

Project:

Give Your Application Auto-Deploy
Superpowers

Selling CI/CD to your Team/Organization

- **Explain the fundamentals and benefits of CI/CD to achieve, build, and deploy automation for cloud-based software products.**

The benefits of CI/CD include:

- + Speed up development: CI/CD helps speed up software development by automating build and deployment processes, reducing the time and effort required for manual tasks.
- + Quality Assurance: Automated and continuous testing during the CI/CD process ensures that the software is reliable, stable, and monitored for quality standards.
- + Risk Reduction: CI/CD helps to reduce the risk of errors arising during the development of software exploits by ensuring that changes are developed only after they have been tested and validated.
- + Increased scalability: The automation in CI/CD makes it easy to scale software systems, while ensuring consistency and reliability during deployment.
- + Continuous Integration: CI/CD facilitates continuous analysis of different software components, including source code, databases, and external services, which enhances interoperability and compatible interactions.

Build Phase

[SCREENSHOT01]

Back-end build24s

```
27 run 'npm audit fix' to fix them, or 'npm audit' for details
28
29 > glee2@1.0.0 build /home/circleci/project/backend
30 > tsc
31
32 src/main.ts:31:21 - error TS1005: ',' expected.
33
34 31 .addBearerAuth()x // here is an intentional compile error. Remove the "x" and the backend should compile.
35 ~
36
37 src/main.ts:32:5 - error TS1128: Declaration or statement expected.
38
39 32 .build();
40 ~
41
42
43 Found 2 errors.
44
45 npm ERR! code ELIFECYCLE
46 npm ERR! errno 2
47 npm ERR! glee2@1.0.0 build: `tsc`
48 npm ERR! Exit status 2
49 npm ERR!
50 npm ERR! Failed at the glee2@1.0.0 build script.
51 npm ERR! This is probably not a problem with npm. There is likely additional logging output above.
52
53 npm ERR! A complete log of this run can be found in:
54 npm ERR! /home/circleci/.npm/_logs/2023-06-29T07_54_53_847Z-debug.log
55
56
57 Exited with code exit status 2
58 CircleCI received exit code 2
```

All Pipelines

All Pipelines

Everyone's Pipelines

All Projects

All Branches

All days

Auto-expand

Pipeline	Status	Workflow	Branch / Commit	Start	Duration	Actions
udacity-project-039	Failed	default	main b20b5a1 push deploy	2m ago	40s	
Jobs	build-frontend 16				30s	
	build-backend 17				38s	

Build Phase

- Fix

```
Administrator@DESKTOP-2361KFI MINGW64 ~/Desktop/AWS-Learning/UDACITY-Project-03/c
dond-c3-projectstarter (main)
$ git commit -m "fix backend"
[main 8b05744] fix backend
2 files changed, 18 insertions(+), 53 deletions(-)

Administrator@DESKTOP-2361KFI MINGW64 ~/Desktop/AWS-Learning/UDACITY-Project-03/c
dond-c3-projectstarter (main)
$ git push origin main
Enumerating objects: 15, done.
Counting objects: 100% (14/14), done.
Delta compression using up to 16 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (8/8), 818 bytes | 818.00 KiB/s, done.
Total 8 (delta 6), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (6/6), completed with 6 local objects.
To https://github.com/phan-van-thuy/udacity-project-03.git
4ce80c6..8b05744 main -> main

Administrator@DESKTOP-2361KFI MINGW64 ~/Desktop/AWS-Learning/UDACITY-Project-03/c
dond-c3-projectstarter (main)
$
```

All Pipelines						
Everyone's Pipelines ▾ All Projects ▾ All Branches ▾ All days ▾ Auto-expand <input checked="" type="checkbox"/>						
Pipeline	Status	Workflow	Branch / Commit	Start	Duration	Actions
udacity-project-03 11	Success	default	main 8b05744 fix backend	3m ago	49s ↓ 2%	🔄 🔄 ✕ ...
Jobs	✓ build-frontend 20					32s
	✓ build-backend 21					42s
udacity-project-03 10	Failed	default	main 4ce80c6 fix backend	7m ago	35s	🔄 🔄 ✕ ...
Jobs	! build-frontend 18					23s

Test Phase

[SCREENSHOT02]

All Pipelines

All Pipelines

Everyone's Pipelines ▾All Projects ▾All Branches ▾All days ▾

AL

Pipeline	Status	Workflow	Branch / Commit	Start	Duration
udacity-project-03 12 ▾	Failed	default	main 8048921 push test	4m ago	1m 56s
Jobs					
build-frontend 22	✓				31s
test-frontend 24	✗				1m 20s
build-backend 23	✓				31s
test-backend 25	✗				1m 2s

Run frontend test

```
117 | index.tsx | 0 | 0 | 0 | 0 | ... 44,247,257,262 |
118 | containers/Employee/components/ViewEmployee | 0 | 0 | 0 | 0 |  |
119 | index.tsx | 0 | 0 | 0 | 0 | ... 95,498,508,513 |
120 | containers/Employee/models | 0 | 0 | 0 | 0 |  |
121 | EmployeeModel.ts | 0 | 0 | 0 | 0 | 1,2,3,6,7,8,66,67 |
122 | index.ts | 0 | 100 | 100 | 0 | 1 |
123 | containers/Employee/reducer | 38.89 | 33.33 | 37.5 | 38.89 |  |
124 | employees.ts | 50 | 33.33 | 42.86 | 50 | ... 28,29,30,36,62 |
125 | sampleData.ts | 0 | 100 | 0 | 0 | 1,4,7,32 |
126 | containers/Employee/services | 30 | 0 | 10 | 30.77 |  |
127 | employees.ts | 30 | 0 | 10 | 30.77 | ... 50,54,57,61,62 |
128 | ----- |
129 |
130 | Test Suites: 1 failed, 4 passed, 5 total
131 | Tests: 1 failed, 11 passed, 12 total
132 | Snapshots: 0 total
133 | Time: 49.31s
134 | Ran all test suites.
135 | npm ERR! code ELIFECYCLE
136 | npm ERR! errno 1
137 | npm ERR! typescript-react-redux-boilerplate@1.0.0 test: 'jest'
138 | npm ERR! Exit status 1
139 | npm ERR!
140 | npm ERR! Failed at the typescript-react-redux-boilerplate@1.0.0 test script.
141 | npm ERR! This is probably not a problem with npm. There is likely additional logging output above.
142 |
143 | npm ERR! A complete log of this run can be found in:
144 | npm ERR! /home/circleci/.npm/_logs/2023-06-29T08_09_01_044Z-debug.log
145 |
146 |
147 | Exited with code exit status 1
148 | CircleCI received exit code 1
```

Run backend test

```
283 |
284 | 33 |
285 | 34 | // Assert
286 | > 35 | expect(employeeRepository.findById).toBeCalledWith(100);
287 | |
288 | 36 | expect(employeeRepository.save).toBeCalled();
289 | 37 | });
290 | 38 | });
291 |
292 | at src/modules/domain/employees/commands/handlers/employee-activator.handler.spec.ts:35:43
293 | at fulfilled (src/modules/domain/employees/commands/handlers/employee-activator.handler.spec.ts:5:58)
294 |
295 |
296 | Test Suites: 1 failed, 50 passed, 51 total
297 | Tests: 1 failed, 78 passed, 79 total
298 | Snapshots: 0 total
299 | Time: 37.144s
300 | Ran all test suites.
301 | npm ERR! code ELIFECYCLE
302 | npm ERR! errno 1
303 | npm ERR! glee2@1.0.0 test: 'jest --runInBand'
304 | npm ERR! Exit status 1
305 | npm ERR!
306 | npm ERR! Failed at the glee2@1.0.0 test script.
307 | npm ERR! This is probably not a problem with npm. There is likely additional logging output above.
308 |
309 | npm ERR! A complete log of this run can be found in:
310 | npm ERR! /home/circleci/.npm/_logs/2023-06-29T08_08_44_764Z-debug.log
311 |
312 |
313 | Exited with code exit status 1
314 | CircleCI received exit code 1
```

Test Phase

- FIX

```
Administrator@DESKTOP-2361KFI MINGW64 ~/Desktop/AWS-Lerning/UDACITY-Project-03/c
dond-c3-projectstarter (main)
$ git commit -m "fix test"
[main Odd9f1b] fix test
1 file changed, 1 insertion(+), 1 deletion(-)

Administrator@DESKTOP-2361KFI MINGW64 ~/Desktop/AWS-Lerning/UDACITY-Project-03/c
dond-c3-projectstarter (main)
$ git push origin main
Enumerating objects: 15, done.
Counting objects: 100% (15/15), done.
Delta compression using up to 16 threads
Compressing objects: 100% (8/8), done.
Writing objects: 100% (8/8), 679 bytes | 679.00 KiB/s, done.
Total 8 (delta 6), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (6/6), completed with 6 local objects.
To https://github.com/phan-van-thuy/udacity-project-03.git
7a6e798..0dd9f1b  main -> main

Administrator@DESKTOP-2361KFI MINGW64 ~/Desktop/AWS-Lerning/UDACITY-Project-03/c
dond-c3-projectstarter (main)
```

All Pipelines

Everyone's Pipelines

All Projects

All Branches

All days

Auto-expand

Pipeline	Status	Workflow	Branch / Commit	Start	Duration	Actions
<div>udacity-project-03</div> <div>14</div>	<div>Success</div>	default	<div>main</div> <div>0dd9f1b fix test</div>	3m ago	1m 55s <div>130%</div>	<div></div> <div></div> <div></div> <div></div>
Jobs	<div>build-frontend</div> <div>test-frontend</div> <div>build-backend</div> <div>test-backend</div>	<div>29</div> <div>31</div> <div>30</div> <div>32</div>			<div>29s</div> <div>1m 21s</div> <div>33s</div> <div>1m 11s</div>	

Analyze Phase

[SCREENSHOT03]

udacity-project-03

Add team members

Edit Config

Trigger Pipeline

Project Settlin

Filters

Everyone's Pipelines

udacity-project-03

All Branches

All days

Auto-expand

Pipeline	Status	Workflow	Branch / Commit	Start	Duration	Actions
udacity-project-03	Failed	default	main 9954fe6 add scan	8m ago	1m 54s	
Jobs						
	✓ build-frontend	33			32s	
	! scan-frontend	35			29s	
	✓ test-frontend	36			1m 15s	
	✓ build-backend	34			33s	
	! scan-backend	38			29s	
	✓ test-backend	37			1m 0s	

Parallel runs

0 00:27

Use parallelism to run faster tests
Parallelism speeds up tests by splitting them across multiple executors.

Go to Docs

▶ ✓ Spin up environment	1s
▶ ✓ Preparing environment variables	0s
▶ ✓ Checkout code	0s
▶ ✓ Restoring cache	0s
▼ ! Run backend scan	26s

Parallel runs

0 00:28

Use parallelism to run faster tests
Parallelism speeds up tests by splitting them across multiple executors.

Go to Docs

▶ ✓ Spin up environment	1s
▶ ✓ Preparing environment variables	0s
▶ ✓ Checkout code	0s
▶ ✓ Restoring cache	0s
▼ ! Run frontend scan	26s

Analyze Phase

FIX

```
scan-frontend:
  docker:
    - image: circleci/node:13.8.0
  steps:
    - checkout
    - restore_cache:
        keys: [frontend-scan]
    - run:
        name: Run frontend scan
        command: |
          cd frontend
          npm install
          npm audit fix --audit-level=critical
          npm audit --audit-level=critical
scan-backend:
  docker:
    - image: circleci/node:13.8.0
  steps:
    - checkout
    - restore_cache:
        keys: [backend-scan]
    - run:
        name: Run backend scan
        command: |
          cd backend
          npm install
          npm audit fix --audit-level=critical
          npm audit --audit-level=critical
```

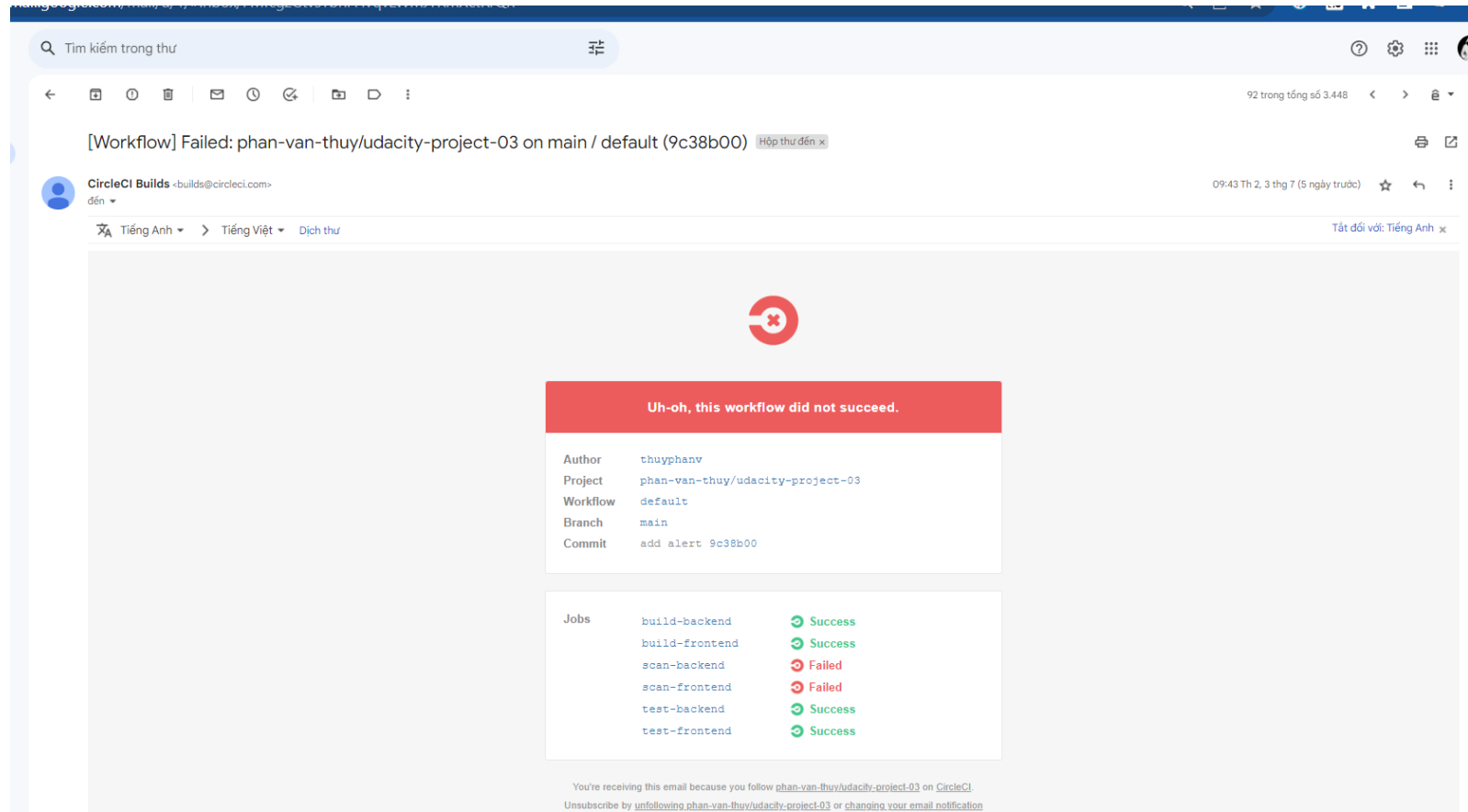
All Pipelines

Everyone's Pipelines ▾ All Projects ▾ All Branches ▾ All days ▾ Filter ▾ Auto-expand ☒

Pipeline	Status	Workflow	Branch / Commit	Start	Duration	Actions
udacity-project-03 25 ▾	Success	default	main 0a538f9 fix scan	8m ago	1m 56s ↓ 1%	🔄 🔄 🗑️ ⋮
Jobs						
	✓	build-frontend 93			38s	
	✓	scan-frontend 98			48s	
	✓	test-frontend 97			1m 13s	
	✓	build-backend 94			36s	
	✓	scan-backend 96			47s	
	✓	test-backend 95			1m 6s	

Alerts

SCREENSHOT04



Create the Infrastructure

Create Backend


[SCREENSHOT05]

▶  Preparing Environment Variables


0s ↗ ↓

▶  Checkout code

2s ↗ ↓

▶  yum -y install tar gzip

6s ↗ ↓

▼  Ensure backend infrastructure exist

0s ↗ ↓

```
#!/bin/bash -eo pipefail
aws cloudformation deploy \
  --template-file .circleci/files/backend.yml \
  --stack-name "udapeople-backend-${CIRCLE_WORKFLOW_ID:0:7}" \
  --parameter-overrides ID="${CIRCLE_WORKFLOW_ID:0:7}" \
  --tags project=udapeople
```

An error occurred (ValidationError) when calling the CreateChangeSet operation: Template format error: Unrecognized resource types: [AWS::EC2::SecurityGroupss]

Exited with code exit status 254

Configure Infrastructure

[URL01] <https://github.com/phan-van-thuy/udacity-project-03/blob/main/.circleci/config.yml>

The screenshot displays the CircleCI web interface for a user named 'phan-van-thuy'. The left sidebar contains navigation links: Dashboard, Projects, Insights, Self-Hosted Runners, Organization Settings, and Plan. Below these are Notifications, Status (OPERATIONAL), Docs, Orbs, and Support. The main content area shows a pipeline run for the workflow 'Run Playbook and Configure server' with a duration of 6m 37s. The run is successful, indicated by a green checkmark. The output log shows the following tasks and their results:

```
13 ok: [54.173.17.136]
14
15 TASK [configure-server : Import env] *****
16 changed: [54.173.17.136]
17
18 TASK [configure-server : upgrade packages] *****
19 changed: [54.173.17.136]
20
21 TASK [configure-server : Remove Old dependencies] *****
22 changed: [54.173.17.136]
23
24 TASK [configure-server : install dependencies] *****
25 changed: [54.173.17.136]
26
27 TASK [configure-server : Install pm2] *****
28 changed: [54.173.17.136]
29
30 TASK [configure-prometheus-node-exporter : install node exporter.] *****
31 changed: [54.173.17.136]
32
33 TASK [configure-prometheus-node-exporter : move binary to /usr/local/bin.] *****
34 changed: [54.173.17.136]
35
36 TASK [configure-prometheus-node-exporter : add node exporter configuration.] ***
37 changed: [54.173.17.136]
38
39 TASK [configure-prometheus-node-exporter : enable node_exporter service] *****
40 changed: [54.173.17.136]
41
42 PLAY RECAP *****
43 54.173.17.136 : ok=11 changed=9 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
44
45 CircleCI received exit code 0
```

Deploy Phase

• Database Migrations

```
run-migrations:
  docker:
    - image: circleci/node:13.8.0
  steps:
    - checkout
    - run:
        name: Run migrations
        command: |
          cd backend
          npm install
          npm run migrations > migrations_dump.txt
          cat migrations_dump.txt
    - run:
        name: Send migration status to kvdb.io
        command: |
          echo https://kvdb.io/9GE4jRtKznmVKRfvdBABBe/migration_${CIRCLE_WORKFLOW_ID:0:7}
          cd backend
          if grep -q "has been executed successfully." ~/project/backend/migrations_dump.txt
          then
            curl --insecure https://kvdb.io/9GE4jRtKznmVKRfvdBABBe/migration_${CIRCLE_WORKFLOW_ID:0:7} -d '1'
          fi
# Rollback if fail
- destroy-environment
- revert-migrations
```

app.circleci.com/pipelines/github/phan-van-thuy/udacity-project-03/161/workflows/b8eb8df9-72f8-4838-bc86-61be3c185e9a/jobs/1229

phan-van-thuy
phan-van-thuy

Dashboard

- Projects
- Insights
- Self-Hosted Runners
- Organization Settings
- Plan

Notifications

Status **OPERATIONAL**

Docs

Orbs

Support

STEPS TESTS TIMING ARTIFACTS RESOURCES

⚠ You're using a deprecated Docker convenience image. Upgrade to a next-gen Docker convenience image.

STEPS	TESTS	TIMING	ARTIFACTS	RESOURCES
▶ ✓ Spin up environment		1s	📄	📄
▶ ✓ Preparing environment variables		0s	📄	📄
▶ ✓ Checkout code		0s	📄	📄
▶ ✓ Run migrations		32s	📄	📄
▼ ✓ Send migration status to kvdb.io		0s	📄	📄

```
1 #!/bin/bash -eo pipefail
2 echo https://kvdb.io/9GE4jRtKznmVKRfvdBABBe/migration_${CIRCLE_WORKFLOW_ID:0:7}
3 cd backend
4 if grep -q "has been executed successfully." ~/project/backend/migrations_dump.txt
5 then
6     curl --insecure https://kvdb.io/9GE4jRtKznmVKRfvdBABBe/migration_${CIRCLE_WORKFLOW_ID:0:7} -d '1'
7 fi
8
9 https://kvdb.io/9GE4jRtKznmVKRfvdBABBe/migration_b8eb8df
10 CircleCI received exit code 0
```

Deploy Frontend

- [URL02]

The screenshot shows the AWS S3 console interface. The top navigation bar includes the AWS logo, a search bar, and a user profile. The left sidebar contains navigation links for Amazon S3, Buckets, Access Points, Object Lambda Access Points, Multi-Region Access Points, Batch Operations, IAM Access Analyzer for S3, Storage Lens, Dashboards, AWS Organizations settings, Feature spotlight, and AWS Marketplace for S3.

The main content area displays the 'Amazon S3' dashboard. It includes an 'Account snapshot' section with a 'View Storage Lens dashboard' button. Below this is a table showing account metrics:

Total storage	Object count	Average object size
11.6 MB	8	1.5 MB

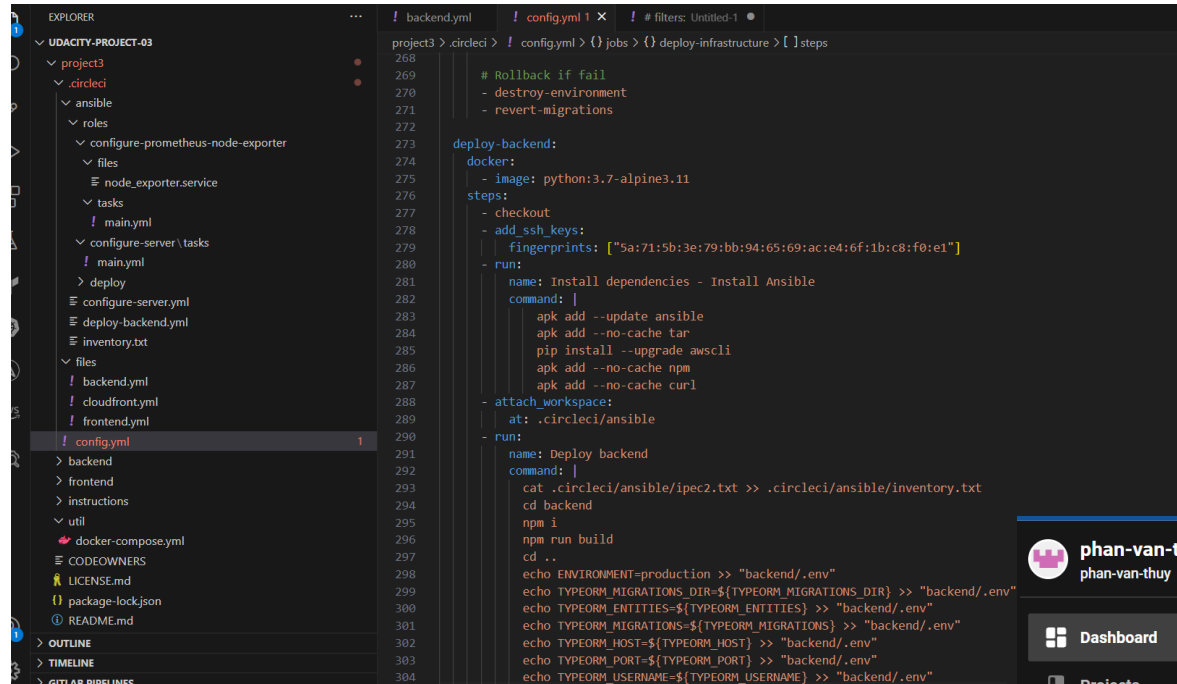
Below the metrics table is a 'Buckets (1)' section with a 'Create bucket' button. It includes a search bar and a table of buckets:

Name	AWS Region	Access	Creation date
udapeople-b8eb8df	US East (N. Virginia) us-east-1	Public	July 9, 2023, 18:02:45 (UTC+07:00)

The bottom screenshot shows the 'udapeople-b8eb8df' bucket details page. It includes a 'Publicly accessible' badge and tabs for Objects, Properties, Permissions, Metrics, Management, and Access Points. The 'Objects' tab is active, showing a list of 8 objects:

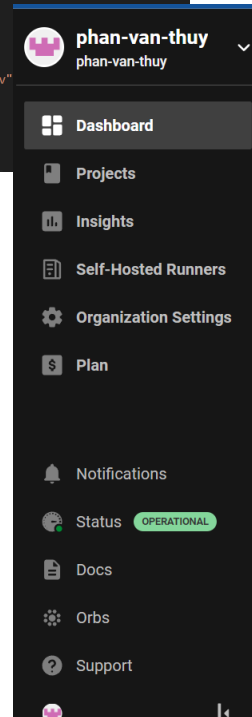
Name	Type	Last modified	Size	Storage class
1ceff9123b66b50a7d3cb5b221160855.eot	eot	July 9, 2023, 18:11:36 (UTC+07:00)	65.5 KB	Standard
224b6d9d16679dab02826a2a7ea705eb.ttf	tff	July 9, 2023, 18:11:36 (UTC+07:00)	65.4 KB	Standard
2fa692cd55bfc83c228c0ab271e4388c.woff	woff	July 9, 2023, 18:11:36 (UTC+07:00)	65.5 KB	Standard
6fba29d438ed8a3922b8.js	js	July 9, 2023, 18:11:36 (UTC+07:00)	1.4 MB	Standard
7d234e755f56c47d2c5a1c...	ic	July 9, 2023, 18:11:36 (UTC+07:00)	0.8 MB	Standard

Deploy Backend

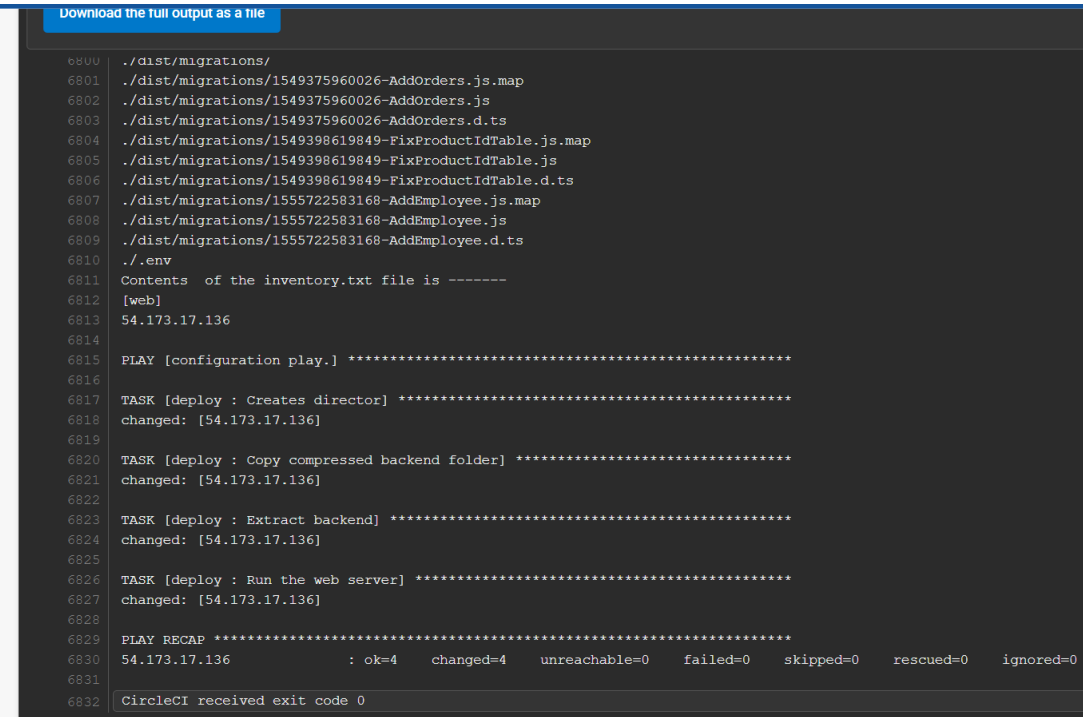


The image shows a VS Code interface with the Explorer sidebar on the left and a terminal window on the right. The Explorer sidebar shows a project structure for 'UDACITY-PROJECT-03' with folders for 'project3', 'circleci', 'ansible', 'roles', 'tasks', 'files', 'cloudfront.yml', 'frontend.yml', 'config.yml', 'backend', 'frontend', 'instructions', 'util', 'docker-compose.yml', 'CODEOWNERS', 'LICENSE.md', 'package-lock.json', and 'README.md'. The terminal window shows the contents of 'config.yml' and 'backend.yml'.

```
project3 > .circleci > ! config.yml { } jobs > { } deploy-infrastructure > [ ] steps
268
269 # Rollback if fail
270 - destroy-environment
271 - revert-migrations
272
273 deploy-backend:
274 docker:
275   - image: python:3.7-alpine3.11
276 steps:
277   - checkout
278   - add_ssh_keys:
279     | fingerprints: ["5a:71:9b:3e:79:bb:94:65:69:ac:e4:6f:1b:c8:f0:e1"]
280   - run:
281     name: Install dependencies - Install Ansible
282     command: |
283       apk add --update ansible
284       apk add --no-cache tar
285       pip install --upgrade awscli
286       apk add --no-cache npm
287       apk add --no-cache curl
288   - attach_workspace:
289     at: .circleci/ansible
290   - run:
291     name: Deploy backend
292     command: |
293       cat .circleci/ansible/ipec2.txt >> .circleci/ansible/inventory.txt
294       cd backend
295       npm i
296       npm run build
297       cd ..
298       echo ENVIRONMENT=production >> "backend/.env"
299       echo TYPEORM_MIGRATIONS_DIR=${TYPEORM_MIGRATIONS_DIR} >> "backend/.env"
300       echo TYPEORM_ENTITIES=${TYPEORM_ENTITIES} >> "backend/.env"
301       echo TYPEORM_MIGRATIONS=${TYPEORM_MIGRATIONS} >> "backend/.env"
302       echo TYPEORM_HOST=${TYPEORM_HOST} >> "backend/.env"
303       echo TYPEORM_PORT=${TYPEORM_PORT} >> "backend/.env"
304       echo TYPEORM_USERNAME=${TYPEORM_USERNAME} >> "backend/.env"
```



The image shows the GitHub Actions dashboard sidebar. It includes a user profile for 'phan-van-thuy', a navigation menu with 'Dashboard', 'Projects', 'Insights', 'Self-Hosted Runners', 'Organization Settings', and 'Plan', and a 'Notifications' section. The 'Status' is shown as 'OPERATIONAL'.



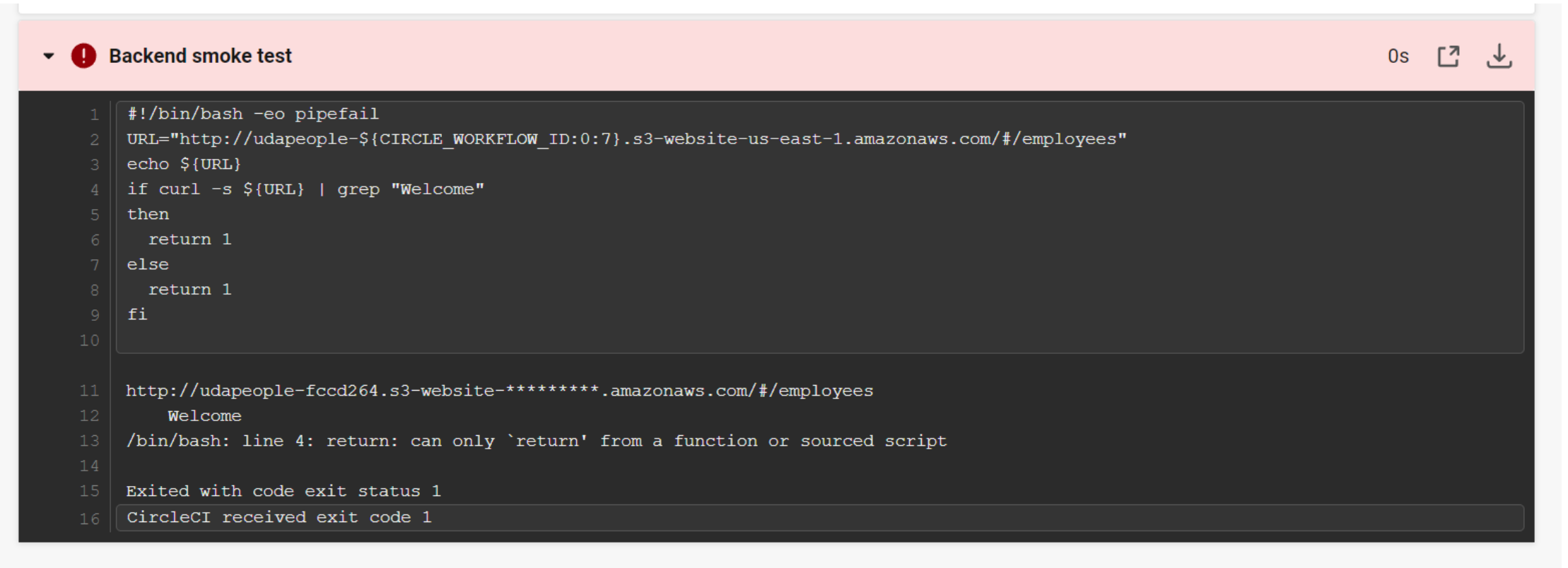
The image shows the GitHub Actions workflow output. It includes a 'Download the full output as a file' button and a list of migration files. The output shows the execution of the 'deploy' job, including the creation of the 'director' directory, copying the backend folder, and running the web server. The final status is 'CircleCI received exit code 0'.

```
6800 ./dist/migrations/
6801 ./dist/migrations/1549375960026-AddOrders.js.map
6802 ./dist/migrations/1549375960026-AddOrders.js
6803 ./dist/migrations/1549375960026-AddOrders.d.ts
6804 ./dist/migrations/1549398619849-FixProductIdTable.js.map
6805 ./dist/migrations/1549398619849-FixProductIdTable.js
6806 ./dist/migrations/1549398619849-FixProductIdTable.d.ts
6807 ./dist/migrations/1555722583168-AddEmployee.js.map
6808 ./dist/migrations/1555722583168-AddEmployee.js
6809 ./dist/migrations/1555722583168-AddEmployee.d.ts
6810 ./env
6811 Contents of the inventory.txt file is -----
6812 [web]
6813 54.173.17.136
6814
6815 PLAY [configuration play.] *****
6816
6817 TASK [deploy : Creates director] *****
6818 changed: [54.173.17.136]
6819
6820 TASK [deploy : Copy compressed backend folder] *****
6821 changed: [54.173.17.136]
6822
6823 TASK [deploy : Extract backend] *****
6824 changed: [54.173.17.136]
6825
6826 TASK [deploy : Run the web server] *****
6827 changed: [54.173.17.136]
6828
6829 PLAY RECAP *****
6830 54.173.17.136 : ok=4 changed=4 unreachable=0 failed=0 skipped=0 rescued=0 ignored=0
6831
6832 CircleCI received exit code 0
```

smoke-test

- Alerts

[SCREENSHOT06]



The screenshot shows a CircleCI job interface for a job named "Backend smoke test". The job status is failed, indicated by a red exclamation mark icon. The output of the job is displayed in a dark-themed terminal window. The script being executed is a bash script that sets a URL, echoes it, and attempts to curl the URL, checking for "Welcome". The script fails with an error message: "/bin/bash: line 4: return: can only `return' from a function or sourced script". The job exits with a status of 1, and a message indicates that CircleCI received this exit code.

```
1  #!/bin/bash -eo pipefail
2  URL="http://udapeople-${CIRCLE_WORKFLOW_ID:0:7}.s3-website-us-east-1.amazonaws.com/#/employees"
3  echo ${URL}
4  if curl -s ${URL} | grep "Welcome"
5  then
6      return 1
7  else
8      return 1
9  fi
10
11  http://udapeople-fccd264.s3-website-*****.amazonaws.com/#/employees
12  Welcome
13  /bin/bash: line 4: return: can only `return' from a function or sourced script
14
15  Exited with code exit status 1
16  CircleCI received exit code 1
```

smoke-test

Fix smoke test

Frontend

```
▼  Frontend smoke test. 0s  
```

```
1  #!/bin/bash -eo pipefail
2  export BACKEND_IP=$(aws ec2 describe-instances --query 'Reservations[*].Instances[*].PublicIpAddress' --filters "Name=tag:project,Value=smoke-test")
3  export API_URL="http://${BACKEND_IP}:3030"
4  echo "${API_URL}"
5  if curl "${API_URL}/api/status" | grep "ok"
6  then
7      echo "-----Frontend test passed-----"
8      exit 0
9  else
10     echo "-----Frontend test failed-----"
11     exit 1
12 fi
13
```

```
14 http://44.202.130.28:3030
15 % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
16          Dload  Upload  Total   Spent    Left   Speed
17 100    55    100    55    0    0    3414    0 --:--:-- --:--:-- --:--:-- 3437
18 {"status":"ok","version":"1.0.0","environment":"local"}
19 -----Frontend test passed-----
20 CircleCI received exit code 0
```

Backend

```
▼  Backend smoke test
```

```
1  #!/bin/bash -eo pipefail
2  URL="http://udapeople-${CIRCLE_WORKFLOW_ID:0:7}.s3-website-us-east-1.amazonaws.com/#/employees"
3  echo ${URL}
4  if curl -s ${URL} | grep "Welcome"
5  then
6      echo "-----Backend test passed-----"
7  else
8      echo "-----Backend test failed-----"
9  fi
10
```

```
11 http://udapeople-ee0a448.s3-website-*****.amazonaws.com/#/employees
12 Welcome
13 -----Backend test passed-----
14 CircleCI received exit code 0
```


Rollback Phase

- [SCREENSHOT07]

app.circleci.com/pipelines/github/phan-van-thuy/udacity-project-03/155/workflows/477accbd-b08f-48a9-abcd-c2cc626b8760/jobs/1129

phan-van-thuy

Dashboard

Projects

Insights

Self-Hosted Runners

Organization Settings

Plan

Notifications

Status OPERATIONAL

Docs

Orbs

Support

Install dependencies - Install Ansible 6s

Attaching workspace 0s

Frontend smoke test. 0s

```
#!/bin/bash -eo pipefail
export BACKEND_IP=$(aws ec2 describe-instances --query 'Reservations[*].Instances[*].PublicIpAddress' --filters "Name=tag:project,Values=udapeople" --output text)
export API_URL="http://${BACKEND_IP}:3030"
echo "${API_URL}"
if curl "${API_URL}/api/status" | grep "ok"
then
  return 1
else
  return 1
fi

http://54.163.48.127:3030
  % Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
                                 Dload  Upload  Total  Spent    Left  Speed
100    55    100    55    0    0   3017      0  --:--:-- --:--:-- --:--:--   3055
{"status":"ok","version":"1.0.0","environment":"local"}
/bin/bash: line 5: return: can only 'return' from a function or sourced script

Exited with code exit status 1
CircleCI received exit code 1
```

Revert migrations 0s

Destroy environment 2s

```
#!/bin/bash -eo pipefail
echo "Distroy environment: ${CIRCLE_WORKFLOW_ID:0:7} "
aws s3 rm "s3://udapeople-${CIRCLE_WORKFLOW_ID:0:7}" --recursive
aws cloudformation delete-stack --stack-name udapeople-backend-${CIRCLE_WORKFLOW_ID:0:7}
aws cloudformation delete-stack --stack-name udapeople-frontend-${CIRCLE_WORKFLOW_ID:0:7}

Distroy environment: 477accb
delete: s3://udapeople-477accb/1ceff9123b66b50a7d3cb5b221160855.eot
delete: s3://udapeople-477accb/index.html
delete: s3://udapeople-477accb/2fa692cd55bfc83c228c0ab271e4388c.woff
delete: s3://udapeople-477accb/bundle.js
delete: s3://udapeople-477accb/224b6d9d16679dab02826a2a7ea705eb.ttf
delete: s3://udapeople-477accb/images/6ab15f4239b7d187935cf6f4ec3313bf-kiwi.svg
delete: s3://udapeople-477accb/7d234c755f55c47d2c5a.js
delete: s3://udapeople-477accb/1ec36026efc604ac6f64.js

CircleCI received exit code 0
```

Promotion Phase

[SCREENSHOT08]

The screenshot displays the CircleCI interface for a user named 'phan-van-thuy'. The left sidebar contains navigation links: Dashboard, Projects, Insights, Self-Hosted Runners, Organization Settings, Plan, Getting Started, Notifications, Status (OPERATIONAL), Docs, Orbs, and Support. The main area shows a list of workflow steps, all of which are completed with green checkmarks:

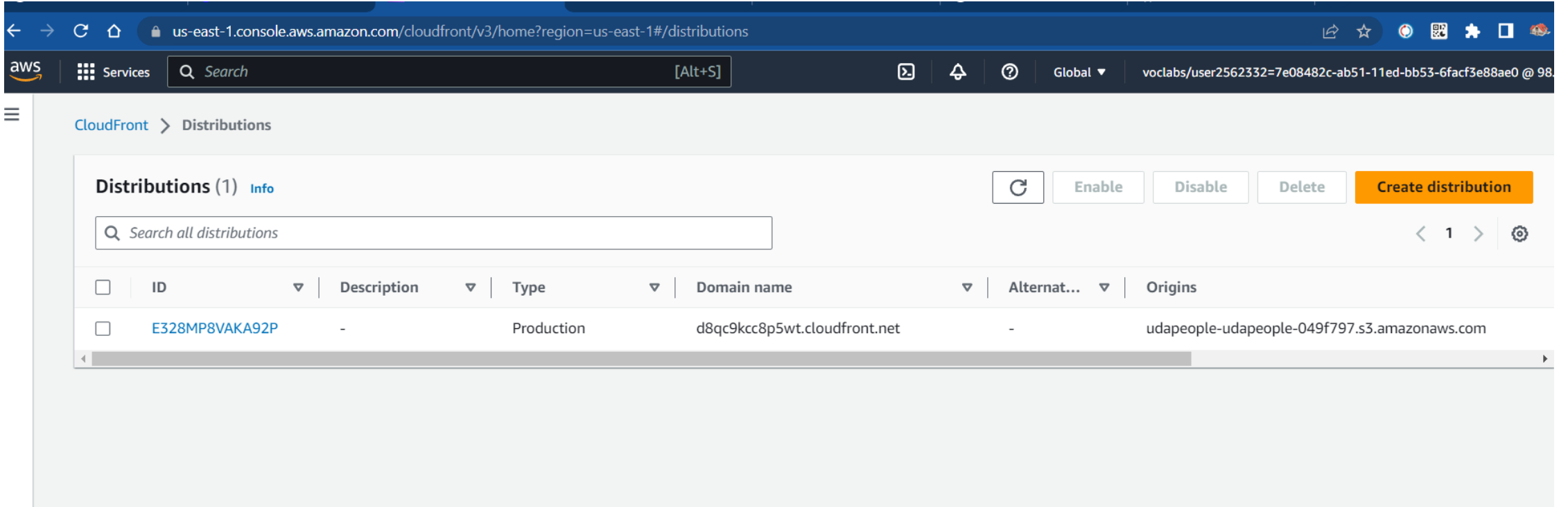
- Preparing environment variables
- Checkout code
- Install dependencies
- Update cloudfront distribution

The 'Update cloudfront distribution' step is expanded, showing a terminal output with the following commands and results:

```
1 #!/bin/bash -eo pipefail
2 export OldWorkflowID=$(aws cloudformation list-exports \
3 --query "Exports[?Name=='WorkflowID'].Value" \
4 --no-paginate --output text)
5 echo $OldWorkflowID >> ~/OldWorkflowID.txt
6 cat ~/OldWorkflowID.txt
7 aws cloudformation deploy \
8 --template-file .circleci/files/cloudfront.yml \
9 --stack-name "InitialStack-{$OldWorkflowID}" \
10 --parameter-overrides WorkflowID="udapeople-{$CIRCLE_WORKFLOW_ID:0:7}" --tags project=udapeople
11 echo OldWorkflowID: "{$OldWorkflowID}"
12 echo current Workflow Id: "{$CIRCLE_WORKFLOW_ID:0:7}"
13
14
15
16 Waiting for changeset to be created..
17 Waiting for stack create/update to complete
18 Successfully created/updated stack - InitialStack-
19 OldWorkflowID:
20 current Workflow Id: 049f797
21 CircleCI received exit code 0
```

Promotion Phase

[URL03_SCREENSHOT]

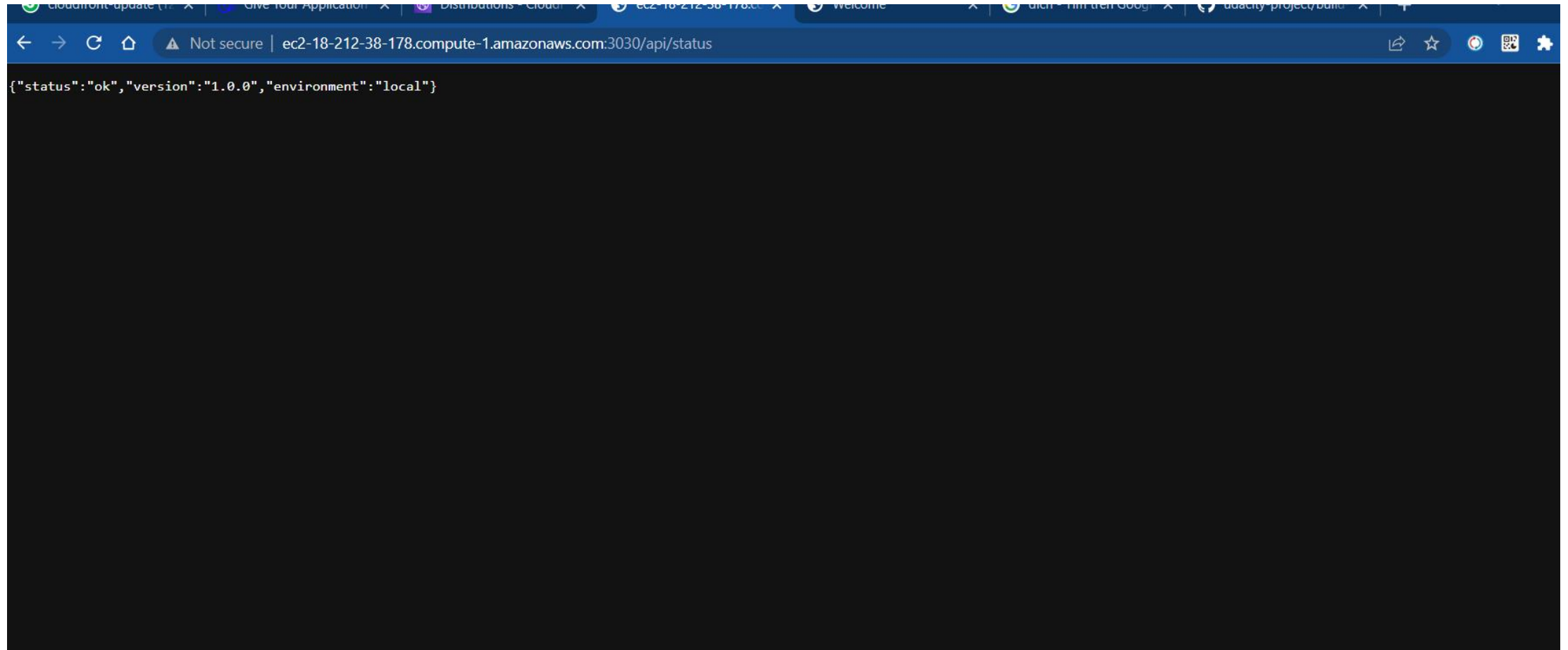


The screenshot shows the AWS CloudFront console interface. The browser address bar indicates the URL: `us-east-1.console.aws.amazon.com/cloudfront/v3/home?region=us-east-1#/distributions`. The AWS Services navigation bar is visible at the top. The main content area is titled "Distributions (1)" and includes a search bar labeled "Search all distributions". To the right of the search bar are buttons for "Refresh", "Enable", "Disable", "Delete", and a prominent orange "Create distribution" button. Below these elements is a table with one distribution listed. The table columns are: ID, Description, Type, Domain name, Alternat..., and Origins. The single entry has the ID `E328MP8VAKA92P`, a description of "-", a type of "Production", a domain name of `d8qc9kcc8p5wt.cloudfront.net`, and an origin of `udapeople-udapeople-049f797.s3.amazonaws.com`.

ID	Description	Type	Domain name	Alternat...	Origins
E328MP8VAKA92P	-	Production	d8qc9kcc8p5wt.cloudfront.net	-	udapeople-udapeople-049f797.s3.amazonaws.com

Promotion Phase

[URL04_SCREENSHOT]



Cleanup Phase

[SCREENSHOT09]

The screenshot displays a CircleCI pipeline job interface. The left sidebar shows the user profile 'phan-van-thuy' and navigation links: Dashboard, Projects, Insights, Self-Hosted Runners, Organization Settings, Plan, Getting Started, Notifications, Status (OPERATIONAL), Docs, Orbs, and Support. The main area shows the pipeline steps for 'github/phan-van-thuy/udacity-project-03/161/workflows/049f797a-66e9-4809-9dec-cf4182a40307/jobs/1206'. The steps are: 'Spin up environment' (0s), 'Preparing environment variables' (0s), 'Checkout code' (0s), and 'Get old stack workflow id' (1s). The 'Get old stack workflow id' step is expanded, showing a bash script that uses AWS CLI to list exports and stacks, and delete stacks if they match the old workflow ID. The script output shows the old workflow ID as 'udapeople-049f797' and the stack names as 'InitialStack- udapeople-frontend-049f797' and 'udapeople-backend-049f797'. The job status is 'CircleCI received exit code 0'.

app.circeci.com/pipelines/github/phan-van-thuy/udacity-project-03/161/workflows/049f797a-66e9-4809-9dec-cf4182a40307/jobs/1206

phan-van-thuy
phan-van-thuy

Dashboard
Projects
Insights
Self-Hosted Runners
Organization Settings
Plan
Getting Started
Notifications
Status OPERATIONAL
Docs
Orbs
Support

Spin up environment

Preparing environment variables 0s

Checkout code 0s

Get old stack workflow id 1s

```
1 #!/bin/bash -eo pipefail
2 export OldWorkflowID=$(aws cloudformation list-exports --query "Exports[?Name=='WorkflowID'].Value" --no-paginate --output text)
3 echo OldWorkflowID: "${OldWorkflowID}"
4 echo CIRCLE_WORKFLOW_ID "${CIRCLE_WORKFLOW_ID:0:7}"
5 export STACKS=$(aws cloudformation list-stacks \
6   --query "StackSummaries[*].StackName" \
7   --stack-status-filter CREATE_COMPLETE --no-paginate --output text))
8 echo Stack names: "${STACKS[@]}"
9 if [[ "${STACKS[@]}" =~ "${OldWorkflowID}" ]]
10 then
11   echo "-----your stack to delete-----"
12   aws s3 rm "s3://udapeople-${OldWorkflowID}" --recursive
13   aws cloudformation delete-stack --stack-name "udapeople-backend-${OldWorkflowID}"
14   aws cloudformation delete-stack --stack-name "udapeople-frontend-${OldWorkflowID}"
15 else
16   echo "-----not found stack delete-----"
17 fi
18
19 OldWorkflowID: udapeople-049f797
20 CIRCLE_WORKFLOW_ID 049f797
21 Stack names: InitialStack- udapeople-frontend-049f797 udapeople-backend-049f797
22 -----not found stack delete-----
23 CircleCI received exit code 0
```

Other Considerations

- **[SCREENSHOT10]**

The screenshot displays the GitHub Actions interface for a workflow named 'default'. The workflow is in a 'Success' state, indicated by a green checkmark and the word 'Success' in a green box. The workflow is triggered by a 'commit revert' on the 'main' branch, with commit hash '247608d'. The workflow consists of two main jobs: 'build-frontend' (29s) and 'build-backend' (36s). Each build job is followed by a 'scan' job and a 'test' job. The 'build-frontend' job is connected to 'scan-frontend' (59s) and 'test-frontend' (1m 19s). The 'build-backend' job is connected to 'scan-backend' (1m 20s) and 'test-backend' (1m 9s). All jobs are marked as successful with green checkmarks.

Workflow Details:

- Workflow:** default (Success)
- Duration / Finished:** 2m 4s / 7h ago
- Branch:** main
- Commit:** 247608d
- Author & Message:** commit revert

Jobs:

Job Name	Duration	Status
build-frontend	29s	Success
scan-frontend	59s	Success
test-frontend	1m 19s	Success
build-backend	36s	Success
scan-backend	1m 20s	Success
test-backend	1m 9s	Success

Run the application

→ ↺ 🏠

⚠ Not secure | udapeople-049f797.s3-website-us-east-1.amazonaws.com/#/employees

🔖 ☆ 🔍 ⚙ 🗖 🏠 🧑

ACKLENA

👤 Employees

☰ View & Manage

⊕ Add New

🔍 Search in the app

Employees / View & Manage

View & Manage Employees

⊕ Add New Employee

Active Archived

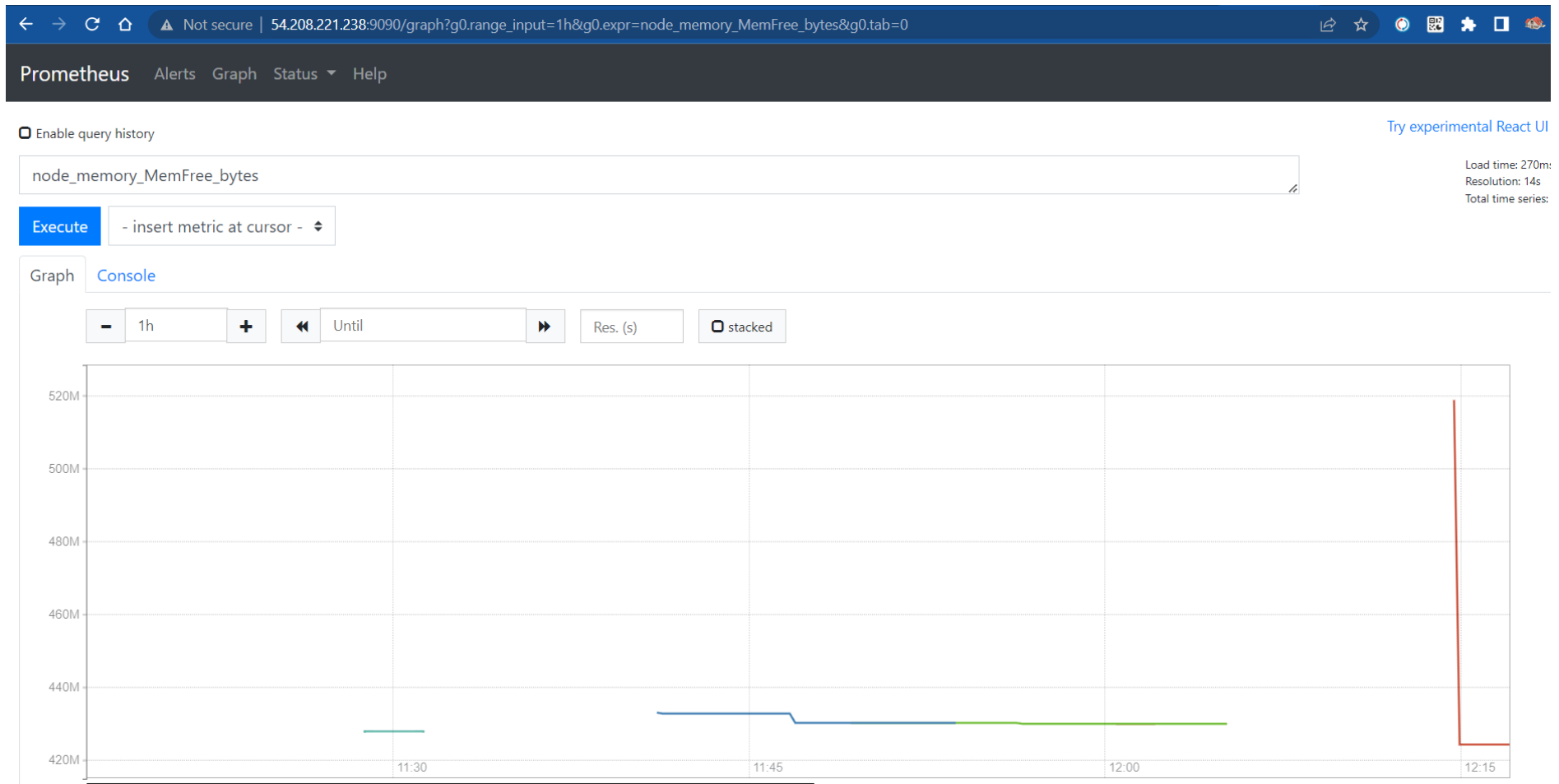
Type to filter... 🔍

	Display Name	Last Name	▲ Email	Tags	Birthdate	Start Date	Action
🟢	Thuy	Thuy	thuyphanv@gmail.com		7/7/2023	7/7/2023	⋮
🟡	thuy2	thuy2	thuyphanv2@gmail.com		7/7/2023	7/7/2023	⋮
🟢	thuy3	thuy3	thuyphanv3@gmail.com		7/7/2023	7/7/2023	⋮

Setup Back-End Monitoring

- Setup Back-End Monitoring

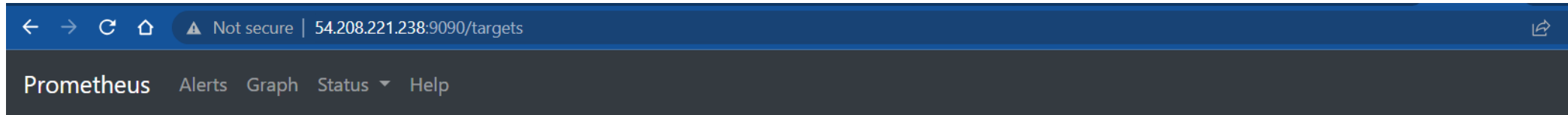
[SCREENSHOT11]



Setup Back-End Monitoring

- **[URL05_SCREENSHOT]**

http://54.208.221.238:9090/targets



Targets

All Unhealthy

Node_Exporter (1/1 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://54.166.1.177:9100/metrics	UP	instance="54.166.1.177:9100" job="Node_Exporter"	342ms ago	12.64ms	

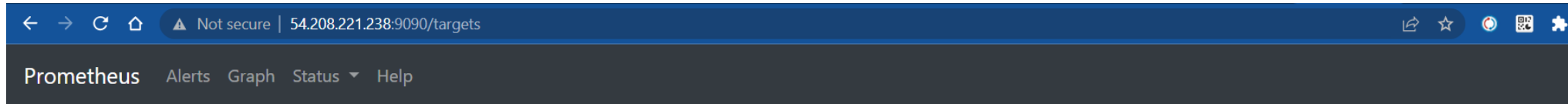
prometheus (1/1 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://localhost:9090/metrics	UP	instance="localhost:9090" job="prometheus"	1.05s ago	5.912ms	

Setup Back-End Monitoring

- Setup Back-End Monitoring

[URL05_SCREENSHOT]



Targets

All Unhealthy

Node_Exporter (1/1 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://54.166.1.177:9100/metrics	UP	instance="54.166.1.177:9100" job="Node_Exporter"	8.233s ago	13.45ms	

prometheus (1/1 up) [show less](#)

Endpoint	State	Labels	Last Scrape	Scrape Duration	Error
http://localhost:9090/metrics	UP	instance="localhost:9090" job="prometheus"	8.94s ago	5.882ms	

Setup Alerts

• [SCREENSHOT12]

