OpenStack with Docker (Team ID: 17, Project ID: 4)

Task on hand

Configure OpenStack with docker and deploy a 3 tier application. Basically includes integrating Docker into Openstack and deploying Docker containers with OpenStack Heat.

Technology Overview

OpenStack – a free and open-source cloud-computing software platform. Users primarily deploy it as an infrastructure-as-a-service (IaaS). The technology consists of a group of interrelated projects that control pools of processing, storage, and networking resources throughout a data center—which users manage through a web-based dashboard, through command-line tools, or through a RESTful API.

Docker - an open-source engine which automates the deployment of applications as highly portable, self-sufficient containers which are independent of hardware, language, framework, packaging system and hosting provider.

Nova typically manages VMs. In this approach, Nova driver is extended to spawn Docker Containers. The Linux Containers deployed with Docker have multiple advantages over the "normal" virtual machines usually deployed by Nova. Those advantages are speed, efficiency, and portability.

Integrating Docker into OpenStack

- Openstack can be easily enhanced by docker plugins. Docker can be integrated into OpenStack Nova as a form of hypervisor (Containers used as VMs).

- *But a better way to use Docker with OpenStack is to orchestrate containers with OpenStack Heat.*

Process Flow

- Install the docker plugin on Heat, which thereby enable to create containers and deploy applications on top of them.

- Identifying the required resources, editing the template and deploying it on Heat. This will create the stack.

- The OpenStack Heat service is used to orchestrate the deployment and management of composite infrastructure and application stacks. The stacks are typically described in YAML documents called Heat Orchestration Templates (HOT). The power of HOT lies in its ability to describe even complex workload deployments in a fully declarative fashion.