

# Troubleshooting Application Failures

## Hands On - Troubleshoot a failing Application

In this lab we will deploy a pod that wont run. For the purposes of this training I will point out the issue and then we will resolve the root cause of failure from cloud shell.

```
apiVersion: v1
kind: Pod
metadata:
  name: nginx-pod
spec:
  containers:
    - name: nginx-configmap
      image: nginx:invalidversion
```

### I. Deploy the faulty manifest

Create the manifest above, apply your deployment to the cluster, and verify.

```
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ cat doms-faultypod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: doms-pod
spec:
  containers:
    - name: nginx-configmap
      image: nginx:invalidversion
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ kubectl apply -f doms-faultypod.yaml
pod/doms-pod created
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ kubectl get pods
NAME          READY   STATUS              RESTARTS   AGE
doms-pod      0/1     ImagePullBackOff    0           3s
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$
```

We see under *Status* an message saying *ImagePullBackoff*.

### II. Explore the reason for failure

First let's pull the logs for the pod.

```
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ kubectl logs doms-pod
Error from server (BadRequest): container "nginx-configmap" in pod "doms-pod" is waiting to start: image can't be pulled
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$
```

We see that the container in my pod is waiting to apply an image but can't do so. Now let's look at the description of the pod. We see that the image is invalid.

```
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ kubectl describe pod doms-pod
Name:          doms-pod
Namespace:     default
Priority:       0
Node:          minikube/192.168.49.2
Start Time:    Thu, 24 Mar 2022 22:11:27 +0000
Labels:        <none>
Annotations:   <none>
Status:        Pending
IP:            172.17.0.3
IPs:
  IP: 172.17.0.3
Containers:
  nginx-configmap:
    Container ID:
    Image:          nginx:invalidversion
    Image ID:
    Port:           <none>
    Host Port:      <none>
    State:          Waiting
      Reason:       ErrImagePull
    Ready:          False
    Restart Count:  0
    Environment:    <none>
```

If look further down we also see in the events that a warning was triggered 20 seconds ago from the kublet. We have failed to pill an image because the description is unknown as well as the manifest.

```
node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type     Reason      Age          From          Message
  ----     -
  Normal   Scheduled   109s         default-scheduler   Successfully assigned default/doms-pod to minikube
  Warning   Failed      33s (x6 over 108s)  kubelet          Error: ImagePullBackOff
  Normal   Pulling     21s (x4 over 109s)  kubelet          Pulling image "nginx:invalidversion"
  Warning   Failed      20s (x4 over 108s)  kubelet          Failed to pull image "nginx:invalidversion": rpc error: code = Unknown desc = Error response from daemon: manifest for nginx:invalidversion not found: manifest unknown: manifest unknown
  Warning   Failed      20s (x4 over 108s)  kubelet          Error: ErrImagePull
  Normal   BackOff     5s (x7 over 108s)  kubelet          Back-off pulling image "nginx:invalidversion"
```

### III. Resolve the issue

To resolve the issue we need to provide the correct version information for our pod. Let's edit the manifest to reflect version 1.14.2 as listed here:

<https://kubernetes.io/docs/concepts/workloads/controllers/deployment/>

Since we've changed the version and applied the new manifest we can see that the pod is back in working order.

```
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ nano doms-faultypod.yaml
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ cat doms-faultypod.yaml
apiVersion: v1
kind: Pod
metadata:
  name: doms-pod
spec:
  containers:
  - name: nginx-configmap
    image: nginx:1.14.2
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ kubectl apply -f doms-faultypod.yaml
pod/doms-pod configured
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
doms-pod      1/1     Running   0           5m46s
dominickhrndz314@cloudshell:~ (sandbox-io-289003)$
```

If your pod is now running and ready you have completed this training.