Cloud Computing

SEWP ZG527

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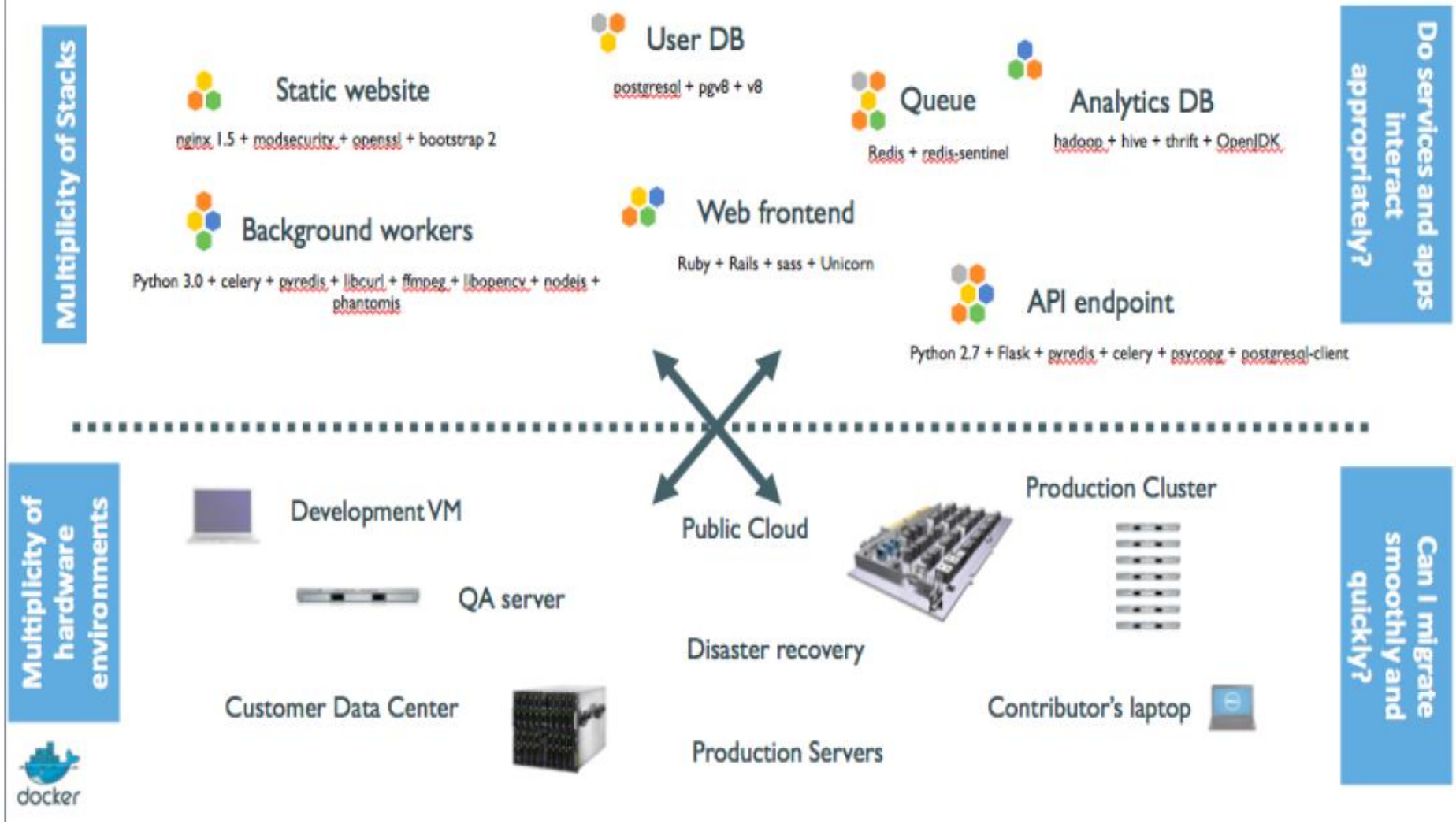
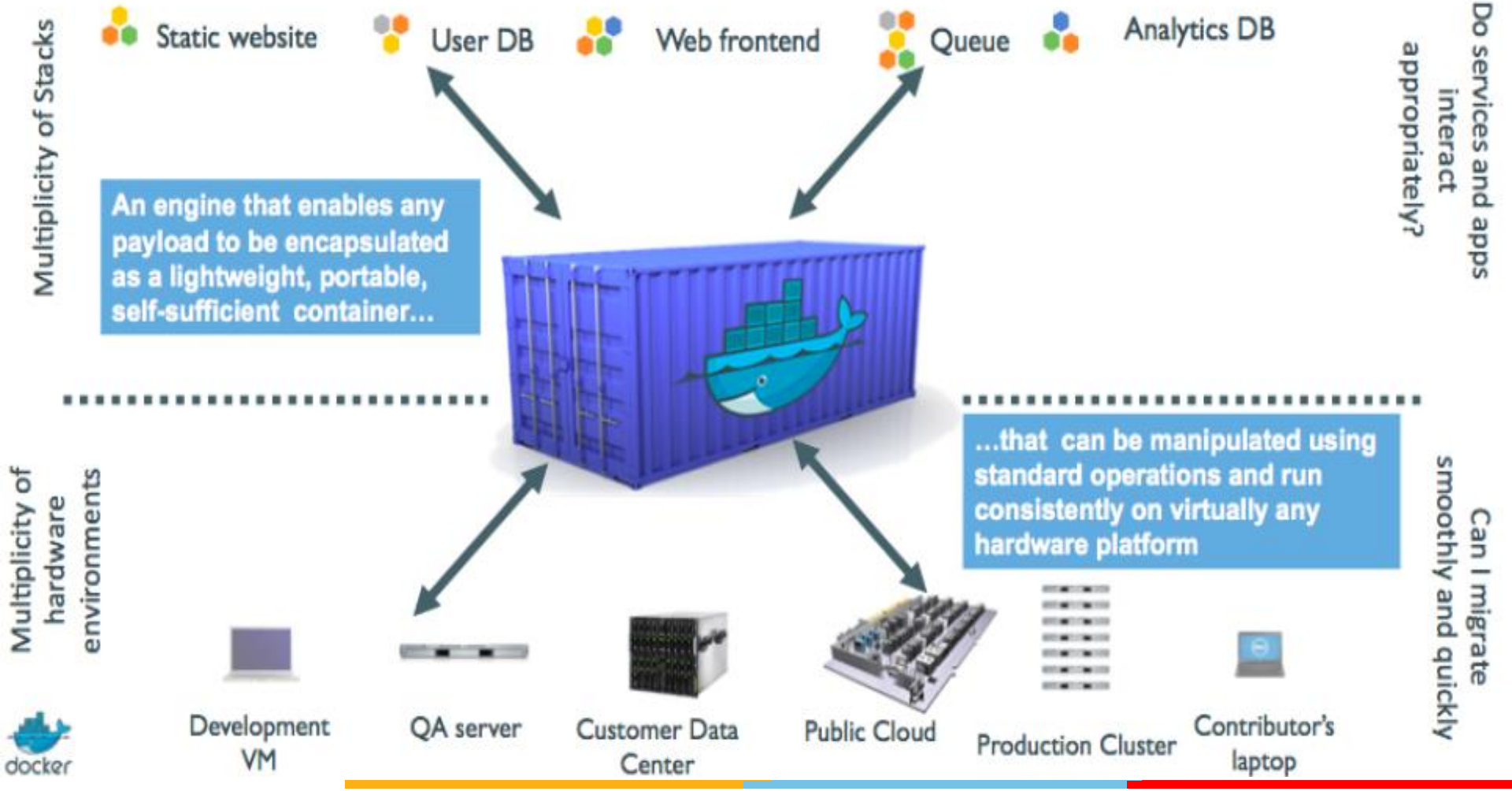
docker

Current Problem the Industry is facing



A shipping container system for applications

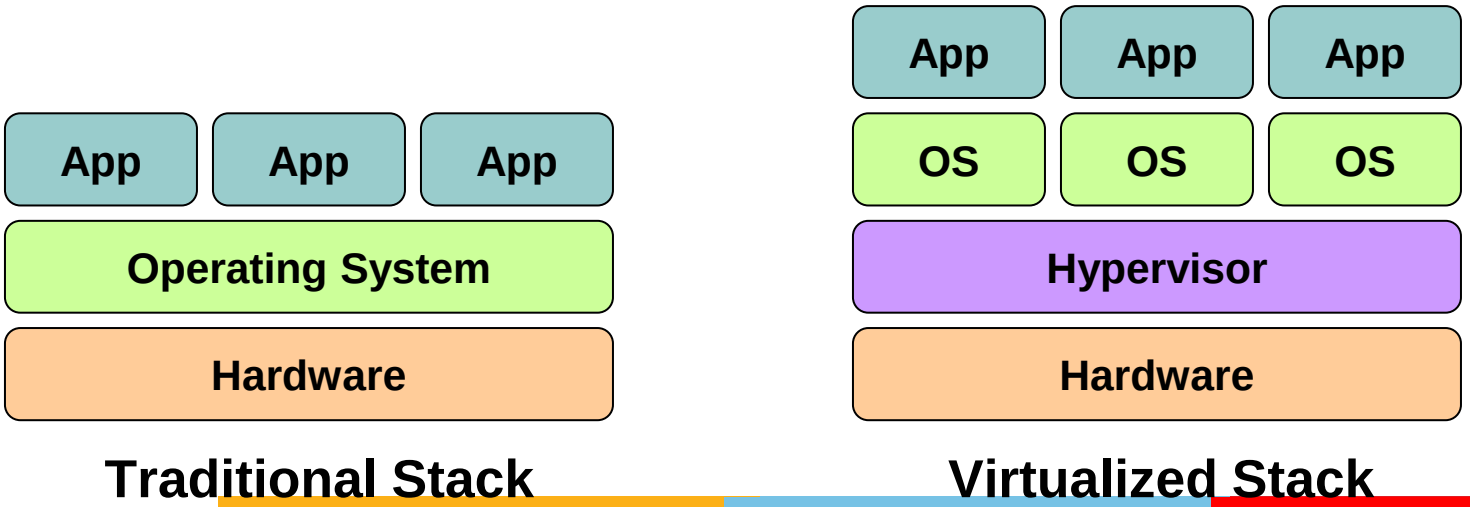


Dockers

- All applications have their own dependencies, which include both software and hardware resources.
- Docker is a mechanism that helps in isolating the dependencies per each application by packing them into containers.
- In terms of technology, it provides cloud portability by running the same applications in different virtual environments.
- Containers are scalable and safer to use and deploy as compared to regular approaches.

Virtual Machines

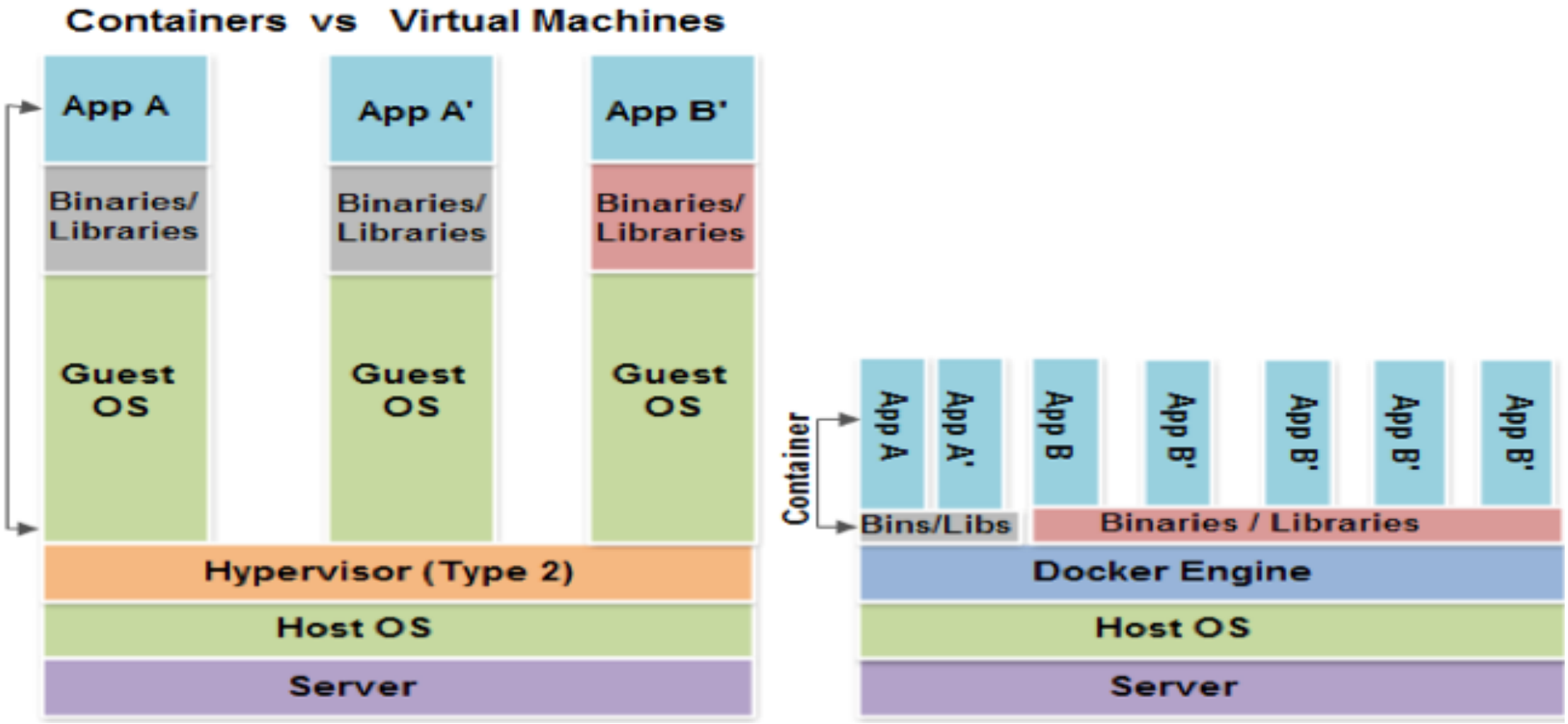
- Virtual machines are used extensively in cloud computing.
- Isolation and resource control have continually been achieved through the use of virtual machines.
- Virtual machine loads a full OS with its own memory management and enable applications to be more efficient and secure while ensuring their high availability.



How are Docker Containers different from a Virtual Machine?

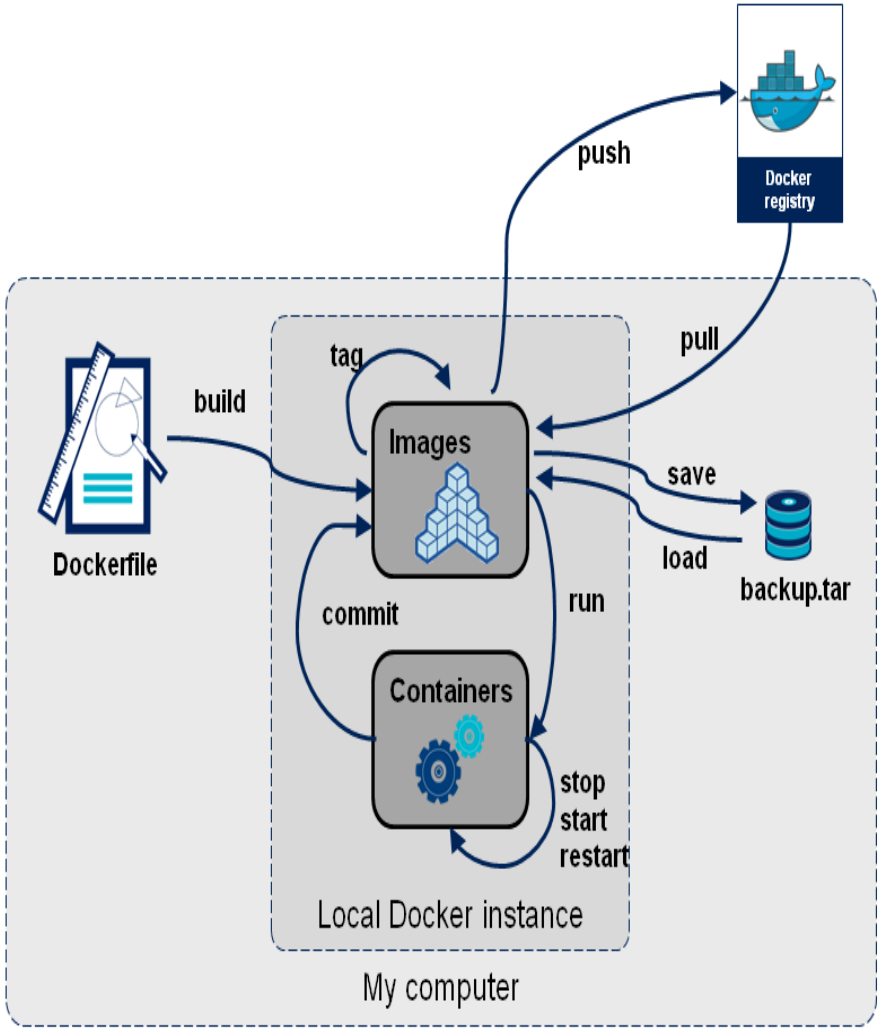
- Virtual machines have a full OS with its own memory management installed with the associated overhead of virtual device drivers.
- Docker containers are executed with the Docker engine rather than the hypervisor.
- Containers are therefore smaller than Virtual Machines and enable faster start up with better performance, less isolation and greater compatibility possible due to sharing of the host's kernel.

How are Docker Containers different from a Virtual Machine?



Docker Container Lifecycle ……

- The Life of a Container
  - Conception
    - **BUILD** an Image from a Dockerfile
  - Birth
    - **RUN** (create+start) a container
  - Reproduction
    - **COMMIT** (persist) a container to a new image
    - **RUN** a new container from an image
  - Sleep
    - **KILL** a running container
  - Wake
    - **START** a stopped container
  - Death
    - **RM** (delete) a stopped container
- Extinction
  - **RMI** a container image (delete image)



Dockerfile ……

- Like a Makefile (shell script with keywords)
- Extends from a Base Image
- Results in a new Docker Image
- Imperative, not Declarative
- A Docker file lists the steps needed to build an images
- docker build is used to run a Docker file

file | 15 lines (11 sloc) | 0.475 kb | Open | Edit | Raw | Blame | History | Delete

```
1  FROM ubuntu:12.04
2
3  RUN apt-get update
4
5  # Make it easy to install PPA sources
6  RUN apt-get install -y python-software-properties
7
8  # Install Oracle's Java (Recommended for Hadoop)
9  # Auto-accept the license
10 RUN add-apt-repository -y ppa:webupd8team/java
11 RUN apt-get update
12 RUN echo oracle-java7-installer shared/accepted-oracle-license-v1-1 select true | sudo /usr/bi[illegible]con[illegible]set-selections
13 RUN apt-get -y install oracle-java7-installer
14 ENV JAVA_HOME /usr/lib/jvm/java-7-oracle
```

https://docs.docker.com/engine/installation/windows/

Thank you