



# 5 Simple Tips for Troubleshooting Your Kubernetes Pods



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# Agenda

- Why Pods fail in Kubernetes?
- 5 tips to troubleshoot pod failure
- Common reasons pods fail (+demos!)
- Summary

<https://github.com/guysalton-codefresh/5-tips-troubleshoot-pods>

# Why Pods fail?

1. Startup failure - containers do not start
2. Runtime failure - the application code fails after the container starts up

# Tip1: Observe Pods

Command: `kubectl get pods`

```
~ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
configmap-pod	0/1	CreateContainerConfigError	0	16m
crasher-588bffdd96-r9bk7	0/1	CrashLoopBackOff	43	3h18m
my-demo-app-664485ccf5-f85cg	0/1	ImagePullBackOff	0	3h42m
my-demo-app-second-5bb8bbb997-8jx6t	0/1	Pending	0	3h40m
secret-pod	0/1	ContainerCreating	0	16s
web-78c7548965-ghtjs	1/1	Running	0	7d5h
web1-85cf9cc57-5dhr6	0/1	ImagePullBackOff	0	7d5h

# Tip2: Check Events Related to Pods

Command: `kubectl describe pod <pod name>`

```
web1:
  Container ID:
  Image:      nginx
  Image ID:
  Port:       <none>
  Host Port:  <none>
  State:      Waiting
    Reason:   ImagePullBackOff
  Ready:      False
  Restart Count: 0
  Environment: <none>
  Mounts:
    /var/run/secrets/kubernetes.io/serviceaccount from default-token-wsk82 (ro)
Conditions:
  Type           Status
  Initialized     True
  Ready           False
  ContainersReady False
  PodScheduled    True
Volumes:
  default-token-wsk82:
    Type:      Secret (a volume populated by a Secret)
    SecretName: default-token-wsk82
    Optional:  false
QoS Class:     BestEffort
Node-Selectors: <none>
Tolerations:   node.kubernetes.io/not-ready:NoExecute for 300s
                node.kubernetes.io/unreachable:NoExecute for 300s
Events:
  Type     Reason      Age          From                                     Message
  ----     -
  Normal   Pulling     58m (x1980 over 7d1h)  kubelet, ip-192-168-59-227.us-east-2.compute.internal  pulling image "nginx"
  Normal   BackOff     33m (x44739 over 7d1h)  kubelet, ip-192-168-59-227.us-east-2.compute.internal  Back-off pulling image "nginx"
  Warning   Failed     3m34s (x44871 over 7d1h)  kubelet, ip-192-168-59-227.us-east-2.compute.internal  Error: ImagePullBackOff
```

# Demo 1:

## Debugging *ImagePullBackOff* Pod

# Demo 2:

## Debugging *RunContainerError* Pod



# Demo 3:

## Debugging *ContainerCreating* Pod

# Demo 4:

## Debugging *Pending* Pods

## Tip3: Check your logs

Command: `kubectl logs pod <pod name>`

```
~ ➤ kubectl logs --tail=10 venona-86b8445875-zdtxj -ncodefresh-runtime
INFO [2020-03-10T13:13:26.374Z]: Calling Codefresh API to fetch jobs
  namespace: "task"
  job: "TaskPullerJob"
  uid: "2fc31d50-7a07-53cd-ab35-174906fe48fe"
INFO [2020-03-10T13:13:26.374Z]: Got 0 tasks
  namespace: "task"
  job: "TaskPullerJob"
  uid: "2fc31d50-7a07-53cd-ab35-174906fe48fe"
INFO [2020-03-10T13:13:26.374Z]: Job: TaskPullerJob finished
INFO [2020-03-10T13:13:26.374Z]: Queue is empty
```

# Demo 5:

## Debugging *CrashLoopBackOff* Pod

## Tip4: Run sh/bash directly in the Pod

Command: `kubectl exec -it <pod name>`

```
~ ➤ kubectl exec -it web-78c7548965-ghtjs bash
root@web-78c7548965-ghtjs:/#
root@web-78c7548965-ghtjs:/#
root@web-78c7548965-ghtjs:/#
root@web-78c7548965-ghtjs:/# █
```

# Demo 6:

## Run commands inside a Pod

# Tip5: Show cluster level events

## Command: kubectl get events

```
~ kubectl get events --sort-by=.metadata.creationTimestamp
```

LAST SEEN	TYPE	REASON	KIND	MESSAGE
3m42s	Warning	Failed	Pod	Error: ImagePullBackOff
3m49s	Normal	BackOff	Pod	Back-off pulling image "r.cfcf.io/codefreshdemo/trivial-web:e1b7756"
8m39s	Warning	Failed	Pod	Error: ImagePullBackOff
31m	Warning	FailedScheduling	Pod	0/2 nodes are available: 2 Insufficient cpu, 2 Insufficient memory.
4m43s	Warning	BackOff	Pod	Back-off restarting failed container
60m	Normal	Pulling	Pod	pulling image "gcr.io/google_containers/busybox"
58m	Warning	FailedMount	Pod	MountVolume.SetUp failed for volume "myothersecret" : secrets "myothersecret" not found
59m	Normal	Scheduled	Pod	Successfully assigned tips-webinar/secret-pod to ip-192-168-2-122.us-east-2.compute.inte
57m	Warning	FailedMount	Pod	Unable to mount volumes for pod "secret-pod_tips-webinar(45dcce32-6c58-11ea-ae33-06924f304560)": timeout expired waiting for volumes to attach or mount for pod "tips-webinar"/"secret-pod". list of unmounted volumes=[myothersecret default-token-wsk82]. list of unattached volumes=[myothersecret default-token-wsk82]
57m	Normal	Scheduled	Pod	Successfully assigned tips-webinar/configmap-pod to ip-192-168-59-227.us-east-2.compute.internal
56m	Warning	Failed	Pod	Error: configmaps "special-config" not found
2m24s	Normal	Pulling	Pod	pulling image "gcr.io/google_containers/busybox"
56m	Normal	Pulled	Pod	Successfully pulled image "gcr.io/google_containers/busybox"
41m	Normal	Scheduled	Pod	Successfully assigned tips-webinar/secret-pod to ip-192-168-2-122.us-east-2.compute.inte
11m	Warning	FailedMount	Pod	MountVolume.SetUp failed for volume "myothersecret" : secrets "myothersecret" not found
68s	Warning	FailedMount	Pod	Unable to mount volumes for pod "secret-pod_tips-webinar(c6a03cb6-6c5a-11ea-acbb-0aeb90b0e834)": timeout expired waiting for volumes to attach or mount for pod "tips-webinar"/"secret-pod". list of unmounted volumes=[myothersecret]

# Summary

- If pod didn't start - *kubectl describe* it to see events
- If pod is crashing - *kubectl logs* to see the logs
- Need to run commands inside the pod? - *kubectl exec -it*





# Thank You!

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