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Research paper

A floating IP implementation based-on load balancing in cloud computing

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Abstract

With the advance of technology and constant changes in internet development, cloud computing has poured today. The industrial 4.0 requires technology that is reliable and has high stability. With lower funds and convenience in overcast computing as a serving, for example, cloud servers, users are increasingly placing web resources and information on cloud computing. But, when needed, by many users, errors or downtime cloud server often occurs on the cloud server. Various kinds of obstacles often happen, such as errors, ISP interrupted, overloaded, or others. From these problems, the availability and reliability system on the cloud server will be increasingly important so that this study will discuss the issue of an encumbrance balancing and floating IP (internet protocol) in a cloud server with a minimum cost. This study proposes a dual balanced approach using floating IP addresses to balance workload in cloud computing. This is to ensure the reliability with the stability of a cloud server to optimize the maximum available resources. Cloud analyst, like a visual-based Cloud Sim Modeler, will be used for algorithm analysis. Comparative studies are also brought out by several algorithms such as the robin algorithm and First Serve algorithm, the results will be analyzed and expected to be a right solution that can later be applied to a need that requires resources with a lot of connectivity, such as e-commerce, revenue new students, online exams, or others.

Keywords: *Load-Balancing; Floating IP; Cloud Computing.*

1. Introduction

Internet technology is developing rapidly and is widely used, with which Virtual Computing is an essential topic in the industrial revolution of today and as a new computing mechanism that emerges. Cloud Server is a unique concept that contains a set of internet-based virtual computer resources where dynamic and virtualized resources provided service on the cyberspace is becoming a fundamental issue. Cloud computing, depicting platforms and types of applications. The computing platform on the cloud is dynamic and has configured, redefinition, and server deprivation as needed. Servers in the cloud can be physical or virtual computing called cloud servers that spread throughout the network. It uses resources on computing in the system to easiness the carrying out of complex tasks, which requires a growing source of computing imaginations as a usefulness to meet society in general [1]. The infrastructure is used by business people and users to access application services in the world on demand. Thus, it represents effective new paradigm computing services, usually supported by the center of all data that contain Virtual Machines on a network [2]. Cloud Computing requires the distribution of computing mechanisms that utilize high internet speeds to move work from personal PCs to remote computer clusters for data processing. Despite the glorious cloud computing, there are still many pressing problems that still need the completion of the settlement to the problem for cloud computing. Its issues on the load balancing of computers have been for long periods, and it requires a critical role in the recognition of virtual cloud computing. Choosing nodes (load balancing) to do tasks in cloud server on computing should pay more attention, and exploited the effectiveness of the resource, cloud computing must be selected correctly according to the source and function of each. Load balancing on the problem of cloud server computing is to spread workloads evenly throughout the cloud, which becomes indispensable in virtual computing. Load Balancer used by Cloud Providers in their cloud server platform to provide efficient solutions for users. Also, a load balancing environment network between CSPs is needed to build low cost and limited resources for consumers. This load balancing cloud computing illustrates an organization's ability to spread various applications requests too many applications located in a data source center and through a data provider in the cloud server. Load balancing [3] is a procedure that distributes workloads between various nodes in a cloud server environment to establish that it doesn't node in the system are loaded or not connected at a certain time a satisfactory working volume is produced by balancing the load efficient at each user node in the network implements an algorithm. Using algorithms on load balancing networks is to map functions employed on the cloud domain to resources so overall response time allocated is increased and taking effective use of it.

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2. Load balancing technology

A Balancing the load becomes half of the essential problems on the cloud domain computing because there are many factors that result in unable to predict the number of user requests issued every second on the cloud environment. Uncertainty is because cloud behavior is always changing. The main problem with load balancing on the cloud domain is to dynamically allocate loads between nodes to meet user needs and to provide use of the most resources by getting along as a whole load available for different nodes. Load balancing [4] is a process that establishes workload evenly among all available nodes on a system. Have a better motto on user satisfaction with load balancing. Because of the number of users too, and their demands are increasing day by day, cloud computing must provide services to customers with the most satisfaction. The right or ideal, a load-balancing environment network helps to make the best use of available resources, thereby ensuring that no nodes are fully loaded or disconnected. Load balancing enables scalability, avoids traffic congestion on the cloud network, and also reduces the time needed to respond to users. Overflow load balancing environment network algorithms [5] have been composed to schedule loads between various machines. But until nowadays the allocation of a good load balancing environment network algorithms is still being studied loads spread throughout the network layout. It has been tested that assigning tasks consistently throughout the order is considered a complete problem [6]. Several Load Balancing approaches are in some literature. In [7] the Minimum Execution time (MET) is used to schedule each work function randomly to the node that is expected to be executed the fastest, avoid the burden on the current computer network. Whereas in [8] the Min minimum tagging algorithm minimum handling time for each unplanned assignment is counted. The round algorithm uses an easy distribution of function in some entire data centers or data compilation and processing units.

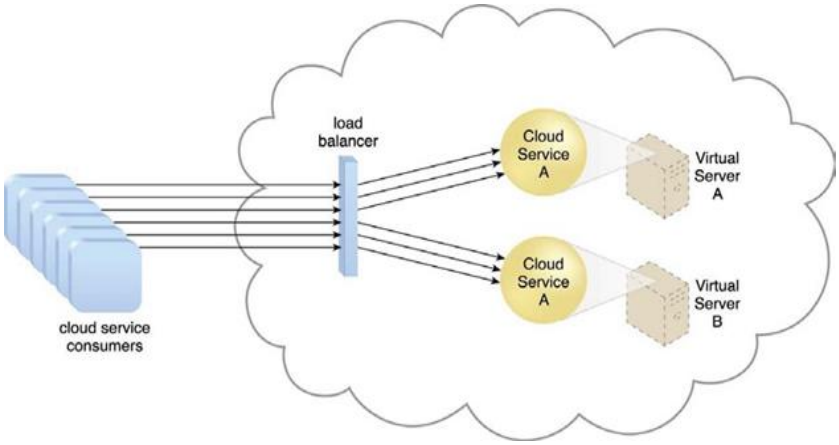


Fig. 1: Load Balancing Schema.

Cloud unification is the component mechanism of managing various application programs to approach and information dispersion in-network chips ciphering. Cloud- established merging is remarked as iPaaS for platform facility integration. While the SaaS industry delivers usability quickly, such as tractability and lower prices. Company's chief has identified combination becomes a secret one come out in useful, go forth SaaS and different software network. Saugatuck Technology conducted a late survey, 32% of herald provided information, which integrated with saas as well-nigh significant interest for the industry. Second, respondents from 39% state a clue and need proper security preservation. Taken from the other cloud computing patterns like the platform is a PaaS facility and infrastructure like an iaas service is growing due to the popularity of media-based platforms and mobile applications. This creates additional information that is worthwhile to run extraneous the firewall of the enterprise and into the cloud. Therefore, with emerging trends and technologies, enterprise supervisor needs to think about effective integration strategies for their applications to interact with the cloud inline between the darkness and the company. Despite the various problems in Cloud integration, there is a form of modern settlement that will be added to address integration issues. PaaS is an independent platform that provides cloud integration services. IPaaS solutions bring different integration patterns not just element to element integration solutions that securely access corporate data as a cloud network-based solution, iPaaS also demonstrates the expertise and flexibility of different cloud services, the most important element of which is that iPaaS work like "point-to-point interaction" for various service categories and applications inside the industry and the cloud. In this context, cloud specifics of work analyzed and acquisition of surveys to generate opinions organizations on choosing useful cloud merge schemes. We support iPaaS as well as scenarios for deployment and recommend a hybrid merging a different forum for aspects of IT calling the link process easy and straightforward. One thousand people approach the data daily done cloud computing servers. These requests, known as the load, are processed by the servers. Servers may take a lot of time to plan a vauntingly capacity, causing delay and congestion. A few object lessons to exemplify this congestion include playing YouTube videos, video buffers despite having a good signal strength, or buying something via e-commerce does not load the page because of too many requests. These examples best explain the scenarios in which servers are unable to process claims. This is a encase with businesses that own the database platform because it can put a hole in the organization's name. To tackle this problem, engineers created the load balancing intrigue to bring of the enormous database stress. Load balancing reduces the overbearing amount on the servers by weight allocation for various servers. It distributes the traffic to deflect overloading on one resource, reducing the network over-crowding.

3. Results and analysis

This paragraph addresses the results of the test after the simulation has been run. To make understanding it quick the results and discuss the various algorithms, these data are provided as visual or tabular representations. A detailed review is required for the research to decide whether predictive model advantages have advantages and can be efficiently and reliably spread on the load balancing system. Generally speaking, the SNLB program has fewer jitters than the other schemes.

Table 1: Latency in Network during Traffic Load

NO	Scheme	Average Network High Load	Medium Load
1	Server and Network Load Balancing	18.51	6.72
2	Round Robin	17.59	6.27
3	Throttled	14.75	5.90
4	ECMP	14.05	5.48

At the start, both systems have approximately the same Jitter quality (the first 4 minutes) due to the light traffic. But because traffic increases jitter in the case of GFF faster, experience based on fluctuation loads less than Round robin, but SNLB has the best performance. Differences in link utilization caused network differences. The GFF has allocated more flow in a single lane, while the round-robin distributes flow across multiple pathways at the same rate, but does not find the form of discharge or load depending on the power separated by the least weight, but might have allocated more elephant demands on any single link that could create a sudden jam. By using all links equally, SNLB has the best distribution of traffic between servers and paths. Within the operating system, the variables and information structures involved with this method are dispersed and include most of the required coordination costs that do not require special security in the system for this reason.

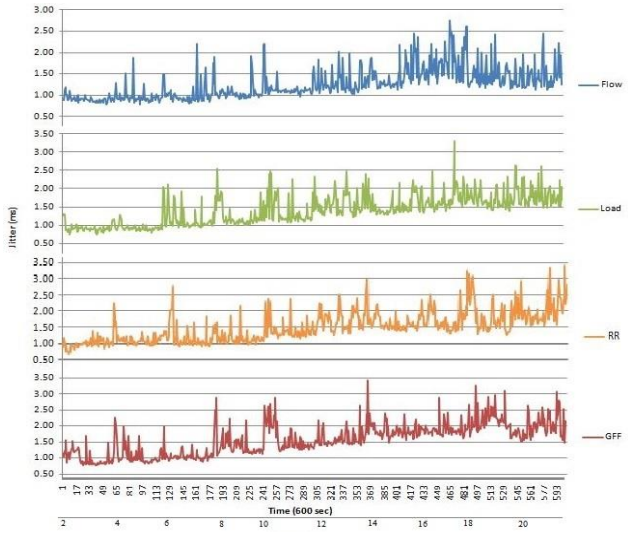


Fig. 2: Load Balancing Network.

This paragraph addresses the test results obtained after running the simulation. To make it easy to analyze the results and compare different algorithms, these data are provided as visual or tabular representations.Generally speaking, the SNLB program has less jitters than the other schemes. At the start, both systems have approximately the same Jitter quality (the first 4 minutes) due to the light traffic. But because traffic increases jitter in the case of GFF faster, experience based on fluctuation loads less than Round robin, but SNLB has the best performance. Differences in link utilization caused network differences.

4. Conclusion

In actually, the ongoing process is trivial in theory, but it is almost impossible in practice. The task placement algorithm requires low costs and can be easily implemented on most operating systems, while only a few operating systems in practice support task allocations. Cost-based algorithms also perform more focus on GFF and Round robin-based projects in the past and then connect to cloud computing. This causes delays and better jitter performance. We can observe that the flow-based SNLB schematic datacenter network has the least latency over increasing traffic with time. Because this scheme jointly propagates network traffic through links and servers so that it uses all paths evenly, these pathways experience the least burden on the roads that directly affect the latency value. SNLB flow-based schemes almost always outperform other systems in terms of latency. Load-based projects also perform more constantly than GFF schemes and Round-robin schemes. Load on server cloud balancing is seen as an emerging and essential technology network. This has been adopted in many data center networks. SDN can provide flexibility in controlling architectural components, clever use of resources on network resources and intelligent control of cloud networks (Quality of Service (QoS)) while reducing capital costs on expenses and Operational Expenditure Costs (OPEX). Load on the proposed server balancing improves performance on the Content Delivery Datacenter Network. This scheme intelligently utilizes features that emerge from SDN. In this scheme, real-time statistics from the network to spread network traffic data evenly between servers and the path to the server is used. Besides, the situation of excessive traffic and fault tolerance is handled efficiently using available network resources. Performance results show that the SNLB scheme performs better than the GFF, and the round-robin algorithm

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