Result on the Analysis of Different Cloud Servers on the Basis of Sophisticated Job Scheduling Approach

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Abstract: **As the cloud computing environment is getting a huge platform to work on and in the upcoming years, cloud would be a name which would be used by common people for their data storage and other works which they do right now on their local servers. In such a case as the energy conservation is a major concern these days, we need to look up that which cloud platform would be better for the future use which is energy efficient and faster than the other cloud platforms. In this paper, proposed work is based on the use of three clouds like Windows Azure, Go daddy and Marttalk cloud for checking of the energy efficiency. The simulation is taken place in the .NET environment.**

Keywords: **Cloud Computing, Energy, Windows Azure, GODADDY.**

I. INTRODUCTION

Recently, the emerging cloud computing offers new computing models where resources such as online applications, computing power, storage and network infrastructure can be shared as services through the internet [1]. The popular utility computing model adopted by most cloud computing providers (e.g., Amazon EC2, Rack space) is inspiring features for customers whose demand on virtual resources vary with time.

Energy consumption is the key concern in content distribution system and most distributed systems. These demands an accumulation of networked computing resources from one or multiple providers on data centers extending over the world. This consumption is censorious design parameter in modern data center and cloud computing systems. The power and energy consumed by the computing equipment and the connected cooling system is a major constituent of these energy cost and high carbon emission. The energy consumption of date centers worldwide is estimated at 26GWcorresponding to about 1.4% of worldwide electrical energy consumption with a growth rate of 12% per year [2] [3]. The Barcelona medium-size Supercomputing Center (a data center) pays an annual bill of about £1 million only for its energy consumption of 1.2 MV [4], which is equivalent to the power of 1, 200 houses [5].However, minimizing this energy consumption can result to conceal cost reduction. Moreover, apart the enormous energy cost, heat released increases with higher power consumption increases the probability of hardware system failures [6]. Therefore, minimizing the energy consumption has a momentous outcome on the total productivity, reliability and availability of the system.

Therefore, minimizing this energy consumption does not only reduce the huge cost and improves system reliability, but also helps in protecting our natural environment. Thus, reducing the energy consumption of cloud computing system and data center is a challenge because data and computing application are growing in a rapid state that increasingly disks and larger servers are required to process them fast within the required period of time.

To deal with this problem and certifying the future growth of cloud computing and data centers is maintainable in an energy-efficient manner, particularly with cloud resources to satisfy Quality of Service (QoS) requirement specified by users via Service Level Agreements (SLAs), thus reducing energy consumption is necessary. The main objective of this work is to present a new energy consumption models that gives detailed description on energy consumption in virtualized data centers so that cloud computing can be more environmental friendly and sustainable technology to drive scientific, commercial and technological advancements for the future.

II. PROPOSED FRAMEWORK

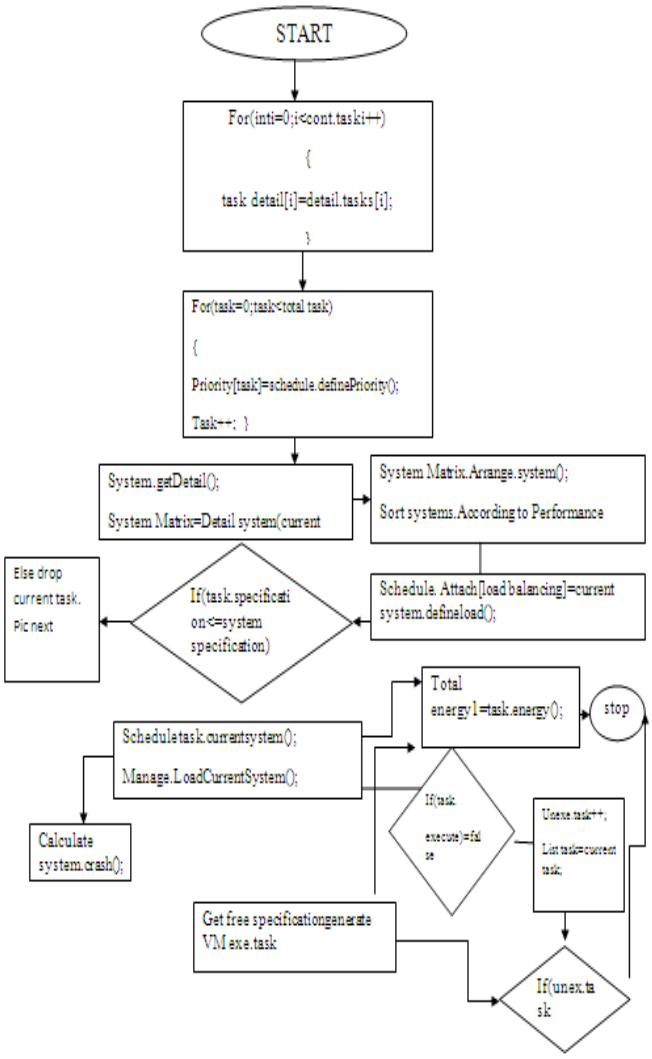
In our proposed work we would be creating a web based application which would include systems and a scheduler which would be deployed over three cloud networks namely Windows Azure and Go daddy and Marttalk over a paid network .For the same purpose we need to purchase space from both the cloud. Every cloud has its own working environment; we need to configure our application accordingly. Then on the basis of scheduler we would be

providing tasks to the scheduler located on the cloud platform. We would be executing the jobs according to the algorithm configured at our front end. The front end for the same purpose would be MICROSOFT'S VISUAL STUDIO 2010 [7]. We would be evaluating the performance ratio of the clouds in a given interval of time and finally we would compare that which cloud would be more suitable for the future uses.

III. PSEUDO CODE OF PROPOSED WORK

1. START
2. Initialize Tasks and Systems
3. Initialize.System.Dependency=true;
   Uneven_taks=0;
4. K=0; completed task counter
5. N=Number of systems ; Nt=Number of Tasks
6. P=Priority Order ;L=Low Priority ;H=High Priority
7. Bl=Balanced Load; IL=Imbalanced
8. Initialize System=[];
9. Arrange System.Matrix=true
10. For i=1:Nt
11. If Ti.specification<S.Specification where Ti=current Task and Si=Current System
12. Scheduled.Task[k]=Current.Task(Ti)
13. K=k++;
14. Initialize Load_Balancing
15. Else
16. Scheduler.Attach[Load Balancing];
17. Calculate System.Crash to ensure alive systems
18. If total_energy==task(energy)
19. Stop
20. Else
21. If task.execution==false
22. Uneven_task=Uneven_taks++;
23. If uneven_task_counter>0
24. Get.free.specification=true
25. Go to step 8
26. End
27. End
28. End
29. Stop

IV. MODEL STRUCTURE



III. IMPLEMENTATION AND DISCUSSION

Our aim is to characterize energy consumption and performance in Cloud environments by analyzing and measuring the impact of various task and system configurations. The whole simulation of results has been taken place, below tables show that there are different rate of energy consumption, no. of tasks executed, load distributed and execution time. Three cases each for go daddy, windows azure and marttalk has been displayed below.

Case-1: For GODADDY

Parameter	Server (GODADDY)
No. of jobs	5
Energy consumption	1756-1801 J
Un-executed tasks	0
Load on System	S3(2),S1(2),S2(1)
System crash	S3
Execution time	281 ms- 315 ms

Figure.1 when no. of tasks is 5

Parameter	Server (GODADDY)
No. of jobs	10
Energy consumption	4008- 4076 J
Un-executed tasks	0
System crash	S1,S3
Load on System	S3(4),S1(3),S2(2)
Virtualization	Yes
Execution time	438 ms- 457 ms

Figure.2 when no. of tasks is 10

Parameter	Server (GODADDY)
No. of jobs	15
Energy consumption	41343- 41379 J
Un-executed tasks	0
System crash	S3
Load on System	S3(5),S1(5),S2(5)
Execution time	710 ms- 740 ms

Figure.3 when no. of tasks is 15

Parameter	Server (GODADDY)
No. of jobs	20
Energy consumption	45375- 45406
Un-executed tasks	1
Virtualization	Yes
System crash	S1, S2, S3
Load on System	S3(7),S1(7),S2(1)
Execution time	879 ms- 896ms

Figure.4 when no. of tasks is 20

Case-2: For MARTTALK

Parameter	Server (MARTTALK)
No. of jobs	5
Energy consumption	2080-2148 J
Un-executed tasks	0
System crash	S3
Load on System	S3(2),S1(2),S2(1)
Execution time	351 ms- 397ms

Figure.5 when no. of tasks is 5

Parameter	Server (MARTTALK)
No. of jobs	10
Energy consumption	43336- 43467J
System crash	S1,S3
Un-executed tasks	0
Load on System	S3(4),S1(3),S2(2)
Virtualization	yes
Execution time	502 ms-530 ms

Figure.6 when no. of tasks is 10

Parameter	Server (MARTTALK)
No. of jobs	15
Energy consumption	41668- 41726 J
Un-executed tasks	0
System crash	S3
Load on System	S3(5),S1(5),S2(5)
Execution time	786 ms- 709ms

Figure.7 when no. of tasks is 15

Parameter	Server (MARTTALK)
No. of jobs	20
Energy consumption	45657- 45750 J
Un-executed tasks	1
System crash	S1, S2, S3
Load on System	S3(7),S1(7),S2(1)
Virtualization	yes
Execution time	954 ms- 976ms

Figure.8 when no. of tasks is 20

Case-3: For WINDOW AZURE

Parameter	Server (WINDOW AZURE)
No. of jobs	5
Energy consumption	1506- 1516 J
Un-executed tasks	0
System crash	S3
Load on System	S3(2),S1(2),S2(1)
Execution time	243ms- 256ms

Figure.9 when no. of tasks is 5

Parameter	Server (WINDOW AZURE)
No. of jobs	10
Energy consumption	3712- 3786 J
System crash	S1,S3
Virtualization	yes
Un-executed tasks	0
Load on System	S3(4),S1(3),S2(2)
Execution time	384 ms- 403ms

Figure.10 when no. of tasks is 10

Parameter	Server (WINDOW AZURE)
No. of jobs	15
Energy consumption	41734- 41704 J
Un-executed tasks	0
System crash	S3
Load on System	S3(5),S1(5),S2(5)
Execution time	662 ms- 673ms

Figure.11 when no. of tasks is 15

Parameter	Server (WINDOW AZURE)
No. of jobs	20
Energy consumption	45375- 45406
Un-executed tasks	1
System crash	S1, S2, S3
Virtualization	yes
Load on System	S3(7),S1(7),S2(1)
Execution time	879 ms- 896 ms

Figure.12 when no. of tasks is 20

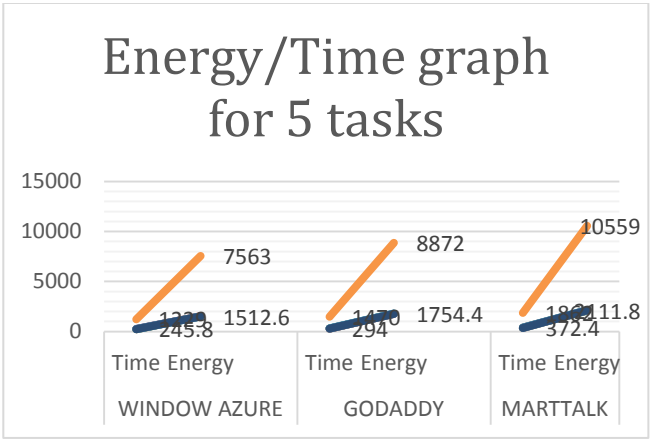


Figure. 13 Energy/ Time graph for 5 tasks

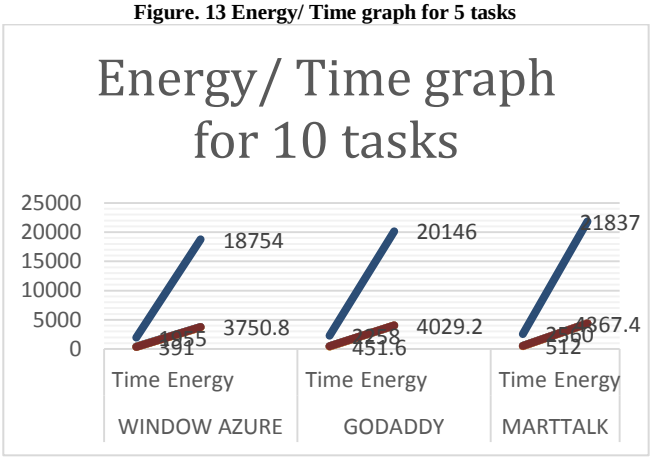


Figure. 14 Energy/ Time graph for 10 tasks

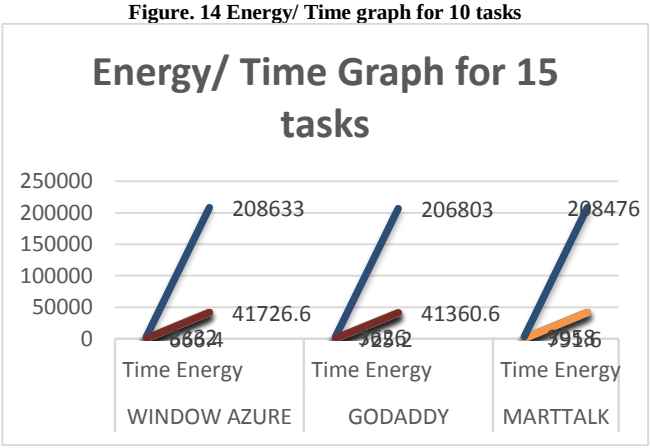


Figure. 15 Energy/ Time graph for 15 tasks

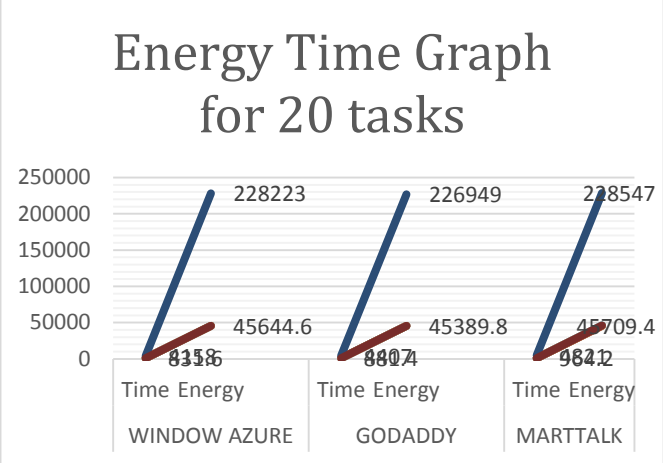


Figure. 16 Energy/ Time graph for 20 tasks

From above graphs for energy and time comparison, it has been clearly noticed that among three clouds Windows azure performs well, as its energy consumption and time efficiency is high.

IV. CONCLUSION

Cloud computing is becoming more and more crucial in IT sector due to abundant advantages it renders to its end users. With the high user demands, Cloud environment possess very large ICT resources. To this, power and energy consumption of Cloud environment have become an issue due to ecological and economical reasons. In this paper, we have presented energy consumption model using scheduling algorithms for calculating the total energy consumption in different Cloud environments like GODADDY, WINDOWS AZURE and MARTTALK and show that there are incentives to save energy.

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