

Load Balancing Techniques of Cloud Computing : A Review

¹Ankita Sharma,²Miss Isha Awasthi

¹Research Scholar, ²lecturar,

Department of CSE

Sri Sai College of Engineering and Technology, Badhani (Pathankot)

Abstract: The cloud computing is the architecture which is decentralized in nature due to which various issues in the network get raised which reduce its efficiency. The virtual machine migration is the major issue of cloud computing and it get raised when uncertainty get happened in the network. Due to extensive use of the virtual machine resources, machine gets overloaded which increase delay for the cloudlet execution. In the base paper, the check pointing algorithm has been proposed which assign task to most capable machine and hosts maintain check points on the virtual machines. At the time the virtual machine get overloaded the cloudlet need to migrate to another virtual machine. In the research work, weight based technique will be proposed which migrate cloudlet from one virtual machine to another.

Keywords: Cloud Computing, Load Balancing

I. Introduction to cloud computing

Cloud computing is used in the Internet to consume software or other IT services on demand. Cloud computing is a completely a new technology. With the use of Cloud Computing users are able to share processing power, storage space, bandwidth, memory and software. As if somebody is using Cloud computing then their resources get shared along with that the cost is also getting shared. This helps user to spend only less cost as they have to pay on the basis of usage. The provider of cloud computing solutions delivers a permission to use its software, hardware, platform, or storage providers like services over the internet. There is such kind of disc or hardware available which user can buy to take the cloud services. Recurring fees is charged by the cloud provider on the monthly basis which is based on the usage by the users.

The evolution of Virtualization, Utility computing, Software-as-a-Service (SaaS), Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) all are combined to make a cloud computing. It is also a development of distributed, parallel and grid computing. Over other existing computing techniques the cloud computing is advantageous and it much improve the availability of IT resources. So with the use of cloud computing users are able to use the infrastructure of IT and pay for that only which will save the cost to buy the physical resources that may be vacant when it is not in use. The data, operating systems, applications, storage and processing power will be active on use basis. The cloud is just like a space available on web where computing has been already installed to get advantage of it in different services.

A decentralized server networks provides different services and computing software both combined to make a cloud computing. Now a day's cloud has been used in number of different applications like Yahoo, Gmail web based email clients, Wikipedia, YouTube and it has also been used in Skype, Bit Torrent like peer to peer networks. In cloud

environment there is no control over it by any centralized organization there is only need of internet connection along with one web browser nothing more is required to utilize its services. For business world there is enterprise cloud computing. There is need of hardware and centralized infrastructure for running Microsoft, SAP, or Oracle like applications. The office space, power, networks, servers, storage, cooling, and bandwidth are types of infrastructure that is required to run or install it. The complexity of above mentioned database has been reduced to much extent with the use of cloud that also reduces the total required expenditure.

II. Issue in Cloud Computing

As day by day the amount of information is getting placed in cloud by different companies or users. By this the concern of data security in the environment is getting increase. There are number of issues in cloud computing out of all some issues are summarized below [5]:

- **Privacy:** When using cloud-based services, one is entrusting their data to a third-party for storage and security. Virtual computing technology is utilized in the Cloud computing. In which the personal data of users may be scatter in number of virtual data centers rather than keeping it in only one physical location. When cloud computing services are accessed by the users at that time they sometimes leak the hidden information. Because of this attackers can analyze the critical task depend on the computing task submitted by the users.
- **Reliability:** As our local servers the cloud servers are also experience downtime and slowdowns.
- **Legal Issues:** Worries stick with safety measures and confidentiality of individual all the way through legislative levels.
- **Compliance:** Regular reporting and audit trial are requiring as there are number of regulations that pertain to the use of required data and its storage. There is need of compliance in cases where data centers are maintained by cloud providers it is special requirement of customers.
- **Freedom:** The stored data can be physically used by users the control of data storage is in cloud providers hand to give access or not.
- **Long- Term Viability:** In case when the when the cloud computing provider go broke or it get acquired and swallowed up a larger company at that time the data which we have enter should have the capabilities to stay for long and never become invalid by the time.
- **Cost:** As there is need of using large amount of data back in house and also there is requirement of always on connection which leads to high cost.

III. Literature Review

| Author | Year | Description | Outcome |
|--|------|---|--|
| ssTalwana Jonathan Charity, et.al, | 2016 | have recommended the use of existing fault tolerance techniques such as job migration, self-healing, static load balancing and replication. | the simulation results it has been seen that the proposed approach provides good results for VM reliability and system reliability comparatively to other existing |

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| | | | approaches. |
| Bashir Mohammed, et.al, | 2016 | have introduced an optimal fault tolerance mechanism to deal with the problem and to minimize the risk of failure. | Their results obtained are demonstrated through experimental validation thereby laying a foundation for a fully fault tolerant IaaS Cloud environment, which suggests a good performance of their model compared to current existing approaches. |
| Ashima Garg, et.al, | 2015 | have introduced an autonomic prospective on managing the fault tolerance which ensure scalability, reliability and availability. | Experimental results show that our framework can deal with fault tolerance very effectively. |
| Parveen Kumar, et.al, | 2015 | have proposed a model for real time cloud environment name it HAFTRC that will help in getting high adaptive fault tolerance. | . In case of cloud environment the novel techniques not prove to be good. |

IV. Objectives

Following are the various objectives of this research work :-

1. To study and analyze various load balancing technique of cloud computing
2. To improve optimization based load balancing techniques of cloud computing
3. Implement proposed technique and compare with existing in terms of certain parameters

V. Research Methodology

The proposed algorithm is the improvement in the fuzzy logic based cloudlet execution technique. In the existing algorithm, the fuzzy rules are generated which will assign the tasks to different virtual machines for the execution. The fuzzy rules are generated on the basis of number of cloudlets and virtual machine resources. The virtual machine resources are counted in the terms of execution time, failure rate. In the proposed algorithm steps described below are followed for the task reassignment :-

1. Cloudlet Assignment: - The cloudlet assignment is the first step which is applied to search the virtual machine which is most applicable to the cloudlet execution. The virtual machine will be searched on the basis of execution time and failure rate. The virtual machines start executing the cloudlet. The virtual machines also start maintaining the check points on the server for the efficient execution of the cloudlets.

2. Overloaded virtual detection and virtual machine migration: - The virtual machine which do not respond back will be considered as the overloaded machine. To migrate the task weight of each virtual machine is calculated. The virtual machine which has maximum weight will be selected as the machine on which cloudlet will be migrated.

VI. Conclusion

In this work, no parameter is been considered which calculates a number of checkpoints are stored on the previous machine and number of bytes required for the task migration which affects the energy consumption of the data center.

VII. References

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