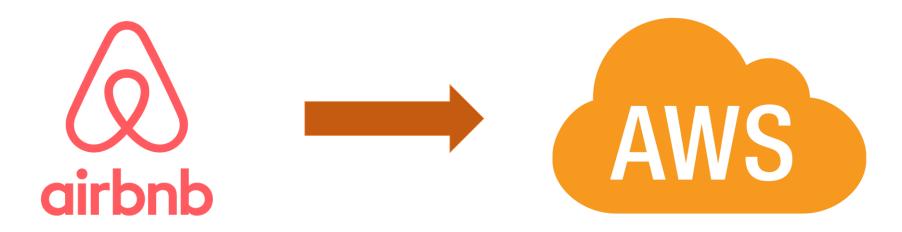
AirBnB API to AWS



By: Jhoan Stiven Zamora Caicedo

APP DEPLOYMENT



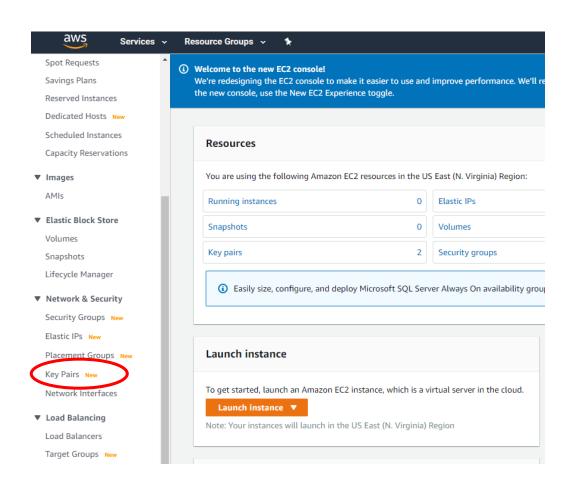


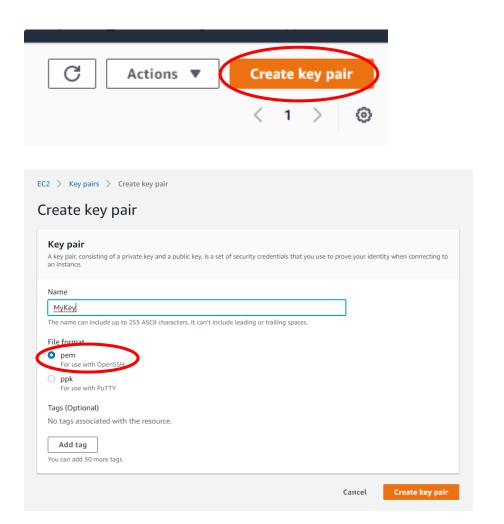


IT IS RECOMMENDED TO CREATE A REGULAR USER IN AWS.

ACADEMIC USERS CAN RESULT IN A LOT OF PERMISSION ISSUES OR OTHER PROBLEMS.

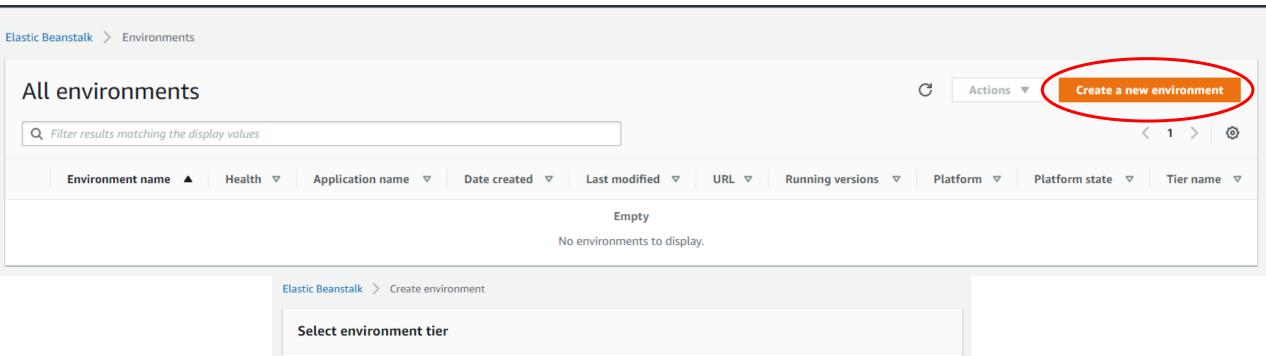
(IN EC2 Dash Board) GENERATE KEYS IN CASE DEBUGGING IS NECESSARY

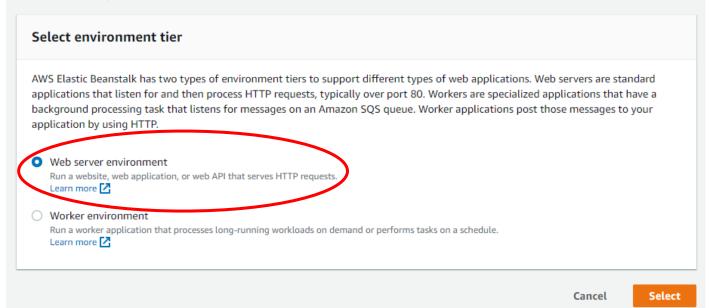




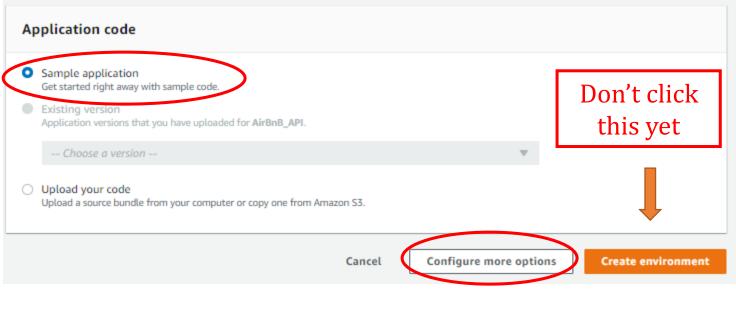
SAVE THE KEY AND DON'T LOSE IT, ALTHOUGH IF YOU DO, IT AIN'T THE END OF THE WORLD, YOU CAN CREATE AS MUCH AS YOU NEED

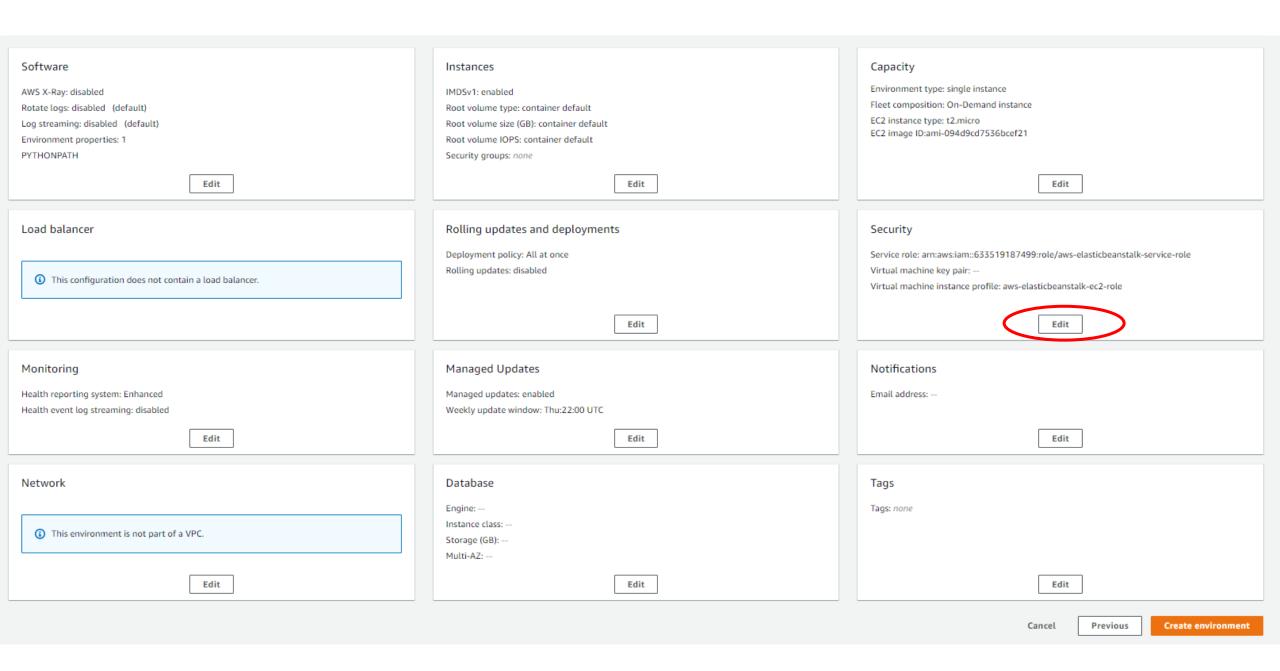
(IN Elastic Beanstalk Dash Board)



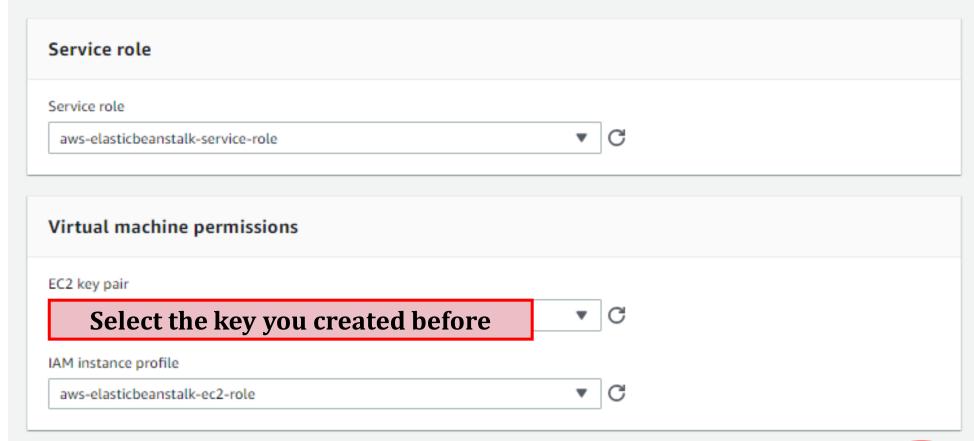


Create a web server environment Launch an environment with a sample application or your own code. By creating an environment, you allow AWS Elastic Beanstalk to manage AWS resources and permissions on your behalf. Learn more [2] Application information Application name AirBnB API Up to 100 Unicode characters, not including forward slash (/). Application tags (optional) Environment information Choose the name, subdomain, and description for your environment. These cannot be changed later. Environment name AirbnbApi-env Domain .us-east-1.elasticbeanstalk. Leave blank for autogenerated value Check availability Description Platform Managed platform Platforms created and owned by you. Platforms published and maintained by AWS Elastic Beanstalk. Learn more [2] Platform Python • Platform branch Python 3.7 running on 64bit Amazon Linux 2 • Platform version 3.1.0 (Recommended) •

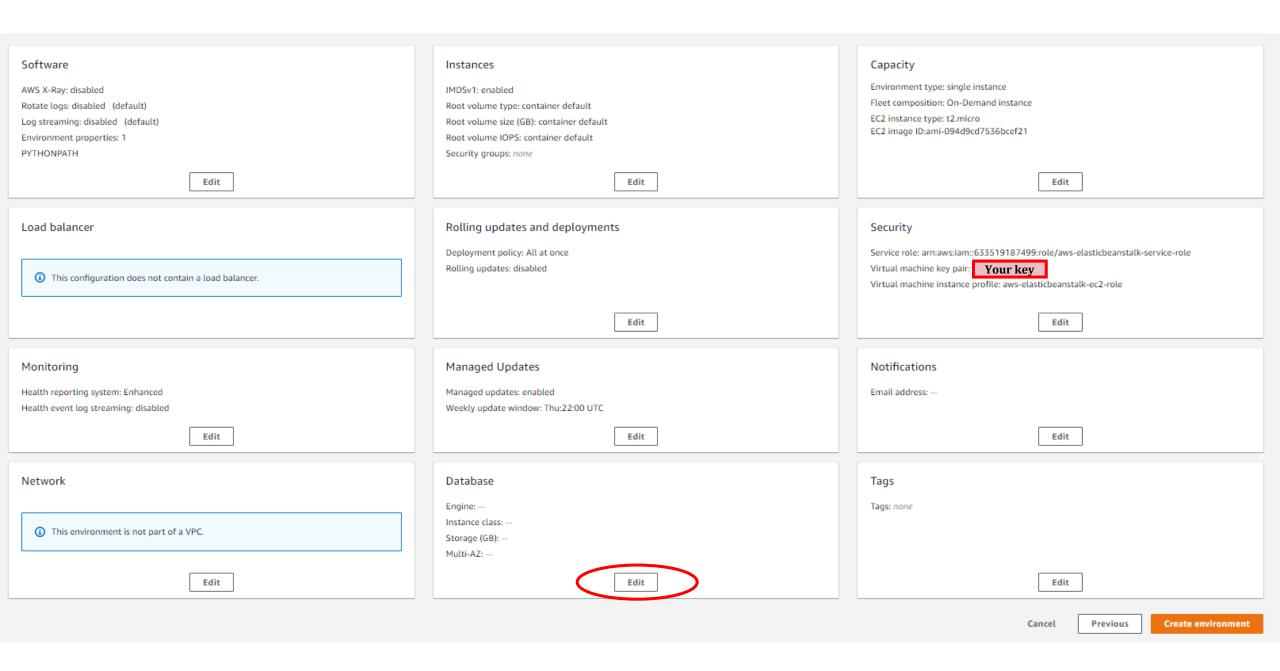


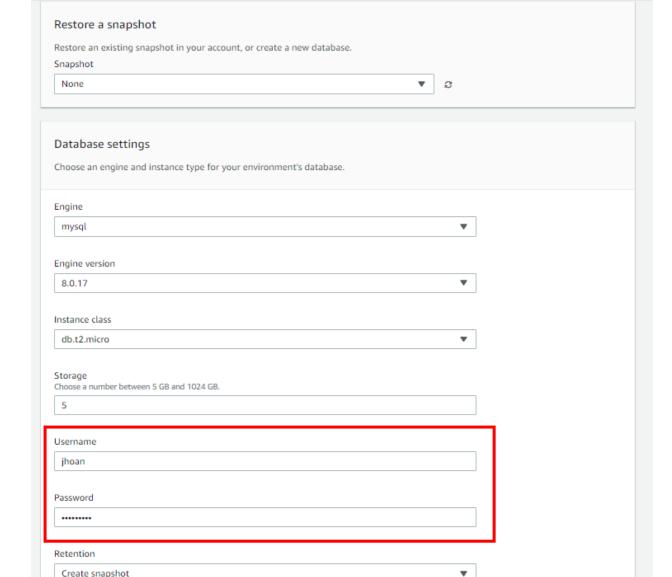


Modify security



Cancel Save





When you terminate your environment, your database instance is also terminated. Choose Create snapshot to save a snapshot of the database prior to

₩

Cancel

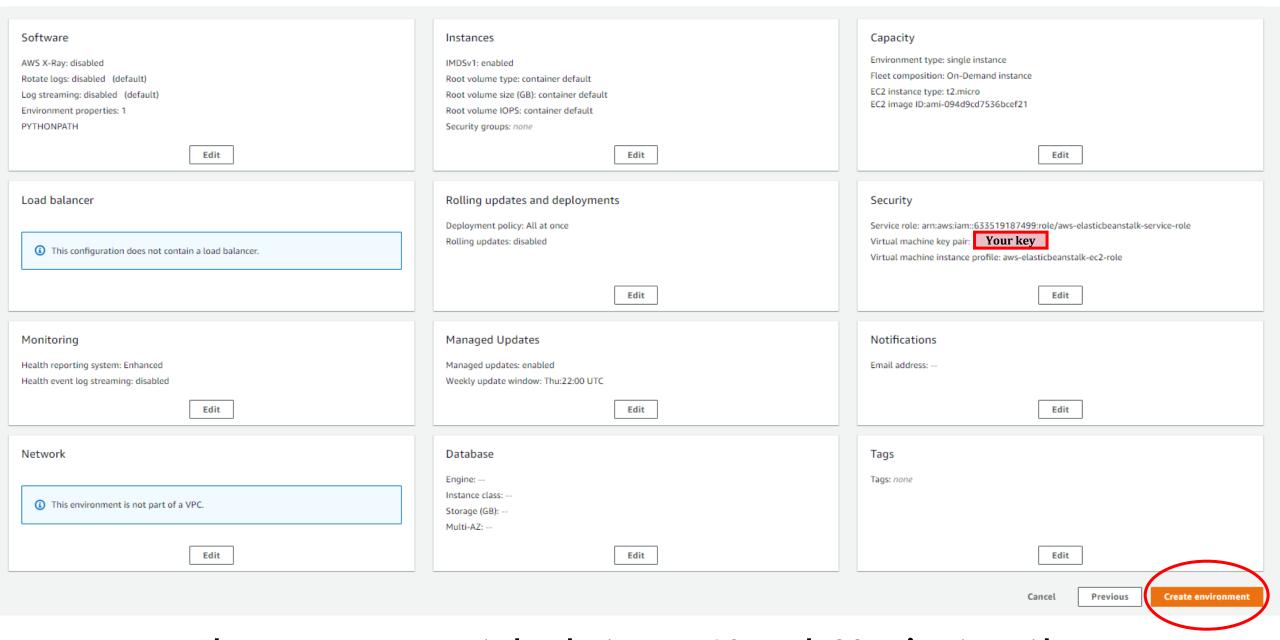
termination. Snapshots incur standard storage charges.

Availability

Low (one AZ)

You can write down the user and password, although you won't be using them directly in your app unless you want to interact with the mysql console.

(Which is not necessary because the ORM is doing everything)



The process can take between 10 and 20 minutes the first time. You just have to wait.

PROJECT CONFIGURATION



INSTALL PIP AND PYTHON VENV

AirBnB_clone_v4\$ sudo apt-get install python3-pip
AirBnB_clone_v4\$ sudo apt-get install python3-venv

CREATE VIRTUAL ENVIRONMENT

AirBnB_clone_v4\$ python3 -m venv ./venv

ACTIVATE VIRTUAL ENVIRONMENT

AirBnB_clone_v4\$ source ./venv/bin/activate
(venv) AirBnB_clone_v4\$

DEACTIVATE

(venv) AirBnB_clone_v4\$ deactivate
AirBnB_clone_v4\$

INSTALL DEPENDENCIES (Don't use sudo)

```
(venv) AirBnB_clone_v4$ pip3 install mysqlclient
(venv) AirBnB_clone_v4$ pip3 install SQLAlchemy==1.2.5
(venv) AirBnB_clone_v4$ pip3 install flask
(venv) AirBnB_clone_v4$ pip3 install flasgger
(venv) AirBnB_clone_v4$ pip3 install flask_cors
```

LIST DEPENDENCIES

```
(venv) AirBnB_clone_v4$ pip3 freeze
```

CHANGE ENV VARIABLES AND ADD PORT VARIABLE

```
HBNB_MYSQL_USER = getenv('RDS_USERNAME')
HBNB_MYSQL_PWD = getenv('RDS_PASSWORD')
HBNB_MYSQL_HOST = getenv('RDS_HOSTNAME')
HBNB_MYSQL_PORT = getenv('RDS_PORT')
HBNB_MYSQL_DB = getenv('RDS_DB_NAME')
```

SET DEFAULT DB MODE

```
HBNB_ENV = "db"

*(In db_storage and __init__ modules)
```

ADD PORT TO CREATE ENGINE

```
create_engine('mysql+mysqldb://{}:{}@{}:{}/{}'.
format(HBNB_MYSQL_USER, HBNB_MYSQL_PWD, HBNB_MYSQL_HOST,
HBNB_MYSQL_PORT, HBNB_MYSQL_DB))
```

TEST LOCALLY USING VENV

```
(venv) AirBnB clone v4$ export FLASK APP=api.v1.app
(venv) AirBnB clone v4$RDS USERNAME=test user
RDS PASSWORD=test pwd RDS HOSTNAME=localhost RDS_PORT=3306
RDS DB NAME=test db flask run
(This does not run as __main__ nor it will do in AWS)
```

CHECK IF SERVER IS RUNNING LOCALLY

```
AirBnB clone v4$ curl localhost:5000/api/v1/status
 "status": "OK"
```

YOU CAN ALSO CHECK MYSQL TO VERIFY IF TABLES ARE CREATED

ELASTIC BEANSTALK CONFIG FILES



COMMANDS AND CONFIGURATION ON DEPLOYMENT (venv does not matter, you can have it on or off) AirBnB_clone_v4\$ mkdir .ebextensions

These files run in order of name (can be any)

```
.ebextension$ touch 01_mysql.config
```

.ebextension\$ touch 02_wsgi_path.config

On 01_mysql.config (Spaces are important)

```
commands:
```

```
01 mysql devel:
```

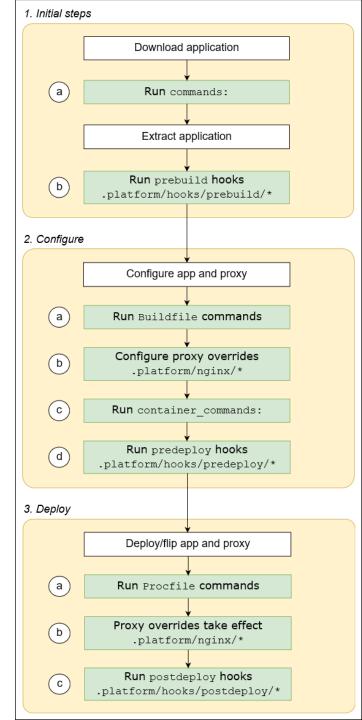
command: "sudo yum install -y mysql-devel"

On 02_wsgi_path.config (Spaces are important)

```
option_settings:
```

aws:elasticbeanstalk:container:python:

WSGIPath: api.v1.app



CREATE REQUIREMENTS FILE

(venv) AirBnB_clone_v4\$ pip3 freeze > requirements.txt

(DON'T DO THIS, IT IS SIMPLY BONUS INFORMATION)

IF YOU WANT TO INSTALL DEPENDENCIES FROM FILE

(venv) AirBnB_clone_v4\$ pip3 install -r requirements.txt

APP DEPLOYMENT

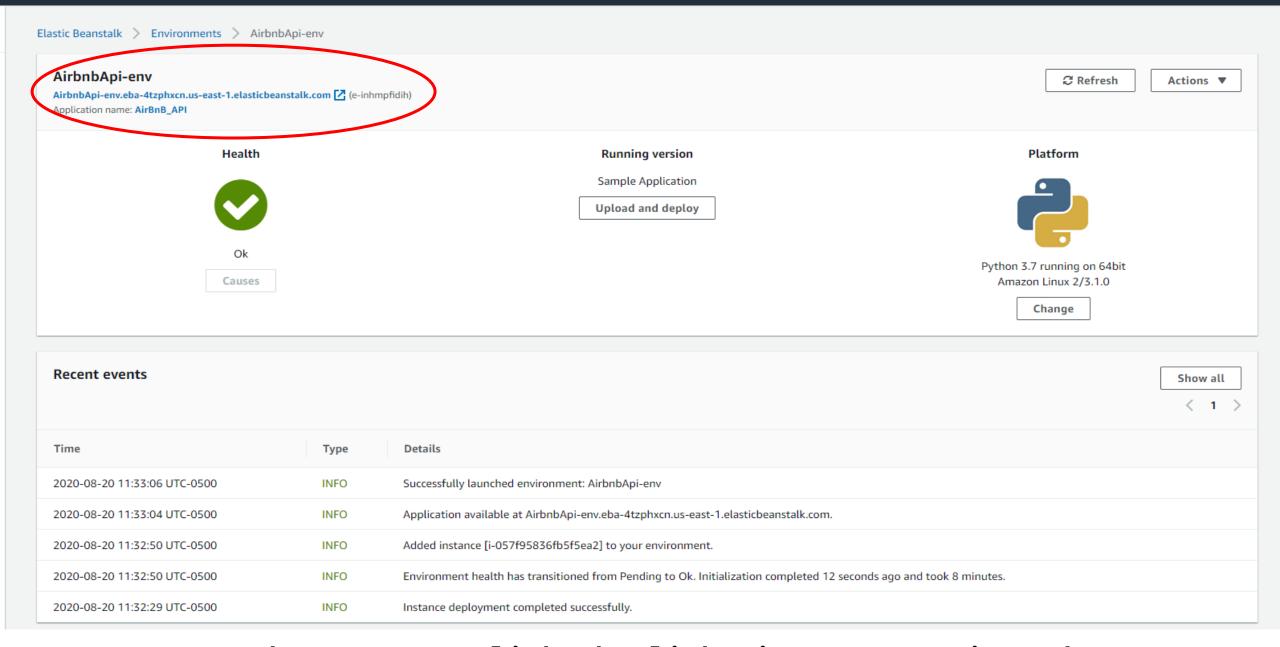






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Once ready, you can click the link given to you in order to verify the sample app was deployed.

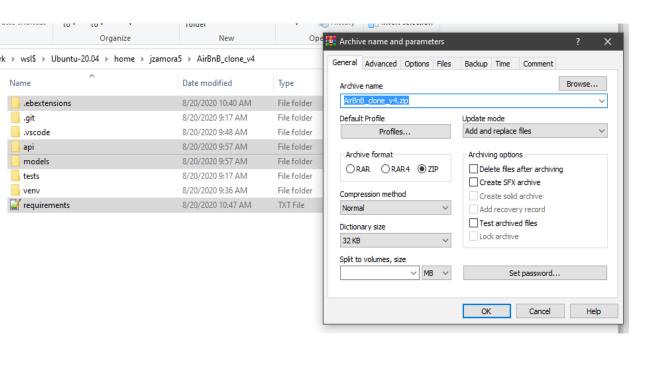
Congratulations

Your first AWS Elastic Beanstalk Python Application is now running on your own dedicated environment in the AWS Cloud

This environment is launched with Elastic Beanstalk Python Platform

What's Next?

- AWS Elastic Beanstalk overview
- AWS Elastic Beanstalk concepts
- Deploy a Django Application to AWS Elastic Beanstalk
- Deploy a Flask Application to AWS Elastic Beanstalk
- Customizing and Configuring a Python Container
- Working with Logs



Now you need to compress your app into a ZIP file.

(MUST BE THIS FORMAT)

ONLY INCLUDE THE HIGHLIGHTED FOLDERS AND THE REQUIREMENTS FILE

(IGNORE THE VENV FOLDER AND ANYTHING ELSE THAT IS NOT PART OF YOUR MAIN APP)

YOU MUST ZIP ALL OF THESE FOLDERS AND FILE DIRECTLY

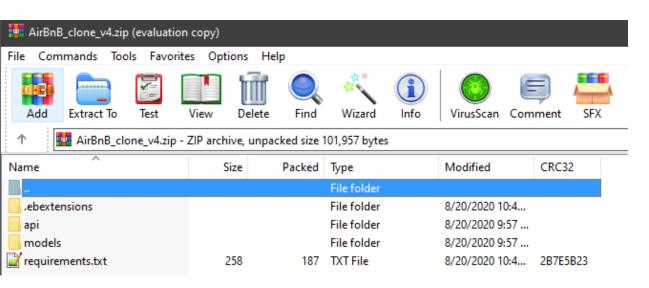
(DO NOT ZIP A FOLDER CONTAINING THEM)

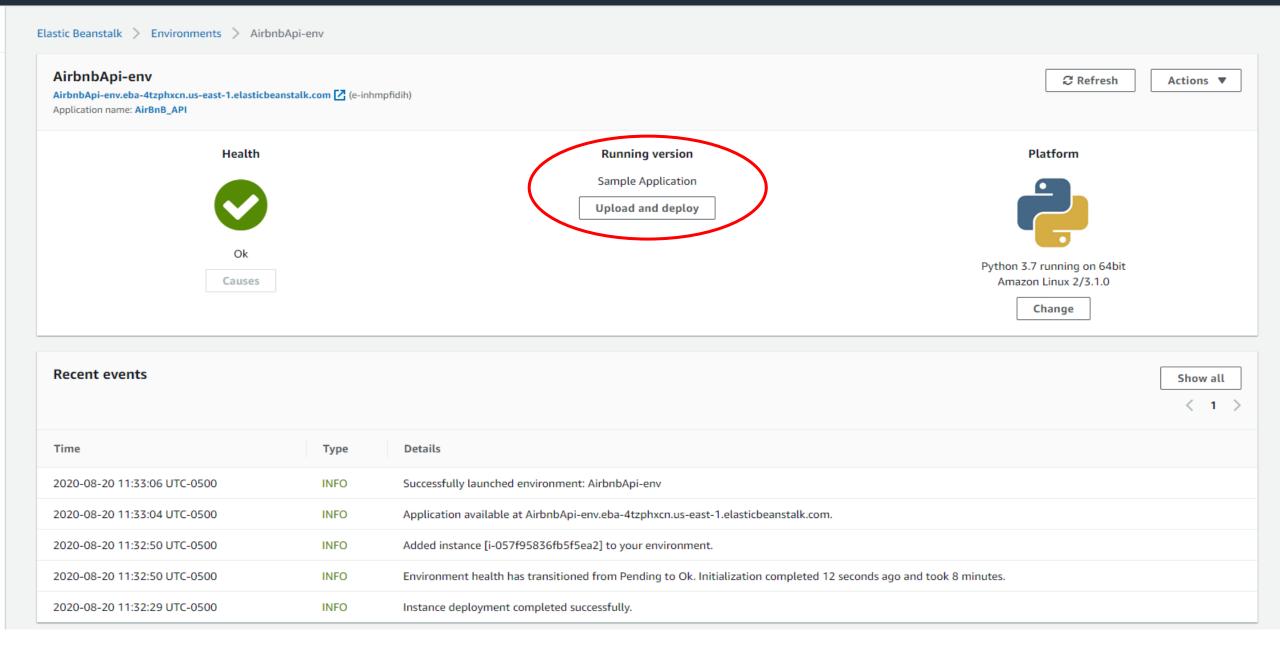


ZIP AirBnB_v4 Folder

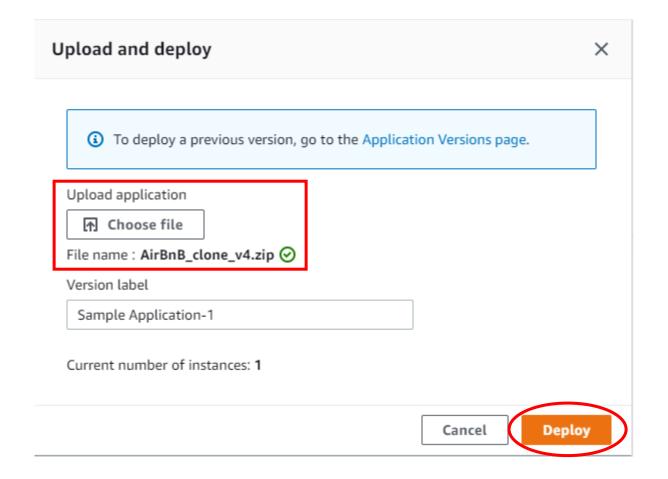
GOOD

ZIP (.ebextensions, api, models, requirements)





Time to upload your app!

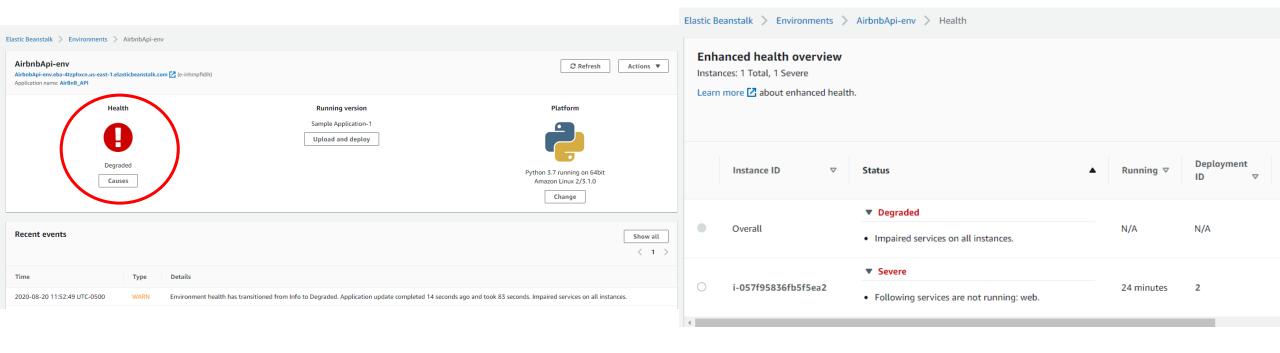


You can let the version label be set automatically or specify one, but make sure to keep the same format:

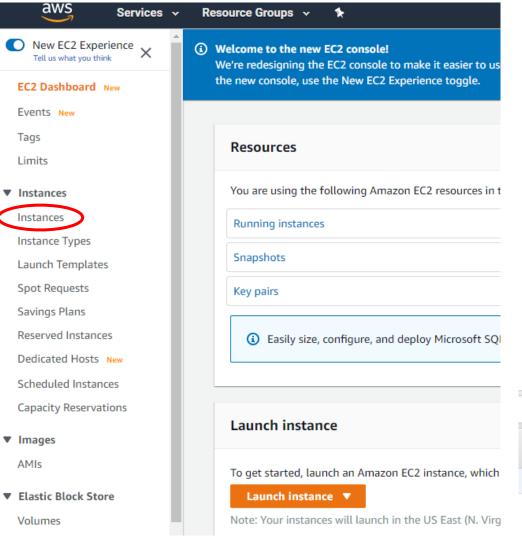
name-number (And the number should increase on each app deployment)

Otherwise you will run into versioning issues.

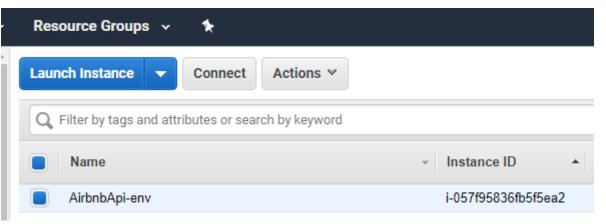
If the deployment fails you will have to SSH into the EC2 instance and debug the system because the causes shown in Elastic Beanstalk are ambiguous.



(IN EC2 Dash Board) Find your instance



It should have the name you defined in Elastic Beanstalk



Scroll to the right and find its Public IP, it shouds also show the key you defined before.



Now you can SSH into the server with the IP you just found. The default use for ec2 instances is ec2-user. So simply run the next command in your terminal.

~\$ ssh -i path_to_key ec2-user@instance_ip

```
~ ssh -i Yourkey ec2-user@54.237.163.186
The authenticity of host '54.237.163.186 (54.237.163.186)' can't be established.
ECDSA key fingerprint is SHA256:gozq8AcT5YjH0aKLDnC4u2vdlmlQVmUpvzL1jaYrRNE.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.237.163.186' (ECDSA) to the list of known hosts.
  Amazon Linux 2 AMI
This EC2 instance is managed by AWS Elastic Beanstalk. Changes made via SSH
WILL BE LOST if the instance is replaced by auto-scaling. For more information
on customizing your Elastic Beanstalk environment, see our documentation here:
http://docs.aws.amazon.com/elasticbeanstalk/latest/dg/customize-containers-ec2.html
[ec2-user@ip-172-31-94-205 ~]$
```

If your app was uploaded to the server but failed when being run, it will be located in the next path for python 3.7:

/var/app/current

If you used other version like python 3.6, the app might be located in: /opt/python/bundle

```
[ec2-user@ip-172-31-94-205 ~]$ cd /var/app/current
[ec2-user@ip-172-31-94-205 current]$ ls
Procfile api models requirements.txt
[ec2-user@ip-172-31-94-205 current]$ cd ..
[ec2-user@ip-172-31-94-205 app]$ ls
current venv
[ec2-user@ip-172-31-94-205 app]$ source venv/staging-LQM1lest/bin/activate
(staging) [ec2-user@ip-172-31-94-205 app]$ |
```

The app also runs on a virtual environment, so if you want to test it locally on the server, you must go back one directory, and activate the venv.

The path changes a little (adding a staging folder) but the process for activation is the same.

Instead of (venv), we get (staging), but it indicates we are already in the virtual environment.

If you simply want to check the logs of the deployment in order to find possible issues, you can go to the directory.

```
/var/log
```

Here you will find all the logs for different things such as elastic beanstalk boot, gunicorn and nginx initialization, etc.

```
[ec2-user@ip-172-31-94-205 ~]$ cd /var/log/
[ec2-user@ip-172-31-94-205 log]$ ls
amazon
           cfn-init-cmd.log cloud-init-output.log eb-cfn-init-call.log healthd nginx
                                                                                    web.stdout.log
boot.log cfn-init.log
                          cloud-init.log
                                                eb-cfn-init.log
                                                                   httpd
                                                                            rotated wtmp
           cfn-wire.log
                                               eb-engine.log
                                                                   maillog
btmp
                          cron
                                                                                    xray
cfn-hup.log chrony
                                                eb-publish.log
                                                                   messages secure yum.log
                           dmesq
[ec2-user@ip-172-31-94-205 log]$
```

You can simply cat the files; some of them require sudo.

```
[ec2-user@ip-172-31-94-205 log]$ sudo cat web.stdout.log
```

This one is for checking gunicorn initialization.

One of the most common issues is this one:

```
Aug 20 16:52:01 ip-172-31-94-205 web: [2020-08-20 16:52:01 +0000] [5546] [INFO] Using worker: threads
Aug 20 16:52:01 ip-172-31-94-205 web: [2020-08-20 16:52:01 +0000] [5553] [INFO] Booting worker with pid: 5553
Aug 20 16:52:02 ip-172-31-94-205 web: Failed to find attribute 'application' in 'api.v1.app'.
Aug 20 16:52:02 ip-172-31-94-205 web: [2020-08-20 16:52:02 +0000] [5553] [INFO] Worker exiting (pid: 5553)
Aug 20 16:52:02 ip-172-31-94-205 web: [2020-08-20 16:52:02 +0000] [5546] [INFO] Shutting down: Master
Aug 20 16:52:02 ip-172-31-94-205 web: [2020-08-20 16:52:02 +0000] [5546] [INFO] Reason: App failed to load.
[ec2-user@ip-172-31-94-205 log]$
```

Which means the name of the app in flask is incorrect. (By default AWS searches for application instead of app inside the python file)

```
01_mysql.config
                   02_wsgi_path.config
                                                          api > v1 > 🕏 app.py > 😚 not_found
       from models import storage
      from api.v1.views import app_views
      from os import environ
      from flask import Flask, render_template, make_response, jsonify
      from flask_cors import CORS
      from flasgger import Swagger
      from flasgger.utils import swag_from
      application = app = Flask(__name__)
      app.contig['JSONIFY_PRETTYPRINT_REGULAR'] = True
      app.register_blueprint(app_views)
      cors = CORS(app, resources={r"/api/v1/*": {"origins": "*"}})
      @app.teardown_appcontext
      def close db(error):
          """ Close Storage """
          storage.close()
      @app.errorhandler(404)
      def not found(error):
           """ 404 Error
          responses:
               description: a resource was not found
          return make response(jsonify({'error': "Not found"}), 404)
      app.config['SWAGGER'] = {
           'title': 'AirBnB clone Restful API',
           'uiversion': 3
(venv) → AirBnB clone v4 git:(master) X
```

Because we do not want to go through the hassle of changing every place where we have the word app, we can take advantage of python referencing, and do this:

```
app = Flask(__name___)
```

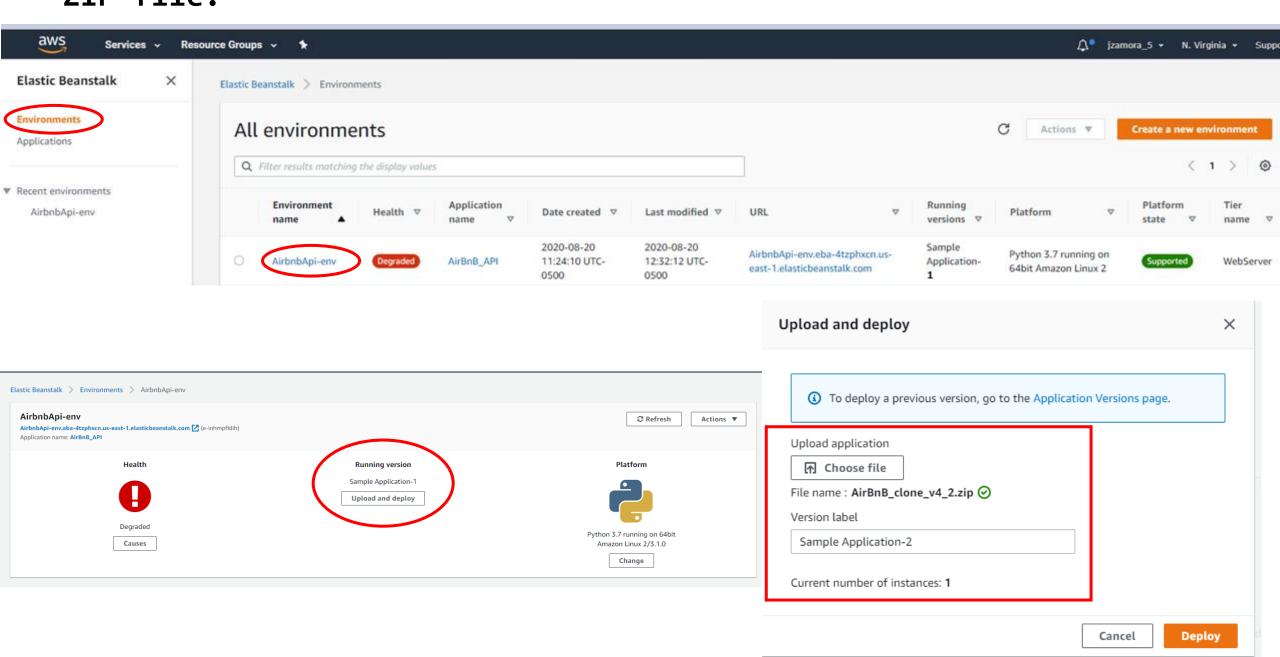


application = app = Flask(__name___)

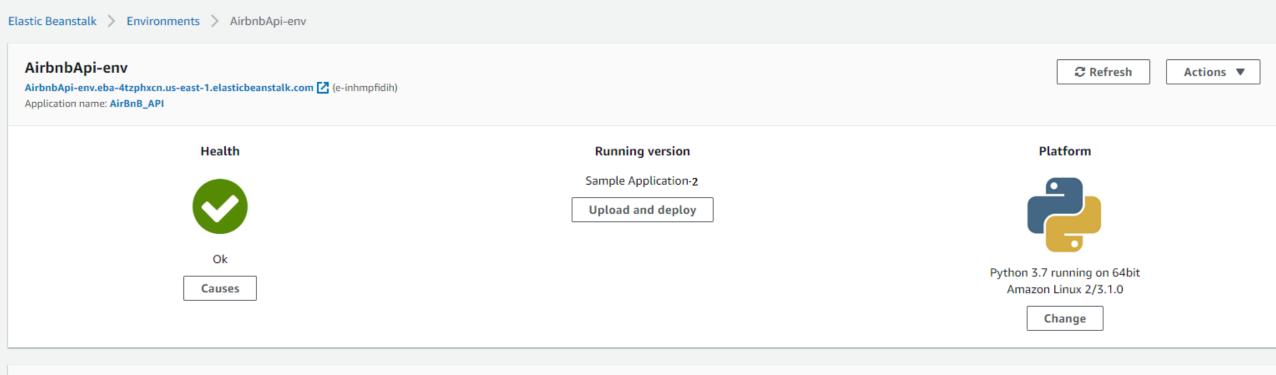
Now that the issue is fixed in the code, you simply create a new ZIP file, just as before.

Name	Date modified	Туре	Size
ebextensions	8/20/2020 10:40 AM	File folder	
.git	8/20/2020 9:17 AM	File folder	
.vscode	8/20/2020 9:48 AM	File folder	
api api	8/20/2020 9:57 AM	File folder	
models	8/20/2020 9:57 AM	File folder	
tests	8/20/2020 9:17 AM	File folder	
venv	8/20/2020 9:36 AM	File folder	
AirBnB_clone_v4	8/20/2020 11:41 AM	WinRAR ZIP archive	61 KB
AirBnB_clone_v4_2	8/20/2020 12:19 PM	WinRAR ZIP archive	61 KB
requirements	8/20/2020 10:47 AM	TXT File	1 KB

In Elastic Beanstalk go to your environments, and deploy the new ZIP file.



If you did everything correctly, your APP should have green Health.



Recent events			Show all
			< 1 >
Time	Type	Details	
2020-08-20 12:37:46 UTC-0500	INFO	Environment health has transitioned from Degraded to Ok. Application update completed 41 seconds ago and took 15 seconds.	
2020-08-20 12:37:00 UTC-0500	INFO	Environment update completed successfully.	
2020-08-20 12:37:00 UTC-0500	INFO	New application version was deployed to running EC2 instances.	
2020-08-20 12:36:54 UTC-0500	INFO	Instance deployment completed successfully.	
2020-08-20 12:36:51 UTC-0500	INFO	Instance deployment successfully generated a 'Procfile'.	

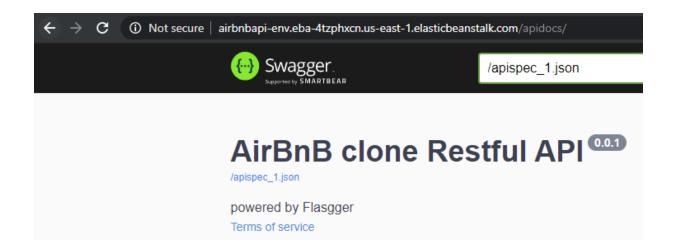
You can now try the link of your API. (The root has no endpoint in flask)

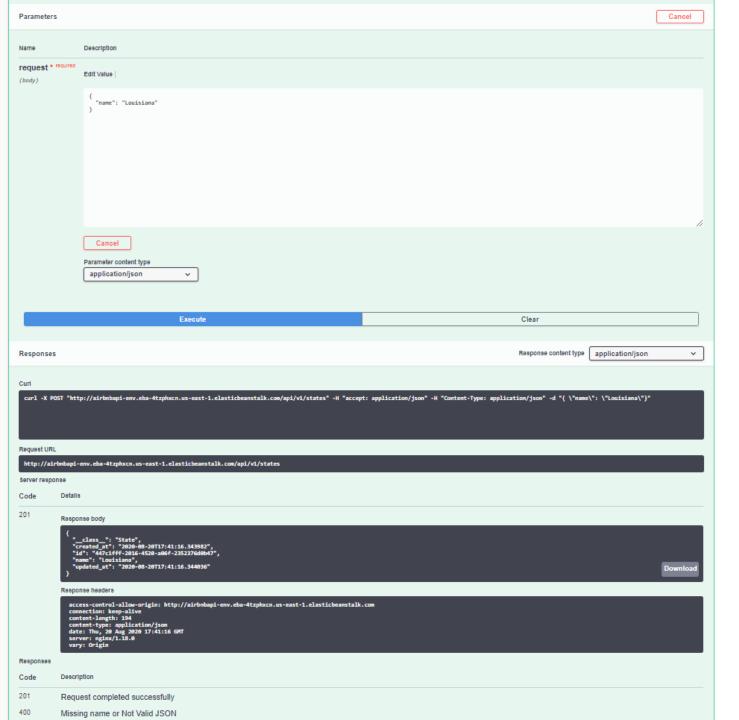
```
← → C ① Not secure | airbnbapi-env.eba-4tzphxcn.us-east-1.elasticbeanstalk.com
▼ {
"error": "Not found"
}
```

You can access the defined endpoints such as status

```
← → C ③ Not secure | airbnbapi-env.eba-4tzphxcn.us-east-1.elasticbeanstalk.com/api/v1/status
▼ {
"status": "OK"
}
```

If you created documentation with Swagger, you can also access it





You can use postman, curl, or even swagger to try out the different endpoints in the API.

Here swagger is used to POST a state with name Louisiana.

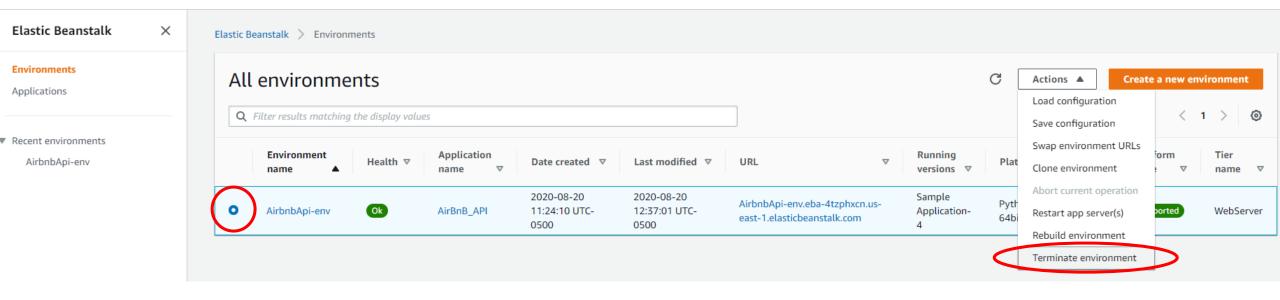
The state was created successfully.

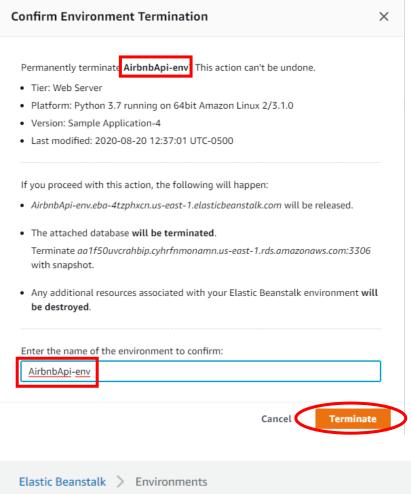
← → C ① Not secure | airbnbapi-env.eba-4tzphxcn.us-east-1.elasticbeanstalk.com/api/v1/states

Now that you have a working ZIP of your file, you can easily deploy it with elastic beanstalk in the future!

Remember servers can cost money if you surpass the AWS free tier, so make sure you terminate your APP when you don't need it anymore.

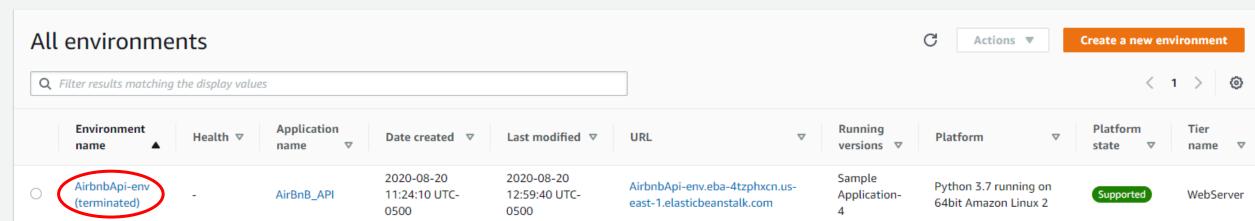
As of this moment it is not possible to pause it, although you can schedule it to work in certain time periods during the day.



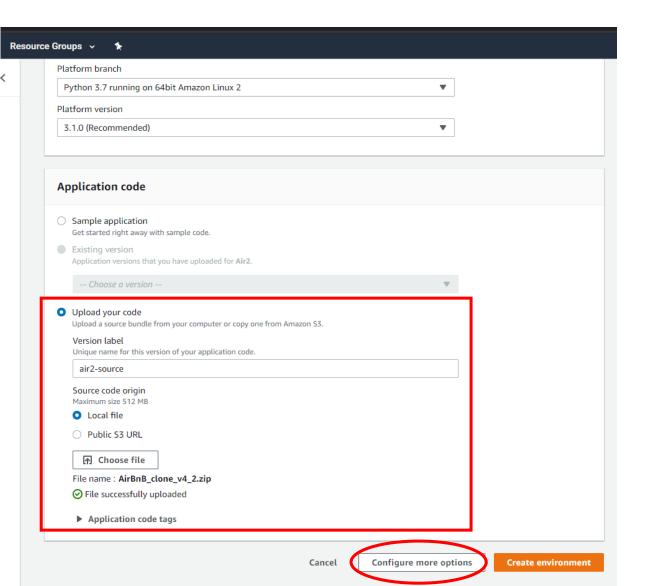


This can take some time, but after it is done, your app should appear like this:





Next time you want to create the app, you will have to repeat the steps of creating the environment in elastic beanstalk with data base and key (although the key is not obligatory, and you can add it later if you want)



The main difference will be that instead of using a sample application you can upload your code so that it is deployed knowing that it is in a working state.

Don't forget to go to Configure more options to set up the DB and key before Create Environment.

Works right away! no server configuration needed

