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A Brief survey on Hypervisor Load balancing technique in Cloud Computing

Ashwini kuamr yadav
Assistant Professor (Janbhagidari)
computer science
Govt. Narmada P.G. college Hoshangabad (M.P.)
ashwiniyadav177@gmail.com
9630088365

Dr. Rashmi Tiwari
Assistant Professor
Mathamatics
Govt. Narmada P.G. college Hoshangabad (M.P.)
rashmi.v.tiwari@gmail.com
9425686967

ABSTRACT

ToDay's era is going towards fast and rapidly growing world of technology, more and more businesses understand the dvantages of usage of computer cloud computing. In resent some years, there has been various works are done in constraints of the technology, applications and world implication. in the era of computing the cloud computing is change the computing environment. cloud is provides the three major services to improve the computing system. in the computing system hypervisor are used to provide the middleware between client and server infrestructure in cloud environment. hypervisor is work on virtualization technology to provide connectivity between two network computer system.

INTRODUCTION

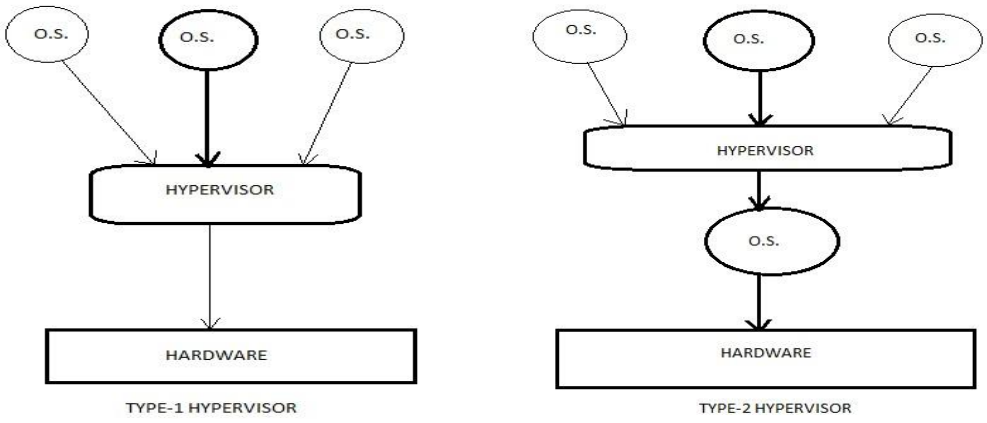
The Cloud Computing environment is very unique computing environment in the computer system. A standard definition of cloud computing is "cloud computing is a model for enabling convenient, on demand network access to a shared pool of configurable computing resources (such as network, storage application and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" by the National Institute of Standards and Technology (NIST). Cloud computing technology is used in a Virtualization environment to access a Datacenters, network systems, Resource Pooling, Reduced implementation and maintenance costs and provide security in computer systems [1]. Cloud computing systems based on the virtualized resource system [2]. In the Virtualization Technology the resources of computer system dividing into multiple execution environment, and it supports heterogeneous operating system environments, even on a single processor. This technology provides a scalable hypervisor system to adjust and manage the number of cores for an application domain in a multi core environment [3]. Virtualization is capable to merge several servers onto a single hardware. The cloud computing system is supported two types of the Virtualization one is called Para Virtualization and second full Virtualization. Full Virtualization is offered some drawbacks because complete emulation usually demands more processing resources from the hypervisor.

The Hypervisor is a software layer in the cloud computing system it is offering system hardware Virtualization. Hypervisor are software or firmware components that are able to virtualize system resources.

Hypervisor to freely manage the memory, processor cores and other resources of a platform. The purpose of the hypervisor system to provide core Virtualization on operating system tasks [4]. Hypervisors played an important role in many load balancing systems in a cloud environment. Hypervisor have a relatively small code base and limited interaction with the external world [5]. The Hypervisor is providing the full operating system is run in the virtual machine. It supports full control of the operating system and its parameters if add any new resources in the hypervisor virtual machine its required shutdown [6].

Hypervisor classified two types.

1. Type 1 hypervisor: - type one hypervisor are natively run on the bare-metal hardware. This type of hypervisor is directly supported system hardware .It runs on the system hardware to offered Virtualization of system [7]. Kernel- based Virtual Machine is an example of type1 hypervisor.



2. Type 2 hypervisor : - type 2 hypervisor runs on a host operating system to provide Virtualization services. It is directly not supported hardware of the system. The QEMU (Q-Emulator) and WINE for an example of a hypervisor system [7].

Load balancing is the main approach of this paper . The load balancing is a critical problem with the hypervisor system in a cloud computing environment .The hypervisor is offered Virtualization of the hardware and software resources . These resources are handled in the hypervisor system is a very critical task, so not a proper allotment of the resources in the hypervisor system than occur a load balancing problem. Many types of process are run on the hypervisor system at a time so the load is increased in the channel and virtual machine.

Technical Review

According to Shakkeera L and Latha Tamilselvan, the distributed computing the cloud computing is a new field. Cloud computing system all the resources and distributed form so network traffic are occurring the network traffic system the author are defining new task scheduling techniques to remove the load on the network and system. Dynamic task scheduling algorithms and maintain the load balancing and provides

better improvement on the system through efficient task scheduling. The efficient task scheduling is a resource provisioning mechanism is used in infrastructure as a service cloud system in the efficient task scheduling system in order to process the task used mathematical programming techniques like optimal task sequencing. The optimal task sequencing methods are based on the minimal cost of all the tasks. According to the author the multiple user and quality of services are required many resource limitations, execution time of all the tasks takes into account [8].

The efficient task scheduling strategy author is used three modes of lease requests (like Advance reservation, Best- effort and Immediate) to apply resource allocation in the infrastructure as a service cloud system. Author are used minimal computation and communication cost to achieve load balancing between resource assignment. Author achieves shortest average execution time of jobs, increase scheduling success rate and minimize the execution cost of workflows (loads) between dynamic scheduling algorithms to use open Nebula 3.0 with Haizea lease scheduler. The Haizea lease scheduler is provided three formats for specifying lease requests.

I. *Advance reservation (AR):* - Resources are reserved in advance only available specific time and user.
II. *Best – Effort (BE):* - Resources are provisioned as soon as possible. When resources are not available request are placed in queue.
III. *Immediate*: - client submits a request either the resources are provisioned immediately otherwise the request is rejected, based on the resource availability.

The task scheduling and resource allocation are a critical problem in the cloud computing system but used this method author are defined increase the scheduling success rate and minimize the execution of workflows for all [8].

According to Ajith Singh N. And M. Hemalatha for use cluster method applied in every central node to achieve better load balance for the cloud computing system designing. It's based on semi – distributed computing system. In the semi distributed computing environment data center is built with lots of system this type of system load balancing is not an easy task in the cloud computing system. In the semi distributed system load task is shared among the node this load balancing can take two form cooperative and non cooperative. Improve the overall response time in the cooperative system node are working side-by-side to achieve a common objective and non cooperative node are working independent to achieve goal. The benefit of this load balancing is that if any node is fail in distributing system the whole network are not halt and performance are not affected. In semi distributed all node make a cluster to perform load balancing algorithm. Dynamic load balancing must have the four policies. (1) transfer policies (2) selection policies (3) location policies (4) information policies. All policies provide up to data load information each node in the system, the author has used Fuzzy logic to create the physical machine and virtual machine cluster node in

the semi distributed computing system. All used hierarchical clustering method maintains load on the system. All method is reducing the energy consumption in the data center cloud environment [9].

According to Akshay Chandak et.al used feature of KVM (kernel virtual machine) to avoid the load on the hypervisor network system. Author are used Q - Emulator in the kernel virtual machine to migrate all resources in the cloud computing environment. Q EMV dynamically takes decision about the migration of heavily/lightly load virtual machine. Migration of virtual machine is providing better handling work load across physical machines in the data center. When physical machine are not sufficient for virtual machines. Author is proposed central scheduler load balancing (CSLB) algorithm. This algorithm is modified version of CSLB algorithm. The algorithm uses the five phases of local balancing in kernel based virtual machine [10]. The flow chart is shown all the five process to use in central scheduler load balancing algorithm.

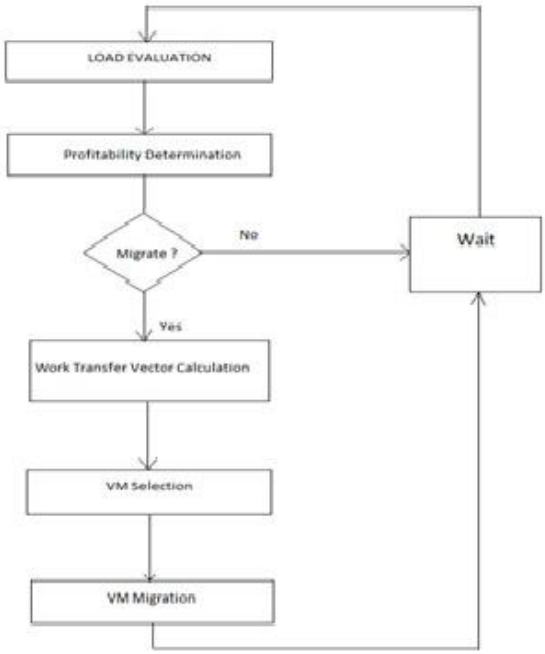


Figure-3. A flowchart of central scheduler load balancing algorithm [10].

The five phrases are:-

- Load evaluation
- Profitability determination
- Work transfer vector calculation
- Task selection
- Task migration

This method provides low migration time in a virtual machine and improved system performance [10].

According to WU Qingbo et. al; are defined BMCS based algorithm its monitors and controlling Low level states and hardware accessing events of operating system in a hypervisor. BMCS used hosted daemon to OS level profile and low level status for events semantics. This out of box method can collect real run time operating system profile and control the execution of the OS according some defined rules. The methods provide stronger operating system. BMCS implementation based on the kernel virtual machine for high BMCS performance. Author is defined monitoring and controlling mechanism based on a hypervisor system for load balancing. BMCS architecture are working on four levels: system level behavior, process level behavior, functions level behavior and instruction level behavior all levels manage system monitoring and controlling for load balancing of hypervisor system [11].

In the request Dispatching Algorithms for Web Server Clusters based on load balancing, author is defined new methodology for achieving high performance system based on cluster methods. Its provide high reliability and scalability on the Web server clustering system. Its accept all the HTTP incoming Requests and dispatch cluster in sever. The server load is balanced during the cluster dispatching .Author also defines a new dispatching algorithm for used load balancing on a Web server. The all Web server requests can be divided into two parts, Header and Body. The header shows the multiline text which contains the request method such as reading a file, posting data to the server validating and updating a file or executing a server side script file. The body part is defined uploading data it text field is MIMO format. The time of a complete response in request method includes three parts [12].

Tc: - the time to establish a network connection between the dispatcher and the servers.

To: - the time used by the server to analyze the request header.

Tf : - the time to read and transmit the required file.

The Request Dispatching Algorithm is also called least time Increment Algorithm. It provides load balancing on the Web server through clustering [12].

Conclusions

Cloud computing system many types of hypervisor are used. the hypervisor is provides many technics to connectivity of client and server system. problem of load balancing in cloud computing has drawn wider interest of research community recently. this includes of VM allocation to service user request on one hand, and allocation of bandwidth for optimum throughput on the other.in this dissertatin an approach to overcome the problem of load balancing, bandwidth allocation and resource allotment for virtual machnies in cloud environment,is considered. these problems affect the performance and efficiency of cloud environment.

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