

V. Build, Release, Run with Docker and Deployments

Relevant Documentation

- [Twelve-Factor App: V. Build, Release, Run](#)
- [Deployments](#)

Lesson Reference

Switch to the source code directory:

```
cd ~/content-designing-applications-for-kubernetes
```

Optional: If you want to start with a clean slate, check out the start tag for this lesson. However, you could lose any local changes you have made if you do this:

```
git reset --hard HEAD
git checkout V-build-release-run-start
```

Build and push your Docker images:

```
docker login

docker build -t <Your Docker Hub username>/uloe-server:0.0.1 --target server .

docker build -t <Your Docker Hub username>/uloe-frontend:0.0.1 --target frontend .

docker push <Your Docker Hub username>/uloe-server:0.0.1

docker push <Your Docker Hub username>/uloe-frontend:0.0.1
```

Create a full manifest deployment file for your app, starting with the existing ConfigMap and Secret:

```
vi uloe-app.yml
```

```
apiVersion: v1
kind: ConfigMap
metadata:
  name: uloe-config
data:
  mongodb.host: "uloe-mongodb"
  mongodb.port: "27017"
  .env: |
    REACT_APP_API_PORT="30081"
```

```
apiVersion: v1
kind: Secret
metadata:
  name: uloe-secure-config
type: Opaque
data:
  mongodb.username: dWxvZV91c2Vy
  mongodb.password: SUxvdmVUaGVMaXN0
```

```
apiVersion: v1
kind: Service
metadata:
  name: uloe-svc
spec:
  type: NodePort
  selector:
    app: uloe
  ports:
    - name: frontend
      protocol: TCP
      port: 30080
      nodePort: 30080
      targetPort: 5000
    - name: server
      protocol: TCP
      port: 30081
      nodePort: 30081
      targetPort: 3001
```

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: uloe
spec:
  replicas: 1
  selector:
    matchLabels:
      app: uloe
  template:
    metadata:
      labels:
        app: uloe
    spec:
      containers:
        - name: uloe-server
          image: <Your Docker Hub username>/uloe-server:0.0.1
          ports:
            - name: web
              containerPort: 3001
              protocol: TCP
          env:
            - name: MONGODB_HOST
              valueFrom:
                configMapKeyRef:
                  name: uloe-config
                  key: mongodb.host
            - name: MONGODB_PORT
```

```

      valueFrom:
        configMapKeyRef:
          name: uloe-config
          key: mongodb.port
    - name: MONGODB_USER
      valueFrom:
        secretKeyRef:
          name: uloe-secure-config
          key: mongodb.username
    - name: MONGODB_PASSWORD
      valueFrom:
        secretKeyRef:
          name: uloe-secure-config
          key: mongodb.password
    - name: uloe-frontend
      image: <Your Docker Hub username>/uloe-frontend:0.0.1
      ports:
        - name: web
          containerPort: 5000
          protocol: TCP
      volumeMounts:
        - name: frontend-config
          mountPath: /usr/src/app/.env
          subPath: .env
          readOnly: true
      volumes:
    - name: frontend-config
      configMap:
        name: uloe-config
        items:
        - key: .env
          path: .env

```

Deploy the app:

```
kubectl apply -f uloe-app.yml -n production
```

Create a new container image version to test the rollout process:

```

docker tag <Your Docker Hub username>/uloe-frontend:0.0.1 willbla/uloe-frontend:0.0.2
docker push <Your Docker Hub username>/uloe-frontend:0.0.2

```

Edit the app manifest:

```
vi uloe-app.yml
```

Change the frontend container image version:

```

...
- name: uloe-frontend
  image: <Your Docker Hub username>/uloe-frontend:0.0.2

```

```
kubectl apply -f uloe-app.yml -n production
```

Get the list of Pods to see the new version rollout:

```
kubectl get pods -n production
```