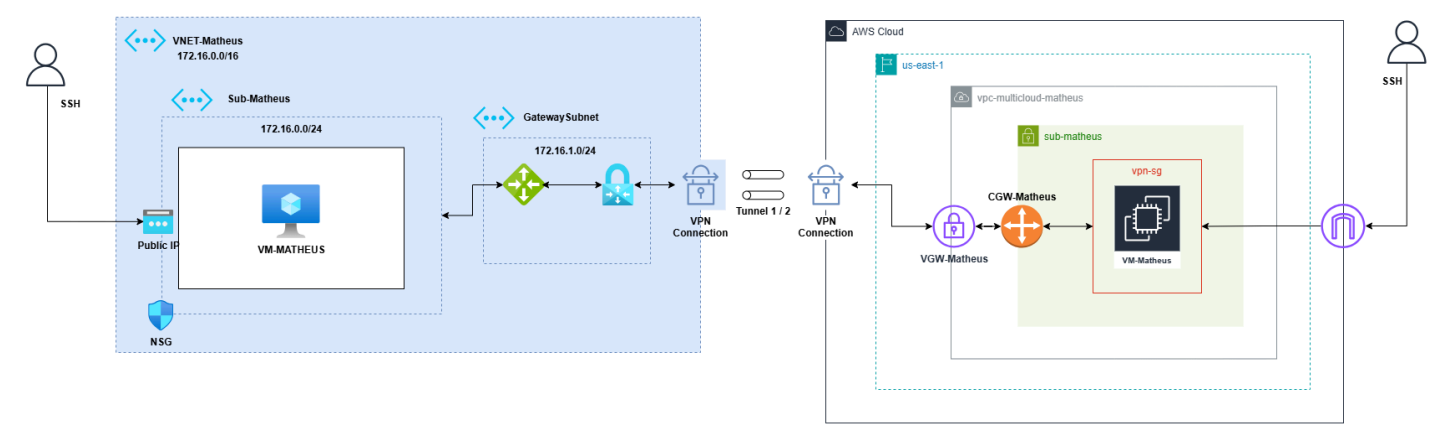


Tabela da documentação

AWS		
VPC		
VPC	vpc-multicloud-matheus	
	Intervalo de IP's: 10.0.0.0/16	
Subnet	sub-multi-matheus	
	Intervalo de IP's: 10.0.0.0/24	
Internet Gateway	igw-multicloud-matheus	
Route Table	rtb-multi-matheus	
	0.0.0.0/0	Internet Gateway
	10.0.0.0/16	Local
	172.16.0.0/24	Virtual Private Gateway
Customer Gateway	cgw-azure-matheus	IP Azure: 4.236.131.106
Virtual Private Gateway	vgw-multicloud-matheus	
Conexão Site-to-site VPN	vpn-azure-matheus	
	Túnel 1	IP de Saída: 3.220.179.138
	Túnel 2	IP de Saída: 54.86.29.167
EC2		
Instância t2.micro	VM-MATHEUS-AWS	
Sistema Operacional	Ubuntu	
IP Público	3.92.68.56	
IP Privado	10.0.1.16	
Security Group	VPN-sg	
	ICMPv4	172.16.0.0/16
	SSH	0.0.0.0/0

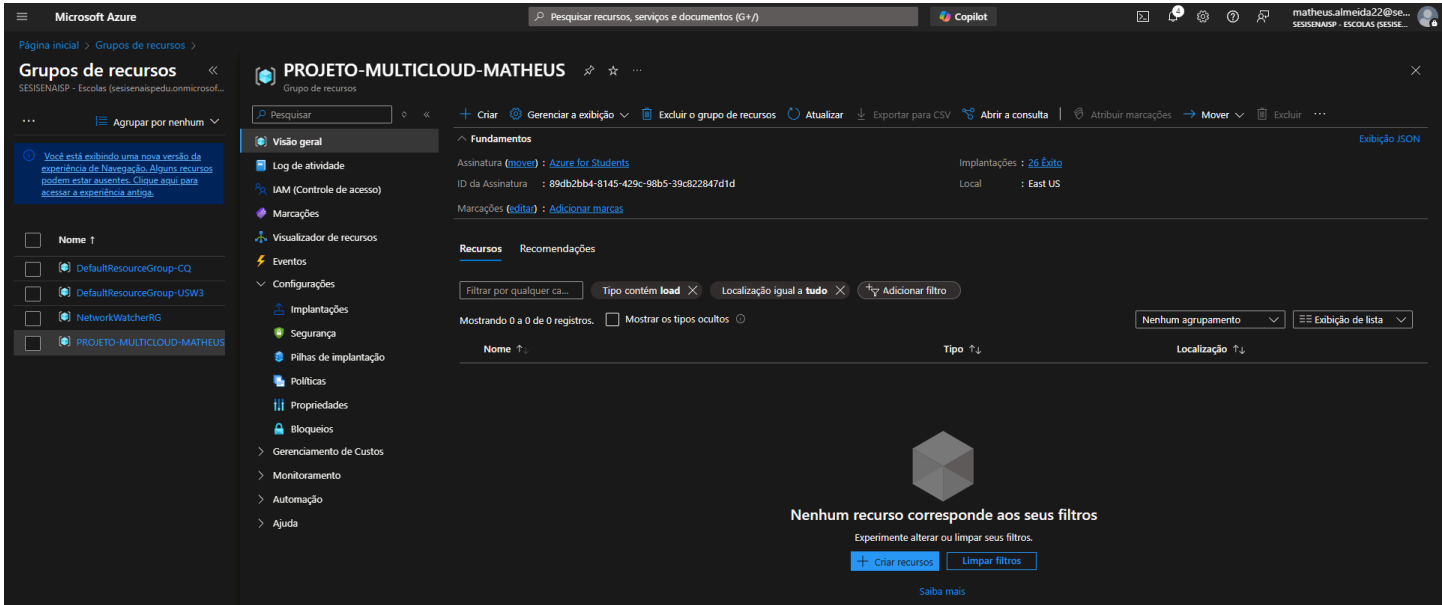
Azure		
Grupo de recursos	PROJETO-MULTICLOUD-MATHEUS	
VNET	vnet-multicloud-matheus	
Subnets	subnet-multi-matheus	172.16.0.0/24
	GatewaySubnet	172.16.1.0/27
Virtual Network Gateway	vng-multicloud-matheus	IP Publico: 4.236.131.106
Local Network Gateway	LGW-AZURE-MATHEUS	IP AWS: 3.220.179.138
	LGW2-AZURE-MATHEUS	IP AWS: 54.86.29.167
Conexão Tunnel 1	Conexao1-aws-matheus	
Conexão Tunnel 2	Conexao2-aws-matheus	
Máquina Virtual	VM-MATHEUS	
Sistema Operacional	Ubuntu	
IP Público	172.190.34.152	
IP Privado	172.16.0.4	
Network Security Group	VM-MATHEUS-nsg	
	SSH	0.0.0.0/0
	PERMITIR-PING	10.0.0.0/16

Topologia da VPN Multi Cloud

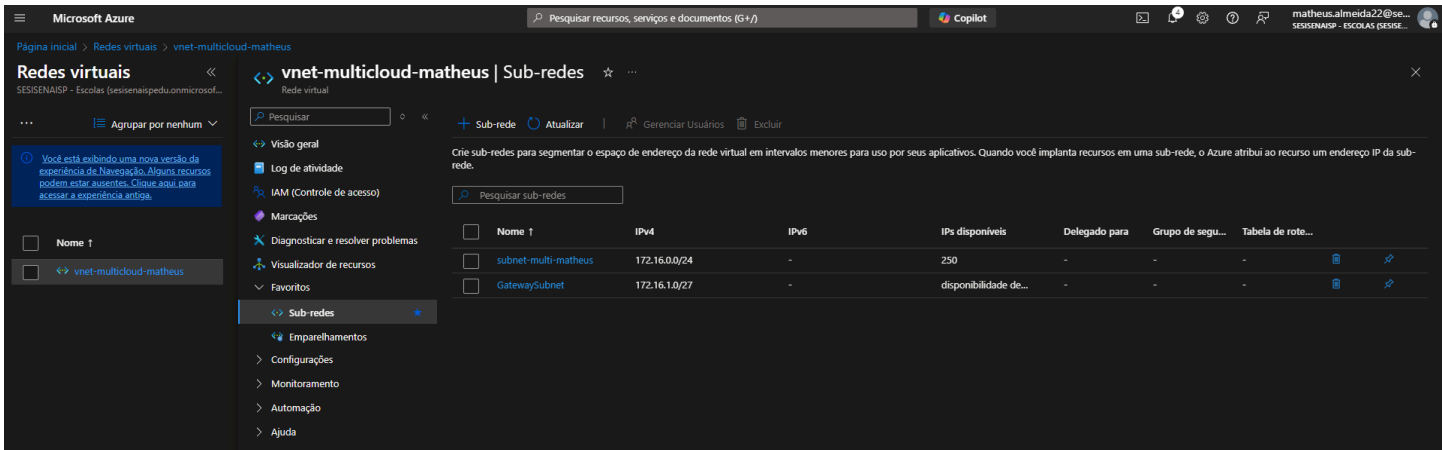


# Configurações iniciais executadas na Azure

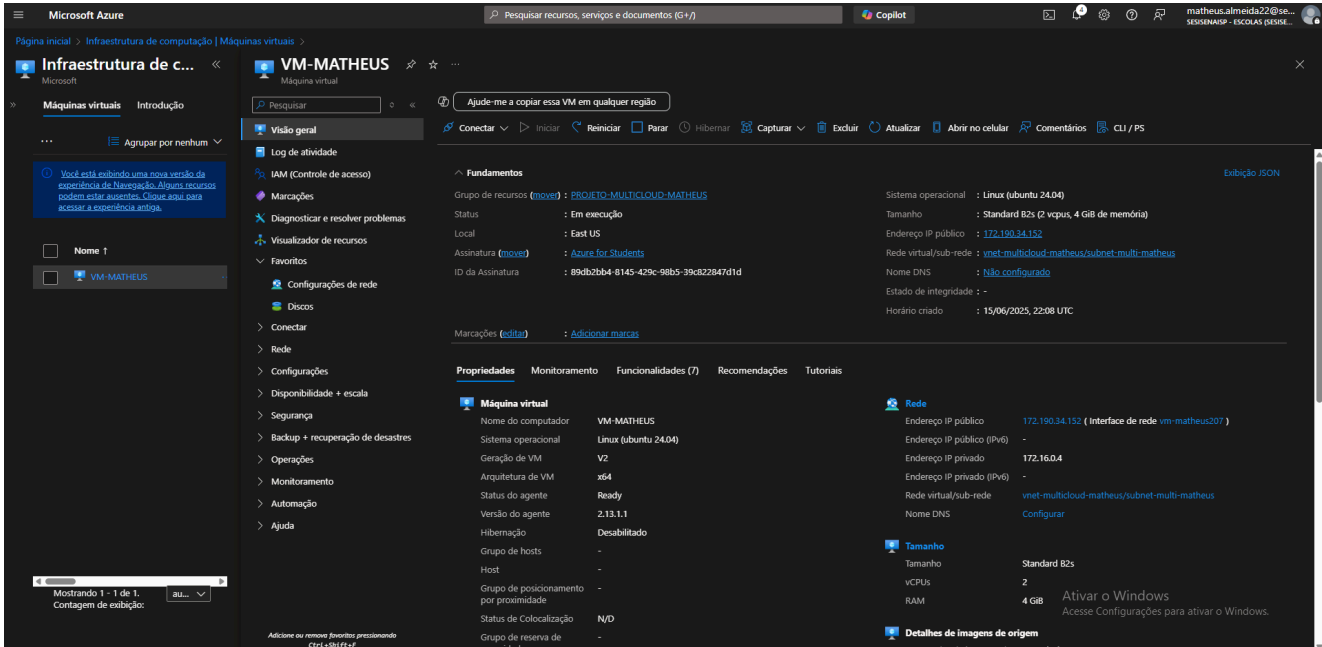
## 1. Criação do grupo de recursos



## 2. Criação da Virtual Network com subnet privadas

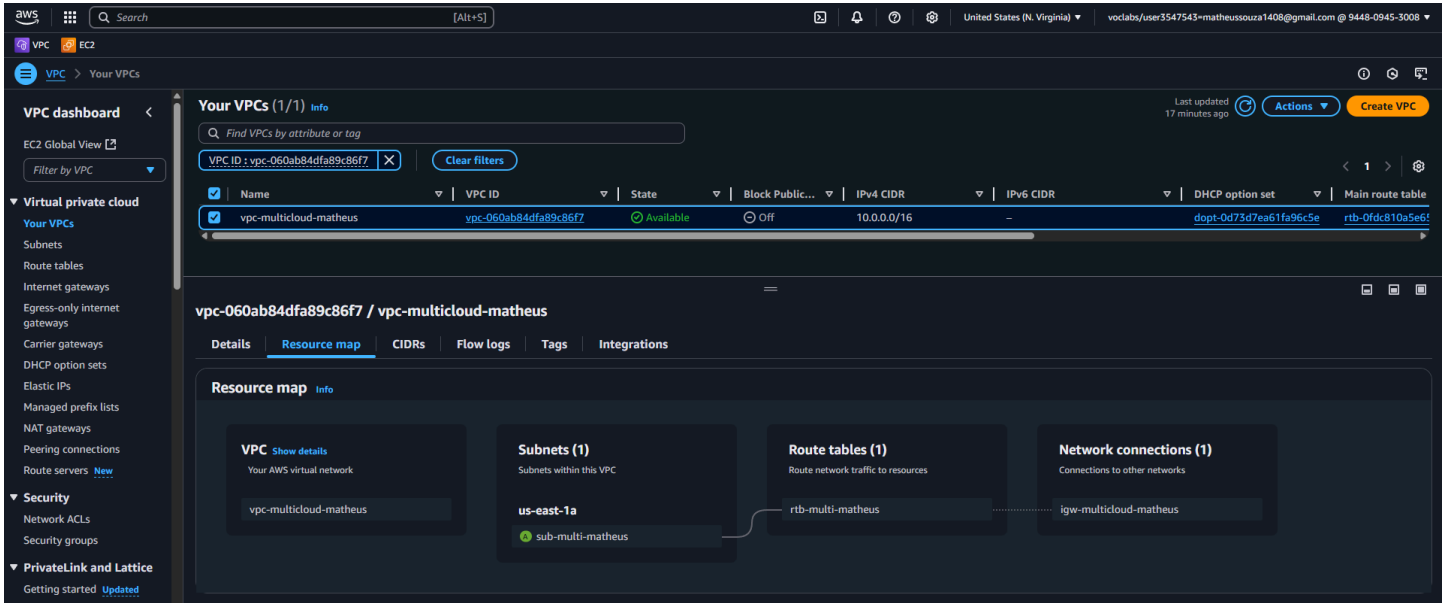


## 3. Deploy da VM com SO Ubuntu

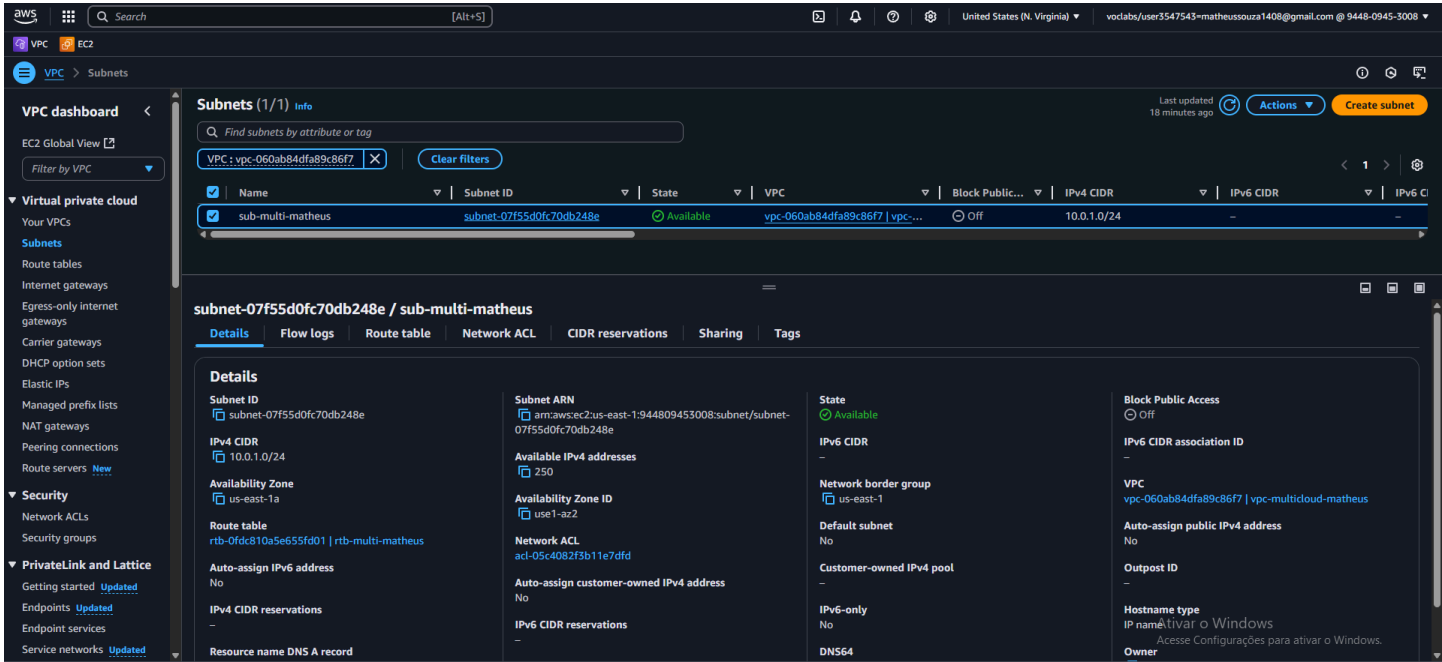


# Configurações iniciais na AWS

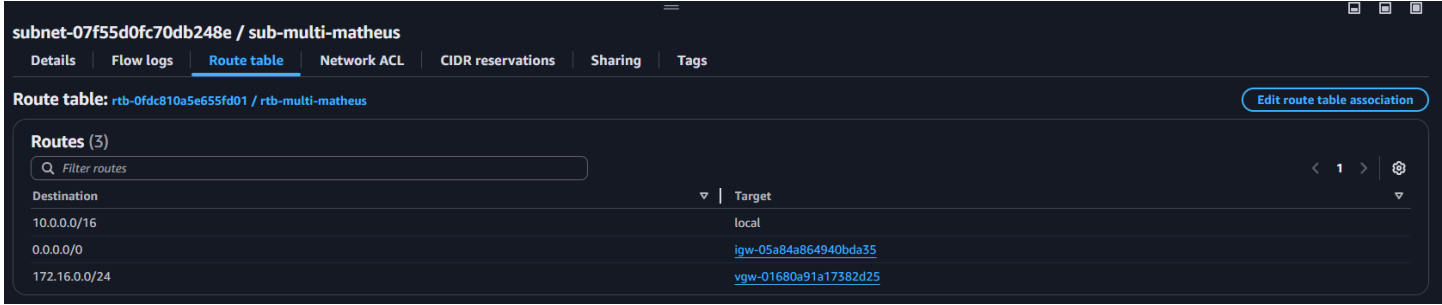
## 1. Criação da VPC



## 2. Criação da Subnet



## 3. Criação da Route Table e associação da subnet



rtb-0fdc810a5e655fd01 / rtb-multi-matheus

Details

Routes

Subnet associations

Edge associations

Route propagation

Tags

Explicit subnet associations (1)

Find subnet association

Name

Subnet ID

IPv4 CIDR

IPv6 CIDR

sub-multi-matheus

subnet-07f55d0fc70db248e

10.0.1.0/24

-

Edit subnet associations

Subnets without explicit associations (0)

Find subnet association

Name

Subnet ID

IPv4 CIDR

IPv6 CIDR

Edit subnet associations

## 4. Implementação do Gateway de Internet

Internet gateways (1/1)

Find internet gateways by attribute or tag

VPC ID : vpc-060ab84dfa89c86f7

Clear filters

Name

Internet gateway ID

State

VPC ID

Owner

igw-multicloud-matheus

igw-05a84a864940bda35

Attached

vpc-060ab84dfa89c86f7 | vpc-multiclo...

944809453008

Create internet gateway

igw-05a84a864940bda35 / igw-multicloud-matheus

Details

Tags

Details

Internet gateway ID

igw-05a84a864940bda35

State

Attached

VPC ID

vpc-060ab84dfa89c86f7 | vpc-multiclo...

Owner

944809453008

## 5. Deploy da VM

Instances (1/1)

Find Instance by attribute or tag (case-sensitive)

All states

VPC ID : vpc-060ab84dfa89c86f7

Clear filters

Name

Instance ID

Instance state

Instance type

Status check

Alarm status

Availability Zone

Public IPv4 DNS

Public IPv4 ...

Elastic IP

VM-MATHEUS...

i-Od1201e4fd0231f0d

Running

t2.micro

2/2 checks passed

View alarms +

us-east-1a

-

3.92.68.56

-

Launch instances

i-Od1201e4fd0231f0d (VM-MATHEUS-AWS)

Details

Status and alarms

Monitoring

Security

Networking

Storage

Tags

Instance summary

Instance ID

i-Od1201e4fd0231f0d

IPv6 address

-

Hostname type

IP name: ip-10-0-1-16.ec2.internal

Answer private resource DNS name

-

Auto-assigned IP address

3.92.68.56 [Public IP]

IAM Role

-

Public IPv4 address

3.92.68.56 | open address

Instance state

Running

Private IP DNS name (IPv4 only)

ip-10-0-1-16.ec2.internal

Instance type

t2.micro

VPC ID

vpc-060ab84dfa89c86f7 (vpc-multicloud-matheus)

Subnet ID

subnet-07f55d0fc70db248e (sub-multi-matheus)

Private IPv4 addresses

10.0.1.16

Public DNS

-

Elastic IP addresses

-

AWS Compute Optimizer finding

Opt-in to AWS Compute Optimizer for recommendations. | Learn more

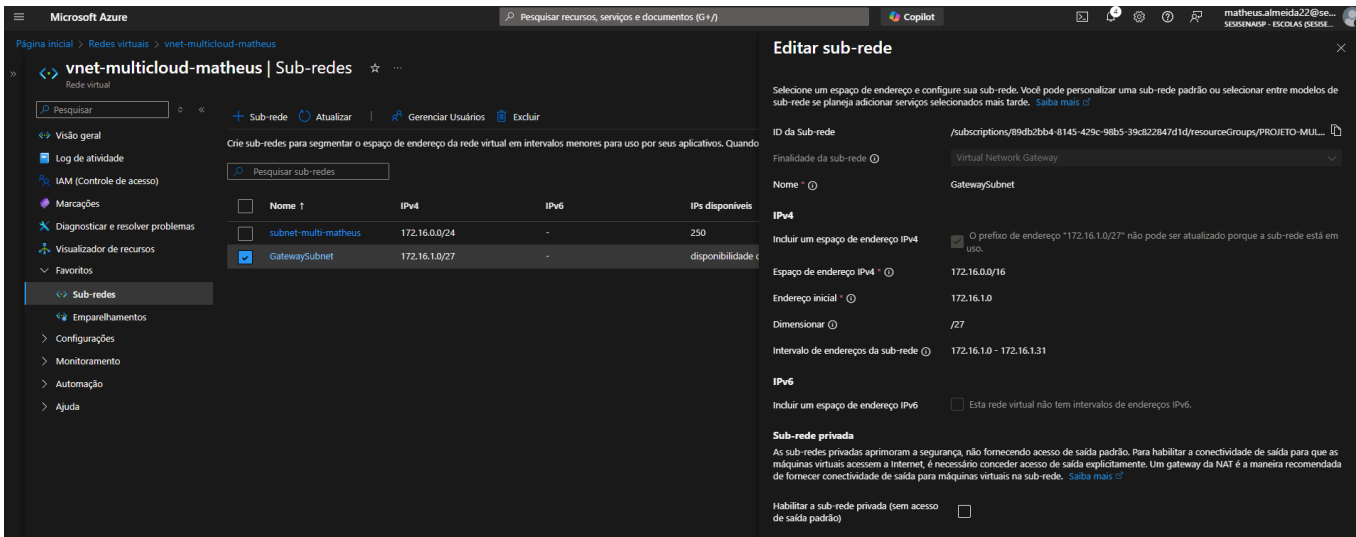
Auto Scaling Group name

Ativar o Windows

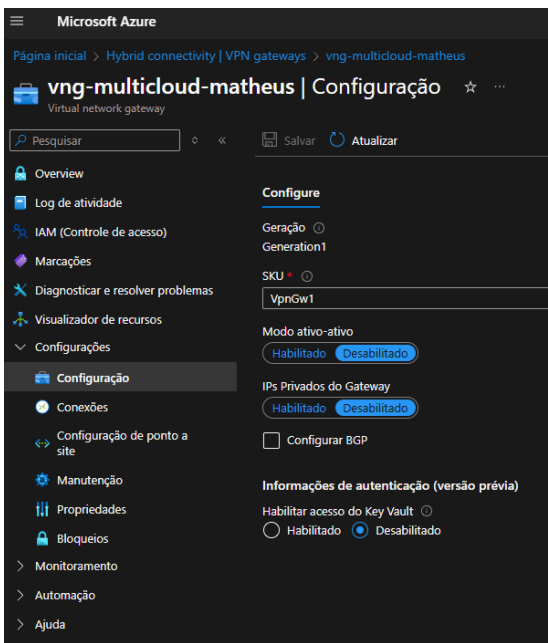
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# Configurações para VPN na Azure

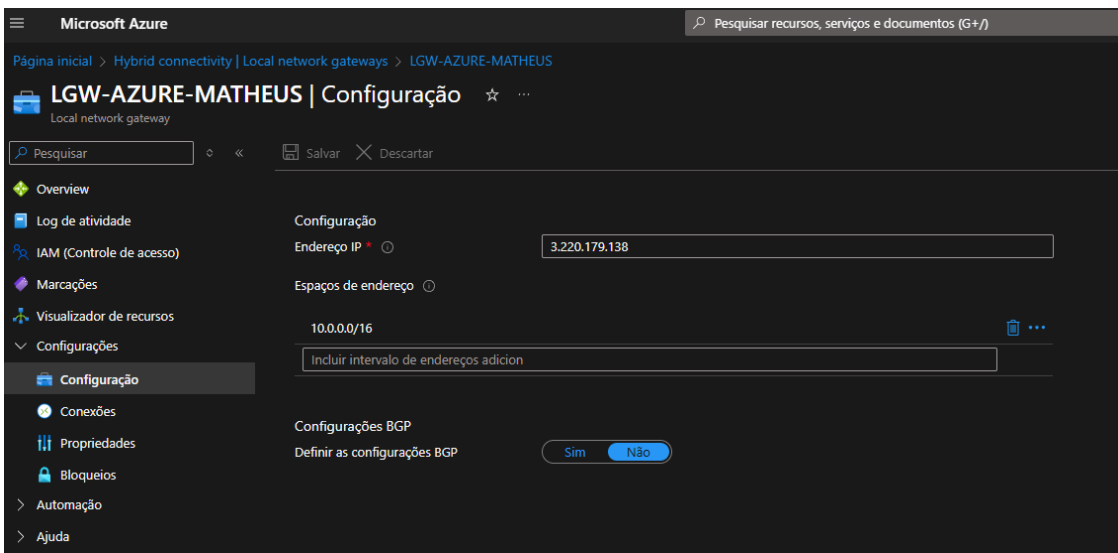
## 1. Criação a subnet específica para o Gateway privado



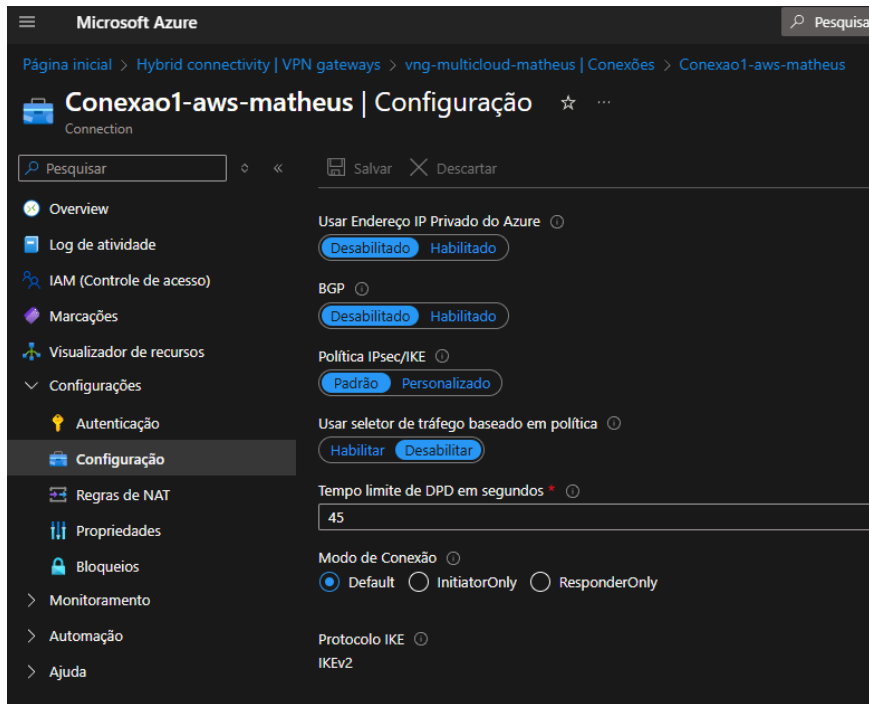
## 2. Criação do Virtual Network Gateway



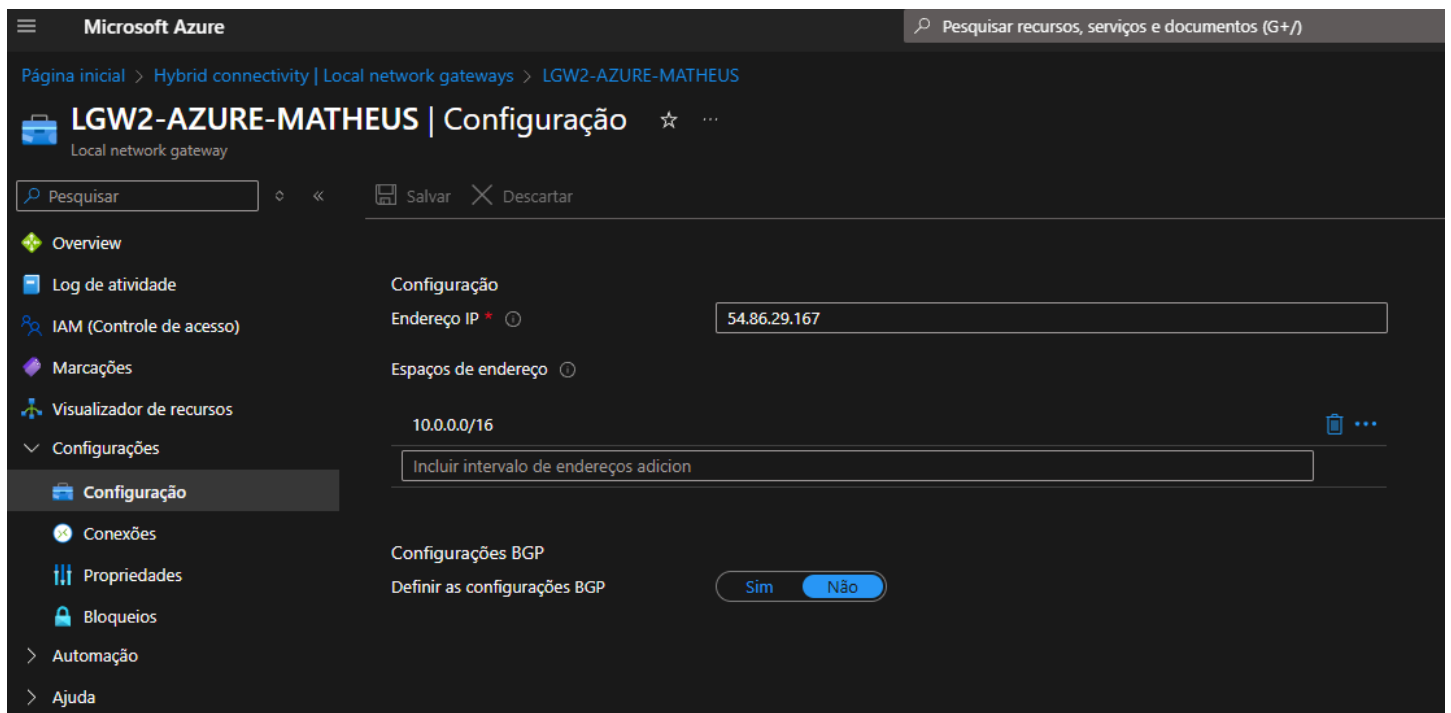
## 3. Criação do Local Network Gateway com o IP do Tunnel 1 do VGW da AWS



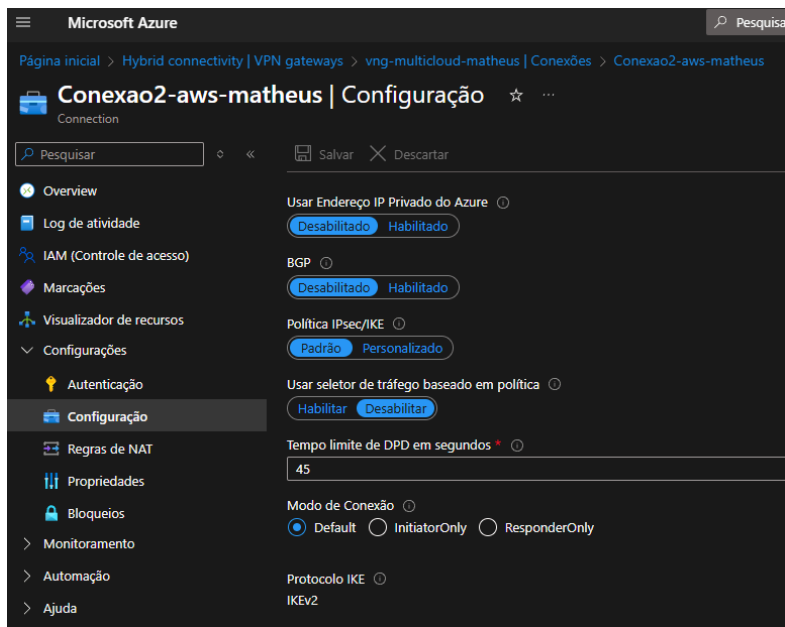
#### 4. Conectar o Tunnel 1 da AWS com o Local Network Gateway da AWS



#### 5. Criação do segundo Local Network Gateway com o IP do segundo túnel do VGW da AWS

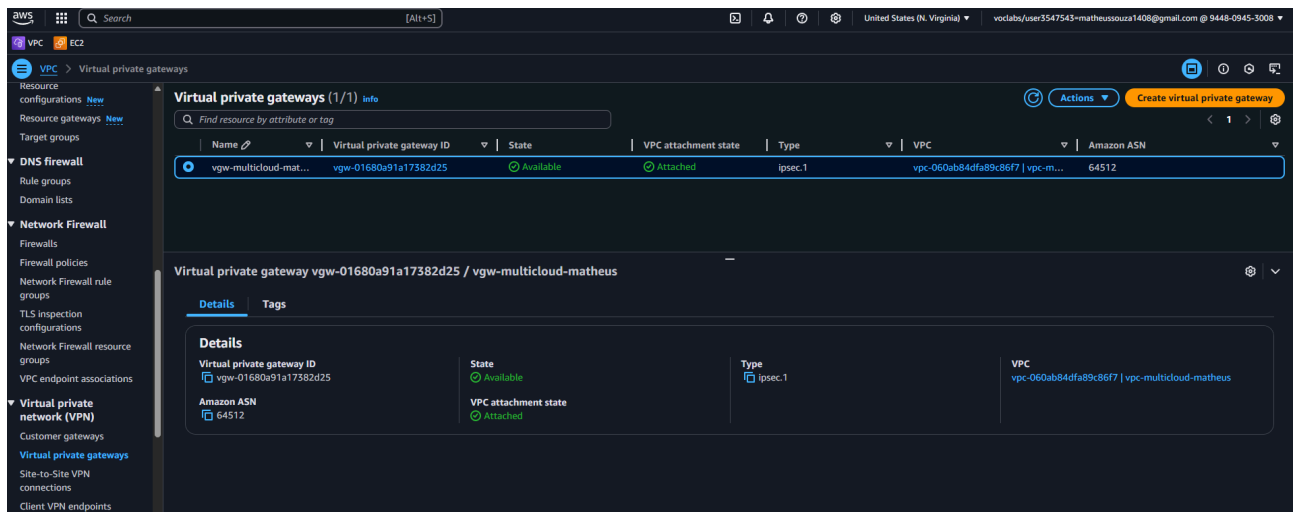


## 6. Conectar o Tunnel 2 da AWS com o segundo Local Network Gateway da AWS

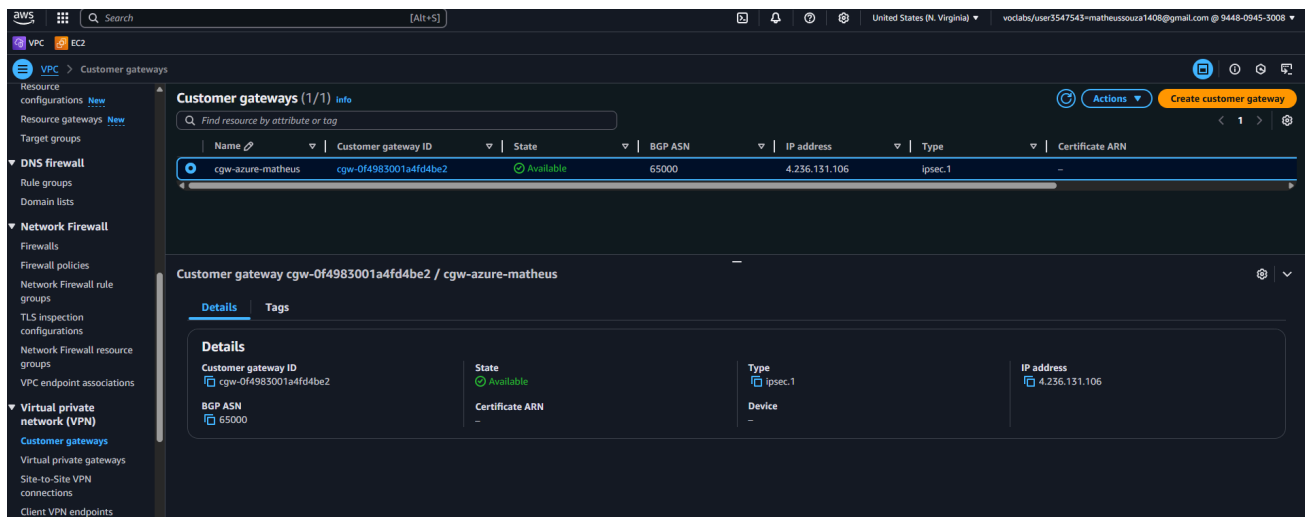


## Configurações para VPN na AWS

### 1. Criação do Virtual Private Gateway e anexar a VPC

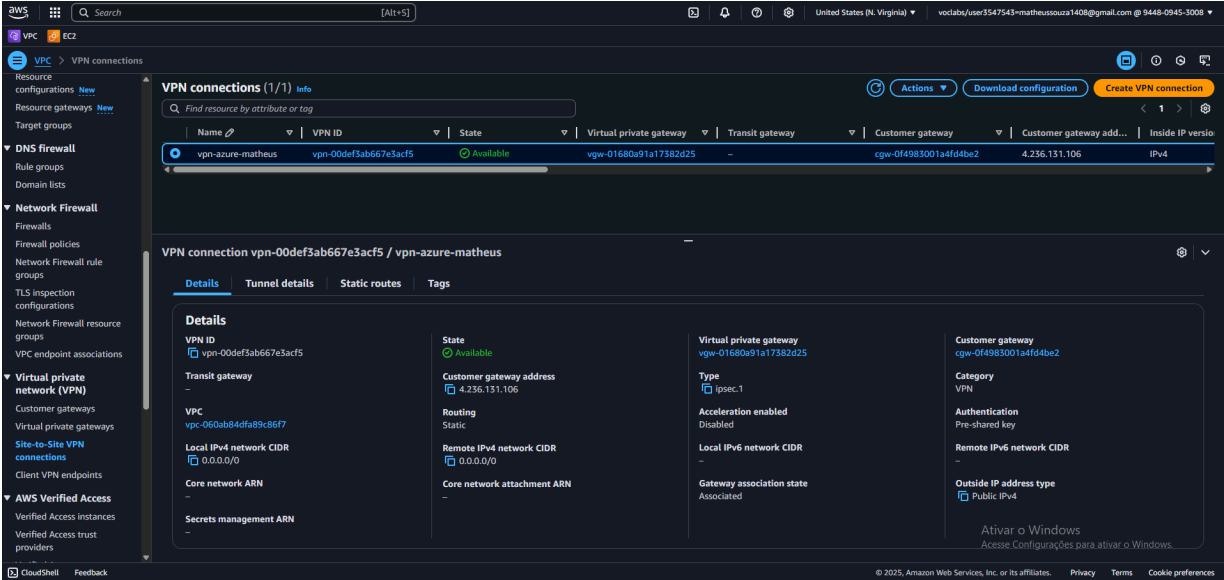


### 2. Criação do Customer Gateway com o IP público do Virtual network gateway da Azure



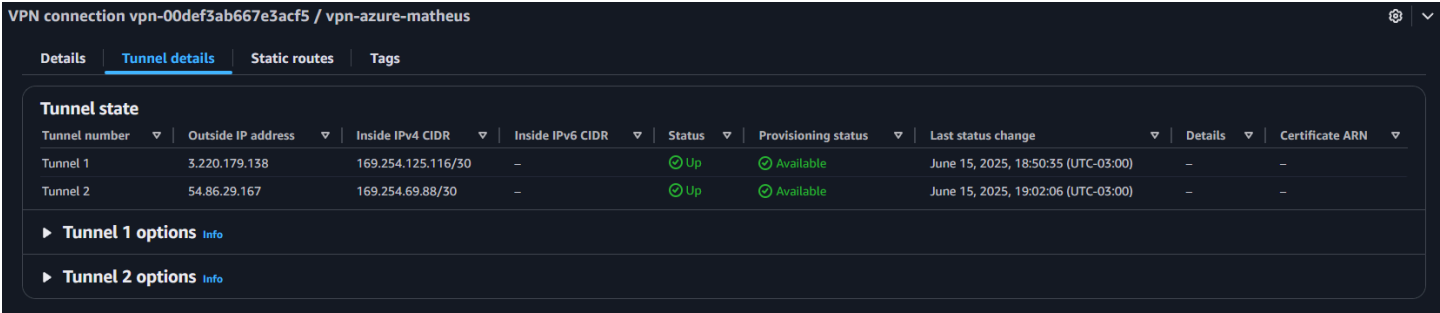


### 3. Criação da conexão site to site VPN para a Azure

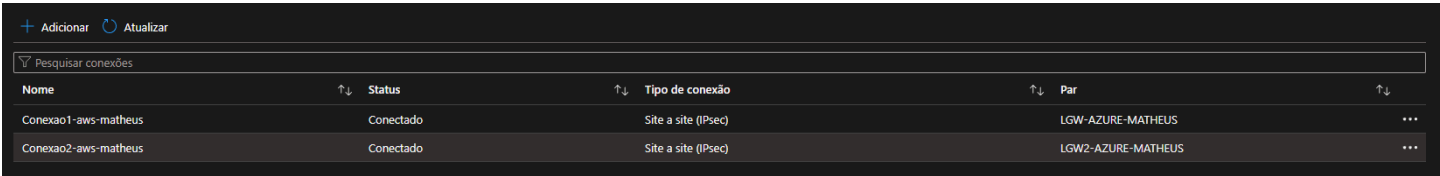


### Testes da VPN

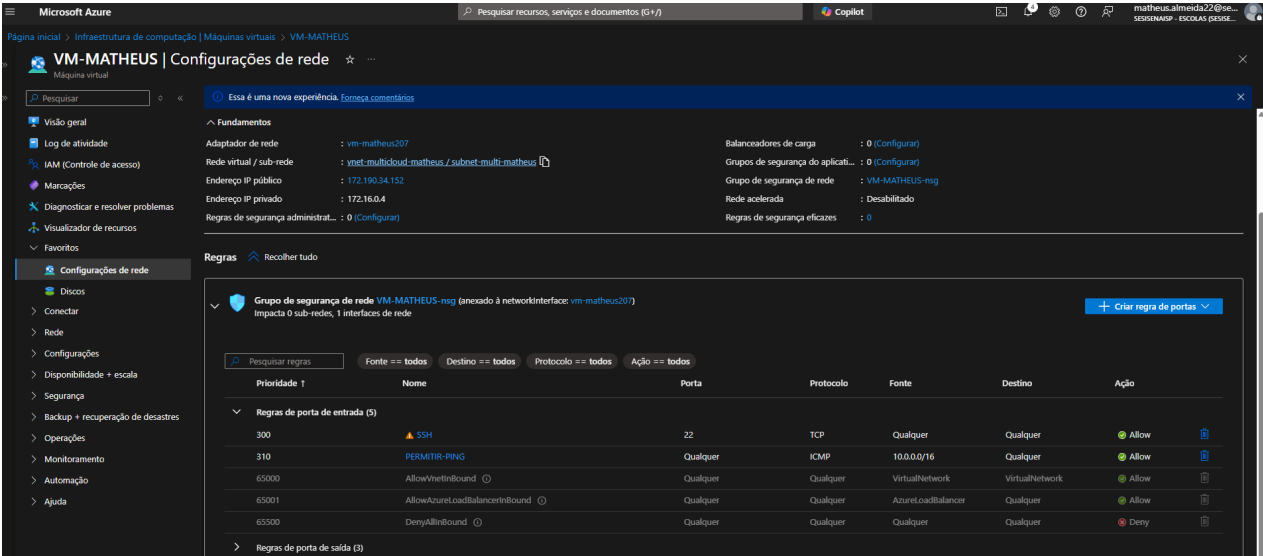
#### 1. Conexões UP na AWS



#### 2. Conexões CONECTADO na Azure



### 3. Configurações do NSG da VM Azure permitindo SSH e ICMPv4



## 4. Configuração do Security Group da Instância EC2 permitindo SSH e ICMPv4

The screenshot shows the AWS Management Console interface for an EC2 instance named 'VM-MATHEUS-AWS'. The 'Security' tab is selected, displaying the security groups and inbound rules associated with the instance.

**Security details**

- IAM Role:** -
- Owner ID:** 944809453008
- Launch time:** Sun Jun 15 2025 19:15:58 GMT-0300 (Horário Padrão de Brasília)

**Security groups**

- sg-064cfd5722ebb0ba1 (VPN-sg)

**Inbound rules**

Name	Security group rule ID	Port range	Protocol	Source	Security groups	Description
-	sg-0acfa87e89821efc6	22	TCP	0.0.0.0/0	VPN-sg	-
-	sg-039a9b4e18a320010	All	ICMP	172.16.0.0/16	VPN-sg	Ativar o Windows Acesse Configurações para ativar o Windows.

## 5. Teste de ping

Instância AWS => VM Azure

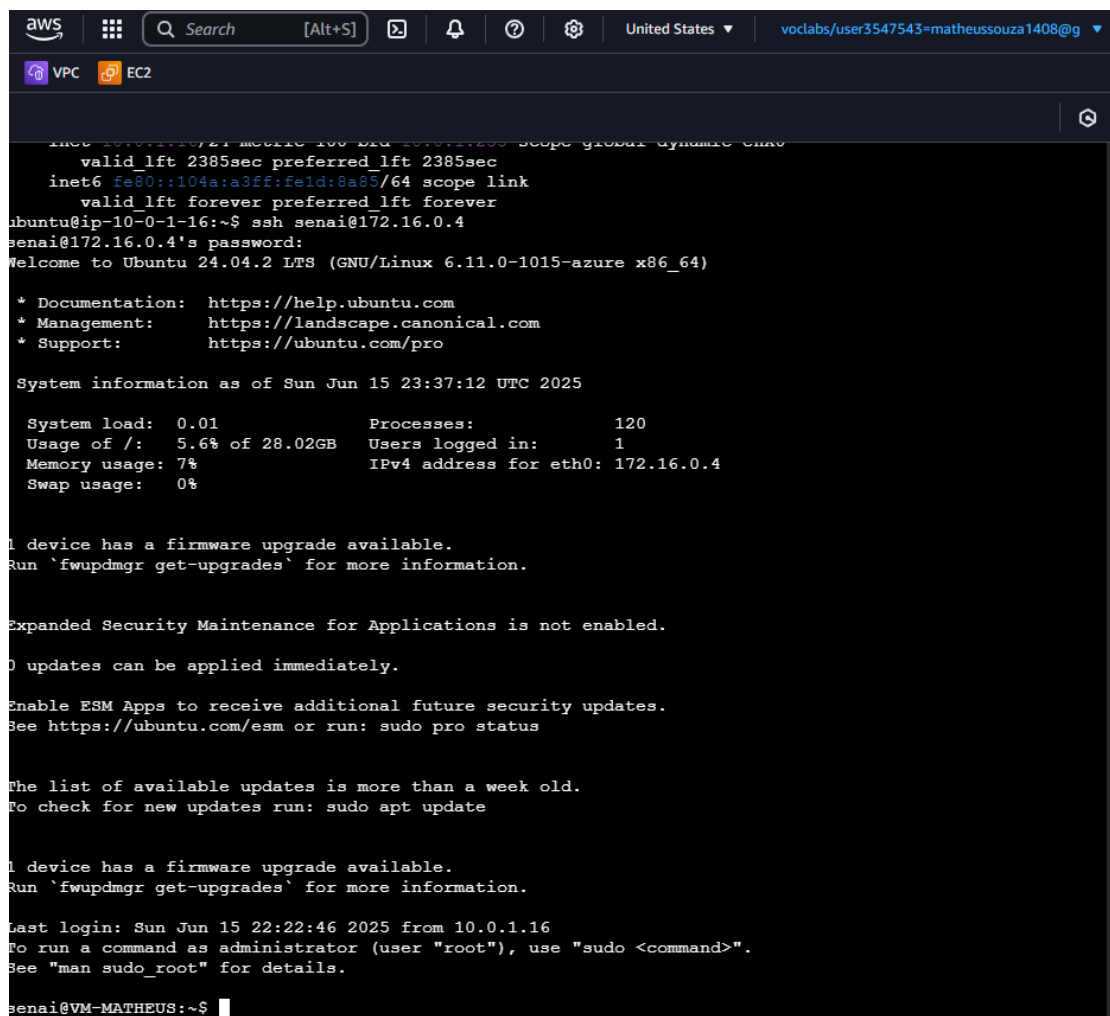
```
aws | Search [Alt+S] | United States | voclabs/user3547543=matheussouza1408@g
VPC EC2
ubuntu@ip-10-0-1-16:~$ ip -c a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: enX0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 9001 qdisc fq_codel state UP group default qlen 1000
    link/ether 12:4a:a3:1d:8a:85 brd ff:ff:ff:ff:ff:ff
    inet 10.0.1.16/24 metric 100 brd 10.0.1.255 scope global dynamic enX0
        valid_lft 2576sec preferred_lft 2576sec
    inet6 fe80::104a:a3ff:fe1d:8a85/64 scope link
        valid_lft forever preferred_lft forever
ubuntu@ip-10-0-1-16:~$ ping 172.16.0.4
PING 172.16.0.4 (172.16.0.4) 56(84) bytes of data.
64 bytes from 172.16.0.4: icmp_seq=1 ttl=64 time=4.54 ms
64 bytes from 172.16.0.4: icmp_seq=2 ttl=64 time=3.65 ms
64 bytes from 172.16.0.4: icmp_seq=3 ttl=64 time=3.79 ms
64 bytes from 172.16.0.4: icmp_seq=4 ttl=64 time=3.94 ms
64 bytes from 172.16.0.4: icmp_seq=5 ttl=64 time=3.78 ms
64 bytes from 172.16.0.4: icmp_seq=6 ttl=64 time=3.80 ms
^C
--- 172.16.0.4 ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5009ms
rtt min/avg/max/mdev = 3.652/3.917/4.542/0.291 ms
ubuntu@ip-10-0-1-16:~$
```

## VM Azure => Instância AWS

```
senai@VM-MATHEUS:~$ ip -c a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host noprefixroute
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 7c:1e:52:47:fe:84 brd ff:ff:ff:ff:ff:ff
    inet 172.16.0.4/24 metric 100 brd 172.16.0.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::7e1e:52ff:fe47:fe84/64 scope link
        valid_lft forever preferred_lft forever
senai@VM-MATHEUS:~$ ping 10.0.1.16
PING 10.0.1.16 (10.0.1.16) 56(84) bytes of data.
64 bytes from 10.0.1.16: icmp_seq=1 ttl=64 time=3.87 ms
64 bytes from 10.0.1.16: icmp_seq=2 ttl=64 time=4.39 ms
64 bytes from 10.0.1.16: icmp_seq=3 ttl=64 time=43.4 ms
64 bytes from 10.0.1.16: icmp_seq=4 ttl=64 time=4.25 ms
64 bytes from 10.0.1.16: icmp_seq=5 ttl=64 time=4.55 ms
64 bytes from 10.0.1.16: icmp_seq=6 ttl=64 time=4.05 ms
64 bytes from 10.0.1.16: icmp_seq=7 ttl=64 time=3.98 ms
^C
--- 10.0.1.16 ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6009ms
rtt min/avg/max/mdev = 3.869/9.777/43.352/13.708 ms
senai@VM-MATHEUS:~$ |
```

## 6. Teste de ssh

## Instância AWS => VM Azure



The screenshot shows the AWS Management Console interface with a terminal window open. The terminal displays the output of an SSH command executed from an Ubuntu instance (ip-10-0-1-16) to a VM in Azure (senai@172.16.0.4). The terminal output includes the SSH command, the password prompt, the Ubuntu login message, system information, and update status.

```
aws
VPC EC2
Search [Alt+S]
United States
voclabs/user3547543=matheussouza1408@g

senai@172.16.0.4:~$ ssh senai@172.16.0.4
senai@172.16.0.4's password:
Welcome to Ubuntu 24.04.2 LTS (GNU/Linux 6.11.0-1015-azure x86_64)

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

System information as of Sun Jun 15 23:37:12 UTC 2025

System load: 0.01          Processes:            120
Usage of /:  5.6% of 28.02GB Users logged in:      1
Memory usage: 7%          IPv4 address for eth0: 172.16.0.4
Swap usage:  0%

1 device has a firmware upgrade available.
Run `fwupdmdmgr get-upgrades` for more information.

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

1 device has a firmware upgrade available.
Run `fwupdmdmgr get-upgrades` for more information.

Last login: Sun Jun 15 22:22:46 2025 from 10.0.1.16
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

senai@VM-MATHEUS:~$ |
```