

REPORT ON MICROSOFT AZURE FUNDAMENTALS

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Date	10.08.2024

1)Sandbox:

Create a Linux virtual machine and install Nginx

Task 1: Create a Linux virtual machine and install Nginx

Use the following Azure CLI commands to create a Linux VM and install Nginx. After your VM is created, you'll use the Custom Script Extension to install Nginx. The Custom Script Extension is an easy way to download and run scripts on your Azure VMs. It's just one of the many ways you can configure the system after your VM is up and running.

1. From Cloud Shell, run the following `az vm create` command to create a Linux VM:

```
Azure CLI Copy
az vm create \
  --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" \
  --name my-vm \
  --public-ip-sku Standard \
  --image Ubuntu2204 \
  --admin-username azureuser \
  --generate-ssh-keys
```

```
Azure Cloud Shell
Switch to PowerShell Restart Manage files New session
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
vishnupriyachinnasamy13 [ ~ ]$ az vm create --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
SSH key files '/home/vishnupriyachinnasamy13/.ssh/id_rsa' and '/home/vishnupriyachinnasamy13/.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/f27a2135-1ae7-44b2-b514-f0b7b1dcbfba/resourceGroups/learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6/providers/Microsoft.Compute/virtualMachines/my-vm",
  "location": "westus",
  "macAddress": "00-0D-3A-32-F5-4A",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
```

Access your web server

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.

1. 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-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" \
  --name my-vm \
  --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" \
  --output tsv)
```

2. Run the following `curl` command to download the home page:

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

```
Azure Cloud Shell
Switch to PowerShell Restart Manage files New session
{
  "name": "my-vm_disk1_5beac8100fa1455083cd4aa211b2ed91",
  "osType": "Linux",
  "vhd": null,
  "writeAcceleratorEnabled": null
}
},
"tags": {},
"timeCreated": "2024-08-10T07:50:10.402096+00:00",
"type": "Microsoft.Compute/virtualMachines",
"userData": null,
"virtualMachineScaleSet": null,
"vmId": "503f45ea-f932-43cf-8d05-a0ef5cddb7db",
"zones": null
}
]
vishnupriyachinnasamy13 [ ~ ]$ IPADDRESS=$(az vm list-ip-addresses --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv)
vishnupriyachinnasamy13 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
curl: (28) Failed to connect to 104.42.233.123 port 80 after 5002 ms: Timeout was reached
vishnupriyachinnasamy13 [ ~ ]$ echo $IPADDRESS
104.42.233.123
vishnupriyachinnasamy13 [ ~ ]$
```

List the current network security group rules

Learn

Discover

Product documentation

Development languages

Topics

Training

Products

Career Paths

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Educator Center

Student Hub

FAQ & Help

LEVEL 87600 / 23599 XP

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-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" \
--query '[] .name' \
--output tsv
```

Copy

You see this output:

Output

```
my-vmNSG
```

Copy

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

```
vishnupriyachinnasamy13 [ ~ ]$ echo $IPADDRESS
104.42.233.123
vishnupriyachinnasamy13 [ ~ ]$ az network nsg list --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" --query '[] .name' --output tsv
my-vmNSG
vishnupriyachinnasamy13 [ ~ ]$ az network nsg rule list --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" --nsg-name my-vmNSG
[
  {
    "access": "Allow",
    "destinationAddressPrefix": "*",
    "destinationAddressPrefixes": [],
    "destinationPortRange": "22",
    "destinationPortRanges": [],
    "direction": "Inbound",
    "etag": "W/\"857935a1-ec42-4d93-95d6-44471f515edc\"",
    "id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcbfba/resourceGroups/learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
    "name": "default-allow-ssh",
    "priority": 1000,
    "protocol": "Tcp",
    "provisioningState": "Succeeded",
    "resourceGroup": "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6",
```

Create the network security rule

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Topics

Training

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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

```
az network nsg rule create \
--resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" \
--nsg-name my-vmNSG \
--name allow-http \
--protocol tcp \
--priority 100 \
--destination-port-range 80 \
--access Allow
```

Copy

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

```
default-allow-ssh 1000 22 Allow
vishnupriyachinnasamy13 [ ~ ]$ az network nsg rule create --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" --nsg-name my-vmNSG --name allow-http --protocol tcp --priority 100 --destination-port-range 80 --access Allow
{
  "access": "Allow",
  "destinationAddressPrefix": "*",
  "destinationAddressPrefixes": [],
  "destinationPortRange": "80",
  "destinationPortRanges": [],
  "direction": "Inbound",
  "etag": "W/\"f960c91a-bd86-4bbc-9bad-6a6d890ec3f9\"",
  "id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcbfba/resourceGroups/learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
  "name": "allow-http",
  "priority": 100,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
  "resourceGroup": "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6",
  "sourceAddressPrefix": "*",
  "sourceAddressPrefixes": [],
  "sourcePortRange": "*",
```

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
```

```
Azure Cloud Shell
Switch to PowerShell Restart Manage files New session
{"id": "/subscriptions/f27a2135-1ae7-44b2-b514-f0b7b1dcfbba/resourceGroups/learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http", "name": "allow-http", "priority": 100, "protocol": "Tcp", "provisioningState": "Succeeded", "resourceGroup": "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6", "sourceAddressPrefix": "*", "sourceAddressPrefixes": [], "sourcePortRange": "*", "sourcePortRanges": [], "type": "Microsoft.Network/networkSecurityGroups/securityRules"}
vishnupriyachinnasamy13 [ ~ ]$ az network nsg rule list --resource-group "learn-5df434bb-176f-48b4-8fe8-ba3ea5312cf6" --nsg-name my-vmNSG --query '[Name, Priority, Port, Access]' --output table
Name          Priority  Port  Access
-----
default-allow-ssh 1000     22    Allow
allow-http     100      80    Allow
vishnupriyachinnasamy13 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
vishnupriyachinnasamy13 [ ~ ]$
```

Final output:

Welcome to Azure! My name is my-vm.

2) Azure Academic Services: Azure for Students

Creation of resource groups

The screenshot shows the Azure portal interface for the 'Vishnu-Priya-C' resource group. The 'Resources' tab is selected, showing a list of resources. The table below represents the data shown in the screenshot:

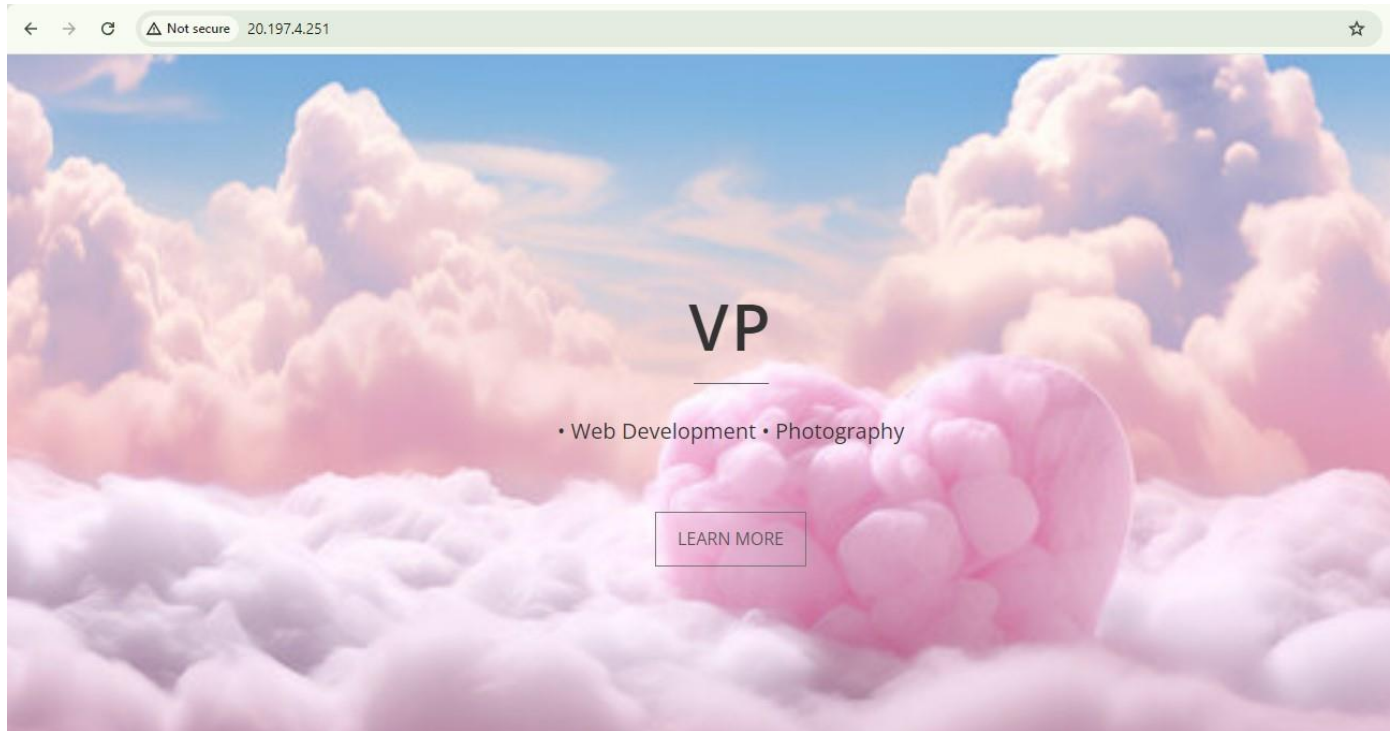
Name	Type	Location
Vishnu-Priya-C	Virtual machine	Central India
Vishnu-Priya-C-ip	Public IP address	Central India
Vishnu-Priya-C-nsg	Network security group	Central India
Vishnu-Priya-C-vnet	Virtual network	Central India
vishnu-priya-c652_z1	Network Interface	Central India
Vishnu-Priya-C_OsDisk_1_ffaba3f344bc40959bedfc3af2067603	Disk	Central India

Creation of Virtual Machine

The screenshot shows the Azure portal interface for the 'Virtual machines' page. The 'Vishnu-Priya-C' virtual machine is listed. The table below represents the data shown in the screenshot:

Name	Subscription	Resource group	Location	Status	Operating system	Size	Public IP address	Disks
Vishnu-Priya-C	Azure for Students	Vishnu-Priya-C	Central India	Stopped (deallocated)	Linux	Standard_D2s_v3	20.197.4.251	1

Hosting my portfolio using Azure Cloud Services




Pricing calculator


	A	B	C	D	E	F	G	
1	Microsoft Azure Estimate-Vishnu Priya C							
2	Your Estimate							
3	Service category	Service type	Custom name	Region	Description	Estimated monthly cost	Estimated upfront cost	
4	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	
5	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	
6	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	
7	Support			Support		\$0.00	\$0.00	
8				Licensing Program	Microsoft Customer Agreement (MCA)			
9				Billing Account				
10				Billing Profile				
11				Total		\$2,078.56	\$0.00	
12								

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

portal.azure.com/#@vishnupriyachinnasamy13outl.onmicrosoft.com/resource/subscriptions/73050093-ee5f-4375-b43b-d5f0c8a918d5/resourcegroups/demorg/provide...

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

Home > vishnupriyac_1723269993720 | Overview > vishnupriyac

vishnupriyac | Containers Storage account

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, 11:37:14 AM	Private	Available ...
<input type="checkbox"/> vishnupriyac	8/10/2024, 11:38:54 AM	Private	Available ...

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Data storage

Containers

File shares

Queues

Tables

Security + networking

portal.azure.com/#view/Microsoft_Azure_Storage/ContainerMenuBlade/~./overview/storageAccountId/%2Fsubscriptions%2F73050093-ee5f-4375-b43b-d5f0c8a918d5%...

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

Home > vishnupriyac_1723269993720 | Overview >

vishnupriyac Container

Search

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

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

Location: vishnupriyac

Search blobs by prefix (case-sensitive) Show deleted blobs

Add filter

Name	Modified	Access tier	Archive status	Blob type	Size	Lease state
No results						

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

portal.azure.com/#view/Microsoft_Azure_Storage/BlobPropertiesBladeV2/storageAccountId/%2Fsubscriptions%2F73050093-ee5-4375-b43b-d5f0c8a918d5%2Fre...

Microsoft Azure Search resources, services, and docs (G+)

Copilot

vishnupriyachinnasamy...
DEFAULT DIRECTORY

Home > vishnupriyac_1723269993720 | Overview > vishnupriyac >

vishnupriyac
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: vishnupriyac

Search blobs by prefix (case-...)

Show deleted blobs

Add filter

Name

computer-science.jpg

computer-science.jpg
Blob

Save Discard Download Refresh Delete Change tier Acquire lease ...

Overview Versions Snapshots Edit Generate SAS

Properties

URL	https://vishnupriyac.blo...
LAST MODIFIED	8/10/2024, 11:42:35 AM
CREATION TIME	8/10/2024, 11:42:35 AM
VERSION ID	-
TYPE	Block blob
SIZE	107.75 KiB
ACCESS TIER	Hot (Inferred)
ACCESS TIER LAST MODIFIED	N/A
ARCHIVE STATUS	-
REHYDRATE PRIORITY	-
SERVER ENCRYPTED	true
ETAG	0x8DCB9036DE5B49D
VERSION-LEVEL IMMUTABILITY POLICY	Disabled
CACHE-CONTROL	
CONTENT-TYPE	image/jpeg

