IJRRECS/October 2013/Volume-1/Issue-6/1313-1319 **ISSN 2321-5461**

INTERNATIONAL JOURNAL OF REVIEWS ON RECENT ELECTRONICS AND COMPUTER SCIENCE

AN APPROACH TOWARDS CACHE AS A SERVICE IN CLOUD COMPUTING

Ravulakollu Sreedevi[1], S.Rama Krishna[2]

[1]M.Tech Student, Dept of CSE, V.R.S & Y.R.N College of Engineering &Technology, Chirala, A.P, India

[2]Associate Professor, Dept of CSE, V.R.S & Y.R.N College of Engineering &Technology, Chirala, A.P, India

ABSTRACT:

Cloud services are the virtualized entities that are basically elastic making an illusion of unrestricted resource capability that intrinsically brings cost efficiency that is the most important driving force behind the cloud. Caching has turn out to be the key technology in connecting the performance gap across hierarchies of memory by means of spatial or temporal localities; specifically, the consequence is well-known in the systems of disk storage systems. CaaS as an added service that is made available predominantly in various cache servers offer the provider a prospect to decrease both the costs of assets and operating by means of a fewer number of vigorous physical machines for IaaS; and this can be capable to rationalize the outlay of servers of cache servers in our representation. The user also profits from CaaS in conditions of performance of application by means of negligible added cost; in addition, caching is facilitated in a manner of user transparent mode and the capability of cache is not restricted to local memory. At present, the effectual usage of cache for the applications of I/O-intensive in the cloud is restricted for both the reasons of practical and architectural. Cooperative cache is a type cache of remote memory that progress the performance of the systems of networked file. It makes use of the cache as the clients participating memory regions. The model of cache as a service model consists of two types of cache service based on the allocation of cache as remote memory or local volatile memory as cache. The expenditure advantage of our cache as a service

based on the allocation of cache as remote memory or local volatile memory as cache. The expenditure advantage of our cache as a service model is two-fold that is improving the performance and maximizing the profit which is the most important object of service provider. The improving of the performance also contributes to accomplish such an intention by means of reducing the number of machines of energetic physical machines.

Keywords: Cloud services, Caching, Cooperative cache, Remote memory, Cache as a service.

1. INTRODUCTION:

Cloud services are the virtualized entities that are basically elastic making an illusion of unrestricted resource capability that intrinsically brings cost efficiency that is the most important driving force behind the cloud. Over the past years, caching has turn out to be the key technology in connecting the performance gap across hierarchies of memory by means of spatial or temporal localities; specifically, the consequence is well-known in the systems of disk storage systems [8]. At present, the effectual usage of cache for the applications of I/O-intensive in the cloud is restricted for both the reasons of practical and architectural. Towards prevailing over the performance of low disk I/O, there has been broad learning on the systems of memory-based cache. The most important improvement of memory is that its time of access is quite a lot of orders of magnitude quicker than that of storage of disk. Noticeably, systems of disk-based information by means of a memory-based cache can to the highest degree do better than those devoid of cache. The concern of performance of disk I/O in the circumstance of caching in the cloud was proposed and presents the model of a cache as a service as an added service to IaaS [2]. The key involvement in this effort is that our cache service representation to a large extent expands effectiveness of the outlay and flexibility of the cloud from the viewpoint of providers and the users. CaaS as an added service that is made available predominantly in various cache servers offer the provider a prospect to decrease both the costs of assets and operating by means of a fewer number of vigorous physical machines for IaaS; and this can be capable to rationalize the outlay

of servers of cache servers in our representation [6]. The user also profits from CaaS in conditions of performance of application by means of negligible added cost; in addition, caching is facilitated in a manner of user transparent mode and the capability of cache is not restricted to local memory. Cooperative cache is a type cache of remote memory that progress the performance of the systems of networked file. It makes use of the cache as the clients participating memory regions. Between the cache of memory-based of a requesting client and a server disk is a cache of remote placed [1]. Meta information is exchanged for every participating client intended for the cache with others at regular intervals and such a scheme of caching is effectual where a remote memory is more rapidly than a disk of local of the requesting client [4]. An advanced technique of buffer management is intended for cooperative cache.

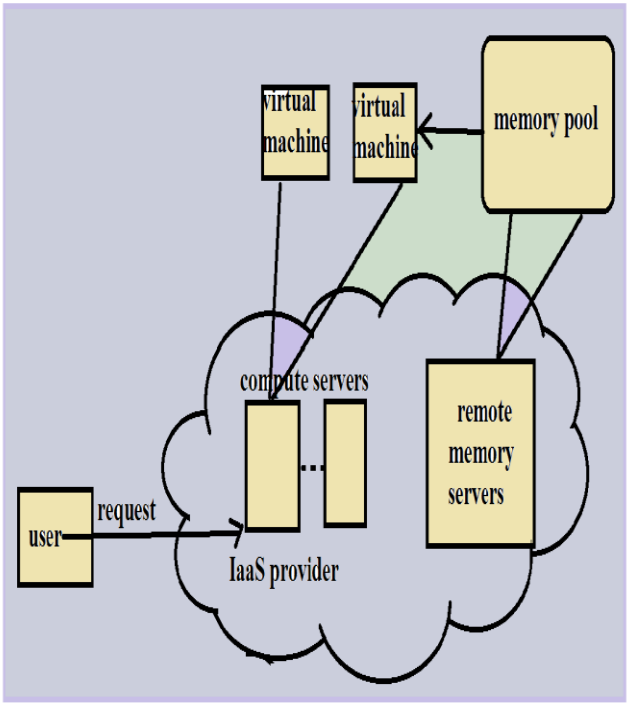


Fig1: An overview of cache as a service

2. METHODOLOGY:

The model of cache as a service model consists of two main components of an elastic cache system as the architectural base and a model of service by means of a pricing method as the profitable foundation. The architecture of basic system intended for the elastic cache endeavours to make use of the remote memory, that is exported from the servers of dedicated memory [10]. The system of elastic cache can make use of any of the active algorithms of cache replacement. In close proximity to time of uniform access to the cache of remote memory-based is assured by means of a

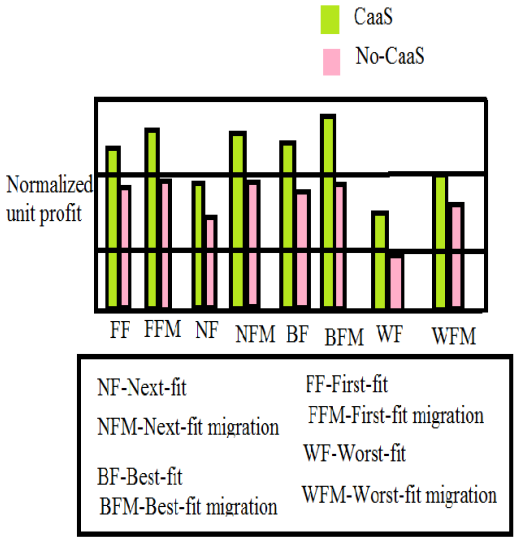
current interface of high speed network that hold up the operations of remote direct access memory. By means of the access interface that is predictable and implemented as a normal driver of block device, each virtual machine in the cloud accesses the remote memory servers [7]. Virtual machines make use of remote memory to stipulate an essential quantity of memory of cache on demand on the basis of this access layer. In the fig1 a collection of servers of dedicated memory exports their local memory in the direction of virtual machines, and the memory space that is exported can be viewed as an obtainable memory pool. This pool of memory pool can be used as an elastic cache for virtual machines in the cloud. The providers of cloud service could make use of a mechanism of lease towards managing the remote memory pool for the purpose of billing [5]. To make use of the system of elastic cache intended for the cloud, the components of service are essential. The model of cache as a service model consists of two types of cache service based on the allocation of cache as remote memory or local volatile memory as cache. In view of the fact that these types are dissimilar in their outlay or performance and a scheme of pricing that integrates these features is worked out as part of cache as a service [3]. The expenditure advantage of our cache as a service model is two-fold that is improving the performance and maximizing the profit which is the most important object of service provider. The improving of the performance also contributes to accomplish such an intention by means of reducing the number of machines of energetic physical machines [9]. From the standpoint of user, the improvement of performance of application can be acquired by means of cache as a service in a much more price competent manner in view of the fact that capacity of caching is more significant than the power of processing for those applications.

3. RESULTS:

IaaS requests by means of cache as a service can provide more advantage to service providers when compared to those without the usage of cache as a service in spite of the resource allocation algorithms and policies of virtual machine migration. The advantage of using virtual machine migration is more than that devoid of virtual machine migration. The algorithm of best fit provides more yield than when compared to others in

view of the fact that it diminishes resource fragmentation that results in advanced utilization of resources.

The algorithm of best fit chooses the smallest amount of resource along with those that can meet up the requests of user's resource. From the outcomes devoid of virtual machine migration, we can observe that the jobs of I/O-intensive show the way to additional advantage due to the competence of the expandable cache. Unit of the normalized yields with virtual machine migration augments when the number of jobs of non-I/O-intensive augments and this is for the reason that virtual machine migration merely are appropriate to the jobs of non-I/O-intensive and it leads to chances of additional migration and utilization of advanced resource.



4. CONCLUSION:

Caching has turn out to be the key technology in connecting the performance gap across hierarchies of memory by means of spatial or temporal localities; specifically, the consequence is well-known in the systems of disk storage systems. CaaS as an added service that is made available predominantly in various cache servers offer the provider a prospect to decrease both the costs of assets and operating by means of a fewer number of vigorous physical machines for IaaS; and this can be capable to rationalize the outlay of servers of cache servers in our representation. The user also profits from CaaS in conditions of performance of application by means of negligible added cost; in addition, caching is facilitated in a manner of user transparent mode and the capability of cache is not restricted to local memory. IaaS requests by means of cache as a service can provide more advantage to service providers when compared to those without the usage of cache as a service in spite of the resource allocation algorithms and policies of virtual machine migration. The advantage of using virtual machine migration is more than that devoid of virtual machine migration. The algorithm of best fit provides more yield

than when compared to others in view of the fact that it diminishes resource fragmentation that results in advanced utilization of resources.

From the outcomes devoid of virtual machine migration, we can observe that the jobs of I/O-intensive show the way to additional advantage due to the competence of the expandable cache.

REFERENCES:

[1] P. Willmann, J. Shafer, D. Carr, A. Menon, S. Rixner, A. L. Cox, and W. Zwaenepoel, "Concurrent direct network access for virtual machine monitors," in *Proceedings of the 2007 IEEE 13th International Symposium on High Performance Computer Architecture (IEEE HPCA '07)*, 2007.

[2] J. Liu, W. Huang, B. Abali, and D. K. Panda, "High performance VMM-bypass I/O in virtual machines," in *Proceedings of the annual conference on USENIX '06 Annual Technical Conference (USENIX ATC '06)*, 2006.

[3] G. Jung, M. Hiltunen, K. Joshi, R. Schlichting, and C. Pu, "Mistral: Dynamically Managing Power, Performance, and Adaptation Cost in Cloud Infrastructures," in *Proceedings of the 2010 IEEE 30th International Conference on Distributed Computing Systems (IEEE ICDCS '10)*, 2010, pp. 62–73.

[4] A. Menon, J. R. Santos, Y. Turner, G. J. Janakiraman, and W. Zwaenepoel, "Diagnosing performance overheads in the xen virtual machine environment," in *Proceedings of the 1st ACM/USENIX international conference on Virtual execution environments (ACM/USENIX VEE '05)*, 2005

[5] J. Ousterhout, P. Agrawal, D. Erickson, C. Kozyrakis, J. Leverich, D. Mazi`eres, S. Mitra, A. Narayanan, G. Parulkar, M. Rosenblum, S. M. Rumble, E. Stratmann, and R. Stutsman, "The case for RAMClouds: scalable high-performance storage entirely in DRAM," *SIGOPS Oper. Syst. Rev.*, vol. 43, pp. 92–105, January 2010.

[6] P. Willmann, J. Shafer, D. Carr, A. Menon, S. Rixner, A. L. Cox, and W. Zwaenepoel, "Concurrent direct network access for virtual machine monitors," in *Proceedings of the 2007 IEEE 13th International Symposium on High Performance Computer Architecture (IEEE HPCA '07)*, 2007.

[7] T. Makatos, Y. Klonatos, M. Marazakis, M. D. Flouris, and A. Bilas, "Using transparent compression to improve SSD-based I/O caches," in *Proceedings of the 5th European conference on Computer systems (ACM EuroSys '10)*, 2010.

[8] P. Barham, B. Dragovic, K. Fraser, S. Hand, T. Harris, A. Ho, R. Neugebauer, I. Pratt, and A. Warfield, "Xen and the art of virtualization," in *Proceedings of the nineteenth ACM symposium on Operating systems principles (ACM SOSP '03)*, 2003.

[9] K. Lim, J. Chang, T. Mudge, P. Ranganathan, S. K. Reinhardt, and T. F. Wenisch, "Disaggregated memory for expansion and sharing
in blade servers," in *Proceedings of the 36th annual international symposium on Computer architecture (ACM ISCA '09)*, 2009.

[10] M. D. Dahlin, R. Y. Wang, T. E. Anderson, and D. A. Patterson, "Cooperative caching: using remote client memory to improve file system performance," in *Proceedings of the 1st USENIX conference on Operating Systems Design and Implementation (USENIX OSDI '94)*, 1994.