Kubernetes Deployment Error – PodToleratesNodeTaints

Scenario

You have a single node (master) kubernetes deployment and you want to schedule standard pods.

The master name is your hostname: $(hostname).

Upon your attempt at deploying a service, you notice the state of the resulting pod remains in *Pending*.

Further investigation via kubectl describe pod {{ YOUR_POD_NAME }} reveals an error similar to
No nodes are available that match all of the following predicates:: PodToleratesNodeTaints

Due Diligence:

- All kubernetes nodes are in a 'Ready' status: kubectl get nodes
- All kubernetes nodes have sufficient resources for pod deployment: kubectl describe nodes
- Your image is available on the docker registry you've specified in your kubernetes manifest (.yaml)

Troubleshooting

According to this post:

"No nodes are available that match all of the following predicates:: PodFitsHostPorts (1), PodToleratesNodeTaints"
https://github.com/kubernetes/kubernetes/issues/49440

The troubleshooting methodology was to review the kubernetes codebase:

- Navigate to the kubernetes github repo
- Search the repository for the relevant function
- Kubernetes is written in golang, so search for “func PodToleratesNodeTaints”

As such, the following block of code:

```
if
v1helper.TolerationsTolerateTaintsWithFilter(pod.Spec.Tolerati
ons, taints, filter) {
return true, nil, nil
}
```

Will not be executed, which will trigger the next line of code:

```
return                                                  false,
[]algorithm.PredicateFailureReason{ErrTaintsTolerationsNotMatc
h}, nil
```

Effectively returning false, hence the original error

Further investigation on your master:

```
kubectl describe node $(hostname) | grep -i taint
```

If the command returns something similar to:

```
Taints: node-role.kubernetes.io/master:NoSchedule
```

Then your node is unschedulable.

The fix would be to remove this taint, as follows:

```
kubectl     taint     nodes     $(hostname)     node-
role.kubernetes.io/master:NoSchedule-
```

You should see a confirmation similar to:

node {{ NODE_NAME }} untainted

You should now be able to schedule pods on this node

Notes

I came across the github issue description by Googling the following search term:

gls*"No nodes are available that match all of the following predicates" "PodToleratesNodeTaints"