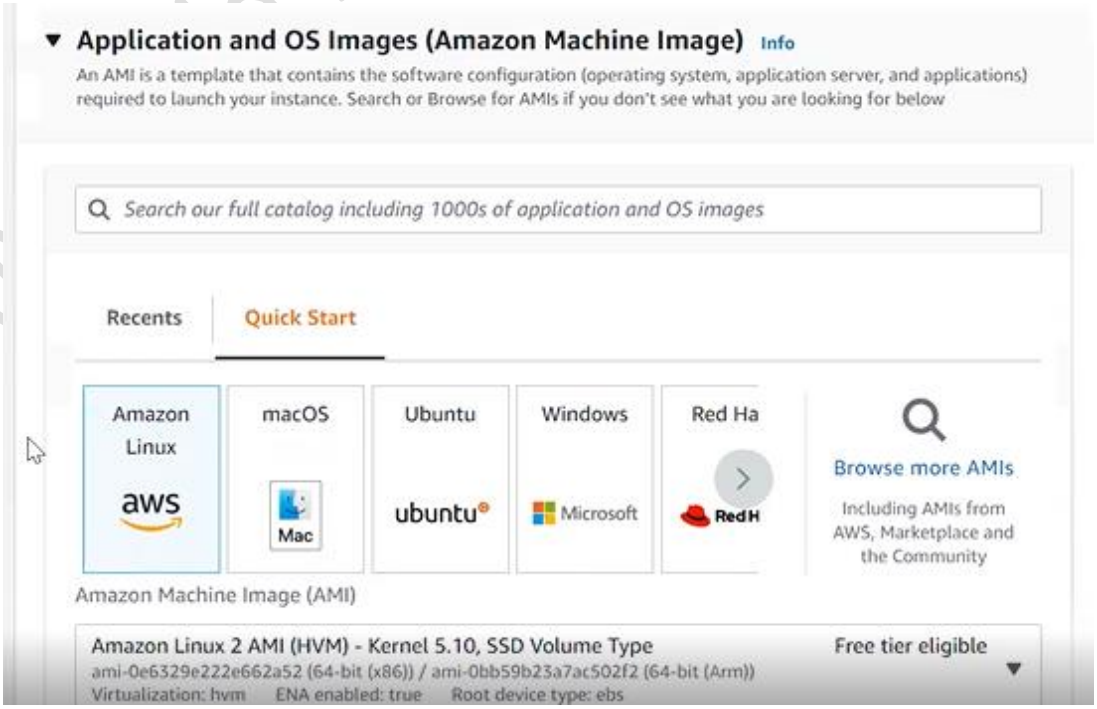
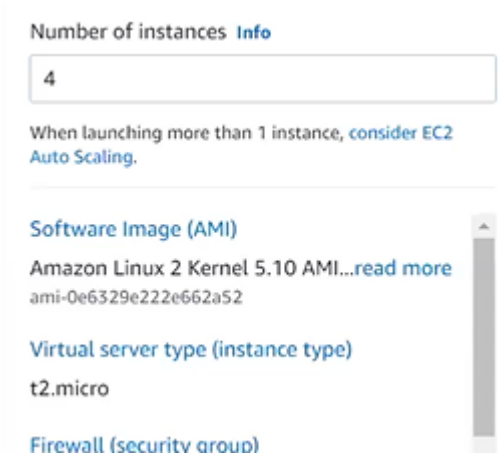
Summary

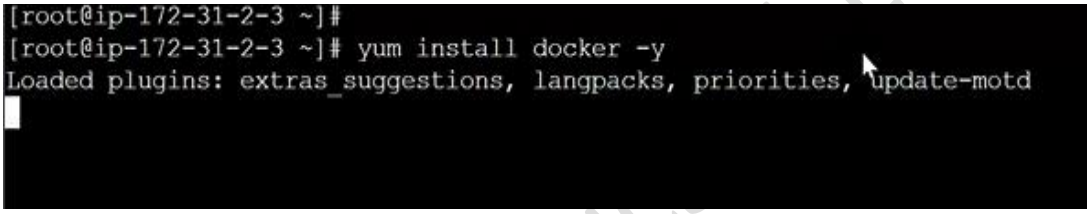
Session No – 15

- For launching the container minimum requirement is hardware resources & operating system
- If we run a website on a container it is completely dependent on the host system's hardware & if there is a possibility that our operating system goes down then the entire website goes down. Here we can say our operating system is a single point of failure
- Adding more resources (CPU / RAM / HD) on one operating system is called vertical scaling
- One of the limitations of vertical scaling is downtime
- Adding additional machines to our infrastructure is called horizontal scaling
- In master-slave architecture one device or system (Master) controls the other devices (Slave)
- Master-slave cluster setup
    - Step 1: launching 4 amazon Linux instances on AWS cloud

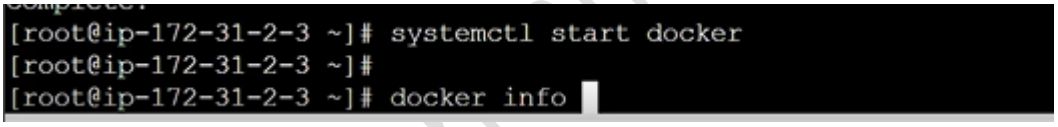




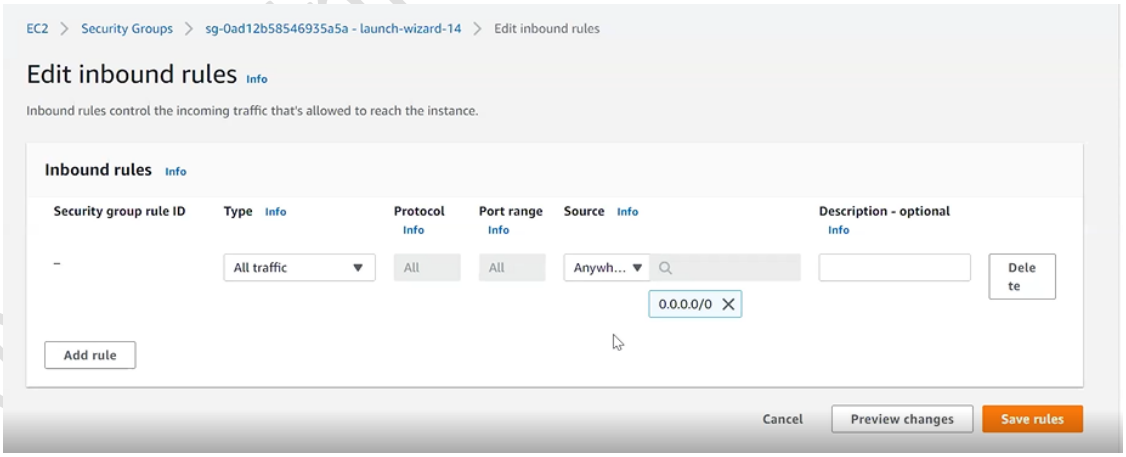
- Step 2:- Installing Docker in all the 4 instances



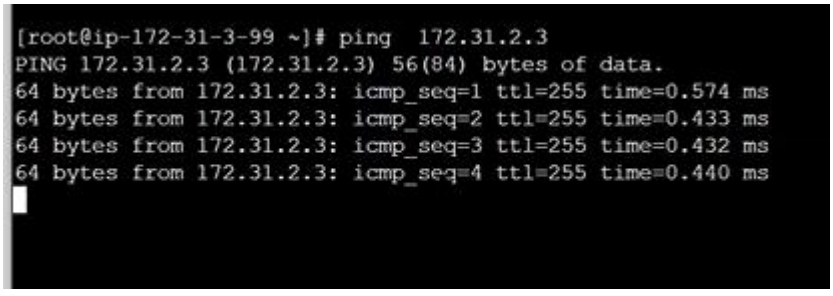
- Step 3 :- Starting docker services



- Step 4:- (**ON MASTER**)Edit the inbound rule or create a new rule



- Step 5:- Pinging from slave to master (Connectivity check)



- Step 6:- (**ON MASTER**) Initializing cluster
  - Command:- **docker swarm init –advertise-addr (Master Ip)**

```
[root@ip-172-31-2-3 ~]# docker swarm init  --advertise-addr  172.31.2.3
Swarm initialized: current node (uvykc1f39gvwckh2ycliwc2zs) is now a manager.

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

    docker swarm join --token SWMTKN-1-2w2ua5nhvc3ivhpbnf35prhifxt3wbi96f9w9h7vrurpxr7ztf-0io6cv0tgwhcbjgi526rwqq3f 17
2.31.2.3:2377

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

[root@ip-172-31-2-3 ~]#
```

- Step 7:- Listing nodes in cluster
  - Command :- **docker node ls**

```
[root@ip-172-31-2-3 ~]# docker node ls
ID                            HOSTNAME                                STATUS    AVAILABILITY   MANAGER STATUS   EN
GINE VERSION
uvykc1f39gvwckh2ycliwc2zs *   ip-172-31-2-3.ap-south-1.compute.internal   Ready     Active         Leader           20
.10.17
[root@ip-172-31-2-3 ~]#
```

- Step 8:- For adding a worker node they give a pre-created command at the time of initializing the cluster

```
[root@ip-172-31-2-3 ~]# docker swarm init  --advertise-addr  172.31.2.3
Swarm initialized: current node (uvykc1f39gvwckh2ycliwc2zs) is now a manager.

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

    docker swarm join --token SWMTKN-1-2w2ua5nhvc3ivhpbnf35prhifxt3wbi96f9w9h7vrurpxr7ztf-0io6cv0tgwhcbjgi526rwqq3f 17
2.31.2.3:2377

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

- Step 9 :- (**ON SLAVE**) Joining slave to master

```
[root@ip-172-31-3-99 ~]# docker swarm join --token SWMTKN-1-2w2ua5nhvc3ivhpbnf35prhifxt3wbi96f9w9h7vrurpxr7ztf-0io6cv0
tgwhcbjgi526rwqq3f 172.31.2.3:2377
This node joined a swarm as a worker.
[root@ip-172-31-3-99 ~]#
```

- Listing the node in cluster

```
[root@ip-172-31-2-3 ~]# docker node ls
ID                            HOSTNAME                                STATUS    AVAILABILITY   MANAGER STATUS   E
NGINE VERSION
uvykc1f39gvwckh2ycliwc2zs *   ip-172-31-2-3.ap-south-1.compute.internal   Ready     Active         Leader           2
0.10.17
idxdku7aor668iuol8q8yq2tq     ip-172-31-3-99.ap-south-1.compute.internal   Ready     Active                          2
0.10.17
[root@ip-172-31-2-3 ~]#
```

- If we run the **docker info** command on the master we can see swarm is active and managing worker nodes

```
 Log: awslogs fluentd gcplogs gelf journald json-file local logentries splunk syslog
Swarm: active
 NodeID: uvykc1f39gvwckh2ycliwc2zs
 Is Manager: true
 ClusterID: maoobafkvdvrw5oodqamdwxoe
 Managers: 1
 Nodes: 2
 Default Address Pool: 10.0.0.0/8
 SubnetSize: 24
 Data Path Port: 4789
 Orchestration:
  Task History Retention Limit: 5
 Raft:
  Snapshot Interval: 10000
  Number of Old Snapshots to Retain: 0
```

- Launching container in the swarm cluster
  - Command:- **docker services create –name webserver httpd**

```
[root@ip-172-31-2-3 ~]# docker service ls
ID        NAME      MODE      REPLICAS   IMAGE     PORTS
[root@ip-172-31-2-3 ~]# docker service  create --name webserver  httpd
nzdpo5nb806ofmhbqj9qu8aj2
overall progress: 1 out of 1 tasks
1/1: running   [==================================================>]
verify: Service converged
[root@ip-172-31-2-3 ~]# docker service ls
ID             NAME        MODE         REPLICAS   IMAGE          PORTS
nzdpo5nb806o   webserver   replicated   1/1        httpd:latest
[root@ip-172-31-2-3 ~]#
```