

A Survey on Virtualization Concept to Provide Run Time Execution

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Abstract-Virtualization is very important concept in computer system design. Virtual Machines are used to enhance system impregnability, software interoperability, and platform versatility. Virtual Compilers has benefits to provide the use of Computer network to the maximum level. In this project I have aim to do centralize compiling, balancing of load, distribution of task, client/server architecture implementation using distributed system. A virtual machine used to support individual processes or a complete system which depends on the abstraction level where virtualization occurs. So this project helps to avoid number of types of compilers in system. Most important benefit is that project helps to supports many languages. This project provides good reliability, good scalability and good service ability over the existing systems. This project overcomes the server overloading problem for source code compiling.

Index terms- Process Virtual Machines, System Virtual Machines, Load Balancing, IP Tunneling.

I. INTRODUCTION

The Virtual Compiler Server is highly scalable and available server which built on a cluster of real servers which consists the load balancer running on the operating system. Compilers can partition hardware and software which are rare and cumbersome to use. The architecture of this server cluster is fully transparent to end users. End users interact as it were a single high-performance virtual server. Research aims at developing the concept further by using IP Tunneling and implementing the same on WINDOWS Operating System.

Clustered system have advantage is that it has hardware redundancy and software redundancy because the cluster system contains a number of independent nodes .Each node runs a copy of operating system and application software. We can achieve high availability by detecting node or daemon failures and reconfiguring the system appropriately. Because of that the workload can be taken over by the remaining nodes in the cluster.

Popek and Goldberg were the first who defined virtual machines as "an efficient, isolated duplicate of a real machine". Presently, VM which have no direct interaction to any of the real hardware is popular. A virtual machine (VM) is software that emulates physical machine. Virtual machines are classified into two categories based on their use and degree of correspondence to any real machine as Process Virtual Machine and System Virtual Machine.

Process Virtual Machines and System Virtual Machines:-

A Process Virtual Machine (PVM) or application VM is designed to run a single program with a single process. PVM runs as a normal application inside a host OS and supports a single process. The virtual machine is created that time when a process is initiated and destroyed when the process exits or dies. Process virtual machine also referred as application virtual machine. PVM runs as a normal application inside a host OS and supports a single process. This virtual machine have aim to provide a platform-independent development environment.

E. g. Java Virtual Machine (JVM)

A System Virtual Machine is giving a complete virtual hardware platform providing support for execution of a complete operating system (OS). This system provides multiple operating system environments which can run in parallel on the same piece of hardware in strong isolation from each other. The Virtual Machine can provide an instruction set architecture (ISA) that is slightly different from that of the real machine.

But virtual machine rather virtualization have some drawbacks such as the virtual machine can indirectly accesses the same hardware the efficiency is compromised. When multiple virtual machines running in parallel on the same physical machine may result in various performances which depend upon the workload imposed on the system when we tries to implements proper isolation techniques may address this drawback.

II. PROBLEM DEFINITION AND OBJECTIVE

Virtual Compiler has benefit to use of Computer network to the maximum level. It is software which helps avoid to have various types compilers in a system. This system helps us to compile programs which are coded in any languages irrespective of the compiler being available in our system. The client software is there which provides the user an Interface where he can type the code in any language. User has to save the file with a proper extension.

For example if the code is written in Java then he has to save it in .java file.

The editor used to provide a virtual compile option where user can compile the typed code on its own machine even though the compiler is not available on his machine. When user selects the option compile the Client initiates a request to the server for compiling the program. The server who collects the file from the client checks the node on which the file can be compiled and initiates a compile request to the correspondent node in the cluster. The node then compiles on its own machine and gives the results back to the client. The client then displays the output in a format as if the compiling has been done on the same machine.

The main objective of this research is to provide centralized compiling. In this, we provide user authentication and personalized task distribution to manage Load Balancing. It describes the motivation, design, and internal implementation of Distributed Virtual compiler Server. This system is proposed to provide a basic framework to build highly scalable and highly available network services using a large cluster of commodity servers. To implement this system we have to implement client/server architecture using distributed system concept.

III. LOAD BALANCING AND IP TUNNELING

Load Balancing is done by virtual server using distributed weighted algorithm since same compilers are present on more than one node. Distributed weighted algorithm works as: it selects the compiler on node with minimum weight on particular node and if all compilers of particular type have same weight then it selects it in round robin fashion.

If client placed request in queue, virtual server becomes free to serve other clients requests. IP tunneling (IP encapsulation) is a technique which encapsulates IP datagram within IP datagram. It allows datagram destined for one IP address to be wrapped and redirected to another IP address. It used to build a virtual server that the load balancer tunnels the request packets to the different servers (real servers or nodes).The servers processes the requests and return the results to the clients directly as shown.

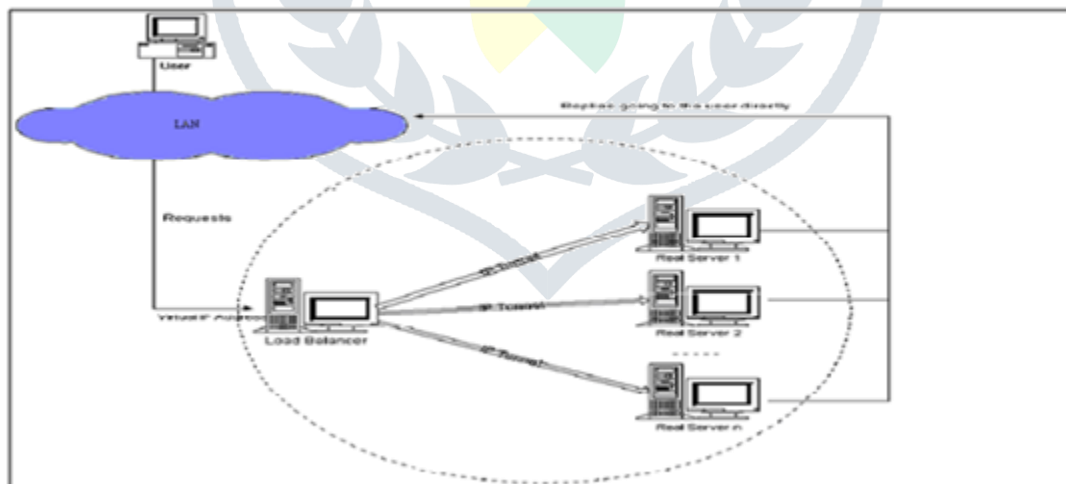


Fig.1 Virtual Server via IP Tunneling

IV. SECURITY AND BENEFITS

This system provides security to data or information by providing authentication. Basically it is used to provide centralized compiling. Virtualization is used to enable resource partitioning, pooling of resources and execution of multiple operating systems. It helps to connect applications on one physical machine concepts which clearly justifies the use of virtualization. It also provides reduction of total cost of ownership, exible service allocation scenarios, and ease of administration. Virtualization technology

provides performance analysis which focused on the applicability to High Performance Computing environments using Future Grid resources.

This system helps to provide the multiple operating system environments which we can run in parallel on the same hardware. But sometimes virtual machine can indirectly accesses the same hardware the efficiency is compromised. Virtualization sometimes introduced performance impact which is depends upon the hypervisor type, but the benefits of such technologies are profound and not all virtualization technologies are equal.

V.CONCLUSION

Now days in present system, we have requirement of different compilers according to the code. Such as, for c, c++ we required turbo c compiler, for java we used java compiler etc. In this system these compiler are installed an every machine for execution of code. So this system is very costly and time consuming.

To overcome this drawback of current system, we use compiler which are install on one machine. Our research is going on so that system help us to compile program coded in any language irrespective of compiler being available in our system. It helps to reduce overloading problem of the servers for Source Code Compiling.

Maximum number of server nodes can reach 25 or up to 100.Future Scope of this system is the project can be made up web enabled. It can be deployed on other operating system.

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