



Atividade 2 - Subindo uma aplicação web para Nuvem (AWS).

Disciplina : Desenvolvimento de Aplicações Distribuídas

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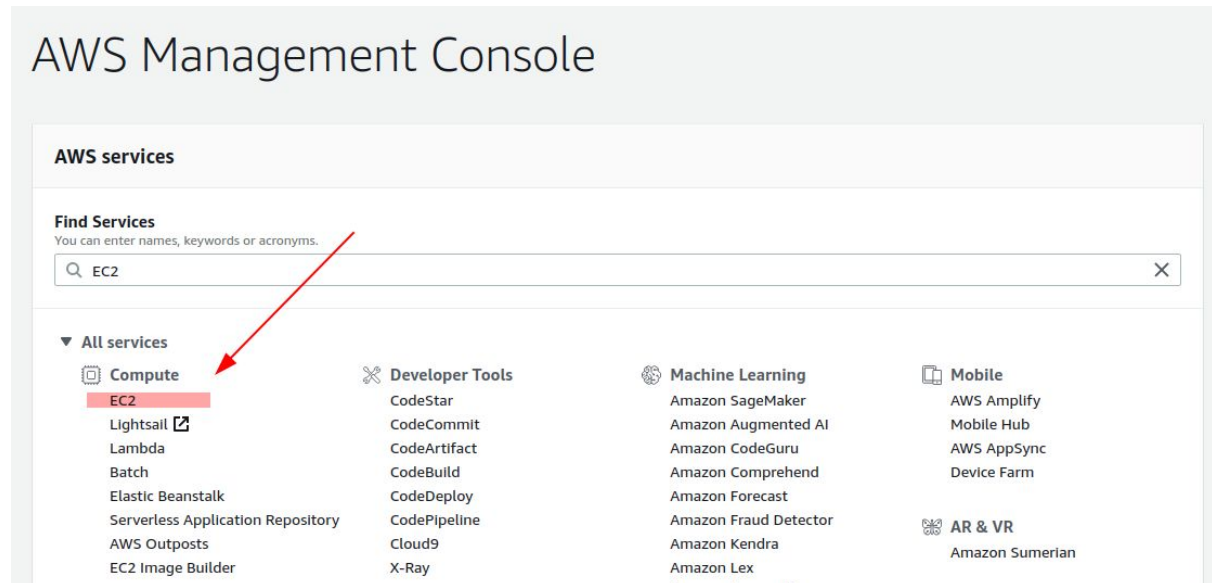
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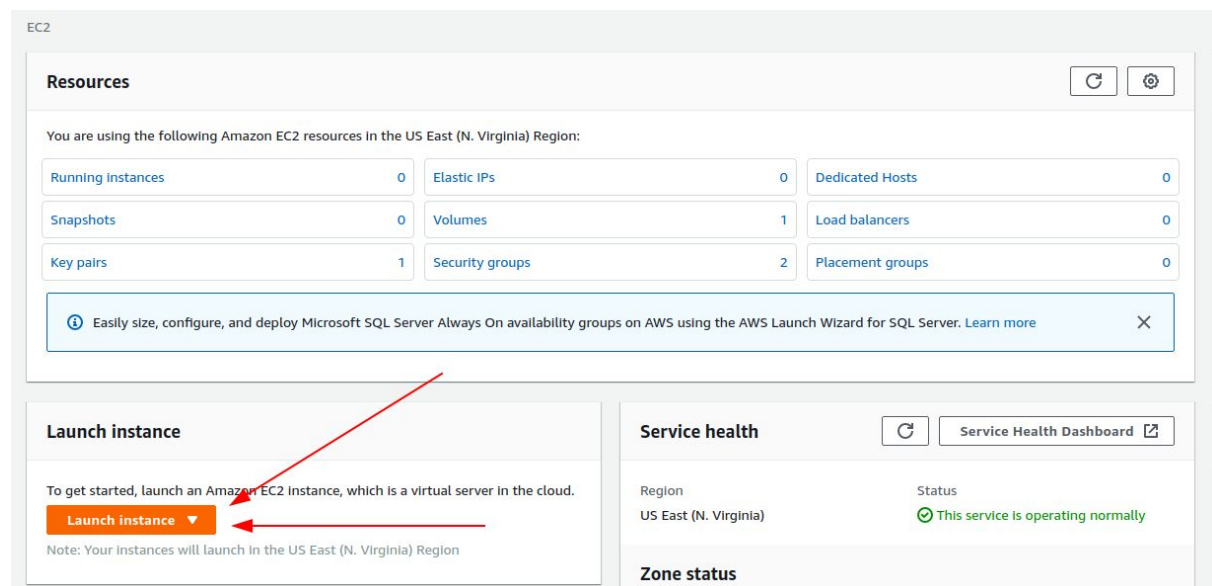
Fortaleza - CE

2020

Passo 1 - Após logar no AWS Management Console, procurar por EC2 na caixa de pesquisa. Clique em EC2.



Passo 2 - Após carregar a página de dashboard EC2 Manager, buscar por “Launch Instance”.



Passo 3 - Escolher a “imagem” que será utilizada para a máquina virtual. Nesse caso utilizamos a imagem do Ubuntu 18.04 LTS (Free tier eligible). Clique em Select.

Ubuntu Server 16.04 LTS (HVM), SSD Volume Type - ami-0a0ddd875a1ea2c7f (64-bit x86) / ami-0b786a1a999c4e98e (64-bit Arm) **Select**

Free tier eligible Ubuntu Server 16.04 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 ENA Enabled: Yes

Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ac80df6eff0e70b5 (64-bit x86) / ami-0d221091ef7082bcf (64-bit Arm) **Select**

Free tier eligible Ubuntu Server 18.04 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 ENA Enabled: Yes

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-08f3d892de259504d (64-bit x86) / ami-0ba960472fc891755 (64-bit Arm) **Select**

Free tier eligible Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras.
Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Passo 4 - Escolha o tipo de instância (veja as configurações básicas de cada instância). Depois clique em “Next : Configure Instance Details”.

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: **All instance types** **Current generation** **Show/Hide Columns**

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t3a.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	General purpose	t3a.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	General purpose	t3a.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	General purpose	t3a.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	General purpose	t3a.large	2	8	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel **Previous** **Review and Launch** **Next: Configure Instance Details**

Passo 5 - Nas 3 próximas páginas , “Step 3: Configure Instance Details” , “Step 4 : Add Storage” e “Step 5 : Add Tags”, basta clicar nos seus respectivos botões “Next”.

Passo 6 - Na página de “Step 6 : Configure Security Group” iremos export a porta 80 com o protocolo HTTP, que é a porta onde o serviço web que iremos rodar atende as requisições.

Após selecionar as configurações e ler a “warning”, clique no botão “Review and Launch”. Na tela seguinte, revise as configurações e clique em “Launch”

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

Security group name:

Description:

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
HTTP	TCP	80	Custom 0.0.0.0/0, ::/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](#)

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.

▼ AMI Details [Edit AMI](#)

Ubuntu Server 18.04 LTS (HVM), SSD Volume Type - ami-0ac80df6eff0e70b5

Free tier eligible

Ubuntu Server 18.04 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 [Edit instance type](#)

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

▼ Security Groups [Edit security groups](#)

Security group name: launch-wizard-2
Description: launch-wizard-2 created 2020-07-28T20:12:28.283-03:00

Type	Protocol	Port Range	Source	Description
HTTP	TCP	80	0.0.0.0/0	

► Instance Details [Edit instance details](#)

► Storage [Edit storage](#)

► Tags [Edit tags](#)

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

Passo 7 - Após clicar em “Launch” será mostrado um modal de ação. Selecione a opção “create a new key pair” e escolha um nome. Logo após clique no botão de download e salve a chave em lugar de fácil acesso. Em seguida, 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.

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 name
dad2020

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**

Na página seguinte, clique em “View Instances”.

Launch Status

Your instances are now launching
The following instance launches have been initiated: i-02c7782a827253126 [View launch log](#)

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

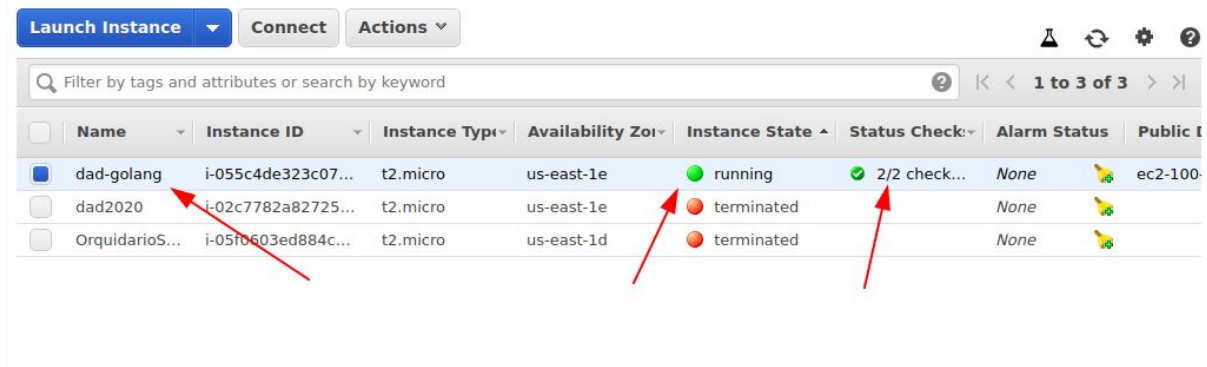
- [How to connect to your Linux instance](#)
- [Amazon EC2: User Guide](#)
- [Learn about AWS Free Usage Tier](#)
- [Amazon EC2: Discussion Forum](#)

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

Passo 8 - Aguarde sua instância subir, o dashboard deve mostrar algo similar a foto abaixo. É hora de finalmente se conectar à instância.



	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public IP
<input checked="" type="checkbox"/>	dad-golang	i-055c4de323c07...	t2.micro	us-east-1e	running	2/2 checks passed	None	ec2-100...
<input type="checkbox"/>	dad2020	i-02c7782a82725...	t2.micro	us-east-1e	terminated		None	
<input type="checkbox"/>	OrquidarioS...	i-05f0603ed884c...	t2.micro	us-east-1d	terminated		None	

Mas antes anote o IPv4 da instância para testes quando tivermos feito deploy da aplicação web.



Instance: i-055c4de323c07c94f (dad-golang)		Public DNS: ec2-100-25-21-88.compute-1.amazonaws.com	
Description Status Checks Monitoring Tags			
Instance ID	i-055c4de323c07c94f	Public DNS (IPv4)	ec2-100-25-21-88.compute-1.amazonaws.com
Instance state	running	IPv4 Public IP	100.25.21.88
Instance type	t2.micro	IPv6 IPs	-
Finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more	Elastic IPs	
Private DNS	ip-172-31-59-83.ec2.internal	Availability zone	us-east-1e

Passo 9 - Selecione a instância (veja passo 8) e clique em “Connect”. Nessa etapa, assumimos que você esteja utilizando alguma distro Linux (Ubuntu, Debian, Fedora...). Basta seguir o tutorial que será mostrado após clicar em “Connect”.

3. Your key must not be publicly viewable for SSH to work. Use this command if needed:

```
chmod 400 dad2020.pem
```

4. Connect to your instance using its Public DNS:

```
ec2-100-25-21-88.compute-1.amazonaws.com
```

Example:

```
ssh -i "dad2020.pem" ubuntu@ec2-100-25-21-88.compute-1.amazonaws.com
```

Please note that in most cases the username above will be correct, however please ensure that you read your AMI usage instructions to ensure that the AMI owner has not changed the default AMI username.

If you need any assistance connecting to your instance, please see our [connection documentation](#).

Close

Passo 10 - Abra o terminal do seu computador e navegue até o local onde você salvou a chave baixada no passo 7. Digite o comando do passo 3 descrito na imagem do Passo 9 deste tutorial. Note que finalmente conseguimos nos conectar à instância rodando na EC2 da AWS utilizando SSH(veja a mudança de máquina no print). Obs : Digite “yes” caso apareça uma pergunta.

```
thyago-ufc@thyagoufc-X510URR ~/Downloads$ ls
codigo_3_desafio_python.png  dad2020.pem  kali-linux-2020-2-installer-amd64-iso
'curriculo (1).pdf'          'Data Science 101 - Coursera.pdf'  'kali-linux-2020.2-installer-amd64.iso (1).torr
'curriculo delfos.pdf'       'Enunciado do Desafio - Bootcamp Python.pdf'  kali-linux-2020.2-installer-amd64.iso.torrent
curriculo.pdf               'Insomnia 2020-07-16.json'         makejson.go
thyago-ufc@thyagoufc-X510URR ~/Downloads$ chmod 400 dad2020.pem
thyago-ufc@thyagoufc-X510URR ~/Downloads$ ssh -i "dad2020.pem" ubuntu@ec2-100-25-21-88.compute-1.amazonaws.com
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 5.3.0-1023-aws x86_64)

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

System information as of Wed Jul 29 00:00:56 UTC 2020

System load:  0.0               Processes:    90
Usage of /:   14.0% of 7.69GB   Users logged in:  0
Memory usage: 16%              IP address for eth0: 172.31.59.83
Swap usage:  0%

0 packages can be updated.
0 updates are security updates.

Last login: Wed Jul 29 00:00:42 2020 from 170.82.214.142
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-59-83:~$
```

Passo 11 - O repositório com a aplicação de exemplo está hospedado no github e tal aplicação foi desenvolvida para rodar em um container, logo precisaremos instalar o Docker e clonar o repositório utilizando o Git. Para instalar basta seguir o seguinte tutorial -> [Clique aqui](#). Após instalar e configurar o docker, iremos clonar o repositório com a aplicação. [Link do repositório](#).

Depois de clonar, entre no diretório clonado e escreva o seguinte comando “**sudo docker build -t go-dad .**” para criar a imagem da aplicação com base no Dockerfile previamente escrito. Agora basta subir para subir um container com base na imagem criada anteriormente, basta utilizar “**sudo docker run --name go-dad-aws -p 80:80 -d go-dad:latest**”.

Utilizando “**sudo docker container ps -a**” podemos ver que o container já está rodando dentro da instância e pode ser acessado de toda a internet.

```
ubuntu@ip-172-31-59-83:~/go-dad$ sudo docker container ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS          NAMES
ae76cf84d66a   go-dad:latest  "/app/main"             13 seconds ago Up 12 seconds  0.0.0.0:80->80/tcp  go-dad-aws
```

A aplicação web consiste em uma pequena API escrita em Golang que atende as seguintes rotas :

- <http://ec2-100-25-21-88.compute-1.amazonaws.com/books> GET (Retornar todos os livros)
- <http://ec2-100-25-21-88.compute-1.amazonaws.com/books/id> GET (Retornar o livro com ID especificado)
- <http://ec2-100-25-21-88.compute-1.amazonaws.com/books/id> DELETE (Deleta o livro com ID especificado)
- <http://ec2-100-25-21-88.compute-1.amazonaws.com/books> POST (Cadastra livro)

Passo 12 - Para testar a aplicação utilizaremos o Insomnia. Segue abaixo alguns testes.

- Cadastrando um livro.

The screenshot shows the Insomnia client interface. On the left sidebar, the 'POST Book' method is selected. The main panel displays a POST request to the URL `http://ec2-100-25-21-88.compute-1.amazonaws.com/books`. The request body is a JSON object:

```
{  "nome": "Livro Y",  "autores": ["Thyago Freitas", "Marcilio"],  "data_lancamento": "20/20/2020",  "preco": 10.0}
```

. The response status is '201 Created' with a response time of 94.1 ms and a body size of 108 B. The response body is a JSON object:

```
{  "nome": "Livro Y",  "autores": [    "Thyago Freitas",    "Marcilio"  ],  "data_lancamento": "20/20/2020",  "preco": 10,  "id": 1}
```

. Red arrows point to the 'POST Book' method, the request URL, the request body, and the response body.

- Buscando todos os livros cadastrados.

The screenshot shows the Insomnia client interface. On the left sidebar, the 'GET Books' method is selected. The main panel displays a GET request to the URL `http://ec2-100-25-21-88.compute-1.amazonaws.com/books`. The response status is '200 OK' with a response time of 93.4 ms and a body size of 218 B. The response body is a JSON array of two book objects:

```
[  {    "nome": "Livro Y",    "autores": [      "Thyago Freitas",      "Marcilio"    ],    "data_lancamento": "20/20/2020",    "preco": 10,    "id": 1  },  {    "nome": "Livro Z",    "autores": [      "Thyago Freitas",      "Marcilio"    ]  }]
```

. Red arrows point to the 'GET Books' method, the request URL, and the response body.

- Deletando o livro com ID 1

The screenshot shows the DAD (Data API Designer) interface. On the left, a sidebar lists several endpoints: **DELETE Book** (highlighted with a red arrow), **GET Book**, **POST Book**, and **GET Books**. The main panel displays a **DELETE** request to the URL <http://ec2-100-25-21-88.compute-1.amazonaws.com/books/1> (indicated by a red arrow). The response status is **202 Accepted** (highlighted with a red arrow), with a response time of 164 ms and a body size of 0 B. The response body is empty, showing "No body returned for response".

- Buscando livro com ID 1

The screenshot shows the DAD (Data API Designer) interface. On the left, a sidebar lists several endpoints: **DELETE Book**, **GET Book** (highlighted with a red arrow), **POST Book**, and **GET Books**. The main panel displays a **GET** request to the URL <http://ec2-100-25-21-88.compute-1.amazonaws.com/books/1> (indicated by a red arrow). The response status is **200 OK** (highlighted with a red arrow), with a response time of 207 ms and a body size of 108 B. The response body is a JSON object (highlighted with a red arrow) representing a book with ID 1:

```
1 {
2   "nome": "Livro Y",
3   "autores": [
4     "Thyago Freitas",
5     "Marcilio"
6   ],
7   "data_lancamento": "20/20/2020",
8   "preco": 10,
9   "id": 1
10 }
```

Passo 13 - Agora que os testes foram feitos e conseguimos rodar a aplicação na instância dentro da EC2 da AWS, basta encerrar a instância indo na página EC2 Manager como na figura abaixo. Clique no botão “Actions”, depois selecione “Instance State” e clique em “Terminate”.

