

BandTec agora é



SÃO  
PAULO  
TECH  
SCHOOL

**LUCAS DE LIMA RODRIGUES 4°ADS-B**  
**Atividade docker compose**

**São Paulo**  
**2024**

## Criando as imagens localmente via WSL

- Criando os três arquivos html para o nginx.

```
lucas@lucas:~/azul$ touch index.html
lucas@lucas:~/azul$ ls
index.html
lucas@lucas:~/azul$ nano index.html
```

```
GNU nano 6.2
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Imagem azul</title>
</head>
<body>
  <h1>Olá, mundo!</h1>
  <p>Este é o container azul</p>
</body>
</html>
```

```
GNU nano 6.2
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Imagem amarelo</title>
</head>
<body>
  <h1>Olá, mundo!</h1>
  <p>Este é o container amarelo</p>
</body>
</html>
```

```
lucas@lucas:~/amarelo$ ls
index.html
lucas@lucas:~/amarelo$
```

```
lucas@lucas:~/verde$ ls
index.html
```

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Imagem verde</title>
</head>
<body>
  <style>
    body{
      background-color: #3eda46;
    }
  </style>
</body>
</html>
```

- Criando a imagem docker que recebera esses arquivos index.

```
lucas@lucas:~/amarelo$ cat > Dockerfile
FROM nginx:latest

COPY index.html /usr/share/nginx/html

EXPOSE 80

CMD ["nginx", "-g", "daemon off;"]
^C
lucas@lucas:~/amarelo$ cp ./Dockerfile ../azul
lucas@lucas:~/amarelo$ cp ./Dockerfile ../verde
lucas@lucas:~/amarelo$ ls ../azul
Dockerfile  index.html
lucas@lucas:~/amarelo$ ls ../verde
Dockerfile  index.html
lucas@lucas:~/amarelo$ |
```

```
GNU nano 6.2
FROM nginx:latest

COPY index.html /usr/share/nginx/html

EXPOSE 81|

CMD ["nginx", "-g", "daemon off;"]
```

- Criando três imagens diferentes.

```
lucas@lucas:~/amarelo$ docker build -t container_amarelo .
[+] Building 12.5s (8/8) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 141B
=> [internal] load metadata for docker.io/library/nginx:latest
=> [auth] library/nginx:pull token for registry-1.docker.io
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 427B
=> [1/2] FROM docker.io/library/nginx:latest@sha256:0463a96ac74b84a8a1b27f3d1f4ae5d1a70ea823219394e131f5bf3536674419
=> resolve docker.io/library/nginx:latest@sha256:0463a96ac74b84a8a1b27f3d1f4ae5d1a70ea823219394e131f5bf3536674419
=> sha256:0463a96ac74b84a8a1b27f3d1f4ae5d1a70ea823219394e131f5bf3536674419 10.22kB / 10.22kB
=> sha256:c46d32988911660c4281ef90ba542bdcc8afba37045bf247cc2478de06beddcd 41.79MB / 41.79MB
=> sha256:b9d860e68bbcccb23eaa139cb02e6912f016ce751fa241bb9778b26c3c29bd95 628B / 628B
=> sha256:b5873c5e785c0ae70b4f999d6719a27441126667088c2edd1eaf3860e4868ec5 2.29kB / 2.29kB
=> sha256:2ac752d7aeb1d9281f708e7c51501c41ba90de15ffc9bca7c5d38b8da41b580 7.02kB / 7.02kB
=> sha256:13808c22b207b066ef43572e57e4fb8c6172e887dd9a918c089a174a19371b7a 29.13MB / 29.13MB
=> sha256:c028eb95b0656c2e0d5c0c522f021aab5ad091384d559c88cdae4105ab1a9972 955B / 955B
=> sha256:e74ab6743f66a2e8b5fa27b7e8cdc4bf2a7888e60cb5b432a2e66661061a07f1 393B / 393B
=> sha256:4a666f159bd07f62aa19ce8eace018931223de67c4bd19ded87b83eb7b103ca 1.21kB / 1.21kB
=> sha256:297a65ba6f0487b713985731422a9477d3fcd6dafca5cabd25bc5294733b6ebc 1.40kB / 1.40kB
=> extracting sha256:13808c22b207b066ef43572e57e4fb8c6172e887dd9a918c089a174a19371b7a
=> extracting sha256:c46d32988911660c4281ef90ba542bdcc8afba37045bf247cc2478de06beddcd
=> extracting sha256:b9d860e68bbcccb23eaa139cb02e6912f016ce751fa241bb9778b26c3c29bd95
=> extracting sha256:c028eb95b0656c2e0d5c0c522f021aab5ad091384d559c88cdae4105ab1a9972
=> extracting sha256:e74ab6743f66a2e8b5fa27b7e8cdc4bf2a7888e60cb5b432a2e66661061a07f1
=> extracting sha256:4a666f159bd07f62aa19ce8eace018931223de67c4bd19ded87b83eb7b103ca
=> extracting sha256:297a65ba6f0487b713985731422a9477d3fcd6dafca5cabd25bc5294733b6ebc
=> [2/2] COPY index.html /usr/share/nginx/html
=> exporting to image
=> => exporting layers
=> => writing image sha256:4767936ce89b4f43bb58e10ce493f3ba03067b6ce15661603d62a623b6e5d0a1
=> => naming to docker.io/library/container_amarelo
lucas@lucas:~/amarelo$
```

```
lucas@lucas:~/azul$ docker build -t container_azul .
[+] Building 0.9s (7/7) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 141B
=> [internal] load metadata for docker.io/library/nginx:latest
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 424B
=> CACHED [1/2] FROM docker.io/library/nginx:latest@sha256:0463a96ac74b84a8a1b27f3d1f4ae5d1a70ea823219394e131f5bf3536674419
=> [2/2] COPY index.html /usr/share/nginx/html
=> exporting to image
=> => exporting layers
=> => writing image sha256:7d71601f5604fa14a48f39b987becf7d24bc92011573c57fbc62b0cc0e3f1a2c
=> => naming to docker.io/library/container_azul
lucas@lucas:~/azul$
```

```
lucas@lucas:~/verde$ docker build -t container_verde .
[+] Building 1.1s (7/7) FINISHED
=> [internal] load build definition from Dockerfile
=> => transferring dockerfile: 141B
=> [internal] load metadata for docker.io/library/nginx:latest
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [internal] load build context
=> => transferring context: 425B
=> CACHED [1/2] FROM docker.io/library/nginx:latest@sha256:0463a96ac74b84a8a1b27f3d1f4ae5d1a70ea823219394e131f5bf3536674419
=> [2/2] COPY index.html /usr/share/nginx/html
=> exporting to image
=> => exporting layers
=> => writing image sha256:b618959ebd5ee1c82c473cebf22759fc5f2c544cc8e8ac337be596e1666393f
=> => naming to docker.io/library/container_verde
lucas@lucas:~/verde$
```

```
lucas@lucas:~/verde$ docker images
```

| REPOSITORY        | TAG    | IMAGE ID     | CREATED            | SIZE  |
|-------------------|--------|--------------|--------------------|-------|
| container_verde   | latest | b618959ebd5e | 36 seconds ago     | 188MB |
| container_azul    | latest | 7d71601f5604 | About a minute ago | 188MB |
| container_amarelo | latest | 4767936ce89b | About a minute ago | 188MB |

```
lucas@lucas:~/verde$
```

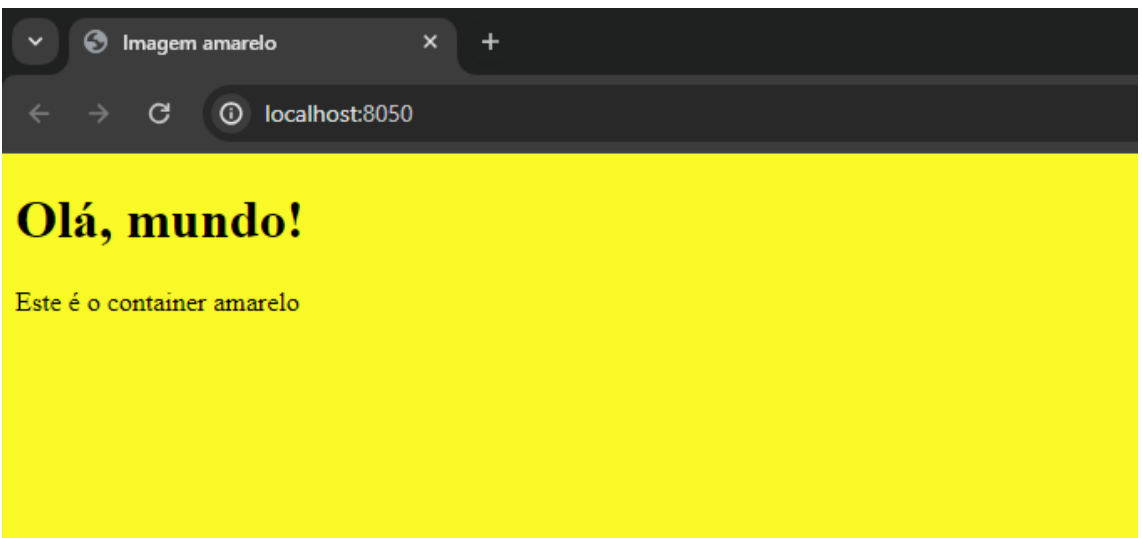
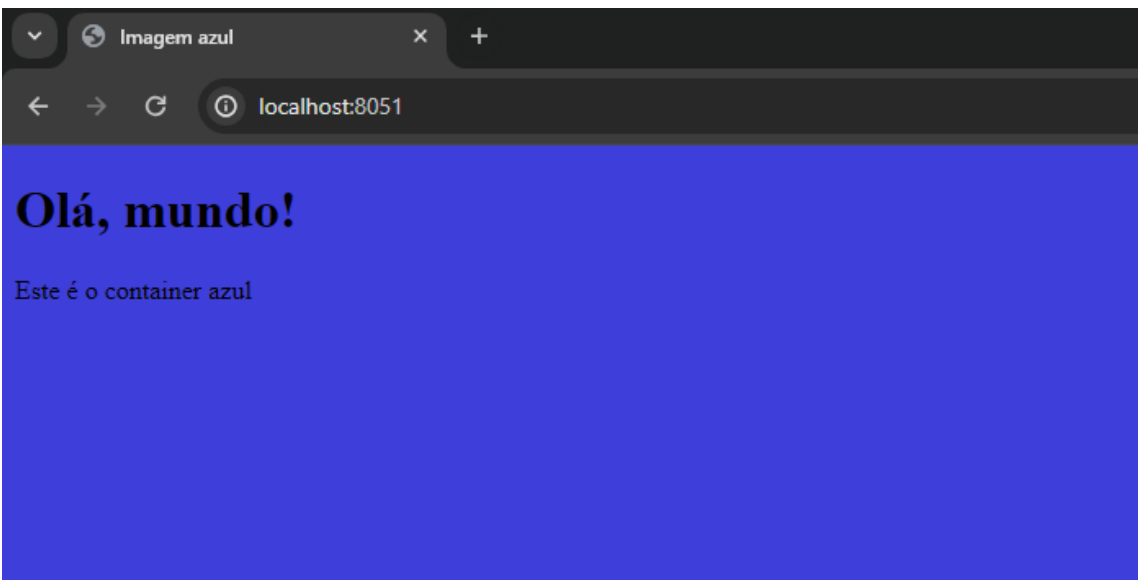
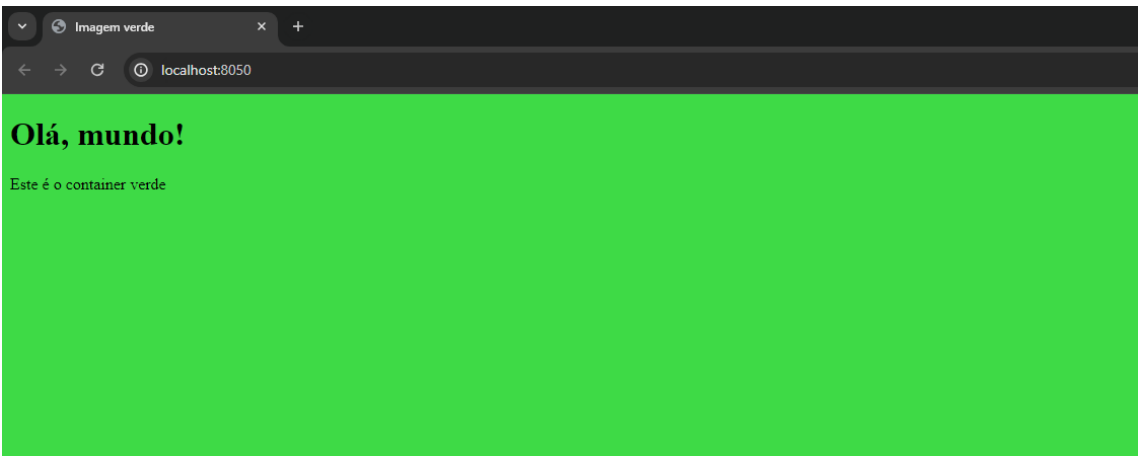
- Containers rodando localmente a partir das imagens nas portas 8050, 8051 e 8052.

```
lucas@lucas:~$ docker run -d -p 8050:80 --name container_teste container_verde
001c4fa958c696042b643b8ce3513dea0e85ca6191b9c8d556c899f8f6dc151
lucas@lucas:~$ docker ps
```

| CONTAINER ID | IMAGE           | COMMAND                 | CREATED       | STATUS       | PORTS                | NAMES           |
|--------------|-----------------|-------------------------|---------------|--------------|----------------------|-----------------|
| 001c4fa958c6 | container_verde | "/docker-entrypoint..." | 4 seconds ago | Up 3 seconds | 0.0.0.0:8050->80/tcp | container_teste |

```
lucas@lucas:~$
```

```
lucas@lucas:~$ docker run -d -p 8051:80 --name container_teste2 container_azul
778aff491c5e6933cba4731338507867f4b86580ecd76d3d2ef9906b99512a94
lucas@lucas:~$ docker run -d -p 8052:80 --name container_teste3 container_amarelo
937975575fa43fbfea7d01619690ef15169ba9264d1714bc8fc0c490cb7aed81
lucas@lucas:~$ |
```



- Criando repositório no dockerhub.

The screenshot shows the Docker Hub interface. At the top, there's a search bar with 'lucasrodrigues' entered. Below it, a repository card for 'lucasrodrigues / faculdade' is visible. The main section is titled 'Create repository'. It has a 'Namespace' dropdown set to 'lucasrodrigues' and a 'Repository Name\*' field with 'compose\_images'. A 'Short description' field contains 'Repositório com três imagens docker.'. To the right, under 'Pushing images', there's a CLI command: `docker tag local-image:tagname new-repo:tagname` and `docker push new-repo:tagname`. Below the description, there's a 'Visibility' section with 'Public' selected. At the bottom, the repository details for 'lucasrodrigues/compose\_images' are shown, including a 'Docker commands' section with the command `docker push lucasrodrigues/compose_images:tagname`.

[https://hub.docker.com/repository/docker/lucasrodrigues/compose\\_images/tags](https://hub.docker.com/repository/docker/lucasrodrigues/compose_images/tags)

- Fazendo login no docker.

```
lucas@lucas:~$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: lucasrodrigues
Password:
WARNING! Your password will be stored unencrypted in /home/lucas/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
lucas@lucas:~$
```

- Tagando imagens.

```
lucas@lucas:~/verde$ docker image tag container_azul lucasrodrigues/compose_images:azul_01222017
lucas@lucas:~/verde$ docker image tag container_amarelo lucasrodrigues/compose_images:amarelo_01222017

lucas@lucas:~/verde$ docker image tag container_verde lucasrodrigues/compose_images:verde_01222017
```

```
lucas@lucas: ~/verde$ docker images
```







| REPOSITORY                     | TAG              | IMAGE ID     | CREATED        | SIZE  |
|--------------------------------|------------------|--------------|----------------|-------|
| container_verde                | latest           | b618959ebd5e | 11 minutes ago | 188MB |
| lucaslrodrigues/compose_images | verde            | b618959ebd5e | 11 minutes ago | 188MB |
| lucaslrodrigues/compose_images | verde_01222017   | b618959ebd5e | 11 minutes ago | 188MB |
| container_azul                 | latest           | 7d71601f5604 | 11 minutes ago | 188MB |
| lucaslrodrigues/compose_images | azul_01222017    | 7d71601f5604 | 11 minutes ago | 188MB |
| container_amarelo              | latest           | 4767936ce89b | 12 minutes ago | 188MB |
| lucaslrodrigues/compose_images | amarelo_01222017 | 4767936ce89b | 12 minutes ago | 188MB |

- Enviando imagens para o repositório remoto via push.

```
lucas@lucas: $ docker push lucaslrodrigues/compose_images:azul_01222017
The push refers to repository [docker.io/lucaslrodrigues/compose_images]
f9c53ce58b0c: Pushed
7abfb0741b3d: Layer already exists
3773452b6e48: Layer already exists
8789db06fb83: Layer already exists
25e1b6e594d0: Layer already exists
0e87b211f7ef: Layer already exists
9b87c194c4dd: Layer already exists
1f00ff201478: Layer already exists
azul_01222017: digest: sha256:c71b62c78c2db060fed9bd6e85f9e91f3716ccce7fe6c9a8539304e801f5073d size: 1985
lucas@lucas: $ docker push lucaslrodrigues/compose_images:verde_01222017
The push refers to repository [docker.io/lucaslrodrigues/compose_images]
cd68a90f4af9: Layer already exists
7abfb0741b3d: Layer already exists
3773452b6e48: Layer already exists
8789db06fb83: Layer already exists
25e1b6e594d0: Layer already exists
0e87b211f7ef: Layer already exists
9b87c194c4dd: Layer already exists
1f00ff201478: Layer already exists
verde_01222017: digest: sha256:14bd10a13ff224f7bac1be809cfa95c59b51a61b7c9065f2b82e8a9a9049c6d8 size: 1985
lucas@lucas: $ docker push lucaslrodrigues/compose_images:amarelo_01222017
The push refers to repository [docker.io/lucaslrodrigues/compose_images]
2c6b45a82692: Pushed
7abfb0741b3d: Layer already exists
3773452b6e48: Layer already exists
8789db06fb83: Layer already exists
25e1b6e594d0: Layer already exists
0e87b211f7ef: Layer already exists
9b87c194c4dd: Layer already exists
1f00ff201478: Layer already exists
amarelo_01222017: digest: sha256:a2af047569edb108b15dc7d1b199a7a32ce4b87af9678608fc0c42b4419a718a size: 1985
lucas@lucas: ~$
```

## Tags

This repository contains 3 tag(s).

| Tag  | OS  | Type  | Pulled | Pushed       |
|--|---|-------|--------|--------------|
|  <a href="#">amarelo_01222017</a> |  | Image | ---    | a minute ago |
|  <a href="#">verde_01222017</a>   |  | Image | ---    | a minute ago |
|  <a href="#">azul_01222017</a>    |  | Image | ---    | a minute ago |

[See all](#)

Arquivo docker compose

```
docker-compose.yml X  Extension: Docker Compose  nginx.conf  Dockerfile

docker-compose.yml
1  services:
2    loadbalancer:
3      image: nginx:latest
4      ports:
5        - "80:80"
6      volumes:
7        - ./config/nginx.conf:/etc/nginx/nginx.conf
8      networks:
9        - rede-compose
10     depends_on:
11       - site1
12       - site2
13       - site2
14
15     site1:
16       image: lucaslrodrigues/compose_images:amarelo_01222017
17       networks:
18         - rede-compose
19
20     site2:
21       image: lucaslrodrigues/compose_images:verde_01222017
22       networks:
23         - rede-compose
24
25     site3:
26       image: lucaslrodrigues/compose_images:azul_01222017
27       networks:
28         - rede-compose
29
30   networks:
31     rede-compose:
32       driver: bridge
```

- Arquivo de configuração para o nginx.

```
config >  nginx.conf
1  upstream web_services {
2    server 127.0.0.1:80;
3    server 127.0.0.1:81;
4    server 127.0.0.1:82;
5  }
6
7  server {
8    listen 80 default_server;
9    listen [::]:80 default_server;
10
11    location ^~ / {
12      proxy_pass http://web_services/;
13      proxy_set_header Host $http_host;
14    }
15  }
```



## VM EC2

- Utilizando uma VM publica para a atividade.

▼ Summary

Number of instances

Info

1

Software Image (AMI)

Canonical, Ubuntu, 22.04 LTS, ...read more

ami-080e1f13689e07408

Virtual server type (instance type)

t2.medium

Firewall (security group)

sprint-sg-public-02

Storage (volumes)

1 volume(s) - 8 GiB

Cancel

Launch instance

Review commands

☐ atividade\_23\_04

i-0b773c25276ca6078

Pending

t2.medium

-

View alarms +

- Instalando docker e docker compose.

```
ubuntu@ip-10-0-0-215: $ sudo apt install docker.io
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
0 upgraded, 8 newly installed, 0 to remove and 2 not upgraded.
Need to get 69.8 MB of archives.
After this operation, 267 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 pigz amd64 2.6-1 [63.6 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 bridge-utils amd64 1.7-1ubuntu3 [34.4 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 runc amd64 1.1.7-0ubuntu1~22.04.2 [4267 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 containerd amd64 1.7.2-0ubuntu1~22.04.1 [36.0
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 dns-root-data all 2023112702~ubuntu0.22.04.1
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 dnsmasq-base amd64 2.90-0ubuntu0.22.04.1 [370
```

```

ubuntu@ip-10-0-0-215:~$ sudo apt-get install ca-certificates curl gnupg
sudo apt-get install docker-compose-plugin
DOCKER_CONFIG=${DOCKER_CONFIG:-$HOME/.docker}
sudo mkdir -p $DOCKER_CONFIG/cli-plugins
sudo curl -SL https://github.com/docker/compose/releases/download/v2.17.2/docker-compose-linux-x86_64 -o $DOCKER_CONFIG/cli-plugins/docker-compose
sudo chmod +x $DOCKER_CONFIG/cli-plugins/docker-compose

Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20230311ubuntu0.22.04.1).
ca-certificates set to manually installed.
curl is already the newest version (7.81.0-1ubuntu1.16).
curl set to manually installed.
gnupg is already the newest version (2.2.27-3ubuntu2.1).
gnupg set to manually installed.
0 upgraded, 0 newly installed, 0 to remove and 2 not upgraded.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
E: Unable to locate package docker-compose-plugin

% Total    % Received % Xferd Average Speed      Time     Time     Time  Current
           Dload  Upload   Total   Spent    Left   Speed

  0% 51.9M    0% 51.9M    0     0      0      0 --:--:-- --:--:-- --:--:--     0
100% 51.9M  100% 51.9M    0     0  85.8M      0 --:--:-- --:--:-- --:--:--  85.8M

ubuntu@ip-10-0-0-215:~$ docker --version
Docker version 24.0.5, build 24.0.5-0ubuntu~22.04.1
ubuntu@ip-10-0-0-215:~$ docker compose version
Docker Compose version v2.17.2
ubuntu@ip-10-0-0-215:~$

```

- Transferindo arquivo docker-compose.yml via scp.

```

PS C:\Users\lukas\OneDrive\Documentos\faculdade\sprint\testes> scp -i C:\Users\lukas\OneDrive\Documentos\Sprint2-key.pem
.docker-compose.yml ubuntu@ec2-44-202-242-104.compute-1.amazonaws.com:/home/ubuntu/front-lb
docker-compose.yml

PS C:\Users\lukas\OneDrive\Documentos\faculdade\sprint\testes>

```

```

ubuntu@ip-10-0-0-215:~/front-lb$ ls
config  docker-compose.yml
ubuntu@ip-10-0-0-215:~/front-lb$

```

- Transferindo arquivo de configuração do nginx.

```

PS C:\Users\lukas\OneDrive\Documentos\faculdade\sprint\testes> scp -i C:\Users\lukas\OneDrive\Documentos\Sprint2-key.pem \.config\nginx.conf ubuntu@ec2-44-202-242-104.compute-1.amazonaws.com:/home/ubuntu/front-lb
.config\nginx.conf
nginx.conf

100% 301 2.0KB/s 00:00

```

- Executando docker diretamente pelo grupo (pelo método convencional não funcionou).

```

ubuntu@ip-10-0-0-215:~/front-lb$ sg docker -c 'docker compose up'
[+] Running 4/0
 ✓ Container front-lb-site3-1      Running
 ✓ Container front-lb-site1-1      Running
 ✓ Container front-lb-site2-1      Running
 ✓ Container front-lb-loadbalancer-1 Created
Attaching to front-lb-loadbalancer-1, front-lb-site1-1, front-lb-site2-1, front-lb-site3-1
front-lb-loadbalancer-1 | /docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
front-lb-loadbalancer-1 | /docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
front-lb-loadbalancer-1 | /docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
front-lb-loadbalancer-1 | 10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
front-lb-loadbalancer-1 | 10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
front-lb-loadbalancer-1 | /docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
front-lb-loadbalancer-1 | /docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
front-lb-loadbalancer-1 | /docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
front-lb-loadbalancer-1 | /docker-entrypoint.sh: Configuration complete; ready for start up
front-lb-loadbalancer-1 | 2024/04/23 20:59:38 [emerg] 1#1: "upstream" directive is not allowed here in /etc/nginx/nginx.conf:1
front-lb-loadbalancer-1 | nginx: [emerg] "upstream" directive is not allowed here in /etc/nginx/nginx.conf:1
front-lb-loadbalancer-1 exited with code 1

```

- Containers rodando

```

ubuntu@ip-10-0-0-215:~/front-lb/config$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED        STATUS        PORTS                               NAMES
acef134a3a0e   nginx:latest          "/docker-entrypoint..." 4 seconds ago   Up 4 seconds   80/tcp, 0.0.0.0:90->90/tcp, :::90->90/tcp   front-lb-loadbalancer-1
ed35e7e3e1d2   lucasrodrigues/compose_images:azul_01222017   "/docker-entrypoint..." 47 minutes ago   Up 47 minutes   80-81/tcp                                front-lb-site3-1
01721a8f5fab   lucasrodrigues/compose_images:amarelo_01222017 "/docker-entrypoint..." 47 minutes ago   Up 47 minutes   80/tcp                                    front-lb-site1-1
c18d2ccea4f6   lucasrodrigues/compose_images:verde_01222017 "/docker-entrypoint..." 47 minutes ago   Up 47 minutes   80/tcp, 82/tcp                           front-lb-site2-1
ubuntu@ip-10-0-0-215:~/front-lb/config$

```

- Utilizando os endpoints

