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Інформатика і програмування

Лабораторна робота № 3b

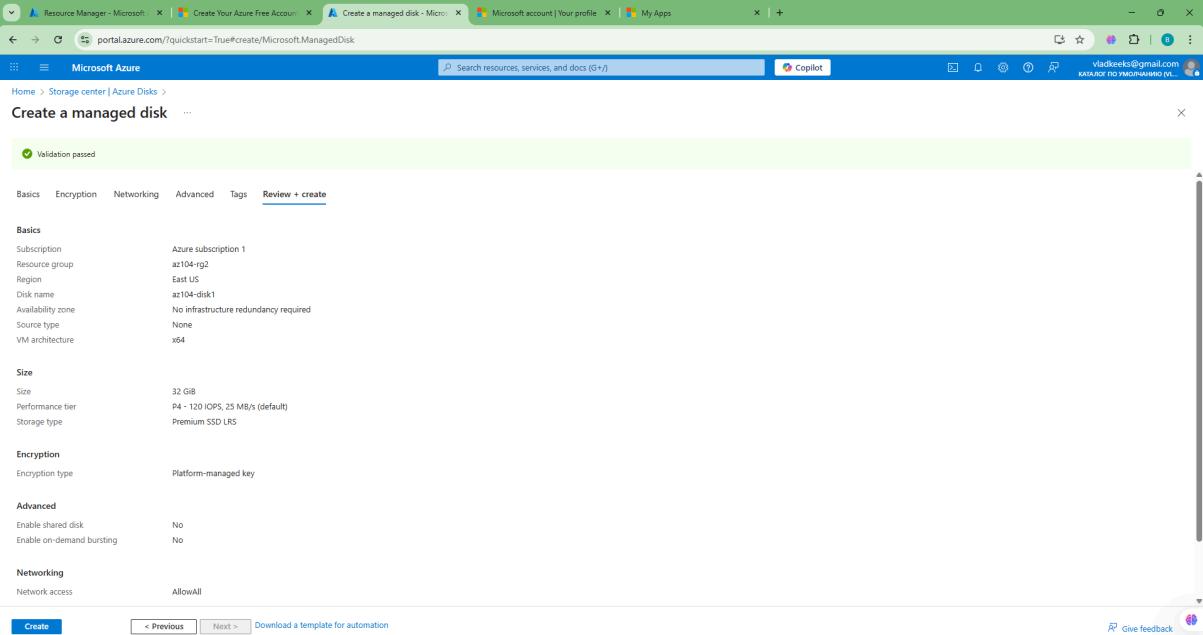
Тема: Manage Azure resources by using Azure Resource Manager
Templates

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Task 1: Create an Azure Resource Manager template

In this task, we will create a managed disk in the Azure portal. Managed disks are storage designed to be used with virtual machines. Once the disk is deployed you will export a template that you can use in other deployments.



The screenshot shows the Microsoft Azure portal interface with the title 'Create a managed disk'. The page is divided into several sections: Basics, Size, Encryption, Advanced, and Networking. The 'Validation passed' message is displayed at the top. The 'Review + create' button is highlighted at the bottom.

Basics

Subscription	Azure subscription 1
Resource group	az104-rg2
Region	East US
Disk name	az104-disk1
Availability zone	No infrastructure redundancy required
Source type	None
VM architecture	x64

Size

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

Encryption

Encryption type	Platform-managed key
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Advanced

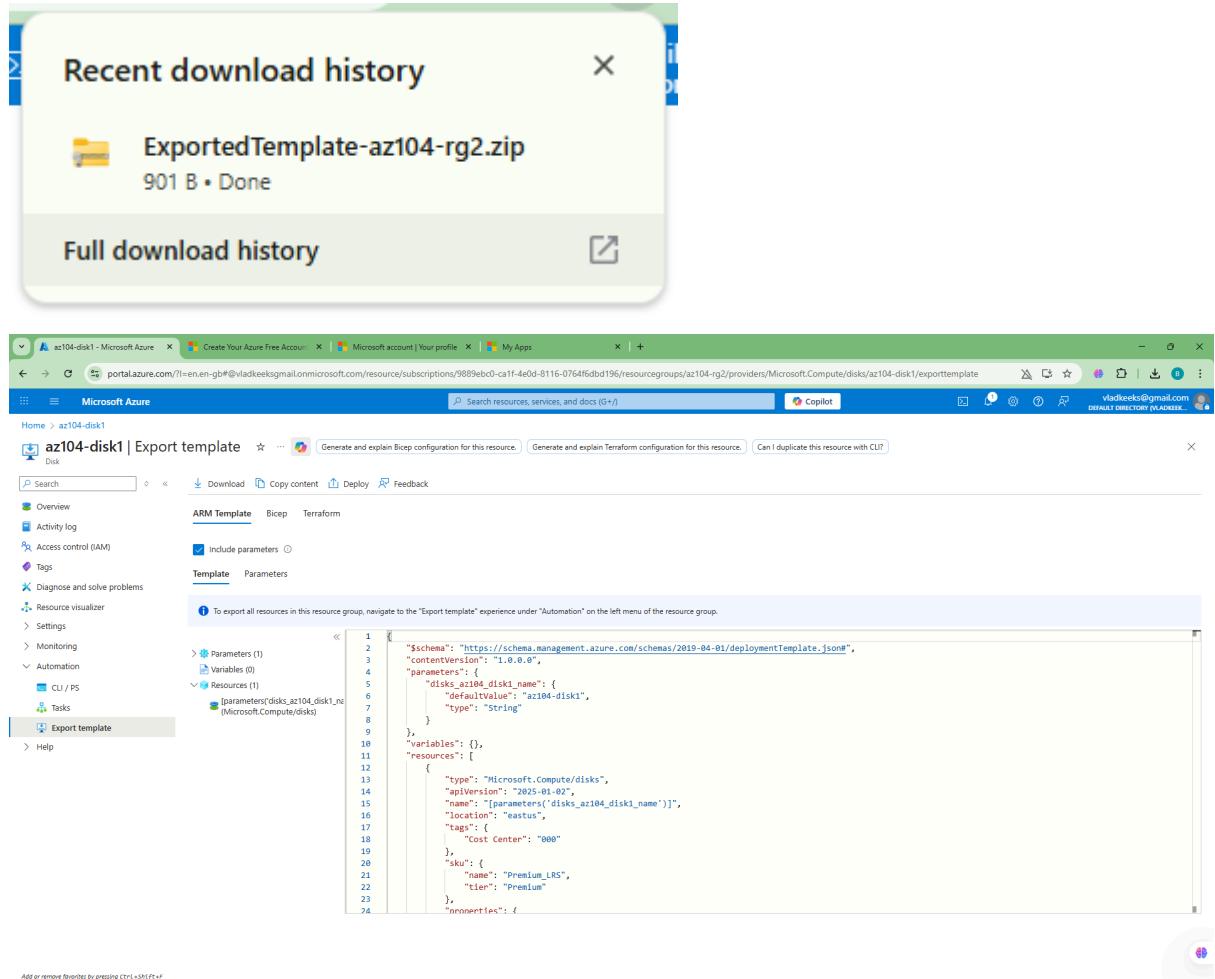
Enable shared disk	No
Enable on-demand bursting	No

Networking

Network access	AllowAll
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Buttons and Links

- Create (blue button)
- < Previous / Next >
- Download a template for automation
- Give feedback



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

The screenshot shows the Microsoft Azure Storage center - Azure Disks page. The left sidebar includes links for Overview, All storage resources, Object storage, File storage, Block storage, Data management, Migration, Partner solutions, Management services, and Help. The main content area displays a table of storage resources with the following columns: Name, Storage type, Size (GiB), Owner, Resource Group, and Location. The table lists five entries, all belonging to the resource group 'az104-rg3' and located in the 'East US' region. The entries are: az104-disk1, az104-disk2, az104-disk3, az104-disk4, and az104-disk5. Each entry shows a 'Premium SSD LRS' storage type and a size of 32 GiB.

Name	Storage type	Size (GiB)	Owner	Resource Group	Location
az104-disk1	Premium SSD LRS	32	-	az104-rg3	East US
az104-disk2	Premium SSD LRS	32	-	az104-rg3	East US
az104-disk3	Premium SSD LRS	32	-	az104-rg3	East US
az104-disk4	Premium SSD LRS	32	-	az104-rg3	East US
az104-disk5	Standard SSD LRS	32	-	az104-rg3	East US

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

In this task, you work with the Azure Cloud Shell and Azure PowerShell. Azure Cloud Shell is an interactive, authenticated, browser-accessible terminal for managing Azure resources. It provides the flexibility of choosing the shell experience that best suits the way you work, either Bash or PowerShell. In this task, you use PowerShell to deploy a template.

```

template.json
1  {
2    "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3    "contentVersion": "1.0.0.0",
4    "parameters": {
5      "disks_az104_disk1_name": [
6        {
7          "defaultValue": "az104-disk3",
8          "type": "String"
9        }
10     ],
11     "variables": {},
12     "resources": [
13       {
14         "type": "Microsoft.Compute/disks",
15         "apiVersion": "2025-01-02",
16         "name": "[parameters('disks_az104_disk1_name')]",
17         "location": "eastus",
18         "tags": {
19           "Cost Center": "000"
20         },
21         "sku": {
22           "name": "Premium_LRS",
23           "tier": "Premium"
24         },
25         "properties": {
26           "creationData": {
27             "createOption": "Empty"
28           },
29           "diskSizeGB": 32,
30           "diskIOPSReadWrite": 120,
31           "diskMBpsReadWrite": 25,
32           "encryption": {
33             "type": "EncryptionAtRestWithPlatformKey"
34           },
35           "networkAccessPolicy": "AllowAll",
36           "publicNetworkAccess": "Enabled"
37         }
38       }
39     ]
40   }
41 }

Parameters
Name Type Value
disks_az104_disk1_name String "az104-disk3"

Outputs
DeploymentLogLevel : Information

PS /home/vladkeeks>

```



```

template.json
1  {
2    "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3    "contentVersion": "1.0.0.0",
4    "parameters": {
5      "disks_az104_disk1_name": [
6        {
7          "defaultValue": "az104-disk3",
8          "type": "String"
9        }
10     ],
11     "variables": {},
12     "resources": [
13       {
14         "type": "Microsoft.Compute/disks",
15         "apiVersion": "2025-01-02",
16         "name": "[parameters('disks_az104_disk1_name')]",
17         "location": "eastus",
18         "tags": {
19           "Cost Center": "000"
20         },
21         "sku": {
22           "name": "Premium_LRS",
23           "tier": "Premium"
24         },
25         "properties": {
26           "creationData": {
27             "createOption": "Empty"
28           },
29           "diskSizeGB": 32,
30           "diskIOPSReadWrite": 120,
31           "diskMBpsReadWrite": 25,
32           "encryption": {
33             "type": "EncryptionAtRestWithPlatformKey"
34           },
35           "networkAccessPolicy": "AllowAll",
36           "publicNetworkAccess": "Enabled"
37         }
38       }
39     ]
40   }
41 }

PS /home/vladkeeks> Get-AzDisk | ft
ResourceGroupName ManagedBy ManagedByExtended Sku Zones TimeCreated OsType HyperVGeneration CreationData DiskSizeGB
----- ----- ----- ----- ----- ----- ----- ----- ----- -----
AZ104-RG3 {} Microsoft.Azure.Management.Compute.Models.DiskSku 12/11/2025 4:32:36 PM Microsoft.Azure.Management.Compute.Models.CreateData 32
AZ104-RG3 {} Microsoft.Azure.Management.Compute.Models.DiskSku 12/11/2025 4:40:37 PM Microsoft.Azure.Management.Compute.Models.CreateData 32
AZ104-RG3 {} Microsoft.Azure.Management.Compute.Models.DiskSku 12/11/2025 4:53:06 PM Microsoft.Azure.Management.Compute.Models.CreateData 32
PS /home/vladkeeks>

```

Task 4: Deploy a template with the CLI

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

Storage fileshare subscription 9889ebc0-ca1f-4e0d-8116-0764f6dbd196 is not registered. Subscriptions will have restricted access to CloudShell service.

```
vladkeeks [ ~ ]$ ls
clouddrive Microsoft parameters.json template.json
vladkeeks [ ~ ]$
```

template.json

```
1  {
2   "schema": "https://schemas.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3   "contentVersion": "1.0.0.0",
4   "parameters": {
5     "disks_az104_disk1_name": {
6       "defaultValue": "az104-disk4",
7       "type": "String"
8     }
9   },
10  "variables": {},
11  "resources": [
12    {
13      "type": "Microsoft.Compute/disks",
14      "apiVersion": "2025-01-02",
15      "name": "[parameters('disks_az104_disk1_name'))]",
16      "location": "eastus",
17      "tags": {
18        "Cost Center": "000"
19      },
20      "sku": {
21        "name": "Premium_LRS",
22        "tier": "Premium"
23      },
24      "properties": {
25        "creationData": {
26          "createOption": "Empty"
27        },
28        "diskSizeGB": 32,
29        "diskIOPSReadWrite": 120,
30        "diskMbpsReadWrite": 25,
31        "encryption": {
32          "type": "EncryptionAtRestWithPlatformKey"
33        },
34        "networkAccessPolicy": "AllowAll",
35        "publicNetworkAccess": "Enabled"
36      }
37    }
38  ],
39  "outputs": {}
40 }
vladkeeks [ ~ ]$ az disk list --resource-group az104-rg3 --output table
Name  ResourceGroup  Location  Zones  Sku  SizeGb  ProvisioningState
-----  -----  -----  -----  -----  -----  -----
az104-disk1  az104-rg3  eastus  Premium_LRS  32  Succeeded
az104-disk2  az104-rg3  eastus  Premium_LRS  32  Succeeded
az104-disk3  az104-rg3  eastus  Premium_LRS  32  Succeeded
az104-disk4  az104-rg3  eastus  Premium_LRS  32  Succeeded
vladkeeks [ ~ ]$
```

Task 5: Deploy a resource by using Azure Bicep

Storage center - Microsoft Azure Microsoft Azure Home - Microsoft Azure Create Your Azure Free Account Microsoft account | Your profile My Apps portal.azure.com/#cloudshell/ Microsoft Azure Upgrade Search resources, services, and docs (G+/)

```

Bash
FILE
1 .zshrc
2 Azure
3 cache
4 local
5 clouddrive
6 Microsoft
7 bash_history
8 bash_logout
9 bash_profile
10 bashrc
11 tmux.conf
12 zshrc
13 azuredeploydisk.bicep
14 parameters.json
15 template.json
16
17
18
19
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21
22
23
24
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34
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36
isnredeploydisk.bicep
param managedDiskName string = "az104-disk5"
@description("Disk size in GiB")
@minValue(4)
@maxValue(65536)
param diskSizeInGiB int = 32
@description("Disk IOPS value")
@minValue(100)
@maxValue(160000)
param diskIOPSReadWrite int = 100
param diskMbpsReadWrite int = 100
@description("Disk throughput value in MBps")
@minValue(1)
@maxValue(2000)
param diskMbpsReadWrite int = 10
@description("Location for all resources.")
param location string = resourceGroup().location
resource managedDisk 'Microsoft.Compute/disk@2020-09-30' = {
  name: managedDiskName
  location: location
  sku: {
    name: 'StandardSSD_LRS'
  }
  properties: {
    creationData: {
      creationOption: 'Empty'
    }
    diskSizeGB: diskSizeInGiB
    diskIOPSReadWrite: diskIOPSReadWrite
    diskMbpsReadWrite: diskMbpsReadWrite
  }
}
"timestamp": "2025-12-11T17:02:51.000300+08:00",
"validatedResources": null,
"validationLevel": null
},
"resourceGroup": "az104-rg3",
"tags": null,
"type": "Microsoft.Resources/deployments"
}
vladkeeks [ ~ ]$ az disk list --resource-group az104-rg3 --output table
Name          ResourceGroup   Location   Zones   Sku           SizeGb  ProvisioningState
az104-disk1   az104-rg3     eastus     -       Premium_LRS  32      Succeeded
az104-disk2   az104-rg3     eastus     -       Premium_LRS  32      Succeeded
az104-disk3   az104-rg3     eastus     -       Premium_LRS  32      Succeeded
az104-disk4   az104-rg3     eastus     -       Premium_LRS  32      Succeeded
az104-disk5   az104-rg3     eastus     -       StandardSSD_LRS 32      Succeeded
vladkeeks [ ~ ]$ 
```