

## **Summary**

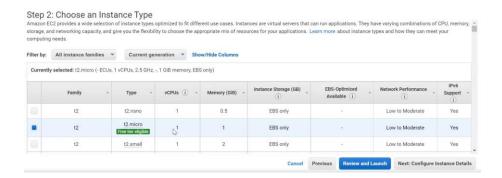
## **Session No 1**

- From a user perspective main use of the operating system is to run the program
- If we want to run any program or application we need the operating system
- There is no way to interact with the operating system without the program
- For getting the operating system we need physical hardware (RAM, CPU,
   Network card, HD) and we need to install the operating system
- Running the program is also called deploy
- Different ways of installing the operating system
  - Bare metal
  - Cloud computing
  - Virtualization
  - Containerization
- Docker is a product that works on the concept of containerization
- Case study on Hotstar
  - Hotstar created the world record on the ICC world cup 2019 IND vs NZ match of having 25.3 million concurrent users
  - For launching the Operating system Hotstar used containerization
  - For launching the server we need physical hardware and we need to install the operating system on it and deploy the application it is also called tech stack
  - Increasing the servers is also called scaling

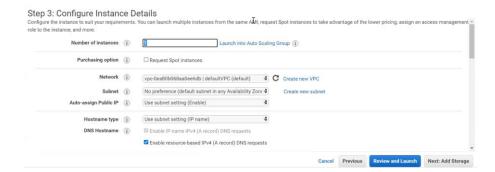
- Before 2018 Hotstar was using Ec2 instance to launch an operating system
- If a surge of requests comes up Ec2 instance will not help because it requires some time to launch the operating system
- If we want to launch the operating system in 1 second then we can use
   Docker which works on the containerization concept
- Docker is software, to run it we need the operating system. Mostly Linux operating system is used
- Launching instance on Aws cloud
  - Step 1 Choose Amazon Machine image



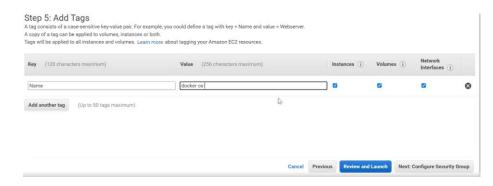
Step 2 –Choose instance type



Step 3 – Configure instance details



Step 4 – Adding a tag



Step 5 – Configuring security groups and allowing all traffic



su command is used to switch between users

```
[ec2-user@ip-172-31-40-68 ~]$ whoami
ec2-user
[ec2-user@ip-172-31-40-68 ~]$ sudo su - root
[root@ip-172-31-40-68 ~]# whoami
root
[root@ip-172-31-40-68 ~]#
```

Installing Docker

```
[root@ip-172-31-40-68 ~]# rpm -q docker-ce
package docker-ce is not installed
[root@ip-172-31-40-68 ~]# yum install docker
```

Starting Docker services

```
[root@ip-172-31-40-68 ~]# systemctl status docker
• docker.service - Docker Application Container Engine
  Loaded: loaded (/usr/lib/systemd/system/docker.service; disabled; vendor preset: disabled)
  Active: inactive (dead)
    Docs: https://docs.docker.com
[root@ip-172-31-40-68 ~]# systemctl start docker
[root@ip-172-31-40-68 ~]#
```

Docker program or service is also known as docker-engine

- If we launch any OS on top of the cloud it is called an instance similarly if we launch any OS on top of Virtualization it is called Host/VM and on top of containerization if we launch any OS it is called Container
- docker ps command is used to see the running containers
- Minimum requirement to launch the Operating system we need an image
- Without an OS image we can not install or launch the operating system
- Registry contains the container image. The famous public registry is DOCKER
   HUB
- docker images command is used to display all the docker images
- docker pull (image name ) command is used to pull or download the image

```
[root@ip-172-31-40-68 ~] # docker pull ubuntu:14.04
14.04: Pulling from library/ubuntu
2e6e20c8e2e6: Pull complete
0551a797c01d: Pull complete
512123a864da: Pull complete
Digest: sha256:d7a459ecd77ebb09525584f2c3e1bb7f6a2879d90df8a3523c1b899dfc2a226f
Status: Downloaded newer image for ubuntu:14.04
docker.io/library/ubuntu:14.04
[root@ip-172-31-40-68 ~] # docker images
                       IMAGE ID
REPOSITORY
            TAG
                                      CREATED
                                                       SIZE
ubuntu
             14.04
                       13b66b487594
                                      18 months ago
                                                       197MB
[root@ip-172-31-40-68
```

- Launching the container
  - o Command docker run -t -i image name
    - i means interactive
    - -t for a terminal

```
[root@ip-172-31-40-68 ~] # docker images
                       IMAGE ID
REPOSITORY
             TAG
                                      CREATED
                                                       SIZE
ubuntu
             14.04
                       13b66b487594
                                                       197MB
                                      18 months ago
[root@ip-172-31-40-68 ~] # docker ps
               IMAGE
CONTAINER ID
                         COMMAND
                                   CREATED
                                             STATUS
                                                        PORTS
                                                                  NAMES
[root@ip-172-31-40-68 ~]# docker
                                             -i ubuntu:14.04
                                   run -t
root@474472007da0:/#
root@474472007da0:/#
root@474472007da0:/#
root@474472007da0:/#
```

• docker ps -a command is used to see all the container

```
[root@ip-172-31-40-68 ~]# docker ps -a
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
ca15ebc88b5a ubuntu:14.04 "/bin/bash" 33 seconds ago Up 32 seconds
474472007da0 ubuntu:14.04 "/bin/bash" 33 minutes ago Exited (0) 54 seconds ago intelligent_kilby
```

docker stop (Container ID) to stop the container from the base system

```
[root@ip-172-31-40-68 ~] # docker ps

CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES

ca15ebc88b5a ubuntu:14.04 "/bin/bash" About a minute ago Up About a minute friendly_lamport

[root@ip-172-31-40-68 ~] # docker stop ca15ebc88b5a

ca15ebc88b5a

[root@ip-172-31-40-68 ~] #
```