

Project 03

I. Build and Deploy Containers to ECR

1. Store Docker images in ECR

Amazon ECR > Repositories > udacity-p03

udacity-p03

[View push commands](#) [Edit](#)

Images (1)

< 1 > ⚙

<input type="checkbox"/>	Image tag	Artifact type	Pushed at	Size (MB)	Image URI	Digest	Scan status	Vulnerabilities
<input type="checkbox"/>	latest	Image	November 07, 2023, 15:46:27 (UTC+07)	155.64	Copy URI	sha256:fb69f40f0e4e206...	-	-

2. Run CodeBuild pipeline to deploy Docker image to AWS ECR

Developer Tools > CodeBuild > Build projects > udacity-p03-codebuild-pl

udacity-p03-codebuild-pl

[Notify](#) [Share](#) [Edit](#) [Delete build project](#) [Start build with overrides](#) [Start build](#)

Configuration

Source provider Amazon S3	Primary repository udacity-p03-codebuild/Archive.zip	Artifacts upload location -	Build badge Disabled
Public builds Disabled			

[Build history](#) [Batch history](#) [Build details](#) [Build triggers](#) [Metrics](#)

Build history

[Refresh](#) [Stop build](#) [View artifacts](#) [View logs](#) [Delete builds](#) [Retry build](#)

< 1 > ⚙

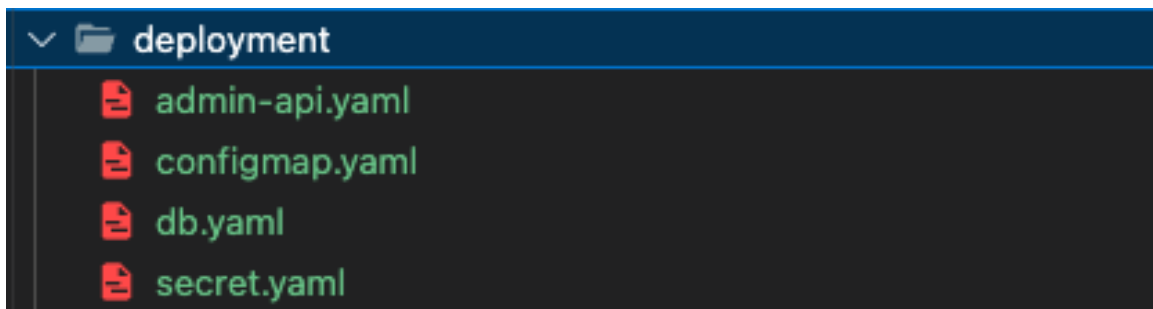
<input type="checkbox"/>	Build run	Status	Build number	Source version	Submitter	Duration	Completed
<input type="checkbox"/>	udacity-p03-codebuild-pl:4bdc6ef1-7a23-4249-89d6-959ff4806ced	✔ Succeeded	4	udacity-p03-codebuild/Archive.zip	voclabs/user2112747=7f2737f4-9d0b-11ec-a4c4-6bb4dd837079	1 minute 31 seconds	6 hours ago
<input type="checkbox"/>	udacity-p03-codebuild-pl:37f9c904-ae31-4ef4-8da2-0d9bf9c05180	✘ Failed	3	udacity-p03-codebuild/Archive.zip	voclabs/user2112747=7f2737f4-9d0b-11ec-a4c4-6bb4dd837079	1 minute 20 seconds	6 hours ago
<input type="checkbox"/>	udacity-p03-codebuild-pl:e9cbe800-df1a-496a-9d3b-253de807d8a8	✘ Failed	2	udacity-p03-codebuild/Archive.zip	voclabs/user2112747=7f2737f4-9d0b-11ec-a4c4-6bb4dd837079	48 seconds	6 hours ago
<input type="checkbox"/>	udacity-p03-codebuild-pl:d1f6e48e-fddb-4164-b9a3-7a4c1c9af97h	✘ Failed	1	udacity-p03-codebuild/Archive.zip	voclabs/user2112747=7f2737f4-9d0b-11ec-a4c4-6bb4dd837079	56 seconds	6 hours ago

II. Kubernetes Configuration

1. Create functional Kubernetes YAML configuration files

The `deployment/` contains Kubernetes config files that:

- create the service's deployment in Kubernetes.
- create the service's services in Kubernetes.
- share plaintext environment variables in a configmap file
- share sensitive environment variables in a separate secrets file



2. Successfully deploy Kubernetes Service

- A screenshot of `kubectl get svc`

```
> kubectl get svc
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
admin-api	LoadBalancer	10.100.7.93	a24c09d7131104c09a07261b3c2e52bf-39995389.us-east-1.elb.amazonaws.com	5000:31527/TCP	5h54m
app-db	NodePort	10.100.86.229	<none>	5432:32447/TCP	5h54m
kubernetes	ClusterIP	10.100.0.1	<none>	443/TCP	7h17m

- A screenshot of `kubectl describe deployment <SERVICE_NAME>`

```

> kubectl describe deployment admin-api
Name:                admin-api
Namespace:           default
CreationTimestamp:    Tue, 07 Nov 2023 16:11:17 +0700
Labels:              name=admin-api
Annotations:         deployment.kubernetes.io/revision: 2
Selector:            service=admin-api
Replicas:            1 desired | 1 updated | 1 total | 1 available | 0 unavailable
StrategyType:        RollingUpdate
MinReadySeconds:     0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels:  service=admin-api
  Containers:
    admin-api:
      Image:      058700463501.dkr.ecr.us-east-1.amazonaws.com/udacity-p03
      Port:       <none>
      Host Port:  <none>
      Environment:
        DB_USERNAME: <set to the key 'DB_USERNAME' of config map 'db-env'> Optional: false
        DB_PASSWORD: <set to the key 'DB_PASSWORD' in secret 'db-secret'> Optional: false
        DB_HOST:     app-db
      Mounts:        <none>
      Volumes:       <none>
  Conditions:
    Type           Status  Reason
    ----           -
    Progressing    True    NewReplicaSetAvailable
    Available      True    MinimumReplicasAvailable
  OldReplicaSets:  <none>
  NewReplicaSet:   admin-api-75bff4447 (1/1 replicas created)
  Events:          <none>

```

- A screenshot of `kubectl get pods`

```

> kubectl get pods

```

NAME	READY	STATUS	RESTARTS	AGE
admin-api-75bff4447-9tqyg	1/1	Running	0	5h35m
app-db-6748cfc8bd-bn5lw	1/1	Running	0	5h35m

3. Create a Kubernetes Database Service using Helm Chart

- A screenshot of `kubectl describe svc`

`<DATABASE_SERVICE_NAME>` shows `app.kubernetes.io/managed-by=Helm` in the `Labels` section

```
> kubectl describe svc app-db
Name:          app-db-postgresql
Namespace:     default
Labels:        app.kubernetes.io/component=primary
               app.kubernetes.io/instance=app-db
               app.kubernetes.io/managed-by=Helm
               app.kubernetes.io/name=postgresql
               app.kubernetes.io/version=16.0.0
               helm.sh/chart=postgresql-13.2.2
Annotations:   meta.helm.sh/release-name: app-db
               meta.helm.sh/release-namespace: default
Selector:      app.kubernetes.io/component=primary,app.kubernetes.io/instance=app-db,app.kubernetes.io/name=postgresql
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:            10.100.221.38
IPs:           10.100.221.38
Port:          tcp-postgresql 5432/TCP
TargetPort:    tcp-postgresql/TCP
Endpoints:     <none>
Session Affinity: None
Events:        <none>

Name:          app-db-postgresql-hl
Namespace:     default
Labels:        app.kubernetes.io/component=primary
               app.kubernetes.io/instance=app-db
               app.kubernetes.io/managed-by=Helm
               app.kubernetes.io/name=postgresql
               app.kubernetes.io/version=16.0.0
               helm.sh/chart=postgresql-13.2.2
Annotations:   meta.helm.sh/release-name: app-db
               meta.helm.sh/release-namespace: default
               service.alpha.kubernetes.io/tolerate-unready-endpoints: true
Selector:      app.kubernetes.io/component=primary,app.kubernetes.io/instance=app-db,app.kubernetes.io/name=postgresql
Type:          ClusterIP
IP Family Policy: SingleStack
IP Families:   IPv4
IP:            None
```

III. Logging and Documentation

1. Review CloudWatch logs to confirm that an application is operating normally

CloudWatch > Log groups > /aws/containerinsights/p03-eks-cluster/application > ip-172-31-22-124.ec2.internal-application.var.log.containers.admin-api-75bf4447-zspb_default_admin-api-f54b340bc4452cc6fe34ed5fede8e9733912b70880bf221cb718555791484b69.log

Log events
You can use the filter bar below to search for and match terms, phrases, or values in your log events. [Learn more about filter patterns](#)

Timestamp	Message
No more records within selected time range Retry	
2023-11-08T15:42:26.673+07:00	{"time": "2023-11-08T08:42:26.67376904Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:42:26,673] INFO in app: {}, 'kubernetes': {'pod_name': ...
2023-11-08T15:42:56.672+07:00	{"time": "2023-11-08T08:42:56.672009924Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:42:56,671] INFO in app: {}, 'kubernetes': {'pod_name': ...
2023-11-08T15:43:26.672+07:00	{"time": "2023-11-08T08:43:26.672686018Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:43:26,671] INFO in app: {'2023-02-13': 2, '2023-02-0...
2023-11-08T15:43:56.672+07:00	{"time": "2023-11-08T08:43:56.672645185Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:43:56,671] INFO in app: {'2023-02-13': 2, '2023-02-0...
2023-11-08T15:44:26.671+07:00	{"time": "2023-11-08T08:44:26.671918764Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:44:26,671] INFO in app: {'2023-02-13': 2, '2023-02-0...
2023-11-08T15:44:56.672+07:00	{"time": "2023-11-08T08:44:56.672194807Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:44:56,671] INFO in app: {'2023-02-13': 2, '2023-02-0...
2023-11-08T15:45:26.673+07:00	{"time": "2023-11-08T08:45:26.673419271Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:45:26,671] INFO in app: {'2023-02-13': 2, '2023-02-0...
2023-11-08T15:45:56.674+07:00	{"time": "2023-11-08T08:45:56.674086759Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:45:56,673] INFO in app: {'2023-02-10': 293, '2023-02-...
2023-11-08T15:46:26.673+07:00	{"time": "2023-11-08T08:46:26.673818759Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:46:26,673] INFO in app: {'2023-02-12': 331, '2023-02-...
2023-11-08T15:46:56.673+07:00	{"time": "2023-11-08T08:46:56.673739055Z", "stream": "stderr", "_p": "F", "log": "[2023-11-08 08:46:56,672] INFO in app: {'2023-02-12': 331, '2023-02-...
No more records within selected time range Auto retrying... Pause	