Enactment Exploration of Cloud Structure for Virtual Pcs

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Abstract:

A methodological computing application and well known artificial standard, the Linpack algebraic library has been used to evaluate the concert of cloud infrastructure. Using this function the Enactment of several key aspects in cloud computing such as the pressure of the number of Microsoft virtual pcs in work per host, as well as the I/O operations were evaluate.

Linpack benchmark was executed under different pattern of the physical host, with different problem sizes and with or without hyper-threading, and with the Microsoft virtual pcs managed using the Microsoft virtual pc hypervisor.

Keywords:

Microsoft virtual pc, Hypervisor, KVM, LinPack.

1. INTRODUCTION:

Cloud computing as discussed in is useful to reduce costs, reduce resources and simplified maintenance .it has ability to work multiple operating systems at same time. Microsoft virtual pc's software allows users to create multiple virtual environments, or virtual computer systems, on a single computer or server.

To evaluate the Enactment of the Cloud infrastructure, a scientific computing application and well known synthetic benchmark, the Linpack numerical library is used. This paper is organized as follows: Section II discuss the literature survey. Section III explores objective of research Section IV describes the Methodology .Section V list and explores the Enactment Exploration metrics.

Section VI describes the Enactment comparison between three benchmarks: Drhystone, Whetstone and LINPAC Benchmarks, Dhrystone and Whetstone benchmarks were used in the base paper for calculating Enactment of cloud infrastructure but in this paper Linpack benchmark has been used.

The LINPACK is a collection of COBAL subroutines for solving various systems of linear equations and linear least-squares problems. Section VII presents the conclusion.

2. WORKSASSESSMENT :

Cloud computing is a general term foranything that can be accessed as service over the internet. The services can be infrastructure, platform and software. It is described in. Microsoft virtual pcs technology enables multiple operating systems to coexist at same computer. Microsoft virtual pc is the software that allows user to create Microsoft virtual pcs on a single computer.

Dhrystone benchmark is used to calculate the integer operations and whetstone benchmark is used to calculatefloating point operations in million for single precision. J.J. Dongarra et.al.[7] Describes the Linpack Benchmark and some of its variations commonly used to assess the Enactment of computer systems. J.J. Dongarra, P. Luszczek and A. Petitet [15] describes the past, present and future of Linpack benchmark.

3. PROBLEM STATEMENT:

Number of projects aimed at developing solutions for managing virtualized enterprise data centers and cloud infrastructures have been proposed earlier by various researchers as discussed in Section II but certain limitations are highlighted as follows:

1.How to work multiple operating systems on the same machine at the same time?
2.How to overcome the problem of data transfer bottlenecks.

4. System Development:

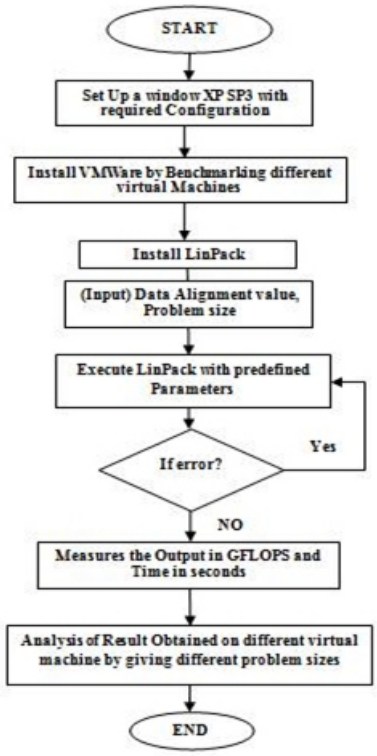
Fig. 1 shows the flow chart of the steps that are followed to calculate the Enactment of cloud infrastructure using a benchmark. First of all install Window XP with required configurations and then install the Microsoft virtual pc software which manages the microsoft virtual pc service. Then install Linpack, a benchmark or simulation tool for performing the desired simulations. To calculate the Enactment inputs given are: problem size and data alignment value and outputs are: times that it takes to solve the equation and number of GFLOPS.

Thus, as described before, many high performancemachines may not have reached their asymptoticexecution rates.

However, the benchmark is stillimportant because it approximates the performancerates of numerically intensive codes written by the userand optimized by an optimizing compiler quite well.The comparison of VMware and VirtualBox is done bybenchmarking virtual machines using LINPACK andCloudSim. The virtual machines were created onVMware and VirtualBox One on VMware and anotheron VirtualBox each with the fixed configuration. Bothcontains Windows XP SP3 edition as guest OS. In thefirst experiment, LINPACK is used to compare thefloating point operations of virtualized XP in VMwareand virtualized XP. The input to the LINPACK tool wasthe problem size.

The configurations were as follows:

Processor : Intel i3
RAM 1 GB
CPU Frequency 2.294 GHz
No. of CPU's 1
No. of Cache 2
No. of thread 4
No. of virtual machine 2



5. Results:

Three Enactment Exploration Results are:

I/O Enactment Number of Microsoft virtual pc Hyper Threading Influence

6.1 I/O Enactment :

This parameter monitors the Enactment of I/O when Linpack is work concurrently with processes that make an intensive use of the hard disk. This work uses the NFS as file system. A Network File System (NFS) allows remote hosts to mount file systems over a network and interact with those file systems as though they are mounted locally.

As shown in the table the input is problem size and output is GFLOPS. In the Table I there are different outputs in GFLOPS at different problem sizes while using 3 Microsoft virtual pcs.

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6.2 Number of Microsoft virtual pc:

This parameter evaluates the impact on the Enactment of the number of microsoft virtual pcs. Microsoft virtual pc technology enables multiple OS environments to coexist on the same physical computer in strong isolation from each other.

On Real OS		Time(s)	GFLOPs
		3.2	13.09
No. of Microsoft virtual pcs	VM Environment	Time	GFlop
1	Win XP	3.2	12.18
2	WinXP Win vista	5.86	7.31
3	Win xp Win vista Linux	3.51	13.26

Micro soft virtua l pc player		Host OS	LINP ACK	
		Input	Outp ut	
S.NO.	Host OS	Problem Size	Time(s)	GFLOPS
1.	Win XP			
		1000	0.058	11.69
		2000	0.57	9.32
		3000	1.41	12.73
		4000	3.17	13.50
		5000	5.89	14.12
2.	Win Vista			
		1000	0.059	11.32
		2000	0.52	12.07
		3000	1.53	11.77
		4000	3.30	14.24
		5000	6.12	13.74
3.	Linux			
		1000	0.24	2.78
		2000	0.76	6.98
		3000	2.59	6.95
		4000	8.22	5.19
		5000	16.08	5.18

6.3. Hyper-Threading Influence:

Hyper-Threading is a technology used by some Intel microprocessors that allows a single microprocessor to act like two separate processors to the operating system and the application programs that use it.

With Hyper-Threading, a microprocessor's core processor can execute two concurrent threads of instructions sent by the operating system. Having two threads of execution units to work on allows more work to be done by the processor during each clock cycle. To the operating system, the Hyper-Threading microprocessor appears to be two separate processors.

Because most of today's operating systems are capable of dividing their work load among multiple processors, the operating system simply acts as though the Hyper-Threading processor is a pool of two processors. As shown in Fig.3 there are 3 Microsoft virtual pcs working on a single physical hardware Result as shown in Table II, as the no. of Microsoft virtual pc increases simulation time also increases but GFLOPS decreases.

6. ENACTMENT ASSOCIATION:

Microsoft virtual pc Player	Host OS	Dhrystone (Billions of operations / second)	Whetstone (Million operations / second)
		Only integer operations	Single precision Floating point operations
1	Win7-32	5.3	535
2	Win7-64	5.7	518
3	Win08 64	5.6	518
4	redhat-64	5.3	524
5	fedora13-64	5.6	510

Comparisionsondifrent levels Enactment of Dhrystone and Whetstone is shown: The Dhrystone 2 benchmark measures thathow many billion integer operations can be performed per second. The Whetstone is a similar metric for floating point Enactment in millions of operations per second. But in this paper Linpack benchmark is used and result are in GFLOPS.

7. Conclusion:

Here We have used the Dhrystone and whetstone benchmarks to calculate Enactment but out of these Dhrystone benchmark cannot calculate floating point operations and whetstone benchmark used for only single precision and not for super computers but in this paper Linpack benchmark which calculate Enactment in GFLOPS for single and double precision both, has been used . The effect of the I/O operations on the Enactment is even more noticeable as shown in Table II with increases in the simulation time when 2 Microsoft virtual pcs are used. For 4 cores we obtain lower simulation times than for 2 cores but just when 1 or 2 VMs are used per host. The influence of enabling the hyper-threading is imperceptible for 1 or 2 Microsoft virtual pcs per host, but for a 3 VMs there is a noticeable drop in the simulation time when the hyper-threading is ON, that is more substantial when there is I/O or in the Linpack benchmark. Furthermore, there is a clear deterioration in the Enactment when the number of VMs is increased.

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