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RESOURCE ALLOCATION USING SJF AND DOMAIN SPECIFIC STORAGE TECHNIQUES

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***Abstract*—**Load Balancing is even distribution of excessive workloads among all nodes to achieve better resource and service utilization. Load-Balancer is assigned with the task of receiving and distributing the load to the DATACENTRES.Proposed model gives an effective load balancer to stay away from blockage and overburdening of server at the data center. We utilized modified SJF algorithm to implement Dynamic balancing of severs. It is utilized for accomplishing a superior assistance provisioning and resource usage proportion, subsequently improving the general performance of the system.The Cloud agents exploit Cloud Providers. The Cloud providers assist the users with discount pricing schemes through online . Modified Sjf A and K-Means algorithm together used to implement the Scheduling or resource allocation . For file storage and retrieval the data is encrypted with the help of AES method and sent to cloud. In information recuperation, the documents are relocated from the virtual machines to cloud named CloudMe for data backup.Also to dissect which particular kind of records are every now and then accessed by the clients we implemented Domain Specific Storage. We have set a charging unit which break down and gives which specific area is every now and then accessed and depending on that virtual machine capacity is expanded/diminished. Likewise the charging unit gives the expense to surveying the records or the data-files.

Keywords*—SJF, AES, VM , FCFS,CSP.*

I. INTRODUCTION

The objective of the model is to add a supplement model to ensure even distribution of excessive dynamic workload among all nodes thereby achieving better resource allocation and utilization ratio at the data centre

. Hence improving the overall efficiency by increasing the

availability of services, maximizing resource utilization and avoiding overloading of Virtual Machine (VM) at the data centres. This proposed model is built using tweaked Shortest Job First (SJF) algorithm by improving certain parameters. Also the objective of the model is to be more user-friendly improving the user

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satisfaction by introducing Discount

Pricing to avail the Cloud Services, unlike the existing ones which do not pass the benefits of cloud services to retail- individual users.

In current scenario it is hard to state the real-time data-centre applications using dynamic load balancing as most of the existing systems use Static load-balancing techniques which do not give expected results at the data-centre in real time applications.Also when workload is not equally assigned to all the VM (in case of distributed load balancing), then there is inadequate utilization of resources which leads to decreased efficiency and also the response time getting increased , chances also exist the job continues to be in the loop when any special instruction given otherwise.

In current existing systems the Cloud Service Provider (CSP) charge the users excessively with parameters like the hours of usage , or the number of units used by the customer.This practice loots the customer as he might be charger for the whole unit when he actually used a partial unit(part of it).

II. STATE OF THE ART (LITERATURE SURVEY)

A. A Survey on Resource Scheduling Algorithms in Cloud

Computing

Cloud Computing is a robust distributive technique providing all kinds of computing services mainly storage and computing power over shared pool of resources by users over the internet.Sudden explosive boom in demand in Cloud Industry can be attributed to the likes of parameters like virtualization, heterogenic outlook , varied pricing scheme to accommodate needs of different types of customers. To accommodate the needs of users efficiently Resources must be carefully efficiently scheduled to maximize the throughput thereby increasing the overall efficiency. Resource Scheduling is the proper allocations of the resources to the incoming tasks. A clear insight on the different resource scheduling algorithms aiming on the efficiency parameters like the makespan, cost of scheduling has been taken into consideration.

B. Implementing Priority based and revamped SJF for task scheduling.

Cloud Computing is an important medium through which data can be transmitted via internet. The data to be send by the user is stored at data centers through brokers. But during the designing of cloud environment load balancing and scheduling of resources is an important task, since the various users can request for the same type of resource at the same time, hence scheduling is applied over each requests so that each user can access the resources.

Although various scheduling techniques are implemented for the scheduling of resources in cloud such as using FCFS or priority based scheduling, but efficient scheduling is needed since these techniques provides more waiting time and responses time for the users request which needs to be minimize, hence an efficient scheduling technique is implemented for the scheduling of cloud resources.

C. DIFFERENT TASK SCHEDULING ALGORITHMS IN CLOUD COMPUTING

Owing to the numerous advantages of Cloud Computing like huge computing capacity even with limited pool of resources

, its robust structure, also the Pay as Usage system paves the way for its utmost importance in the IT sector.A detailed study on the different types of scheduling techniques in CloudSim has given us a observation that among available scheduling algorithms SJF turned out to be most efficient on the parameters of Average Waiting and Burst Time.

D. INFERENCE ON STORAGE AND PROTECTION OF FORMAT-SPECIFIC DATA IN THIRD-PARTY CLOUD VENDORS

Domain Based Storage Protection (DBSP) is implemented to encrypt the user data files on the local host computer, and the decryption keys are stored in the local Volume Metadata . Implementation of this technique leads to minimization or even elimination of Cloud Provider's interference into the User Data , hence increasing the security and integrity of stored data over the public cloud infrastructure.

III. PRPOSED WORK

Scope of the proposed project is to develop a novel system to handle the Cloud data owner requests and to provide response without congestion using efficient load-balancing algorithm . Hence implementing the Domain Specific Storage to identify which specific domain is being accessed frequently by the users and the cloud data owner to accommodate the VM capacity respectively.

Also we provided an option for the user to choose the Pricing Scheme based on the users requirements and usage , so that they wont have to be shelling out their money for the unused

Storage or unused Time.

A. Abbreviations and Acronyms

FCFS – First-Come-First-Serve

SJF – Shortest Job First

SRTF- Shortest Remaining Time First

VM – Virtual Machne

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CSP- Cloud Service Provider

IV. IMPLEMENTATION

MODULES:

1. Pricing
2. Load Balancing – SJF algorithm
3. Domain based Storage and encryption
4. Cloud Computing
5. Ant Colony Optimization

PRICING:

We introduced discrete charging cloud units, wherein the user will have to opt for the suitable plan according to his requirements of amount of storage space required and discount needed. We are eliminating the involvement of third party cloud brokers between the Cloud Service Providers , Customers thereby reducing the cost burden on User Side . ROSA algorithm is implemented to ensure the user gets more storage space than the present conventional systems , thereby increasing the chances to buy the storage space with more efficiency.

SJF scheduling has the higher throughput so this is better option of scheduling in private cloud. With SJF some jobs may suffer due large burst time this is called starvation. To overcome form this problem bounded waiting must be there which introduce a tag with every arrived and decreased automatically with every new arrival of process and when it will reach to zero then that job must be executed

A. Load Balancing- SJF Algorithm

Of all the available scheduling algorithms , SJF algorithm has better efficiency compared to First Come First Serve (FCFS), Round Robin (RR) etc. But when process with large burst time are scheduled they may be in the loop forever, such a state called Starvation to overcome this each new entry process must be given a tag , when individual tag becomes zero then that particular Job must be executed.

DOMAIN BASED STORAGE:

The data files uploaded to the cloud by the users are stored in VM's wherein each VM stores a particular type of data i.e, VM 's are analysed and programmed to store Domain wise, Unlike the present system wherein data is stored in anywhere which can accommodate it. By implementing the Domain Based Storage , the efficiency of retrieval and storage of files into the cloud is much faster as Server need not search the entire cloud for the whereabouts of the file instead it directly goes to respective domain and hence finds it. Therefore it increases the rate of upload and retrieval of files to and from the cloud.

With the implementation of Domain Based Storage , User Files are encrypted directly on the local host and uploaded into the cloud , with the decryption keys for the same stored in the meta-data of the local host , thereby minimizing or eliminating the interference of Cloud Service Providers on the encryption mechanism,

thereby by bolstering the safety quotient of the cloud storage

CLOUD STORAGE:

After the Encryption of the User data files , the encrypted files are uploaded into the Cloud Server. Normally Cloud Servers are maintained by CSP's. In public clouds there is a greater risk of data/ information to be stolen or misused, while we use a public cloud provider called CloudMe for storage we used AES encryption and DBSP to resolve the security issue.

ANT COLONY OPTIMIZATION:

Ant Colony Algorithm depends on the wonder of working of natural ants, wherein for their every day complex undertakings are conveyed as an aggregate of number of different straightforward assignments. Essentially here Ant Colony Algorithm is executed to streamline the errand of seeing free resources for the activity as planned in a split second in order to improve the general usefulness and effectiveness of the venture. The calculation is actualized to guarantee the quicker correspondence through shared assets so that when the job is in queue it gets allocated to suitable VM.

V. CONCLUSION

Implemented model develops a novel system to handle the Cloud data owner requests and to provide response without congestion using efficient load-balancing algorithm. Hence by implementing the Domain Specific Storage we are able to identify which specific domain is being accessed frequently by the users and the cloud data owner to accommodate the VM capacity respectively.

Also we provided an option for the user to choose the Pricing Scheme based on the users' requirements and usage, so that they won't have to be shelling out their money for the unused Storage or unused Time.

REFERENCES

[1] A Survey on Resource Scheduling Algorithms in Cloud Computing by Shweta Varshney, Sarvpal Singh in 2018

[2] Resource Management and Scheduling in Cloud EnvironmentVignesh

V, Sendhil Kumar KS, Jaisankar N2013

[3] DIFFERENT TASK SCHEDULING ALGORITHMS IN CLOUD COMPUTING by Amandeep Kaur & Dr. Raman Maini in 2015

[4] AN IMPROVED SJF SCHEDULING ALGORITHM IN CLOUD COMPUTING ENVIRONMENT BY MOKHTAR A. ALWORAFI ; ATYAF DHARI ; ASMA A. AL-HASHMI ; A. BASIT DAREM ; SURESHA IN 2016

[5] An Efficient Hybrid SJF and Priority based Scheduling of Jobs in

Cloud Computing by Devanshu Tiwari, Prof. Damodar Tiwari in 2014

[6] R. Ren and X. Tang. Clairvoyant dynamic bin packing for job scheduling with minimum server usage time. In Proceedings of the 28th ACM Symposium on Parallelism in Algorithms and Architectures, pages 227–237. ACM, 2016.

[7] Chang, S. Khuller, and K. Mukherjee. LP rounding and combinatorial algorithms for minimizing active and busy time. Journal of Scheduling, 20(6):657–680, 2017.

[8] An analysis of data storage and retrieval of file format system R.

Mariappan and B. Parthasarathy -2009

[9] R. Khandekar, B. Schieber, H. Shachnai, and T. Tamir. Real-time scheduling to minimize machine busy times. Journal of Scheduling,

[10] 18(6):561–573, 2015.