

REPORT ON MICROSOFT AZURE FUNDAMENTALS

| | |
|-------------|--------------|
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| Date | 10.08.2024 |

1)Sandbox:

Create a Linux virtual machine and install Nginx

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LEVEL 8

5550 / 23599 XP

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.

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

Azure CLI

Copy

```
az vm create \
  --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" \
  --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 Shellvarnitha ammu2005 [~]\$ az vm create --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --name my-vm --public-ip-sku Standard --image Ubuntu2204 --admin-username azureuser --generate-ssh-keys
{
 "fqdns": "",
 "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/learn-96bab233-19ad-4ec1-9486-4a40fc66269e/providers/Microsoft.Compute/virtualMachines/my-vm",
 "location": "westus",
 "macAddress": "00-22-48-0A-42-15",
 "powerState": "VM running",
 "privateIpAddress": "10.0.0.4",
 "publicIpAddress": "13.64.152.115",
 "resourceGroup": "learn-96bab233-19ad-4ec1-9486-4a40fc66269e",
 "zones": ""
}
varnitha ammu2005 [~]\$ az vm extension set --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --vm-name my-vm --name customScript --publisher Microsoft.Azure.Extensions --version 2.1 --settings '{"fileUri":

List the current network security

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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-96bab233-19ad-4ec1-9486-4a40fc66269e" \
  --query '[] .name' \
  --output tsv
```

You see this output:

Output

Copy

```
my-vmNSG
```

Azure Cloud Shell

Switch to PowerShell

Restart

Manage files

New session

...


—

↗

✕

}
}
varnitha ammu2005 [~]\$ IPADDRESS=\$(az vm list-ip-addresses --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --name my-vm --query "[].virtualMachine.network.publicIpAddresses[*].ipAddress" --output tsv)
varnitha ammu2005 [~]\$ curl --connect-timeout 5 http://\$IPADDRESS
curl: (28) Failed to connect to 13.64.152.115 port 80 after 5003 ms: Time out was reached
varnitha ammu2005 [~]\$ echo \$IPADDRESS
13.64.152.115
varnitha ammu2005 [~]\$ az network nsg list --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --query '[] .name' --output tsv
my-vmNSG
varnitha ammu2005 [~]\$ az network nsg rule list --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --nsg-name my-vmNSG
{
 "access": "Allow",
 "destinationAddressPrefix": "*",
 "destinationAddressPrefixes": [],
 "destinationPortRange": "22",
 "destinationPortRanges": [],
 "direction": "Inbound",
 "etag": "W/\"a1409e4c-346f-41a4-a368-df5efal14876\"",
 "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/learn-96bab233-19ad-4ec1-9486-4a40fc66269e/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/default-allow-ssh",
 "name": "default-allow-ssh",
 "protocol": "TCP",
 "sourceAddressPrefix": "Internet",
 "sourceAddressPrefixes": [],
 "sourcePortRange": "*",
 "sourcePortRanges": []
}

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-96bab233-19ad-4ec1-9486-4a40fc66269e" \
  --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

Azure Cloud Shell

Switch to PowerShell Restart Manage files New session ...

```
]
varnitha ammu2005 [ ~ ]$ az network nsg rule list --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --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
varnitha ammu2005 [ ~ ]$ az network nsg rule create --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --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/\"8942ced8-f032-4264-8efb-08f782d2847a\"",
  "id": "/subscriptions/081f341e-de8f-4bcd-8946-3fa44b5188e0/resourceGroups/learn-96bab233-19ad-4ec1-9486-4a40fc66269e/providers/Microsoft.Network/networkSecurityGroups/my-vmNSG/securityRules/allow-http",
  "name": "allow-http",
  "priority": 100,
  "protocol": "Tcp",
  "provisioningState": "Succeeded",
}
```

Access your web server again

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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.

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

Bash Copy

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

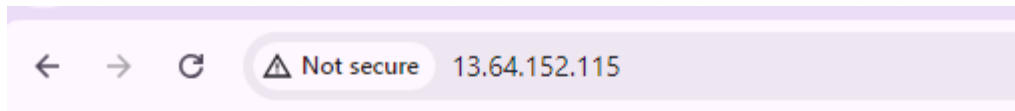
You see this response:

Azure Cloud Shell

Switch to PowerShell Restart Manage files New session ...

```
]
varnitha ammu2005 [ ~ ]$ az network nsg rule list --resource-group "learn-96bab233-19ad-4ec1-9486-4a40fc66269e" --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
varnitha ammu2005 [ ~ ]$ curl --connect-timeout 5 http://$IPADDRESS
<html><body><h2>Welcome to Azure! My name is my-vm.</h2></body></html>
varnitha ammu2005 [ ~ ]$
```

Final output:



Welcome to Azure! My name is my-vm.

2) Azure Academic Services: Azure for Students

Creation of resource groups

A screenshot of the Microsoft Azure portal interface. The top navigation bar is blue and contains the "Microsoft Azure" logo, a search bar with the placeholder "Search resources, services, and docs (G+)", a "Copilot" button, and several utility icons. The user's profile "varnitha.ammu2005@g..." is visible on the right. Below the navigation bar, the "Resources" section is active, showing a table of recent resources. The table has columns for "Name", "Type", and "Last Viewed". It lists three items: "varnitha" (Virtual machine, viewed 3 hours ago), "rg" (Resource group, viewed 3 hours ago), and "demo_group" (Resource group, viewed 21 hours ago). A "See all" link is present below the table. At the bottom, the "Navigate" section shows four icons: "Subscriptions", "Resource groups", "All resources", and "Dashboard".

| Name | Type | Last Viewed |
|------------|-----------------|--------------|
| varnitha | Virtual machine | 3 hours ago |
| rg | Resource group | 3 hours ago |
| demo_group | Resource group | 21 hours ago |

Creation of Virtual Machine

Virtual machine

| | |
|----------------------------|----------|
| Computer name | Varnitha |
| Operating system | Linux |
| VM generation | V2 |
| VM architecture | x64 |
| Hibernation | Disabled |
| Host group | - |
| Host | - |
| Proximity placement group | - |
| Colocation status | N/A |
| Capacity reservation group | - |
| Disk controller type | SCSI |

Azure Spot

Azure Spot -

Networking

| | |
|---------------------------|---|
| Public IP address | 98.70.32.7 (Network interface varnitha684_z1) |
| Public IP address (IPv6) | - |
| Private IP address | 10.0.0.4 |
| Private IP address (IPv6) | - |
| Virtual network/subnet | demo-vnet/default |
| DNS name | Configure |

Size

| | |
|-------|-----------------|
| Size | Standard D2s v3 |
| vCPUs | 2 |
| RAM | 8 GiB |

Source image details

| | |
|------------------------|------------------|
| Source image publisher | canonical |
| Source image offer | ubuntu-24_04-lts |

```
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.
varnitha [ ~ ]$ ssh varnitha@20.244.24.142
The authenticity of host '20.244.24.142 (20.244.24.142)' can't be established.
ED25519 key fingerprint is SHA256:uJrn0xyvApMwyhIOJxpcu0eZa8eRJsfsGwCaIU5qZG4.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.244.24.142' (ED25519) to the list of known hosts.
varnitha@20.244.24.142's password:
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1012-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

System information as of Fri Aug  9 08:37:20 UTC 2024

System load:  0.96      Processes:      26
Usage of /home: unknown  Users logged in:  0
Memory usage:  4%      IPv4 address for eth0: 10.10.10.2
Swap usage:    0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

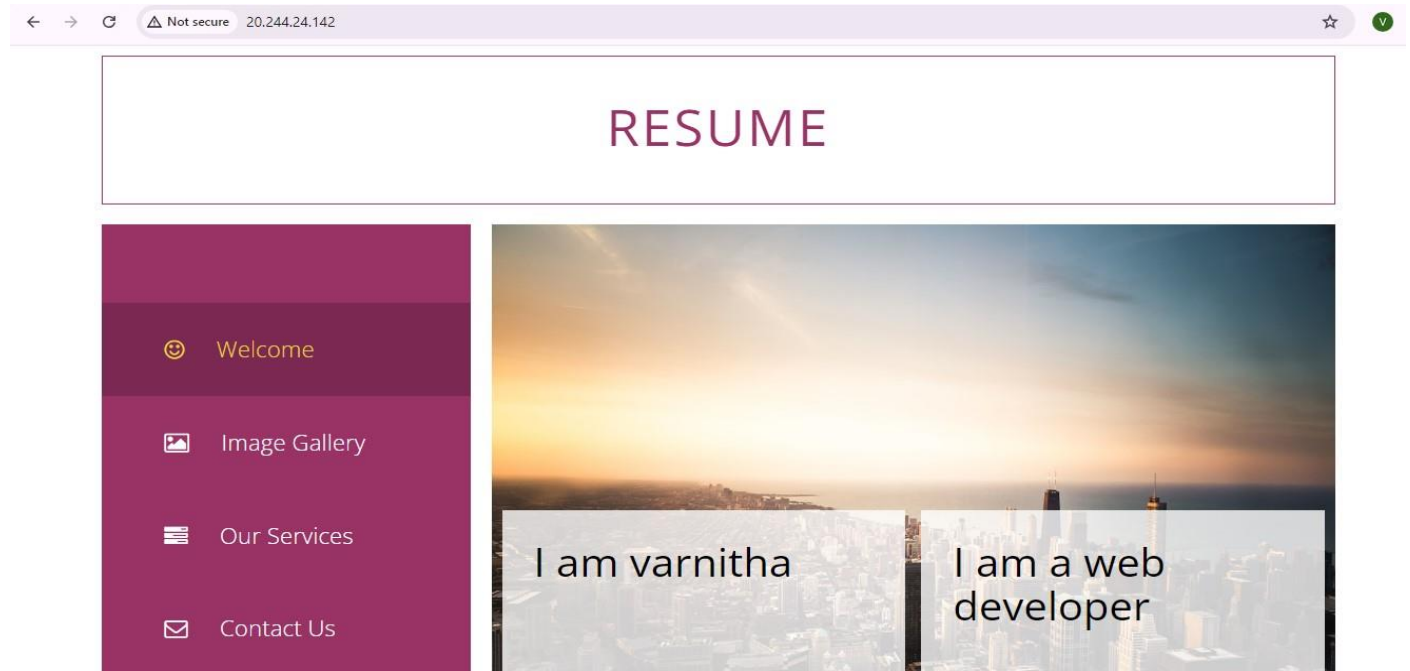
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

varnitha@varnitha:~$ sudo apt update
Hit:1 http://azure.archive.ubuntu.com/ubuntu noble InRelease
```

Hosting my portfolio using Azure Cloud Services



3)Cost Management

Pricing calculator

| | A | B | C | D | E |
|----|--------------------------|---------------------|-------------|-------------------|---|
| 1 | Microsoft Azure Estimate | | | | |
| 2 | Your Estimate | | | | |
| 3 | Service category | Service type | Custom name | Region | Description |
| 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 |
| 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 |
| 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) |
| 7 | Support | | | Support | |
| 8 | | | | Licensing Program | Microsoft Customer Agreement (MCA) |
| 9 | | | | Billing Account | |
| 10 | | | | Billing Profile | |

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

1

Define your workloads

2

Adjust assumptions

3

View report

My saved reports

Sign In

View report

Timeframe ⓘ

3 Years

Region ⓘ

North Europe

Licensing program ⓘ

Microsoft Online Services Program

Show Dev/Test Pricing ⓘ

Over 3 year(s) with Microsoft Azure, your estimated cost savings could be as

much as ₹98,439,004

4) Blobs

Creation of container

Home > varnitha

varnitha

Containers

Storage account

Search

+ Container

Change access level

Restore containers

Refresh

Delete

Give feedback

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Storage Mover

Data storage

Containers

File shares

Search containers by prefix

Show deleted containers

| Name | Last modified | Anonymous access level | Lease state |
|-----------------------------------|-----------------------|------------------------|---------------|
| <input type="checkbox"/> \$logs | 8/10/2024, 1:47:26 PM | Private | Available *** |
| <input type="checkbox"/> varnitha | 8/10/2024, 1:48:30 PM | Private | Available *** |

**Overview**

Diagnose and solve problems

Access Control (IAM)

> Settings

Authentication method: Access key ([Switch to Microsoft Entra user account](#))**Location:** varnitha

Add filter

| Name | Modified | Access tier | Archive status | Blob type |
|--|-----------------------|----------------|----------------|------------|
| <input type="checkbox"/> img-11-01.jpg | 8/10/2024, 1:50:54 PM | Hot (Inferred) | | Block blob |

img-11-01.jpg ...

Blob

**Overview**

Versions

Snapshots

Edit

Generate SAS

Properties

URL

<https://varnitha.blob.co...>

LAST MODIFIED

8/10/2024, 1:50:54 PM

CREATION TIME

8/10/2024, 1:50:54 PM

VERSION ID

-

TYPE

Block blob

SIZE

60.97 KiB

ACCESS TIER

Hot (Inferred)

ACCESS TIER LAST MODIFIED

N/A

ARCHIVE STATUS

-

REHYDRATE PRIORITY

-

SERVER ENCRYPTED

true

ETAG

0x8DCB9155AA8B1F5

VERSION-LEVEL IMMUTABILITY POLICY

Disabled

CACHE-CONTROL

