

## Fixing “0/2 Nodes Available”

A somewhat infrequent cluster error that pops up is the following:

0/2 nodes are available: 1 Insufficient cpu, 1 node(s) didn't match node selector

And related:

pod didn't trigger scale-up: 1 node(s) didn't match node selector

For a while, I just ignored this error because I thought it was just related to node preemption and that it would sort itself out.

Well, I finally observed it today (July 30, 2021) after deploying Import Rules (UFC-381) to production.

As it turns out, this error is caused by an `ingress-nginx-controller` pod not being able to start (i.e. it is stuck in the pending state). This happens because one of the nodes (i.e. the node that it is trying to be scheduled onto) does not have enough available resources.

This explains the error: the node has insufficient cpu, and the other node didn't match the node selector (i.e. the pod anti-affinity selector).

So why was one node out of cpu? Turns out, it was because the second `kube-dns` pod had gotten scheduled onto the same node as the first one. Since the DNS pods have actual CPU requests attached (and a large amount at that — 260 mCPU), they exhausted the one node's resources.

So why did one node have both DNS pods? Presumably, it was because of the same reason for why the descheduler exists: during node preemption, deployments with multiple replicas will get shuffled onto a single node. But once the preempted node comes back, they won't get shuffled out.

So either we need to scale `kube-dns` back down to 1 replica (and potentially face those rare DNS issues we were seeing before), or increase the node count to 3 in the hopes of lowering the chances that two nodes go down at once and cause replicas to be put onto one node, or we could increase the node size so that each node has 2 cpus.

Since we have the \$5k in GCP credits, we *could* feasibly do both. Just a matter of picking a time to do it, cause that'll cause downtime.