running), 'OS' (Windows), and 'Status' (Not connected). There is a 'More' button at the end of the row.

Microsoft Azure

Home > MyAutomationAccount | State configuration (DSC) > Virtual Machines > Windows1S >

Registration

Registration key *

Primary key Secondary key

Node configuration name ⓘ

Refresh Frequency ⓘ

30

Configuration Mode Frequency ⓘ

15

Configuration Mode ⓘ

ApplyAndMonitor

Allow Module Override ⓘ

Reboot Node If Needed ⓘ

Action after Reboot ⓘ

ContinueConfiguration

OK

Microsoft Azure

Home > MyAutomationAccount | State configuration (DSC)

MyDSCConfig

Configuration

Compile Export Delete

Compile DSC Configuration

Are you sure you want to compile this configuration? Any node configurations generated will be automatically placed on the Azure Automation DSC pull server. If node configurations with the same name exist on the pull server, they will be overwritten.

Yes No

Compilation jobs

Node configurations

Created	Status	Last updated
No compilation jobs found.		

Microsoft Azure

Home > Sample > MyAutomationAccount | State configuration (DSC)

Assign Node Configuration

Windows1S

Changing the node configuration assigned to a node will cause the node to change its configuration to match the node configuration next time it pulls.

Name	Last modified
MyDSCConfig.localhost	2/9/2025, 8:27 PM

Microsoft Azure

Home > Sample > MyAutomationAccount

MyAutomationAccount | State configuration (DSC)

Automation Account

Search

Add Compose configuration Refresh Reset filters

A new configuration service is now generally available, with features like control over drift correction, assigning multiple configurations per machine, increased configuration size, machine resource ⚡ in reports, and PowerShell support for Linux. Learn more

Nodes Configurations Compiled configurations Gallery

Nodes

Configuration status

State	Count
Pending	1
Not compliant	0
In progress	0
Unresponsive	0
Compliant	0

Nodes

Search Node names...

Status

Node configuration

VM DSC extension version > 2.70

Learn more About State Configuration Add non-Azure machine Supported operating systems

Node	Status	Node configuration	Last seen	Version
Windows1S	Pending	MyDSCConfig.localhost	2/9/2025, 8:30 PM	2.83.5

Showing 1 - 1 of 1 results.

Microsoft Azure

Home > Sample > MyAutomationAccount | State configuration (DSC) >

Windows11S

Assign node configuration X Unregister

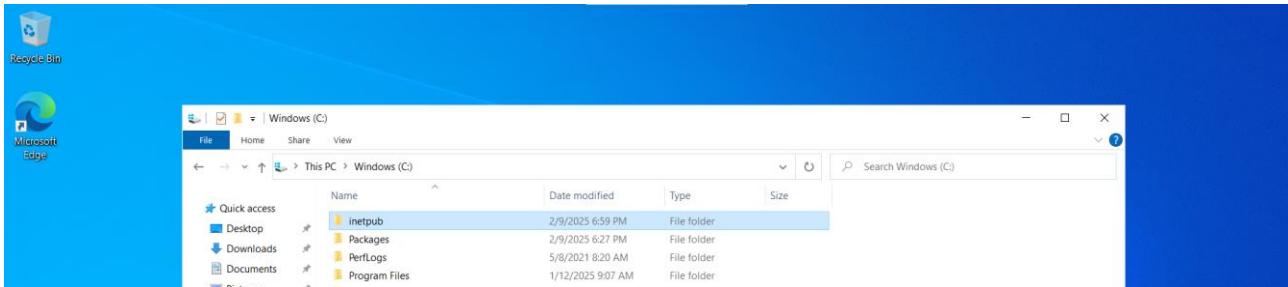
Essentials

Resource group : Sample	IP address : 10.0.0.4
ID : a999a54-e713-11ef-9aa9-6043bdc9701	Account : MyAutomationAccount
Last seen time : 2/9/2025, 8:59 PM	Virtual machine : Windows11S
Configuration : MyDSCConfig	Node configuration : MyDSCConfig/localhost
Registration time : 2/9/2025, 8:28 PM	Status : Compliant

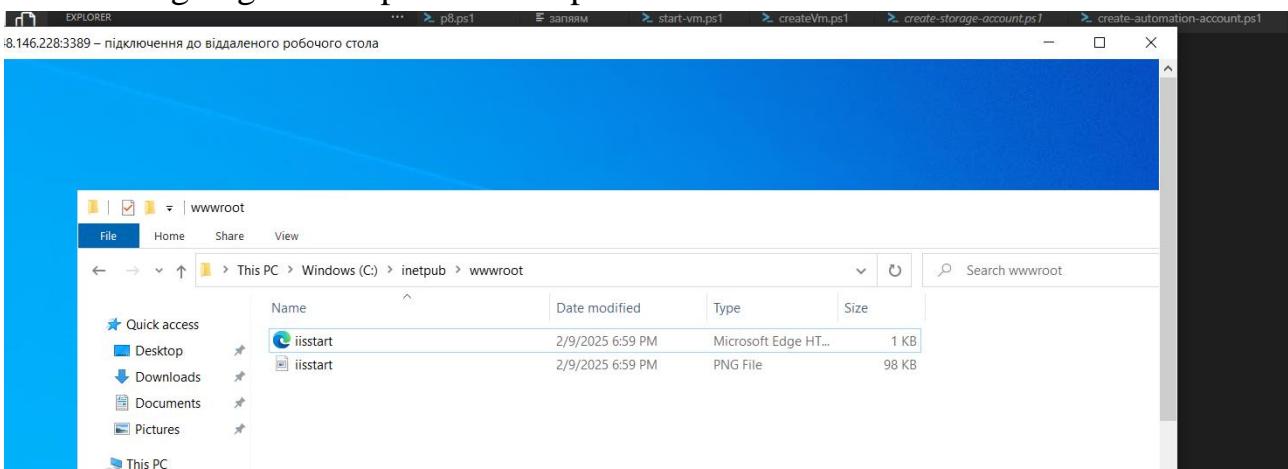
Reports

Type	Status	Report time
Consistency	Compliant	2/9/2025, 8:59 PM
Consistency	Compliant	2/9/2025, 8:29 PM

Showing 1 - 2 of 2 results.



Before assigning dsc inetpub was not present



Deleted config.xml

Microsoft Azure

Home > Sample > MyAutomationAccount

MyAutomationAccount | State configuration (DSC)

Automation Account

+ Add Compose configuration Refresh Reset filters

A new configuration service is now generally available, with features like control over drift correction, assigning multiple configurations per machine, increased configuration size, machine resource ID in reports, and PowerShell support for Linux. [Learn more](#)

Nodes **Configurations** **Compiled configurations** **Gallery**

Configuration status

Nodes 1	Pending 0	Not compiled 0	In progress 1	Unresponsive 0
Status 0	Not compliant 0	Compliant 0		

Nodes (1) **Status** (0) **Node configuration** (All) **VM DSC extension version > 2.70** (0)

Search Node names... **6 selected** **All** **2 selected**

Node	Status	Node configuration	Last seen	Version
Windows11S	Pending	MyDSCConfig/localhost	2/9/2025, 8:59 PM	2.83.5

Showing 1 - 1 of 1 results.

Home > MyAutomationAccount | State configuration (DSC) >

WindowsIIS

Assign node configuration Unregister

Essentials

Resource group	: Sample
Id	: a959ae54-e713-11ef-9aa9-6045bdcd9701
Last seen time	: 2/9/2025, 9:13 PM
Configuration	: MyDSCConfig
Registration time	: 2/9/2025, 8:28 PM

Reports

Type	Status	Report time
Consistency	⚠ Not compliant	2/9/2025, 9:13 PM

JSON View

Home > MyAutomationAccount | State configuration (DSC) >

WindowsIIS

Assign node configuration Unregister

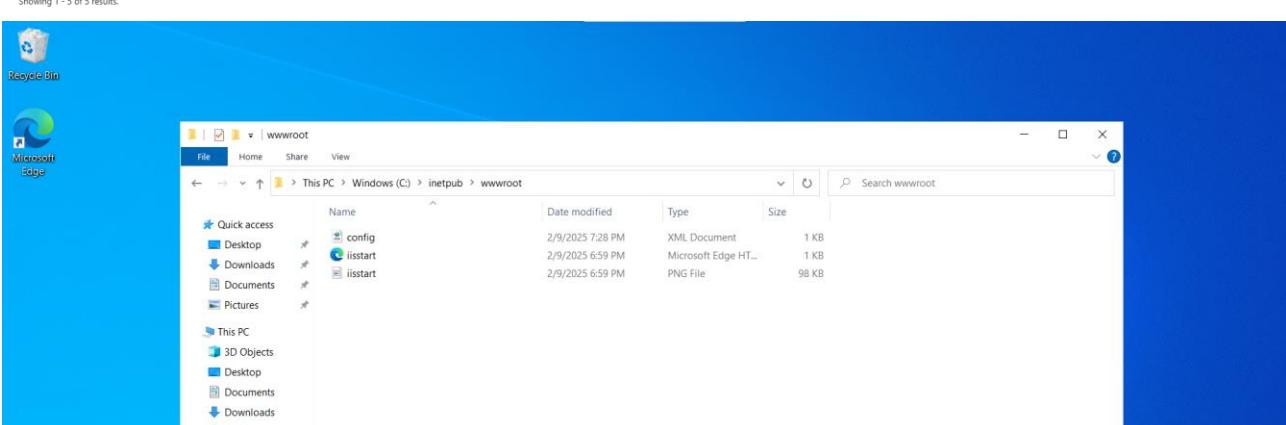
Essentials

Resource group	: Sample
Id	: a959ae54-e713-11ef-9aa9-6045bdcd9701
Last seen time	: 2/9/2025, 9:28 PM
Configuration	: MyDSCConfig
Registration time	: 2/9/2025, 8:28 PM

Reports

Type	Status	Report time
Consistency	✓ Compliant	2/9/2025, 9:28 PM
Consistency	⚠ Not compliant	2/9/2025, 9:28 PM
Consistency	⚠ Not compliant	2/9/2025, 9:13 PM
Consistency	✓ Compliant	2/9/2025, 8:59 PM
Consistency	✓ Compliant	2/9/2025, 8:29 PM

Showing 1 - 5 of 5 results.



File appears

Practical Task 10: Automate Multi-Resource Deployment and Configuration Using Runbooks and DSC

Chose Pwsh 5.1, because were bugs

```
param (
    [string]$resourceGroupName = "MyResourceGroup",
    [string]$location = "East US",
    [string]$vmName = "WebServerVM",
    [string]$diskName = "WebServerDisk",
    [string]$dscConfigurationName = "WebServerConfig"
)

# Connect to Azure
Write-Output "Connecting to Azure..."

Disable-AzContextAutosave -Scope Process

# Connect to Azure with system-assigned managed identity
$AzureContext = (Connect-AzAccount -Identity).context

# Set and store context

Set-AzContext -SubscriptionName $AzureContext.Subscription -DefaultProfile
$AzureContext
Install-Module -Name Az.Automation -Force -AllowClobber
Import-Module Az.Automation

# Create VM
$password = -join ((48..57) + (65..90) + (97..122) | Get-Random -Count 16 | %
{[char]$_})
$password = ConvertTo-SecureString $randomPassword -AsPlainText -Force
Write-Output "Creating VM: $vmName"
$vm = New-AzVM -ResourceGroupName $resourceGroupName -Name $vmName -Location
$location -Image "Win2019Datacenter" -Credential (New-Object
System.Management.Automation.PSCredential ("azureuser",$password)) -OpenPorts 80
Write-Output "VM Created: $vmName"

# Attach Managed Disk
Write-Output "Attaching Managed Disk: $diskName"
$diskConfig = New-AzDiskConfig -Location $location -CreateOption Empty -DiskSizeGB
32
$disk = New-AzDisk -ResourceGroupName $resourceGroupName -DiskName $diskName -Disk
$diskConfig
Add-AzVMDataDisk -VM $vm -Name $diskName -CreateOption Attach -ManagedDiskId
$disk.Id -Lun 0
Update-AzVM -ResourceGroupName $resourceGroupName -VM $vm
Write-Output "Disk Attached Successfully"

# Deploy DSC Configuration
```

```

Write-Output "Deploying DSC Configuration..."
Configuration WebServerConfig {

    Node "localhost"
    {
        # Ensure IIS (Web-Server) is installed
        WindowsFeature IIS
        {
            Name = "Web-Server"
            Ensure = "Present"
        }

        # Ensure the config.xml file exists with predefined content
        File ConfigFile
        {
            DestinationPath = "C:\inetpub\wwwroot\config.xml"
            Contents = "<settings><value>MyConfig</value></settings>"
            Ensure = "Present"
            Type = "File"
        }

        # Ensure the w3svc service (IIS) is running
        Service IISService
        {
            Name = "w3svc"
            State = "Running"
            Ensure = "Present"
        }
    }
}

# Compile and Publish DSC Configuration
WebServerConfig -OutputPath "C:\\WebServerConfig"
Export-AzAutomationDscConfiguration -ResourceGroupName $resourceGroupName -
AutomationAccountName "MyAutomationAccount" -Name "WebServerConfig" -Slot Published
-OutputFolder "C:\\WebServerConfig\\WebServerConfig.ps1p"
Write-Output "DSC Configuration Published"

# Start DSC Configuration
Start-AzAutomationDscCompilationJob -ResourceGroupName $resourceGroupName -
AutomationAccountName "MyAutomationAccount" -ConfigurationName
$dscConfigurationName
Write-Output "DSC Configuration Applied"

# Retrieve Public IP
$publicIP = $vm | Get-AzPublicIpAddress
Write-Output "Web Server is accessible at: http://$publicIP"

```

```

>Server
Suspend Resume View last test Refresh job streams
Completed

CapacityReservation : 
UserData : 
ApplicationProfile : 
PlatformFaultDomain : 
TimeCreated : 2/9/2025 9:36:59 PM
RequestId : 
StatusCode : 0

RequestId IsSuccess StatusCode ReasonPhrase
----- -----
True      OK

Disk Attached Successfully...
Deploying DSC Configuration...
The 'Microsoft.PowerShell.Management' module was not imported because the 'Microsoft.PowerShell.Management' snap-in was already imported.
The configuration 'WebServerConfig' is loading one or more built-in resources without explicitly importing associated modules. Add Import-DscResource -ModuleName 'PSDesiredStateConfiguration' to your configuration to avoid this message.

Directory: C:\WebServerConfig
Mode LastWriteTime      Length Name
---- -----          ---- 
-a--- 2/9/2025 9:37 PM    3444 localhost.mof

Configuration content can not be in edit/draft mode in current preview. Use the Published option.
DSC Configuration Published
Runbook not found.
DSC Configuration Applied
The names of some imported commands from the module 'Microsoft.Azure.PowerShell.Cmdlets.Network' include unapproved verbs that might make them less discoverable. To find the commands with unapproved verbs, run the Import-Module command again with the Verbose parameter. For a list of approved verbs, type Get-Verb.
The Resource "Microsoft.Network/publicIPAddresses/WebServerVM" under resource group "Sample" was not found. For more details please go to https://aka.ms/ARMResourceNotFoundFix
StatusCode: 404
ReasonPhrase: Not Found
ErrorMessage: ResourceNotFound
ErrorMessage: The Resource "Microsoft.Network/publicIPAddresses/WebServerVM" under resource group "Sample" was not found. For more details please go to https://aka.ms/ARMResourceNotFoundFix
OperationId : 31052345-005c-40ba-b38b-2b2d8172f4a9
Web Server is accessible at: http://


```

<input type="checkbox"/>	 DeployAndConfigureWebServer (MyAutomationAccount/DeployAndConfigureWebServer)	Runbook	East US 2	...
<input type="checkbox"/>	 MyAutomationAccount	Automation Account	East US 2	...
<input type="checkbox"/>	 WebServerDisk	Disk	East US	...
<input type="checkbox"/>	 WebServerVM	Virtual machine	East US	...
<input type="checkbox"/>	 WebServerVM	Network interface	East US	...
<input type="checkbox"/>	 WebServerVM	Network security group	East US	...
<input type="checkbox"/>	 WebServerVM	Virtual network	East US	...

Resources created but public ip doesn't