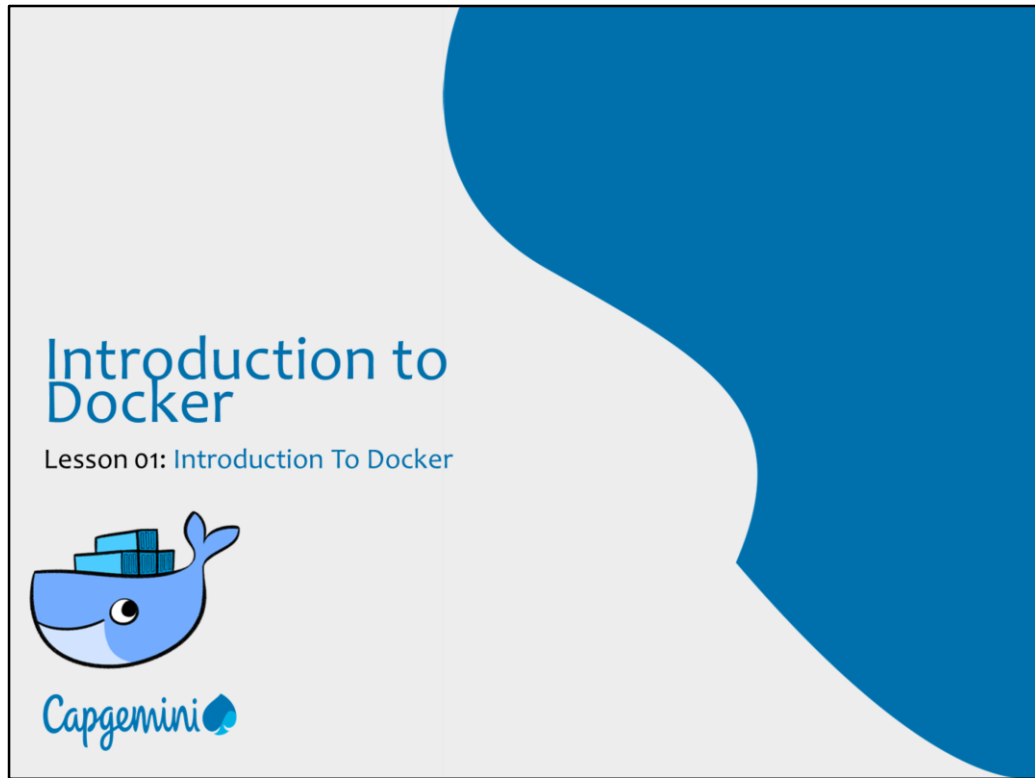


Instructor Notes:

Add instructor notes here.



Instructor Notes:

This lesson is to give an Introduction on Java Server Pages

Lesson Objectives



In this lesson, you will learn:

- What is Docker
- Limitation of VM
- Introduction to Container
- Container Vs VM
- Docker Architecture
- Docker Community
- Docker Installation(demo)

- What is Docker
- Limitation of VM
- Introduction to Container
- Container Vs VM
- Docker Community
- Docker Architecture
- Docker Installation(demo)

Instructor Notes:

1.1: What is Docker What is Docker ?



It is a Open source platform which was promoted by the company DotCloud.inc in 2013 October later on it was renamed to Docker Inc.

Docker is a platform for developing, shipping and running applications using container virtualization technology




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Docker is open source, i.e., anyone can use it and can contribute to Docker to make it easier and more features in it which aren't available in it.


Instructor Notes:



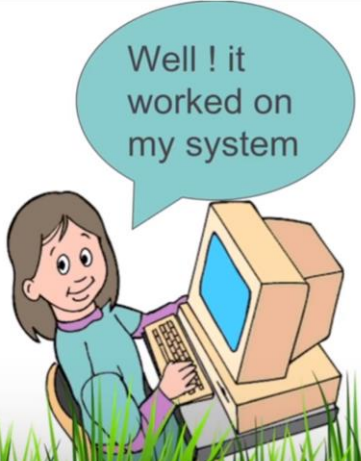
1.1: What is Docker

Development / Production Environment

TESTING ENVIRONMENT



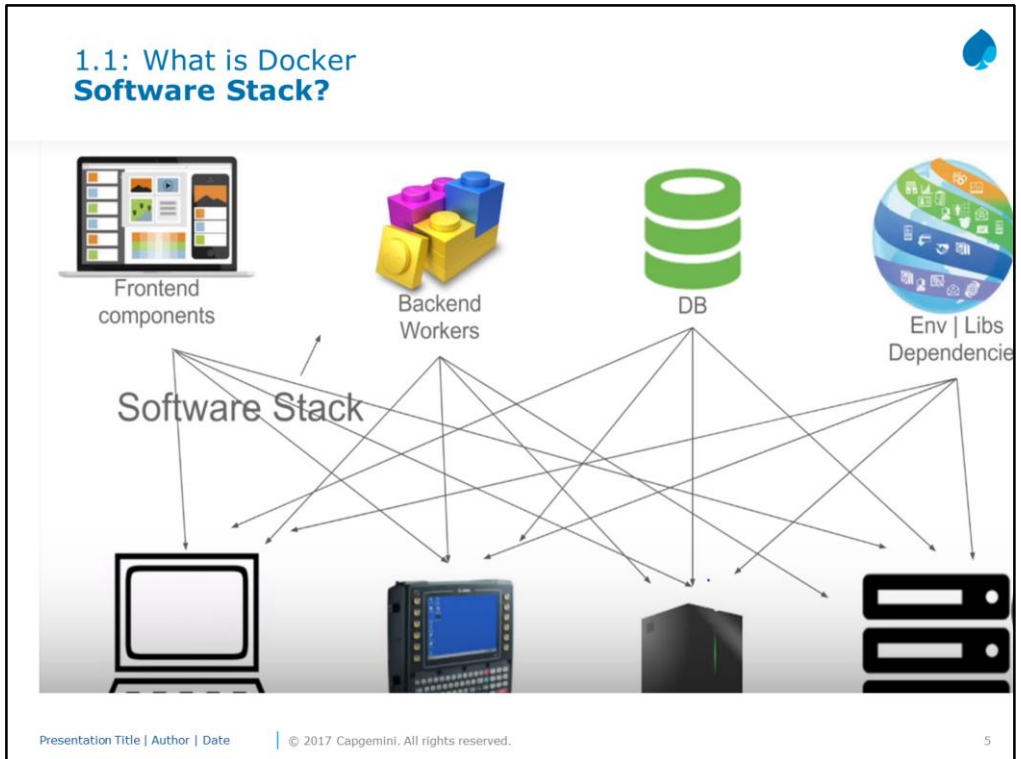
DEVELOPMENT ENVIRONMENT



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The advantage of Docker platform is to ship, test, and deploy code quicker so that we can reduce the time between writing code and execute it in production.

Instructor Notes:



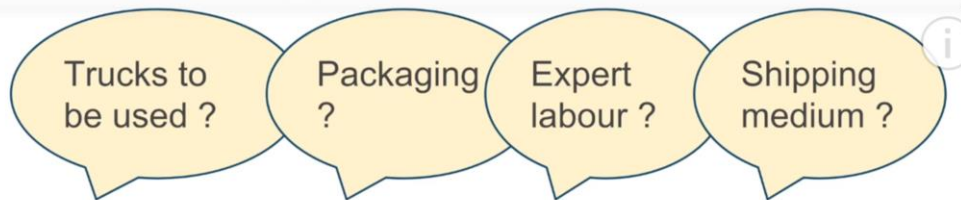
Now a days The developer and the production people always try that , how the SW should run in every specific platform



1.1: What is Docker Shipping Industry problem

A classical problem in shipping industry

How to transport different goods having different size, shape and requirements



Now a days The developer and the production people always try that , how the SW should run in every specific platform



1.1: What is Docker Shipping Industry(Container is Sol...)



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Docker Container allows the developer to package up an application with all the parts it is required i.e. library and other dependencies
And ship it all into a one package.

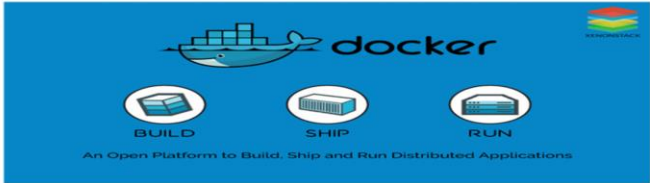
Instructor Notes:

1.1: What is Docker

Docker Provides Solution(S/W deploy)

- Frontend components
- Backend Workers
- DB
- Env | Libs Dependencies






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Docker Container allows the developer to package up an application with all the parts it is required i.e. library and other dependencies
And ship it all into a one package.

Instructor Notes:

1.1: What is Docker

Software Design Approach?

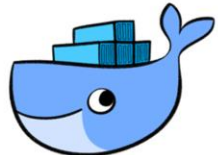



Design

Development

Deployment

Testing / Release

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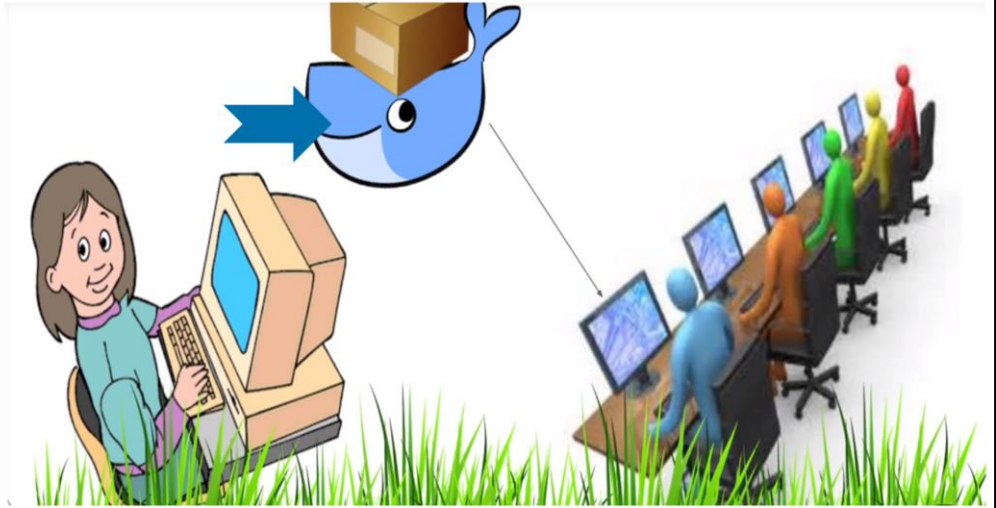
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Docker mainly use in Deployment stage. It makes the deployment process very easy , efficient .



1.1: What is Docker How Docker Works?



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Developer can create the application and package the SW into Docker container and he will not worry about where and in which platform this package will be deployed. The complete deployment will be taken care by Docker.



1.1: What is Docker

What is Docker ?

Docker Containers allow us to separate the applications from the infrastructure so we can deploy application/software faster.

Docker Container have many components

- Docker Swarm
- Docker Compose
- Docker Images
- Docker Daemon
- Docker Engine.
- Kitematic

The Docker is like a virtual machine but instead of creating a new whole virtual machine, it allows us to use the same Linux kernel.

We can manage our infrastructure in the same ways as we manage our applications. The Docker is like a virtual machine but creating a new whole virtual machine; it allows us to use the same Linux kernel.

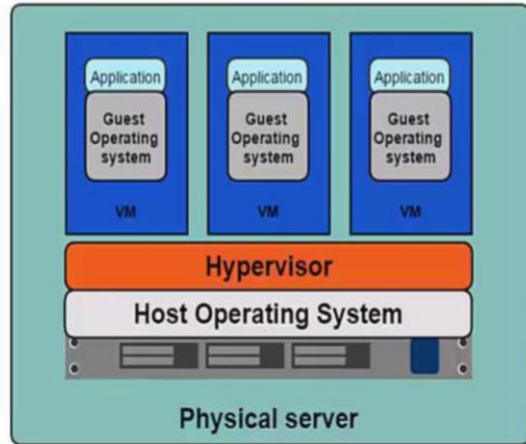


1.2: Limitation of VM

Limitation of VM(Virtualization)

Each VM still require

- CPU Allocation
- Storage
- RAM
- Entire Guest O/S



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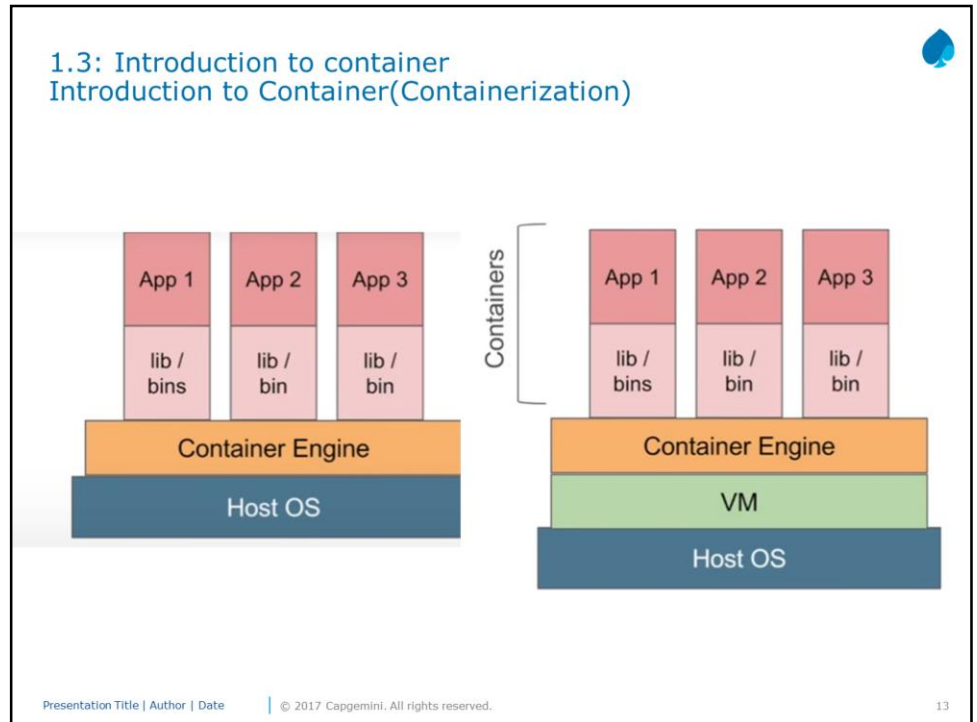
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Hypervisor – It is a SW which helps to create multiple VM s on a Host OS.
 Each VM has it's own O/S and it doesn't use the Host Operating System(O/S)
 It could be a overhead for Host platform
 We also need to provide a separate Space , RAM for Each VM , which is a lot of wastage of Memory and space

Guest Operating System :- It means more wasted resources

Application Portability also not sure

Instructor Notes:



Here no Hypervisor but Container Engine is there and In App , there is no guest O/S but dependency of App are there.

Here there are no wastage of memory and the load on Host O/S is less .

In some scenario where we work on Window O/S and launching a Linux Machine on Window platform , VM is required



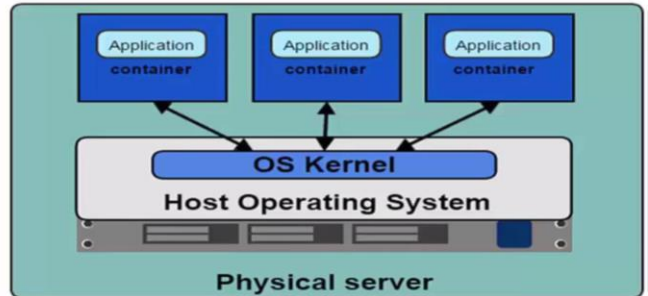
1.3: Introduction to container Introduction to Container(Containerization)

Container based virtualization uses the kernel on the host's operating system to run multiple guest instances

Containers

Each those Container has it's own

- Root File system
- Processes
- Memory
- Devices
- Network port etc.



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Each those Guest instances are called as Container

Each those Container has it's own

- Root File system
- Processes
- Memory
- Devices
- Network port etc.

Instructor Notes:

1.4: Container Vs VM

Container Vs VM



Container is light weight then VM

In Container , no need to install Guest Operating System

Container consumes less CPU , RAM , Storage space

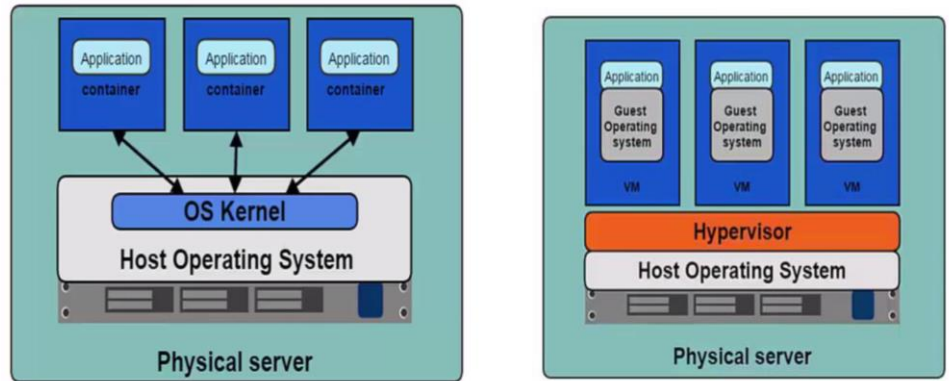
One can Use more Container as compare to VM.



1.4: Container Vs VM

Container Vs VM

Container is the best choice for Microservices



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As per the requirement Container consume memory , RAM

Instructor Notes:

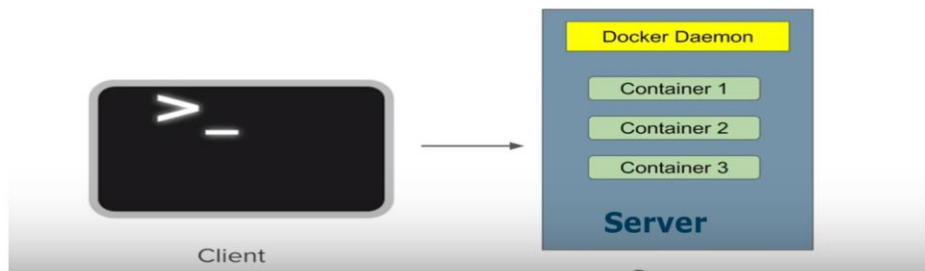
1.5: Docker Architecture Docker Architecture



Docker follows the Client – Server Architecture

Docker Server receives the Client request from a Command line or through Rest Service API.

Docker Client and Server may be located in Same Host or in a different Host machine

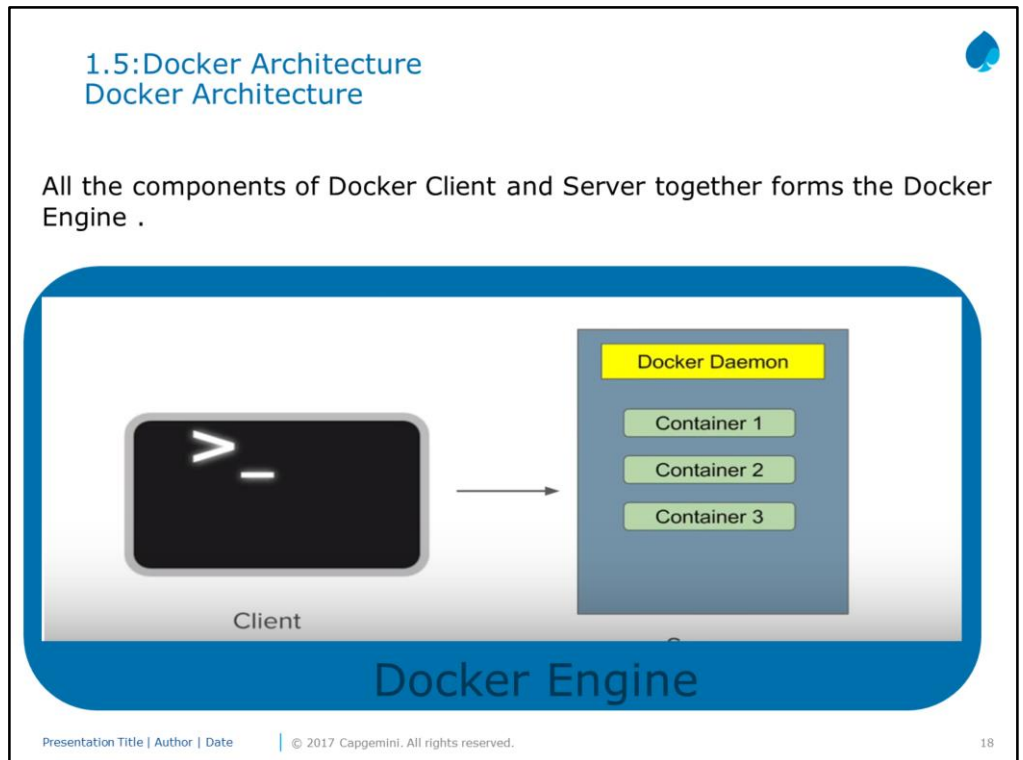


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Docker Client : It could be a Command line Prompt

Instructor Notes:

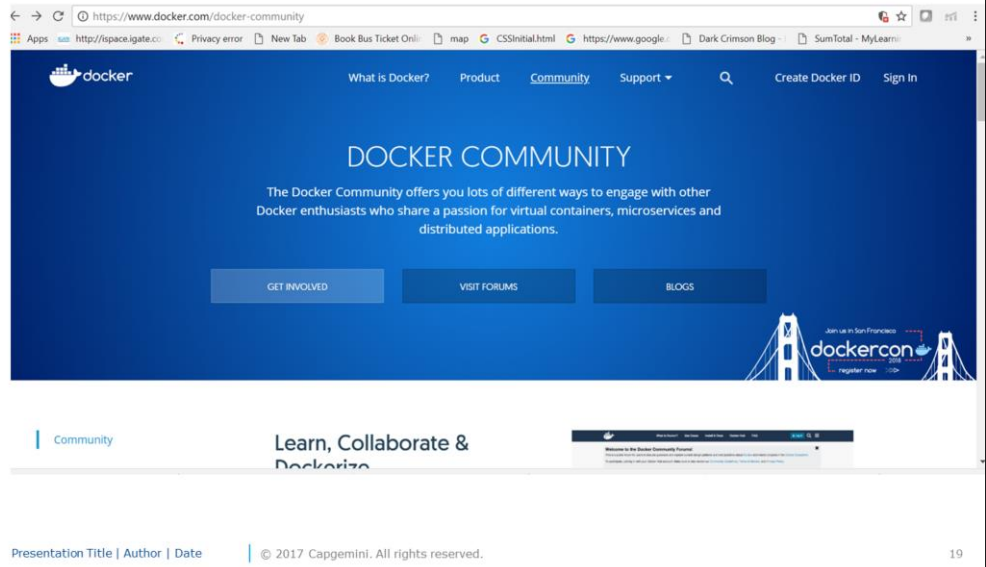
The Docker Daemon Server receives the commands from Docker Client through CLI or REST API,s. and builds , run and distributed the container

Docker Client and Server may be located in Same Host or in a different Host machine

Docker client may be CLI client or in GUI(Kitematic)

Instructor Notes:

1.6: Docker Community Docker Community(CE) Edition



Docker Community Edition (CE) is ideal for developers and small teams looking to get started with Docker and experimenting with container-based apps. Available for many popular infrastructure platforms like desktop, cloud and open source operating systems, Docker CE provides an installer for a simple and quick install so you can start developing immediately. Docker CE is integrated and optimized to the infrastructure so you can maintain a native app experience while getting started with Docker.

Instructor Notes:

1.6: Docker Community Docker Community(CE) Features



The latest Docker version with integrated tooling to build, test and run container apps

Available for free with software maintenance for the latest shipping version

Integrated and optimized for developer desktops, Linux servers and clouds.

Monthly Edge and quarterly Stable release channels available



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Docker Community Edition (CE) is ideal for developers and small teams looking to get started with Docker and experimenting with container-based apps. Available for many popular infrastructure platforms like desktop, cloud and open source operating systems, Docker CE provides an installer for a simple and quick install so you can start developing immediately. Docker CE is integrated and optimized to the infrastructure so you can maintain a native app experience while getting started with Docker.

Instructor Notes:

1.6: Docker Community Docker Community(CE) Features

Native desktop or cloud provider experience for
easy onboarding

Unlimited public and one free private repo
storage as a service

Automated builds as a service

Image scanning and continuous vulnerability
monitoring as a service



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Docker Community Edition (CE) is ideal for developers and small teams looking to get started with Docker and experimenting with container-based apps. Available for many popular infrastructure platforms like desktop, cloud and open source operating systems, Docker CE provides an installer for a simple and quick install so you can start developing immediately. Docker CE is integrated and optimized to the infrastructure so you can maintain a native app experience while getting started with Docker.

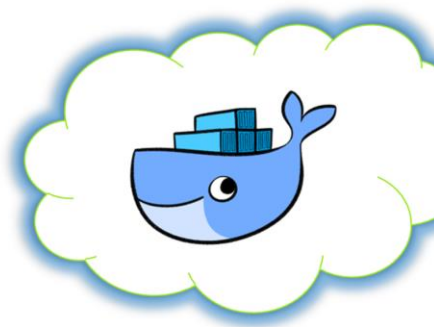
Instructor Notes:

1.7: Docker installation Demo



Demo on:

- Docker Installation(Steps given in Note section)



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Step 1 : Go To your EC2 instance and note the public IP address

Step 2: In your Window platform Use the puttygen and putty.exe files to connect to your Linux server instance in AWS .

Type the command to install Docker

Step 3 : **sudo yum update -y**

Step 4: **sudo yum install -y docker**

Check the Docker is successfully installed or not

Step 5 : Type the command “docker -v”

Type the command to Start the Docker service

Step 6: **sudo service docker start**

Now Add the EC2 user to your Docker group . Type the command

Step 7: **sudo usermod -a -G docker ec2-user**

Step 8 : Now type the command “Docker info”

Below Command for Stop the Docker

Step 8 : **sudo service docker stop**

To uninstall the docker . Type the below command

Step 9 : **sudo yum remove docker**

Instructor Notes:

Summary



In this lesson, you have learnt:

- Introduction to Docker
- How Docker provides Solution in SW or Application implemented
- Limitation of VM
- What is Containerization
- The Differences between VM and Container
- Docker Architecture
- Docker community

Instructor Notes:

Answers for the Review Questions:

Answer 1: True

Answer 2: VM

Review – Questions



Question 1: Docker container is light weight then VM.

- Option 1 : True
- Option 2 : False

Question 2 : _____ requires a Guest O/S and need Space , RAM , storage capacity.