FAIR SHARE MANAGEMENT FOR RESOURCE ALLOCATION IN MULTI CLOUD ENVIRONMENT

Falguni N. Vaghela[1], Shilpa Serasiya[2]

[1]PG Student, Computer Engineering, KITRC, Kalol, Gujarat, India

[2]Head Of the Department, Computer Engineering, KITRC, Kalol, Gujarat, India

ABSTRACT

Many people are increasingly moving their workload to Cloud service providers' facilities. To optimize revenue and maximize resource usage, suppliers attempt to give services not only to local customers, but also to make their free slot available to a global consumer. A multi-Cloud environment is created when all service providers give a free slot or a full computer to satisfy worldwide users' needs. On the one hand, this basic boosts each provider's resource consumption; on the other hand, it raises the question of equitable user request allocation across providers and revenue sharing based on slot usage. If sufficient care is not exercised in both of these fundamentals, it is probable that certain providers will be overworked. However, the share is not proportional to the number of slots available. So the primary goal must be to create a system that allows for efficient resource allocation and effective management of the share that is distributed across the various providers' machines. It also offers preference-based allocation on the user side to improve cloud users' pleasure. So, in this study, I'll provide a fair share management strategy in which each service provider receives an equal portion of the resources requested by a user based on the total resources available for sharing.

Keywords: (Resource Allocation, Resource Utilization, efficient scheduling, Fair Share).

1. INTRODUCTION

Cloud Computing: The definition of Cloud Computing is to develop a computing technology that uses internet and essential remote servers to manage data and application. Cloud computing is to distribute to calculate different type of resources as a service. Here the main meaning of cloud is different type of resources are managed by third party provider instead of user. There are different three type of services like IAAS, PAAS, and SAAS in Cloud Computing. There are different type of deployment models which are Public Cloud, Private Cloud, Community Cloud and Hybrid Cloud. Public Cloud, Private Cloud, Community Cloud, and Hybrid Cloud are examples of diverse deployment models.

The practice of allocating various types of resources to users is known as resource allocation. Different types of resources are managed through resource allocation. Resource allocation tactics include: resource argument, resource scarcity, resource fragmentation, resource fragmentation, over provisioning, and under provisioning. CPU and RAM resources are utilized extremely well in this resource allocation challenge, and these resources are also exploited. We can save CPU, RAM, and energy resources by using the resource allocation scheduling task and giving it a resource allocation problem. Fair Share Management (FSM) The task of allocating available resources to multiple users is known as resource allocation.

User: User send request to the cloud service provider.

Service Provider: Service provider allocate resources as per the user request.

2. METHODOLOGY

The system will allocate resources fairly. The system receives a request from the user. The provider informs the system about the available resources. System calculate fair share for each provider. Provider have fairer share then it will have more profit. If number of request > fair share then allocate full resource to that particular provider. After that system update details. If it is last request to that provider then its stop otherwise it continue with the beginning flow. For request allocation system get highest share provider (except those from full list) and system will allocate requested resource to that provider.   System check if the provider is the last, the system will be stopped; otherwise, the system will resume its initial flow. The entire system is working on fair share resource management and equitable resource allocation. And increase all over satisfaction level of cloud user.

3. MODELING AND ANALYSIS
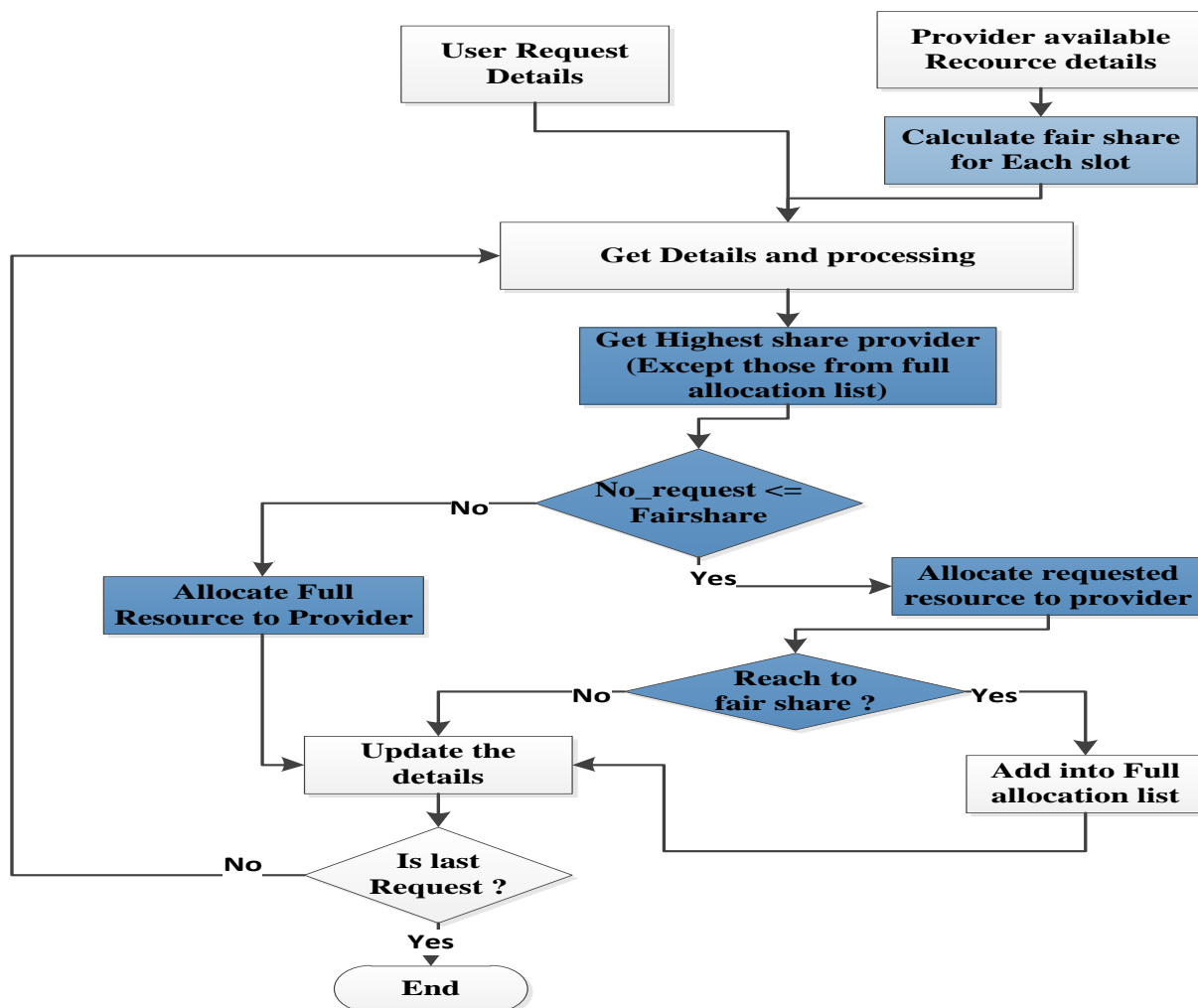
Flow of Fair Share Management is described as following.

Figure 1: Proposed systems

Step 1: Start.

Step 2: Provider put details of available resource

Step 3: Get details and calculate fair share for each slot

Step 4: User put request and preference details.

Step 5: Get details and processing.

Step 6: Get highest share provider (except those from full allocation list)

Step 7: Check Number of request<= Fair share then continue else go to step 11

Step 8: Allocate resource to provider

Step 9: Update share details

Step 10: If last request then go to step 14 else go to Step 5

Step 11: Allocate resource to provider

Step 12: If provider not reach to fair share then go to step 9 else continue

Step 13: Add provider to full allocation list and go to step 10

Step 14: End

4. RESULTS AND DISCUSSION

In this Section results and discussion of the study is written. Here User send request to the provider. Provider allocate resources as per User request. Here Provider allocate all resources and condition satisfied.

Table 1. Provider Satisfied

SN.		Provider	Existing	Proposed
1	3	3	2	3
2	5	4	3	3
3	7	7	5	6
4	9	8	6	8
5	11	11	9	10
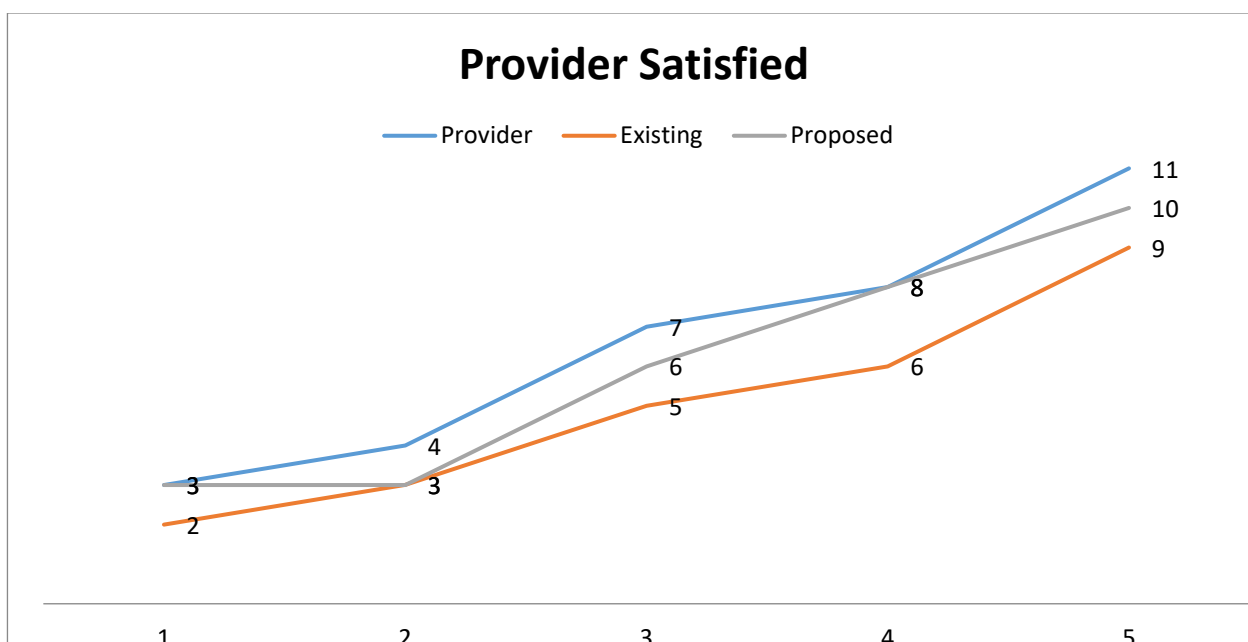
In this section there are user request which is requested by user for resources. Provider allocate resources as per user request. This is a graph for allocate resources provided by provider. In this table there are different type of table Provider resource detail which give the detail of resources by service provider. Allotment Existing means User has a request of different type of resources. Allotment Proposed means Service provider Allocate resources as per user request and total availability of resources.

Table 2: Provider Methodology

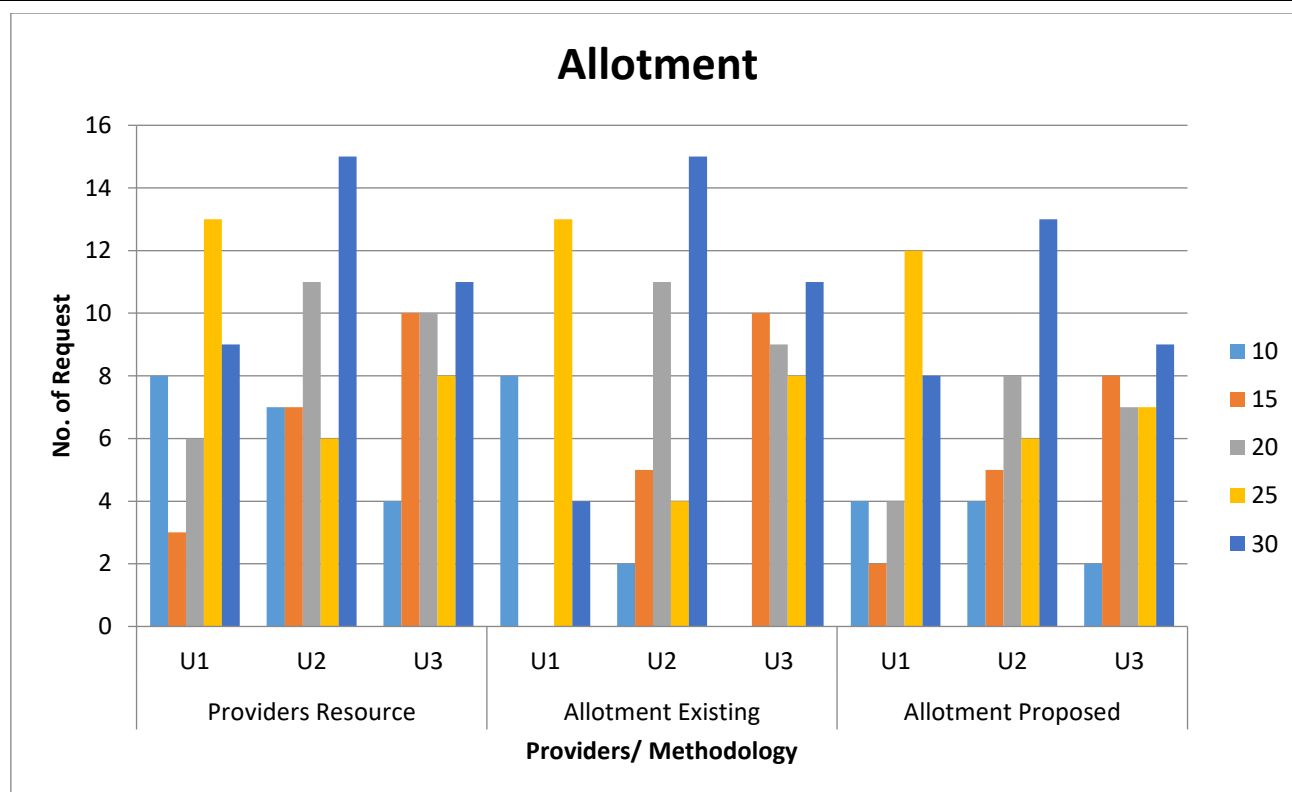| SN.		Providers Resource			Allotment Existing			Allotment Proposed		
1		U1	U2	U3	U1	U2	U3	U1	U2	U3
2	10	8	7	4	8	2	0	4	4	2
3	15	3	7	10	0	5	10	2	5	8
4	20	6	11	10	0	11	9	4	8	7
5	25	13	6	8	13	4	8	12	6	7
6	30	9	15	11	4	15	11	8	13	9

Figure 2: Providers Methodology

5. CONCLUSION

My analysis concluded that the provider reaps the greatest benefit from resource allocation. As requested by the user, the provider performs equal share management. Remove the difficulty of locating a user to rent resources. The primary goal is to maximize resource use. Better Service Quality for the User.

6. REFERENCES

[1] K. N. Kumar and R. Mitra, "Resource Allocation for Heterogeneous Cloud Computing Using Weighted Fair-Share Queues," 2018 IEEE International Conference on Cloud Computing in Emerging Markets (CCEM), 2018, pp. 31-38, DOI: 10.1109/CCEM.2018.00014.

[2] M. Jebalia, A. Ben Letaïfa, M. Hamdi and S. Tabbane, "A Fair Resource Allocation Approach in Cloud Computing Environments," 2018 IEEE 27th International Conference on Enabling Technologies: Infrastructure for Collaborative Enterprises (WETICE), 2018, pp. 54-57, DOI: 10.1109/WETICE.2018.00017.

[3] H. Hamzeh, S. Meacham, K. Khan, A. Stefanidis and K. Phalp, "H-FFMRA: A Multi Resource Fully Fair Resources Allocation Algorithm in Heterogeneous Cloud Computing," 2021 IEEE 45th Annual Computers, Software, and Applications Conference (COMPSAC), 2021, pp. 1243-1249, DOI: 10.1109/COMPSAC51774.2021.00172.

[4] G. Zhang, R. Lu and W. Wu, "Multi-Resource Fair Allocation for Cloud Federation," 2019 IEEE 21st International Conference on High-Performance Computing and Communications; IEEE 17th International Conference on Smart City; IEEE 5th International Conference on Data Science and Systems (HPCC/SmartCity/DSS), 2019, pp. 2189-2194, DOI: 10.1109/HPCC/SmartCity/DSS.2019.00303.