Module-7: Containerization using Docker Part - II

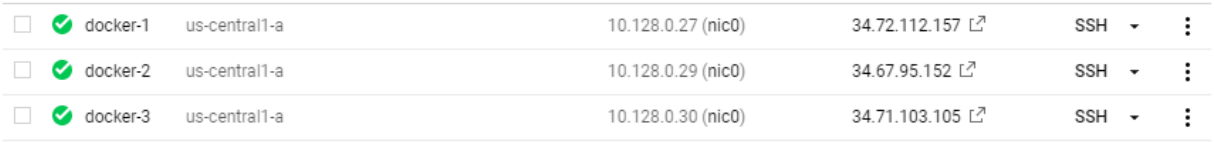
Demo Document - 4

DEMO-4: Starting Docker in Swarm Mode

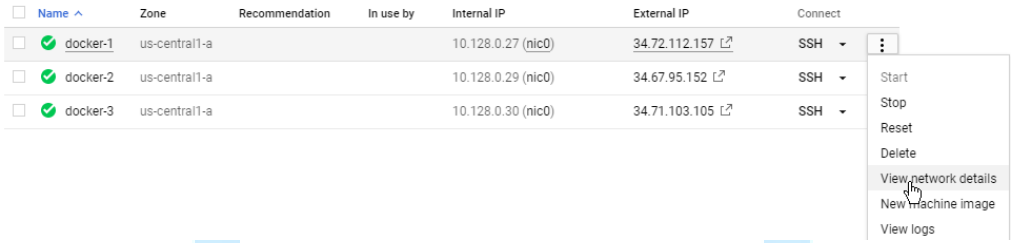
Note: All commands are executed as root.

This setup requires 3 separate instances: 1 Manager node and 2 Worker nodes.

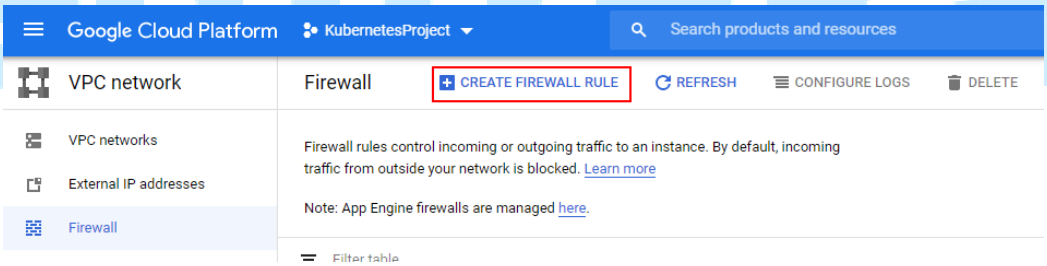
1. Create 3 ubuntu instance on GCP with Docker engine installed on them



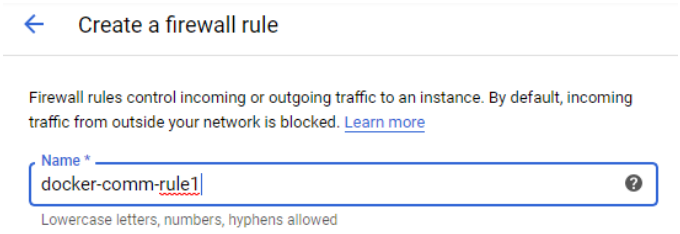
2. Before initializing with the init command set firewall rules for all the instances
   Create ingress and egress rules for TCP 2377, TCP and UDP 7946, and UDP 4789 ports
   Click on view network details and then Firewall



3. Click on CREATE FIREWALL RULE

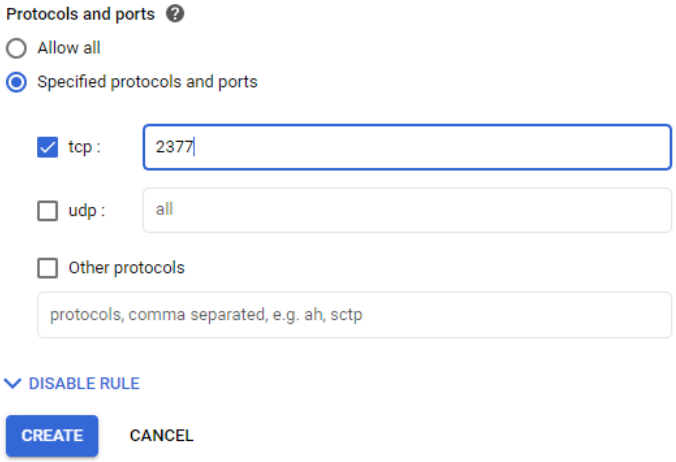


4. Add a name for your rule



5. Select egress or ingress. Select all instances in network for Targets. In Source IP Ranges add the IPs for your instances

6. Set the port and protocol and click on tcp



7. On your manager node run the following command to initialize a swarm cluster

```
$ docker swarm init --advertise-addr <MANAGER-IP>
```

```
root@docker-1:~# docker swarm init --advertise-adder 34.72.112.157
unknown flag: --advertise-adder
See 'docker swarm init --help'.
root@docker-1:~# docker swarm init --advertise-addr 34.72.112.157
Swarm initialized: current node (tulukz7mmibu3a80b70bn4nfa) is now a manager.

To add a worker to this swarm, run the following command:

    docker swarm join --token SWMTKN-1-4p7i7n56ytjf8gcyi3qz2xreyxjzg3vigfp15falkb50nbmvc7-3y1qfpqoug2d4hmkqnpe4nsoq 34.72.112.1
57:2377

To add a manager to this swarm, run 'docker swarm join-token manager' and follow the instructions.
```

8. Copy the output of the init command (marked red in the image above) and use it on the worker nodes
   In case, you have lost the output, the join command can be obtained by running the following command

```
$ docker swarm join-token worker
```

```
root@docker-3:~# docker swarm join --token SWMTKN-1-4p7i7n5
q 34.72.112.157:2377
This node joined a swarm as a worker.
```

9. On the manager node run the node ls command to check all the connected nodes in the cluster

```
$ docker node ls
```

```
root@docker-1:~# docker node ls
ID                            HOSTNAME            STATUS              AVAILABILITY        MANAGER STATUS      ENGINE VERSION
tu1ukz7mmibu3a80b70bn4nfa *   docker-1            Ready               Active              Leader              19.03.11
m1y4s9m41tl8msdk2rqg1zdue     docker-2            Ready               Active                                  19.03.12
5aof5ybchhvxdq7klvu7ukqv2     docker-3            Ready               Active                                  19.03.12
```

Deploy a Service in Swarm

Note: All commands are executed as root.

1. Simply deploy a service using the service create command. Deploying a tomcat service here

```
$ docker service create --name mysvc --replicas 4 -p 8006:8080 tomcat
```

```
root@docker-1:~# docker service create --name tomservice --replicas 3 -p 8006:8080 tomcat
q35e5yfp487qakm5rhoatwqg1
overall progress: 0 out of 3 tasks
1/3: preparing [=================================>                 ]
2/3: preparing [=================================>                 ]
3/3: preparing [=================================>                 ]
```

```
root@docker-1:~# docker service create --name tomservice --replicas 3 -p 8006:8080 tomcat
q35e5yfp487qakm5rhoatwqg1
overall progress: 3 out of 3 tasks
1/3: running   [==================================================>]
2/3: running   [==================================================>]
3/3: running   [==================================================>]
verify: Service converged
```

2. To list the service deployed use:

```
$ docker service ls
```

```
root@docker-1:~# docker service ls
ID                  NAME                MODE                REPLICAS            IMAGE               PORTS
q35e5yfp487q        tomservice          replicated          3/3                 tomcat:latest       *:8006->8080/tcp
```

3. Check the tasks deployed by the service using the ps command

```
$ docker service ps <serviceName>
```

```
root@docker-1:~# docker service ps tomservice
ID                  NAME                IMAGE               NODE                DESIRED STATE       CURRENT STATE           ERR
OR                  PORTS
9dadls5670jk        tomservice.1        tomcat:latest       docker-3            Running             Running 9 minutes ago

o31kikov9z0m        tomservice.2        tomcat:latest       docker-1            Running             Running 9 minutes ago

710bt0ydg6hh        tomservice.3        tomcat:latest       docker-2            Running             Running 8 minutes ago
```

4. To inspect service:

```
$ docker service inspect <serviceName>
```

5. To remove the service:

```
$ docker service rm <serviceName>
```