Efficient Speed Management in Cloud Environment

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Abstract— **Cloud computing is highly promising technology that providing unlimited resources and data storage services which help us in managing the data as per requirements. Cloud Computing can used Virtualization technique that all client and server are located in different places. Client can send request to multiple server and server respond time in message. Data frames to be easily shared among different environment. Virtualization is way to improve security, reliability and availability, reducing costs and provide higher flexibility. This paper explains how client getting fast response of server in cloud environment using virtualization.**

Keywords—— **cloud computing, Virtualization, Data frames**

I. INTRODUCTION

Cloud computing is an umbrella term used to refer to Internet based development and services. Cloud Computing is based on five attributes as Multitenancy (shared resources), massive scalability, elasticity, pay as you go, and self-provisioning of resources.

Multitenancy (shared resource): cloud computing is based on a business model in which resources are shared at the network level, host level, and application level.

Massive scalability: organizations have hundreds or thousands of systems, cloud computing provides the ability to scale to tens of thousands of systems, as well as the ability to massively scale bandwidth and storage space.

Elasticity: Users can rapidly increase and decrease their computing resources as needed, as well as release resources for other uses when they are no longer required.

Pay as you go: Users pay for only the resources they actually use and for only the time they require them.

Self-provisioning of resources: Users self-provision resources such as additional systems (processing capability, software, storage) and network resources.

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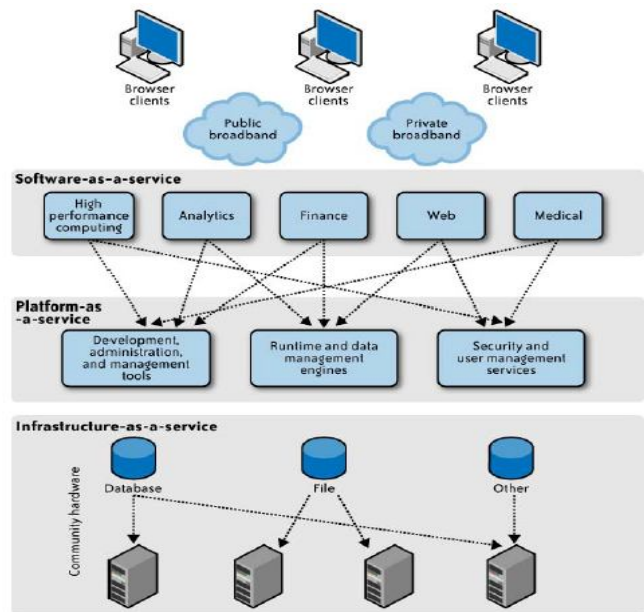
Figure 1: Architecture for relevant technologies in cloud

TABLE: 1

DIFFERENT CLOUD COMPUTING LAYERS

Application Service (SaaS)	MS Live/ExchangeLabs, IBM, Google Apps; Salesforce.com, Zoho, Cisco
Application Platform	Google App Engine, Mosso, Force.com, Engine Yard, Facebook, Heroku, AWS
Server Platform	3Tera, EC2, SliceHost, GoGrid, RightScale, Linode
Storage Platform	Amazon S3, Dell, Apple, ...

II. A NUMBER OF CHARACTERISTICS DEFINE CLOUD DATA, APPLICATIONS SERVICES AND INFRASTRUCTURE

Remotely hosted: Services or data are hosted on remote infrastructure.

Ubiquitous: Services or data are available from anywhere.
Commodified: The result is a utility computing model similar to traditional that of traditional utilities, like gas and electricity - you pay for what you would want!

III. VIRTUALIZATION

"The ability to run multiple operating systems on a single physical system and share the underlying hardware resources."

These project assigned to class that consisted of Implementing Virtual Machine Monitor (VMM) for a simulated architecture. System virtualization adds a hardware abstraction layer, called the Virtual Machine Monitor (VMM), that consisting on top of the hardware bar. Virtual machines may then run regular operating system, which would normally run directly on top of the actual hardware.

The main motivation for virtualization to increase the level of sharing and utilization of expensive computing resources such as the mainframes. There is large number of client machines connected to numerous servers of various types gave rise to new computational paradigms like client-server and peer-to-peer systems. These new environments brought with several challenges and problems including reliability and security.

This paper describes the basic concepts of virtualization on cloud as multiple Clients can send request to multiple server and server respond time in message. We will consider universal time which is same in all worlds as UTC. So server given responds in UTC time to client so we can identify which server getting faster response.

Virtualization is concepts as one machine for production environment and another is development and testing. Virtualization allows to you run two environments on the same machine as two environments are completely isolated from one another. As the figure shows, the production environment runs on top of operating system OS1 and the test environment runs on the top of operating system OS. Both Operating systems run on top of the Virtual Machine Monitor (VMM). The VMM virtualizes all resources as processors, memory, main memory, networks and allocates them to the various virtual machines that run on top of the VMM.
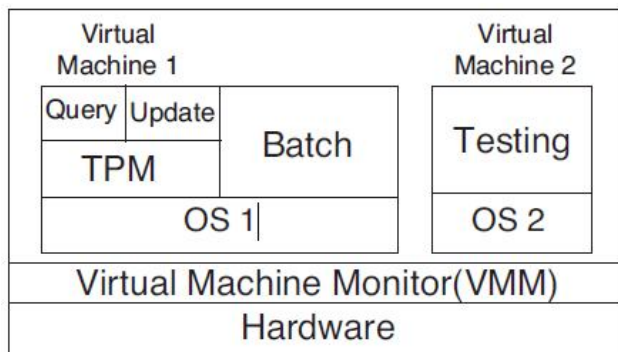

Figure 2: Virtualization Basic Concepts.

A machine operates in two modes: user and Administrative Mode. In Administrative mode, the entire instruction set can be executed. This is the mode in which the operating system runs. In user mode, only non-privileged instructions can be executed. In a virtual machine environment, the VMM runs in supervisor mode and controls access to the resources shared by all virtual machines and virtual machines run in user mode. The VMM schedules the virtual machines, in a manner similar to how an operating system schedules processes, and allocates processor cycles to them. Virtual machine has operating system called guest operating system. If any issue accrued in virtual machine then stopped it, but all other virtual machines continue to run.
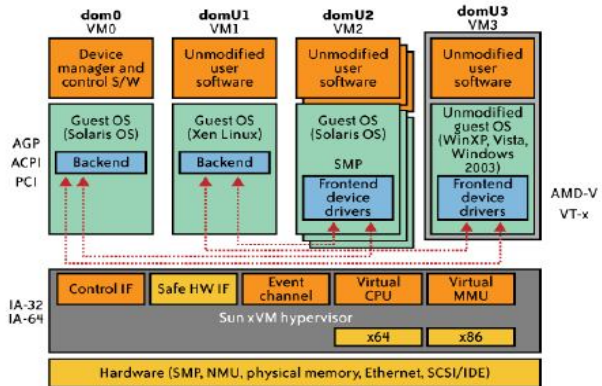

Figure 3: Sun VM hypervisor environment

Virtualization technologies enable Multitenancy cloud business models by providing a scalable, shared resource platform for all tenants. Virtualization offers data center consolidation and improved IT operational efficiency. Including OS virtualization (VMware, Xen), storage virtualization (NAS, SAN), database virtualization, and application or software virtualization (Apache Tomcat, JBoss, Oracle App Server, WebSphere).

Above figure illustrates OS virtualization and the layers of the virtualization environment as defined by Sun Microsystems.

The hypervisor is a small application that runs on top of the physical machine hardware layer. It implements and manages the virtual CPU, virtual memory, event channels, and memory shared by the resident virtual machines (VMs).

A VM is called a domain, whereas in the VMware virtualization product it is referred to as a guest OS. In Figure 2 the VMs are labelled as dom0 and domU1, domU2, and domU3. Dom0 is used to manage the other user domains (domU1, etc.).

The cloud computing paradigm, with virtualization as key enabling technology, is constantly gaining in popularity.

IV. ADVANTAGES OF VIRTUALIZATION

There are several advantages to virtualization across several dimensions:

Security: Compartmentalizing environments with different security requirements in different virtual machines one can select the guest operating system and tools that are more appropriate for each environment.

Reliability and availability: A software failure in a virtual machine does not affect other virtual machines.

Cost: It is possible to achieve cost reductions by consolidation smaller servers into more powerful servers.

Cost reductions stem from hardware cost reductions, operations cost reductions in terms of personnel.

Adaptability to Workload Variations: workload intensity level can easily take by shifting resources and priority allocations among virtual machines. Autonomic computing based resources allocation techniques, dynamically move processors from one virtual machine to another.

Load Balancing: Since the software state of an entire virtual machine is completely encapsulated by the VMM, it is relatively easy to migrate virtual machines to other platforms in order to improve performance through better load balancing.

Legacy Applications: Even if an organization decides to migrate to a different operating system, it is possible to continue to run legacy applications on the old OS running as a guest Within a VM. This reduces the migration cost.

V. AIM AND OBJECTIVE

Find which servers are available for response to client and how much time is required for it. And if multiple servers are available then which server got less time.

VI. IMPLEMENTATION

A Hypervisor or Virtual Machine Monitor (VMM) is a piece of computer hardware, software or firmware that creates and runs virtual machines.
A Computer on which a hypervisor s running one or more virtual machines is defined as a host machine. And each virtual machine is called a guest machine.
The Hypervisor presents guest operating system with virtual operating platform and manages the execution of the guest operating system and multiple instance of variety of operating systems may share the virtualized hardware resources.
We are cerate Hypervisor and adding three clients and two servers as virtualization techniques really apply in cloud Environment.
Connecting these clients and server with network. Find IP address of each machine by ipconfig command in cmd.
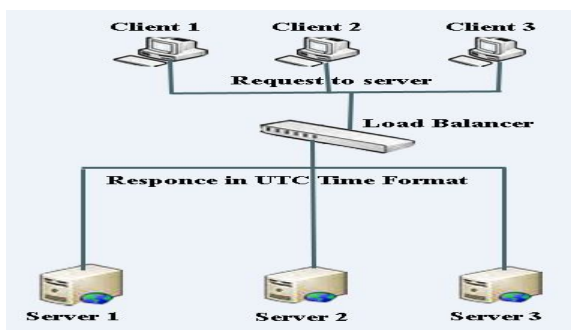Checking connectivity by Appling ping <IPv4 address> as ping 172.16.209.138 if machine is connected then find average time for response.

Figure 4: Client Server Communication

- Applying Socket programming in java and creating client and server communication.
- Client can first find server and given the UTC time in mille Second after sending request then note request time.
- Server can get the client and send response time to client so we can calculate it.
- Difference=Response time – Request Time

VII. CONCLUSION

Through Virtualization Technique we can find which server is given faster response. We are Appling socket programming for client server communication to find server is free available or not. If multiple servers are available then send request to all servers and find which server given less response time. Here, Time is given by UTC format. UTC time is similar to all over world. Thus server can send request receiving time and sent to client and calculate it.

REFERENCES

[1]   Daniel A. Menesce: Virtualization: concepts, applications, and Performance modelling
[2]   H.Andres Lagar-Cavilla,Joseph A.Whitney : Snow Flock: Rapid Virtual Machine cloning for Cloud Computing
[3]   Tim mather, Subra Kumaraswamy : Cloud Security and privacy
[4]   Norman Wilde, Thomas Huber :Virtualization and cloud computing

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