

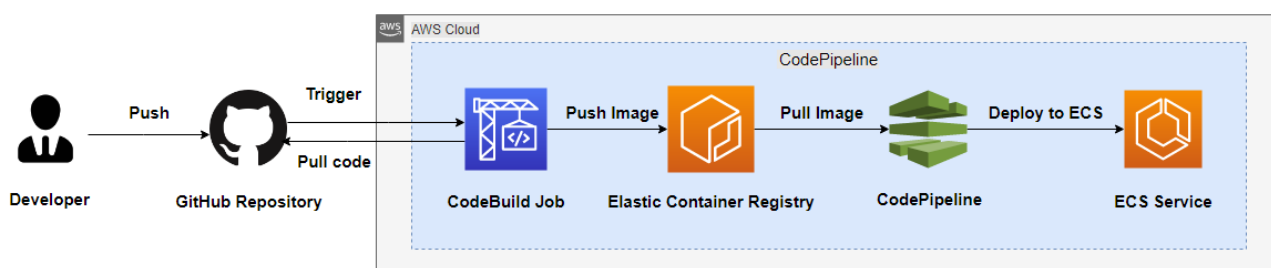
AWS

文档说明

1.设计文档，包含框架设计图、执行与部署步骤以及说明

1.1框架设计图

1.1.1 CICD流程

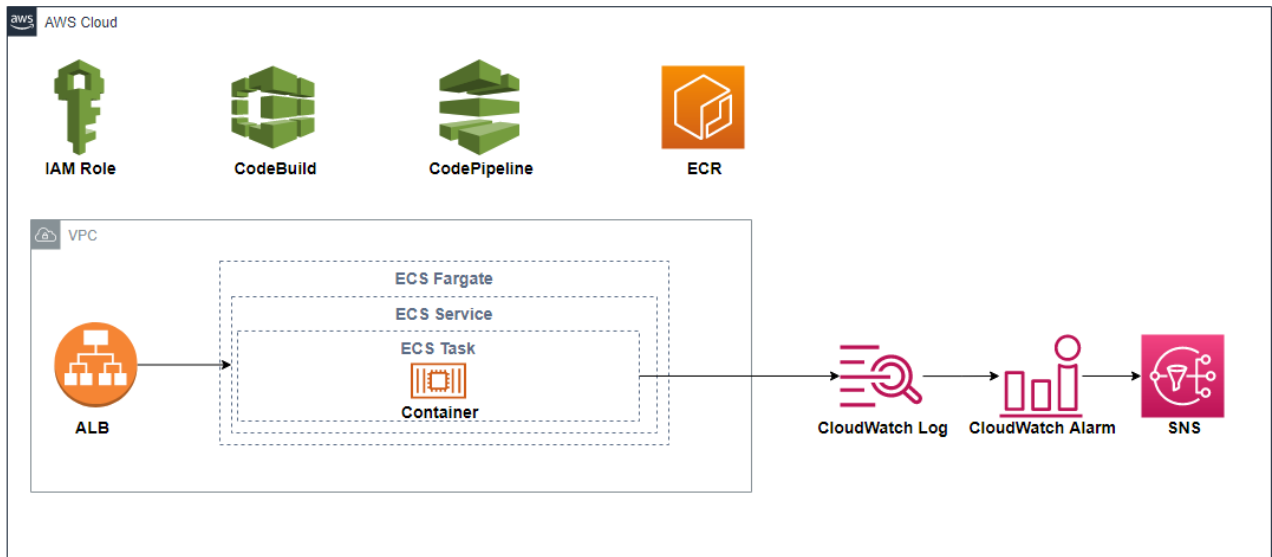


过程：

- 开发Push代码到GitHub代码仓
- Github通过webhook触发AWS CodeBuild开始镜像构建
- CodeBuild从Github拉取代码，构建镜像，最后将镜像推送到ECR Repository
- Codepipeline从ECR拉取镜像
- Codepipeline将镜像部署到ECS相应的Service中

1.1.2 AWS基础设施

CDK创建的AWS基础设施如下：



1.2 部署步骤

1.2.1 Fork Git代码

将作业上传的代码fork到自己的github账号

1.2.2 准备CDK环境

```
1 git clone [fork的仓库地址]
2 cd devops
3 source .venv/bin/activate
4 python -m pip install -r requirements.txt
```

1.2.3 根据实际情况修改devops目录下的devops_stack.py文件

```
1 #下面变量根据测试者情况修改
2
3 #fork后的用户profile ID
4 github_owner="wyifei"
5
6 #github repository名
7 github_repository="Simplest-Spring-Boot-Hello-World"
8
9 #github access token,token需要有[admin:repo_hook]权限
10 github_token="***"
11
```

```
12 #aws account ID
13 aws_account="258076216385"
14
15 #SNS发送警报邮件的地址
16 mail="test@163.com"
```

1.2.4 授权Codebuild访问Github

```
aws codebuild import-source-credentials --server-type GITHUB --auth-type
PERSONAL_ACCESS_TOKEN --token <GITHUB-TOKEN>
```

1.2.5 创建AWS基础设施

```
cdk synth
```

```
cdk deploy
```



首次运行CDK，由于ECR还没有生成镜像，在创建Service时会等待较长时间。可以在AWS Console手动运行一次CodeBuild生成镜像，缩短Service创建等待时间。

1.3 CICD Demo

CICD基本流程：

Code Source→Code Build→Manually Approve→Code Deploy

1.3.1 Git Clone fork后的代码

```
git clone <repository url>
```

1.3.2 修改buildspec.yml

将REPOSITORY_URI修改为AWS ECR中Repository的地址

1.3.2 提交修改后的代码，触发CICD流程

```
1 git add .
2 git commit -m <comment>
3 git push
```

1.3.3 CICD过程截图

Developer Tools > CodePipeline > Pipelines > DevopsStack-MyFirstPipeline9D7B1BB0-RGCEVN4MKQ9M

DevopsStack-MyFirstPipeline9D7B1BB0-RGCEVN4MKQ9M

Notify Edit Stop execution Clone pipeline Release change

Source Succeeded
Pipeline execution ID: 1b310b66-e0c4-41fa-82ad-3abb73418fa3

GitHub_Source
GitHub (Version 1)
Succeeded - Just now
72858c85

72858c85 GitHub_Source: yes

Disable transition

CodeBuild In progress
Pipeline execution ID: 1b310b66-e0c4-41fa-82ad-3abb73418fa3

CodeBuild
AWS CodeBuild
In progress - Just now
Details

72858c85 GitHub_Source: yes

Codepipeline被trigger自动运行

Developer Tools > CodeBuild > Build projects > devops9F509F04-MTsT9nmY2Xrn > devops9F509F04-MTsT9nmY2Xrn:5bec5798-8aa7-4322-b024-ba8dbcc24bf3

devops9F509F04-MTsT9nmY2Xrn:5bec5798-8aa7-4322-b024-ba8dbcc24bf3

Stop build Retry build

Build status

Status	Initiator	Build ARN	Resolved source version
Succeeded	codepipeline/devops	arn:aws:codebuild:us-east-1:749211935990:build/devops9F509F04-MTsT9nmY2Xrn:5bec5798-8aa7-4322-b024-ba8dbcc24bf3	fe2af732f11c7152c3a03221d257e5d3608e2297
Start time	End time	Build number	
Jun 5, 2021 11:26 PM (UTC+8:00)	Jun 5, 2021 11:27 PM (UTC+8:00)	5	

Code Build创建镜像

ECR > Repositories > devops

devops

Images (5)

<input type="checkbox"/>	Image tag	Pushed at	Size (MB)	Image URI	Digest
<input type="checkbox"/>	latest	2021年6月05日 下午11:33:47	93.25	Copy URI	sha256:1fc0ba0b0b1e40bf395032ecf4c1d2...
<input type="checkbox"/>	<untagged>	2021年6月05日 下午11:27:41	93.25	Copy URI	sha256:f54a30fd152895dbc9a393b153c8dd...
<input type="checkbox"/>	<untagged>	2021年6月05日 下午11:11:36	93.25	Copy URI	sha256:1a26f1de27802b3a57f273aa3f4b90...
<input type="checkbox"/>	<untagged>	2021年6月05日 下午11:01:23	93.25	Copy URI	sha256:fc212c8b204130e057c45f5b1d33ea...
<input type="checkbox"/>	<untagged>	2021年6月05日 下午10:16:32	93.25	Copy URI	sha256:9ea73b28e8c080262a37040d9ba26...

Code Build推送Docker镜像到ECR

本次CICD Demo中唯一需要手动干预的环节：在Code Build后定义了手动审批环节（可以在CDK代码中取消这个环节），审批同意后触发Code Deploy

Approve Pending

Pipeline execution ID: **1b310b66-e0c4-41fa-82ad-3abb73418fa3**

Approve

Manual approval

Waiting for approval -

Review

72858c85 GitHub_Source: yes

Review

×

Comments about this action

-


URL for review

-

Comments - optional

☐

Preview markdown

[Learn more](#) 

Cancel

Reject

Approve

最终运行结果

Developer Tools > CodePipeline > Pipelines > DevopsStack-MyFirstPipeline9D7B1BB0-RGCEVN4MKQ9M

DevopsStack-MyFirstPipeline9D7B1BB0-RGCEVN4MKQ9M

Source Succeeded
Pipeline execution ID: 8458a298-de72-434f-b75c-6742a4df7e0c

GitHub_Source
GitHub (Version 1)

Succeeded - 33 minutes ago
c7f6dc7

c7f6dc7 GitHub_Source: yes

Disable transition

CodeBuild Succeeded
Pipeline execution ID: 8458a298-de72-434f-b75c-6742a4df7e0c

CodeBuild
AWS CodeBuild

Succeeded - 32 minutes ago
Details

c7f6dc7 GitHub_Source: yes

Disable transition

Approve Succeeded
Pipeline execution ID: 8458a298-de72-434f-b75c-6742a4df7e0c

Approve
Manual approval

Approved - 12 minutes ago
Details

c7f6dc7 GitHub_Source: yes

Disable transition

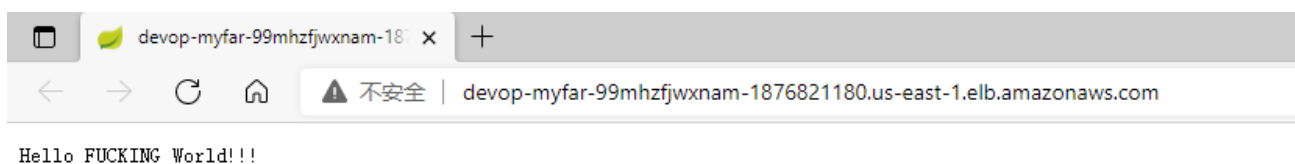
Deploy Succeeded
Pipeline execution ID: 8458a298-de72-434f-b75c-6742a4df7e0c

DeployAction
Amazon ECS

Succeeded - 5 minutes ago
Details

c7f6dc7 GitHub_Source: yes

访问ALB :



2.Dockerfile


```
2 # Build stage.
3 #
4 FROM maven:3.6.0-jdk-11-slim AS build
5 COPY src /home/app/src
6 COPY pom.xml /home/app
7 RUN mvn -f /home/app/pom.xml clean package
8
9 #
10 # Package stage
11 #
12 FROM openjdk:11-jre-slim
13 VOLUME /tmp
14 COPY --from=build /home/app/target/example.smallest-0.0.1-SNAPSHOT.war /tm
15 EXPOSE 8080
16 ENTRYPOINT ["java","-Djava.security.egd=file:/dev/./urandom","-jar","/tmp/
```

3.CI/CD的代码或配置

3.1CI

CI部分实际由AWS CodeBuild负责，AWS CodeBuild的创建和配置由AWS CDK完成

3.2CD

CD部分实际由AWS Codepipeline负责，AWS Codepipeline的创建和配置由AWS CDK完成

4. 其他用到的代码和配置文件

4.1 Git hook

- 在.git/hooks下创建pre-push文件，添加执行权限
- pre-push文件内容如下：

```
1 #!/bin/bash
```

```
2
3 protected_branch='master'
4
5 if read local_ref local_sha remote_ref remote_sha; then
6     if [[ "$remote_ref" == *"$protected_branch"* ]]; then
7         echo "You're pushing code to master branch and unit test has been
8         mvn test &> ~/unit_test_log.txt
9         if [[ $? != 0 ]] ; then
10             echo "There is some failed test, pls check the file in ~/unit_te
11             mvn clean
12             exit 1 #push will not execute
13         fi
14         echo "Everything is ok...pushing"
15         mvn clean
16         # ok
17     fi
18 fi
```

4.2 buildspec.yml

AWS CodeBuild需要用的buildspec文件，文件位于Git仓库根目录下