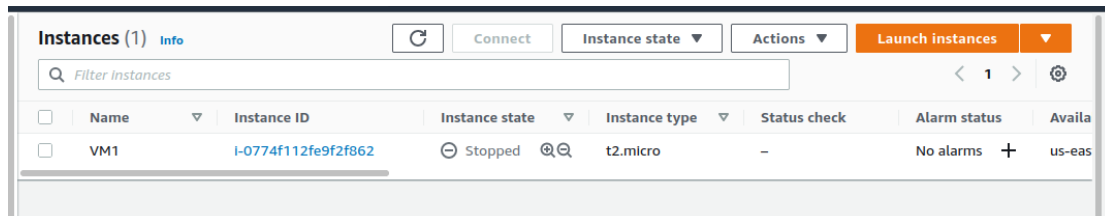


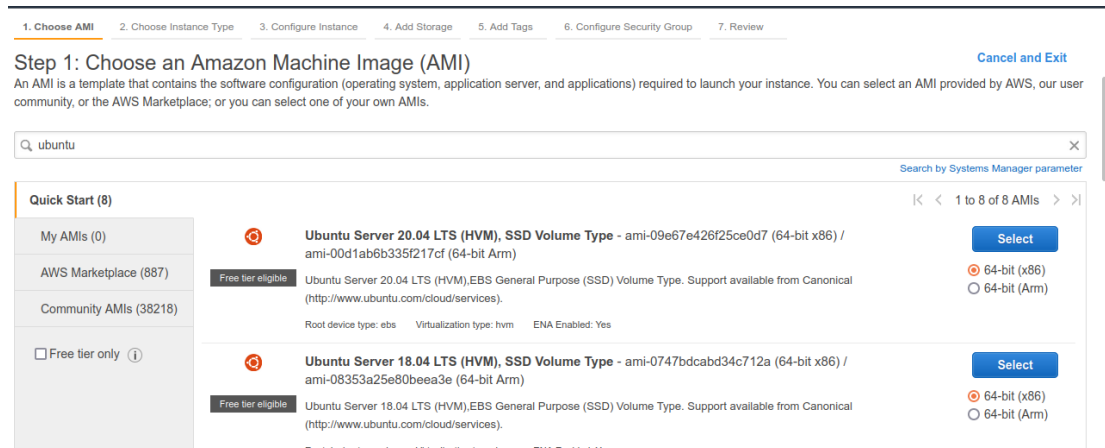
## Como criar uma instância na AWS EC2

Depois de entrar no AWS Educate -> AWS Console -> EC2 -> Instances

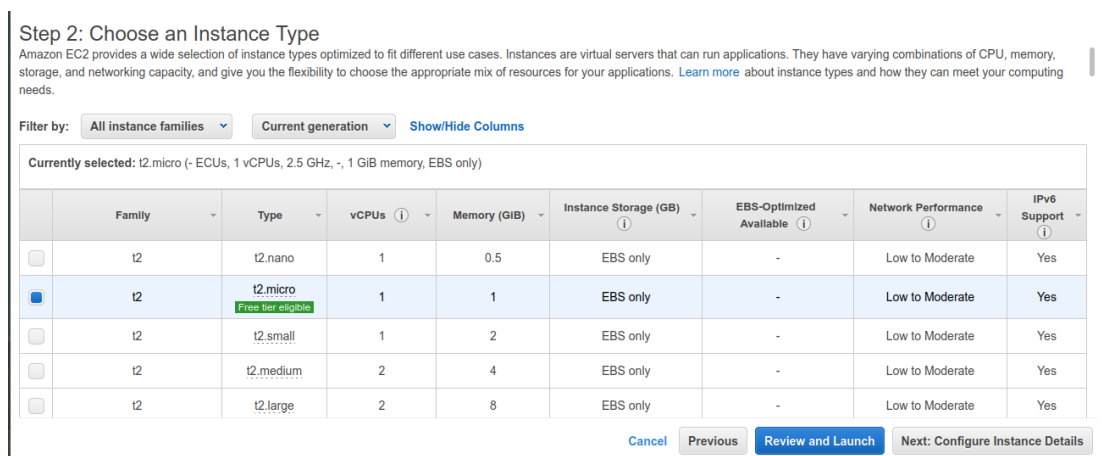
### 1) Clique em launch instances



### 2) Procure por Ubuntu e selecione a versão LTS mais recente



### 3) Selecione t2 micro, pois é de graça e clique em Next: Configure Instance Details



#### 4) Apenas Clique em Next: Add Storage

The screenshot shows the AWS Management Console interface for configuring an EC2 instance. The top navigation bar includes the AWS logo, a search bar, and user information. The main content area is titled 'Step 3: Configure Instance Details' and includes a sub-header 'Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.'

The configuration options are as follows:

- Number of instances:** 1 (with a link to 'Launch into Auto Scaling Group')
- Purchasing option:** ☐ Request Spot instances
- Network:** vpc-09309596b0f0590df (default) (with a link to 'Create new VPC')
- Subnet:** No preference (default subnet in any Availability Zone) (with a link to 'Create new subnet')
- Auto-assign Public IP:** Use subnet setting (Enable)
- Placement group:** ☐ Add instance to placement group
- Capacity Reservation:** Open
- Domain join directory:** No directory (with a link to 'Create new directory')
- IAM role:** None (with a link to 'Create new IAM role')

At the bottom right, there are four buttons: 'Cancel', 'Previous', 'Review and Launch' (highlighted in blue), and 'Next: Add Storage'.

#### 5) Coloque a quantidade de Espaço Desejada e Clique em Add Tags

aws

Services

Q

Search for services, features, marketplace produc

[Alt+5]

vocstartsoft/user1620197=luiz.martinsfo@bandtec.com.br @ 9240...

N. Virginia

Support

1. Choose AMI

2. Choose Instance Type

3. Configure Instance

4. Add Storage

5. Add Tags

6. Configure Security Group

7. Review

### Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0a52a8f51496c3782	30	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypte

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel

Previous

Review and Launch

Next: Add Tags

6) Apenas Clique em Next: Configure Security Group

**Step 5: Add Tags**

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	Value	Instances	Volumes	Network Interfaces
This resource currently has no tags				
Choose the <b>Add tag</b> button or <a href="#">click to add a Name tag</a> . Make sure your <a href="#">IAM policy</a> includes permissions to create tags.				

**Add Tag** (Up to 50 tags maximum)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Security Group](#)

## 7) Configure o grupo de Segurança

### Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

**Assign a security group:** ☒ Create a new security group  
☐ Select an existing security group

**Security group name:** grupo-exemplo

**Description:** launch-wizard-3 created 2021-10-27T13:16:29.762-03:00

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

[Add Rule](#)

**Warning**  
 Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

[Cancel](#) [Previous](#) [Review and Launch](#)

7.1) É recomendado no source colocar os ips das máquinas que podem ter acesso à instância;

7.2) Clique em Review and Launch

## 8) Clique em Launch

### Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**Warning**  
 Improve your instances' security. Your security group, grupo-exemplo, is open to the world. Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only. You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

#### AMI Details

**Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-09e67e426f25ce0d7**  
 Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).  
 Root Device Type: ebs Virtualization type: hvm

#### Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

[Cancel](#) [Previous](#) [Launch](#)

9) Crie uma chave SSH, faça o Download dela E SALVE EM ALGUM LUGAR SEGURO NA NUVEM, sem ela você não pode acessar a máquina. Clique em Launch Instances;

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance. Amazon EC2 supports ED25519 and RSA key pair types.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

Key pair type

☒ RSA ☐ ED25519

Key pair name

CH27102021RA02211045

Download Key Pair

You have to download the **private key file** (\*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

Cancel

Launch Instances

## 10) Clique em View Instances

### Launch Status

Get notified of estimated charges

Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click **View Instances** to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

Here are some helpful resources to get you started

How to connect to your Linux instance

Learn about AWS Free Usage Tier

Amazon EC2: User Guide

Amazon EC2: Discussion Forum

While your instances are launching you can also

Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)

Create and attach additional EBS volumes (Additional charges may apply)

Manage security groups

View Instances

11) Sua instância já estará funcionando. Para pará-la basta selecioná-la e clicar em Instance State e colocar STOP INSTANCE, o Terminate vai apagar sua instância, e siga para o passo 24.

The screenshot shows the AWS Management Console 'Instances' page. The 'VM Tutorial' instance (ID: I-056f3cd0ddb4ba686) is selected. The 'Instance state' dropdown menu is open, displaying options: Stop Instance, Start Instance, Reboot Instance, Hibernate Instance, and Terminate Instance. The 'Status check' for the selected instance shows '2/2 checks passed'.

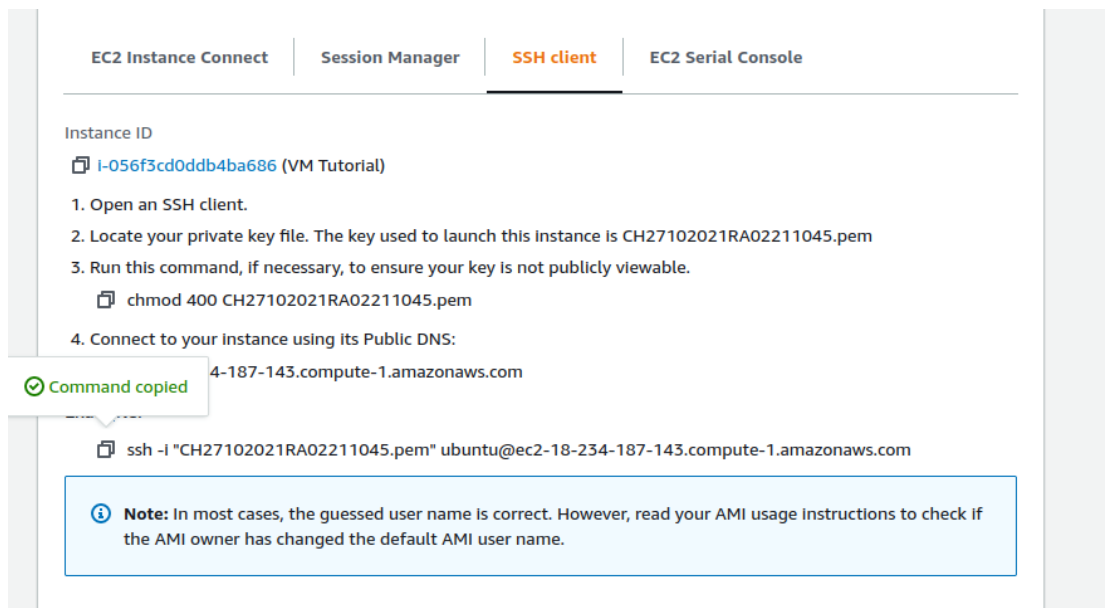
12) Para Iniciar a Instância, Selecione-a e clique em Instance State e depois em Start Instance

The screenshot shows the AWS Management Console 'Instances' page. The 'VM1' instance (ID: I-0774f112fe9f2f862) is selected. The 'Instance state' dropdown menu is open, displaying options: Stop Instance, Start Instance, Reboot Instance, Hibernate Instance, and Terminate Instance. The 'Status check' for the selected instance shows '2/2 checks passed'.

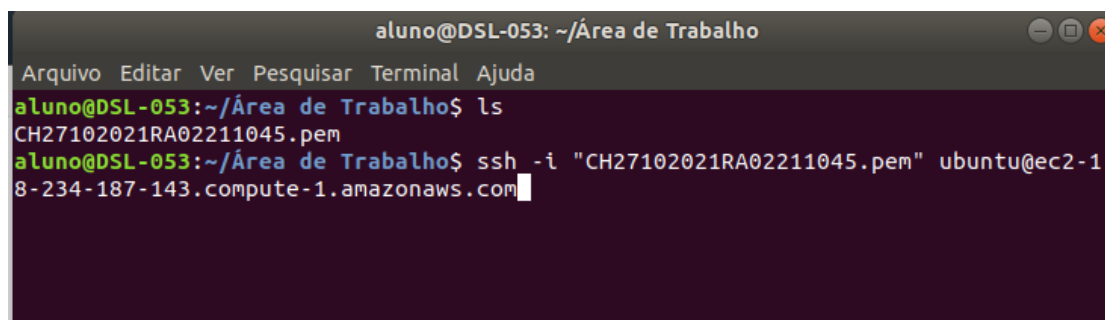
13) Para se conectar na VM, selecione-a e clique em connect e depois em SSH Client

The screenshot shows the AWS Management Console 'Instances' page. The 'VM Tutorial' instance (ID: I-056f3cd0ddb4ba686) is selected. The 'Connect' button is visible in the top right corner of the instance list.

14) Copie o comando do exemplo



15) Abra o Git Bash ou o Terminal Linux e cole o comando no mesmo diretório em que sua chave SSH está



16) Dê enter e digite Yes quando requisitado

16.1) Caso dê o erro abaixo, basta dar `chmod 400 nomeDaChave` e tentar novamente. (O `chmod` serve para alterar permissões entre Dono do Arquivo, Grupo do Dono e Outros Users.)

```
aluno@DSL-053:~/Área de Trabalho$ ssh -i "CH27102021RA02211045.pem" ubuntu@ec2-18-234-187-143.compute-1.amazonaws.com
The authenticity of host 'ec2-18-234-187-143.compute-1.amazonaws.com (18.234.187.143)' can't be established.
ECDSA key fingerprint is SHA256:zwjx/8pvYRgZOrk0W+0iUYN8htMIR/RP54652rpFXF4.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-18-234-187-143.compute-1.amazonaws.com,18.234.187.143' (ECDSA) to the list of known hosts.
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@                WARNING: UNPROTECTED PRIVATE KEY FILE!                @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
Permissions 0664 for 'CH27102021RA02211045.pem' are too open.
It is required that your private key files are NOT accessible by others.
This private key will be ignored.
Load key "CH27102021RA02211045.pem": bad permissions
ubuntu@ec2-18-234-187-143.compute-1.amazonaws.com: Permission denied (publickey)
```

17) Entramos na máquina

```

aluno@DSL-053:~/Área de Trabalho$ chmod 400 CH27102021RA02211045.pem
aluno@DSL-053:~/Área de Trabalho$ ssh -i "CH27102021RA02211045.pem" ubuntu@ec2-1
8-234-187-143.compute-1.amazonaws.com
Welcome to Ubuntu 20.04.2 LTS (GNU/Linux 5.4.0-1045-aws x86_64)

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

System information as of Wed Oct 27 16:38:24 UTC 2021

System load:  0.0               Processes:            100
Usage of /:   4.3% of 29.02GB   Users logged in:     0
Memory usage: 22%              IPv4 address for eth0: 172.31.86.112
Swap usage:   0%

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

```

18) Para mudar ou colocar uma nova senha para um usuario use sudo passwd

```

ubuntu@ip-172-31-86-112:/$ sudo passwd
New password:
Retype new password:
passwd: password updated successfully
ubuntu@ip-172-31-86-112:/$

```

19) cat etc/passwd para mostrar os grupos existentes. Sempre que criamos um usuário ele é inserido em um grupo com o mesmo nome do usuário, por isso existe um grupo chamado ubuntu

```

systemd-coredump:x:999:999:systemd Core Dumper:/:/usr/s
ubuntu:x:1000:1000:Ubuntu:/home/ubuntu:/bin/bash
lxd:x:998:100::/var/snap/lxd/common/lxd:/bin/false
ubuntu@ip-172-31-86-112:/$

```



20) Para criar um novo usuário use `sudo adduser nomeDoUsuario`. Para remover, use `deluser`

```
ubuntu@ip-172-31-86-112:/$ sudo adduser ra02211045
Adding user `ra02211045' ...
Adding new group `ra02211045' (1002) ...
Adding new user `ra02211045' (1002) with group `ra02211045' ...
Creating home directory `/home/ra02211045' ...
Copying files from `/etc/skel' ...
New password:
Retype new password:
passwd: password updated successfully
Changing the user information for ra02211045
Enter the new value, or press ENTER for the default
    Full Name []:
    Room Number []:
    Work Phone []:
    Home Phone []:
    Other []:
Is the information correct? [Y/n] y
ubuntu@ip-172-31-86-112:/$
```

21) Para tornar o usuário root basta adicioná-lo nos grupos sudo e adm usando:

`sudo gpasswd -a nomeDoUsuário nomeDoGrupo`. Caso você queira remover um usuário de um grupo, basta trocar o `-a` por `-d`

<https://qastack.com.br/ubuntu/43317/what-is-the-difference-between-the-sudo-and-admin-group>

```
ubuntu@ip-172-31-86-112:/$ sudo gpasswd -a ra02211045 sudo
Adding user ra02211045 to group sudo
ubuntu@ip-172-31-86-112:/$ sudo gpasswd -a ra02211045 adm
Adding user ra02211045 to group adm
ubuntu@ip-172-31-86-112:/$ groups ra-2211045
groups: 'ra-2211045': no such user
ubuntu@ip-172-31-86-112:/$ groups ra02211045
ra02211045 : ra02211045 adm sudo
ubuntu@ip-172-31-86-112:/$
```

22) Para alternar entre usuário execute su nomeDoUsuarioQueVoceQuerEntrar. É sempre bom dar um exit depois que você terminar de usar um usuário.

```
ubuntu@ip-172-31-86-112:/$ su ra02211045
Password:
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

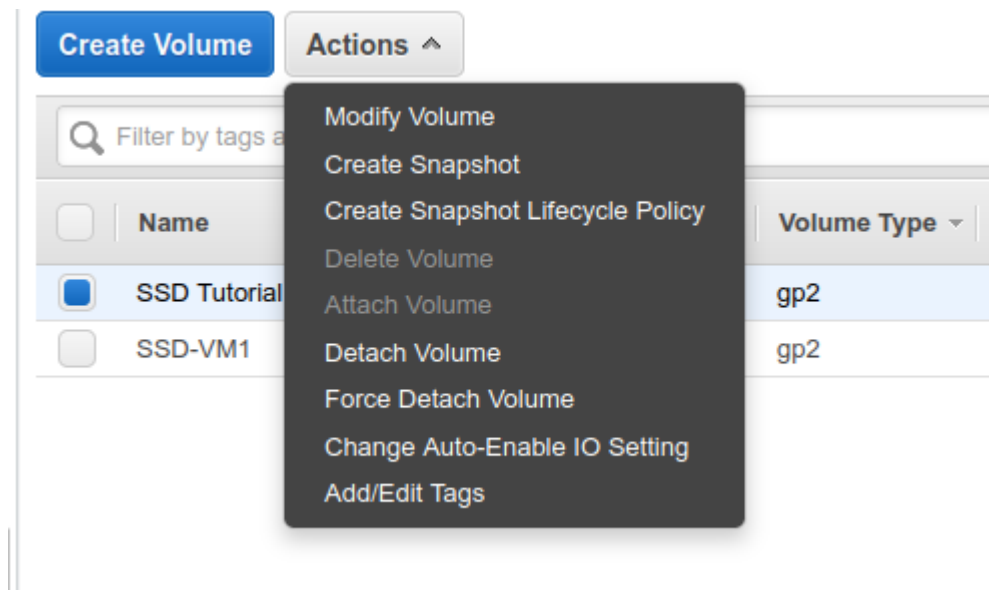
ra02211045@ip-172-31-86-112:/$
```

23) Use sudo apt update para procurar por versões mais recentes dos pacotes instalados na máquina e sudo apt upgrade para instalar essas versões

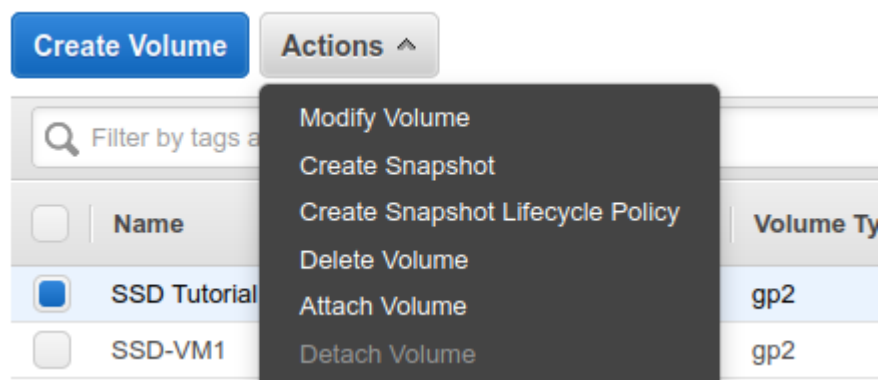
```
ra02211045@ip-172-31-86-112:/$ sudo apt update
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [144 kB]
```

```
ra02211045@ip-172-31-86-112:/$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  distro-info libatasmart4 libblockdev-crypto2 libblockdev-fs2
  libblockdev-loop2 libblockdev-part-err2 libblockdev-part2 libblockdev-swap2
  libblockdev-utils2 libblockdev2 libjcat1 libnspr4 libnss3
  libparted-fs-resize0 libudisks2-0 libvolume-key1
  linux-aws-5.11-headers-5.11.0-1020 linux-headers-5.11.0-1020-aws
  linux-image-5.11.0-1020-aws linux-modules-5.11.0-1020-aws udisks2
The following packages will be upgraded:
  alsa-ucm-conf appport apt apt-utils base-files ca-certificates cloud-init
  cpio curl distro-info-data fwupd fwupd-signed gcc-10-base git git-man
  grub-common grub-pc grub-pc-bin grub2-common initramfs-tools
  initramfs-tools-bin initramfs-tools-core intel-microcode isc-dhcp-client
  isc-dhcp-common libapt-pkg6.0 libasound2 libasound2-data libcurl3-gnutls
  libcurl4 libdrm-common libdrm2 libfwupd2 libfwupdplugin1 libgcc-s1
  libgcrypt20 libglib2.0-0 libglib2.0-bin libglib2.0-data libgnutls30
  libhoo weed5 liblzf4-1 libnetplan0 libnettle7 libnss-systemd libntfs-3g883
  k8]
```

24) Para desatachar um disco dê exit até sair do terminal e depois pare sua instância de acordo com o passo 11. Posteriormente, siga para volumes em Elastic Block Store, selecione seu disco, clique em Actions e depois em Detach Volume. O status do disco fica como available pois ele está disponível para que outras pessoas usem-o, isso é importante para economizar créditos.



25) Para que você possa iniciar sua instância é necessário reatachar o disco à ela, para isso selecione o disco, clique em actions e Attach Volume



26) Selecione a instancia que vai receber o disco e coloque sda1 no device. O device é o diretório do Linux que guarda os arquivos que fazem a abstração do Hardware e o sda1 é o arquivo que diz respeito ao disco1

Attach Volume

Volume

vol-0f533eb0d1d5d8118 (SSD Tutorial) in us-east-1c

Instance

in us-east-1c

Device

Linux Devices: /dev/sdf through /dev/sdp

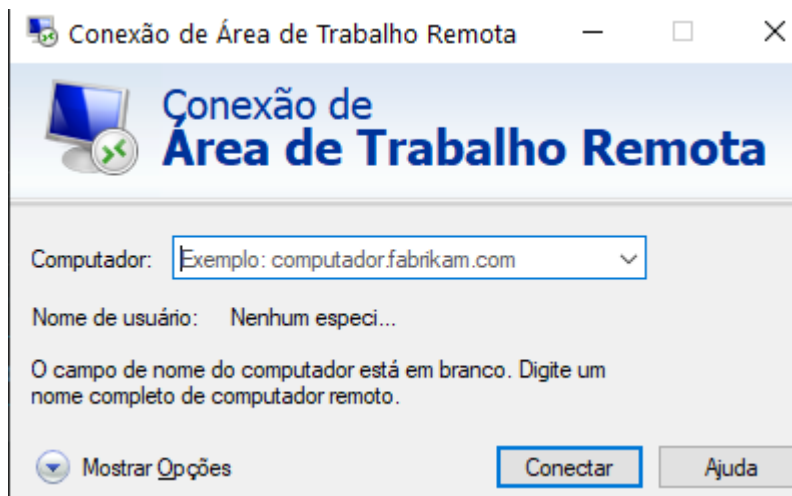
Note: Newer Linux kernels may rename your devices to /dev/xvdf through /dev/xvdp internally, even when the device name entered here (and shown in the details) is /dev/sdf through /dev/sdp.

Cancel

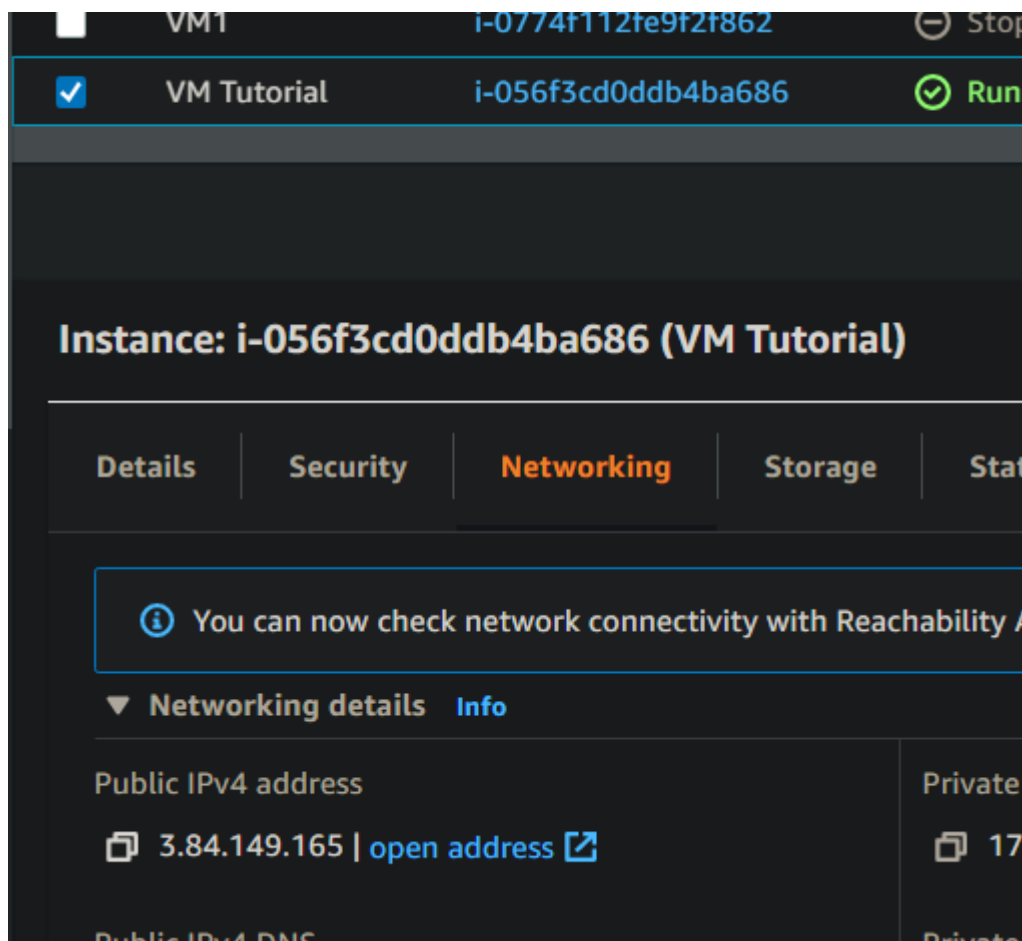
Attach

27) Para instalar a GUI execute `sudo apt-get install xrdp lxde-core lxde tigervnc-standalone-server -y`  
caso apareça uma mensagem, aperte enter e selecione gmd3

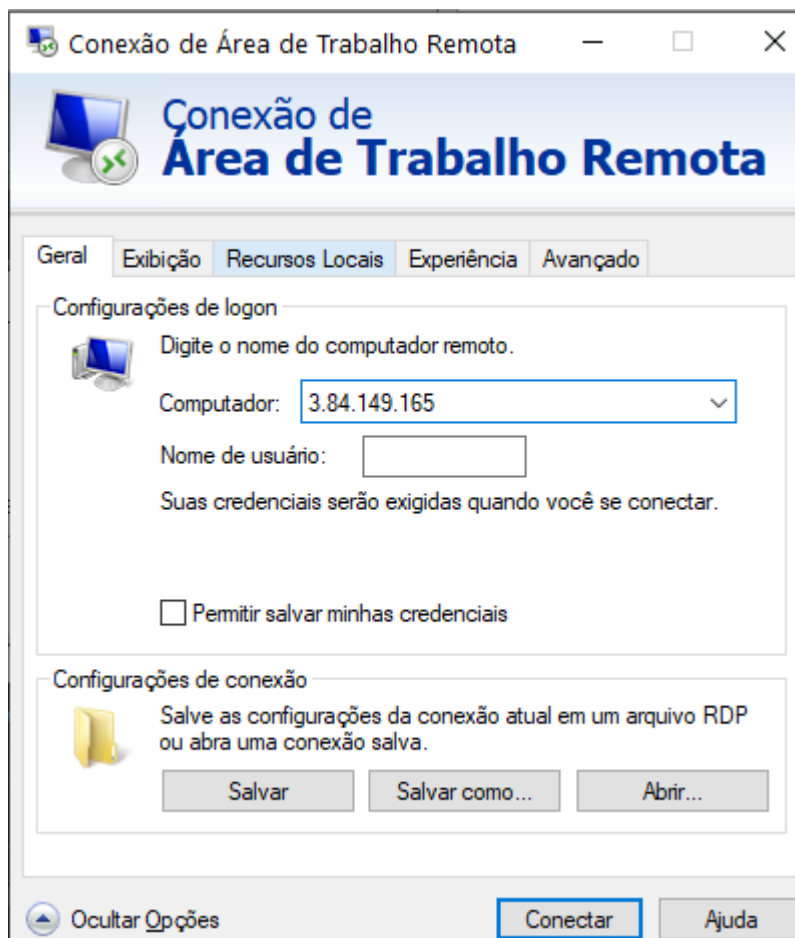
28) No Windows, procure pro Área de Trabalho Remota e execute



29) No aws console, selecione a VM, vá em Networking e copie o IPV4 Público da Máquina

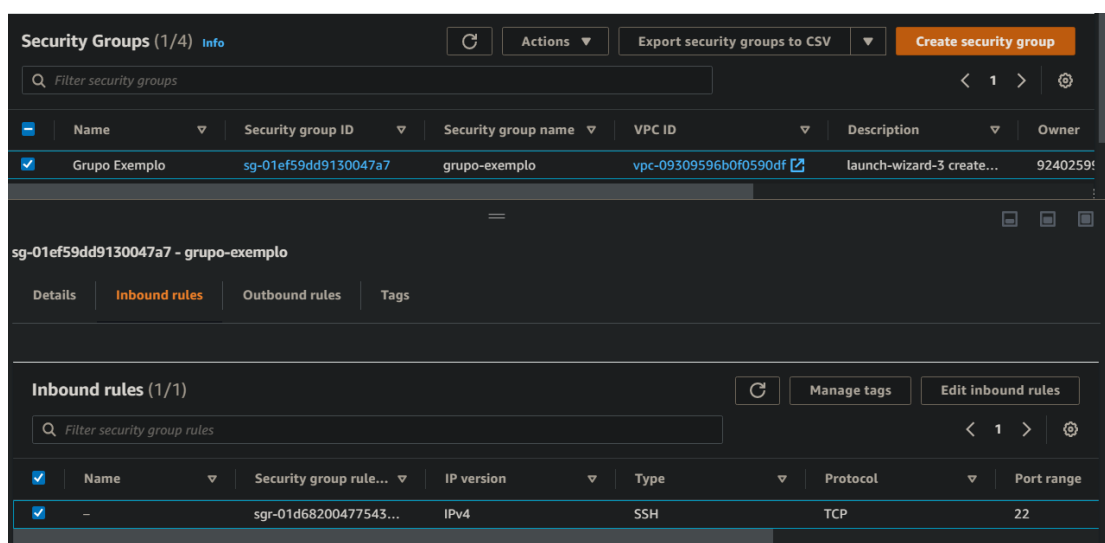


30) Cole o IP no campo Computador da área de trabalho remota



31) Para permitir que a conexão ocorra, deve-se adicionar uma regra RDP (Remote Desktop Protocol) no Grupo de Segurança na AWS. Vá até Network & Security e depois Security Groups

32) Selecione o Grupo e vá em Inbound Rules



33) Clique em Edit Inbound Rules e Adicione uma regra RDP. No source pode deixar 0.0.0/0. Clique em salvar

**Inbound rules** [Info](#)

Security group rule ID	Type <a href="#">Info</a>	Protocol <a href="#">Info</a>	Port range <a href="#">Info</a>	Source <a href="#">Info</a>	Description - optional <a href="#">Info</a>	
sgr-01d68200477543bb5	SSH	TCP	22	Custom <input type="text" value="0.0.0.0"/>		Delete
-	RDP	TCP	3389	Anywh... <input type="text" value="0.0.0.0"/>	REGRA RDP	Delete

[Add rule](#)

[Cancel](#) [Preview changes](#) [Save rules](#)


34) Encerre a conexão com a AWS e feche terminal, depois reconecte-se

35) Recomendo Deixar tudo que você for usar na área de trabalho e que faça isso pelo terminal, pois a máquina com GUI é muuuuuito lenta.

36) Na área de trabalho remota, clique em conectar e depois em sim

37) Insira suas credenciais e clique em ok. OBS: Se você estiver conectado pelo terminal, encerre essa conexão

Login to ip-172-31-86-112



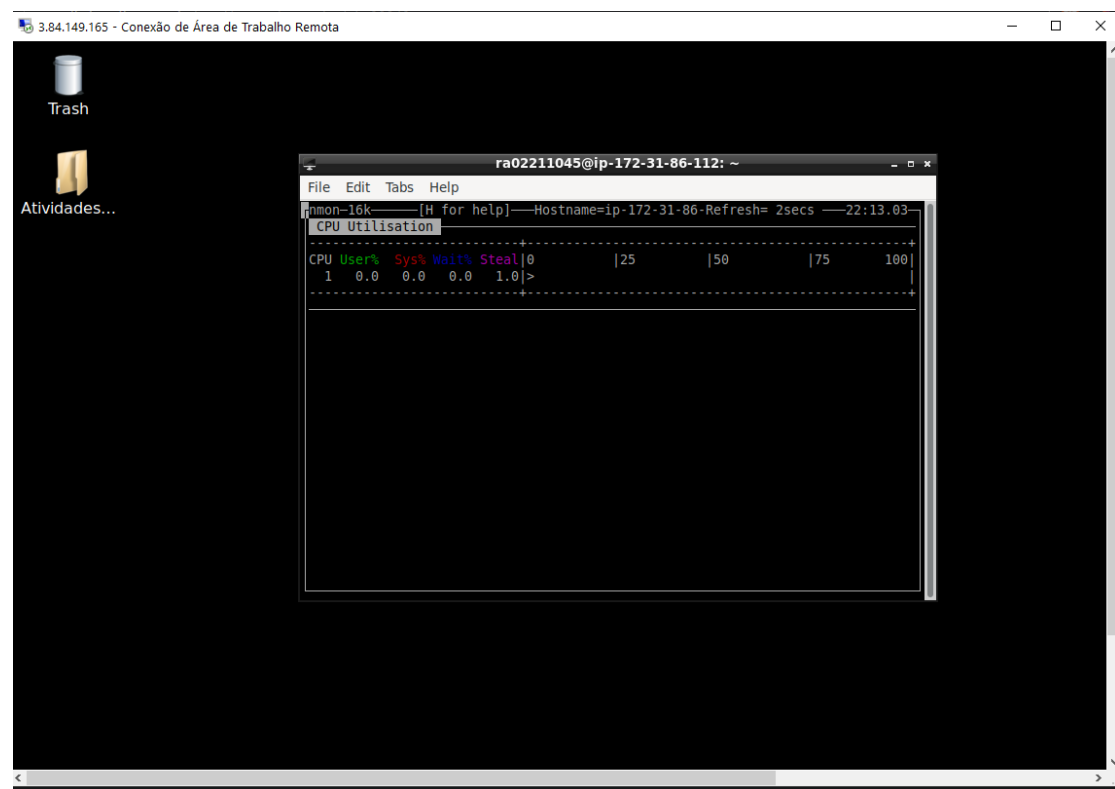
Session

username

password

O RDP é o protocolo que nos permite fazer essa conexão de Desktops Remotos

### 38) Executando o NMON pela GUI



39) Para instalar bibliotecas do Python, precisa instalar o pip. Sudo apt install python pip

40) Para rodar um código em python que se conecta com o mysql é preciso instalar a biblioteca mysql-connect. Para isso, sudo pip install mysql-connector-python

```
ra02211045@ip-172-31-86-112:~$ sudo pip install mysql-connector-python
Collecting mysql-connector-python
  Downloading mysql_connector_python-8.0.27-1commercial-cp38-cp38-manylinux1_x86_64.whl (37.5 MB)
    | 37.5 MB 92 kB/s
Requirement already satisfied: protobuf>=3.0.0 in /usr/lib/python3/dist-packages (from mysql-connector-python) (3.6.1)
Installing collected packages: mysql-connector-python
Successfully installed mysql-connector-python-8.0.27
```

Como instalar mysql no Linux pelo terminal:

<https://dev.mysql.com/doc/mysql-apt-repo-quick-guide/en>



41) Dê o python3 arquivo.py no diretório do arquivo python

```
-----
Dados do seu disco rígido na máquina 1:
% de uso: 16.30 %

-----

Dados do seu disco rígido na máquina 2:
% de uso: 97.80 %

-----

Dados do seu disco rígido na máquina 3:
% de uso: 39.12 %

-----

Conectado ao MySQL Server versão 8.0.27
1 registro inserido
Conexão com MySQL está fechada

Conectado ao MySQL Server versão 8.0.27
```

```
mysql> use serverTracker;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> select * from dadosHardware;
+-----+-----+-----+-----+-----+-----+-----+
| idDados | dadosCpuPercent | dadosRamPercent | dadosDiscoPercent | dataTempo | fkServidor | fkEmpresa |
+-----+-----+-----+-----+-----+-----+-----+
| 1 | 0.40 | 93.60 | 16.30 | 2021-10-27 23:22:06 | 100 | 1 |
| 2 | 1.00 | 1.19 | 97.80 | 2021-10-27 23:22:06 | 101 | 2 |
| 3 | 2.33 | 0.32 | 39.12 | 2021-10-27 23:22:06 | 102 | 3 |
| 4 | 0.20 | 94.00 | 16.30 | 2021-10-27 23:22:16 | 100 | 1 |
| 5 | 0.50 | 1.19 | 97.80 | 2021-10-27 23:22:16 | 101 | 2 |
| 6 | 1.17 | 0.32 | 39.12 | 2021-10-27 23:22:16 | 102 | 3 |
| 7 | 0.60 | 94.00 | 16.30 | 2021-10-27 23:22:27 | 100 | 1 |
+-----+-----+-----+-----+-----+-----+-----+

Conexão com MySQL está fechada

Dados do processador do seu dispositivo:
"CATÉ logo!"
```

Estamos usando a biblioteca mysql connector pra fazer a conexão entre python e mysql

```
GNU nano 4.8 connectdb.py
import mysql.connector
from credentials import usr, pswd

def insert_db(value1, value2, value3, value4, value5):
    try:
        mydb = mysql.connector.connect(
            host="localhost",
            user=usr,
            password=pswd,
            database="serverTracker"
        )
```

Importamos as credenciais do arquivo credentials.py como medida de segurança.

Depois disso usamos a conexão mydb para criar um cursor e confirmar mudanças (mydb.commit())

```
if mydb.is_connected():
    db_Info = mydb.get_server_info()
    print("Conectado ao MySQL Server versão ", db_Info)

    mycursor = mydb.cursor()

    sql_query = "INSERT INTO dadosHardware(dadosCpuPercent, dadosRamPer"
    val = [value1, value2, value3, value4, value5]
    mycursor.execute(sql_query, val)

    mydb.commit()

    print(mycursor.rowcount, "registro inserido")
except mysql.connector.Error as e:
```

A cada registro criado nós fechamos a conexão com banco de dados

```
print("Erro ao conectar com o MySQL", e)
finally:
    if(mydb.is_connected()):
        mycursor.close()
        mydb.close()
        print("Conexão com MySQL está fechada\n")
```

**DEPOIS QUE ACABAR O TRABALHO, NÃO SE ESQUEÇA  
DE DAR STOP NA MÁQUINA E DESATACAR O DISCO!**