CKA Lab Part 1 - Scheduling

Requirements

- A preconstructed Kubernetes lab with kubectl

Guidelines

Before you begin:

- Open up a ssh connection so you can run "kubectl" commands
- Open up a browser window to https://kubernetes.io/docs/home/

During the activity

- Leverage https://kubernetes.io/docs/home/ as much as you need

Lab Activity 1 - Label Selectors

Deploy two pods:

One pod with a label of "Tier = Web"

One pod with a label of "Tier = App"

Use any container image you see fit.

Verify the labels are applied.

Lab Activity 2 - Daemonsets

Deploy a Daemonset that leverages the nginx image

Verify the daemonset has been created successfully

Lab Activity 3 - Resource Limits

Create a new namespace called "tenant-b-100mi"

Create a memory limit of 100Mi for this namespace

Create a pod with a memory request of 150Mi, ensure the limit has been set by verifying you get a error message.

Lab Activity 4 - Multiple Schedulers

Assume another scheduler "CustomScheduler" has been created in your environment. Configure a pod to use this scheduler.

Validate the pod is using this scheduler.

Lab Activity 5 - Schedule Pod without a scheduler

On one of the worker nodes:

Create the directory /etc/staticpods

Create a pod manifest file in this directory

Configure the kubelet service on this worker node to create pods from /etc/staticpods

Lab Activity 6 - Display Scheduler Events

Create a pod manifest file using the nginx image which will create a pod called "nginx-web" (Alternatively do this via `kubectl run`)

Extract the events from the cluster, particularly those pertaining to scheduling to find where this pod was scheduled.

Extract the logs from the pod running the default scheduler, or from the respective file if running as a deamon service on your master node.

Lab Activity 7 - Know how to configure the Kubernetes Scheduler

Configure the Kube-Scheduler by adding --logtostderr=true to the existing configuration.

Lab Activity 8 - Taints

Place a taint on a node

Configure a pod with a toleration for the new taint and observe scheduling behaviour

Modify toleration effects and observe scheduling behaviour

Add tolerationSeconds to the pods toleration spec

Place additional taints on the node

Additional References

- Resource Policies
- Kubernetes Scheduler
- Taints and Tolerations