Business card website development CI/CD

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By Serhii Borovyk

Goal

The goal of the project is to create a CI/CD Pipeline that automates the software development life cycle - the creation of a web application - a business card website, to ensure fast, efficient, and high-quality code delivery.

This is achieved through a series of automated steps that include getting the code from GitHub, building it, testing it, and delivering it to the deployment servers - the stage server and the production server.

The ultimate goal of this process is to make the process of developing and deploying web applications more streamlined, reduce errors, and ensure fast deployment with minimal manual intervention.

Tools and tech

Used in project

- Terraform
- Ansible
- Docker
- AWS and OCI

Key benefits

1. Developers work together on the code base, ensuring smooth and continuous integration of changes. Reduces the time and effort required to resolve integration conflicts. Helps speed up release cycles.

2. Different environments such as automation, stage and production servers ensures that code is tested, meets customer requirements reducing runtime issues.

3. Automation creates the pipeline and automates tasks such as code building, testing and deployment. Reduces manual effort required.

4. Scalable and secure infrastructure as AWS and OCI allows to scale resources and deploy a web application. Provides a secure and reliable infrastructure for the pipeline. Ensures the application is available to end users with minimal downtime.

Infrastructure

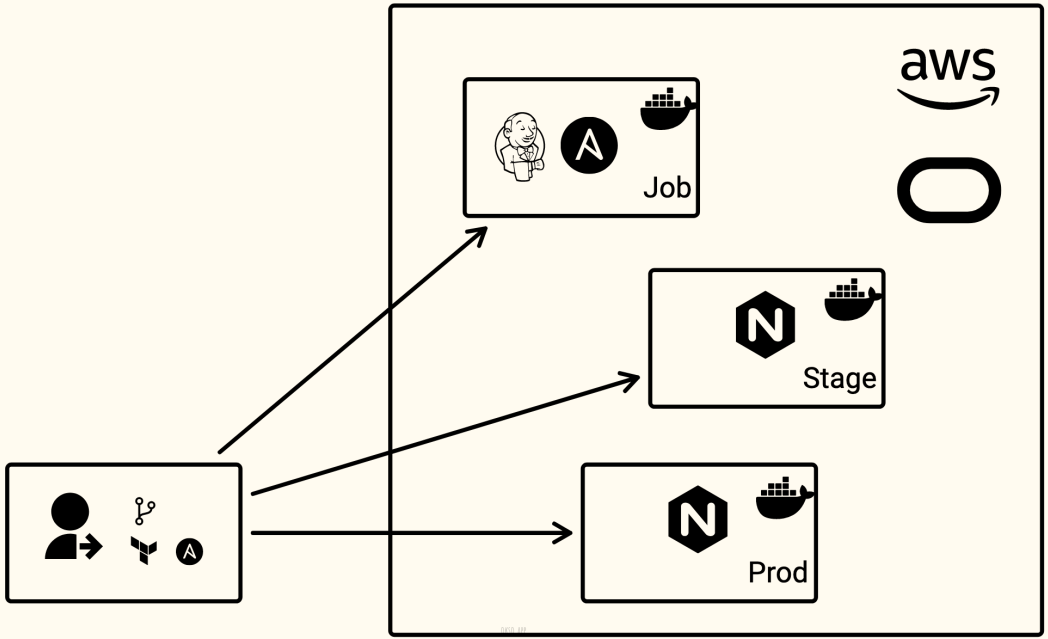
Distributed infrastructure across servers.

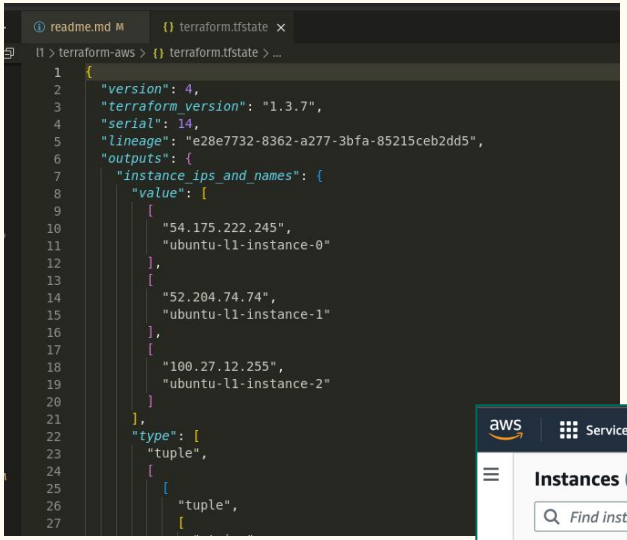
Local tools

- Git for project code development
- Terraform for building infrastructure
- Ansible to configure it

Remote side

- AWS and OCI
- Job node with Jenkins and ansible
- Stage and prod web servers with nginx in docker




readme.md M
terraform.tfstate
terraform-aws > terraform.tfstate > ...
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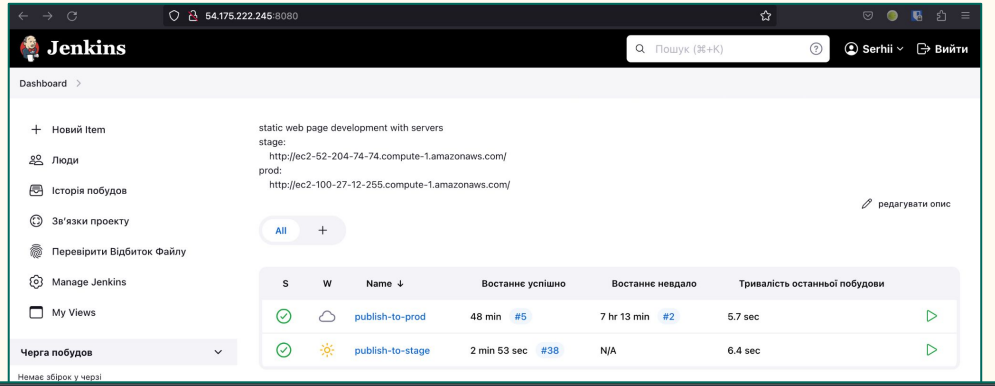
54.175.222.245:8080
Jenkins
Пошук (⌘+K)
Serhii
Вийти
Dashboard
Новий Item
Люди
Історія побудов
Зв'язки проекту
Перевірити Відбиток Файлу
Manage Jenkins
My Views
Черга побудов
Немає збірок у черзі
static web page development with servers
stage:
http://ec2-52-204-74-74.compute-1.amazonaws.com/
prod:
http://ec2-100-27-12-255.compute-1.amazonaws.com/
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All
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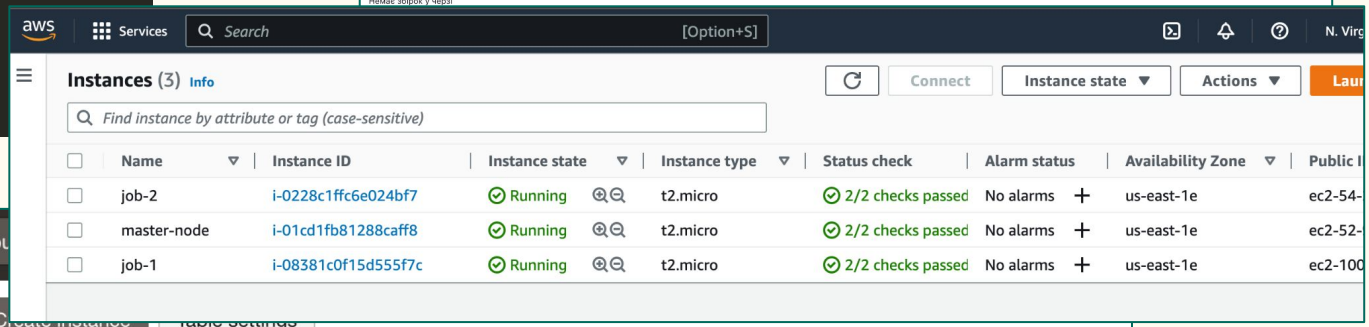
W
Name
Востаннє успішно
Востаннє невдало
Тривалість останньої побудови
publish-to-prod
48 min #5
7 hr 13 min #2
5.7 sec
publish-to-stage
2 min 53 sec #38
N/A
6.4 sec


aws
Services
Search
[Option+5]
N. Virg
Instances (3) Info
Connect
Instance state
Actions
Find instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
job-2
i-0228c1ffc6e024bf7
Running
t2.micro
2/2 checks passed
No alarms
us-east-1e
master-node
i-01cd1fb81288caff8
Running
t2.micro
2/2 checks passed
No alarms
us-east-1e
job-1
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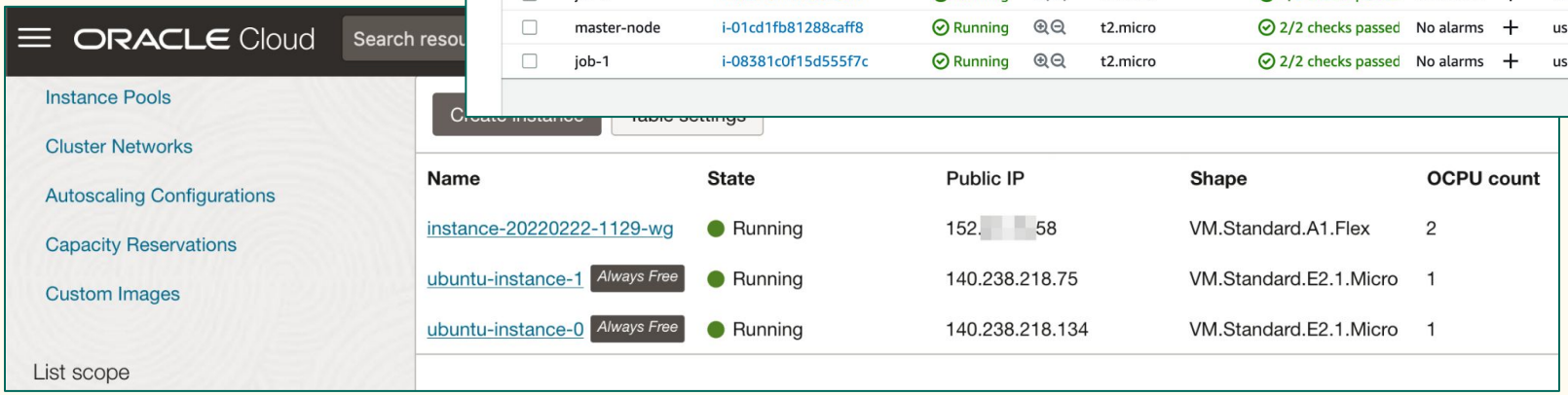
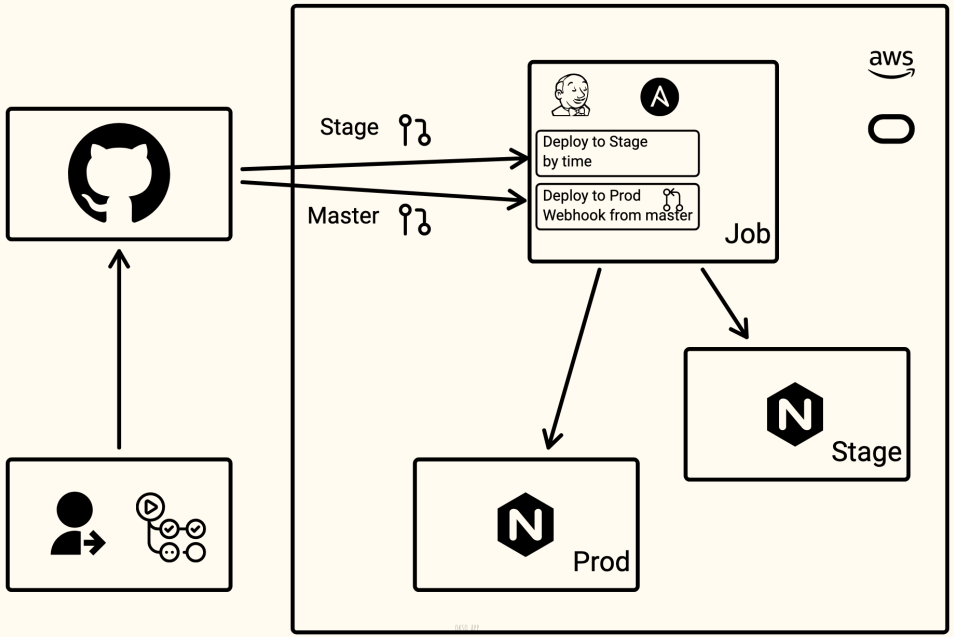
t2.micro
2/2 checks passed
No alarms
us-east-1e


ORACLE Cloud
Search resou
Instance Pools
Cluster Networks
Autoscaling Configurations
Capacity Reservations
Custom Images
List scope
Name
State
Public IP
Shape
OCPU count
instance-20220222-1129-wg
Running
152.[redacted]58
VM.Standard.A1.Flex
2
ubuntu-instance-1
Always Free
Running
140.238.218.75
VM.Standard.E2.1.Micro
1
ubuntu-instance-0
Always Free
Running
140.238.218.134
VM.Standard.E2.1.Micro
1

Pipeline

1. Developers push local code to the stage branch on GitHub
2. A Jenkins node periodically clones code from the stage branch on GitHub, tests it, and deploys it to the stage server for review.
3. If the web application meets the requirements, the developers merge the stage branch into the master branch.
4. Changes to the master branch trigger the job on the Jenkins node, which automatically receives and builds the code, tests it, and deploys the changes to the production server.



Stage pipeline

ec2-52-204-74-74.compute-1.amazonaws.com

Hi there!

My name is Serhii Borovyk.

I make computers purr like cats.

GitHub | 8y9aqg46@duck.com

Build #36 at 2023-02-13T20:18:01UTC

Stage server
Before

code-server - index.html — l1 (Workspace) — code-server

SOURCE CONTROL

update-index

Commit

Staged Changes 1

index.html aws/ansible/playbo... M

Changes 4

jenkins.yaml | run-docker.yaml.bak U | readme.md | run-www-docker.yaml

home > serg > do > l1 > aws > ansible > playbooks > content > www > index.html > ...

```
<html>
<head>
    <title>Wellcome</title>
    <meta charset="UTF-8">
</head>
<body>
    <h2>Hi there!</h2>
    <p>  </p>
    <p>My name is Serhii Borovyk.</p>
    <p>I make computers purr like cats.</p>
    <br />
-   <!-- <img src="https://s36537.pcdn.co/wp-content/uploads/2015/06/google
+   <img src="https://s36537.pcdn.co/wp-content/uploads/2015/06/google-cat-
    <p>
        <a href="https://github.com/sborovik">GitHub</a> | 8y9aqg46@duck.c
-   <!-- <p id='timestamp'> -->
</body>
</html>
```

stage*+ 0 0 1 Ln 17, Col 1 Spaces: 4 UTF-8 HTML Layout: U.S.

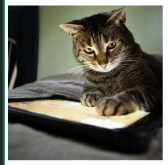
Change code

ec2-52-204-74-74.compute-1.amazonaws.com

Hi there!

My name is Serhii Borovyk.

I make computers purr like cats.

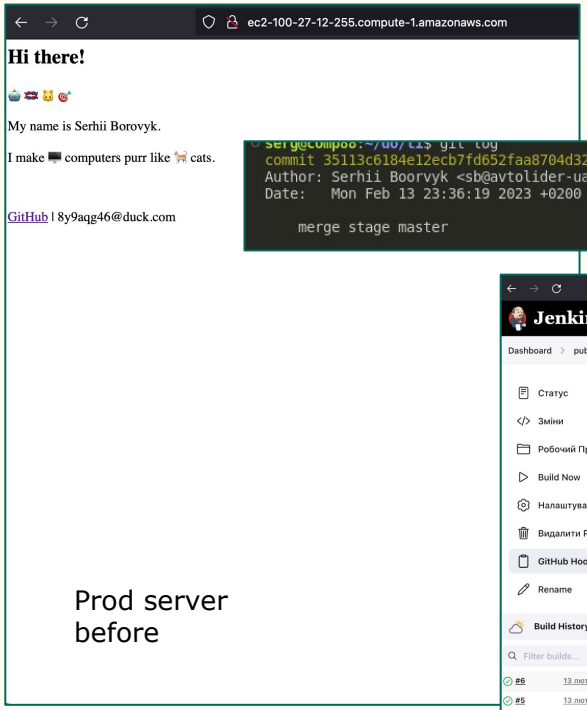


GitHub | 8y9aqg46@duck.com

Build #40 at 2023-02-13T21:31:19UTC

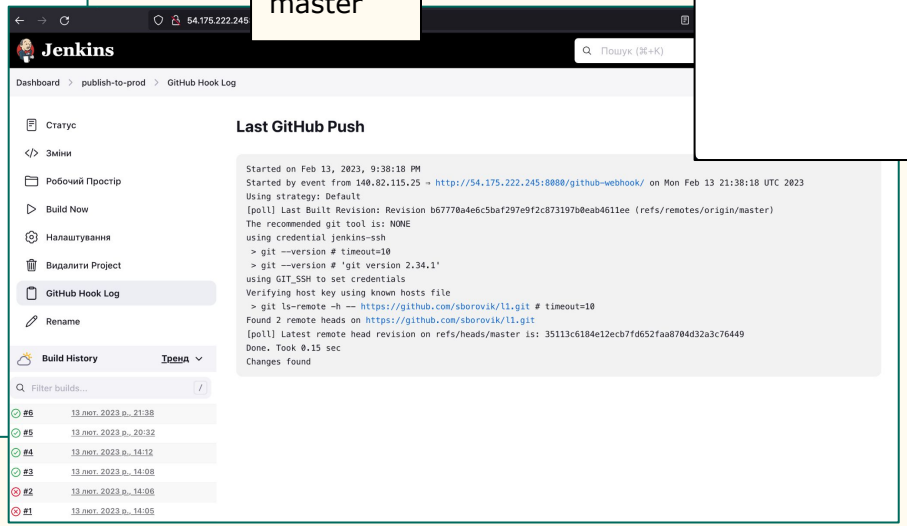
Stage server
After

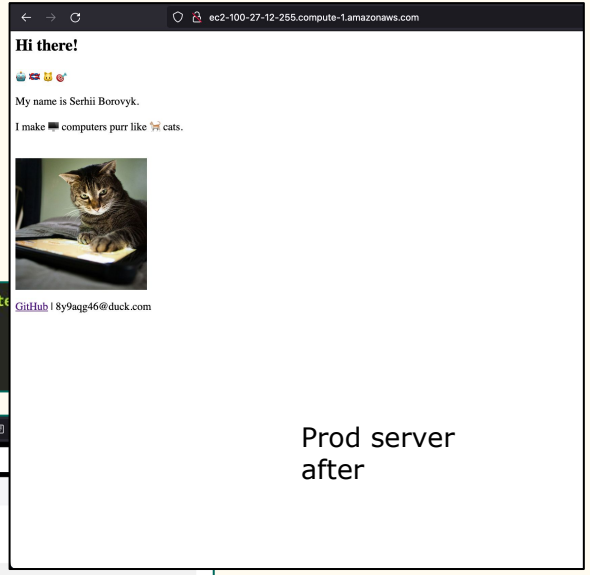
Production pipeline



Prod server before

Merge to master





Prod server after

Summary

In summary, my CI/CD Pipeline is an effective tool for automating the web application development process.

Of course, the process can always be improved.
In this case, for example, create a Docker image, publish the image to the Docker Hub, and deploy it to the job server.
Use Amazon ECR and Oracle Container Registry for store, share, and deploy containers.

Thank You

Thank you for your time and attention.

I remain immersed in continuous improvement and study of innovative solutions, implementation of new technologies in my work.