

# Cloud Computing – DAY2

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# Agenda

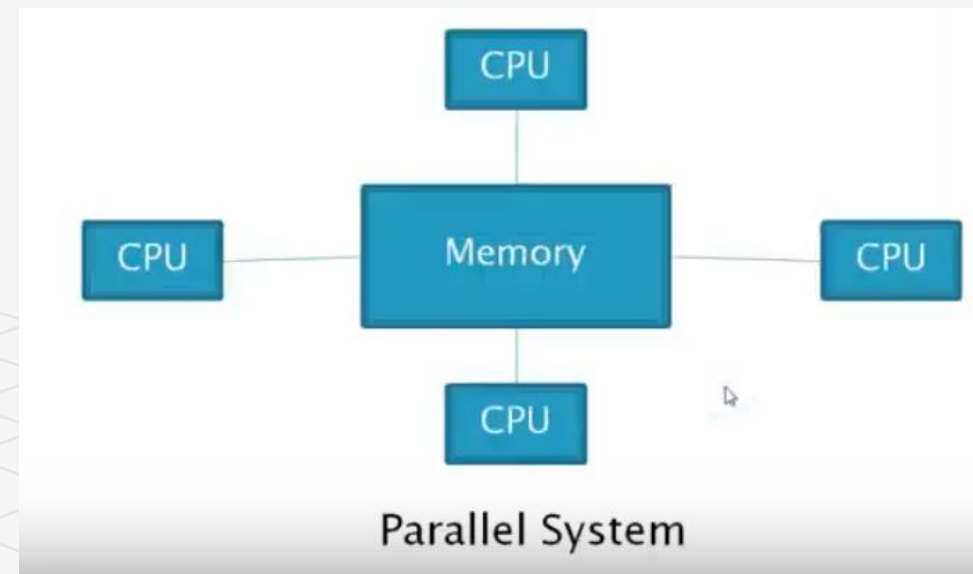
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1. Principles of Parallel and Distributed Computing
2. Architecture of Cloud Computing
3. Major player on Cloud Infrastructure

# Parallel Computing

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- A system is said to be parallel system in which multiple processes have direct access to shared memory which form a common address space
- It is **tightly coupled system**
- It is designed to speed up the execution of a programme
- It is simultaneous use of multiple compute resources to solve the computational problem
  - To be run using multiple CPUs
  - A problem is broken into discrete parts that can be solved concurrently
  - Each part is further broken down into series of instructions
  - Instructions from each part executes simultaneously on different CPUs



# Applications available in Parallel Computing

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- Parallel computing would be **2** servers that share the workload of routing mail / solving mathematical problem
- Super computers are usually placed in parallel system architecture
- Terminals are connected to single server




# Advantages and Disadvantages of Parallel Computing

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## Advantages

- Cost Saving and Time Saving
- Overcome memory constraints
- Do multiple things at the same time

## Disadvantages

- Lack of scalability between memory and CPU
  - Programmer responsibility for correct access of global memory
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# Distributed Computing

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- A collection of independent computers interconnected via network capable of collaborating on a task
- It is **loosely coupled system** because each processor has its own memory and various communication lines will be available
- It maintains Client-Server Architecture

Examples:

- Telephone Network
- Cellular Network
- ATM Machines
- Computer network such as Internet
- Mobile Computing

Distributed Server is classified as follows:

- Computer Server : It provides an interface to which client can send request to perform an action and server send back result to client
- File Server : It provides a File System interface where client create, update, read and delete the files that are present in the server

# Advantages of Distributed Computing

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## Advantages

- Resource Sharing
- Computation Speedup
- Reliability
- Shorter Response Time

# Differences between Parallel and Distributed Computing

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## Memory

- Parallel : it is tightly coupled as it is shared memory
- Distributed is loosely coupled as each system is having its own memory

## Control

- In Parallel, all CPUs will share global clock control
- In Distributed, each system is independent to another, so there is no global clock control

## Processor

- In Parallel, processor interconnection is in the order of Terabytes per Second (TBPS)
- In Distributed, processor interconnection is in the order of Gigabytes per Second (GBPS)

## Main Focus

- In Parallel, main focus is on performance of the system and scientific computing
- In Distributed, main focus is on performance based on cost and scalability, reliability and resource sharing



# Cloud Computing Architecture

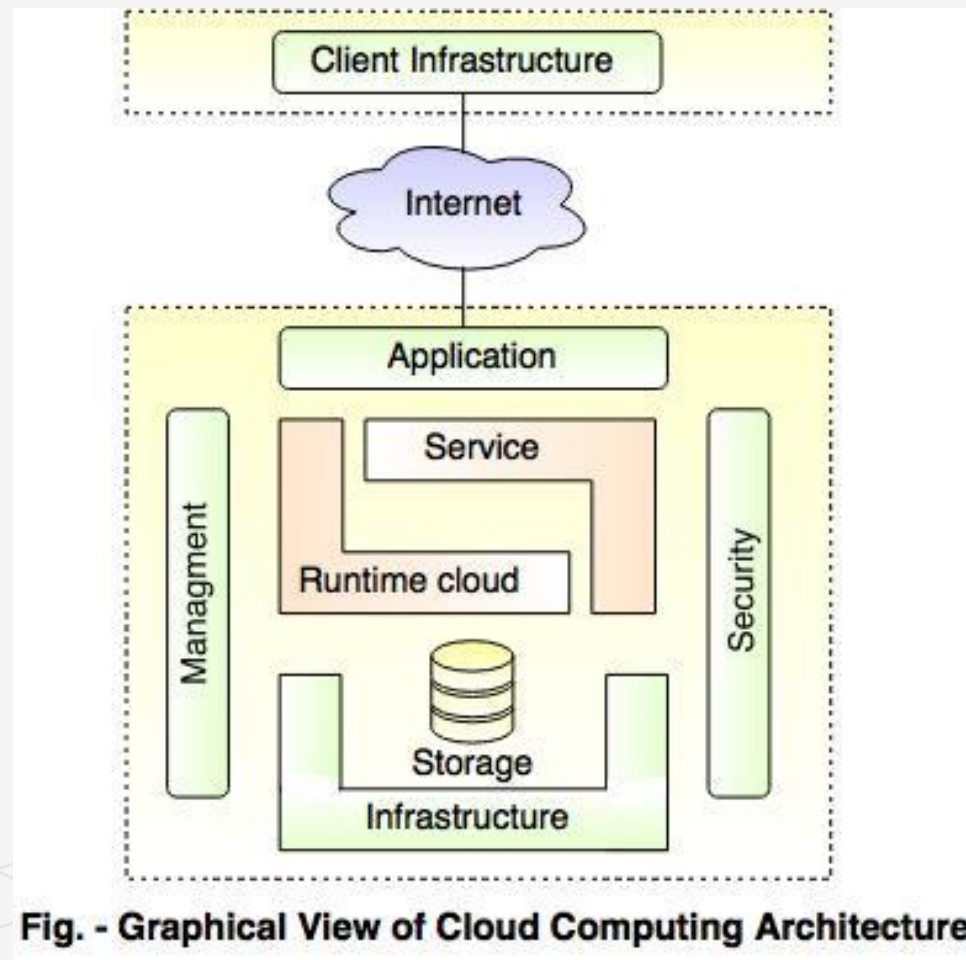
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- Users may access the internet from any of their gadgets.
- Cloud Computing comprises many components each of them **loosely coupled**
- Can be broadly divided into **2** parts:
  - Frontend : Refers to the client part of cloud computing system. It consists of interfaces and applications that are required to access the cloud platform.  
Ex: Web browser
  - Backend : It comprises of storage, virtual machine, security mechanism, services, deployment models, servers etc.



# Cloud Computing Architecture

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# Major player on Cloud Infrastructure

Figure 1. Magic Quadrant for Public Cloud Storage Services, Worldwide



Source: Gartner (July 2016)

This graphic was published by Gartner, Inc. as part of a larger research document and should be evaluated in the context of the entire document. The Gartner document is available upon request from <http://www.gartner.com/doc/reprints?id=1-2IH2LGI&ct=150626&st=sb>

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# Questions?

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