

Cloud Computing Basics





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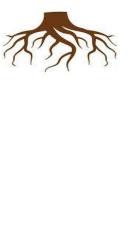


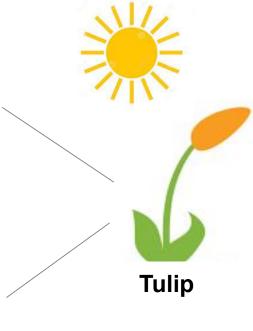






Introduction to Cloud Computing

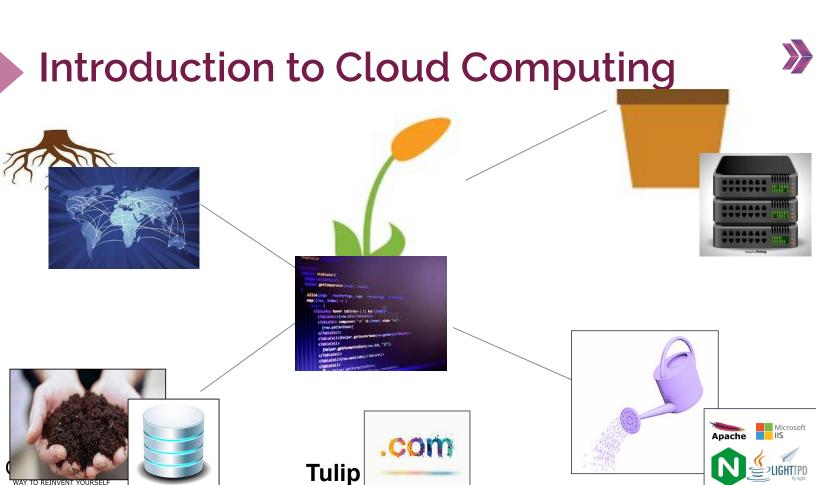




































What is Cloud Computing?

- 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



Introduction to Cloud Computing

Evolution of the 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.



Evolution of the Cloud Computing

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



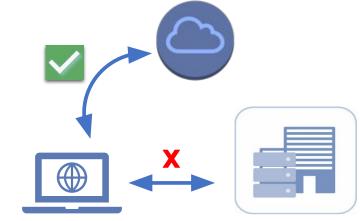






How Cloud Works?

- 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.





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Introduction to Cloud Computing







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

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





- 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









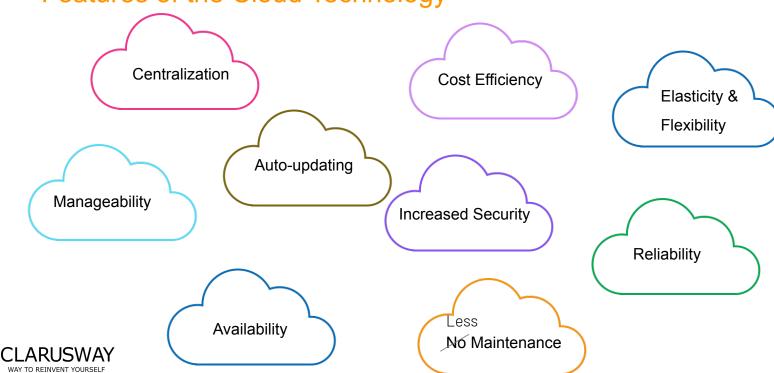






Introduction to Cloud Computing

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?











Why Cloud Computing?

New Concepts

- Virtualization
- Containerization Technology
- Software Development Cycle



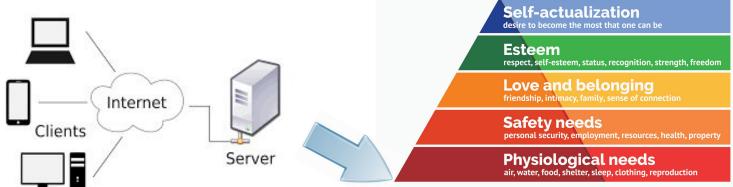


Virtualization

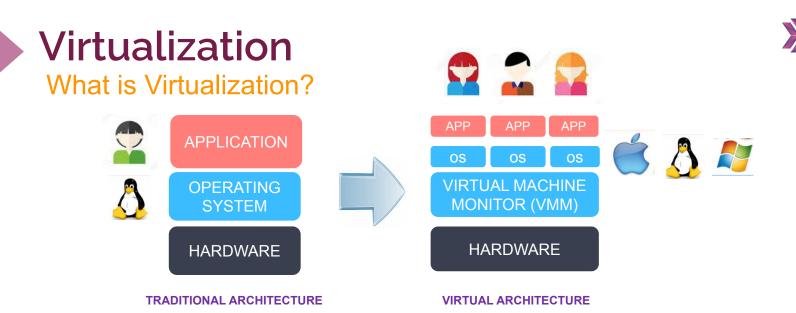


Virtualization

Server and Client



- **Maslow Hierarchy of Needs**
- 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.



- 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.

Virtualization

Server and Client



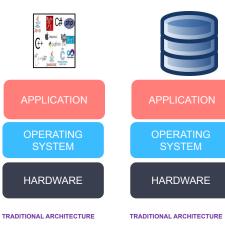




- Assume that you have web application, and at least you need three servers to keep application running; Front-end, Back-end and Database
- But the necessity to install these servers on separate machines creates an idle capacity for you.











VIRTUAL ARCHITECTURE

 App : 3
 App : 3

 Hardware : 3
 Hardware : 1

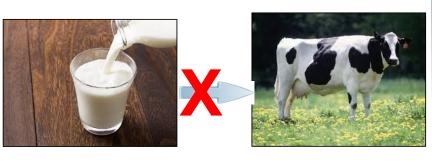
 O/S : 3
 O/S : 3



Virtualization

Why Virtualization?

ANALOGY



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

SCALE OUT - SCALE DOWN



Virtualization

Type of Virtualization?



Software Virtualization



Server Virtualization



Storage Virtualization



O/S Virtualization







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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.

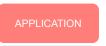
The major public cloud computing providers, including Amazon Web Services, Microsoft Azure and Google Cloud Platform have embraced container technology.



Containerization Technology

Containerization





OPERATING SYSTEM

HARDWARE

TRADITIONAL ARCHITECTURE

App : 3

Hardware: 3

O/S : 3



APP APF

AF

os

os

VIRTUAL MACHINE MONITOR (VMM)

HARDWARE

VIRTUAL ARCHITECTURE

App : 3

Hardware: 1

O/S : 3



APP Container Container

DOCKER ENGINE

OPERATING
SYSTEM

HARDWARE

CONTAINERIZATION ARCHITECTURE

App Container : 3

Hardware: 1

O/S : 1

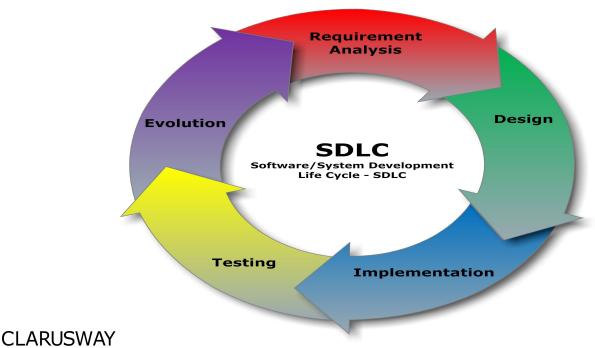


Software Development Cycle



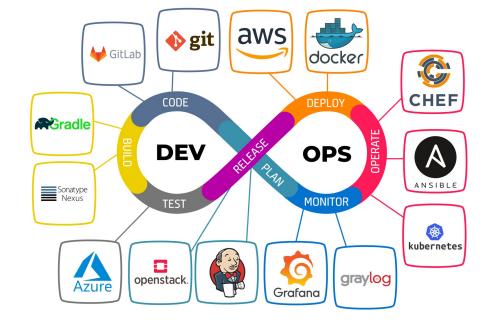
Software Development Cycle

What is SDLC?



Software Development Cycle

DevOps





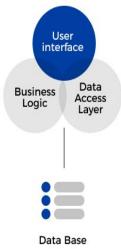




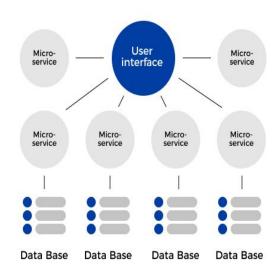
Software Development Cycle

Software Development Architectures





MICROSERVICE ARCHITECTURE

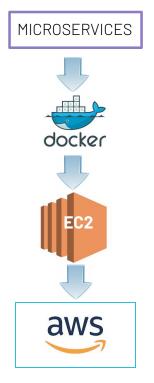




Software Development Cycle

Software Development Architectures









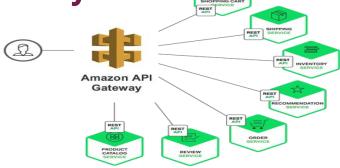


Software Development Cycle

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





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





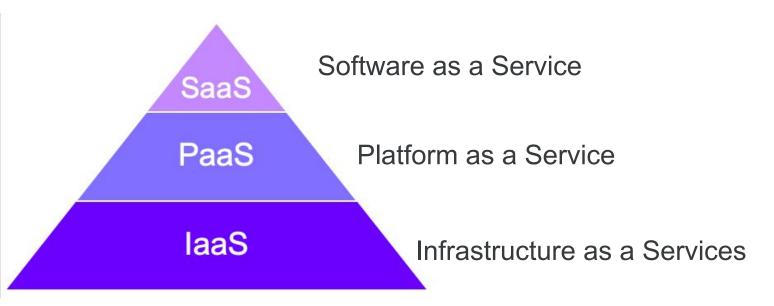
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Service Models



Service Models

Cloud Service Models

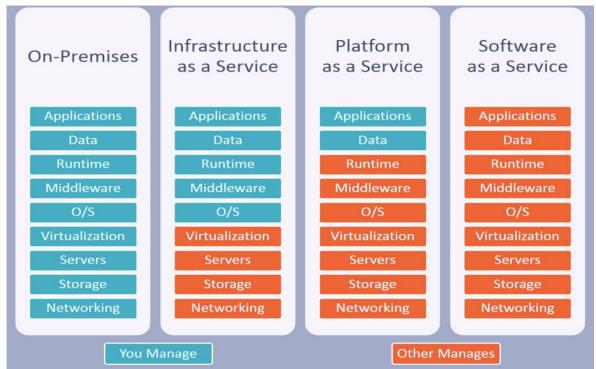




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Service Models

Cloud Service Models

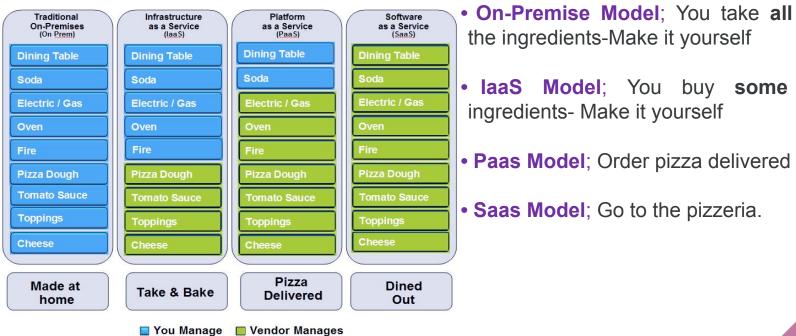




CLARUSWAY

Service Models

Pizza Analogy for Service Model Comparison





7 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

CLARUSWAY
WAY TO REINVENT YOURSELE

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.

Deployment Models

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



- Community clouds are shared platforms, usually with shared data and data management considerations, between organizations.
- If multiple/sister companies share use of cloud technology, it is called Community Cloud
- A community cloud, for example, may belong to a single government and can be used by different departments of that government.





THANKS!

Any questions?

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