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INNOVATION
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Docker: from Zero to Deploy

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AWS Community Builder, Infrastructure &
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Docker: from Zero to Deploy

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Introduction



Dwi Fahni Denni (dfdenni)



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Carrier Path & Volunteering

- **2009:** Software Engineer
- **2017:** Infrastructure Engineer
- **2021:** Lead DevOps Engineer, ZebraX
- **2021:** AWS Community Builders (Q4) 1st Year – Containers Category
- **2022:** Infrastructure & Cloud Services Manager, Xapiens
- **2022:** AWS Community Builders (Q4) 2nd Year – Containers Category

Publications

- **GitHub:** <https://github.com/devopscorner>
- **Blog:** <https://devopscorner.id>

Activity

- Plan, Manage & Roadmap Infrastructure Journey

Agenda

- Advanced Dockerfile
- Advanced Docker-Compose
- Docker Semver (Semantic Version)
- Container Registry (ECR)
- Demo

Advanced Dockerfile

Advanced Dockerfile

```
### Builder ###  
FROM golang:1.19.2-alpine3.16 as builder  
  
WORKDIR /go/src/app  
ENV GIN_MODE=release  
ENV GOPATH=/go  
  
RUN apk add --no-cache \  
    build-base \  
    git \  
    curl \  
    make \  
    bash  
  
COPY src/ /go/src/app  
  
RUN GOOS=linux GOARCH=amd64 CGO_ENABLED=0 \  
    cd /go/src/app && \  
    go build -mod=readonly -ldflags="-s -w" -o goapp
```

```
### Binary ###  
FROM golang:1.19.2-alpine3.16  
  
ARG BUILD_DATE  
ARG BUILD_VERSION  
ARG GIT_COMMIT  
ARG GIT_URL  
  
ENV GIN_MODE=release  
COPY --from=builder /go/src/app/goapp /usr/local/bin/goapp  
  
ENTRYPOINT ["/usr/local/bin/goapp"]  
EXPOSE 8080
```

```
## External Existing Images  
COPY --from=devopscorner/demo:latest /go/src/app/goapp  
/usr/local/bin/goapp
```

Advanced Docker-Compose

Advanced Docker-Compose

```

1  version: "3"
2
3  #=====
4  # NETWORK SETUP
5  #=====
6  networks:
7    devopscorner_net:
8      name: devopscorner_net
9      driver: bridge
10     ipam:
11       config:
12         - subnet: 172.148.148.0/16
13
14  #=====
15  # VOLUME SETUP
16  #=====
17  volumes:
18    vol_go_demo:
19      driver: ${VOLUMES_DRIVER:-local}
20      driver_opts:
21        o: bind
22        type: none
23        device: ${DATA_GO_DEMO:-/opt/data/docker/go-demo}

```

```

25  services:
26    #=====
27    # GOLANG-DEMO
28    #=====
29    go-demo:
30      build:
31        context: .
32        dockerfile: Dockerfile
33      container_name: ${CONTAINER_GO_DEMO:-devopscorner_go_demo}
34      restart: unless-stopped
35      ports:
36        - "${PORT_GO_DEMO:-8080}:8080"
37      volumes:
38        # - /etc/localtime:/etc/localtime:ro      ## Do not use it in mac
39        - /var/run/docker.sock:/var/run/docker.sock ## Do not use it in k8s
40      environment:
41        - TZ="Asia/Jakarta"
42        - ALPINE_VERSION=${ALPINE_VERSION:-3.16}
43      privileged: true
44      tty: true
45      networks:
46        devopscorner_net:
47          ipv4_address: ${CONTAINER_IP_GO_DEMO:-172.148.148.225}

```

```

## Create binding docker-volume
mkdir -p /opt/data/docker/go-demo
chmod 777 /opt/data/docker

```


Docker Semver (Semantic Version)

Docker SemVer

```
CURRENT_VERSION := $(shell git ls-remote --tags | awk '{ print  
$2}' | sort -nr | head -n1 | sed 's/refs/tags/\\\\g')  
  
ifndef CURRENT_VERSION  
CURRENT_VERSION := 0.0.0  
endif  
  
NEXT_VERSION := $(shell docker run --rm alpine/semver semver -c -i  
$(RELEASE_TYPE) $(CURRENT_VERSION))  
  
current-version:  
    @echo $(CURRENT_VERSION)  
  
next-version:  
    @echo $(NEXT_VERSION)  
  
release:  
    git checkout master;  
    git tag $(NEXT_VERSION)  
    git push --tags
```

```
# REFERENCES  
# >> https://hub.docker.com/r/alpine/semver  
  
$ docker run --rm alpine/semver semver -c -i minor 1.0.2  
1.1.0  
  
$ docker run --rm marcelocorreia/semver semver -c -i patch  
1.1.0  
1.1.1  
  
$ docker run --rm marcelocorreia/semver semver -c -i minor  
$(git describe --tags --abbrev=0)  
5.6.0
```

Container Registry (ECR)

Container Registry (ECR)

```
#!/bin/sh

export AWS_ACCOUNT_ID=YOUR_AWS_ACCOUNT_ID
export AWS_REGION="ap-southeast-1"

export ALPINE_VERSION=3.16
export BASE_IMAGE="alpine"
export ECR_PATH="$AWS_ACCOUNT_ID.dkr.ecr.$AWS_REGION.amazonaws.com"
export IMAGE="$ECR_PATH/devopscorner/demo"
export TAG="latest"

docker build -f Dockerfile -t $IMAGE:alpine .

docker tag $IMAGE:$BASE_IMAGE $IMAGE:$TAG
docker tag $IMAGE:$BASE_IMAGE $IMAGE:alpine-$TAG
docker tag $IMAGE:$BASE_IMAGE $IMAGE:alpine-$ALPINE_VERSION

PASSWORD=$(aws ecr get-login-password --region $AWS_REGION)
echo $PASSWORD | docker login --username AWS --password-stdin
$ECR_PATH
```

```
docker push $IMAGE:$BASE_IMAGE
docker push $IMAGE:latest
docker push $IMAGE:alpine-latest
docker push $IMAGE:alpine-$ALPINE_VERSION
```

ECR Policies

```
1  {
2      "Version": "2012-10-17",
3      "Statement": [
4          {
5              "Effect": "Allow",
6              "Action": [
7                  "ecr:*"
8              ],
9              "Resource": "*"
10         }
11     ]
12 }
```

Demo

Thank you!

Dwi Fahni Denni

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