www.ijecs.in
International Journal Of Engineering And Computer Science ISSN: 2319-7242
Volume 3 Issue 6 June, 2014 Page No. 6333-6336

Effective Resource Management Based on Flexible Workload Technique in Cloud

V.RakeshDevi M.E.,

Department of Computer Science Engineering, KRCT, Trichy.

Guided By: Asst. Prof. P.Deepavathi M.Tech.,

ABSTRACT

The resource management is the main problem in the cloud. Anchor used for fetching stable matching policies when mapping the virtual machine's to physical servers and clients and the operators are mapping virtual machine's to physical servers based on the preferences of the user request. In the proposed system, Anchor is the many to one stable matching with heterogeneous resources needs to server. The system used in the large-scale resources management system based on the workload traces. To realize with diverse set of policy goals with good performance. In the system bandwidth estimation algorithm to estimate the data bandwidth of the particular uploading data and the downloading data in the various cloud resources. In the every cloud server's offer services different from other resources. So, the virtual node can formed and enhance the services and rectify the network based resources problems and give the optimal solutions to the various cloud based resources. The cloud can scaled among different resources and give the effective services in the cloud environment.

Index Terms: Resource management, cloud computing, VM Placement, cloud services, virtual machine

I. INTRODUCTION

The variety of public cloud such as Amazon may wish to use a workload that consolidation policy to make sure quality of the service. In the cloud servers provide service's to their different from other cloud services. Application share the hardware by running in isolated in the Virtual Machine's.VM sizing based on estimation of the amount of the resource's that should be allocated to a VM. Each applications run on a subset of the node's and these subsets overlaps with one another application. The flexibility that requires in an effective resource management that is able to control the number of active users in a system where capacity varies in the each resource. The resource availability prefers the user capacity demands needs to consider at the same time to make an efficient resource. The cloud service provider manages the services to users at any place and the resources that used allocated from the cloud service provider. Every time the services should be in activation stages.

II. CHARACTERISTICS

Cloud computing has some important characteristics, they are

A. *On demand self services*

Cloud service provider's used to providing on demand self services includes Amazon Web Services, Microsoft and Google. Computer services such as email, applications and network or server services can support without required human interaction with each service provider.

B. *Broad network access*

Cloud capabilities are available over the network and that can being accessed through standard mechanisms that gives different use by thin or thick client platforms such as mobile phones, laptops.

C. *Resource pooling*

The resources have been including among other storage, processing, memory, network bandwidth, virtual machines and email services. The provider's computing resource's are pooling together to serve multiple consumers using multiple-tenant model, with different physical and virtual resources dynamically assigned and reassigned according to the consumer demand.

III. DESIGN OF FLEXIBLE WORKLOAD

There are three common approaches to improving the flexible workload applications. In the first approach, VMs are created with specified size and then consolidated onto a set of the physical severs. Such an approach not only makes the evaluate them using common server applications and then find the efficiency, but it does not reduces the wastage of the capacity size [4]. In the second approach, online solution for a dynamic environment with changing traffic. Although the second approach is better than the first, because it raise efficient traffic engineering within each data center network under dynamic arrivals of the jobs [2]. The third approach, a resource management solution, is proposed in this study to address the drawbacks of the above mentioned two approaches. The workload technique aims at providing the every cloud server provide services different from other resources and then rectify the network based resources problems and give the optimal solutions [5]. Thus the efficient resource was completely redesigned and developed to achieve high performance, maximum flexibility capacity, and good portability.

IV. STRUCTURE OF EFFECTIVE RESOURCE MANAGEMENT

The structure of the effective Resource Management implementation shown in the figure, where there are three distinct layers of interfaces to make the effective Resource Management design portable and flexible. As shown in figure, clients are used to choose particular clouds to register their information for authentication purpose and then it begin activate the cloud services.

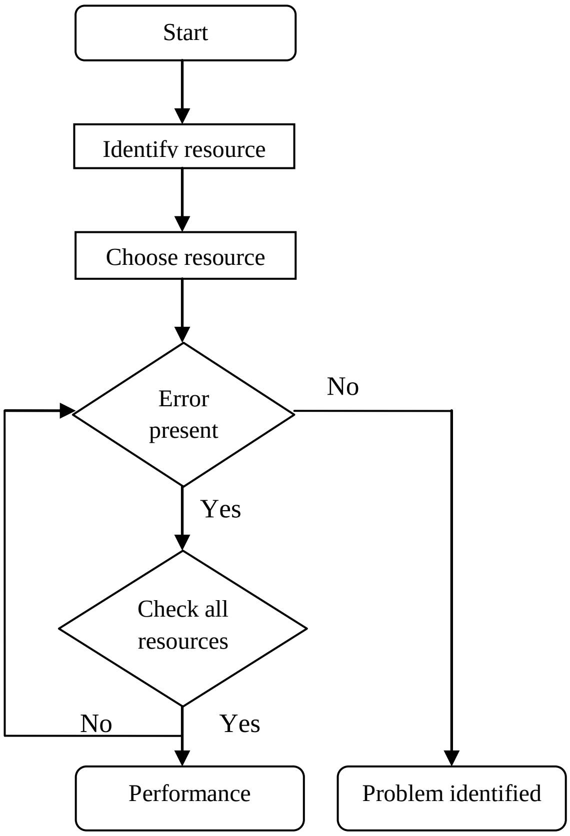

Fig. 4 Implementation in effective Resource management

4.1 Anchor and interface

The clients from various clouds are entered into the cloud interface using the anchor checks the policies if the policies are matching then the clients can be connected to the clouds and the transactions are proceed otherwise the clients are rejected. Anchor enables efficient resource utilization of the infrastructure and improves performance of its VMs, by allowing specific policies need to particular resource.

4.2 Efficient resource allocation

The resource allocation is well suited to distributed resource allocation. These can concentrates on high performance resource and evaluated using virtual machines. Virtual machine is used to check the process without memory constraints. Resource allocation does not change for the duration of the lease from the cloud provider. Virtual network nodes based on the current traffic condition it could be used to improve the efficient utilization. There are three efficient resources:

1. **Resource mapping:** The optimal allocation of a clod computing is related to the cost efficiency of the resource mapping procedure and network performance. Provides an overview of environment implement to testing the efficiency. The application of the proposed resource mapping methodology in a prototype implementation
2. **Hard/Soft Qos based on computational Resource:** A provisioning of computing resources is employed to both hard and elastic cloud provisioning models. Due to the lack of dependence on specific hardware. Specifically, hard and soft Qos produce the capacity requirements imposed by the users. Soft Qos provisioning implies that can be provided on the high workload demands for elastic cloud services.
3. **Cost effective:** The user can utilize custom tools and services to meet their needs. To support legacy code within new infrastructure. User’s finds only the hardware required for each resource. The user is only paying for needed infrastructure while maintaining the option to increase service. This greatly reduces the risk for institutions that may be looking to build a scalable system. Clouds provide access to a potentially vast amount of the computing resources in an easy.

V. OVERVIEW OF EFFECTIVE RESOURCE MANAGEMENT

Being a cloud resource management it consolidation based on the CPU usage, energy consumption, bandwidth multiplexing and storage dependence. There are three distinct layers of interfaces to make the effective Resource Management design portable and flexible. As shown in figure a resource monitor, a policy manager and a matching engine. Note that each one is corresponding Anchor control plane. Resource monitor is used to view information about the use of hardware and software. Policy management is enforcing the policy of the organization that pertains to information and computing, it mostly deals with database access and network resource. Matching engine is based match the policy through each resource. Each VM has a different size corresponding to its demand for CPU, memory and storage resources. The performance evaluation is based on the real time in a workload traces. The matching mechanism resolves conflicts of interest and outputs a matching between VMs and servers. One node in the cluster is designed to run the Anchor control plane, while others host VMs. To enable memory ballooning in virtual Box to allow the temporary burst of the memory use.

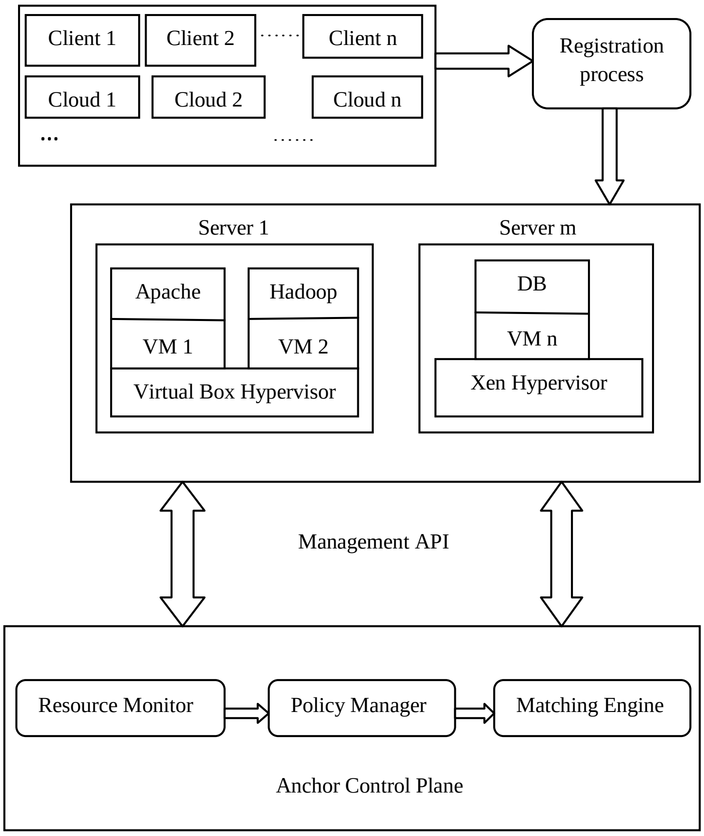

Fig. 5 Design policies in Resource Management

The Anchor that produces a policy engine which constructs according to various resource management policies. The cloud operator and clients interact with the policy engine through an API as shows in Table 3

Functionality	Anchor API Call
Create a policy group	g = create{}
Add/delete server	add/delete {g_o, S}
Add/delete VMs	add/delete {g_c, V}
Set ranking factors	conf {g, factor1…}
Set placement constraints	limit {g_c, servers}
Colocation/anti-colocation	collocate {tenants, i, g_c}

Table 1 Anchor's policy interface

1. Each policy group contains a set of servers or VMs that are entitled to a common policy, it could reduce management using policy groups that can be created with create () call.
2. The policy engine considered the factors to be ranking the potential partners in a descending order with policy groups, only one common preference list is needed for all members of the group.
3. It is also possible for the operator to configure policies on behalf of its clients if they do not explicitly specific any. This is done by enrolling them to the default policy group.

5.1 Optimal allocation of virtual machine

Distributed clouds extend over a loosely coupled integrated providing enhanced communication and computational services to target end-users with quality of service (Qos) requirements. It requires delivery of user-driven sets of virtual resources which dynamically allocated to actual resources with in networked clouds. The capacity of physical resources can be multiplexed among requested resources allowing us to accommodate more requests.

5.2 Bandwidth estimation algorithm

In the bandwidth estimation algorithm is used to estimate the bandwidth in the data transmission. Using this algorithm find out the bandwidth range. By using this range determine the bandwidth for file uploaded. If the choosing file size is in-between the determined range then can upload file using the virtual memory. If the file size a low then the selected frequency range then select the large file. In the cloud estimate the bandwidth and then select based on the buffer size of the data.

1. The resource can be separate into network resources and system resources. The bandwidth range estimate between the saturate node and the virtual node.
2. The capacity range of the saturated limit can be finished then it can be allocated to virtual node. The capacity of the data range allocated node can be finished and limited the data capacity and send the data through the virtual node. The allocation of the resource in the limited range and the data through the virtual nodes based on the id it can be securely send the data.

VI CONCLUSION

We presented Anchor as a unifying fabric for resource management in the cloud, where policies are decoupled from the management mechanisms by the stable matching framework. We developed a new theory of job-machine stable matching with size heterogeneous jobs as the underlying mechanism to resolve conflict of interests between the operator and clients. We then showcased the versatility of the preference abstraction for a wide spectrum of resource management policies for VM placement with a simple API. Finally, the efficiency and scalability of Anchor are demonstrated using a prototype implementation and large-scale trace-driven simulations. Many other problems can be cast into our model. For instance, job scheduling in distributed computing platforms such as MapReduce, where jobs have different sizes and share a common infrastructure.

VII FUTURE WORK

In this the service provide by the cloud is not utilized efficiently, due to performance degradation in network, so the virtual allocation of the network is used to act as buffer to efficiently utilize the cloud service. Our theoretical results are, thus, potentially applicable to scenarios beyond those described in this paper. As future work, we plan to extend Anchor for the case where resource demands vary, and VMs may require to be replaced, where specific considerations for VM live migration are needed.

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