

## CLUSTER COMPUTING: BENEFITS AND APPLICATIONS

**Dr Banitamani Mallik**

Centrefor Computational Mathematics

Centurion University of Technology and Management, Odisha, India

### ABSTRACT

Cluster computing is the state of the art to interconnect a group of machines in a way that they work together as a single system. Clustering of computers has been a hot research challenge in computer architecture. This process mainly helps to reduce cost and improve network technology in all possible situations. Cluster computing has become a popular research area among scientists, researchers, network developers and algorithm developers. The main goal of this article is to focus on cluster computing, cluster architecture, cluster components, cluster types, benefits and applications of cluster.

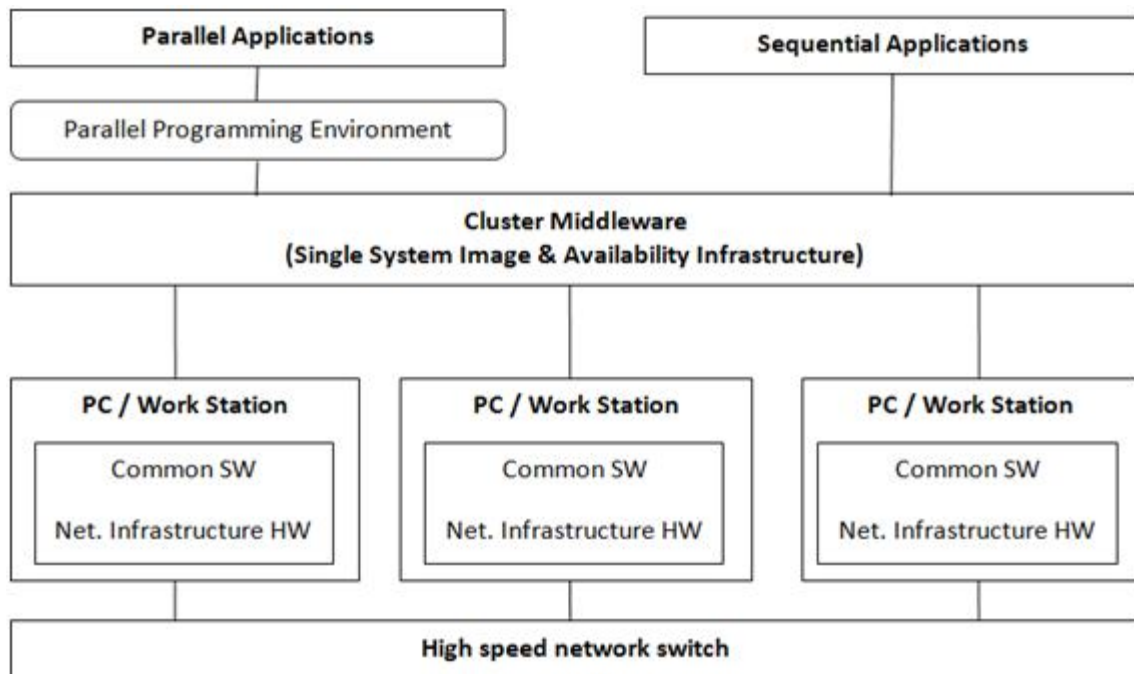
**Keywords-** High-Availability (HA), Load Balancing (LB), High Performance/Parallel (HP)

### 1. INTRODUCTION

A group of computers are connected on a network and they perform like a single entity is referred as Cluster computing. Each computer is connected to the network is called a node. In other words, the process of sharing the computation tasks among multiple computers is called as cluster computing. A cluster connects a number of computing nodes that are used as servers via a fast LAN (local area network). Clustering of computers is popular because of additional backup server availability in case of failure, scalability, cost efficient and more important, processing power to complete the task with minimum time. A Cluster has a great capacity of providing better performance and reliability than traditional-mainframes / supercomputers.

### 2. ARCHITECTURE OF CLUSTER

A cluster is a type of parallel/distributed processing system. It mainly consists of a collection of inter-connected stand-alone computers working together as a single, integrated computing resource. It is a collection of computers/workstations working together as a single, integrated computing resource connected via high speed interconnects.



(Fig. Cluster System Architecture)

(Courtesy of Rajkumar Buyya)

### 3. CLUSTER COMPONENTS