CLOUD COMPUTING - MICROSOFT AZURE
ZEN CLASS - MAIN PROJECT - 1

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Batch - CC2WE-E

Project Scope:

Create a demo using any of the cognitive services and showcase the use of that service. This is similar to what we did in class with compute vision.

Architecture Overview:

1. **Creation of Virtual Machine:**

- I started by creating a virtual machine (VM) based on a Linux operating system. This VM provided a flexible and isolated environment for your development work.

2. **Setting Up Azure AI Translator:**

- Within the VM, I aimed to set up a translation service utilizing Azure AI Cognitive Services. The Translator is a component of these services, designed for AI-based translation tasks.

3. **Opening the Virtual Machine:**

- After the VM was created, I opened it to begin configuring the necessary software and dependencies.

4. **Installing Required Packages:**

- I executed a series of commands to install essential packages. These included:
- sudo apt update: This command updated the package lists for upgrades and new package installations.
- sudo apt install python3-pip: You installed pip, the Python package manager, to facilitate the installation of additional Python libraries.
- sudo apt install python3-requests: This library was installed to make HTTP requests easier in your Python code.

- sudo apt install python3-pillow: This library enables image processing capabilities within your Python applications.
- sudo apt install python3-flask: Flask was installed to help create web applications and APIs.

5. **Adding the Azure Translator Endpoint:**

- In my Python code, I added the endpoint URL for the Azure Translator service. This endpoint is crucial for sending requests to the translation API.

6. **Inserting the API Key:**

- I included the API key in my code, which is necessary for authenticating requests to the Azure Translator service. This key ensures that only authorized applications can access the translation features.

7. **Uploading Data to Azure VM:**

- After setting up the code, I uploaded any necessary data files or configurations to the Azure VM to support the translation function.

8. **Executing the Translation Script:**

- With everything in place, I executed your Python script within the VM. This script called the Azure Translator API, sending a word in English for translation.

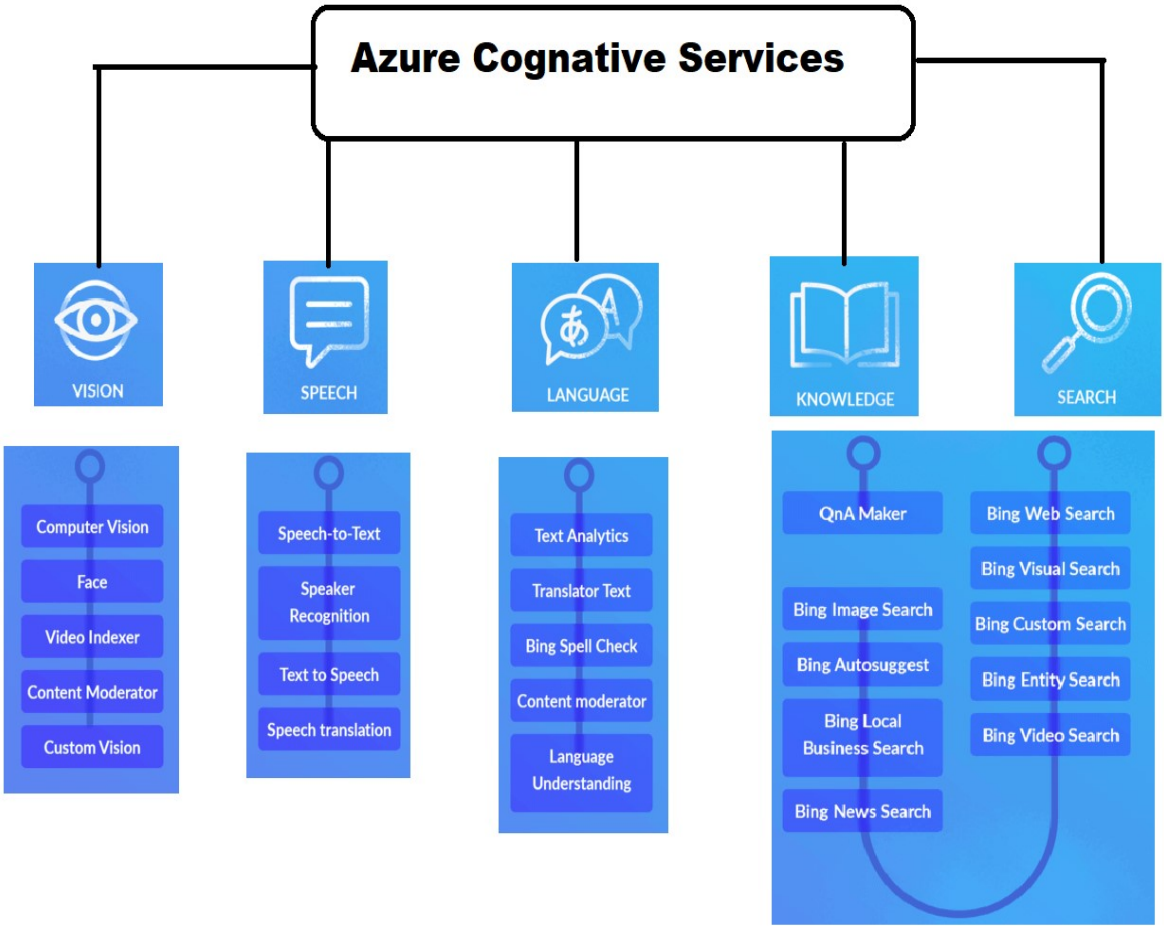
9. **Receiving Translation Results:**

- Upon execution, I successfully received the translated result in Hindi, confirming that the integration between my Python code and Azure Translator was functioning correctly.

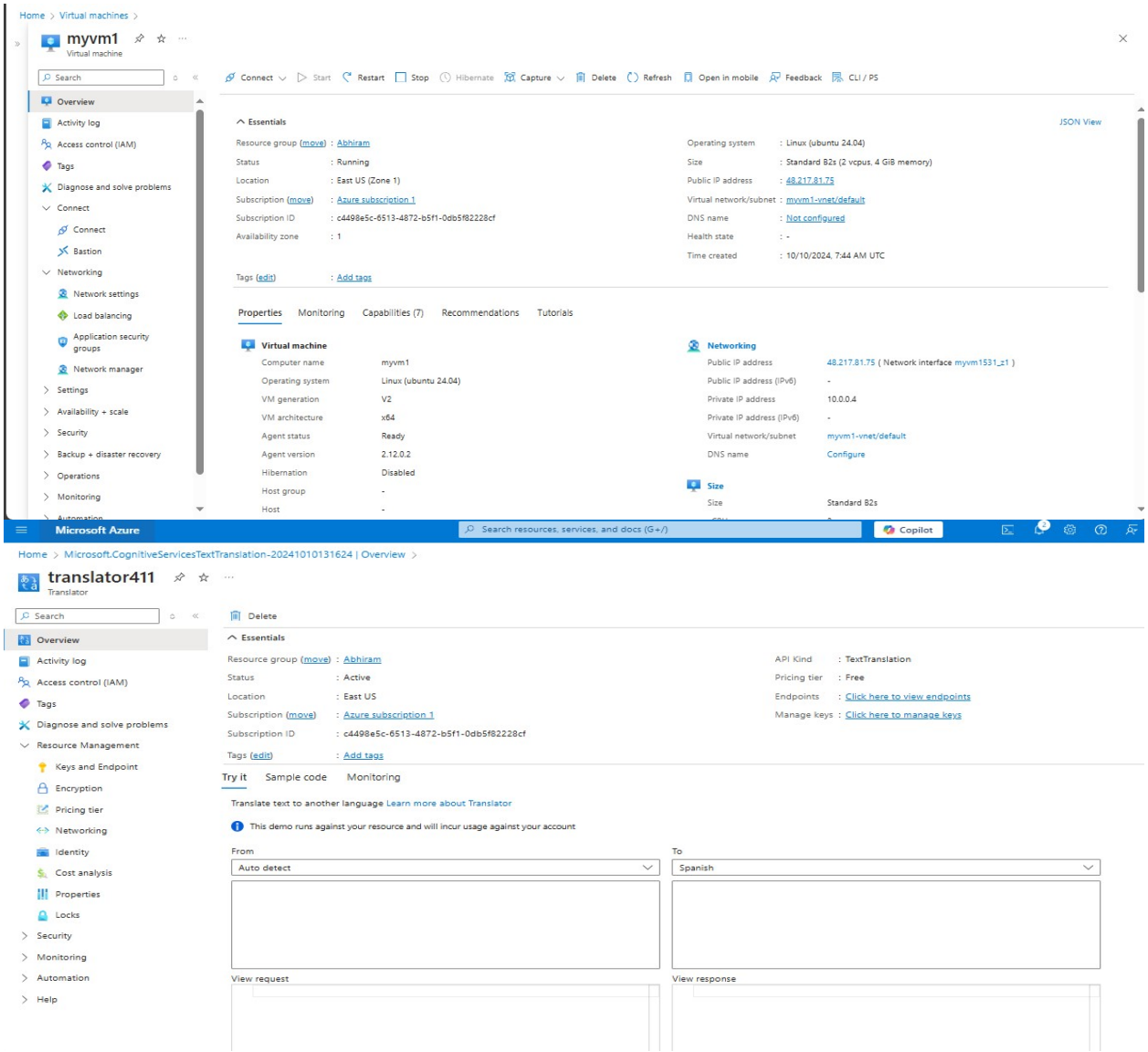
10. **Conclusion:**

- This step-by-step process showcases how I effectively utilized a Linux VM and Azure AI Cognitive Services to create a working translation tool that translates English words into Hindi.

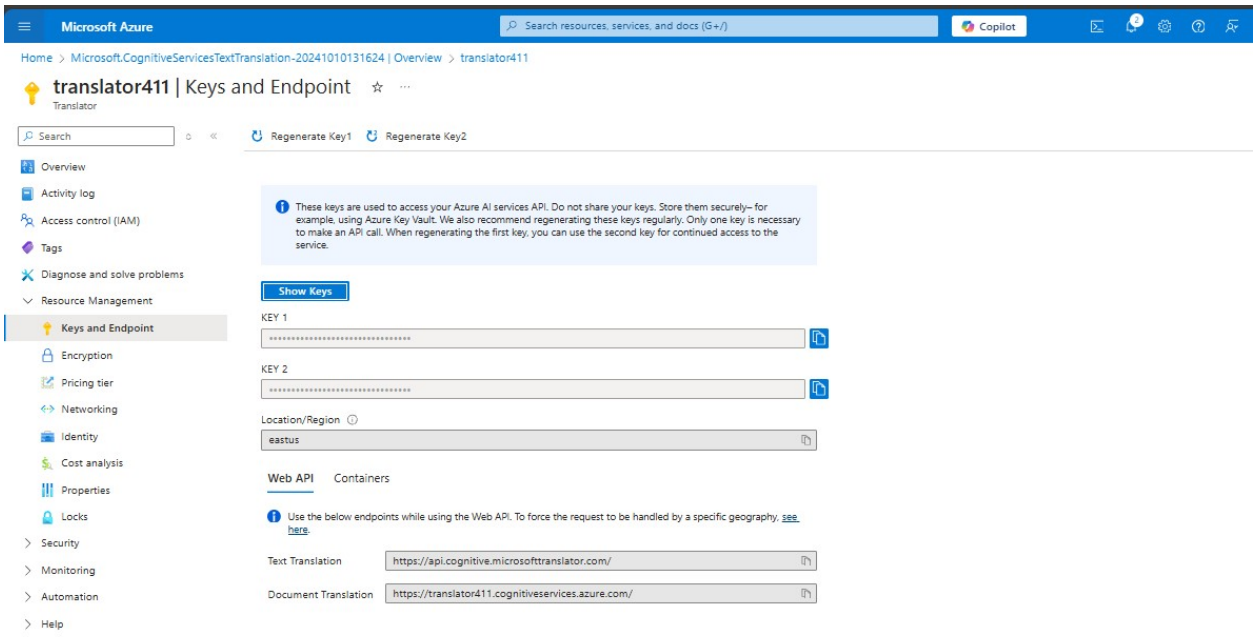
Project Architecture:



1.Translator:



- Create a Vritual Machine with Ubentu software
- Then created the Microsoft Cognative Service Text Translator
- The created a code to acces the translator in the vritual machine
- In that code I had added the key value and the endpoint
- After adding I had ssh to the Vritual Machine
- And then installed the software like sudo apt update
- sudo apt install python3-pip,sudo apt install python3-requests, sudo apt install python3-pillow, sudo apt install python3-flask

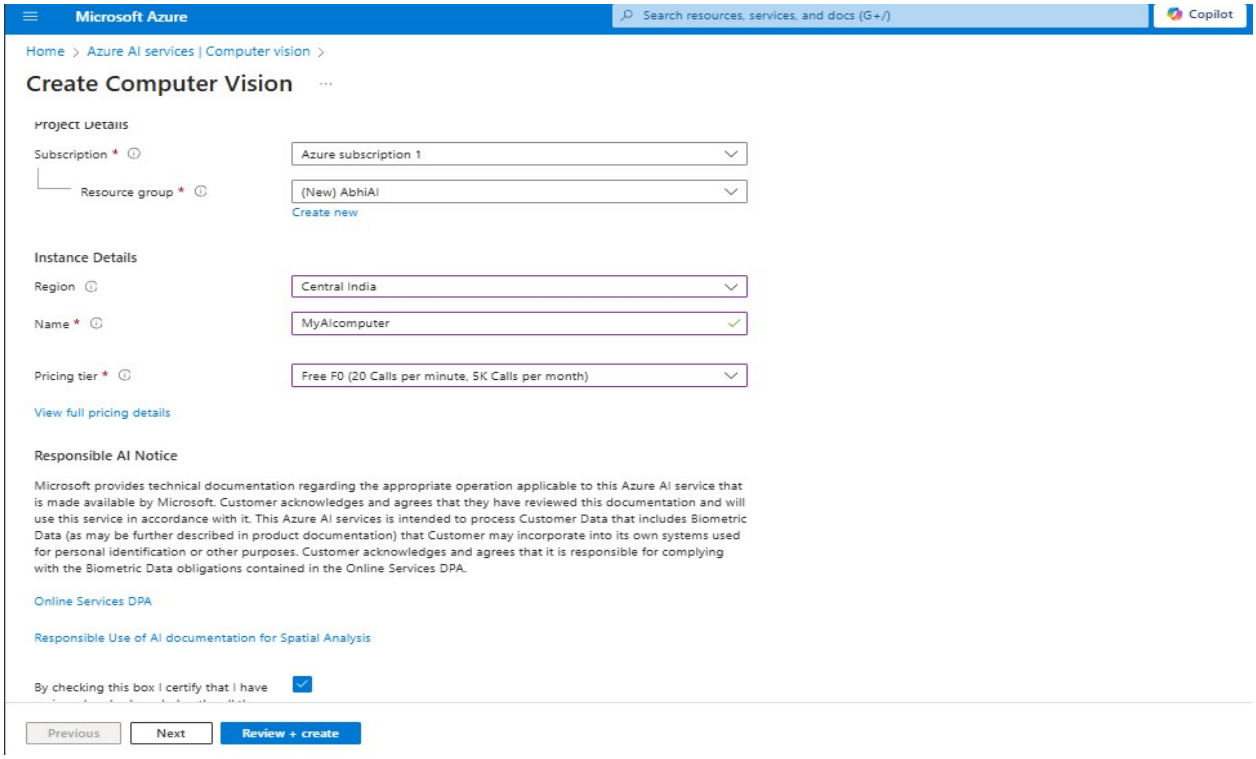


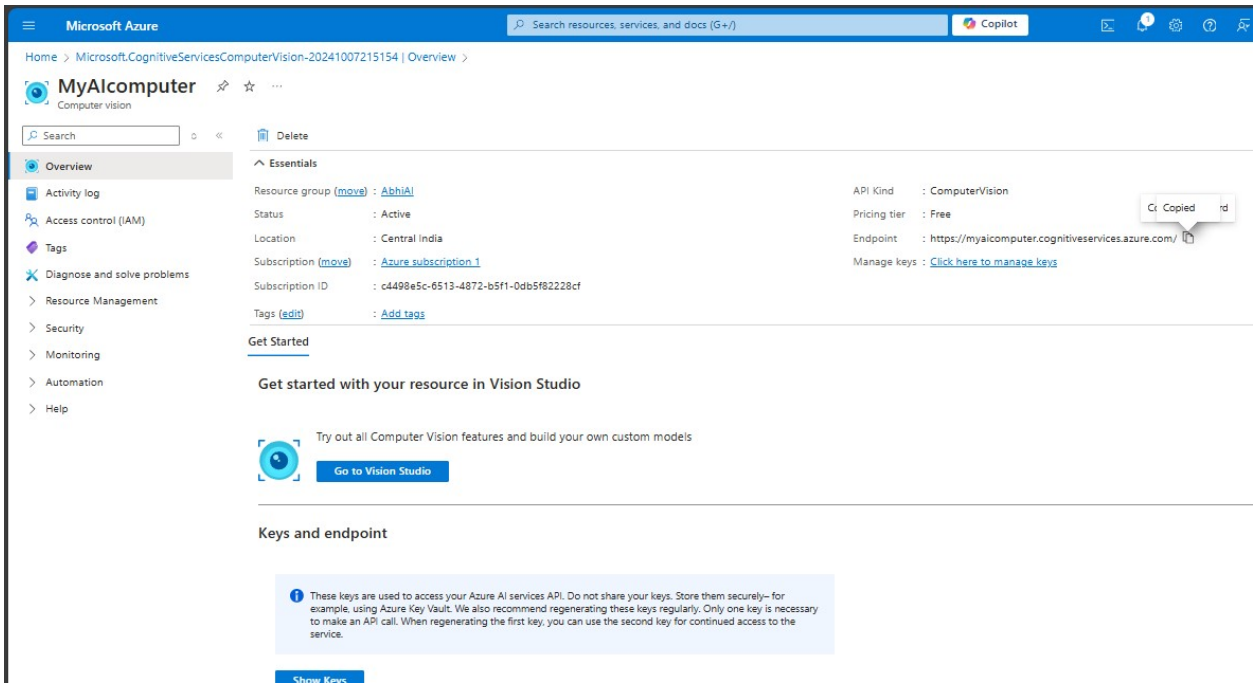

```
azureuser@myvm1: $ nano translator-app.py
azureuser@myvm1: $ cat translator-app.py
import requests, uuid, json

# Add your key and endpoint
key = "3889d925aa1a4bdfa25eb4dd628f4f31"
endpoint = "https://api.cognitive.microsofttranslator.com/"

# location, also known as region.
# required if you're using a multi-service or regional (not global) resource. It can be found in the Azure portal on the Keys and Endpoint page.
location = "eastus"

path = '/translate'
constructed_url = endpoint + path

params = {
    'api-version': '3.0',
    'from': 'en',
    'to': ['fr', 'zu']
}

headers = {
    'Ocp-Apim-Subscription-Key': key,
    # location required if you're using a multi-service or regional (not global) resource.
    'Ocp-Apim-Subscription-Region': location,
    'Content-type': 'application/json',
    'X-ClientTraceId': str(uuid.uuid4())
}

# You can pass more than one object in body.
body = [{
    'text': 'Full fathom five thy father lies, of his bones are coral made. Those are pearls that were his eyes. Nothing of him that doth fade, but doth suffer a sea-change into something rich
 and strange'
}]

request = requests.post(constructed_url, params=params, headers=headers, json=body)
response = request.json()

print(json.dumps(response, sort_keys=True, ensure_ascii=False, indent=4, separators=(',', ': ')))
```

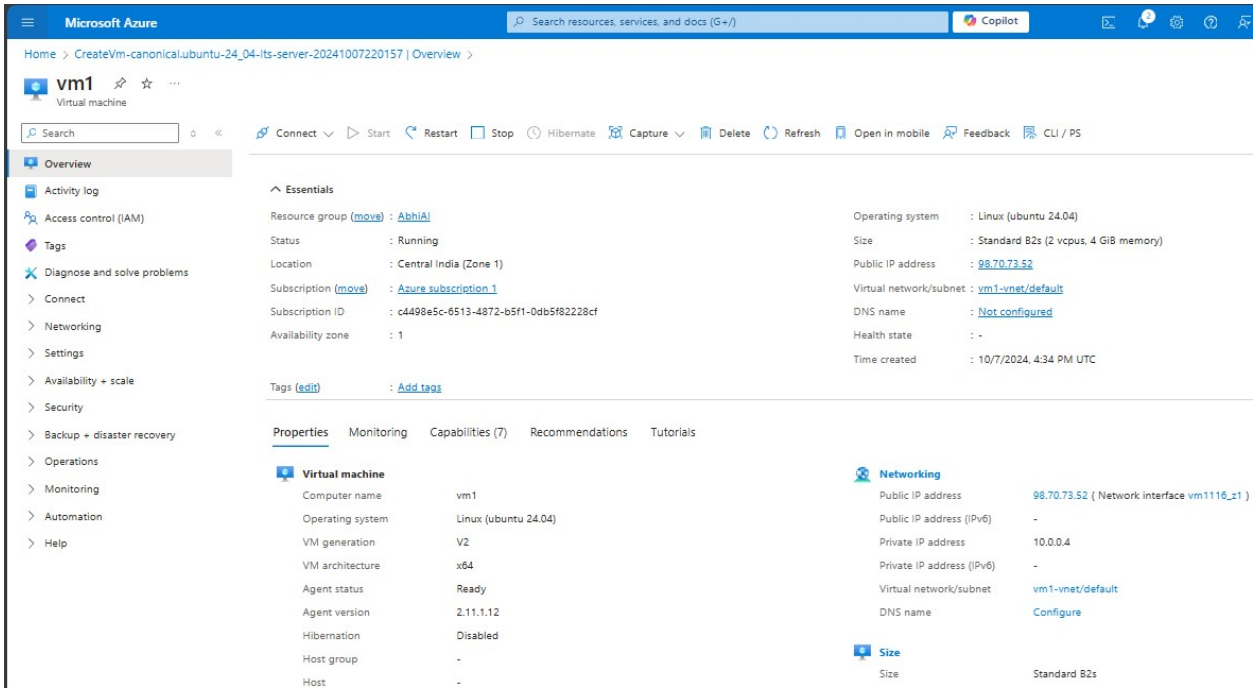
```
azureuser@myvm1: $ python3 translator-app.py
[
    {
        "translations": [
            {
                "text": "Sur cinq brasses de ton père ment, ses os sont faits de corail. Ce sont des perles qui étaient ses yeux. Rien de celui qui ne se fane, mais subit un changement radical
 en quelque chose de riche et d'étrange",
                "to": "fr"
            },
            {
                "text": "I-fathom ephelele ezinhlanu uyihlo amanga, amathambo akhe enziwe amakhorali. Lawo ngamaparele ayengamehlo akhe. Akukho lutho kuye oluphelayo, kodwa oluhlupheka ngokush
intsha kolwandle lube yinto ecebile futhi engavamile",
                "to": "zu"
            }
        ]
    }
]
```

- After insalling I had created a nono translator-app.py folder
- Then added the code into the folder also the text is included in it
- Then viewed by using cat translator-app.py
- To run that I used the code pythin3 translator-app.py

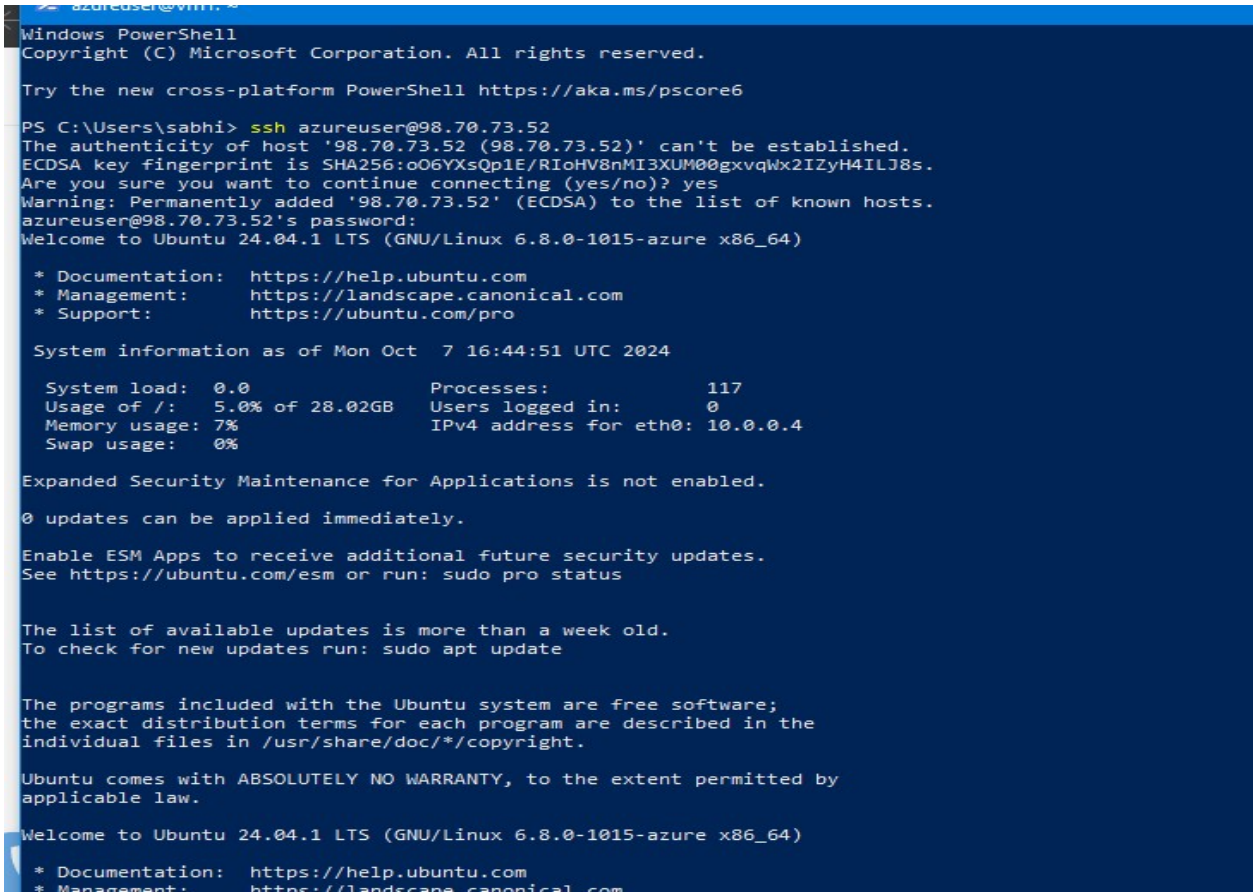
2.Image to text





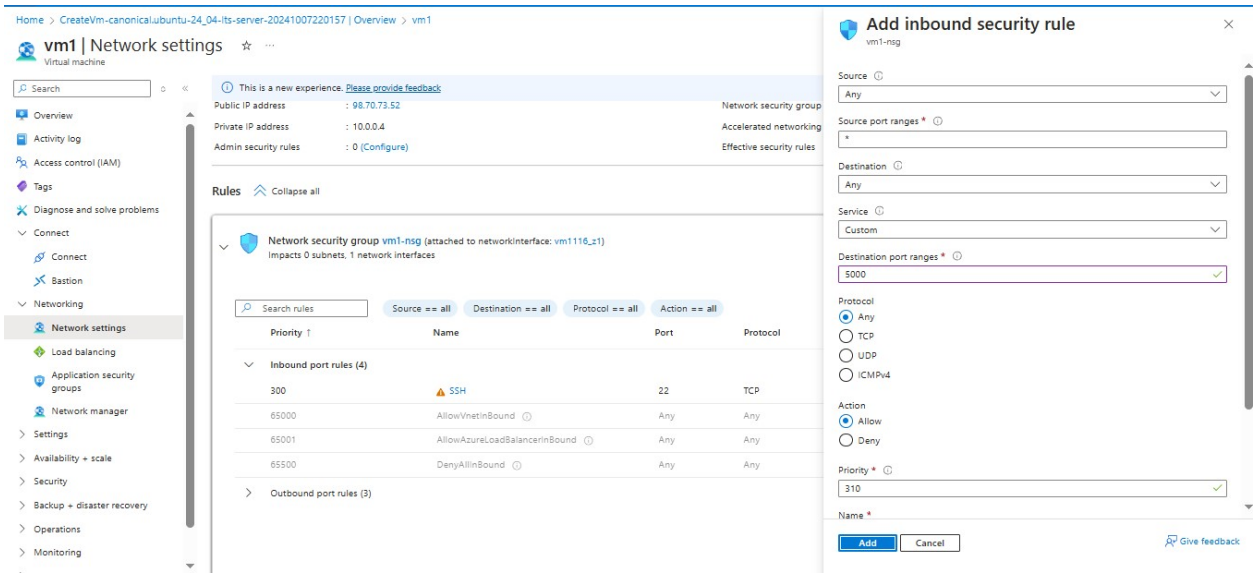

Microsoft Azure
Search resources, services, and docs (G+/)
Copilot
Home > CreateVm-canonical.ubuntu-24_04-lts-server-20241007220157 | Overview >
vm1
Virtual machine
Search
Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems
Connect
Networking
Settings
Availability + scale
Security
Backup + disaster recovery
Operations
Monitoring
Automation
Help
Connect
Start
Restart
Stop
Hibernate
Capture
Delete
Refresh
Open in mobile
Feedback
CLI / PS
Essentials
Resource group (move) : AbhiAI
Status : Running
Location : Central India (Zone 1)
Subscription (move) : Azure subscription 1
Subscription ID : c4498e5c-6513-4872-b5f1-0db5f82228cf
Availability zone : 1
Operating system : Linux (ubuntu 24.04)
Size : Standard B2s (2 vcpus, 4 GiB memory)
Public IP address : 98.70.73.52
Virtual network/subnet : vm1-vnet/default
DNS name : Not configured
Health state : -
Time created : 10/7/2024, 4:34 PM UTC
Tags (edit) : Add tags
Properties
Monitoring
Capabilities (7)
Recommendations
Tutorials
Virtual machine
Computer name vm1
Operating system Linux (ubuntu 24.04)
VM generation V2
VM architecture x64
Agent status Ready
Agent version 2.11.1.12
Hibernation Disabled
Host group -
Host -
Networking
Public IP address 98.70.73.52 (Network interface vm1116_z1)
Public IP address (IPv6) -
Private IP address 10.0.0.4
Private IP address (IPv6) -
Virtual network/subnet vm1-vnet/default
DNS name Configure
Size
Size Standard B2s

Created

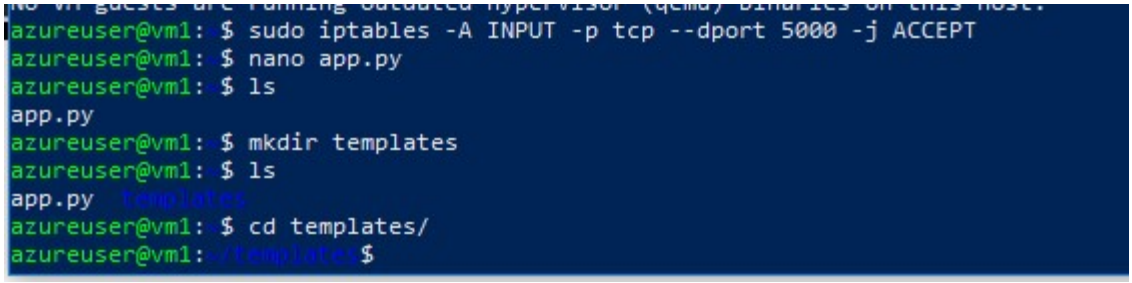

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Try the new cross-platform PowerShell https://aka.ms/pscore6
PS C:\Users\sabhi> ssh azureuser@98.70.73.52
The authenticity of host '98.70.73.52 (98.70.73.52)' can't be established.
ECDSA key fingerprint is SHA256:oO6YXsQp1E/RIoHV8nMI3XUM00gxvqWx2IZyH4ILJ8s.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '98.70.73.52' (ECDSA) to the list of known hosts.
azureuser@98.70.73.52's password:
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1015-azure x86_64)
* Documentation: https://help.ubuntu.com
* Management: https://landscape.canonical.com
* Support: https://ubuntu.com/pro
System information as of Mon Oct 7 16:44:51 UTC 2024
System load: 0.0
Usage of /: 5.0% of 28.02GB
Memory usage: 7%
Swap usage: 0%
Processes: 117
Users logged in: 0
IPv4 address for eth0: 10.0.0.4
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 list of available updates is more than a week old.
To check for new updates run: sudo apt update
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.
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1015-azure x86_64)
* Documentation: https://help.ubuntu.com

```
sudo apt update
sudo apt install python3-pip
sudo apt install python3-requests
sudo apt install python3-pillow
sudo apt install python3-flask

sudo iptables -A INPUT -p tcp --dport 5000 -j ACCEPT
```

Code to install

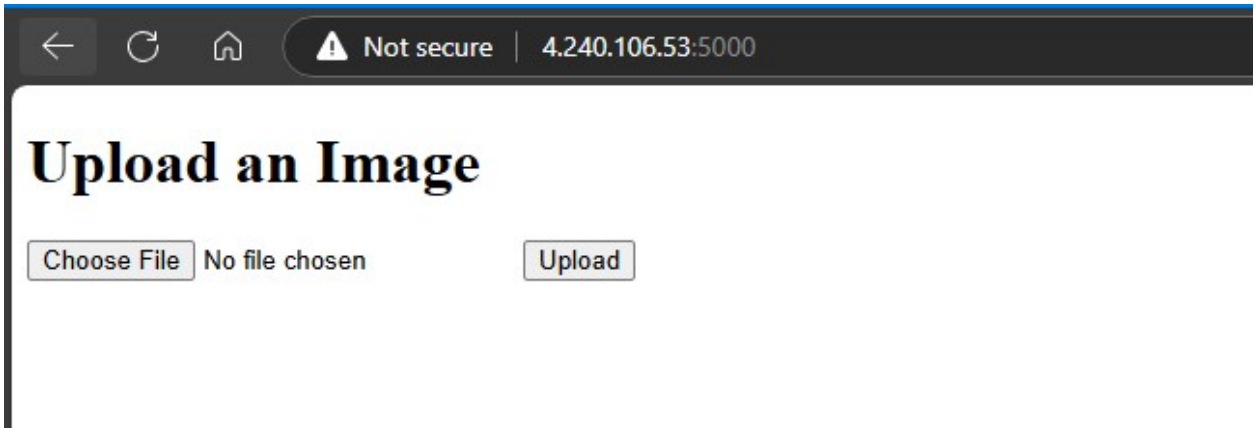


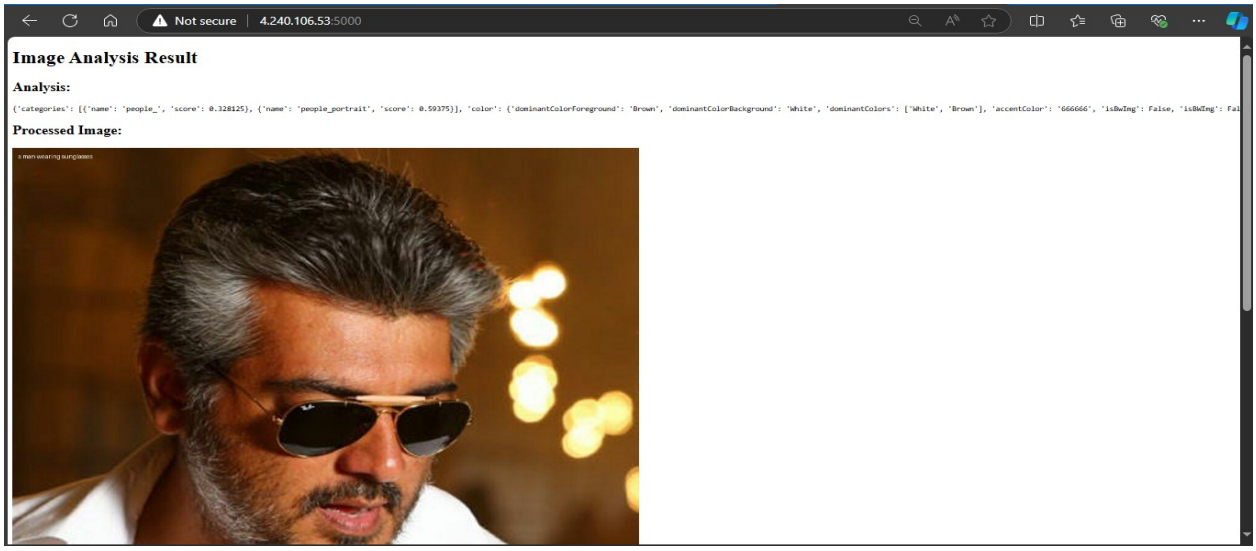
Add port rule in vm port range as 5000



```
azureuser@myvm1: $ ls
app.py
azureuser@myvm1: $ mkdir templates
azureuser@myvm1: $ ls
app.py  templates
azureuser@myvm1: $ cd templates/
azureuser@myvm1:~/templates$ nano upload.html
azureuser@myvm1:~/templates$ nano result.html
azureuser@myvm1:~/templates$ nano error.html
azureuser@myvm1:~/templates$ ls
error.html  result.html  upload.html
azureuser@myvm1:~/templates$ cat upload.html
<!doctype html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Upload Image</title>
</head>
<body>
  <h1>Upload an Image</h1>
  <form method="post" enctype="multipart/form-data">
    <input type="file" name="file">
    <input type="submit" value="Upload">
  </form>
</body>
</html>
azureuser@myvm1:~/templates$ cat result.html
<!doctype html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Image Analysis Result</title>
</head>
<body>
    <h1>Image Analysis Result</h1>

    <h2>Analysis:</h2>
    <pre>{{ analysis }}</pre>

    <h2>Processed Image:</h2>
    <img src="{{ image_data }}" alt="Processed Image">
</body>
</html>

azureuser@myvm1:~/templates$
```

```
azureuser@myvm1:~/templates$ cd ..
azureuser@myvm1: $ ls
app.py  templates
azureuser@myvm1: $ python3 app.py
 * Serving Flask app 'app'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://10.0.0.5:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 393-599-125
```





- Created the Computer Vision account in portal.azure
- Then created linux disktop and ssh in to it
- Installed some codes like sudo apt install python3-pip,sudo apt install python3-requests, sudo apt install python3-pillow, sudo apt install python3-flask
- After install added the nano app.py and added the code into it
- The entered some codes like mkdir template , cd templates/ , la
- Then added the nano value like update.html, result.html, error.html
- After viwing that by cat option added the codes like cd .., python3 app.py to view the details
- Add port rule in vm port range as 5000
- Searched that by using http port and ip address and the port number (eg:http//4.240.106.53:5000)
- Then choose the image and upload it the result will bee executed