

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: 49 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.

```
"enableAutomaticUpgrade": null,
"forceUpdateTag": null,
"id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcfbfa/resourceGroups/learn-39eff82e-378f-46ec-b11e-c949563fb600/providers/Microsoft.Compute/virtualMachines/my-vm/extensions/customScript",
"instanceView": null,
"location": "westus",
"name": "customScript",
"protectedSettings": null,
"protectedSettingsFromKeyVault": null,
"provisionAfterExtensions": null,
"provisioningState": "Succeeded",
"publisher": "Microsoft.Azure.Extensions",
"resourceGroup": "learn-39eff82e-378f-46ec-b11e-c949563fb600",
"settings": {
  "fileUri": [
    "https://raw.githubusercontent.com/MicrosoftDocs/mslearn-welcome-to-azure/master/configure-nginx.sh"
  ]
},
"suppressFailures": null,
"tags": null,
"type": "Microsoft.Compute/virtualMachines/extensions",
"typeHandlerVersion": "2.1",
"typePropertiesType": "customScript"
}
```

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).

```
"resourceGroup": "learn-39eff82e-378f-46ec-b11e-c949563fb600",
"securityProfile": null,
"storageAccountType": "Premium_LRS"
},
"name": "my-vm_disk1_051dcf3d7d2c40d78349019ce656f8f7",
"osType": "Linux",
"vhd": null,
"writeAcceleratorEnabled": null
}
},
"tags": {},
"timeCreated": "2024-08-10T06:12:30.681174+00:00",
"type": "Microsoft.Compute/virtualMachines",
"userData": null,
"virtualMachineScaleSet": null,
"vmId": "c4003fe1-656b-479f-bd0f-eac358c0ebcb",
"zones": null
}
]
shrisanjay377 [ ~ ]$ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-39eff82e-378f-46ec-b11e-c949563fb600" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv)
shrisanjay377 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 13.64.75.95 port 80 after 5002 ms: Timeout was reached
shrisanjay377 [ ~ ]$ echo $IPADDRESS
13.64.75.95
shrisanjay377 [ ~ ]$
```

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-39eff82e-378f-46ec-b11e-c949563fb600" \
  --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 ...
{"destinationAddressPrefixes": [],
 "destinationPortRange": "22",
 "destinationPortRanges": [],
 "direction": "Inbound",
 "etag": "W/\"d5179155-2579-49ff-9509-9e7793e5fe64\"",
 "id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcfbfa/resourceGroups/learn-39eff82e-378f-46ec-b11e-c949563fb600/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
 "name": "default-allow-ssh",
 "priority": 1000,
 "protocol": "Tcp",
 "provisioningState": "Succeeded",
 "resourceGroup": "learn-39eff82e-378f-46ec-b11e-c949563fb600",
 "sourceAddressPrefix": "*",
 "sourceAddressPrefixes": [],
 "sourcePortRange": "*",
 "sourcePortRanges": [],
 "type": "Microsoft.Network/networkSecurityGroups/securityRules"
}
shrisanjay377 [ ~ ] $ az network nsg rule list --resource-group "learn-39eff82e-378f-46ec-b11e-c949563fb600" --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
shrisanjay377 [ ~ ] $
```

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-39eff82e-378f-46ec-b11e-c949563fb600" \
  --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 CLI
shrisanjay377 [ ~ ] $ az network nsg rule list --resource-group "learn-39eff82e-378f-46ec-b11e-c949563fb600" --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
shrisanjay377 [ ~ ] $
```

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.

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

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

You see this response:

```
HTML
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
```

Azure Cloud Shell

```
Switch to PowerShell Restart Manage files New session Editor
{"destinationPortRanges": [],
"direction": "Inbound",
"etag": "W/\"699fb2ea-b6a8-47a8-8dfa-cf6cc5de9f1f\"",
"id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcbfba/resourceGroups/learn-39eff82e-378f-46ec-b11e-c949563fb600/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
"name": "allow-http",
"priority": 100,
"protocol": "Tcp",
"provisioningState": "Succeeded",
"resourceGroup": "learn-39eff82e-378f-46ec-b11e-c949563fb600",
"sourceAddressPrefix": "*",
"sourceAddressPrefixes": [],
"sourcePortRange": "*",
"sourcePortRanges": [],
"type": "Microsoft.Network/networkSecurityGroups/securityRules"}
shrisanjay377 [ ~ ]$ az network nsg rule list --resource-group "learn-39eff82e-378f-46ec-b11e-c949563fb600" --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
shrisanjay377 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
shrisanjay377 [ ~ ]$
```

Final output:

Exercise - Configure network x Virtual machines - Microsoft x Inbox (3,435) - sanjay.savit x internet speed test - Google x 40.86.175.142

Not Secure 40.86.175.142

Welcome to Azure! My name is my-vm.

2) Azure Academic Services: Azure for Students

Microsoft Academic Verification Process

The screenshot shows the Microsoft Academic Verification website. The browser tabs include '[Microsoft Academic Verifica]', 'Get verified now', and 'verify.microsoft.com'. The page header has 'Microsoft Academic Verification' and a user profile icon. The main heading is 'Take advantage of your academic status'. Below it, a paragraph states: 'For academic status verification 'school' is defined to include 'schools, universities, colleges, technical/STEM schools, and other academic schools' throughout the verification process.' A progress bar shows four steps: 'Profile information' (checked), 'Security Check' (checked), 'Additional information' (unchecked), and 'Verifying' (checked). A large green 'Congratulations!' message is displayed, followed by the text 'Your academic status has been successfully verified.' and a blue 'Continue' button. At the bottom, there are links for 'Consumer Health Privacy Privacy Terms of use Trademark' and a copyright notice '© Microsoft 2024'.

Creation of resource groups

The screenshot shows the Microsoft Azure portal. The browser tabs include 'Exercise - Configure network a...', 'shrisanjay/sanjay', 'WhatsApp', 'Resource groups - Micros...', 'Your Repositories', and 'Password Manager'. The address bar shows 'portal.azure.com/#browse/resourcegroups'. The page header has 'Microsoft Azure' and a search bar. The main heading is 'Resource groups'. Below it, there are links for 'Create', 'Manage view', 'Refresh', 'Export to CSV', 'Open query', and 'Assign tags'. A filter bar shows 'Subscription equals all' and 'Location equals all'. A table displays two resource groups:

Name	Subscription	Location
NetworkWatcherRG	Azure for Students	Central India
rg	Azure for Students	Central India

The page footer shows 'Showing 1 to 2 of 2 records.' and a 'Give feedback' link. The Windows taskbar at the bottom shows the time as 11:54 AM on 10-08-2024.

Creation of Virtual Machine

Exercise - Configure network a | shrisanjay/sanjay | WhatsApp | Virtual machines - Microso... | Your Repositories | Password Manager | + | - | x

portal.azure.com/#browse/Microsoft.Compute%2FVirtualMachines

For quick access, place your bookmarks here on the bookmarks bar. [Import bookmarks now...](#)

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 1 of 1 records. | No grouping | List view

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
demo	Azure for Students	RG	Central India	Running	Linux	Standard_D2s_v3	20.198.9.234	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...

Welcome to Azure Cloud Shell

Type "az" to use Azure CLI
Type "help" to learn about Cloud Shell

Your Cloud Shell session will be ephemeral so no files or system changes will persist beyond your current session.
shri [ ~ ]$ ssh shrisanjay@
20.198.9.234
```

Search | ENG IN | 11:56 AM 10-08-2024

Hosting my portfolio using Azure Cloud Services

20.198.9.234

Would you like to make Opera your everyday browser? [How do I do that?](#) | Yes, set it as default browser

f t g+ i m

Hello, I am shrisanjay

Full Stack Developer

Print Resume

Home | About | Resume | Portfolio | Blog | Contact

Pricing calculator

Microsoft Azure Estimate						
Your Estimate						
Service category	Service type	Custom name	Region	Description	Estimated monthly cost	Estimated upfront cost
Compute	Virtual Machines		West US	2 D2 v3 (2 vCPUs, 8 GB RAM) x 730 Hours (Pay as you go), Windows (License included), OS Only; 0 managed disks – S4; Inter Region transfer type, 5 GB outbound data transfer from West US to East Asia	\$305.14	\$0.00
Networking	Application Gateway		West US	Web Application Firewall tier, Medium Instance size: 2 Gateway hours instance(s) x 730 Hours, 1 TB Data processed unit(s), 5 GB Zone unit(s)	\$206.04	\$0.00
Databases	Azure SQL Database		West US	Single Database, vCore, General Purpose, Provisioned, Standard-series (Gen 5), Primary or Geo replica Disaster Recovery, Locally Redundant, 1 - 8 vCore Database(s) x 730 Hours, 32 GB Storage, SQL License (Pay as you go), RA-GRS Backup Storage Redundancy, 0 GB Point-In-Time Restore, 0 x 5 GB Long Term Retention	\$1,567.39	\$0.00
Support			Support		\$0.00	\$0.00
			Licensing Program	Microsoft Customer Agreement (MCA)		
			Billing Account			
			Billing Profile			
			Total		\$2,078.57	\$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 4:12:11 AM UTC.						

Total Cost of Ownership (TCO) Calculator

Menu

toc.pdf

Create

All tools

Edit

Convert

E-Sign

Find text or tools

AI Assistant

Total Cost of Ownership (TCO) Calculator

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

My saved reports

Shri Sanjay
Shrisanjay377@outlook.com

Over 3 year(s) with Microsoft Azure, your estimated cost savings could be as much as **\$620,994**

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

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes the 'Microsoft Azure' logo, a search bar, and a 'Copilot' button. The breadcrumb trail indicates the path: Home > newstorea_1723275890969 | Overview > newstorea. The main heading is 'newstorea | Containers'. Below this, there's a search bar for containers and a table listing them. The table has columns for Name, Last modified, Anonymous access level, and Lease state. Two containers are listed: 'slogs' and 'shrisanjay544'. The left sidebar shows various Azure services, with 'Containers' selected under 'Data storage'. The bottom taskbar shows the Windows Start menu, search bar, and system tray with the date and time (01:23 PM, 10-08-2024).

Name	Last modified	Anonymous access level	Lease state
<input type="checkbox"/> slogs	8/10/2024, 1:15:35 PM	Private	Available
<input type="checkbox"/> shrisanjay544	8/10/2024, 1:21:59 PM	Private	Available

The screenshot shows the Microsoft Azure portal interface for a specific blob. The breadcrumb trail is: Home > newstorea_1723275890969 | Overview > newstorea | Containers > shrisanjay544 > IMG-20240219-WA0171.jpg. The main heading is 'shrisanjay544' (Container) and 'IMG-20240219-WA0171.jpg' (Blob). The left sidebar shows the 'Overview' tab selected. The main content area displays the blob's properties, including URL, Last Modified, Creation Time, Version ID, Type, Size, Access Tier, and more. The 'Authentication method' is set to 'Access key'. The 'Location' is 'shrisanjay544'. The 'Search blobs by prefix' field is empty. The 'Add filter' button is visible. The bottom taskbar shows the Windows Start menu, search bar, and system tray with the date and time (01:29 PM, 10-08-2024).

Property	Value
URL	https://newstorea.blob.core.windows.net/shrisanjay544/IMG-20240219-WA0171.jpg
LAST MODIFIED	8/10/2024, 1:28:58 PM
CREATION TIME	8/10/2024, 1:28:58 PM
VERSION ID	-
TYPE	Block blob
SIZE	841.72 KiB
ACCESS TIER	Hot (Inferred)
ACCESS TIER LAST MODIFIED	N/A
ARCHIVE STATUS	-
REHYDRATE PRIORITY	-
SERVER ENCRYPTED	true
ETAG	0x8DCB91249F8E1FD
VERSION-LEVEL IMMUTABILITY POLICY	Disabled
CACHE-CONTROL	
CONTENT-TYPE	image/jpeg
CONTENT-MD5	HDy+14PBswmKz1GtOK5C/...

Exercise - Configure network a... shrisanjay/sanjay (4) WhatsApp IMG-20240219-WA0171.jp... Your Repositories Password Manager

portal.azure.com/#view/Microsoft_Azure_Storage/BlobPropertiesBladeV2/storageAccountId/%2Fsubscriptions%2F8dc00da9-6b09-4b... All Bookmarks

Microsoft Azure Search resources, services, and docs (G+...) Copilot Shrisanjay377@outlook... DEFAULT DIRECTORY (SHRISANJAY...)

Home > newstorea_1723275890969 | Overview > newstorea | Containers > shrisanjay544 >

shrisanjay544 Container

Search Upload Change access level ...

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Shared access tokens

Access policy

Properties

Metadata

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

Location: shrisanjay544

Search blobs by prefix (case-...)

Show deleted blobs

Add filter

Name

IMG-20240219-WA0171.jpg ...

IMG-20240219-WA0171.jpg ...

Blob

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

Overview Versions Snapshots Edit Generate SAS

Properties

URL https://newstorea.blob... [Copy]

LAST MODIFIED 8/10/2024, 1:28:58 PM

CREATION TIME 8/10/2024, 1:28:58 PM

VERSION ID -

TYPE Block blob

SIZE 841.72 KiB

ACCESS TIER Hot (Inferred)

ACCESS TIER LAST MODIFIED N/A

ARCHIVE STATUS -

REHYDRATE PRIORITY -

SERVER ENCRYPTED true

ETAG 0x8DCB91249F8E1FD

VERSION-LEVEL IMMUTABILITY POLICY Disabled

CACHE-CONTROL

CONTENT-TYPE image/jpeg

CONTENT-MD5 HDy+14PB8swmKz1GtOK5C/...

Exercise - Configure network a... shrisanjay/sanjay (4) WhatsApp Virtual machines - Micros... Your Repositories Password Manager

portal.azure.com/#browse/Microsoft.Compute%2FVirtualMachines All Bookmarks

Microsoft Azure Search resources, services, and docs (G+...) Copilot Shrisanjay377@outlook... DEFAULT DIRECTORY (SHRISANJAY...)

Home >

Virtual machines ...

Default Directory (Shrisanjay377@outlook.onmicrosoft.com)

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 1 of 1 records. No grouping List view

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
demo	Azure for Students	RG	Central India	Running	Linux	Standard_D2s_v3	20.198.9.234	1

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Give feedback

