

# **REPORT ON MICROSOFT AZURE FUNDAMENTALS**

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# 1)Sandbox:

## Create a Linux virtual machine and install Nginx

**Exercise - Create an Azure virtual machine**

10 minutes

Sandbox activated! Time remaining: 8 min

You have used 1 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 Resource Manager (ARM) template.

In this instance, you're going to use the Azure CLI.

```
vishnuk123123 [ ~ ] $ az vm create --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
{
  "fagsn": "",
  "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee/providers/Microsoft.Compute/virtualMachines/my-vm",
  "location": "westus",
  "macAddress": "68-45-BD-02-A3-E6",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "13.91.94.54",
  "resourceGroup": "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee",
  "zones": ""
}
vishnuk123123 [ ~ ] $ az vm extension set --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --settings '[{"fileUri": "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"}]' --protected-settings '{"commandToExecute": "./configure-nginx.sh"}'
{
  "autoUpgradeMinorVersion": true,
  "enableAutomaticUpgrade": null,
  "forceUpdateTag": null,
}
```

## Access your web server

**Exercise - Configure network access**

10 minutes

Sandbox activated! Time remaining: 45 min

You have used 1 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In this exercise, you configure the access to the virtual machine (VM) you created earlier in this module.

**Important**

The Microsoft Learn sandbox should still be running. If the sandbox timed out, you'll need to redo the previous exercise (Exercise - Create an Azure virtual machine).

```
vishnuk123123 [ ~ ] $ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[0].ipAddress" --output tsv)
vishnuk123123 [ ~ ] $ az vm list
[Warning] This output may compromise security by showing the following secrets: osProfile, linuxConfiguration, ssh, publicKeys, keyData. Learn more at: https://go.microsoft.com/fwlink/?linkid=2258669
{
  "additionalCapabilities": null,
  "applicationProfile": null,
  "availabilitySet": null,
  "billingProfile": null,
  "capacityReservation": null,
  "diagnosticsProfile": null,
  "etag": "\i",
  "evictionPolicy": null,
  "extendedLocation": null,
  "extensionsTimeBudget": null,
  "hardwareProfile": {
    "vmSize": "Standard_DS1_v2",
    "vmSizeProperties": null
  },
  "host": null,
  "hostGroup": null,
  "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/LEARN-AF33CC9F-09AE-480C-B0B2-C6CCBA8011EE/providers/Microsoft.Compute/virtualMachines/my-vm",
  "identity": null,
}
```

**Exercise - Configure network access**

10 minutes

Sandbox activated! Time remaining: 43 min

You have used 1 of 10 sandboxes for today. More sandboxes will be available tomorrow.

In this exercise, you configure the access to the virtual machine (VM) you created earlier in this module.

**Important**

The Microsoft Learn sandbox should still be running. If the sandbox timed out, you'll need to redo the previous exercise (Exercise - Create an Azure virtual machine).

```
vishnuk123123 [ ~ ] $ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 13.91.94.54 port 80 after 5003 ms: Timeout was reached
vishnuk123123 [ ~ ] $ echo $IPADDRESS
13.91.94.54
vishnuk123123 [ ~ ] $
```

## List the current network security group rules

**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
az network nsg list \
  --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" \
  --query "[].name" \
  --output tsv

```

You see this output:

```

Output
my-vmNSG

```

Every VM on Azure is associated with at least one network security group. In this case,

```

Azure Cloud Shell
Switch to PowerShell Restart Manage files New session Editor ...
{
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "22",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"8384609e-02a2-4c59-9c36-86c262a17931\"",
  "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
  "name": "default-allow-ssh",
  "priority": 1000,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
  "sourcePortRanges": [],
  "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
vishnuk123123 [ ~ ] $ az network nsg rule list --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" --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

```

## Create the network security rule

**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
az network nsg rule create \
  --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" \
  --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 priority doesn't matter. You would need to consider the priority if you had overlapping port ranges.

- To verify the configuration, run `az network nsg rule list` to see the updated list of rules:

```

Azure Cloud Shell
Switch to PowerShell Restart Manage files New session Editor ...
vishnuk123123 [ ~ ] $ az network nsg rule list --resource-group "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee" --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
{
  "access": "Allow",
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "80",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"9aae8ed-f3ac-4b66-8db4-8ecc3998b85e\"",
  "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
  "name": "allow-http",
  "priority": 100,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-af33cc9f-09ae-480c-b0b2-c6ccba8011ee",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
  "sourcePortRanges": [],
  "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
vishnuk123123 [ ~ ] $

```

## Access your web server again

**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.

- Run the same `curl` command that you ran earlier:

```

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

```

You see this response:

```

HTML
<html><body>ch2>Welcome to Azure! My name is my-vm.</body></html>

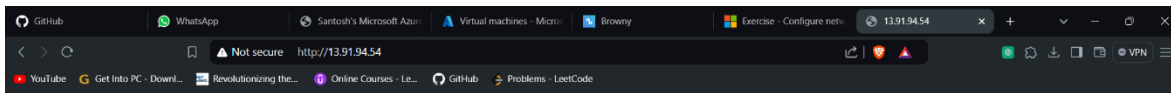
```

```

Azure Cloud Shell
Switch to PowerShell Restart Manage files New session Editor ...
vishnuk123123 [ ~ ] $ curl --connect-timeout 5 http://$IPADDRESS
curl: (3) URL rejected: No host part in the URL
vishnuk123123 [ ~ ] $

```

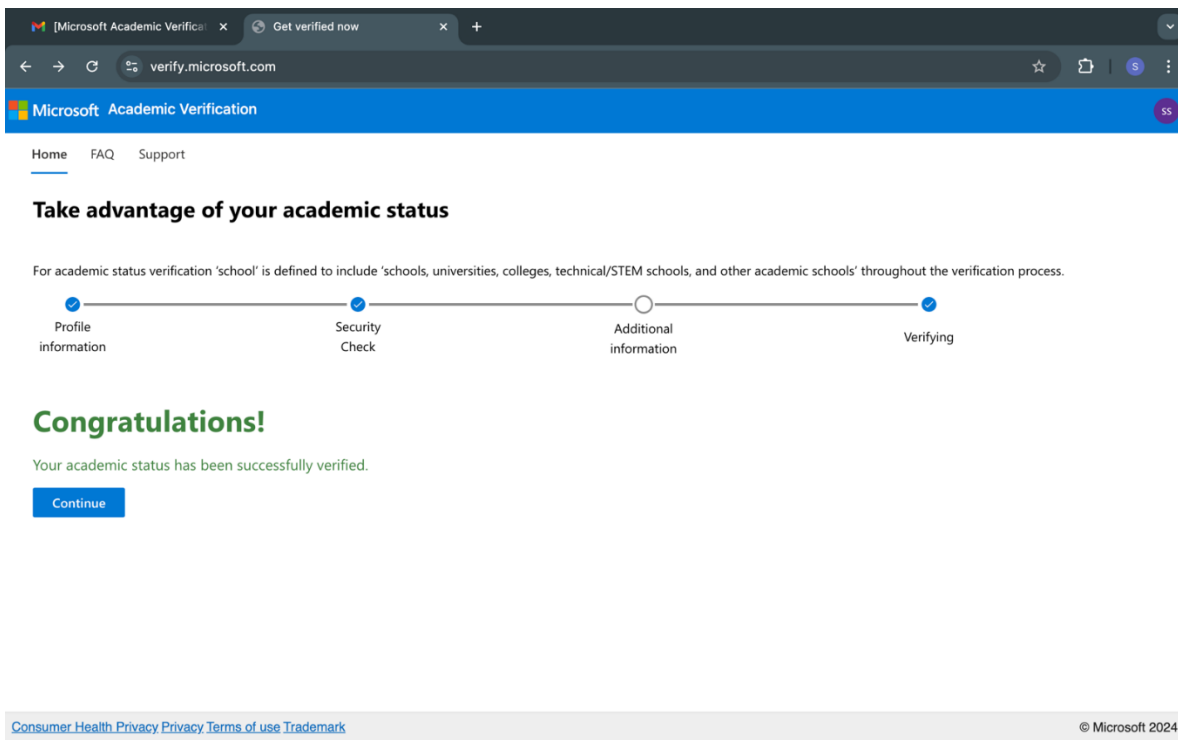
Final output:



Welcome to Azure! My name is my-vm.

## 2) Azure Academic Services: Azure for Students

### Microsoft Academic Verification Process



## Creation of resource groups

Microsoft Azure

Search resources, services, and docs (G+)

Home >

### Resource groups

Default Directory

+ Create Manage view Refresh Export to CSV Open query Assign tags Group by none

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

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

Name ↑	Subscription	Location
RG1	Azure for Students	Central India

Showing 1 - 1 of 1. Display count: 10

[Give feedback](#)

## Creation of Virtual Machine

Microsoft Azure

Search resources, services, and docs (G+)

Home >

### Virtual machines

Default Directory

+ Create Switch to classic Reservations Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete Services Maintenance

Filter for any field... Subscription equals all Type equals all Resource group equals all Location equals all Add filter

Showing 1 to 2 of 2 records. No grouping List view

Name ↑	Subscription ↑	Resource group ↑	Location ↑	Status ↑	Operating system ↑	Size ↑	Public IP address ↑	Disks ↑
xeno	Azure for Students	RG1	Central India	Stopped (deallocated)	Linux	Standard_E2s_v3	4.240.74.160	1

< Previous Page 1 of 1 Next >

[Give feedback](#)

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

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

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
vishnuk123123 [ ~ ]$ ssh vishnuk123@4.240.74.160
```

## Hosting my portfolio using Azure Cloud Services

Not secure http://4.240.74.160

YouTube Get Into PC - Downl... Revolutionizing the... Online Courses - I.e... GitHub Problems - LeetCode

BROWN'Y

EDUCATION SKILLS EXPERIENCE PROFILE PORTFOLIO CLIENTS CONTACT

HI, I AM BROWN'Y STAR.

UI/UX DESIGNER AND WEB DEVELOPER

Download Resume

# Pricing calculator

AutoSave

ExportedEstimate

Search (Cmd + Ctrl + U)

Comments

Share

HomeInsertDrawPage LayoutFormulasDataReviewViewAutomate

Paste

Segoe UI

14

General

Conditional Formatting

Format as Table

Cell Styles

Insert

Delete

Format

Σ

Sort & Filter

Find & Select

Add-ins

Analyse Data

A1Microsoft Azure Estimate

Service category	Service type	Custom name	Region	Description	Estimated monthly cost	Estimated upfront cost
Compute	Virtual Machines		East US	1 D2 v3 (2 vCPUs, 8 GB RAM) x 730 Hours (Pay as you go), Windows (License included), OS Only; 0 managed disks - \$4; Inter Region transfer type, 5 GB outbound data transfer from East US to East Asia	\$137.24	\$0.00
Support			Support	Microsoft Customer Agreement (MCA)	\$0.00	\$0.00
			Licensing Program			
			Billing Account			
			Billing Profile			
			Total		\$137.24	\$0.00

Disclaimer

All prices shown are in United States - Dollar (\$) USD. This is a summary estimate, not a quote. For up to date pricing information please visit <https://azure.microsoft.com/pricing/calculator/>. This estimate was created at 8/9/2024 4:04:33 AM UTC.

# Total Cost of Ownership (TCO) Calculator

FileC:/Users/zenny/Downloads/azure%20TCO.pdf

1 of 11

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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 \$663,656

Total on-premises vs. Azure cost over time

Savings from running workloads in Azure accrue over time. The following shows how those

# Creation of container

Microsoft Azure

Home > Storage accounts > xeno

### xeno | Containers

Storage account

Search containers by prefix

Show deleted containers

Name	Last modified	Anonymous access level	Lease state
<input type="checkbox"/> \$logs	8/10/2024, 2:46:43 PM	Private	Available
<input type="checkbox"/> xeno	8/10/2024, 2:49:36 PM	Private	Available

Microsoft Azure

Home > Storage accounts > xeno

### xeno

Container

Search

Upload Change access level Refresh Delete Change tier Acquire lease Break lease View snapshots Create snapshot Give feedback

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

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

Location: xeno

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
<input type="checkbox"/> joker.png	8/10/2024, 2:54:48 PM	Hot (Inferred)		Block blob	447.61 KiB	Available

Microsoft Azure

Home > Storage accounts > xeno

### xeno

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: xeno

Search blobs by prefix (case-sensitive)

Show deleted blobs

Add filter

Name

☐ joker.png

### joker.png

Blob

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

Overview Versions Snapshots Edit Generate SAS

Properties

URL <https://xeno.blob.core...>

LAST MODIFIED 8/10/2024, 2:54:48 PM

CREATION TIME 8/10/2024, 2:54:48 PM

VERSION ID -

TYPE Block blob

SIZE 447.61 KiB

ACCESS TIER Hot (Inferred)

ACCESS TIER LAST MODIFIED N/A

ARCHIVE STATUS -

REHYDRATE PRIORITY -

SERVER ENCRYPTED true

ETAG 0x8DCB91E47F14899

VERSION-LEVEL IMMUTABILITY POLICY Disabled

CACHE-CONTROL

CONTENT-TYPE image/png

CONTENT-MD5 a81KaT4dGHDjqZ/OU4yftg==

Home >

Virtual machines 

✕

...

Default Directory

+ Create

↺ Switch to classic

🕒 Reservations

⚙️ Manage view

🔄 Refresh

📄 Export to CSV

🔗 Open query

 | 

🏷️ Assign tags

▶ Start

↺ Restart

⏹ Stop

🗑 Delete

☰ Services

🔧 Maintenance

Filter for any field...

Subscription equals all

Type equals all

Resource group equals all ✕



Location equals all ✕

+ Add filter

Showing 1 to 2 of 2 records.

No grouping

List view

<input type="checkbox"/> Name ↑↓	Subscription ↑↓	Resource group ↑↓	Location ↑↓	Status ↑↓	Operating system ↑↓	Size ↑↓	Public IP address ↑↓	Disks ↑↓	
<input type="checkbox"/>  sss	Azure for Students	RG1	centralindia	Stopped (deallocated)	Linux	Standard_D2s_v3	20.40.55.246	1	...
<input type="checkbox"/>  xeno	Azure for Students	RG1	centralindia	Stopped (deallocated)	Linux	Standard_E2s_v3	4.240.74.160	1	...