# ICT 1711 Assignment 2

Cloud server project

- Global IP address: 20.206.205.14
- DNS: www.myportfoliouae.com

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# Project Overview

The project part I would take on would be building a (professional) portfolio website hosted on a cloud-based server. My skills and some of my projects will be presented in the portfolio, and it will be essential to satisfy some technical requirements such as server configuration, version control, and scripting. This project will demonstrate my capability of designing and setting up an infrastructure as a service (IaaS) solution and documenting the process, as well as handling server-related tasks efficiently.

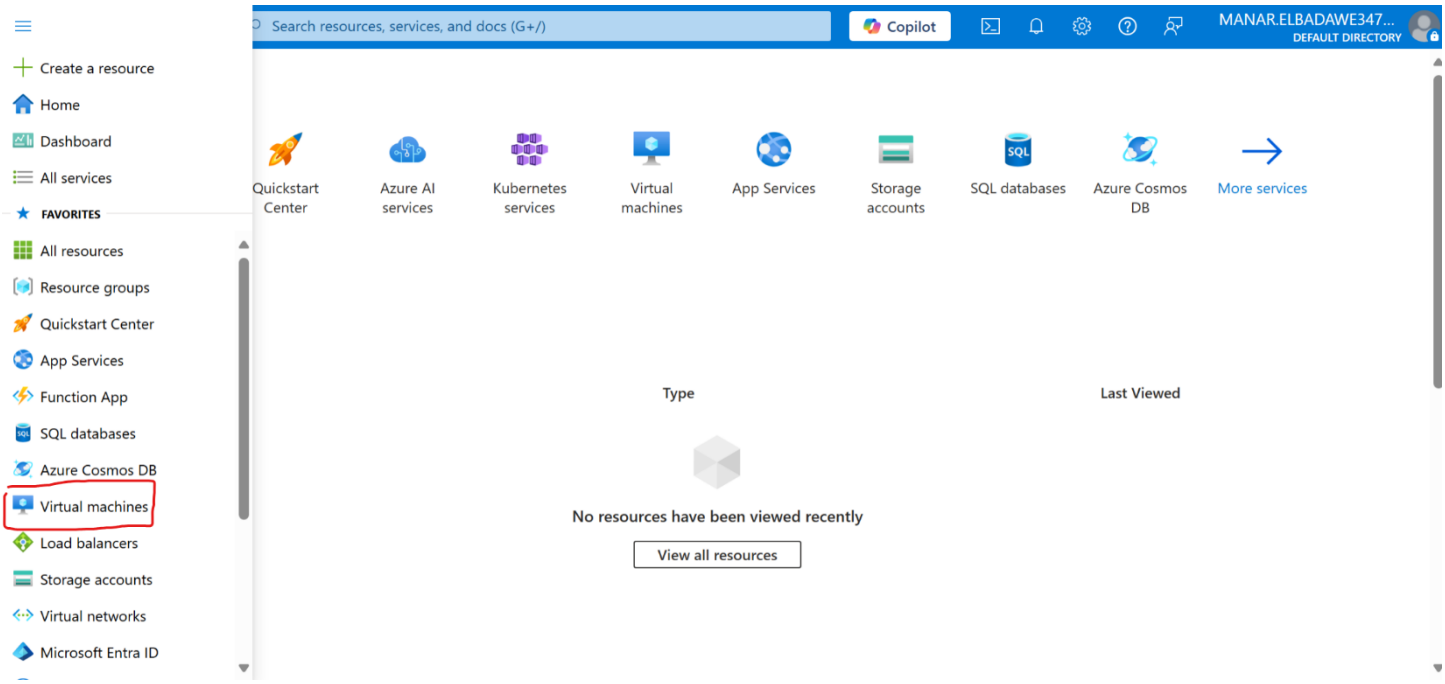
Objectives:

- Create a killer portfolio website that will answer convincingly and on point.
- Deploy the portfolio on a cloud-based server, such as Microsoft Azure.
- Set up a Linux server, install and configure firewall rules, and enable SSH access.
- Use GitHub as a version control and project documentation.
- Use Python or Bash scripts to automate tasks.
- I will produce professional documentation like TCO and support tickets.

# Setup instruction

## 1. Setting up a server using Microsoft Azure:

In your Oracle virtualBox, after signing up ( using student email or your personal email ), the home page will be displayed, click on the three lines on the top left and click on the Virtual machines.




1. Using these settings to create the VM :

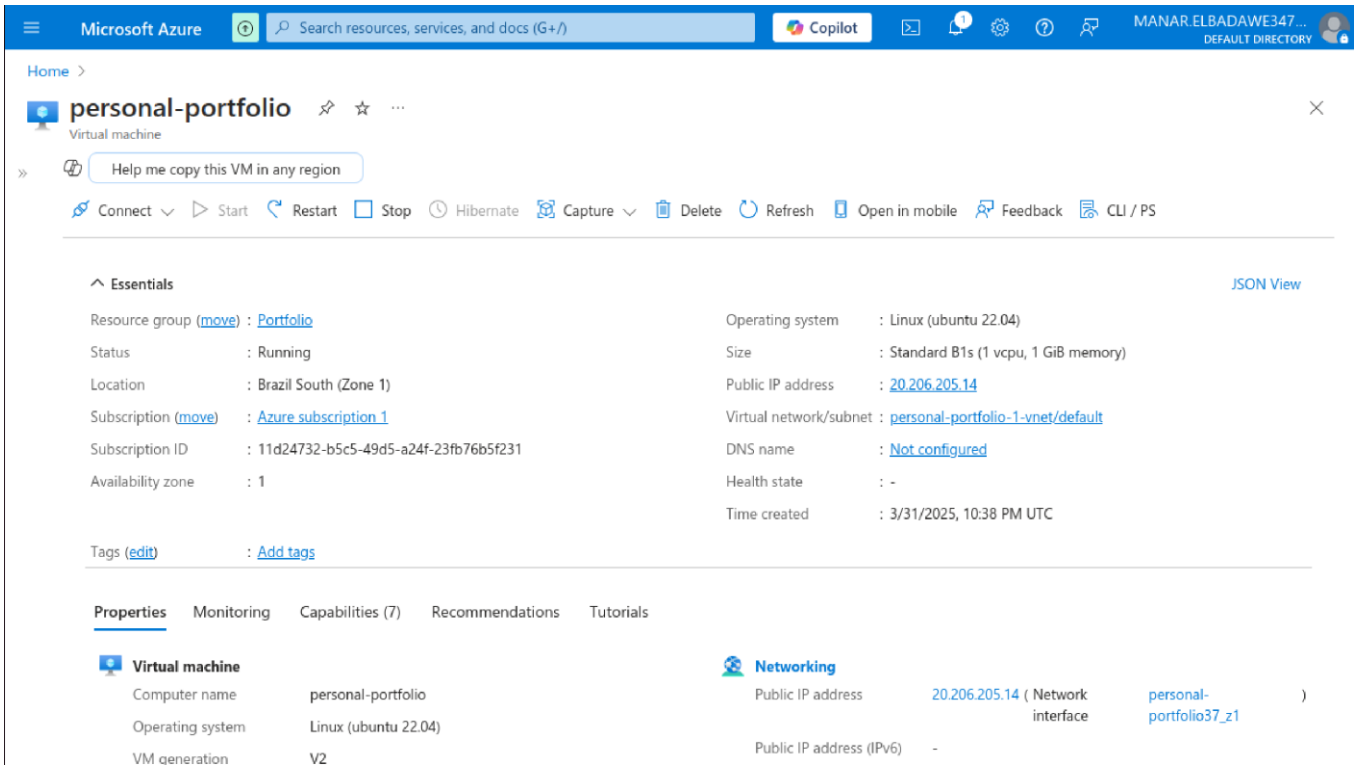
   Configure basic settings:

   a. Subscription: Your subscription
   b. Resource group: Create new (e.g., "portfolio-rg")
   c. Virtual machine name: "portfolio-vm"
   d. Region: Choose closest (e.g., "Australia East")
   e. Image: "Ubuntu Server 22.04 LTS"
   f. Size: "Standard_B1s" (Free tier eligible)

2. Authentication:
   a. Authentication type: "SSH public key"
   b. Username: "azureuser"
   c. SSH public key source: "Generate new key pair"
   d. Key pair name: "portfolio-key"
3. Networking:
   a. Allow selected ports: SSH (22), HTTP (80), HTTPS (443)

Then click review + create , then download the privet key when prompted

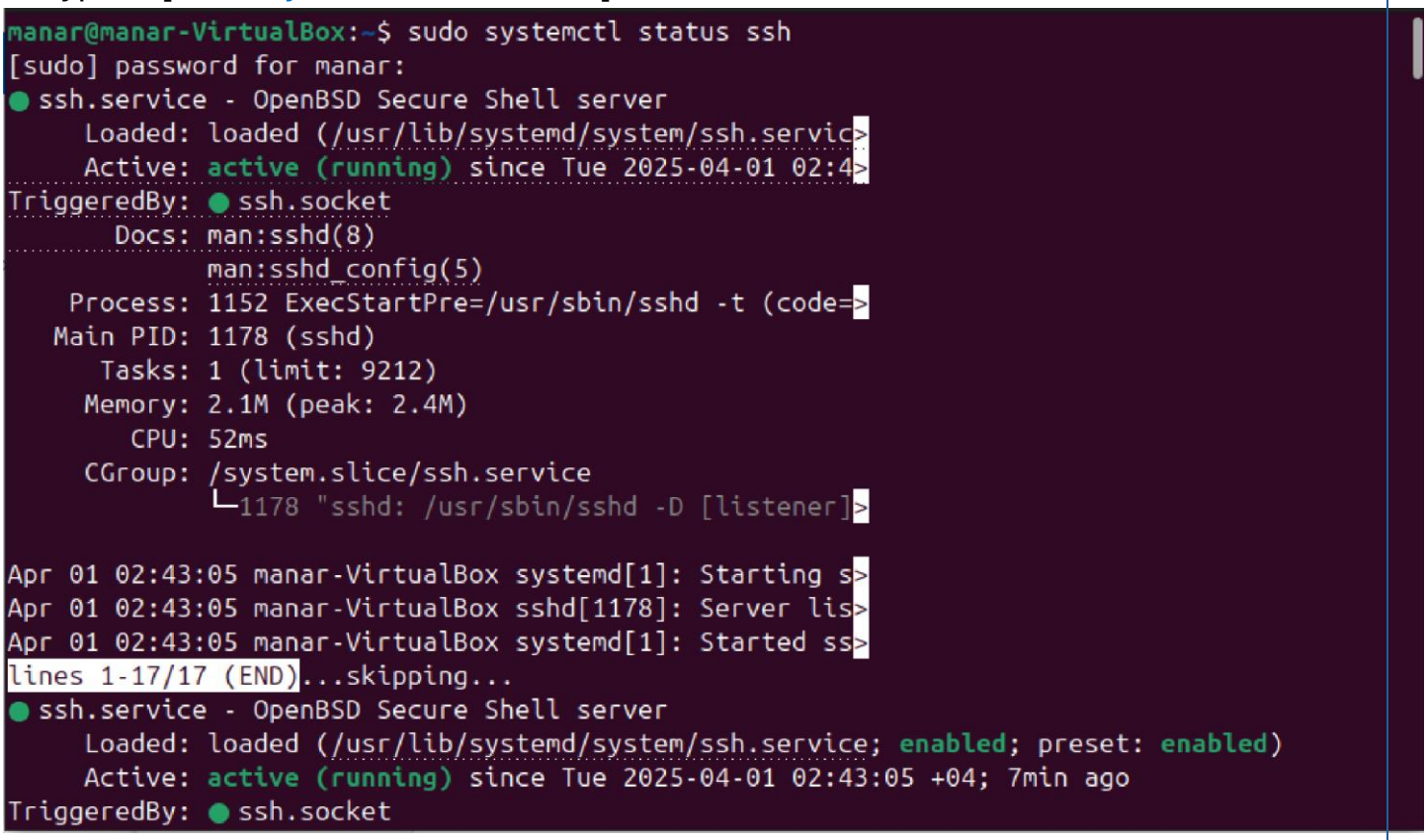
Furthermore, you should be able to access your VM home page, make sure that is running.



## 2. Connecting SSH to VM :

Using the Ubuntu terminal, check if ssh is installed in your VM

a. type in [ sudo systemctl status ssh ]

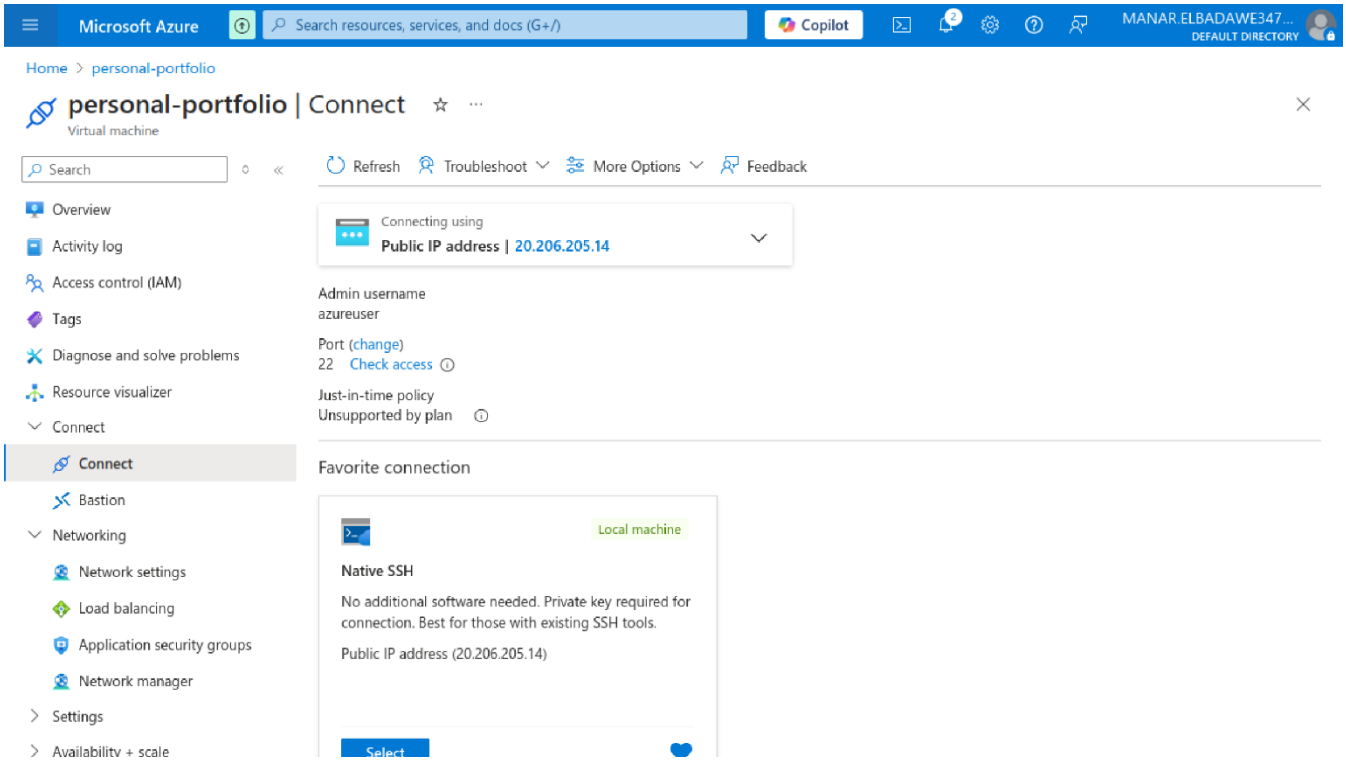



Mine is active but if its not start with [ sudo systemctl start ssh ], then install it with [ sudo apt update && sudo apt install openssh-server -y

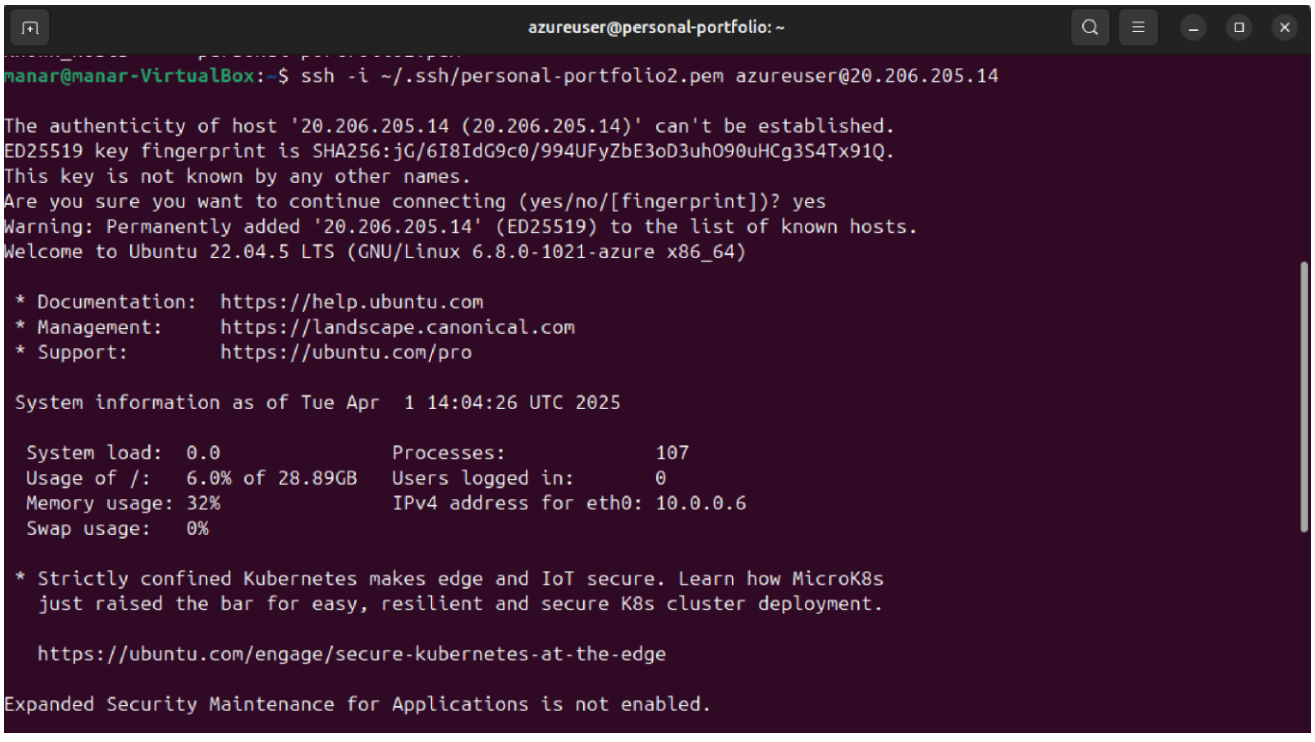
sudo systemctl enable ssh

sudo systemctl start ssh ]

b. In your Azure VM home page press Connect, then native SSH




c. In the VM terminal type in [ssh -I ~/.ssh/key-id.pem azureuser@your-ip ]




if you see this, then you're connected!!

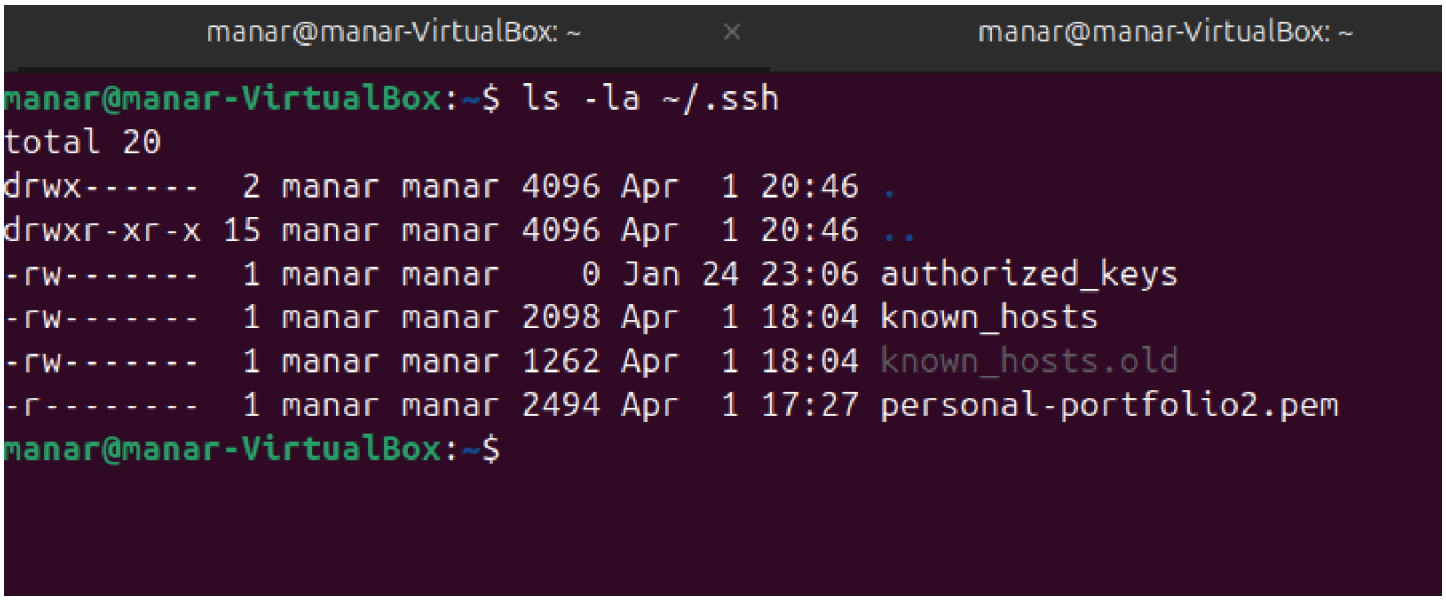
### 3. Install & Configure a Web Server (

We'll install **Nginx** because it's lightweight and efficient for serving a portfolio website.

First, you have to transfer the SSH key from the Ubuntu VM to your laptop :

**a. Locate your key on the Ubuntu VM**

On your Ubuntu VM, check if the key exists [ ls -la ~/.ssh ], you should be able to see your key




**b. Copy the key to your laptop:**

option 1: use SCP

you must connect to your Ubuntu VM using [ ssh ubuntu-username@ubuntu-ip ]


If you see this, then you're connected!!

2. Run this command on your Ubuntu VM to copy the key to your laptop:
in your laptop's PowerShell, run this code

[ scp username@remote_host:/path/to/remote/file "C:\path\to\local\destination\" ]

- scp → Secure copy command
- username@remote_host → Your remote machine's username and IP address
- /path/to/remote/file → The absolute or relative path of the file on the remote machine
- "C:\path\to\local\destination\" → The target folder on your local Windows machine (use quotes if the path has spaces)

```
Administrator: | manar@mana | manar@mana | Administrator

Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\MANAR> scp manar@192.168.1.27:~/.ssh/personal-portfolio2.pem C:\Users\MANAR\Down
loads\
manar@192.168.1.27's password:
personal-portfolio2.pem                                   100% 2494   811.8KB/s   00:00
PS C:\Users\MANAR>
```

On your Ubuntu VM terminal, start with updating your package list [ sudo apt update ],

Then install Nginx [ sudo apt install nginx ]

Then start and enable nginx [ sudo systemctl start nginx ], and enable it with [ sudo systemctl enable nginx ]

```
manar@manar-VirtualBox:~$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
     Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: en>
     Active: active (running) since Thu 2025-04-03 23:06:41 +04; 36s ago
       Docs: man:nginx(8)
    Process: 11190 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_proc>
    Process: 11192 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (>
   Main PID: 11194 (nginx)
      Tasks: 5 (limit: 9212)
     Memory: 3.7M (peak: 4.1M)
        CPU: 26ms
     CGroup: /system.slice/nginx.service
             ├─11194 "nginx: master process /usr/sbin/nginx -g daemon on; maste>
             ├─11195 "nginx: worker process"
             ├─11196 "nginx: worker process"
             ├─11197 "nginx: worker process"
             └─11198 "nginx: worker process"

Apr 03 23:06:41 manar-VirtualBox systemd[1]: Starting nginx.service - A high pe>
Apr 03 23:06:41 manar-VirtualBox systemd[1]: Started nginx.service - A high per>
lines 1-19/19 (END)
```

Lastly, verify the installation by navigating to your ubuntu's ip address in a web browser , on your local machine try : [ http://localhost ]

---

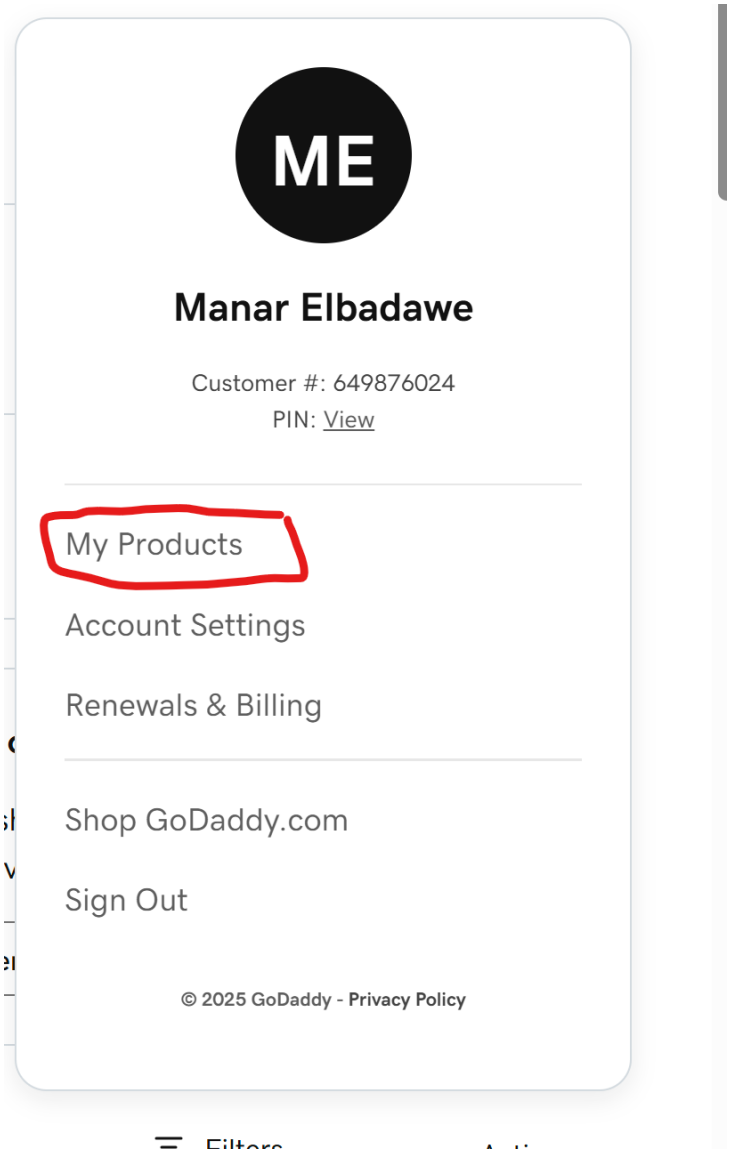
my first server ever

**welcome to my ubuntu server!**

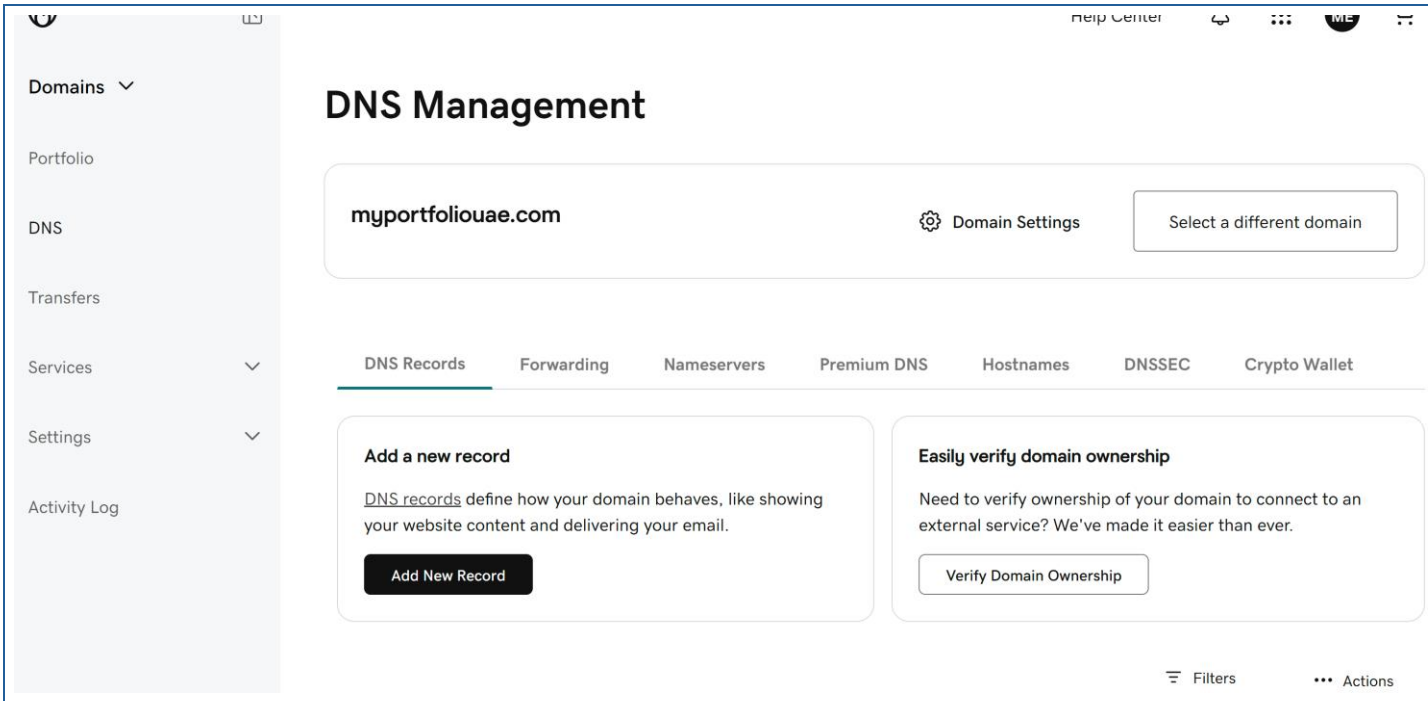
If you see this, congrats its working

**4. get your DNS**

got mine using GoDaddy, once you successfully buy your domain , go to you profile and click on My products to change your DNS

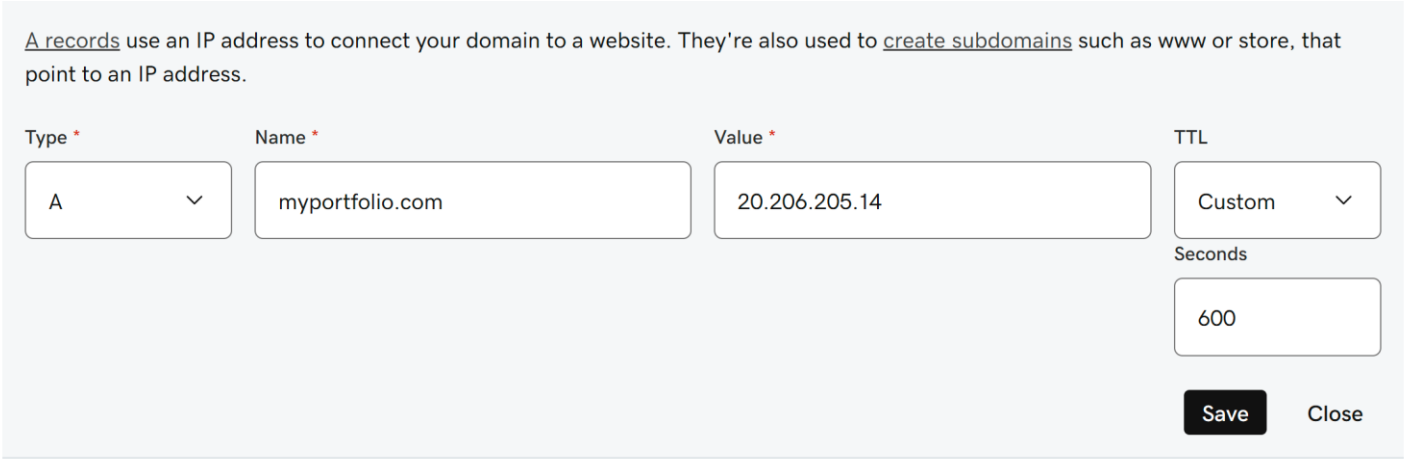



Once you click it , you should be able to see DNS on the side




Press “add a new record” and change it with the following settings:

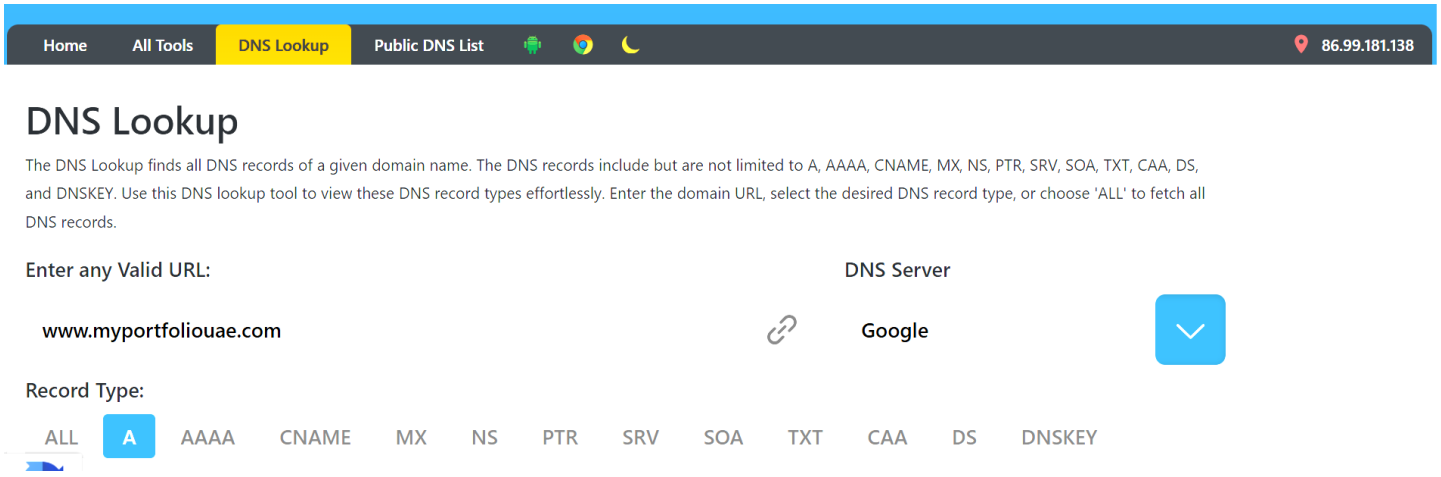
- **Name**: @ (this represents myportfolio.com).
- **Type**: A.
- **Value**: Enter your **server's public IP address** here (the one you found in Step 1).
- **TTL**: Set it to the lowest available value, such as 600  then save it



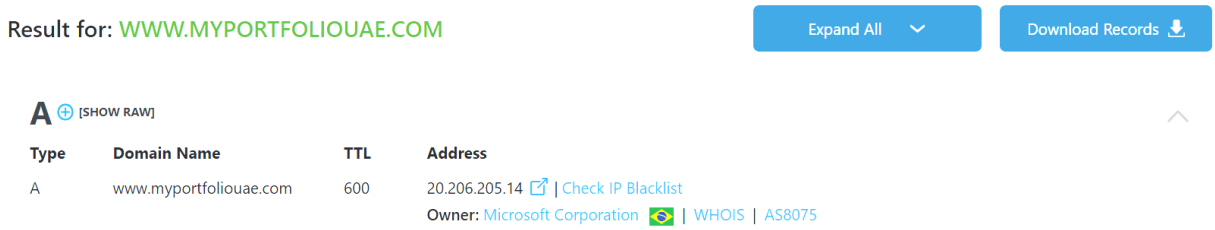

Now, **Wait for DNS Propagation**

- DNS changes can take anywhere from a few minutes to 48 hours to propagate worldwide. You can check if your domain is pointing to the right IP address using a tool like DNS Checker.

Inside the DNS checker web, navigate to DNS lookup, type in your domain, and choose type A (because it's connected to your server’s IP address)




You should be able to see your domain connected to your IP address




On your laptop, check if your domain name is connected to your IP address

Using [ nslookup your domain.com ]

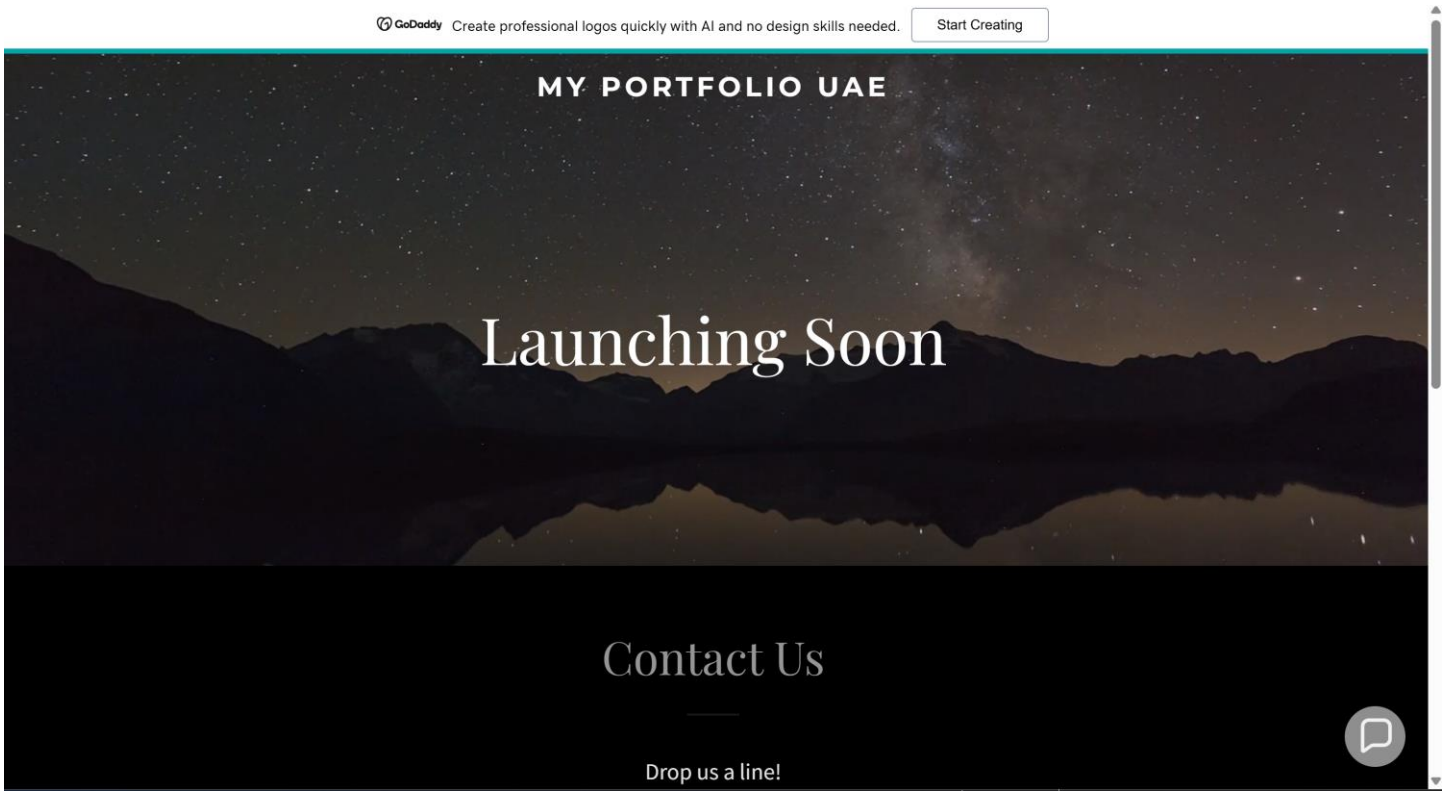
```
PS C:\Users\MANAR> nslookup myportfoliouae.com
Server:  mygpon.ip
Address:  192.168.1.1

Non-authoritative answer:
Name:    myportfoliouae.com
Addresses:  13.248.243.5
          20.206.205.14
          76.223.105.230
```

My domain name is connected to 2 more IP addresses, and that's why it's not running correctly. To solve that, go back to your domain provider ( in my case, GoDaddy ) and go to the DNS settings and Delete the Conflicting "WebsiteBuilder Site" A Record

- Look for the **A record** with WebsiteBuilder Site.
- Click **Delete** on that row.
- Keep **only** the A record pointing to 20.206.205.14.

Now, look for your domain name in your browser.




If you see your website page, well done!!

**5. Build your website:**

For this project, I will be using a free portfolio website template [start bootstrap]

**Template Information**

- **Name:** Personal
- **Source:** Start Bootstrsudo ngap
- **License:** MIT License (Allows free use with attribution)
- **Original Features:**
    - One-page layout
    - Smooth scrolling navigation
    - Responsive design
    - Sections for about, projects, and contact

**Changes and customization:**

- **HTML:**
    - Updated <title> and meta tags
    - Added my own bio and project descriptions in index.html
- **CSS:**
    - Changed colours to match my brand
    - Adjusted font styles and sizes
- **Images:**
    - Replaced default images with my profile picture and project screenshots
- **Other:**
    - Removed unnecessary sections.
    - Updated the contact form to link to my real email or form handler

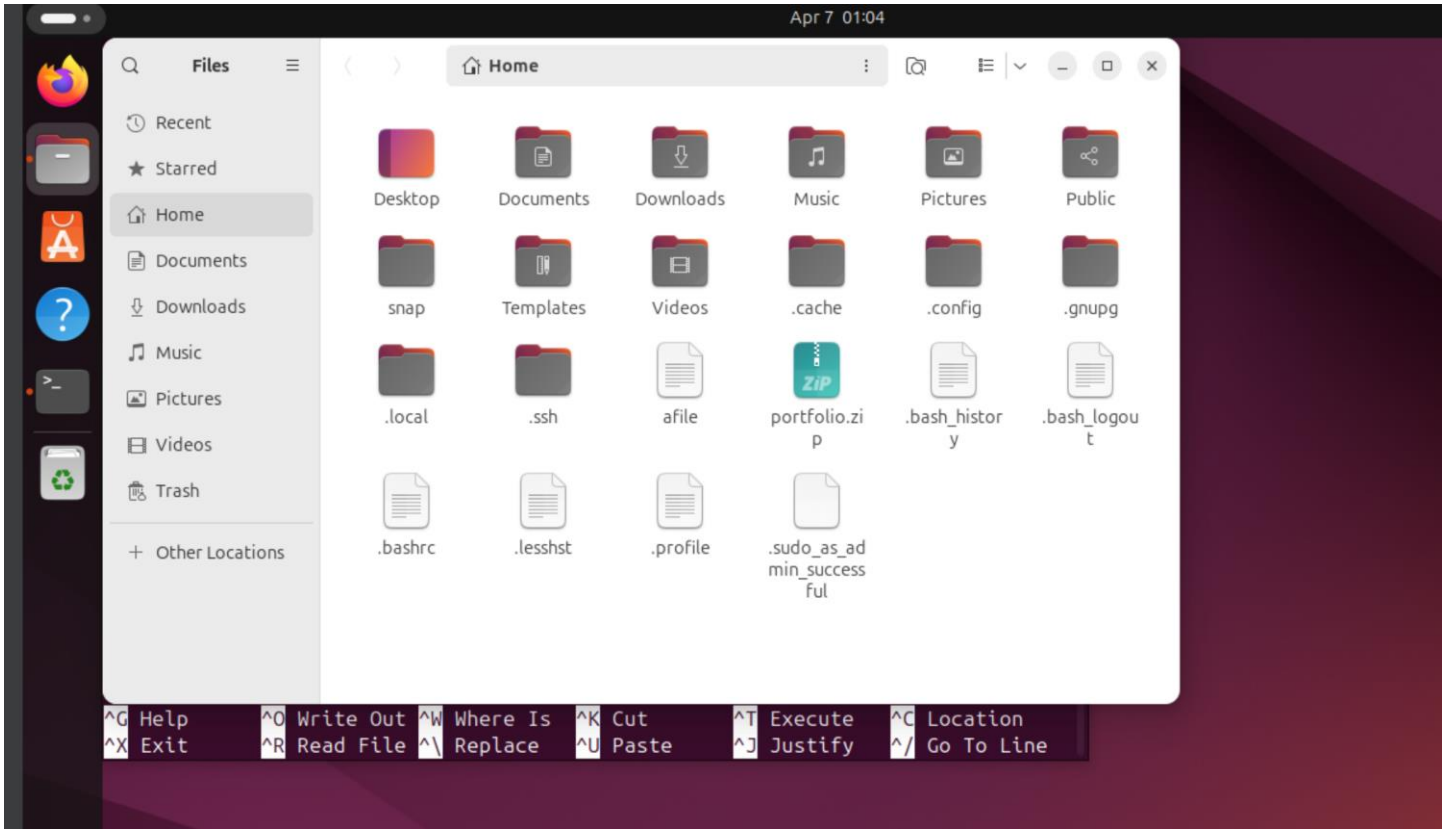
**5. Setup your server to point to your domain name (website)**

Since my domain website is saved on my laptop, I will zip the project file and move it to my Ubuntu VM

[ scp path/to/yourprojectfilr.zip yourusername@your-server-ip:~ ]

```
lio.zip": No such file or directory
PS C:\Users\MANAR> scp \Users\MANAR\OneDrive\Desktop\portfolio.
zip manar@192.168.1.27:~
manar@192.168.1.27's password:
portfolio.zip 100%   52KB   6.3MB/s   00:00
PS C:\Users\MANAR>
```

Open your file app on your Ubuntu VM and your file should be there. Then unzip the folder




Move it to the proper place

[ sudo mv filename /var/www/yourdomain.com ]

And fix permissions

[ sudo chown -R www-data:www-data /var/www/yourdomain.com ]

Since im using Nginx,

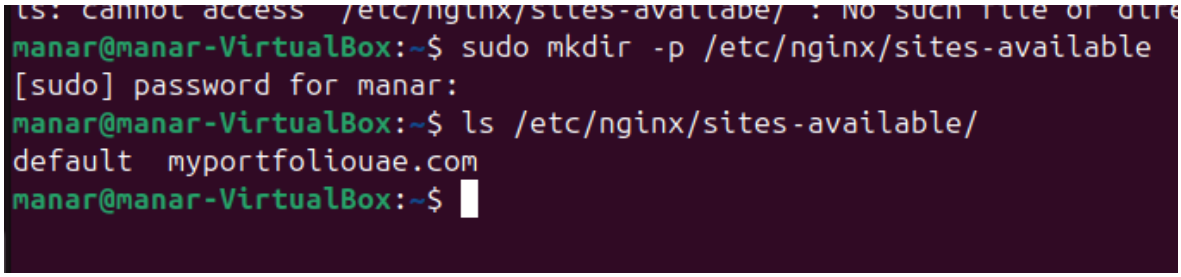
I'll start **by installing Nginx** in my Ubuntu server,
[ sudo apt update
sudo apt install nginx ]

Create the directory

[ sudo mkdir -p /etc/nginx/sites-available ]

Check if its been created

[ ls /etc/nginx/sites-available/ ]




Then **create a new server block configuration file** for my domain
[ sudo nano /etc/nginx/sites-available/yourdomain.com ]

and add the following configuration:

[

```
server {
    listen 80;
    server_name yourdomain.com www.yourdomain.com;
    root /var/www/html/yourwebsite;

    index index.html index.htm;

    access_log /var/log/nginx/yourdomain.com.access.log;
    error_log /var/log/nginx/yourdomain.com.error.log;

    location / {
        try_files $uri $uri/ =404;
    }
}
```

]

```
  GNU nano 7.2      /etc/nginx/sites-available/myportfoliouae.com *
server{
        listen 80;
        server_name myportfoliouae.com  www.myportfoliouae.com;
        root/var/www/html/portfolio;

        index index.html.index.htm;

        access_log /var/log/nginx/www.myportfoliouae.com.access.log;
        error_log /var/log/nginx/www.myportfoliouae.com.error.log;

location/{
  try_fiels $uri $uri/=404;

     }

}
```

Now, create the sites-enabled link

[ sudo ln -s /etc/nginx/sites-available/yourdomain.com /etc/nginx/sites-enabled/ ]

**Test the config**

[ sudo nginx -t ]

```
manar@manar-VirtualBox:~$ sudo nginx -t
2025/04/07 18:02:07 [warn] 5168#5168: conflicting server name "www.myportfoliouae.com" on 0.
0.0.0:80, ignored
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
```

**6. Open port 80 in Azure**

Go to the Azure portal: https://portal.azure.com

**Navigate to "Virtual Machines"** and select your VM.

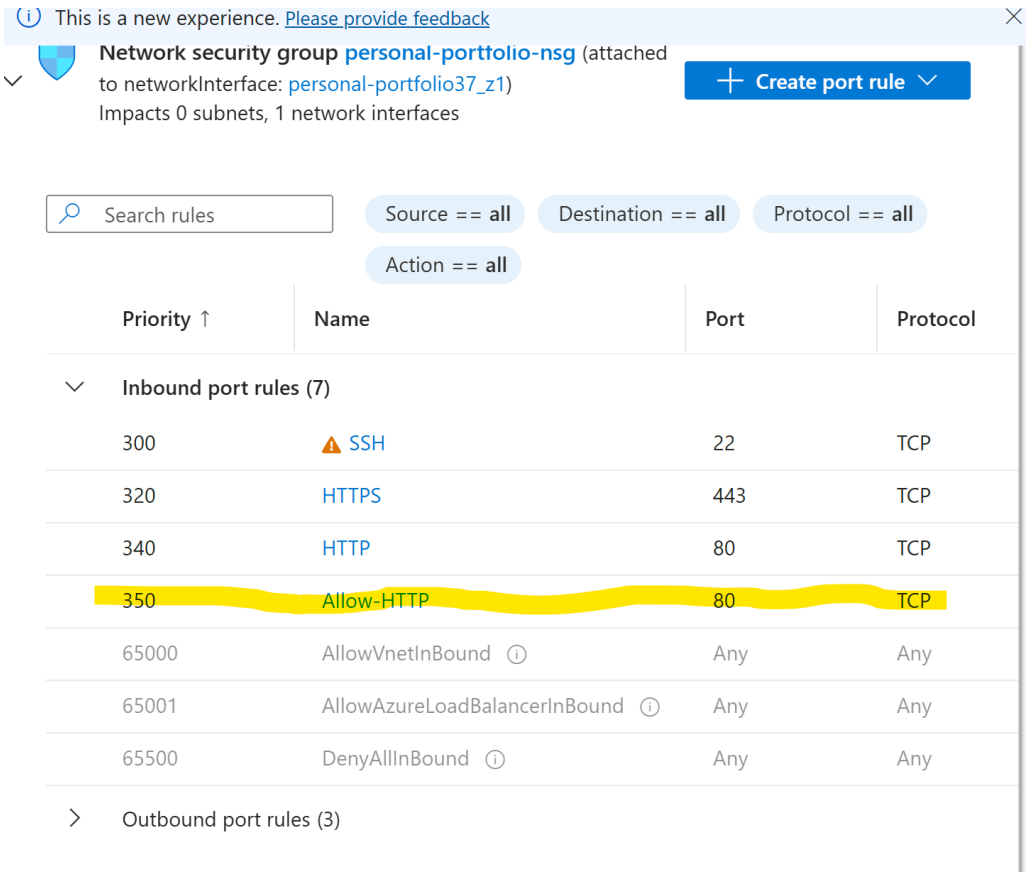
In the **left-hand menu**, scroll down to **"Networking"** under the **"Settings"** section.

Under **"Inbound Port Rules"**, click **“Add inbound port rule”**.

Fill in the fields:

- **Source**: Any
- **Source port ranges**: *
- **Destination**: Any
- **Destination port ranges**: 80
- **Protocol**: TCP
- **Action**: Allow
- **Priority**: (keep default unless it conflicts)
- **Name**: Allow-HTTP

Click **“Add”**




Give it a minute, then try opening your site

**7. Set up HTTPS (SSL certificate)**

It will give the secure lock icon to your web and remove the “not secure” warning

On VM run

[ sudo apt install certbot python3-certbot-nginx]

Then request the SSL certificate

[ sudo certbot --nginx -d domainname.com -d www.domainname.com ]

Test auto-renewal

[ sudo certbot renew --dry-run ]

Now your web is working via https ://yourdomainname.com