

Code-to-Cloud



Insight DevOps Fellowship, New York

Wen Gong

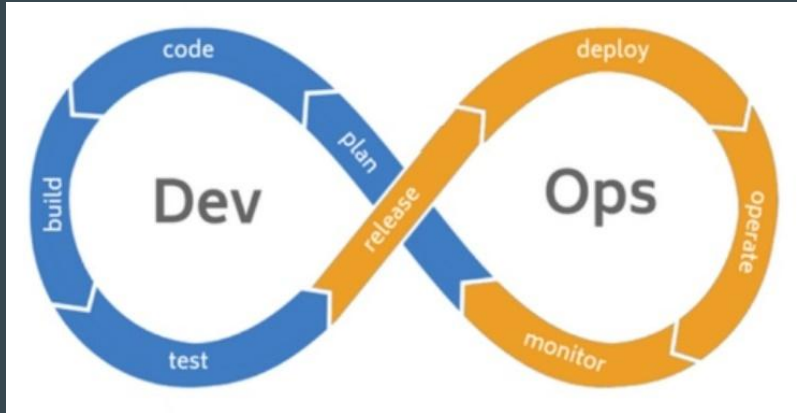
Motivation

Problems

- monolithic app
- dev not test-driven
- lack of tests
- build not automated
- slow approval

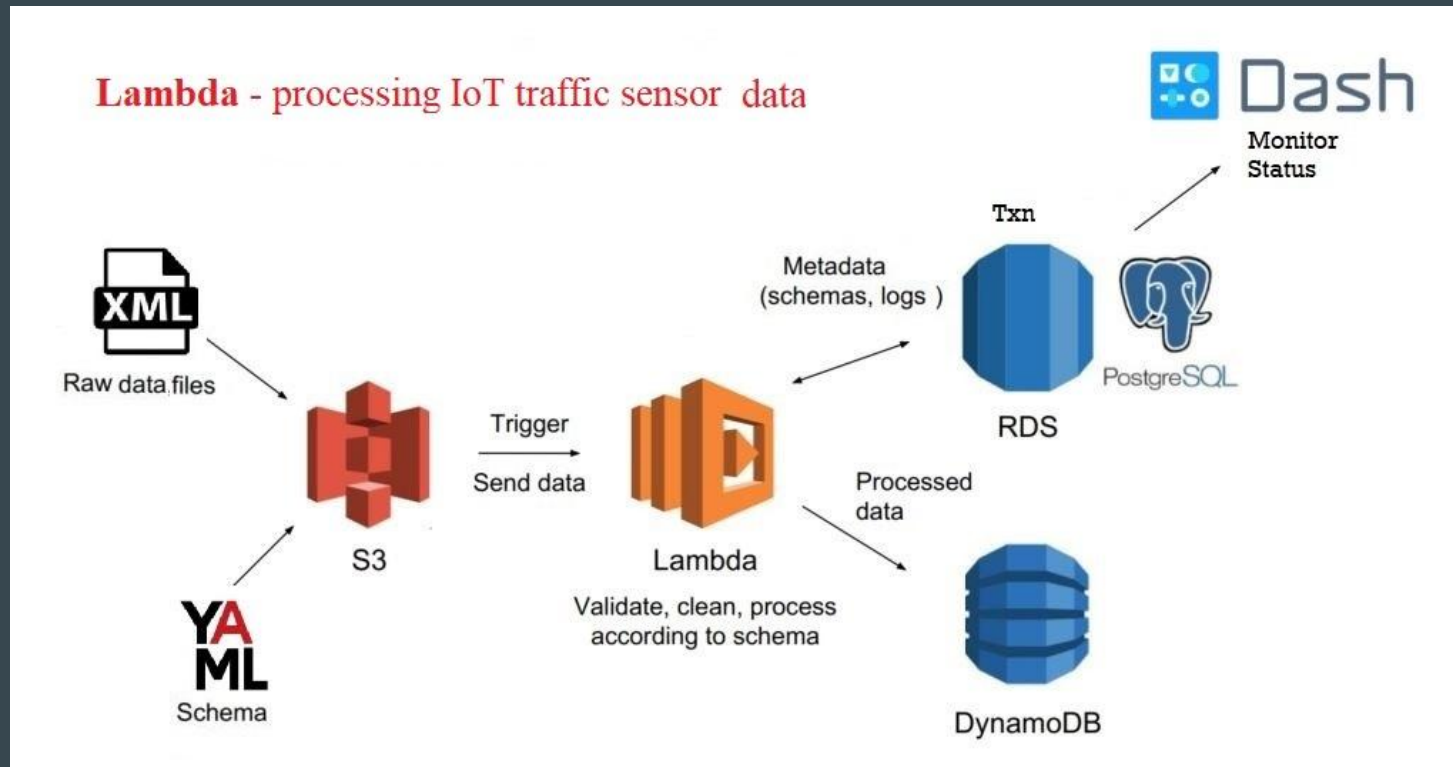
Promise

- Faster time-to-market cycle
- Productivity gain
- Cost savings

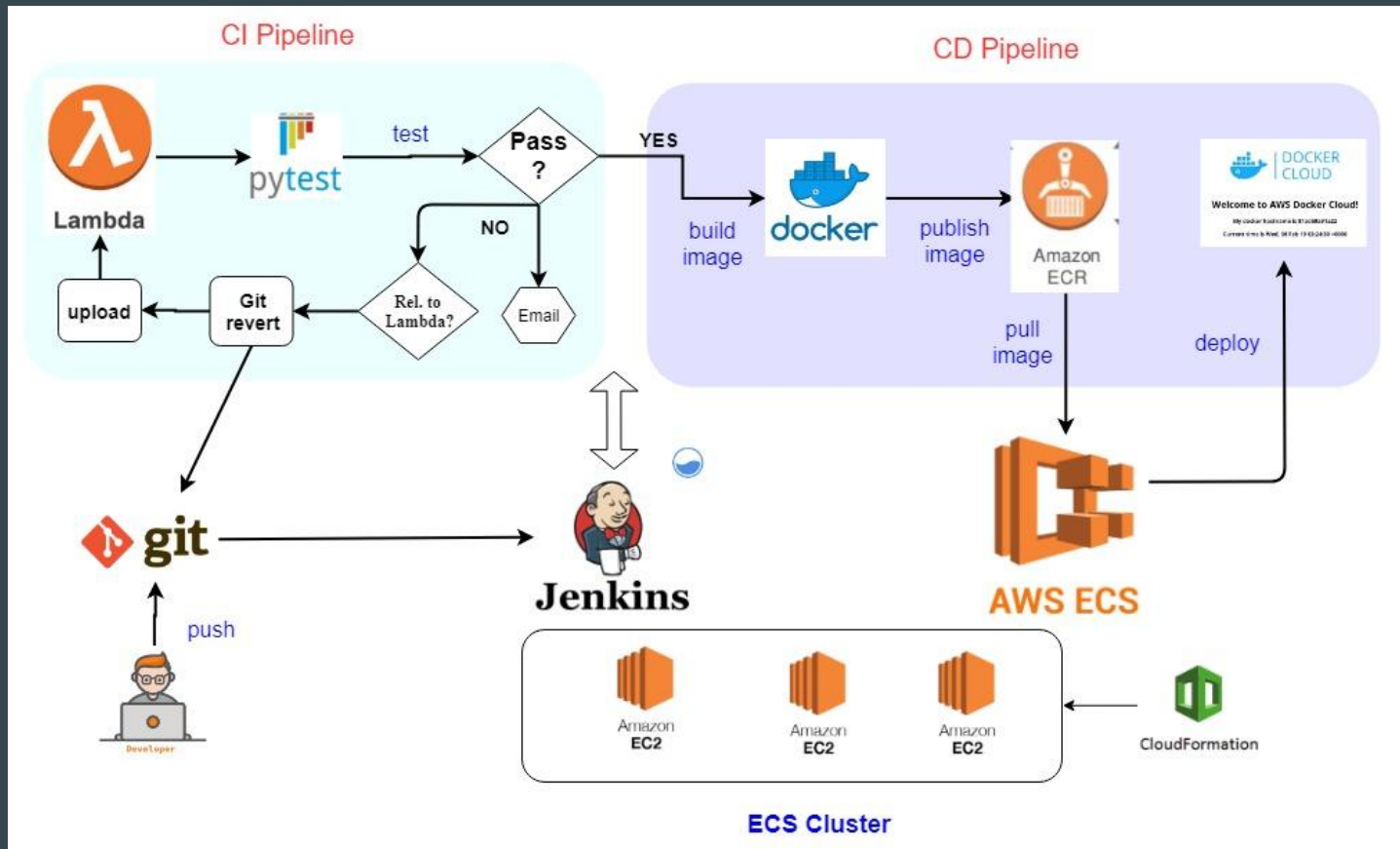


Data Engineering Pipeline

- 1) enhanced logging
- 2) added E2E test
- 3) included in CI



DevOps Pipelines: CI + CD



Challenge 1 - Improved DE pipeline

- added pytest: `test_lambda_function_xml.py`
- enhanced logging by adding new table: `xml_txns`
- improved XML parsing
- fixed issue when uploading 2 files within the same minute.

Challenge 2 - worked-around Jenkins plugin error

```
# login
$(aws ecr get-login --no-include-email --region=us-east-1)

#Store the repositoryUri as a variable
REPOSITORY_URI=`aws ecr describe-repositories --repository-names ${RE}

# workaround to fix Docker build and publish plugin issue
TAG_NAME=${REPOSITORY_NAME}:v_${BUILD_NUMBER}
IMG_NAME=${REPOSITORY_URI}:v_${BUILD_NUMBER}
docker build --tag=${TAG_NAME} .
docker tag ${TAG_NAME} ${IMG_NAME}
docker push ${IMG_NAME}

#Replace the build number and repository URI placeholders with the c
sed -e "s;%BUILD_NUMBER%;${BUILD_NUMBER};g" -e "s;%REPOSITORY_URI%;${
#Register the task definition in the repository
aws ecs register-task-definition --family ${FAMILY} --cli-input-json
SERVICES=`aws ecs describe-services --services ${SERVICE_NAME} --clus
#Get latest revision
REVISION=`aws ecs describe-task-definition --task-definition ${NAME}
```

Challenge 3 - DB secrets in Lambda + Docker

- evaluated python client for Vault (hvac)

```
import hvac # python client for Vault
client = hvac.Client(url='http://127.0.0.1:8200/', \
    token='s.1gXcsuHjPZKH3qecpqc6QtTd')
db_secrets = client.read('kv/postgresql_dev')
db_host,db_port,table_name,db_user,db_pwd = \
    db_secrets['data']['hostname'], \
    db_secrets['data']['port'], \
    db_secrets['data']['db_name'], \
    db_secrets['data']['user'], \
    db_secrets['data']['pwd']
```

Demo

CD	walk through from git push to service deployed in AWS (https://youtu.be/dxnUyEwXZhw)
CI	walk through from git push to docker push (https://youtu.be/rKY6u4Z6AzM)
DE	walk through DE pipeline (https://youtu.be/qpPLTKGVnkc)

Wen Gong



- Ph.D. in nuclear physics
- 20 years of experience as Software Engineer & Consultant

CRM & master data management
data quality
integration bridges
ETL

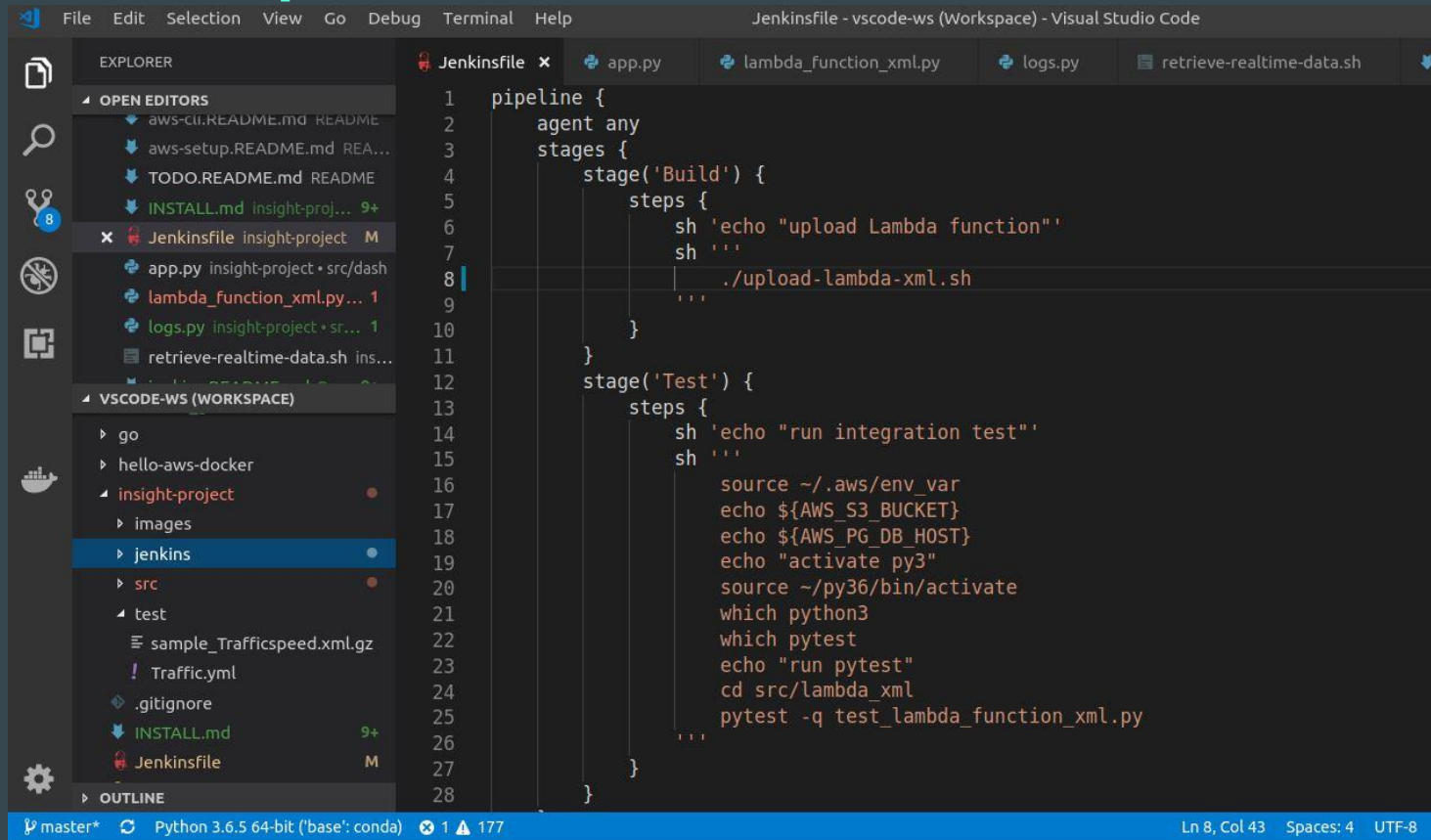
- Passionate about STEM
teach py4kids
student named 2019 Regeneron STS Scholar

Questions

Links

- <http://jenkins.s8s.cloud/>
- <https://github.com/wgong/code2cloud>

Jenkins: Pipeline/Jenkinsfile



```
1 pipeline {
2   agent any
3   stages {
4     stage('Build') {
5       steps {
6         sh 'echo "upload Lambda function"'
7         sh '''
8           ./upload-lambda-xml.sh
9         '''
10      }
11    }
12    stage('Test') {
13      steps {
14        sh 'echo "run integration test"'
15        sh '''
16          source ~/.aws/env_var
17          echo ${AWS_S3_BUCKET}
18          echo ${AWS_PG_DB_HOST}
19          echo "activate py3"
20          source ~/py36/bin/activate
21          which python3
22          which pytest
23          echo "run pytest"
24          cd src/lambda_xml
25          pytest -q test_lambda_function_xml.py
26        '''
27      }
28    }
29  }
```

master* Python 3.6.5 64-bit ('base': conda) 177 Ln 8, Col 43 Spaces: 4 UTF-8

Jenkins: Build Config

← → ↻ 🏠 ⓘ Not secure | ec2-52-3-227-246.compute-1.amazonaws.com/job/insight-project/configure 🔍 ☆ 📦 ⚙️ K 🔄 🌐 📄 Upd. 🗨️

Jenkins ▶ insight-project ▶

General

Branch Sources

Build Configuration

Scan Repository Triggers

Orphaned Item Strategy

Health metrics

Properties

JIRA

Pipeline Libraries

Vault Plugin

Pipeline Model Definition

Build Configuration

Mode

by Jenkinsfile ▼

Script Path

Jenkinsfile ?

Scan Repository Triggers

☐ Monitor Docker Hub/Registry for image changes ?

☒ Periodically if not otherwise run ?

Interval

2 hours ▼ ?

Jenkins: Dashboard

✓ insight-project
< 56

Pipeline

Changes

Tests

Artifacts

Logout

Branch: master

24s

No changes

Commit: —

9 hours ago

Push event to branch master

Start

Build

Test

Deploy

End

Test - 15s

Restart Test

✓ > echo "run integration test" — Shell Script <1s

✓ > pwd whoami which git git --version source ~/.aws/env_var # echo \${AWS_S3_BUCKET} # ... — Shell Script 15s