iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IV **Month of publication:** April 2020

DOI:

www.ijraset.com

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IV Apr 2020- Available at www.ijraset.com

A Study of Cloud Computing & Load Balancing Algorithms

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Abstract: ***In this Era of Digital communication data is most important thing which is used in everywhere, a huge amount of data are available in the system node network. So we require a technique to store data over the network or internet Space. It is also known as cloud computing. Cloud Computing Delivery of on demand and computing services. Cloud services suppliers host the data services and we can access the data from these services. In this technique user can share or store the data and retrieve the data anywhere at any time but of the storage of large amount of data. In the services the retrieval of data very hard so load balancing technique are used to maintain the load of cloud or balance the load over the cloud. The aim of this paper is to define all the types of load balancing algorithm and introduce the cloud computing.***
Keywords: Digital Communication, Cloud Computing, Load Balancing.

I. INTRODUCTION

Now a days lot of customers or user need to process or store a huge amount of information a Data or need to do some the operation over that data ,but some time due to lack of memory management and the user fails to do so .so we are here to introduce new types of .data storage system known as "cloud computing" . Cloud Computing can be demonstrated as operation of heavy computing resources such as software package and hardware a kind of services that are delivered to clients over a outsized scale network [1].
Cloud computing grave a lot of attention because of opportunities that it offers .In 2013 it was reported that cloud computing had become highly demanded service or as a utility comparison to other one. It used as a platform as well as application. Cloud computing grave a lot of attention because of opportunities that it offers .In 2013 it was reported that cloud computing had become highly demanded service or as a utility comparison to other one. It used as a platform as well as application.
It offers platform independency there is no requirement of installation in personal computers because of this features it is very helpful in extending business. You can say that cloud to be a very big server on which a large amount of data stored and also provide different services to different server.

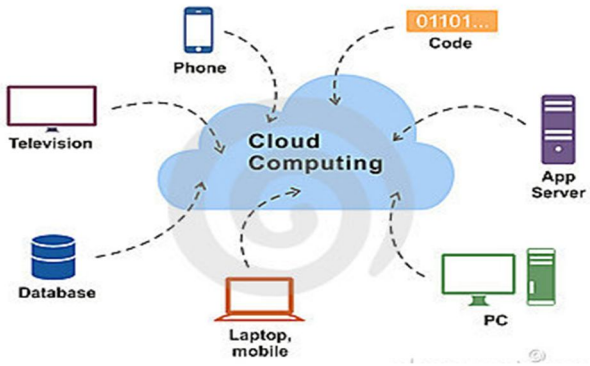

Fig.No.1- Architecture of cloud computing

A. Benefits of Cloud Computing

1) To manipulate and accessing the data online easily at any time.
2) Resource are easily available as per demand.
3) Having high potential to access information.
4) The application used as utilities over the internet.
5) These tools are called as developing tool as online.
6) No requirement of software.

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B. Characteristic of Cloud Computing

1) On Demand Self-Service: In this service the user have to access your own services and have control over the services that any change can occur by the users. You may add and delete users according to your own choice.

2) Resource Pooling: The cloud allow user to access data from anywhere at any time. It is easy for users to use data from any of remote location.

3) Rapid Elasticity: It means it provide users to work at any environment and access data from any tool. It is very flexible in nature so easily add or remove any type of data and any software features.

4) Measured Services: It means in this service it provide users pay as per use of software services. User and cloud provider only measures the storage levels, processing, bandwidth and the number of user account and you are paid according to the appropriate use of services.

5) Broad network Access: This service provide access of data from anywhere either from smartphones, personal computers ,tablets or from official computers .This may helpful in business management or in academics we can easily access data from anywhere and at any time. Broad network includes either its public cloud or private cloud.

C. Challenges of Cloud Computing

1) Data Protection: In many enterprises data is not disclose because of security concern. But in cloud computing it provide firewalls across data center to protect data from unauthorized access. So, that the full guarantee of data protection in cloud computing.

2) Data recovery and Availability: The followings ways so that data is recovered and available at any time as follows-

a) Data have many copies called as replicas so if you have lost data found replica of that data.

b) The system is been monitored in systematic way so that we can easily access information.

c) No need of maintenance data is stored in any form and later you catch it easily as per needed.

d) The capacity and performance management is best in cloud computing.

3) Management Capabilities: Cloud computing is having good feature of balancing load and manage information easily.

4) Regulatory and Compliance Restriction: In some of other country it is rule by government that no one have access the personal detail of any users so that some type of restriction is followed .So in cloud computing it is also done that the user have some type of sensitive information that may be feed in the server so by identified their own identity user may access their data and information.

II. LOAD BALANCING

Load Balancing is a process that allows you to create a proper balance of the amount of work that is being performed on various piece of device or HI W. Equipment .load of the nodes are balanced among different serve or inside a single cloud serve B/W CPU and hard drives .Load Balancing is process of distributing a total workload to different nodes so that the work is divided and machine works efficiently because of reassigning of total load to the individual node to make use of effective resource utilization and also improve the response time of each job[2]. Sometime it happens that at a time particular node is in under loaded condition because of this balancing is help in division of proper workload.

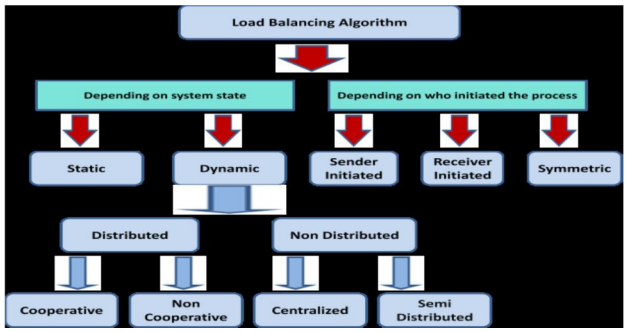

Fig. No.2-Types of Load Balancing Algorithms.

A load balancing algorithm which is dynamic in nature ,does not consider previous state or behavior of the system, that is depend on the present state or behavior of the system. Depending upon the who initiated the process, load balancing algorithm can be divided into three types of sender Initiated ,receiver initiated and symmetric.

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A. Types of Load Balancing Algorithm

It can be Classified into 3 Parts depends on how Process Initiated:

1) *Sender Initiated:* It is Totally depends on the sender. The overloaded node search for the underloaded node to accept the load. This type of Algorithm only initialized by the Sender.
2) *Receiver Initiated:* It is Totally depends on the Receiver. This Receiver Node transfer request message or Packet till founds a sender node that can get the load.
3) *Symmetric Initiated:* It is the Combination of both sender and Receiver Initiated. It is totally based on the Current State of the Node[3].

On the basis of system state the load balancing algorithm is divided in two parts such as –

a) Static Load Balancing
b) Dynamic Load Balancing.

III. STATIC LOAD BALANCING

In this algorithm of load balancing is achieved by providing priority information about the node. Static load balancing mainly based on the information about the average of the system work load .It performance of processor is measured during the compilation time. Static load balancing method are Non-preemptive i.e. once the loads allocated to the system It cannot be transferred to another node this approach requires less communication ,So it reduces the exertion time.

1) *Advantage:* It minimize the execution time of the processes ;they are simpler design and Implementation.

IV. DYNAMIC LOAD BALANCING

In dynamic load balancing it can be categorized in two types-

1) *Distributed*
2) *Non distributed*

In distributed system all nodes present in the system and all the algorithm executed by it and after that the task of balancing the load is distributed among them. In this node interaction is of two types such as cooperative and non-cooperative[3].In cooperative all node work together to achieve the same objective such as to improve overall performance and response time of a task . But in non-cooperative the nodes works individually to improve the response time. In non- cooperative there are two types of node that work individually and other may work in group to achieve the goal. It works in two form centralized and semi distributed. In centralized only one perform the whole task whereas in semi distributed the system is partitioned into the clusters[4]. The group of node work together called as clusters which may choose randomly to perform the load balancing task to distribute the work load.

Dynamic load balancing is key feature for distributing the load to different servers. The main goal of dynamic load balancing is to provide elasticity and capability to expand the load when it is overloaded or in underloaded condition. Sometimes additional instances of an application will be required in order for the architecture to scale and meet demand[5]. That means there is a need for a mechanism to balance requests between two or more instances of that application. The mechanism most likely to be successful in performing such a task is a load balancer . There's no other way to assume increased load other than adding new instances and distributing that load with software or hardware. Similarly, when the additional instances of that application are de provisioned, the changes to the network configuration need to be reversed, but software and hardware load balance is easy to scale up or scale down.

V. CONCLUSION AND FUTURE SCOPE

Cloud computing are always used to store data or information over the cloud and it transferring data and information from one Node to another Node. During the transmission of data or information a large amount of data are transferred so in the network heavy congestion are available, So we require a tecniques i.e. known as Load Balancing. It require to distribute the work load equally across all nodes which are connoted to the cloud network .Due to load balancing we achieved the high performance once and minimum load area the network.

In this Paper discuss 3 types of load balancing algorithm which is based on the how the process initiated .

A. Sender Initiated
B. Received Initiated
C. Symmetric Initiated.

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We also discuss about the approaches which are used for load algorithm .There are 2types of approaches used in load balancing algorithm .

a) Static

b) Dynamic

In the further me should try to improve the static and dynamic algorithm approaches with and help of different method .So In the further me easily manage the load or balancing the load over the cloud .

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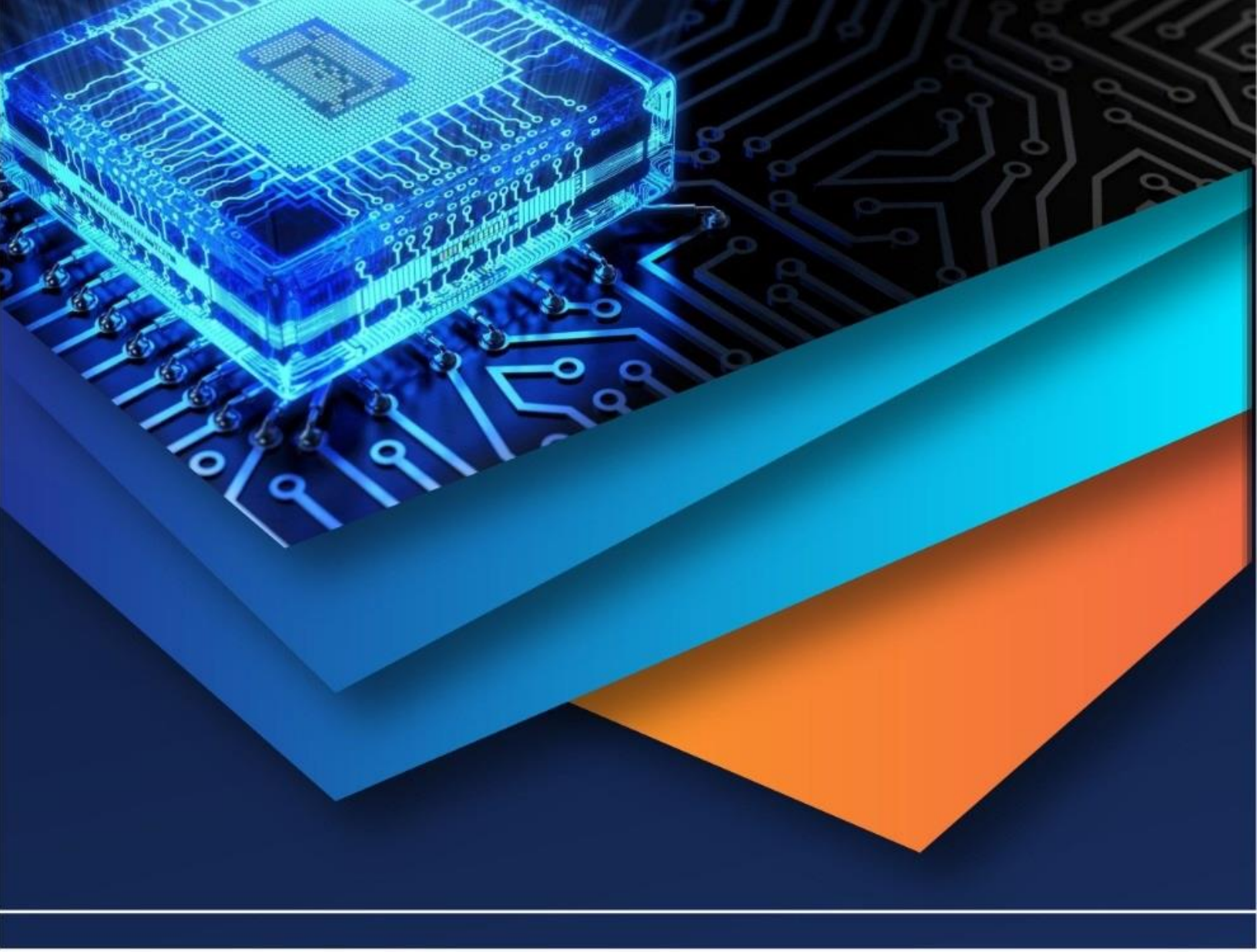

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