Assignment 3: Virtualization using Docker

Web Services and Cloud Based System 2020
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1 Assignment 3.2

We used Ubuntu for this assignment in Virtualbox. We used the following guids to setup Kubernetes:

- https://kubernetes.io/docs/setup/production-environment/container-runtimes/
  For Docker.
- https://kubernetes.io/docs/setup/production-environment/tools/kubeadm/install-kubeadm/
  For Kubeadm.

While setting up Kubernetes we found the following things:

1.1 Networking

We found that we needed communication between the different host nodes of Kubernetes but they also required internet connection. There are multiple solutions for this but we choose for creating two network adapters one for NAT, which allows internet access and one attached to the "Internal Network", this one allowed the different virtual machines to communcate with eachother. However, this also didnt work so we switched to bridged and let them communicate of this network type.

1.2 System requiremets

The master node of Kubernetes requires 2 CPUS to run, we needed to change that from default 1 CPU. The worker node has less requirements to run.

1.3 product_uuid

The product_uuid needs to be unique within the cluster, we thought to change the uuid after cloning one installation, before setting up the cluster. However,

the action was not allowed, we tried to symbolic link it however we also got an access denied error.

1.4 Deployment.yml and service.yml files

We created four yml files two for the deployments and two for the services. The services relay the information to one of the pods, this is done in a loadbalancing way by Kubernetes it self. We have one of them is on port 80 and the other one is on port 5001. the deployments have three replicas thus creating three pods each.rea