Debugging pods

This guide helps you debug applications that are deployed into Kubernetes and do not behave correctly.

> ***NOTE:*** *This is not a guide for people who want to debug their cluster. For that you should follow the Troubleshooting Clusters guide.*

Diagnosing the state of the pod

This guide is to help users debug applications that are deployed into Kubernetes and not behaving correctly.

1. Check the current state of the pods the following command:

   ```
   $ kubectl get pods

   NAME                                READY    STATUS     RESTARTS        AGE
   alertmanager-main-0                 6/6      Running    0               3h15m
   cluster-monitoring-operator-1234    1/1      Pending    0               3h31m
   kube-state-metrics-1234             3/3      Running    6 (3h19m ago)   3h23m
   ```

   Look at the state of the pods. Are they all `Running`? Are there any recent restarts?

2. Continue debugging depending on the state of the pods.

   1. Check pods that are not in the `Running` status.
   2. Gather more information with the `kubectl describe pods <pod_name>` command.

About the state of the pods

Pods can be observed in the following states:

Table of pod states

State	Description	Reasons
`Running`	The Pod has been bound to a node, and all of the containers have been created.	No issues observed.
`Pending`	The pod cannot be scheduled onto a node.	Not enough resources.
`Waiting`	The pod is scheduled to a worker node, but it cannot run on the machine.	Problems with image.
`Terminating`	A deletion is issued for the pod, but the control plane is unable to delete the `Pod` object.	Problems with webhook.

Debugging pods in the pending status

If a pod is stuck in the `Pending` status, it means that it cannot be scheduled onto a node.

Reasons might include the following issues:

- **You do not have enough resources**: You need to delete pods, adjust resource requests, or add new nodes to your cluster.
  - See Compute Resources document for more information.
- **You are using *hostPort***: Try using a `Service` object to expose your pod.