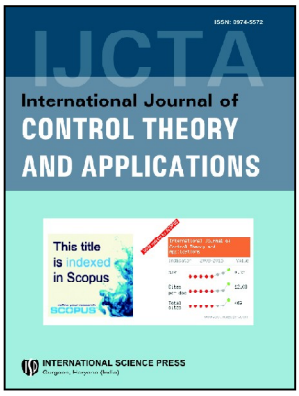

International Journal of Control Theory and Applications

ISSN : 0974-5572

Volume 10 • Number 11 • 2017

Analysing on Qos Requirments and Existing Methods in Cloud Computing Networking

V. Phanikumar[1] and K. V. V. Satyanarayana[2]

Department of Computer Science and Engineering, K L University, Vaddeswaram, Guntur Dist. A. P, India
E-mails: [1]phanikumarvarikuti@gmail.com, [2] kopparti@kluniversity.in

Abstract: In cloud computing, resources shared through the internet by a technique called "virtualization, in perspective of the pay-per-utilize premise". While sharing the resources to the clients, fulfilling the end-to-end QoS requirements is the focus of cloud producing. To provide Optimized QoS for various resources existed in the cloud-based web application, the providers uses the efficient algorithms. This paper presents the existing algorithms and how we can conquer the issues of satisfying the end-user client's QoS requirements by examining the presented algorithms, relating to the web service QoS issues.

Keywords: cloud computing, virtualization, QoS requirements.

INTRODUCTION

Cloud computing is a stockpile of statistics and implementation on isolated servers and racks up through net rather than retaining or setting up on very own (or) work portable computer. The precept of a cloud is utilized at the time that results of the information and applications area unit constrict on a cloud. Gathering of web servers and computers on by distributors away. The cloud is accessed through the cloud computing systems interface software system package which is able to be as an easy as using an internet based service that hosts all the applications and file that shoppers would need for his or her task or personal life.

The cloud is getting used not only to cache data but additionally flexible alternative expensive, proficient and formative to promote consistently and sustain in geography computing appliance and application set up , not solely that the cloud offers the flexibility to figure anyplace at any time as a result of the information is usually on the client's account. The cloud computing manner is comprised of two components they are "frontend and the backend" that are interconnected by the net. The frontend represents the web page that as a client that needs accessing the cloud computing system in advance access may be easy using an online browser (or) higher complex by using a distinctive interface software system that offers the access to the cloud. The backend in cloud computing system is containing the networking, Computers, Data repository systems and servers that store all the files and information.

The three framework segments of cloud computing are "SaaS(software as a service), PaaS(platform as a service), IaaS(infrastructure as a service)" full of those permit end users to run applications and keep storage on-line. For all that, individually recommend a distinct level of user's resilience and management. The SaaS permits users to existing on-line applications. PaaS permits the users to form their separate cloud applications accepting alternate functional tools and terminology and IaaS permits to the client to execute several appliances on cloud hardware of their personal selection [6].

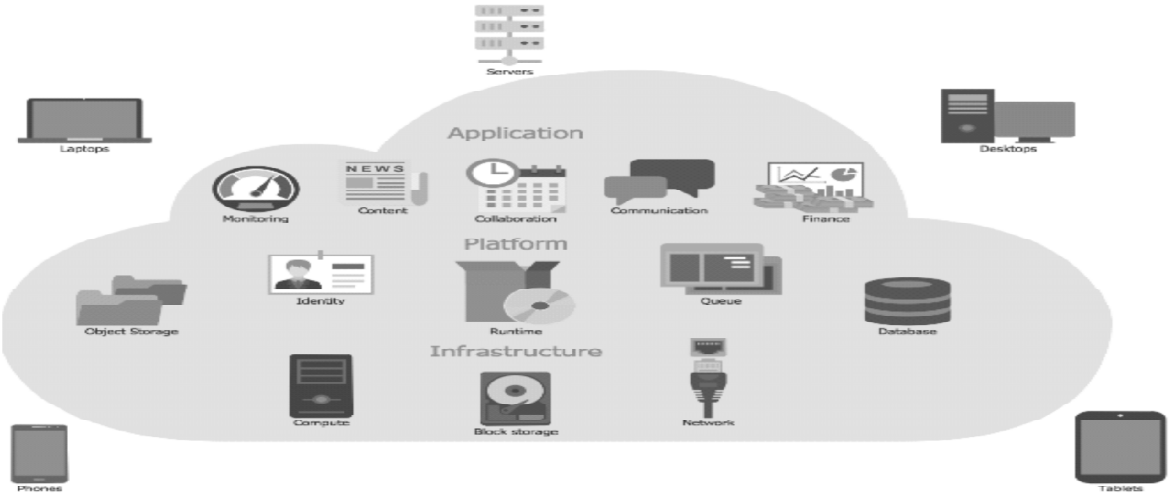

Figure: Resource sharing in cloud

KEY CONCEPTS

(A) Virtualization

Around the generations, IT complication has full- leading whereas adaptability has dropped. Virtualization contradiction this liability facilitates IT framework thus we are able to do a lot of with less. Virtualization run the applications on limited substantial servers terminate virtualization every application an execution system live in an isolated software storage called a virtual machine's(VM).the VM's are absolutely isolated however computing resources CPU'S, storage and networking area unit combined along and software called dynamically to every VM by software referred to as hypervisor[1].

(B) QoS Requirements

Based on the SLA (service level agreements) the major QoS requirements [1] are given below.

1) **Availability:** The availability refers the weather the services are existent or adjusted for their essential request. The anticipation of that an applicability is accessible anytime.
2) **Accessibility:** It represents the grade of capable of quantity to web services requests in the cloud. The web service is available. But not accessible web service having maximum accessibility should be active the scalable system.
3) **Performance:** It can be measured based on the latency and throughput. The throughput distributes at a conformed moment. Downtime is the space among dispatching a signal and accepting the response for the round-trip. The maximum throughput and minimum latency give the better performance of web services.
4) **Reliability:** It is the grade of being useful for sustain the performance and performance specifications. The reliability is the total of failing per season or period of network services.

5) **Regulatory:** It is set of rules and laws, compliance with standards. Based on the SLA the provider uses a lot of regulatory stands to maintain the web services.

6) **Integrity:** the quality of data maintaining the correctness is the integrity. Based on the user's daily data accessing or changing integrity must be provided.

7) **Security:** Based on SLA, Security get farther influence due to accessing the services by the social internet, the CSP (Cloud Service Provider) provide the different levels of security advances.

EXISTING METHODS

(A) The QoS-aware VM placement (QAVMP) algorithm

The VM's interference [7] will conclude the performance of applications running on physical machines (PM), mainly in delay sensitive applications. The data access delays main QoS requirements in the delay sensitive applications, then we can overcome this problem by integrating the QoS awareness with virtualization on mainly efficiency performing is called QAVMP problem. So the development of the QAVMP issue[2] as on Integer Linear Programming (ILP) method to catch its exact result. The QAVMP algorithm reduces the VM interference in the same PM's and removes the overstep QoS requirements of services following the VM placement. Finally, the QAVMP can reduce the data transfer delays and minimized the total cost of resource provisioning through stochastic provisioning programming problem.

(B) Heuristic algorithm

In QAVMP algorithm, while integrating the ILP method of three factors, it figures complexity problem based on the polynomial time heuristic algorithm we can overcome this issue. The operation of the heuristic algorithm is mainly four phase[1] , 1) Development phase, 2) Contention phase, 3) distribute phase and 4) transformation phase, all the phases run round by round process. In development phase develops bipartite graph for all the possible allocations relationship between new VM's and PM's, in contention phase, performs the every PM's profit based on its new VM's , in the distribute can be arranged based performs the every PM's profit based on its new VM's and placements phase can be arranged based on the VM placements. The remaining arrangement resources units of PM can be allocated to the VM's after the allocation VM can be removed in the list of the bipartite graph. The final phases transformation unplaced VM's. That all are placed in the second round process.Based on the three phases calculate the cost and time complexity to run the applications.

(C) Multi-objective Optimization Problem (MOP)

The QWSC (QoS-aware web service composition) is selecting suitable services from the pool of shared resources to satisfies the end users. [5]Due to maximizing the number of services and increasing the size of candidates for each task. The QWSC is not to fulfill the QoS requirements. MOP[5] overcomes this issue b selecting the flexible decision to the users. The main aim of MOP from is different objectives to find the set of comprised solutions can fulfill the clients to generate the adaptable decision. The MOP have contained a number of restrictions to which any helpful solution must satisfy.

(D) An efficient e-dominance multi-objective evolutionary algorithm (EDMOEA)

Based on the authors [1] large-scale QWSC, EDMOEA has developed EDMOEA consists three phases 1) initial phase, 2) selection phase, 3) population-updating phase. In the initial phase, it generates the number (N) of individuals randomly from the population and estimates the objective standards for separated personally and reproduction the non-demanded individual for the alive population. In selection method, it selects the two existences randomly. Following to the dominance, communication chooses the non-demanded one of both are non-dominated it select any one of them. In last population updating using architecture restoration method of two generations. In

comparing the two generations based on the dominance communication and select the non-demanded one .the EDMOA mainly improve the time complexity, concurrence, and variety of the paired frontier.

(E) Resource Optimization Allocation and Recommendation (ROAR)

It is the framework for optimization [3] and automates resources allocation for the web applications to conform the QoS objectives, including distributing the multi-tier operations for distinct server aggregation. It mainly used for the domain specific languages to configuring the web application. The framework is addressed cloud for modifies cloud resources optimization and allocation to the clients. The testing and derivation of optimized resource allocation of application, it modifies the end-to-end composition from application implementation.

(F) Grouped task scheduling algorithm (GTS)

It is based on the attributes it allots all tasks into classes. In [4] the GTS algorithm compared with the task scheduling algorithm (TS) and min-min algorithm. Based on the attributes [4] the execution time span with a minimum number of services, the min-min algorithm is lower execution time span compared to GTS algorithm. TS algorithm is the greater execution time span. The mainly 3 facts that are latency, execution time span, and load balancing, GTS achieves the minimum time execute with a maximum number of services. GTS is the best solution while scheduling a large number of resources to get the minimum execution time, latency, optimize the cost [8] and load balancing.

CONCLUSION AND FUTURE WORK

QoS be a key method in cloud computing networking, during this paper, has analyzed varied existing methods for computing resources in varied levels of QoS requirements like infrastructure, networking etc.. And they way to control the QoS requirements. Finally, through tendency to ended optimization of QoS requirements is the vital issue in cloud computing. The GTS algorithm implemented in[4] only up to four attributes for before to applying of QoS, It only works for independent tasks, the future work as follows "1. Maximize the attributes to use QoS in the algorithm, 2.To concentrate the dependent tasks and to figure on real time".

REFERENCES

[1] Fuzan chen, runliang dou, Minqiang Li, Harris WU, A flexible QoS- aware web service composition method by multi-objective optimization in cloud manufacturing, *Computers & Industrial Engineering* 99(2016) 423-431.

[2] Jenn-Wei Lin,Chien-Hung Chen,Chi-Yin, Integrating QoS awareness with virtualization in cloud computing systems for delay-sensitive applications, *Future Generation Computer System* 37 (2014) 478-487.

[3] Yu Sun, Jules White, Sean Eade,Douglas C.Schmidt, ROAR: A QoS-oriented modeling framework for automated cloud resource allocation and optimization, *The Journal of System and Software* 116 (2016) 146-161.

[4] Hend G amal El Din Hassan Ali, Imane Aly Saroit,Amira Mohamed Kotbb, Grouped task scheduling algorithm based in QoS in cloud computing network, Egyptian Informatics Journal (2016).

[5] Li, Minqiang, Liu, Liu, Lin, Dan (2011). A fast steady-state e-dominance multi objective evolutionary algorithm. Computational Optimization and Applications, 48(1), 109-138.

[6] *http://www.webopedia.com/TERM/C/cloud_computing.html.*

[7] J. Xu, J.A.B. Fortes, Multi-objective virtual machine placement in virtualized data center environments, in: Proc. IEEE/ACM Int. Conf. Green Comput. And Commun. & Int. Conf. Cyber, Physical and Social Comput., Washington, DC, USA, 2010, pp. 179–188.

[8] Selvarani S, Sudha Sadhasivam G. Improved cost-based algorithm for task scheduling in cloud computing. In: International conference. IEEE; 2010.