

# **REPORT ON MICROSOFT AZURE FUNDAMENTALS**

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## 1) Sandbox:

### Create a Linux virtual machine and install Nginx

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Unit 3 of 14

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100 XP

## Exercise - Create an Azure virtual machine

10 minutes

Sandbox activated! Time remaining: 57 min

You have used 3 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In this exercise, you create an Azure virtual machine (VM) and install Nginx, a popular web server.

You could use the Azure portal, the Azure CLI, Azure PowerShell, or an Azure

Azure Cloud Shell

Switch to PowerShell Restart Manage files ▾ New session ...

```
sherinruffia91 [ ~ ]$ az vm create --resource-group "learn-d465d9de-fe8d-46a2-a6f5-39c268de9d65" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
SSH key files '/home/sherinruffia91/.ssh/id_rsa' and '/home/sherinruffia91/.ssh/id_rsa.pub' have been generated under ~/.ssh to allow SSH access to the VM. If using machines without permanent storage, back up your keys to a safe location.
{
  "fqdns": "",
  "id": "/subscriptions/66934742-a2f4-4f94-ad7b-07a47d83d2bc/resourceGroups/learn-d465d9de-fe8d-46a2-a6f5-39c268de9d65/providers/Microsoft.Compute/virtualMachines/my-vm",
  "location": "westus",
  "macAddress": "00-0D-3A-36-9B-8C",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "13.88.186.128",
  "resourceGroup": "learn-d465d9de-fe8d-46a2-a6f5-39c268de9d65",
  "zones": ""
}
```

### Access your web server

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allowing inbound HTTP access on port 80.

## Task 1: Access your web server

In this procedure, you get the IP address for your VM and attempt to access your web server's home page.

- Run the following `az vm list-ip-addresses` command to get your VM's IP address and store the result as a Bash variable:

Azure CLI

Copy

```
IPADDRESS=$(az vm list-ip-addresses \
--resource-group "learn-d465d9de-fe8d-46a2-a6f5-39c268de9d65" \
--name my-vm \
--query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" \
--output tsv)
```

- Run the following `curl` command to download the home page:

Azure Cloud Shell

Switch to PowerShell Restart Manage files ▾ New session ...

```
sherinruffia91 [ ~ ]$ az vm list-ip-addresses --resource-group "learn-d465d9de-fe8d-46a2-a6f5-39c268de9d65" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv
sherinruffia91 [ ~ ]$
```

## List the current network security group rules

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### Task 2: List the current network security group rules

Your web server wasn't accessible. To find out why, let's examine your current NSG rules.

- Run the following `az network nsg list` command to list the network security groups that are associated with your VM:

Azure CLI

Copy

```
az network nsg list \
  --resource-group "learn-3b89623d-796d-42dd-81b0-72066da62752" \
  --query '[] .name' \
  --output tsv
```

You see this output:

Output

Copy

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

```
"destinationAddressPrefix": "*",
"destinationAddressPrefixes": [],
"destinationPortRange": "22",
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"e2ce1bde-9c88-460b-909b-7f7661fdb565\"",
"id": "/subscriptions/66934742-a2f4-4f94-ad7b-07a47d83d2bc/resourceGroups/learn-3b89623d-796d-42dd-81b0-72066da62752/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
"name": "default-allow-ssh",
"priority": 1000,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-3b89623d-796d-42dd-81b0-72066da62752",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
]
```

sherinruffia91 [ ~ ]\$

## Create the network security rule

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### Task 3: Create the network security rule

Here, you create a network security rule that allows inbound access on port 80 (HTTP).

- Run the following `az network nsg rule create` command to create a rule called `allow-http` that allows inbound access on port 80:

Azure CLI

Copy

```
az network nsg rule create \
  --resource-group "learn-3b89623d-796d-42dd-81b0-72066da62752" \
  --nsg-name my-vmNSG \
  --name allow-http \
  --protocol tcp \
  --priority 100 \
  --destination-port-range 80 \
  --access Allow
```

For learning purposes, here you set the priority to 100. In this case, the

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

```
"access": "Allow",
"destinationAddressPrefix": "*",
"destinationAddressPrefixes": [],
"destinationPortRange": "80",
"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"df38f130-6685-4eb5-be4b-350fa3414640\"",
"id": "/subscriptions/66934742-a2f4-4f94-ad7b-07a47d83d2bc/resourceGroups/learn-3b89623d-796d-42dd-81b0-72066da62752/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-3b89623d-796d-42dd-81b0-72066da62752",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
]
```

sherinruffia91 [ ~ ]\$

## Access your web server again

learn.microsoft.com/en-us/training/modules/describe-azure-compute-networking-services/9-exercise-configure-network-access

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### Task 4: Access your web server again

Now that you configured network access to port 80, let's try to access the web server a second time.

#### Note

After you update the NSG, it may take a few moments before the updated rules propagate. Retry the next step, with pauses between attempts, until you get the desired results.

1. Run the same `curl` command that you ran earlier:

Bash

Copy

```
curl --connect-timeout 5 http://$IPADDRESS
```

```
Azure Cloud Shell

Switch to PowerShell Restart Manage files New session

{"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-3b89623d-796d-42dd-81b0-72066da62752",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"
}

sherinruffia91 [ ~ ]$ az network nsg rule list --resource-group "learn-3b89623d-796d-42dd-81b0-72066da62752" --nsg-name my-vmNSG --query '[].{Name:name, Priority:priority, Port:destinationPortRange, Access:access}' --output table
-----
Name                Priority    Port    Access
-----
default-allow-ssh   1000       22      Allow
allow-http          100        80      Allow

sherinruffia91 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>

sherinruffia91 [ ~ ]$
```

### Final output:

Not secure 13.64.20.234

Welcome to Azure! My name is my-vm.

## 2) Azure Academic Services: Azure for Students

### Creation of resource groups

Microsoft Azure

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

Copilot

3

sherink1910@outlook.c...  
DEFAULT DIRECTORY

Home >

Resource groups

Default Directory

Create

Manage view

Refresh

Export to CSV

Open query

Assign tags

Filter for any field...

Subscription equals all

Location equals all

Add filter

Showing 1 to 5 of 5 records.

No grouping

List view

<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Location ↑↓	
<input type="checkbox"/> NetworkWatcherRG	Azure for Students	Central India	...
<input type="checkbox"/> rg_group	Azure for Students	Central India	...
<input type="checkbox"/> sherink	Azure for Students	Central India	...
<input type="checkbox"/> sherink_group	Azure for Students	Central India	...
<input type="checkbox"/> sherink_group_08100938	Azure for Students	Central India	...

### Creation of Virtual Machine

Microsoft Azure

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

Copilot

3

sherink1910@outlook.c...  
DEFAULT DIRECTORY

Home >

Virtual machines

Default Directory

Create

Switch to classic

Reservations

Manage view

Refresh

Export to CSV

Open query

Assign tags

Start

Restart

Stop

Delete

...

Filter for any field...

Subscription equals all

Type equals all

Resource group equals all

Location equals all

Add filter

Showing 1 to 1 of 1 records.

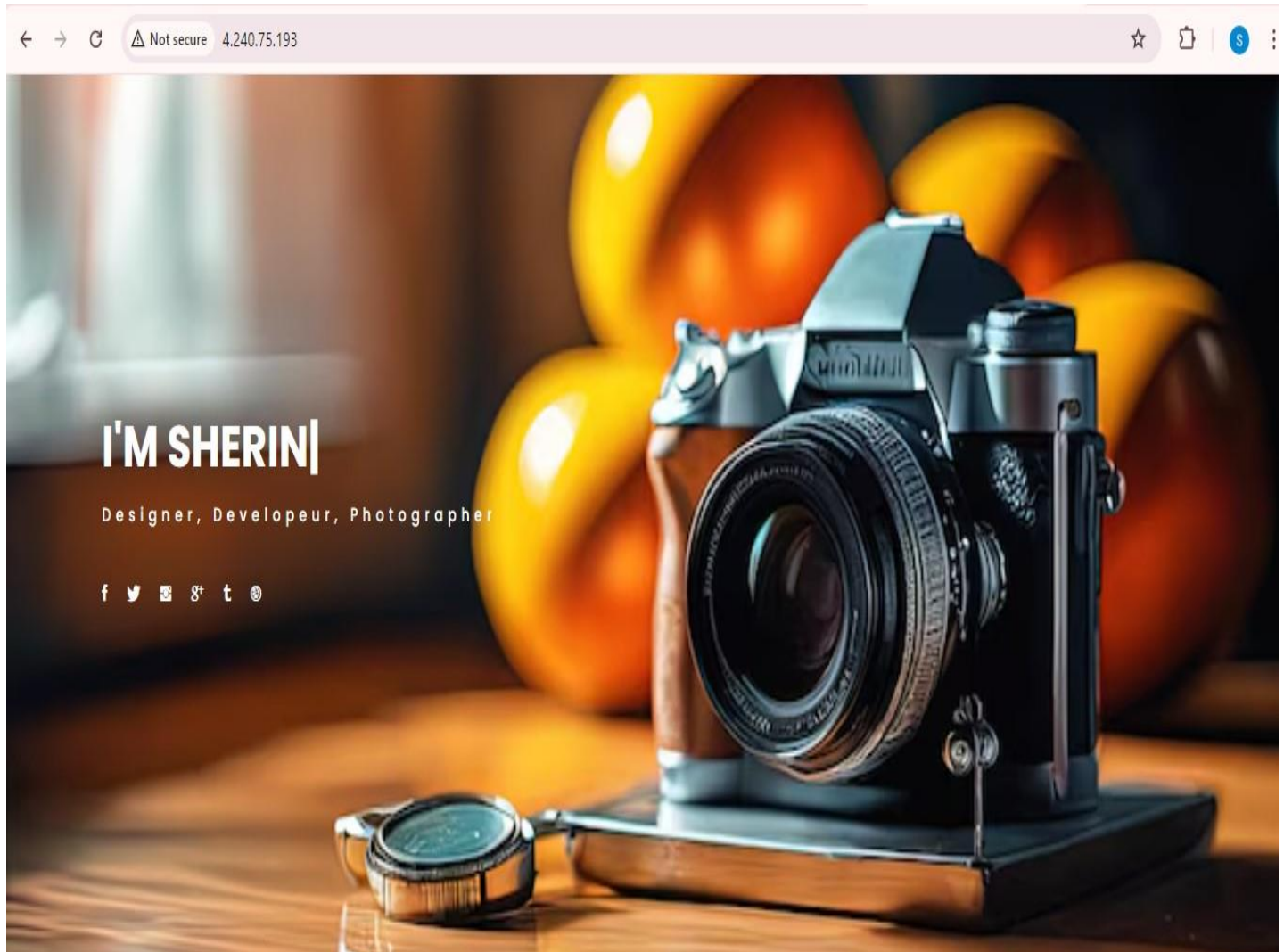
No grouping

List view

<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓	Operating system ↑↓	Size ↑↓	Public IP address ↑↓
<input type="checkbox"/> sherink	Azure for Students	sherink_group_081009...	Central India	Stopped (deallocated)	Linux	Standard_D2s_v3	4.240.75.193



## Hosting my portfolio using Azure Cloud Services




## Pricing calculator


[illegible]

## Total Cost of Ownership (TCO) Calculator

## Total Cost of Ownership (TCO) Calculator

Estimate the cost savings you can realize by migrating your workloads to Azure

 My saved reports

 Sign In

Over 3 year(s) with Microsoft Azure, your estimated cost savings could be as much as **₹51,439,123**

Total on-premises vs. Azure cost over time

Savings from running workloads in Azure accrue over time. The following shows how those savings add up over years.

# Creation of container

Microsoft Azure

Search resources, services, and docs (G+)

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sherink1910@outlook.c...  
DEFAULT DIRECTORY

Home > sherinruffiak\_1723269965214 | Overview > sherinruffiak

sherinruffiak  
Storage account

Containers

Search

+ Container | Change access level | Restore containers | Refresh | Delete | Give feedback

Search containers by prefix

Show deleted containers

Name	Last modified	Anonymous access level	Lease state	
<input type="checkbox"/> \$logs	8/10/2024, 11:36:40 AM	Private	Available	...
<input type="checkbox"/> sherink	8/10/2024, 11:38:20 AM	Private	Available	...

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Partner solutions

Data storage

Containers

File shares

Queues

Tables

Security + networking

Data management

Microsoft Azure

Search resources, services, and docs (G+)

Copilot

sherink1910@outlook.c...  
DEFAULT DIRECTORY

Home > sherinruffiak\_1723269965214 | Overview > sherinruffiak | Containers >

sherink  
Container

...

Search

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

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

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size
No results					

Overview

Diagnose and solve problems

Access Control (IAM)

Settings



Microsoft Azure

Search resources, services, and docs (G+)

Copilot

sherink1910@outlook.c...  
DEFAULT DIRECTORY

Home > sherinruffiak\_1723269965214 | Overview > sherinruffiak | Containers > sherink >

sherink  
Container

Search

Upload Change access level

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

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

Location: sherink

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name

computer.jpeg

computer.jpeg  
Blob

Save Discard Download Refresh Delete Change tier Acquire lease Break lease Give feedback

Overview Versions Snapshots Edit Generate SAS

Properties

URL [https://sherinruffiak.blob...](https://sherinruffiak.blob.core.windows.net/sherink/computer.jpeg)

LAST MODIFIED 8/10/2024, 11:45:52 AM

CREATION TIME 8/10/2024, 11:45:52 AM

VERSION ID -

TYPE Block blob

SIZE 87.33 KiB

ACCESS TIER Hot (Inferred)

ACCESS TIER LAST MODIFIED N/A

ARCHIVE STATUS -

REHYDRATE PRIORITY -

SERVER ENCRYPTED true

ETAG 0x8DC8903E338927A

VERSION-LEVEL IMMUTABILITY POLICY Disabled

CACHE-CONTROL

CONTENT-TYPE image/jpeg

CONTENT-MD5 EWdkavsgnWgicwIFQnBZpA...

CONTENT-ENCODING

CONTENT-LANGUAGE

CONTENT-EXCEPTIONS

Final output:

