

Technical Test

This test is designed to demonstrate the applicants ability to create a kubernetes cluster from a base OS install, follow third party documentation to install some additional functionality and then create some basic automation scripts around the infrastructure.

1. Kubernetes Install

- Deploy 3 ubuntu 20.04 instances
- Update all packages
- Install docer-ce
- Install kubelet / kubeadm v1.21.0
- Hold kubelet / kubeadm / docker to the currently installed version
- Boot strap a kubeadm cluster across all three nodes
- Install flannel as the CNI

Results

- Show the output `kubectl get nodes` with all nodes ready
- Show the output from `kubectl get pods -A`

2. Install KubeVirt

Using the publicly available docs for kubevirt (<https://kubevirt.io/user-guide/>), install this to the cluster and launch the sample alpine VM (<https://github.com/kubevirt/kubevirt/blob/main/examples/vm-alpine-datavolume.yaml>).

Results

- Show the output `kubectl get nodes` with all nodes ready (virt-api / virt-controller / virt-handler / virt-operator)
- Show the output from `kubectl get pods -n default` showing the launched VM

3. Templating with Helm

Create a helm chart to launch a variable number of VM's. The values file should look like this:

```
virtual_machines:
  - image: docker://registry:5000/kubevirt/alpine-container-disk-
demo:devel
    count: 4
    memory: 128Mi
    cpu: 4
    name: medium
  - image: docker://registry:5000/kubevirt/alpine-container-disk-
demo:devel
    count: 1
    memory: 256Mi
    cpu: 8
```

When run, this helm chart will create 5 VM's with the correct disk image / ram / cpu values.

Results

- Run `kubectl get vm -A` shows the following:
- Run `kubectl describe vm -n default medium-01` shows the correct CPU and Ram allocation

4. Operator (Bonus)

Replicate the helm functionality with an operator. With the following CustomResources

```
kind: DemoInstance
spec:
  image: docker://registry:5000/kubevirt/alpine-container-disk-
demo:devel
  memory: 128Mi
  CPU: 8
```

A single VM should be created. Note, the `count` functionality should not be replicated.