nimble

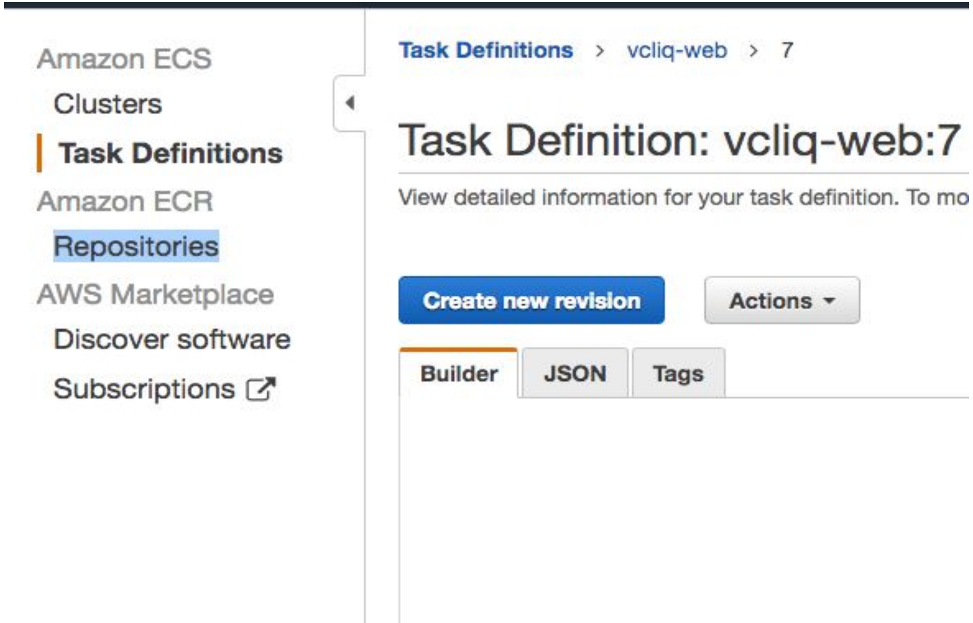
Deploy Dockerized Rails App to AWS #3 - Using ECS

Ankit

Growth Session #20 - XX - December 20-21 2018

What is ECS (Elastic Container Service)?

- ECS (Elastic Container Service) is service which allows you to easily run and scale containerized applications on AWS
- Eliminates the need for you to install and operate your own container orchestration software.

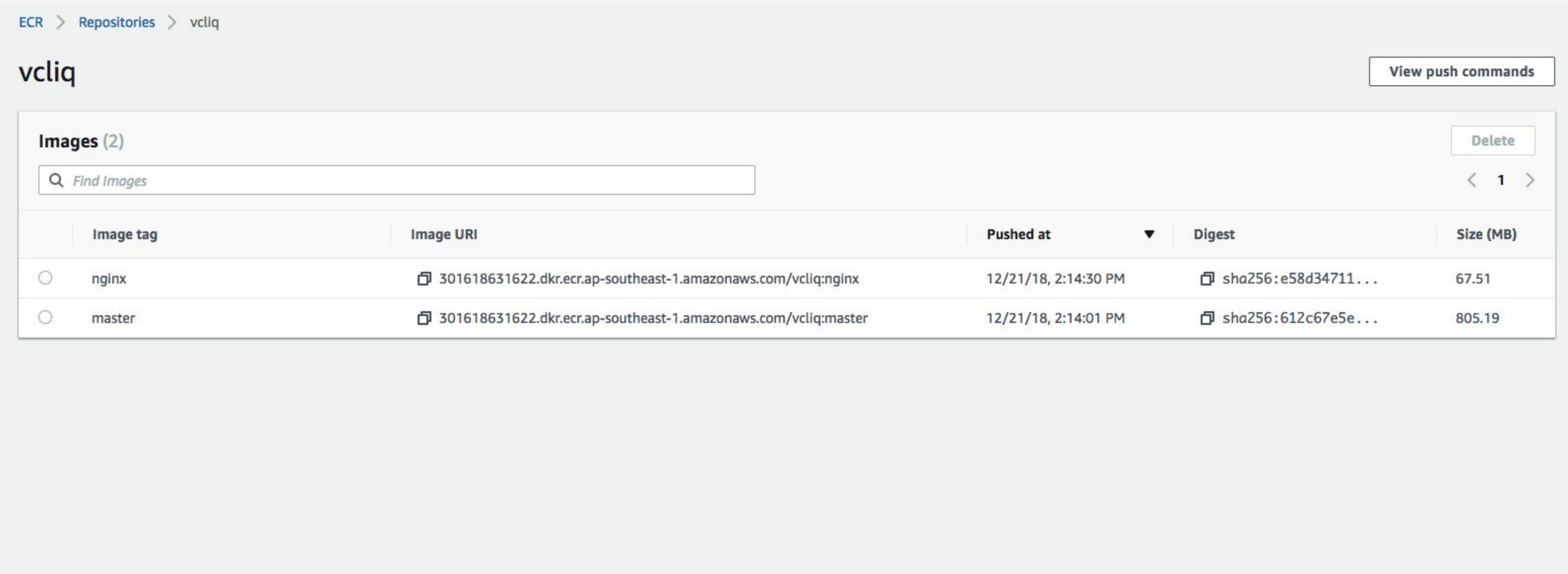


Task Definition: vcliq-web:7

View detailed information for your task definition. To mo

What is ECR (Elastic Container Registry)?

Similar to Docker Hub



vcliq

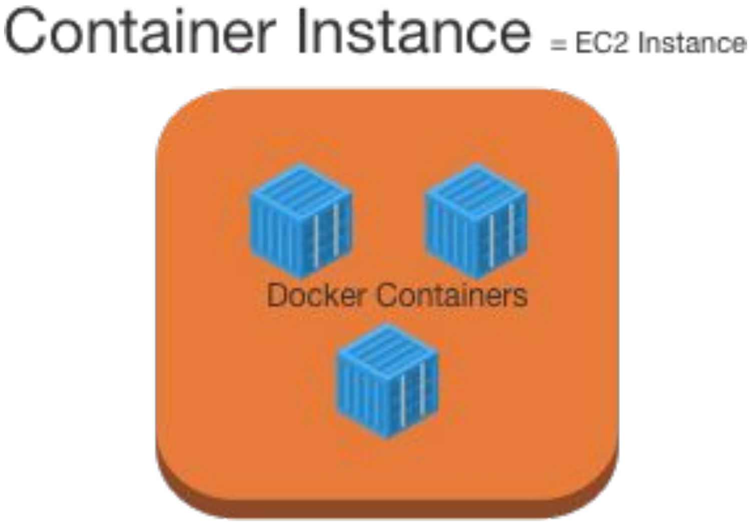
Images (2)

	Image tag	Image URI	Pushed at ▼	Digest	Size (MB)
○	nginx	301618631622.dkr.ecr.ap-southeast-1.amazonaws.com/vcliq:nginx	12/21/18, 2:14:30 PM	sha256:e58d34711...	67.51
○	master	301618631622.dkr.ecr.ap-southeast-1.amazonaws.com/vcliq:master	12/21/18, 2:14:01 PM	sha256:612c67e5e...	805.19

Components of ECS

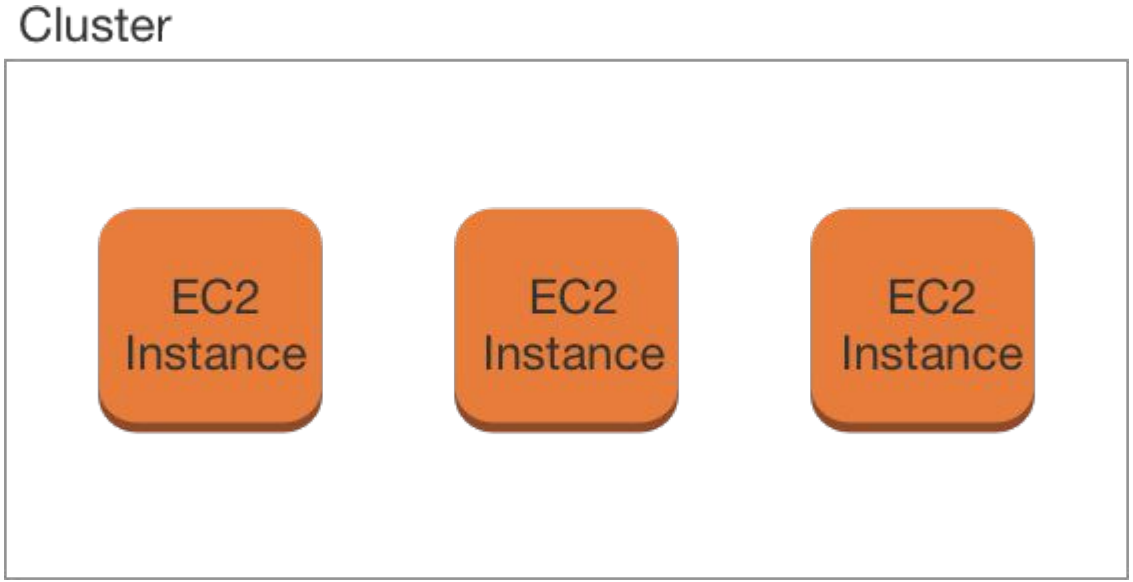
1. Container Instance

- A Container Instance is just a fancy word for an EC2 instance.
- Each Container Instance is a host to one or more Docker Containers.



2. Cluster

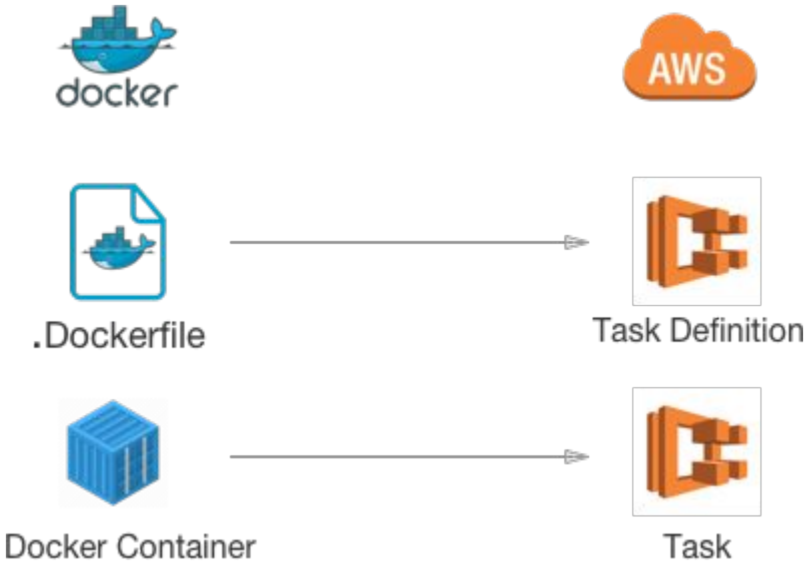
Simply put, a cluster is a logical grouping of a few Container Instances



Task Definition and Tasks

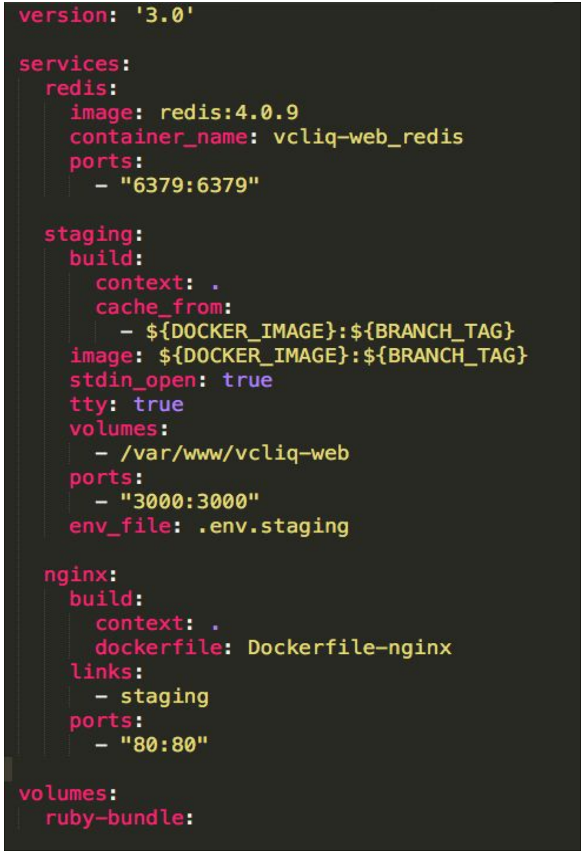
- Task Definition: similar to docker-compose.yml or dockerfile, defines a group of tasks to run together. One definition can have multiple docker containers.

- Task - Actual process which runs the containers.



In Past Sessions

- Deployed directly to EC2 container by installing Docker on them and using mina.
- My container architecture was something like this ⇒



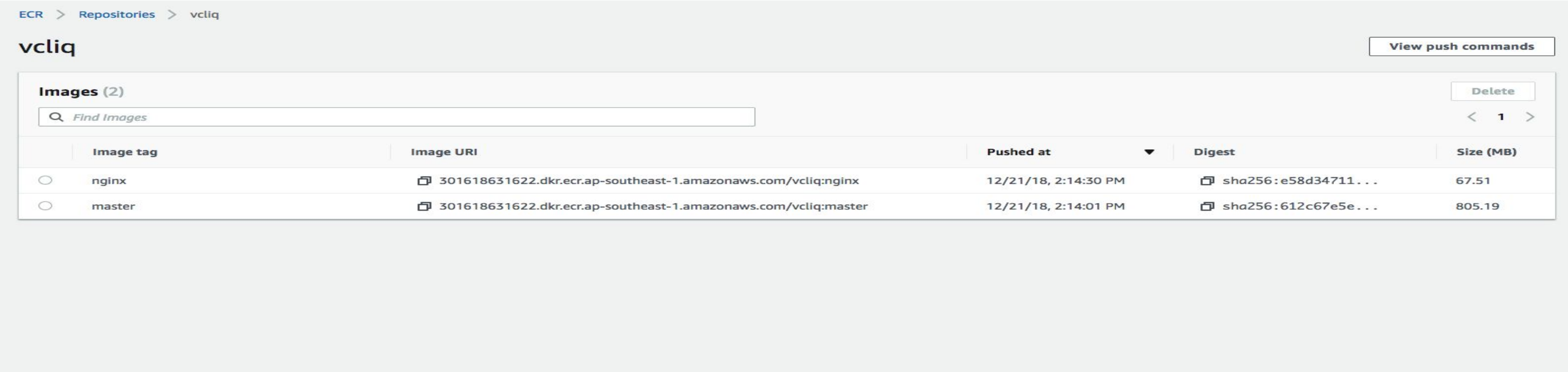
```yaml
version: '3.0'

services:
  redis:
    image: redis:4.0.9
    container_name: vcliq-web_redis
    ports:
      - "6379:6379"

  staging:
    build:
      context: .
      cache_from:
        - ${DOCKER_IMAGE}:${BRANCH_TAG}
    image: ${DOCKER_IMAGE}:${BRANCH_TAG}
    stdin_open: true
    tty: true
    volumes:
      - /var/www/vcliq-web
    ports:
      - "3000:3000"
    env_file: .env.staging

  nginx:
    build:
      context: .
      dockerfile: Dockerfile-nginx
    links:
      - staging
    ports:
      - "80:80"

volumes:
  ruby-bundle:
```

Goals

Deploy Vcliq to ECS

Setup

1. Build docker images locally and push them to ECR



vcliq

Images (2)

	Image tag	Image URI	Pushed at	Digest	Size (MB)
○	nginx	301618631622.dkr.ecr.ap-southeast-1.amazonaws.com/vcliq:nginx	12/21/18, 2:14:30 PM	sha256:e58d34711...	67.51
○	master	301618631622.dkr.ecr.ap-southeast-1.amazonaws.com/vcliq:master	12/21/18, 2:14:01 PM	sha256:612c67e5e...	805.19

2. Install ECS CLI and configure using keys

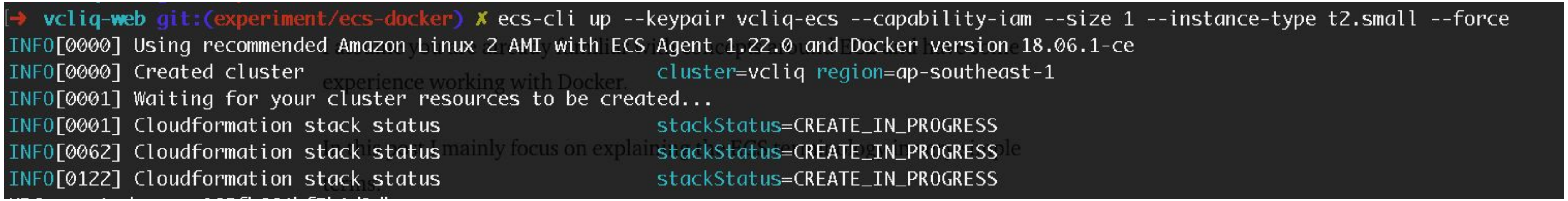
```
ecs-cli configure profile --profile-name profile_name --access-key
$AWS_ACCESS_KEY_ID --secret-key $AWS_SECRET_ACCESS_KEY
```

Setup

3. Create a cluster

```
ecs-cli configure --cluster vcliq-cluster --default-launch-type EC2
--region ap-southeast-1 --config-name vcliq-config
```

```
ecs-cli up --keypair vcliq-ecs --capability-iam --size 1 --instance-type
t2.small --force
```

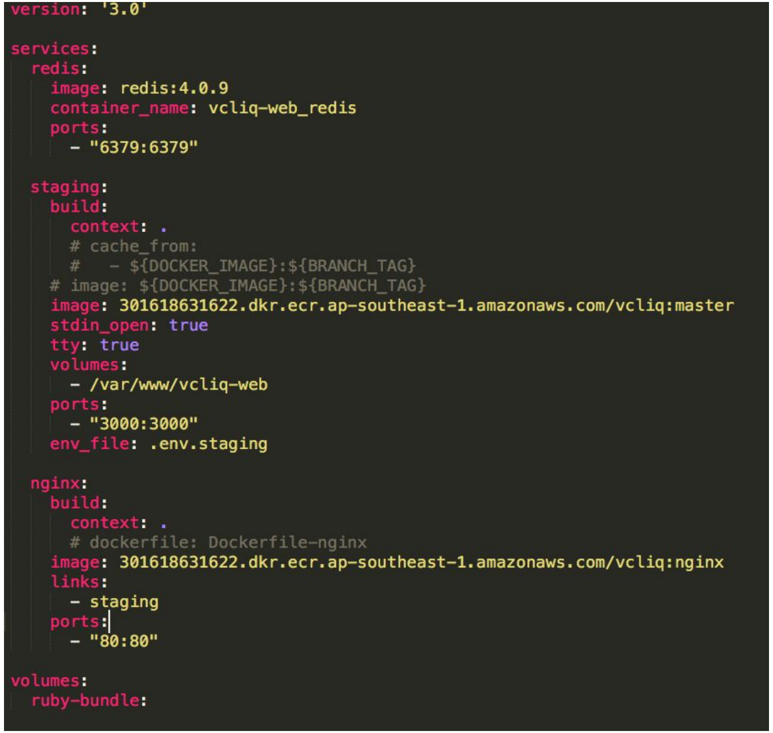


```
➜ vcliq-web git:(experiment/ecs-docker) ✗ ecs-cli up --keypair vcliq-ecs --capability-iam --size 1 --instance-type t2.small --force
INFO[0000] Using recommended Amazon Linux 2 AMI with ECS Agent 1.22.0 and Docker version 18.06.1-ce
INFO[0000] Created cluster                               cluster=vcliq region=ap-southeast-1
INFO[0001] Waiting for your cluster resources to be created...
INFO[0001] Cloudformation stack status                   stackStatus=CREATE_IN_PROGRESS
INFO[0062] Cloudformation stack status                   stackStatus=CREATE_IN_PROGRESS
INFO[0122] Cloudformation stack status                   stackStatus=CREATE_IN_PROGRESS
```

we must always associate a valid keypair, otherwise later on we would never be able to SSH to the system

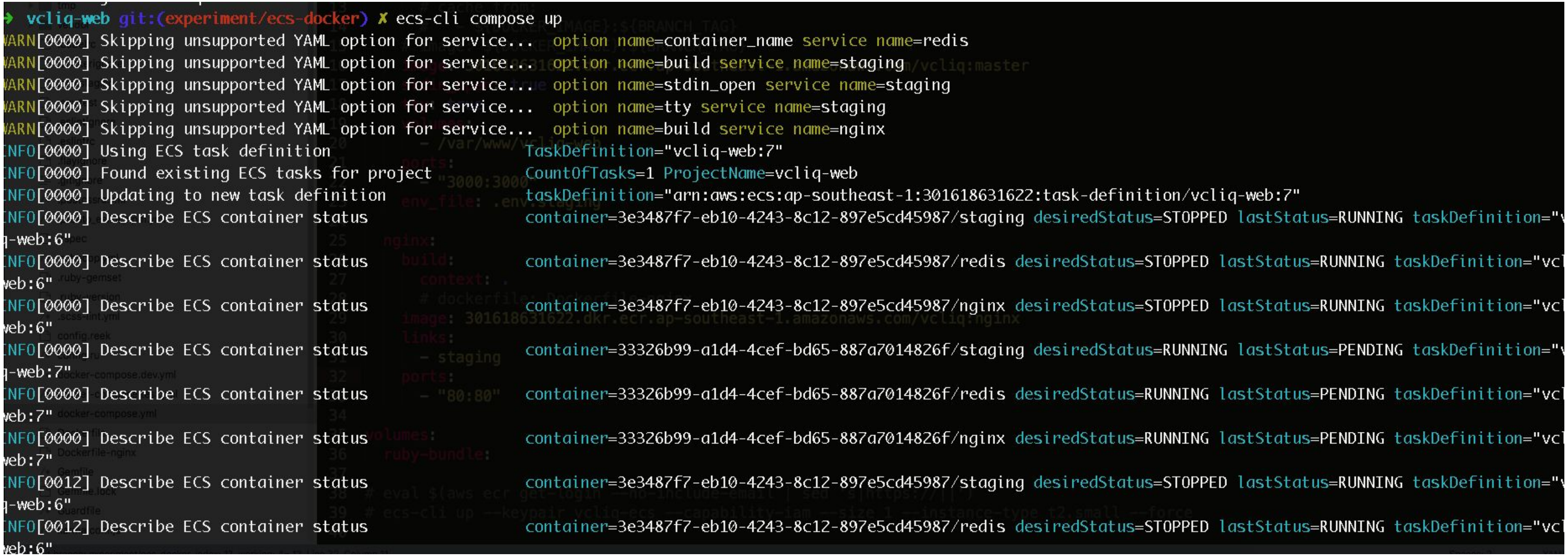
Setup

4. Create a separate docker-compose.yml file for ecs-cli



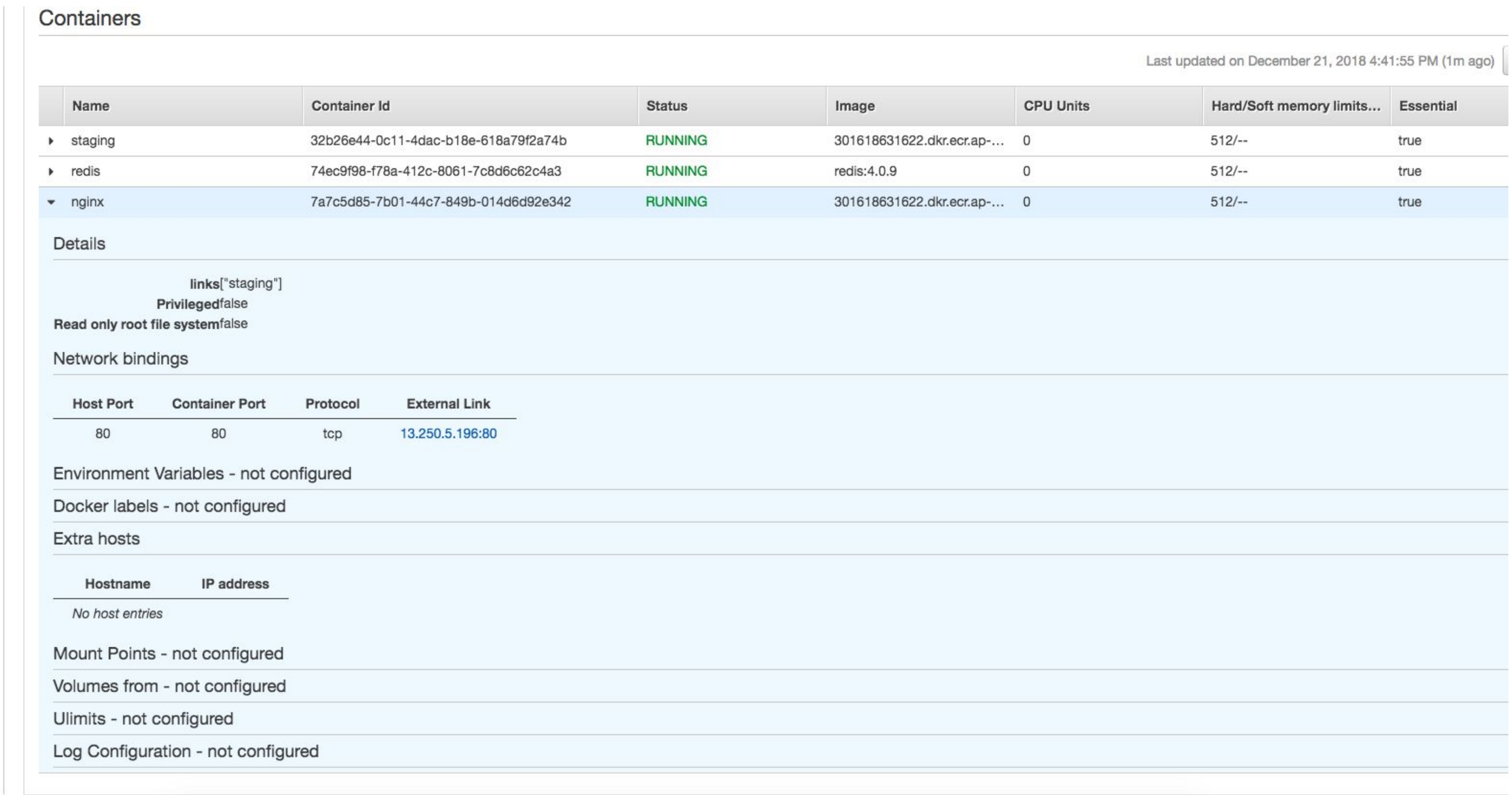
```yaml
version: '3.0'

services:
  redis:
    image: redis:4.0.9
    container_name: vcliq-web_redis
    ports:
      - "6379:6379"

  staging:
    build:
      context: .
      # cache_from:
      #   - ${DOCKER_IMAGE}:${BRANCH_TAG}
    # image: ${DOCKER_IMAGE}:${BRANCH_TAG}
    image: 301618631622.dkr.ecr.ap-southeast-1.amazonaws.com/vcliq:master
    stdin_open: true
    tty: true
    volumes:
      - /var/www/vcliq-web
    ports:
      - "3000:3000"
    env_file: .env.staging

  nginx:
    build:
      context: .
      # dockerfile: Dockerfile-nginx
    image: 301618631622.dkr.ecr.ap-southeast-1.amazonaws.com/vcliq:nginx
    links:
      - staging
    ports:
      - "80:80"

volumes:
  ruby-bundle:
```

Setup



```
➜ vcliq-web git:(experiment/ecs-docker) ✗ ecs-cli compose up
WARN[0000] Skipping unsupported YAML option for service...  option name=container_name service name=redis
WARN[0000] Skipping unsupported YAML option for service...  option name=build service name=staging
WARN[0000] Skipping unsupported YAML option for service...  option name=stdin_open service name=staging
WARN[0000] Skipping unsupported YAML option for service...  option name=tty service name=staging
WARN[0000] Skipping unsupported YAML option for service...  option name=build service name=nginx
INFO[0000] Using ECS task definition                       TaskDefinition="vcliq-web:7"
INFO[0000] Found existing ECS tasks for project            CountOfTasks=1 ProjectName=vcliq-web
INFO[0000] Updating to new task definition                 taskDefinition="arn:aws:ecs:ap-southeast-1:301618631622:task-definition/vcliq-web:7"
INFO[0000] Describe ECS container status                   container=3e3487f7-eb10-4243-8c12-897e5cd45987/staging desiredStatus=STOPPED lastStatus=RUNNING taskDefinition="v
q-web:6"
INFO[0000] Describe ECS container status                   container=3e3487f7-eb10-4243-8c12-897e5cd45987/redis desiredStatus=STOPPED lastStatus=RUNNING taskDefinition="vcl
web:6"
INFO[0000] Describe ECS container status                   container=3e3487f7-eb10-4243-8c12-897e5cd45987/nginx desiredStatus=STOPPED lastStatus=RUNNING taskDefinition="vcl
web:6"
INFO[0000] Describe ECS container status                   container=33326b99-a1d4-4cef-bd65-887a7014826f/staging desiredStatus=RUNNING lastStatus=PENDING taskDefinition="v
q-web:7"
INFO[0000] Describe ECS container status                   container=33326b99-a1d4-4cef-bd65-887a7014826f/redis desiredStatus=RUNNING lastStatus=PENDING taskDefinition="vcl
web:7"
INFO[0000] Describe ECS container status                   container=33326b99-a1d4-4cef-bd65-887a7014826f/nginx desiredStatus=RUNNING lastStatus=PENDING taskDefinition="vcl
web:7"
INFO[0012] Describe ECS container status                   container=3e3487f7-eb10-4243-8c12-897e5cd45987/staging desiredStatus=STOPPED lastStatus=RUNNING taskDefinition="v
q-web:6"
INFO[0012] Describe ECS container status                   container=3e3487f7-eb10-4243-8c12-897e5cd45987/redis desiredStatus=STOPPED lastStatus=RUNNING taskDefinition="vcl
web:6"
```

Progress and Demo



Containers

Last updated on December 21, 2018 4:41:55 PM (1m ago)

	Name	Container Id	Status	Image	CPU Units	Hard/Soft memory limits...	Essential
▸	staging	32b26e44-0c11-4dac-b18e-618a79f2a74b	RUNNING	301618631622.dkr.ecr.ap-...	0	512/--	true
▸	redis	74ec9f98-f78a-412c-8061-7c8d6c62c4a3	RUNNING	redis:4.0.9	0	512/--	true
▾	nginx	7a7c5d85-7b01-44c7-849b-014d6d92e342	RUNNING	301618631622.dkr.ecr.ap-...	0	512/--	true

Details

links["staging"]
Privilegedfalse
Read only root file systemfalse

Network bindings

Host Port	Container Port	Protocol	External Link
80	80	tcp	13.250.5.196:80

Environment Variables - not configured

Docker labels - not configured

Extra hosts

Hostname	IP address
No host entries	

Mount Points - not configured

Volumes from - not configured

Ulimits - not configured

Log Configuration - not configured

Next Steps

- Complete the setup and integrate with our CI/CD workflow
- Explore the load balancer service for ECS

Should we use it?

YES!

Thanks!

Contact Nimble

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