Computing & its Types

What is Computing

Computing represents goal-oriented activity which includes design and use of hardware and software for wide range of tasks.

What is Computing Environment

Computing Environment explains how a collection of computers will process and exchange the information to solve various types of computing problems.

Computing Environment Types

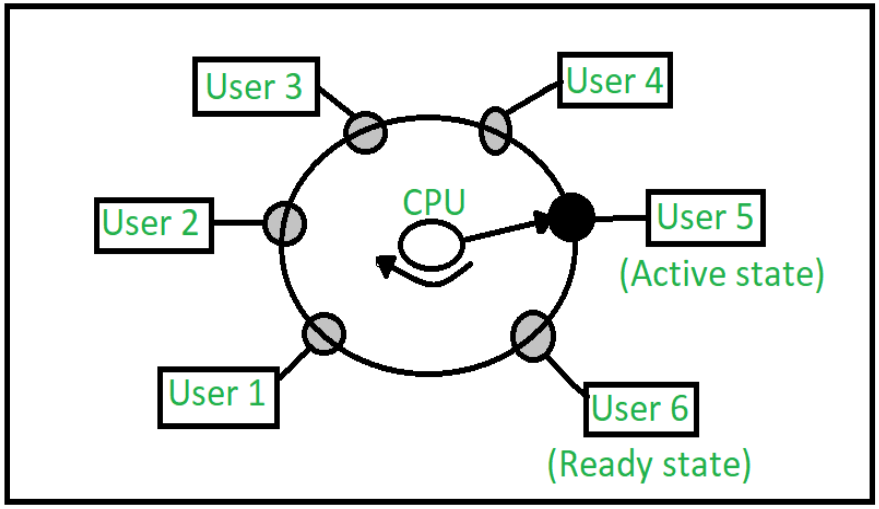
- Personal Computing
- Client Server Computing
- Distributed Computing
- Time Sharing Computing
- Cluster Computing
- Grid Computing
- Cloud Computing

Personal Computing Environment

- Personal computing is a stand-alone machine, the complete program resides on that machine and executed from it.

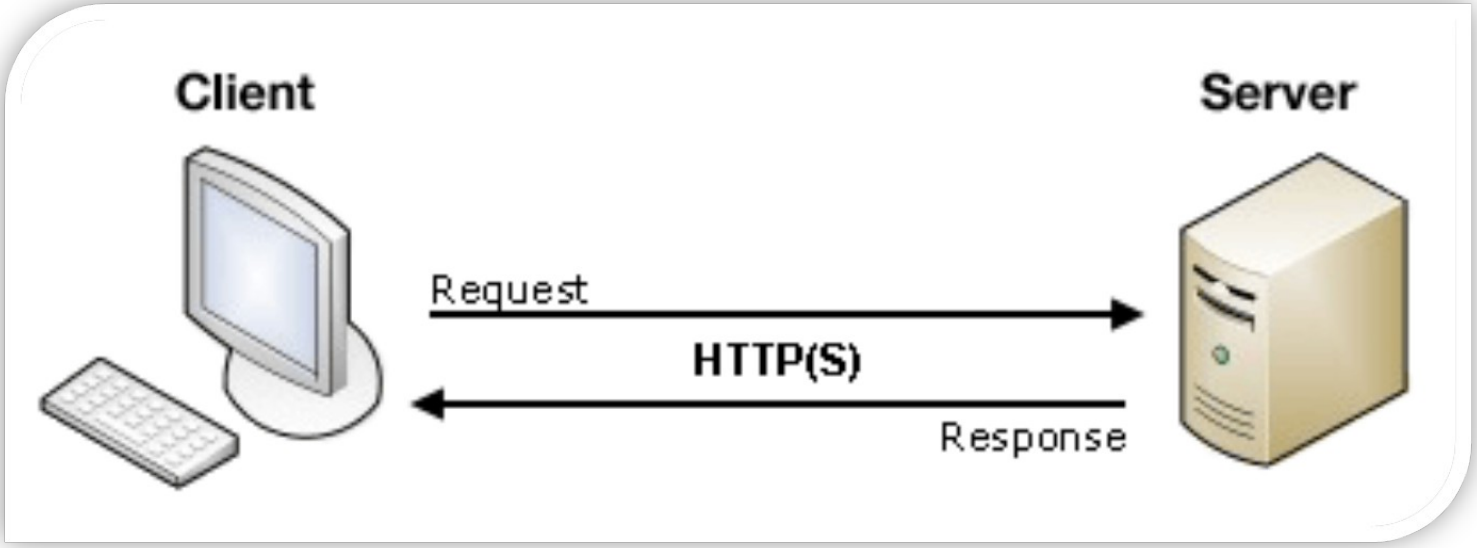
Time Sharing Computing Environment

- In computing, time-sharing is the sharing of a computing resource among many users at the same time by means of multiprogramming.
- The time-sharing computing environment allows multiple users to share the system simultaneously.



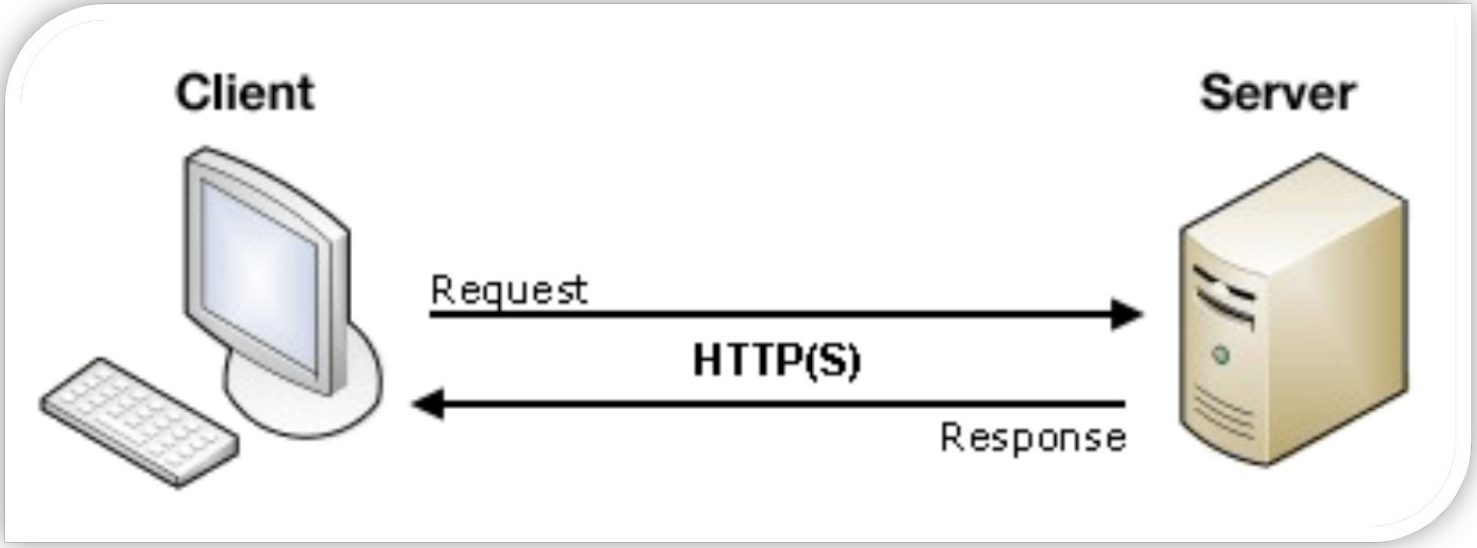
Client Server Computing Environment

- This environment contains two machines (Client machine and Server machine), both machines will exchange the information through an application.

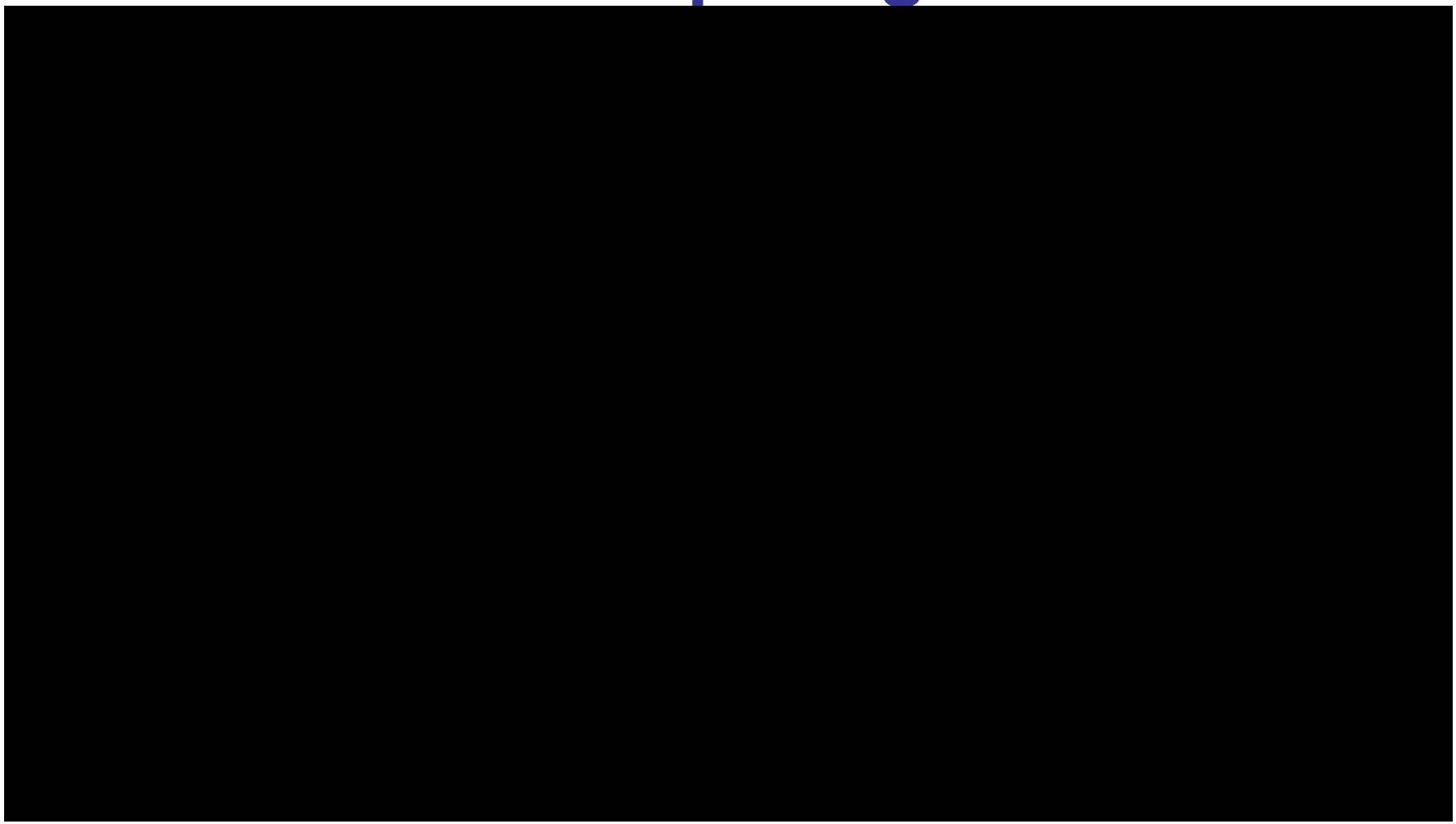


Client Server Computing Environment

- Here Client is a normal computer like PC, Tablet, Mobile, etc., and Server is powerful computer which can store huge data, manage file, manage emails, etc.,



Client Server Computing Environment

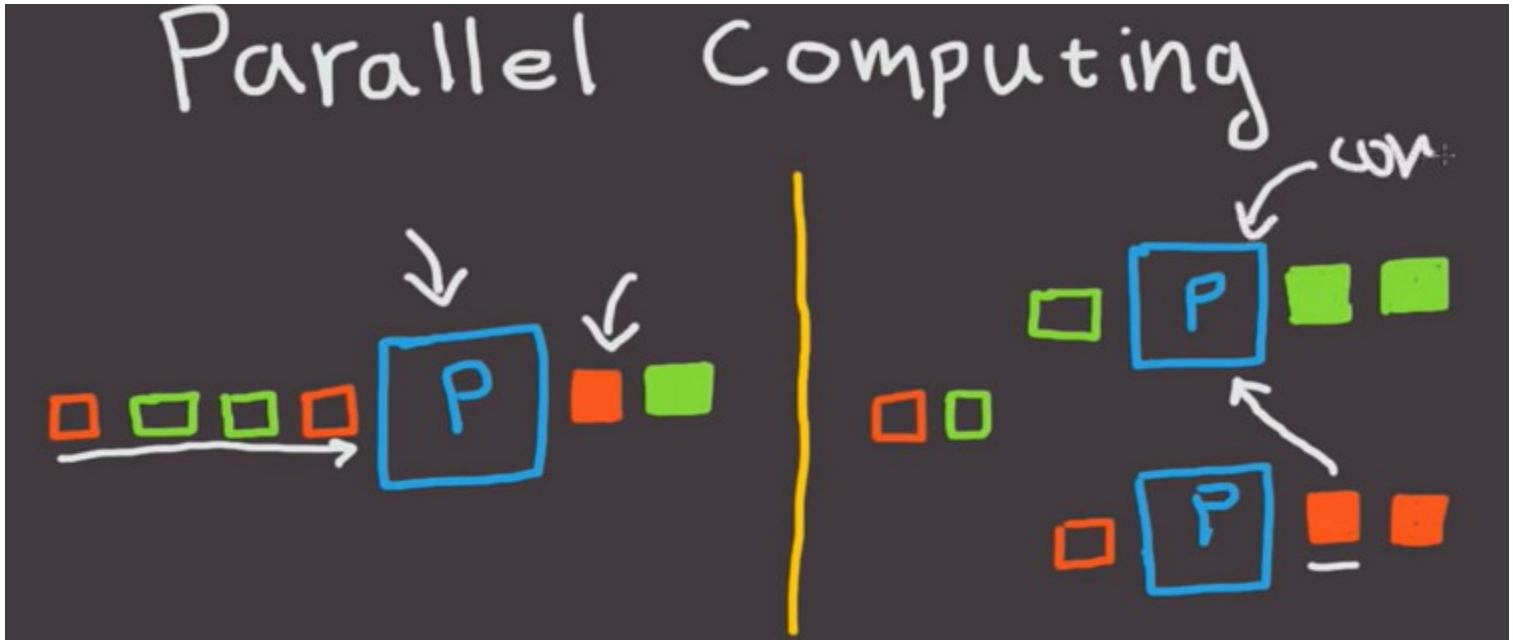


How to Enhance the Performance of Computing Environment

Parallel computing and distributed computing are ways of exploiting parallelism in computing to achieve higher performance.

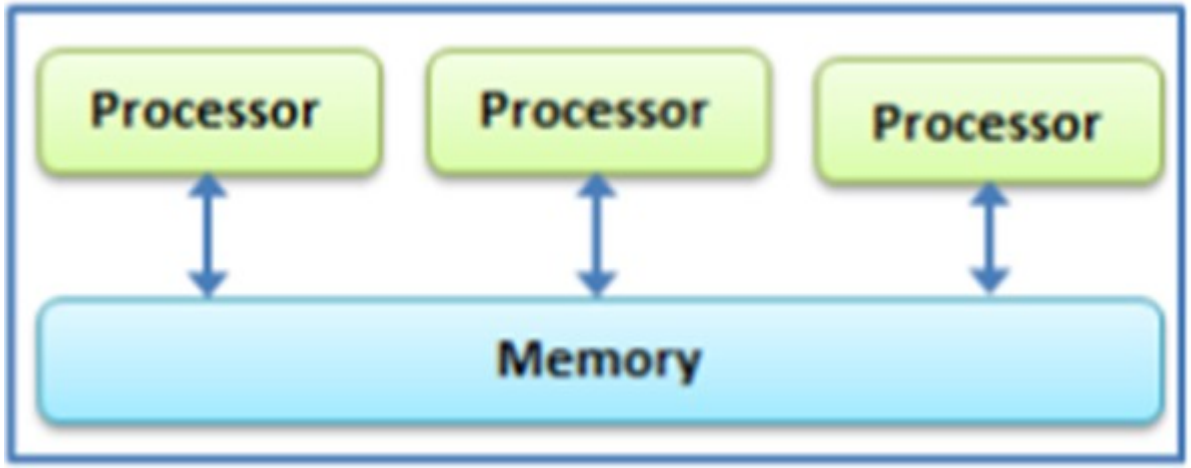
Parallel Computing

- Parallel computing represents that type of computing in which multiple calculations are carried out in parallel.



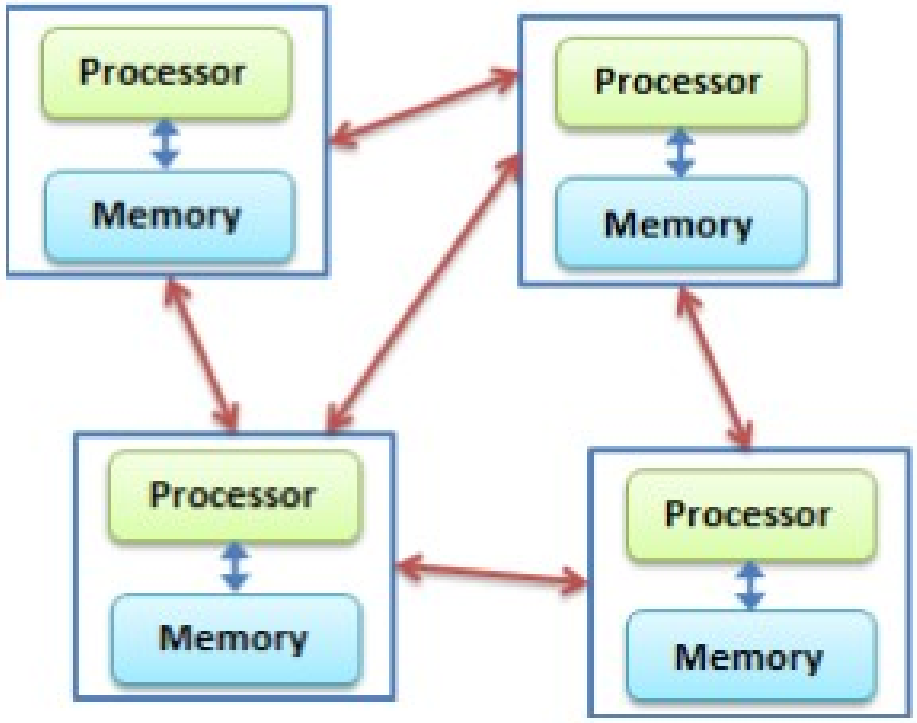
Parallel Computing

- Large collections of processing cores are used but they are part of single system sharing the memory module.



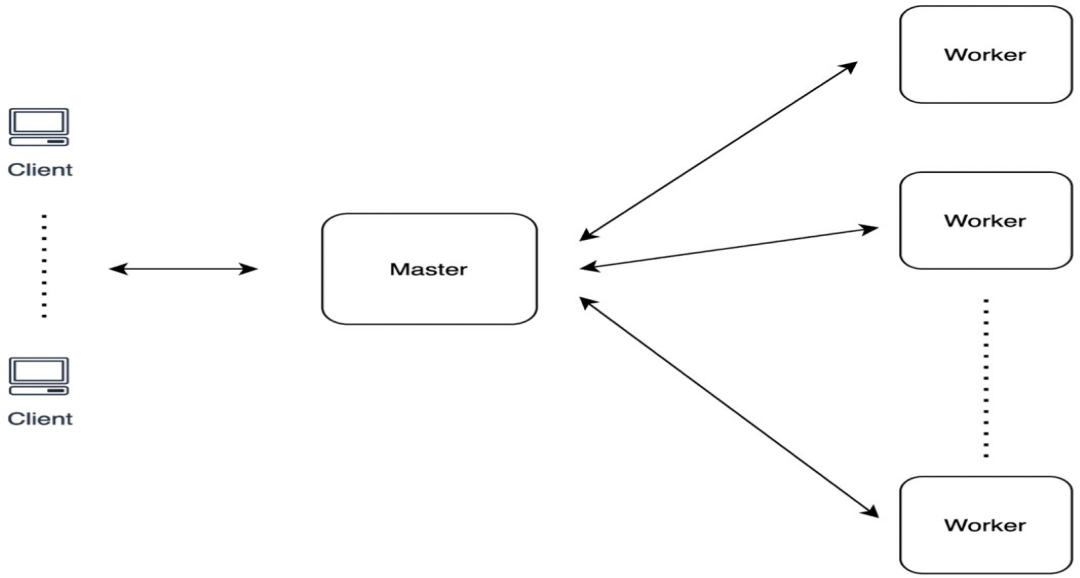
Distributed Computing

- In distributed computing multiple processing cores are used and they are not part of the same system.
- Each system has its own memory module.



Distributed Computing

- Physically they may be at the same or different location.
- Here data is distributed to different systems, but they are logically related to each other.



Types of Distributed Computing

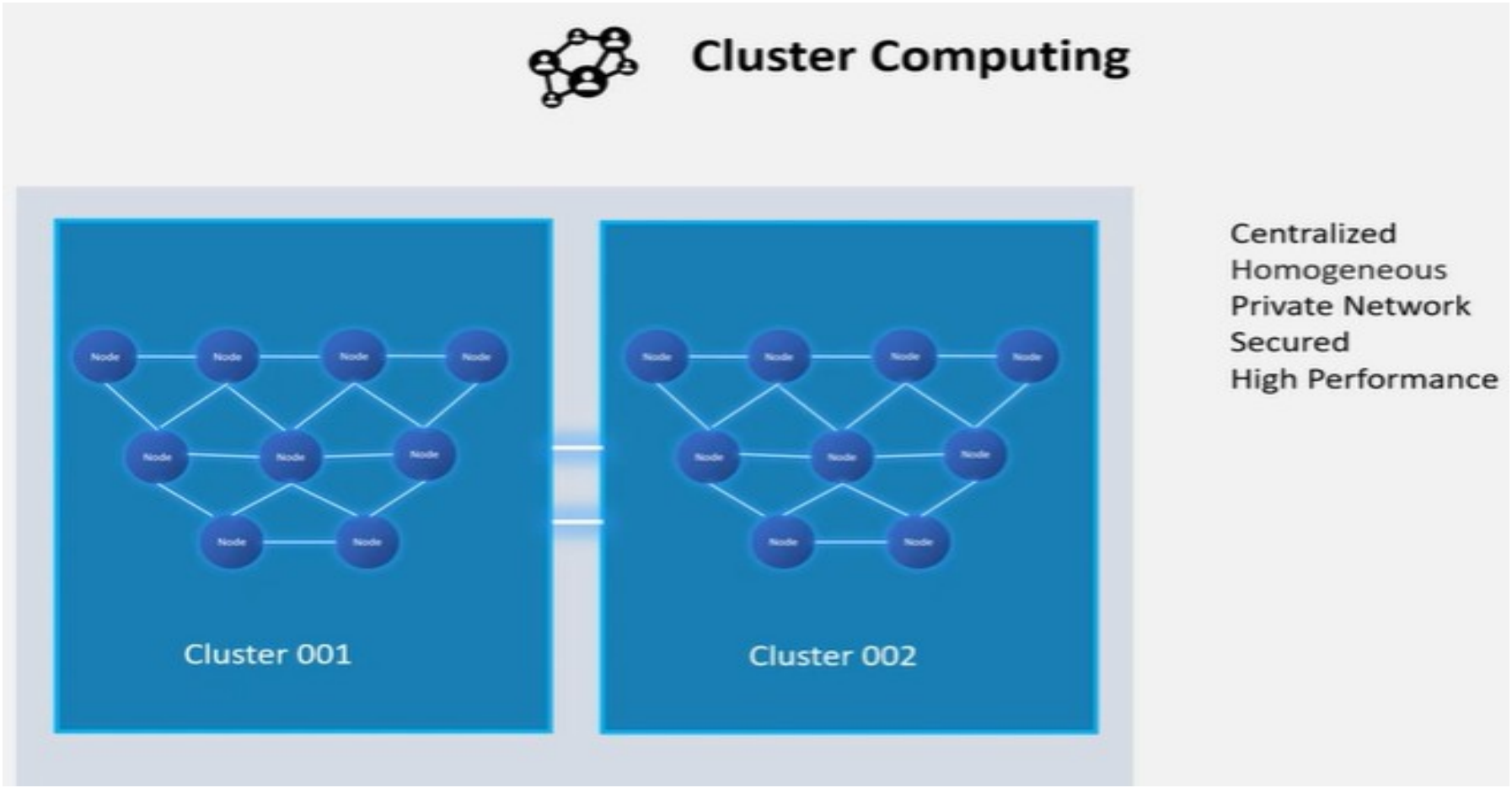
There are three types of popular distributed computing:

- Cluster Computing
- Grid Computing
- Cloud Computing

Cluster Computing

- In cluster computing, group of different interconnected systems lying in the same room are used to solve a problem.
- It is pretended that different systems lying in the same room are representing a single system.
- So, cluster is a parallel or distributed computer system, which is a collection of interconnected stand-alone computers working together as a single integrated computing resource

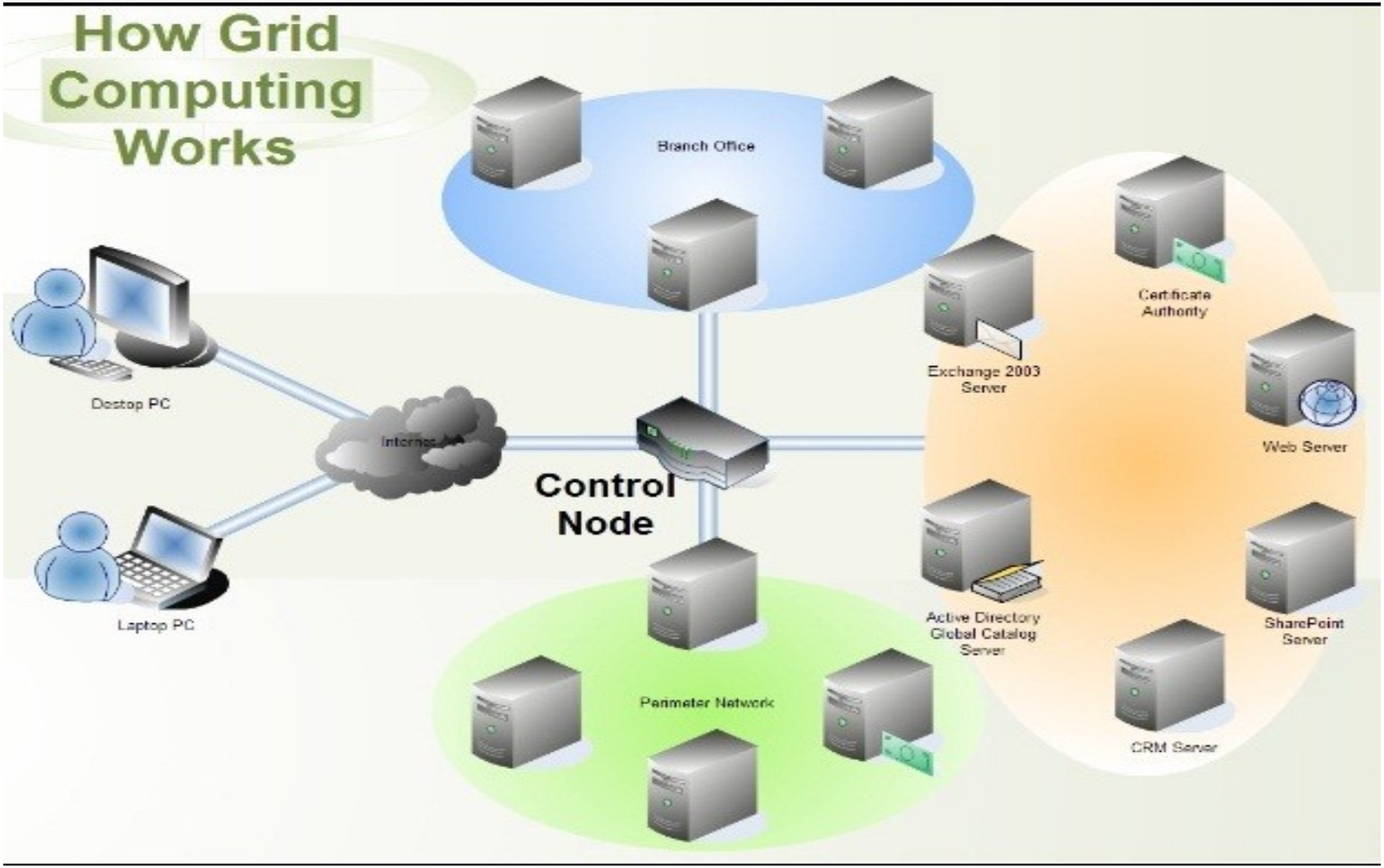
Cluster Computing



Grid Computing

- Grid computing evolved in early 1990s as dynamic aggregations of geographically dispersed homogeneous or heterogeneous clusters through internet connection.
- These clusters are at geographically same or different locations and part of same or different organization.
- Unlimited no of systems can be removed or added in the grid any time instantly.
- Nodes associated in grid are working on a common problem which is generally related to research not from business prospect.

Grid Computing



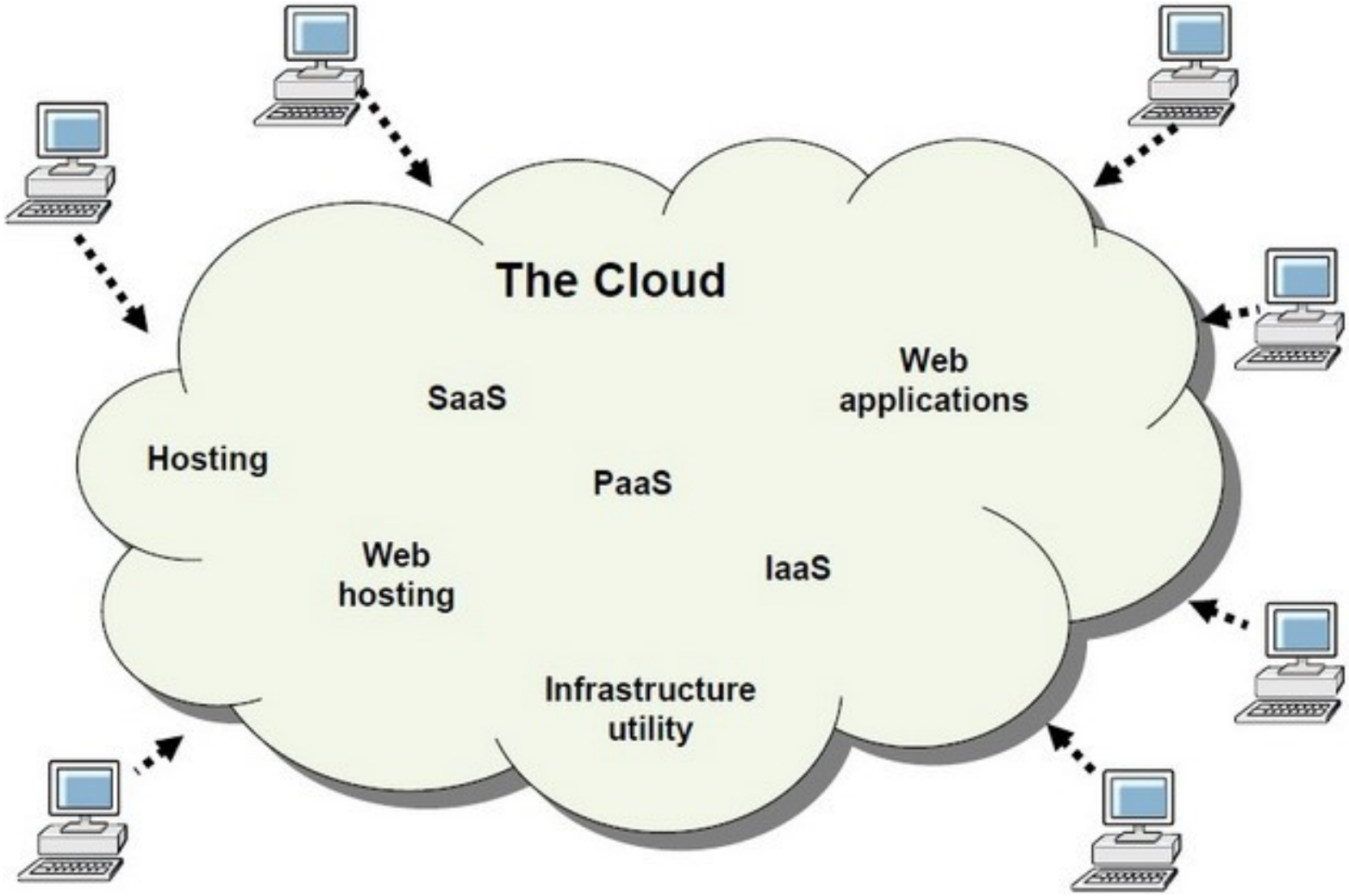
Cluster Vs Grid

- The difference between cluster and grid computing is that cluster computing is a homogenous network whose devices have the same hardware components and the same OS connected in a cluster while grid computing is a heterogeneous network whose devices have different hardware components and different OS.

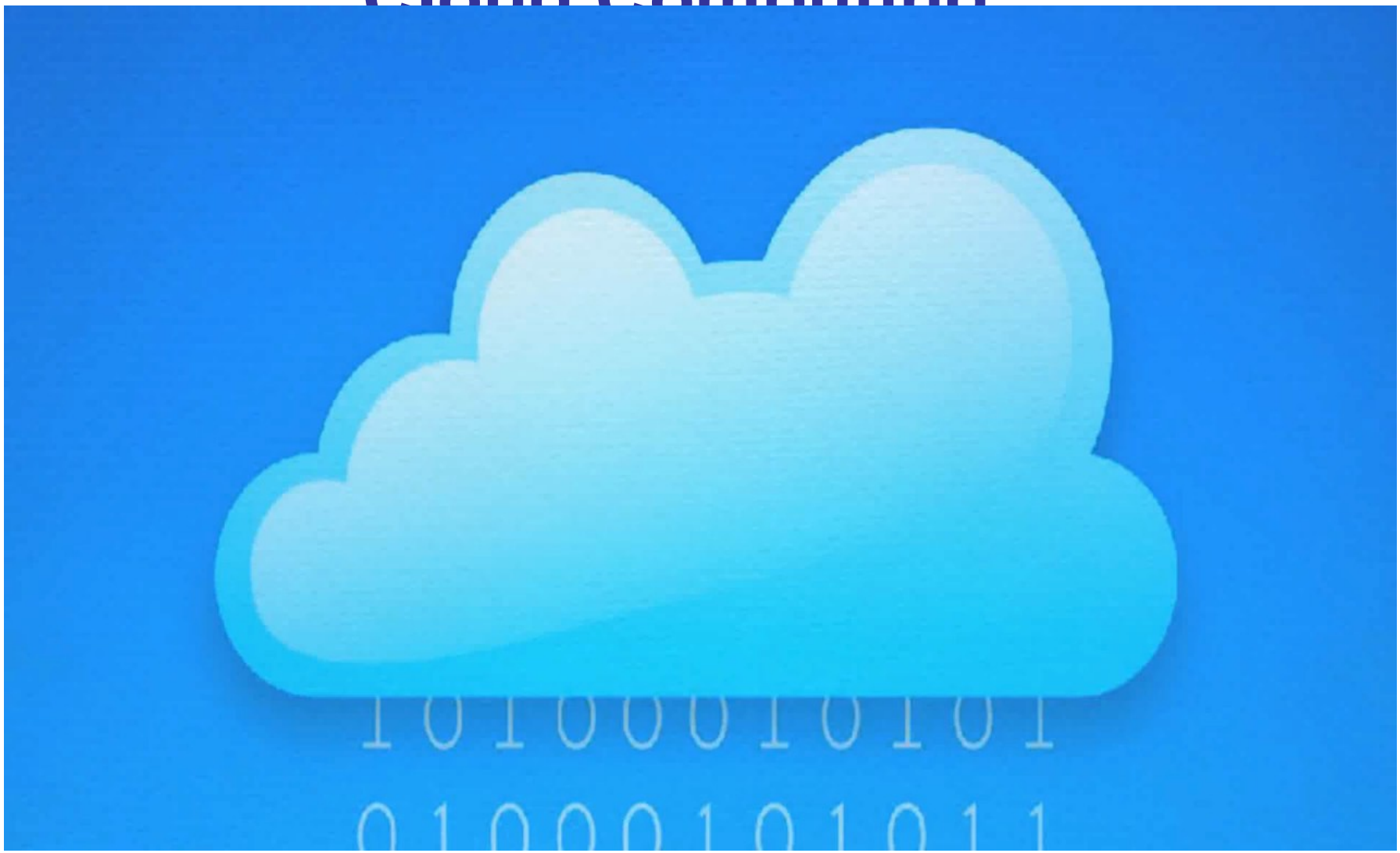
Cloud Computing

- Cloud computing means delivery of services through internet.
- These service can be in the form of both software and hardware.
- Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (for example, networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud Computing



Cloud Computing



Evolution of Cloud Computing