LOAD BALANCES BASED ON JOB SCHEDULING USING HEURISTIC CLUSTERING IN CLOUD COMPUTING

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ABSTRACT

The cloud computing environment is a Load balancing has an important blow on the performance. Good load balancing make cloud computing more private and improve user satisfaction. These articles introduce a improved load balance modules for the public cloud based on the cloud partition idea with a switch mechanism to choose different strategies for different situations. This paper covers the main unease on Load Balancing in Cloud Computing environment. The implement technique enables us to validate the new plan much earlier and improves load balancer the dependability requirement. Load balances based on bayes and clustering (LB-BC) makes a limited check about all physical hosts aiming to reach a task deployment approach with global search capacity in terms of the performance function of computing resource. The Bayes theorem is joint with the clustering process to get the optimal clustering set of animal hosts finally. Using bayes theorem is a far better approach. There are many approaches to determination the complicated of load balancing in cloud environment, hence by examination of such procedures with their innumerable returns, restrictions and issue a original and competent practice for Load Balancing is instigated in future.

Keywords- *load balances, work load, scheduling, Ant colony, clustering jobs*

1.INTRODUCTION:

Cloud computing is an emerging technology which provider a lot of opportunities for online sharing of resources or services. One of the fundamental advantages of CC is pay-as you-go pricing model, where customers pay only according to their usage of the services. Cloud Computing is an internet oriented a computing.

Fig: 1 Cloud Computing architecture

It dynamically delivers all as a service over the internet base and on user demand, such as network, storage, operating system, hardware, software and resources. These are cloud services types:

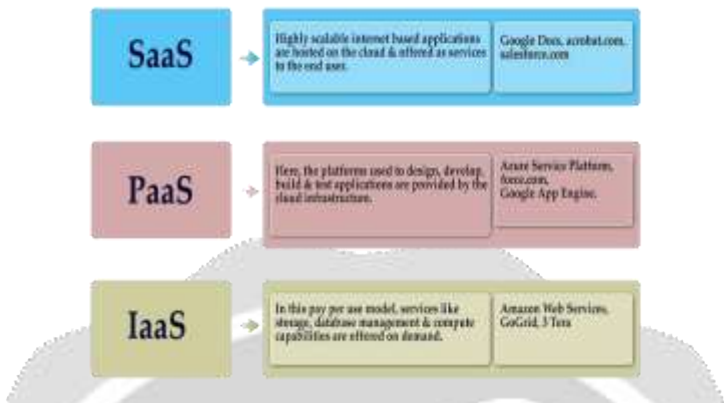

Fig: 2 Cloud Computing services

1.1 Software as a Service

In this model, a full application is to be had to the customer, as a service on demand. A lone instance of the service runs on the cloud & multiple end users are serviced. On the patron’s side, there is no need for open investment in servers or software license, while for the provider, the costs are lower, since only a single request needs to be hosted & maintained. Today SaaS is offered by company such as Google, Salesforce, Microsoft, Zoho, etc.

1.2 Platform as a Service

Here, a layer of software or development environment is encapsulated & accessible as a service, upon which other top level of service can be built. The purchaser has the freedom to build his own application, which process on the provider’s infrastructure. To meet manageability and scalability supplies of the applications, PaaS provider present a predefined group of OS and application servers, such as LAMP platform (Linux, Apache, MySql and PHP), Ruby etc. Google’s App Engine, Force.com, etc are some of the popular PaaS examples.

1.3 Infrastructure as a Service

IaaS provides basic resources and computing capability as standardized services over the network. Servers, storage space systems, networking equipment, data centre space etc. are shared and made available to handle workloads. The client would classically install his own software on the infrastructure. Some general examples are Amazon etc.

Cloud Computing is application as three types such as Public, Private and Hybrid Clouds.

1.4 Public Cloud

Public clouds are owned and operate by third party; they distribute superior economies of range to patrons, as the infrastructure costs are reach among a mix of users, giving each character client an beautiful low-cost, “ease of use variances. These are managed and support by the cloud provider. One of the compensation of a Public cloud is that they may be better than an enterprises cloud, thus providing the ability to scale effortlessly, on demand.

1.5 Private Cloud

Private clouds are built completely for a single project. They aim to address concern on data security and offer larger control, which is naturally lacking in a public cloud. There are two variations to a private cloud using follow:

- ✓ On-premise Private Cloud
- ✓ Externally hosted Private Cloud

1.6 On-premise Private Cloud.

On-premise private clouds, also known as familial clouds are hosted surrounded by one's own data center. This model provides a more even method and protection, but is limited in aspect of size and scalability. IT department would also need to incur the capital and prepared costs for the corporal resources. This is best right for applications which need complete control and configurability of the infrastructure and defense.

1.7 Externally hosted Private Cloud

This type of personal cloud is hosted externally with a cloud provider, where the provider facilitates an exclusive cloud setting with full agreement of privacy. This is best suited for enterprise that doesn't prefer a public cloud due to giving out of physical resources.

1.8 Hybrid Cloud

Hybrid Clouds connect equally public and private cloud model. With a Hybrid Cloud, examine providers can utilize 3rd party Cloud Providers in a full or partial manner thus increasing the suppleness of computing. The Hybrid cloud environment is capable of providing on-demand, on the exterior provisioned scale. The ability to enlarge a private cloud with the wealth of a public cloud can be used to administer any unexpected surges in workload.

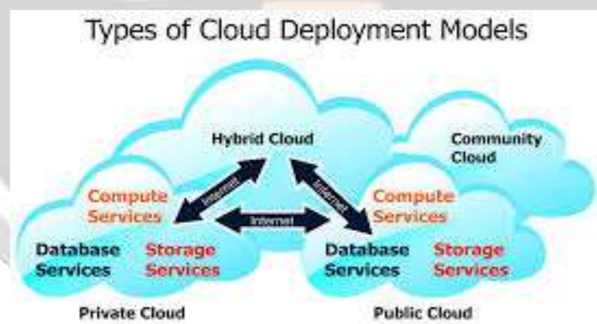

Fig: 3 Cloud Computing deployments

Cloud Storage system, is a also recognized as DAAS (Data storage as a service), is the abstract of resources last an interface where resources can be administered on order. Cloud data resources works on distribution file systems because of its ability to handle a countless volume of data effectively. Storage can be limited or remote. Cloud computing is cost effective, safe and scalable but organization the load of random job available is a tricky work. Data ease of use means data is available when never it is request. Accessibility of data increases with augmentation in number of duplication of data. But after accomplishment a specific level of repetition, there occurs no growth in availability. So it is improved to find an optimum level of duplication. Availability and replication ratio also depends on node malfunction ratio. If failure probability is towering, more number of replication of that data is required. So if node breakdown ratio is less, less duplication number is necessary for maximum file availability.

2. LITERETURE SURVAY

2.1 Distributed resource allocation in cloud-based wireless multimedia social networks

A cloud-based wireless multimedia social network (WMSN) to deal with multimedia sharing and distribution. By introducing cloud computing, it is possible to store, process, and distribute live streaming in a multimedia social network environment. Users are categorized on the basis of social contexts, available resources, preference for sharing resources, and device capabilities. The network allows one type of users to obtain live programs from the cloud and share their live streaming with socially related wireless users. Although the proposed architecture has several advantages with respect to cost reduction and performance improvement, sharing the radio resources among users should be carefully studied. In addition, we note the potential selfish behavior of mobile users for resource competition and propose a cheat-proof mechanism to motivate mobile users to share bandwidth. In this article, we present a cloud-based wireless multimedia social network (WMSN) to deal with multimedia sharing and distribution. By introducing cloud computing, it is possible to store, process, and distribute live streaming in a multimedia social network environment. Although the proposed architecture has several advantages with respect to cost reduction and performance improvement, sharing the radio resources among users should be carefully studied. Game theory has been shown to be a powerful tool to investigate P2P video streaming and devices' cooperation. In addition, we notice the potential cheating behavior of mobile users and propose a cheat proof strategy based on a new punishment mechanism.

2.2 A novel artificial bee colony approach of live virtual machine migration policy using Bayes theorem

Focus on live VM migration policy based on green data center. In a cloud data center, there are always some VMs needing to be migrated for some reasons. Generally speaking, the migrant VM has many available target hosts. However, only one target host is most suitable for the VM in order to minimize the total incremental power consumption in cloud data center. To achieve green cloud data center, in the search direction of VM provisioning the problem is similar to that of live VM migration. Both are to find out the optimal target host. Many papers have presented some heuristic approaches to find optimal solutions aiming to minimize power consumption. The basic idea is that according to the current situation and history of a cloud data center, the controllers have searched for a best policy by using their proposed approaches. The problems of convergence and local optimization have been challenging the research direction. On the other hand, we know that a data center does not have abilities in predicting the size and type of the next workloads. Therefore, the optimal policy which the proposed approaches have found out in a short-term is not necessarily the optimal solution in a long-term. The approach achieves a longer-term efficient optimization for power saving. The experimental results demonstrate that PS-ABC evidently reduces the total incremental power consumption and better protects the performance of VM running and migrating compared with the existing research.

2.3 A heuristic placement selection of live virtual machine migration for energy-saving in cloud computing environment

This paper has focused on live VM migration policy for energy saving in this context of green cloud data centers. In virtualized green cloud data centers, there are always plenty of VMs needing to be migrated for certain goals. These migrant VMs, however, have many valid target hosts to select from. It is generally acknowledged that only one target host is most suitable for the VM in the aspect of minimizing the total incremental energy consumption in cloud data center. It is the proposed objective to pick out the optimal target hosts of migrant VMs. The other one is that it uses the Probability Theory and Mathematical Statistics and once again utilizes the SA idea to deal with the data obtained from the improved PSO-based process to get the final solution. And thus the whole approach achieves a long-term optimization for energy saving as it has considered not only the optimization of the current problem scenario but also that of the future problem. The experimental results demonstrate that PS-ES evidently reduces the total incremental energy consumption and better protects the performance of VM running and migrating compared with randomly migrating and optimally migrating. As a result, the proposed PS-ES approach has capabilities to make the result of live VM migration events more high-effective and valuable.

3.RELATED WORK:

G. Nan, 2014…,[2] present a cloud-based wireless multimedia social network (WMSN) to deal with multimedia sharing and distribution. Although the proposed architecture has several advantages with respect to cost reduction and performance improvement, sharing the radio resources among users should be carefully studied. Game theory has been shown to be a powerful tool to investigate P2P video streaming and devices' cooperation. In addition, we notice the potential cheating behavior of mobile users and propose a cheat proof strategy based on a new punishment mechanism.

G. Xu, 2013….,[6] The problems of convergence and local optimization have been challenging the research direction. On the other hand, we know that a data center does not have abilities in predicting the size and type of the next workloads. Therefore, the optimal policy which the proposed approaches have found out in a short-term is not necessarily the optimal solution in a long-term. The approach achieves a longer-term efficient optimization for power saving. The experimental results demonstrate that PS-ABC evidently reduces the total incremental power consumption and better protects the performance of VM running and migrating compared with the existing research.

J. Zhao, 2014….,[5] The other one is that it uses the Probability Theory and Mathematical Statistics and once again utilizes the SA idea to deal with the data obtained from the improved PSO-based process to get the final solution. And thus the whole approach achieves a long-term optimization for energy saving as it has considered not only the optimization of the current problem scenario but also that of the future problem. The experimental results demonstrate that PS-ES evidently reduces the total incremental energy consumption and better protects the performance of VM running and migrating compared with randomly migrating and optimally migrating. As a result, the proposed PS-ES approach has capabilities to make the result of live VM migration events more high-effective and valuable.

J. Zhao, 2013….,[7] The focused on the power consumption and load balancing. It is a multi objective optimization problem (MOP) which differs from the traditional single objective optimization problem. The basic idea of the existing research is that, according to the current situation and history of a cloud data center, the controller has searched for a best migration policy by optimizing the objective function of the proposed algorithm. In the MOPs, the situation is different and complex. It needs to optimize multiple objectives at the same moment. This paper has presented the specific design and implementation of MOGA-LS such as the design of the genetic operators fitness values, and elitism. We have introduced the Pareto dominance theory and the simulated annealing (SA) idea into MOGA-LS and have presented the specific process to get the final solution, and thus, the whole approach achieves a long-term efficient optimization for power saves and load balancing. The experimental results demonstrate that MOGA-LS evidently reduces the total incremental power consumption and better protects the performance of VM migration and achieves the balancing of system load compared with the existing research.

C. Dupont, 2012….,[1] The framework's flexibility is achieved by decoupling the expressed constraints from the algorithms using the Constraint Programming (CP) paradigm and programming language, basing ourselves on a cluster management library called Entropy. The optimizer aims at computing a configuration; an assignment of the VMs to the nodes; that minimizes the overall energy consumption of a federation of data centers while satisfying the different SLAs. In practice, the optimizer uses a power objective model to estimate the energy consumption of a configuration and extends Entropy, a flexible consolidation manager based on Constraint Programming, to compute the optimized configurations.

4.PROPOSED SYSTEM,ARCHITECTURE

The proposed Ant colony algorithm approach presents a solution to dynamically achieve the process-based optimal load balancing with low computation complexity and thus obtain the efficient service performance and computing efficiency on two sides. The main contributions is follows: Introduce the concept of process-based load balancing in cloud computing environment, which is in contrast to the immediate load balancing strategies in the current literatures. The benefits are many fold: to reduce unnecessary computation complexity and to increase deployment efficiency while fulfilling the service performance for users. What is crucial is that ant colony has long-term potential benefits of optimizing external service capabilities and resource utilization from the cloud ends perspective. Introduce the model of ant colony on optimal deployment of tasks to work out the probabilities of optimal physical hosts. Propose the cluster-based task deployment algorithm by combining with ant colony probabilities to obtain the optimal set of candidate physical hosts. Propose a data structure of Matrix to determine the final solution vector in each algorithm cycle.

5.METHODOLOGIES WITH ALGORITHM

ANT COLONY ALGORITHM

In this section, we describe the specific process of Ant colony. Details are as follows:

The constraint value Li of each physical host i in the cloud data center has been calculated. We define an empty set NPH ={}, and the performance constraint value of the set TR of task requests is defined as the maximum requested resource amount in NPH. The maximum requested resource amount L_{mreq} of TR can be calculated in terms of formula. And if Li>L_{mreq}, host i will be placed into the set NPH. Having compared the constraint value Li of each physical host with the performance constraint value L_{mreq}, the new candidate set NPH = {nph_1; nph_2; . . . ; nph_m, m≦m is obtained and it will be used as the candidate set of physical hosts for the following clustering process.

Input: current PH, current Lc, current Lmem, received TR, received Rc, received Rmem;
Output: final deployment solution vector S;
Step1: NPH =∅ , NPH' = ∅ , S = NULL;
Step 2: for each $tr_i \in TR$ do
Step 3: R_i=αR_c^i+βR_{mem}^i;
Step 4: end for
Step 5: L_{mreq}=$max_{i=1}^{n}$ RR_i;
Step 6: for each $ph_i \in$PH do
Step 7: L_i = $\propto l_c^i$+βl_{mem}^i;
Step 8: if L_i>L_{mreq} then
Step 9: NPH = NPH ∪ ph_i;
Step 10: end if
Step 11: end for
Step 12: for each nph_i ∈ NPH do
Step 13: the posterior probability $P(B_i|$ A) of nph_i is obtained according to the formula;
Step 14: end for
Step 15: nph_j is the candidate physical host with Pj = $max_{i=1}^{m'} p(B_i|A) in\ NPH$;
Step 16: NPH' = NPH'∪ nph_j;
Step 17: for each $nph_i \in NPH$do
Step 18: SD(nph_i nphj) is obtained according to the formula (17);
Step 19: if SD(nph_i nphj) >$U_{hreshold}^{Similarity}$
Step 20: NPH' = NPH'| nphi;
Step 21: end if
Step 22: end for
Step 23: for each tr_i ∈TR do
Step 24: S[i] = the No. of the physical host $nph_i^{'}$ with the maximum remaining resource amount Li in NPH';
Step 25: L_i= LL_i - R_i
Step 26: end for
Step 27: Return S;

6.EXPERIMENTAL RESULTS:

We can evaluate the performance of the system using the parameters such as

- ✓ increasing the number of nodes in the system,
- ✓ increasing the number of objects keeping number of nodes constant,
- ✓ Changing the nodes storage capacity, and

- ✓ Varying the read/write ratio. These capacities are consolidated as capacity of replication node and time of updating.

And it can be plotted as graph in fig 5.

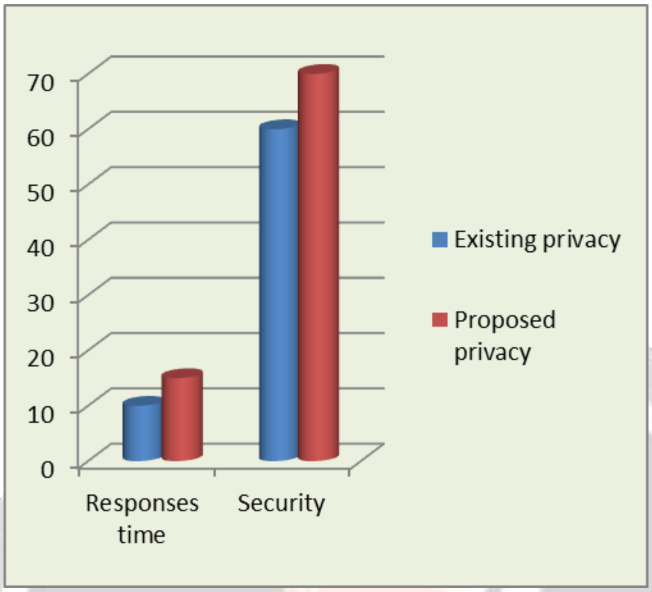

Fig 5: Experimental Results

7.CONCLUSION:

In this paper, we current enabling data reliability proof and constancy services over multi cloud system using ABE which helps in informative violation as much as possible. The cloud reliability model and local auditing, global auditing that helps user to confirm the cloud service provider (CSP) provide the promised constancy or not and count the severity of the violations. Therefore system monitor consistency service model as well as level of data uploads which helps the user to get the data in updated version. User can recognize various sub servers in CSP. It is a considered to provide regular update mechanism to confirm fragments simply and provide the data to users after update only.

REFERENCES

[1] A. Khiyaita, M. Zbakh, H. El Bakkali, and D. El Kettani, "Load balancing cloud computing: state of art," in Network Security and Systems (JNS2), 2012 National Days of, pp. 106–109, IEEE, 2012.

[2] N. J. Kansal and I. Chana, "Existing load balancing techniques in cloud computing: A systematic review.," Journal of Information Systems & Communication, vol. 3, no. 1, 2012.

[3] G. Nan, Z. Mao, M. Li, Y. Zhang, S. Gjessing, H. Wang, and M. Guizani, "Distributed resource allocation in cloud-based wireless multimedia social networks," IEEE Netw. Mag., vol. 28, no. 4, pp. 74–80, Jul. 2014

[4] G. Xu, Y. Ding, J. Zhao, L. Hu, and X. Fu, "A novel artificial bee colony approach of live virtual machine migration policy using Bayes theorem," Sci. World J., vol. 2013, no. 2013, p. 369209, Sep. 2013.

[5] J. Zhao, L. Hu, Y. Ding, G. Xu, and M. Hu, "A heuristic placement selection of live virtual machine migration for energy-saving in cloud computing environment," PloS One, vol. 9, no. 9, p. e108275, Sep. 2014.

[6] J. Zhao, Y. Ding, G. Xu, L. Hu, Y. Dong, and X. Fu, "A location selection policy of live virtual machine migration for power saving and load balancing," Sci. World J., vol. 2013, no. 2013, p. 492615, Sep. 2013.

[7] C. Dupont, G. Giuliani, F. Hermenier, T. Schulze, and A. Somov, “An energy aware framework for virtual machine placement in cloud federated data centres,” in Proc. 3th IEEE Int. Conf. Future Energy Syst.: Where Energy, Comput. Commun. Meet (e-Energy), 2012, pp. 1–10.

[8]. K. Xu, Y. Zhang, X. Shi, H. Wang, Y. Wang, and M. Shen, “Online combinatorial double auction for mobile cloud computing markets,” in Proc. IEEE Int. Perform. Comput. Commun. Conf., 2014, pp. 1–8.