

#### AVS



Course CloudComputing Basic

Session ==



Starting promptly at 7:05 pm CET Break till pm EST

DATE

08.01

7.00 - 10.00 pm

TIME

INSTRUCTOR

osvaldo



"All you need is the plan, the road map, and the courage to press on to vour destination"



## Cloud Computing Basics







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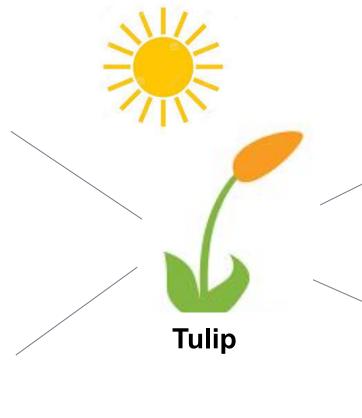
- Introduction to Cloud Computing
- Why Cloud Computing?
  - Virtualization
  - Containerization Technology
  - Software Development Cycle
- Service Model
- Deployment Models
- Conclusions





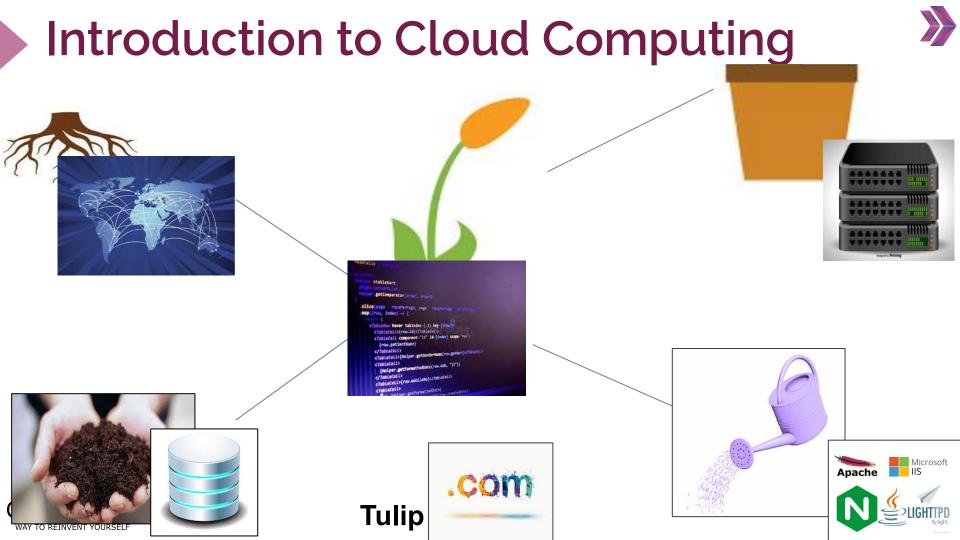












#### What is Cloud Computing?



www.clarusway.com





















What is Cloud Computing?

- The Cloud term refers to software and services running on the Internet, not locally on your computer.
- So you can store and access data and programs over the internet rather than the hard drive of your computer



Cloud Computing = Application running on someone else's computer



What is Cloud Computing?



VS



What is Cloud Computing?







- In 1950, The idea of cloud computing came into the picture,
- In 1970, The concept of virtualization has evolved with the Internet,
- In 1997, Professor Ramnath Chellappa had mentioned the Cloud in an article,
- In 2002, Amazon Web Services (AWS) launched its public cloud,
- In 2008, Google announced a preview release of App Engine,
- In 2008, Microsoft launched Azure,
- In 2009, Alibaba launched Alibaba Cloud,
- In 2011, IBM introduced the IBM SmartCloud Project,
- In 2012, Oracle launched the Oracle Cloud.

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**Evolution of the Cloud Computing** 

In 2002, Amazon Web Services (AWS) launched its public cloud,



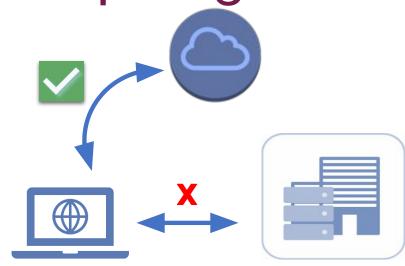






#### **How Cloud Works?**

- Information and data are stored on physical or virtual servers that a cloud computing service can retain and monitor.
- Instead of computer or data center, a client uses an internet connection to access the stored information on the cloud.





VAY TO REINVENT YOUR



Parts of Cloud Computing Architecture



- The Front-end is the client part of cloud computing.
- User interface, applications and cloud computing platforms.
- Example: AWS Management Console

• The **Back-end** is managed by the host.

Back-end

- It consists of virtual machines, data storage, security system, etc.
- Responsible for security mechanisms, traffic control, etc.
- Example: AWS Data Center



#### **Cloud Computing Architecture**



#### **Roles of Cloud Computing**











Cloud Consumer

Cloud Provider

Cloud Broker

Cloud Auditor

Cloud Carrier

- A Cloud Consumer is an user of cloud products and services.
- The purveyor of products and services is the Cloud Provider.
- The Cloud Broker connects consumers to appropriate cloud providers.
- The Cloud Auditor conducts independent performance and security monitoring.
- The **Cloud Carrier** is the interconnect between datacenters and aggregated WANs.



#### Popular Cloud Computing App.

 Cloud usage is now spreading rapidly around the world.



NETFLIX

- Examples of companies using cloud computing :
  - · Google Drive,
  - Netflix,
  - · Apple iCloud,
  - Dropbox,
    - Microsoft Office Online.



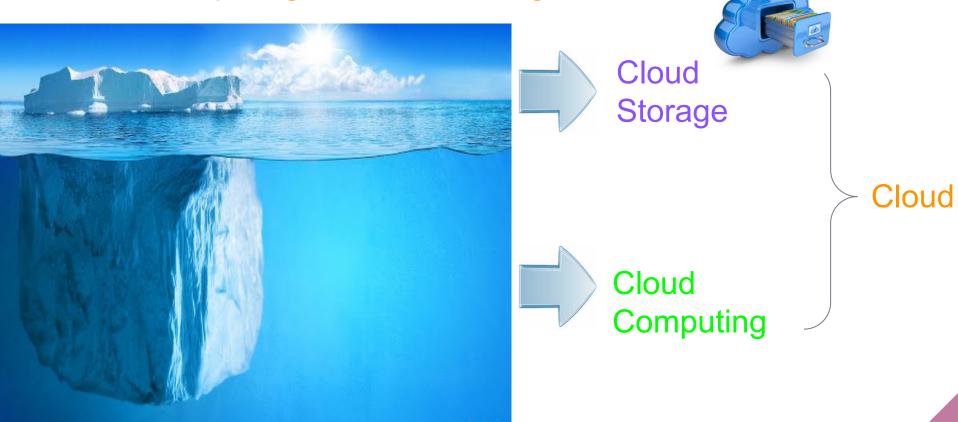




#### What is Cloud Computing?



Cloud Computing vs. Cloud Storage





#### **Cloud Computing Leveraging Endustries**









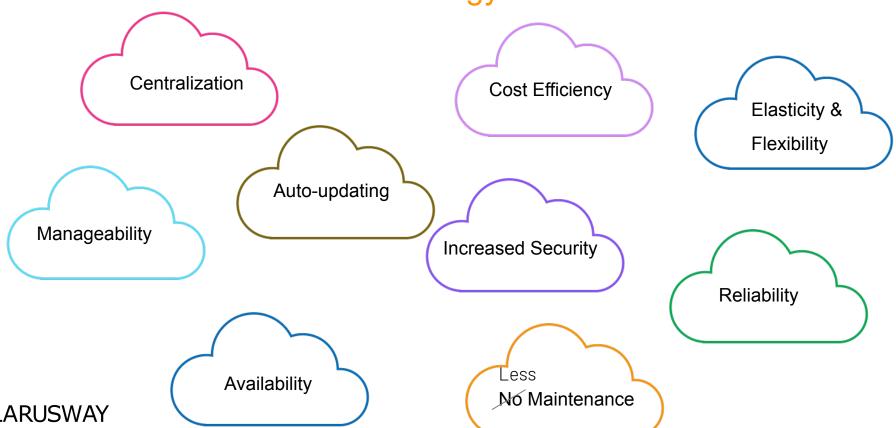








Features of the Cloud Technology





Advantages of the Cloud Technology



Increases the value of the work (cloud native, cloud agnostic,)



Disadvantages of the Cloud Technology

- Internet Dependency
- Loss of Control
- Lack of Support









## Why Cloud Computing?



### Why Cloud Computing?



#### Zeitgeist (The spirit of the time)











## **New Concepts**

- Virtualization
- Containerization Technology
- Software Development Cycle
- Serverless

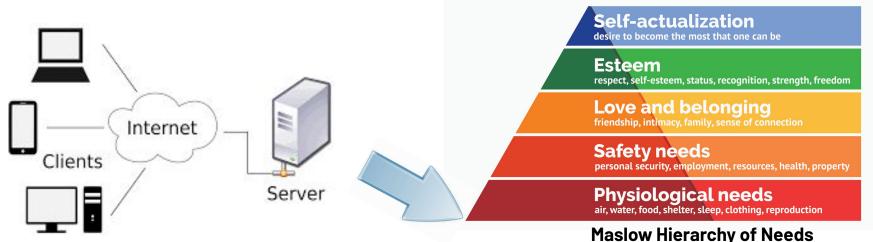








#### Server and Client

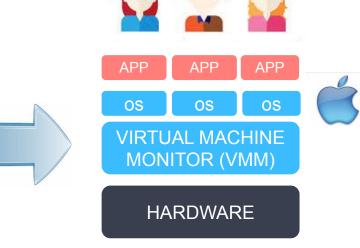


- A server is a connection point for several clients, that will handle their requests.
- A client is software that (usually) connects to the server to perform actions. The client provide a user interface that allows users to carry out actions. It forwards these requests to the server, which carries out the action and returns a response.

#### What is Virtualization?



TRADITIONAL ARCHITECTURE



VIRTUAL ARCHITECTURE

- Virtualization refers to the operation of multiple operating systems called guests by sharing the same physical equipment resources.
- This will help the user to share a single physical resource instance or application with multiple users by providing multiple machines at the same time.

#### Server and Client



- Assume that you have web application, and at least you need three servers to keep application running; Front-end, Back-end and Database
- But the necessity to install these servers on separate machines creates an idle capacity for you.

#### What is Virtualization?



**APPLICATION** 

**OPERATING** 

**HARDWARE** 

TRADITIONAL ARCHITECTURE



**APPLICATION** 

**OPERATING** 

**HARDWARE** 

TRADITIONAL ARCHITECTURE



**APPLICATION** 

**OPERATING** 

**HARDWARE** 

TRADITIONAL ARCHITECTURE





**APP** 

**APP** 

APP

OS

OS

OS

VIRTUAL MACHINE **MONITOR (VMM)** 

**HARDWARE** 

VIRTUAL ARCHITECTURE

App

App : 3

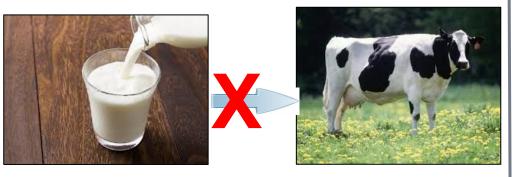
Hardware: 3 Hardware: 1

O/S

O/S

Why Virtualization?

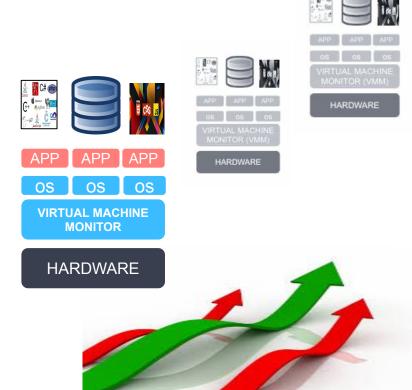
#### **ANALOGY**



"If you only need milk, would you buy a cow?"



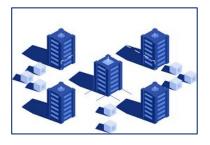
#### **SCALE OUT - SCALE DOWN**



#### Type of Virtualization?



Software Virtualization



Server Virtualization



Storage Virtualization



O/S Virtualization





## Containerization Technology



#### **Containerization Technology**

What is container?



Container technology, also simply known as just a container, is a method to package an application so it can be run, with its dependencies, isolated from other processes.

The major public cloud computing providers, including Amazon Web Services, Microsoft Azure and Google Cloud Platform have embraced container technology.



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#### **Containerization Technology**







OPERATING SYSTEM

**HARDWARE** 

TRADITIONAL ARCHITECTURE

App : 3

Hardware: 3

O/S : 3



APP APP APP

OS

OS

OS

VIRTUAL MACHINE MONITOR (VMM)

#### **HARDWARE**

**VIRTUAL ARCHITECTURE** 

**App** : 3

Hardware: 1

O/S : 3



APP Container Container Container

DOCKER ENGINE

OPERATING

**HARDWARE** 

SYSTEM

**CONTAINERIZATION ARCHITECTURE** 

App Container : 3

Hardware: 1

O/S :

### **Containerization Technology**

Containerization















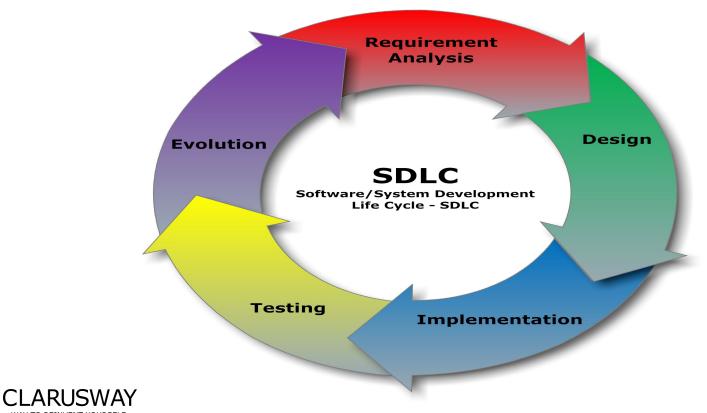
## Software Development Cycle



# Software Development Cycle

What is SDLC?

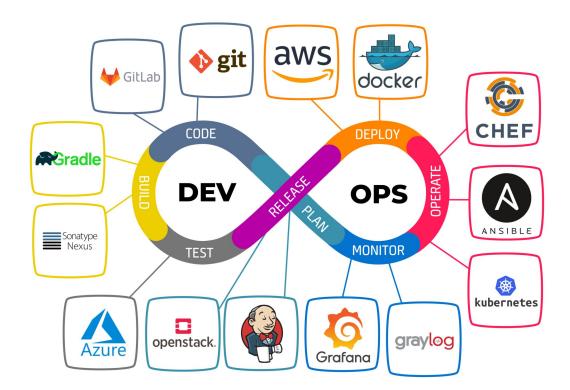
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# Software Development Cycle

DevOps

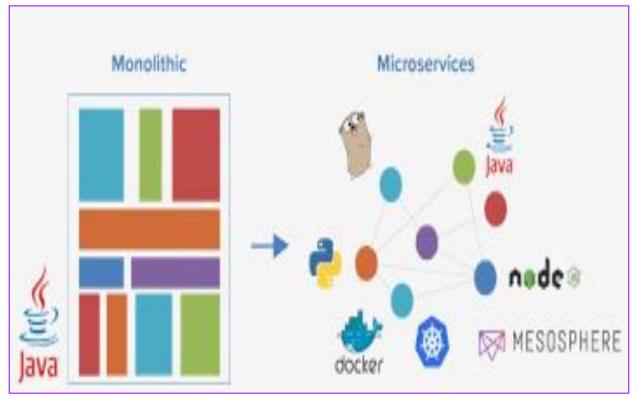








Software Development Architectures



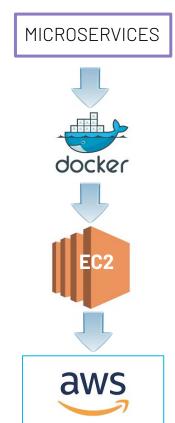






Software Development Architectures







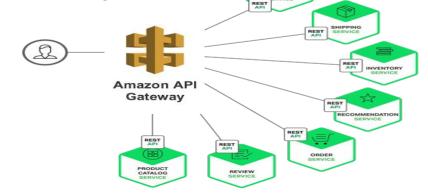


Software Development Cycle

**API** Gateway

API stands for Application Programming Interface. An API is a software that allows two applications to talk to each other.

An API gateway is an API management solution acting as the single entryway into a system for all API.





# Serverless

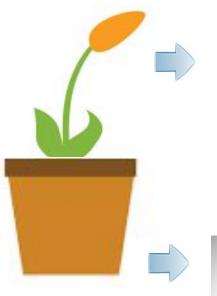




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## Serverless





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**Soilless Agriculture = Serverless** 



## Serverless



## Why Build Serverless Application?



Benefit from a fully managed service



Scale flexibly



Only pay for resources you use









# Why Cloud Computing?

- Increases the value of the work
- Zeitgeist (The spirit of the time)
- Cost reduction (pay as you go -source optimization)
- Scalability need
- Virtualization
- Containerization Technology
- Software Development Cycle
- From Monolithic to Microservices

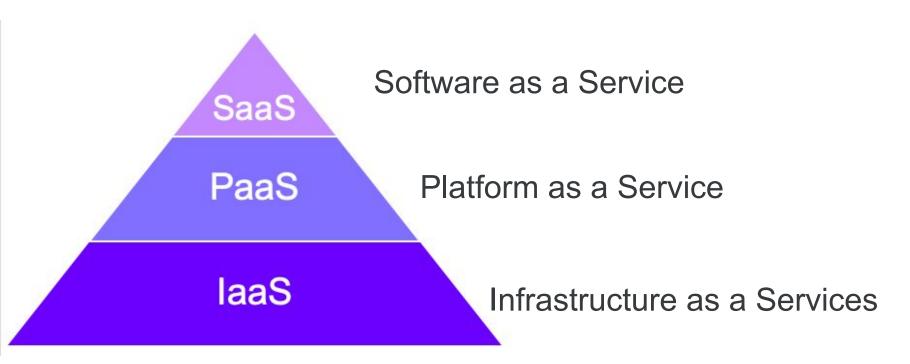






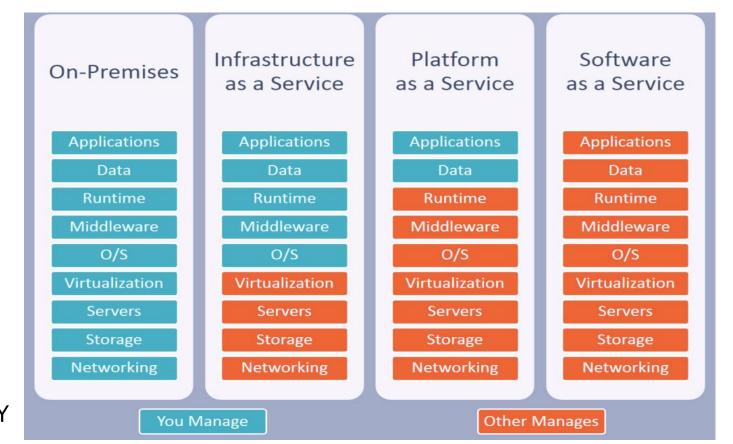


**Cloud Service Models** 





### Cloud Service Models



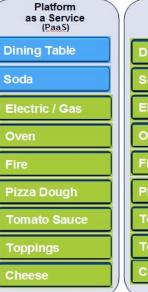




### Pizza Analogy for Service Model Comparison







Software as a Service (SaaS) **Dining Table** Electric / Gas Oven Fire Pizza Dough **Tomato Sauce Toppings** 

- On-Premise Model; You take all the ingredients-Make it yourself
- laaS Model; You buy some ingredients- Make it yourself
- Paas Model; Order pizza delivered
- Saas Model; Go to the pizzeria.

Made at home

Take & Bake

Pizza Delivered

Dined Out



# Deployment Models



# **Deployment Models**

**Cloud Deployment Models** 







# **Deployment Models**

**Public Cloud** 







- Public Cloud is the name of the information service used for platforms that transfer data to all individuals or organizations with internet access.
- Public Clouds are owned and operated by cloud service providers.
- Amazon EC2, Google AppEngine, Windows Azure Services Platform, IBM Blue Cloud



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## Deployment Models



**Private Cloud** 



- It means using or creating a cloud infrastructure that is dedicated to only a specific customer/organization.
- The key differences between private and public clouds;
  - Not publicly accessible
  - Private Clouds are owned and operated by your IT team.



Hybrid clouds



- Hybrid clouds use both private and public clouds, depending on their purpose.
- Hybrid clouds are Integrated environments of public and private infrastructure.
- For example, You can use a Public Cloud to interact with customers while retaining secure data via a Private Cloud.



# Deployment Models Community Cloud





- If multiple/sister companies share use of cloud technology, it is called Community Cloud
- A community cloud, for example, may belong to a government and can be used by different departments of that government.



# THANKS!

# Any questions?

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