Task Scheduling and Resource Allocation of Cloud Computing Based on QoS

Sathya K

Associate Professor Mr.J.Jayapandian

Krishnasamy College of Engineering and Technology,

Cuddalore.

Abstract: The enlargement of the scope of cloud computing application, the number of user and types also increases accordingly, the special demand for cloud computing resources has also improved. Cloud computing task scheduling and resource allocation are key technologies, mainly responsible for assigning user jobs to the appropriate resources to perform. But the existing scheduling algorithm is not fully consider the user demand for resources is different, and not well provided for different users to meet the requirements of its resources. As the demand for quality of service based on cloud computing and cloud computing original scheduling algorithm, the computing power scheduling algorithm is proposed based on the QoS constraints to research the cloud computing task scheduling and resource allocation problems, improving the overall efficiency of cloud computing system.

1.Introduction

With the cloud proposed computing concept and its low cost and high efficiency of resource use in terms of outstanding advantages, it is esteemed the major IT companies. The high reliability of cloud computing need to perfect safety management mechanism and resource monitoring mechanism; Cloud computing high scalability needed resource management system to support various heterogeneous resources; The low cost of cloud computing services to resource management system effectively organize a large number of low-cost PC, and efficient distribution of resource scheduling strategy is needed to improve the use efficiency of system. So the resource management to large extent determines the quality of service provided by the cloud computing platform, is highly efficient and one of the key problems in stable operation of the relationship to the cloud computing system [1].The resources matching and task scheduling is one of the cloud computing resources management basic core functions. Effective task resource scheduling algorithm can reduce the number of cloud computing system task completion time, increase the efficiency of the use of computing resources in the system, thus improve the performance of the system and the quality of services is one of the most core function of this system. It is proposed in this paper, based on the QoS constraints of

computing power scheduling algorithm and the QoS parameters generated by the vector of resource and task matching, this will be able to distinguish between user service quality requirements, to provide users with in accordance with the requirements of resources.

2.Literature survey

This section will brief about the state-of-the-art in the various algorithms used to solve task scheduling issues in the Cloud Computing.

Liu et al. have been designed a model for a programming, which utilized the large scale data intensive batch applications [7]. It can specify the data partitioning and the computation task distribution, while the complexity of parallel programming is hidden. Fallenbeck et al. present a dynamic approach to create virtual clusters to deal with the conflict between parallel and serial jobs [8]. In this approach, the job load is adjusted automatically withoutrunning time prediction.

3.Existing System

But the existing scheduling algorithm is not fully consider the user demand for resources is different, and not well provided for different users to meet the requirements of its resources. As the demand for quality of service based on cloud computing and cloud computing original scheduling algorithm, the computing power.

Disadvantages:

- More cost
- Less efficient

4.Proposed system

Inthis project, it analyzes the cloud computing task scheduling and resource allocation management system that should have the main function based on the cloud computing architecture. On the basis of in-depth analysis of the resource scheduling, it put forward the resource scheduling algorithm based on QoS, supporting QoS constraints resources task.

Advantages:

- Low cost and high efficiency of resource
- Improve the user efficiency

- Improve the Performance

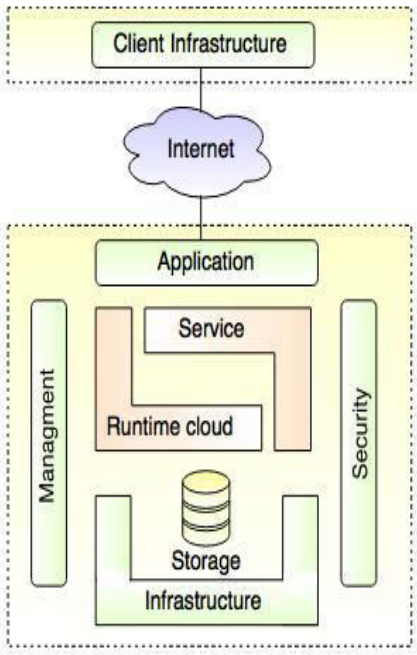

Fig. - Graphical View of Cloud Computing Architecture

5.Modules

- Login
- Admin
- Task scheduling module
- Resource Allocation Module
- Monitor Scheduling Module

5.1 Module Description

1)Login

Administrator can login to the system with unique username and password.

2)Admin

Admin has full access to control the system.

3) Task scheduling module

Scheduling model and matching task scheduling and resource allocation can be roughly divided into batch mode andonline mode.

1.Batch Mode:

Batch mode refers to the amount of resource requests together to become a task scheduling cycle, then this will match a set task focused on resources. Scheduling goal is to find a scheduling scheme, makes the system scheduling cycle of some aspect of the task or resources or some kind of objective function to achieve expected values or optimal.

2.Online Mode:

Online mode is refers to the resource request, not every resource request to their resource matching. This type of scheduling algorithm often use some simple data structure and algorithm theory, generally without iteration, so the response speed, suitable for the actual current used in online mode.

4) Resource Allocation Module

Resources organization plan calls for system data structure has two entities, resource management node resource entities. Which resources entities has geographical information, hardware information, such as static properties.

5) Monitor Scheduling Module

Monitoring algorithms require resources entities have the dynamic information such as utilization rate, availability, attributes. A computing resources may be installed on multiple software, can provide various application service, a kind of software can be installed on multiple resources, so has the application service software entities, entities and computing resources and software applications services entity relationship is many-to-many relationships.

6.Management system design of task scheduling and resource allocation of cloud computing

Task scheduling and resource allocation integration and management system has the function of the main interface, needing to design and implementation of some data structures. Resources organization plan calls for system data structure has two entities, resource management node resource entities. Which resources entities has geographical information, hardware information, such as static properties. Monitoring algorithms require resources entities have the dynamic information such as utilization rate, availability, attributes. A computing resources may be installed on multiple software, can provide various application service, a kind of software can be installed on multiple resources, so has the application service software entities, entities and computing resources and software applications services entity relationship is many-to-many relationships. To achieve the above functions, this paper puts forward as shown in figure 3 cloud computing task scheduling and resource allocation management system design. The resources matching and task scheduling is one of the cloud computing resources management basic core functions. Effective task resource scheduling algorithm can reduce the number of cloud computing system task completion time, increase the efficiency of the use of computing resources in the system,thus improve the performance of the system and the quality of services is one of the most core function of this system.

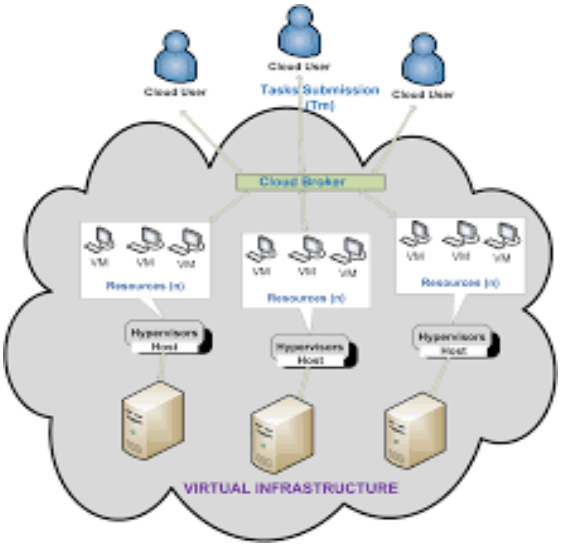

Fig. Management system of task scheduling and resource allocation.

7.Conclusion

This paper analyzes thebatch mode and online mode of two kinds of resource scheduling model design thought, putsforward the task under the guidance of QoS load balancing resource

scheduling algorithm, andfurther analyzes the cloud computing platform and the research status of resource managementsystem, and cloud computing resource management subsystem was designed and implemented.

Reference

[1] R. Buyya, C.S. Yeo, and S. Venugopal: Future Generation computer systems, Vol. 25(2009)
No.6, p. 599.

[2] G. Wei, A.V. Vasilakos, and Y. Zheng: The Journal of Supercomputing, Vol. 54(2010) No.2, p.
252.

[3] Y. Fang, and F. Wang, Ge J. *Web Information Systems and Mining* (Springer Berlin Heidelberg,
2010), p.271.

[4] Q. Zhang, L. Cheng, and R. Boutaba: Journal of internet services and applications, Vol.
1(2010) No.1, p.7

[5] M.D. Dikaiakos, D. Katsaros, and P. Mehra: Internet Computing, Vol. 13(2009) No.5, p. 10

[6]Zhang Qi, Lu Cheng, and Raouf Boutaba, "Cloud computing: state-ofthe-art and research challenges", Journal of internet services and applications, no. 1 (2010): pp 7-18.J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892,
pp.68–73.

[7]Amazon AWS, http://aws.amazon.com/. Accessed online 02 June 2017. K. Elissa, “Title of paper if known,” unpublished.

[8]Microsoft cloud, http://www.microsoft.com/enus/cloud/.Accessed online 02 June 2017..

[9]IBM cloud, http://www.ibm.com/ibm/cloud/. Accessed online 02 June 2017..

[10]Copcuoglu, Haluk, Salim Hariri, and Min-you Wu. "Performance-effective and low-complexity task scheduling for heterogeneous computing", IEEE transactions on parallel and distributed systems 13.3 T(2002): 260-274.

[11]Google Compute Engine, https://cloud.google.com/solutions/reliable-task-scheduling-compute-engine.Accessed Online 04 June 2017.

[12]H. Liu, D.Orban, GridBatch: cloud computing for large-scale data-intensive batch applications, in: IEEE International Symposium on Cluster Computing and the Grid, pp. 295–305, 2008.