

* NOTE *

Remaining Topics (Read them in Decade) -

- i) IOT cloud (in Home automation)
- ii) Kubernetes
- iii) Future trends in Cloud Computing
- iv) Energy Aware CC.

UNIT - VI

Advanced Techniques in Cloud Computing

* Mobile Cloud -

- • Mobile Cloud Computing (MCC) refers to infrastructure where both, data storage and data processing happen outside mobile device
- In mobile cloud computing, mobile network and cloud computing are combined, thereby providing optimal services for mobile clients.
- Working -
 - On a remote data center, Mobile cloud applications are operated generally by third-party, data is stored & compute cycles are carried out.
 - These apps can function online quite well, however they need timely updating.
 - These apps need not be permanently stored on device but they do not always occupy any storage space on device.
- Characteristics of Mobile Cloud Application -
 - i) Cloud Infrastructure -
It is specific form of information architecture that is used to store data

ii) Data cache - Data can be locally cached

iii) User Accommodation -

Scope of accommodating different user

requirements is available in MCC.

i) Easy Access -

It is easily accessed from desktop or mobile.

■ Advantages -

i) Saves battery power

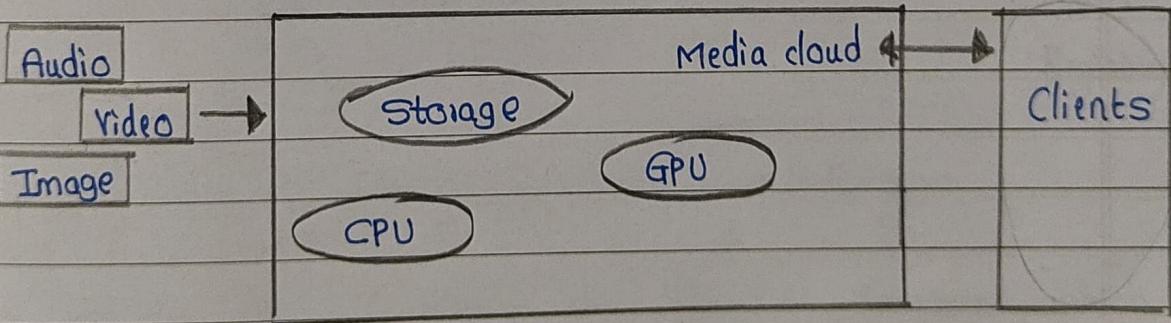
ii) makes execution faster

iii) Improves data storage capacity

iv) Improves reliability & availability

* Multimedia Cloud -

- Multimedia cloud computing is processing, accessing & storing of multimedia contents like audio, video, image using services & applications available in cloud.
- Currently, many company's clouds like Amazon EC2, DropBox, etc provide content management system within cloud network.
- Users of these clouds can access multimedia content, eg, user can view video anywhere in world at anytime using mobiles, computers, etc.
- Diagram -

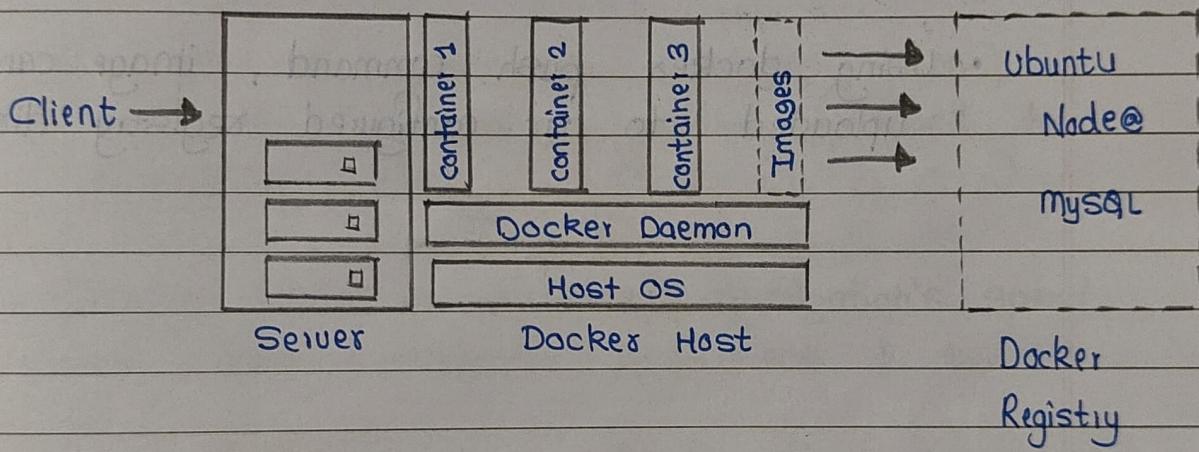


- Cloud media is a cloud which has multimedia content of owner of that particular cloud.
- The media content can be accessed through multimedia signaling protocols in cloud & can be streamed to clients present in mobiles, computers, etc.

- Not only processing, but media content can be shared between clouds using streaming protocols like TCP/IP, HTTP, etc.
- Cloud media has created striking impact in multimedia content processing like editing, gaming, streaming, etc.
- Cloud media technology offers number of key benefits like efficient data storage, capacity, less computation & cost.

* Docker -

- Docker is an open platform for developing, shipping & running applications.
- It enables you to separate your applications from your infrastructure so you can deliver software quickly.
- Architecture:



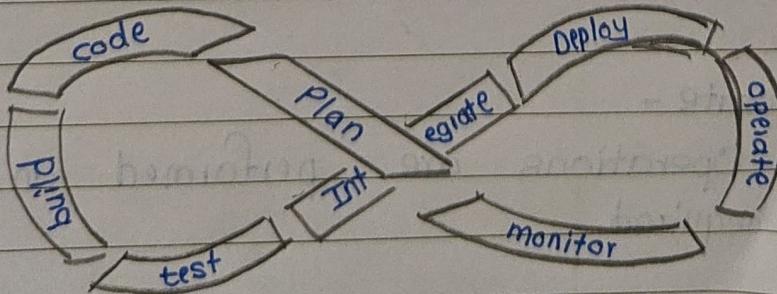
- Docker uses client-server architecture
- Docker client talks to Docker Daemon, which does heavy lifting of building, running & distributing your Docker containers.
- The Docker client and daemon can run on same system, or you can connect docker client to remote Docker Daemon.

- Docker client and daemon communicate using REST API, over UNIX sockets or network interface.
- Docker Registry keeps docker images. We can run our private registry.
- When we run docker pull and docker run commands, required images are pulled from our configured registry directory.
- Using docker push command, image can be uploaded to our configured registry directory.

* DevOps -

- • DevOps is a combination of two words Development and Operations.
- The development team is responsible for developing, designing & building application.
- The operation team deals with deployment & testing of application.
- If there are problems with application, operation team also provides feedback to development team.
- DevOps helps to increase organization's speed to deliver software applications. & services.
- DevOps should be used for large distributed applications such as eCommerce sites / applications.

■ Architecture -



ii) Plan -

- In this stage, all requirements of project & everything regarding project like time, cost, etc are discussed.

iii) Code -

- In this stage, code is written over here according to client's requirements

iv) Build -

- In this stage, building of units are done

v) Test -

- In this stage, testing of all units is done.

vi) Integrate -

- In this stage, all the units of codes are integrated.

vii) Deploy -

- In this stage, code is deployed on client's environment

viii) Operate -

- Operations are performed on code if required

ix) Monitor -

- Monitoring of application is done over

here in clients environment.

* Comparison -

Distributed Computing

i) It is computing model wherein system components are distributed across multiple computers but they run as one system

ii) Higher latency than edge computing due to distance from end user

iii) Higher bandwidth usage

iv) ~~High~~ operational & maintenance cost

v) System components are distributed across multiple computers making system secure

vi) Data is stored in cloud data center which may be spread across multiple locations

Edge Computing

i) It involves processing data at or near data source (edge) rather than relying on central data center.

ii) Low latency due to proximity to data source & end user.

iii) Lower bandwidth usage

iv) Low operational & maintenance cost

v) It provides additional security measures by incorporating edge data centers.

vi) Data is stored locally or in nearby edge servers

vii) Google Cloud, AWS, etc
are examples

vii) Eg, Autonomous cars,
streaming services, etc.