Comparative Analysis and Evaluation of Load Balancing Algorithms

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ABSTRACT

In today's environment the challenging task within cloud computing is to distribute workload among all arriving requests and also balancing those requests. To improve entire system performance, a broker policy has been taken into addition which distributes workload equally with different datacenters in computing environment. A different VM load balancing algorithms will be compared along with different data center broker policies. A cloud analyst simulator, simulate these approaches and final results will be evaluated on several parameters. It covers all the feasible simulations and results will specify the finest possible combinations.

Keywords

Cloud Computing, Virtual machines, Load balancing, Broker policy, Performance Evaluation

1. INTRODUCTION

Cloud computing is a computing system where communication takes place between thousands of computer systems to fulfill the user's needs, where user feels that as if he/she using a particular large resource. Cloud computing gives a larger number of computing assets, applications, storage for huge quantity of data and many more. The idea behind Cloud Computing is to give secured, speedy and suitable data storage and figuring organizations. [3]

Cloud computing mainly focuses to give maximum numbers of shared resources and support for user requests in actual time. The cloud services are of three classes: Infrastructure asa-Service (IaaS), Platform-as-a-Service (PaaS) and Softwareas-a-Service (SaaS).The key disadvantage is its redundant power utilization, enormous quantity of energy loss and higher infrastructure cost.

1.1 Load Balancing in Cloud Computing

To perform load balancing, various algorithms were proposed. Load Balancing is a method which redistributes the workload with system nodes, to improve resource consumption and system performance. Load Balancing is taken in to account so that all virtual machine gets equal quantity of workload which increases throughput and reduces response time. Load balancing is a technique that helped systems and assets by giving a maximum throughput and less response time. Load balancing separates the traffic between all servers, so information can be sent and get back immediately with load balancing[10].

2. LITERATURE SURVEY

Authors in [4] discussed about architecture plan of cloud computing where cloud computing framework are divided in to two parts that is front-end & back-end. Both are connected through the internet. Front end is the thing that is visible to users and back end is for cloud framework. Front end consist S. G. Kulkarni Department of Computer Science and Engineering KLS Gogte Institute of Technology Belagavi, Karnataka, India

of client's computer accessed by the cloud, where as back end gives the 'cloud computing services' like storage, computers etc. Author also discussed about the services and layers provided by cloud computing design which are Software as a Service, Platform as a Service, and Infrastructure as a Service. And also some issues related to privacy, security, reliability etc

Authors in [6] depict the key ideas of cloud computing, administrations offered, & its key constituents, capacities given by the cloud, and furthermore checked on some current load balancing algorithms which will be trained on cloud [6]. The closed-form solution for smallest amount of estimation & announcing time for single level tree systems with various load balancing techniques were likewise examined. The implementation of these systems as for the planning and impact of link & evaluation speed were studied.

Authors in [10] studied the art of load balancing in cloud computing. They build up the art of load balancing for cloud computing, giving a meaning of this term, its characterization and cases of its execution in established disseminated frameworks.

In [7] author proposed algorithms called Join-Idle-Queue for distributed load balancing in extensive frameworks constrain. This algorithm gives better outcomes for system load. It produces 30-fold diminish in lining overhead when contrasted with Power-of-Two at medium to high load.

In [11] author discussed the distinctive type of long availability applications, which are progressively well known these days in distributed computing. An enhanced algorithm is projected based on weighted least connection algorithm. The new algorithm measures the load & power, and single exponential smoothing forecasting is included. At long last, the article demonstrates by examinations that the new algorithm can decrease the server stack tilt, & enhance customer benefit quality adequately.

Authors in [5] discussed Load Balancing Strategy of Cloud Computing on Artificial Bee Algorithm, is a technique based on gathering performance of honeybee. Through impression of conduct of honeybees, it improves the measure of nectar to achieve the most extreme throughput.

In [12] Author discussed about the tool called Cloud-Analyst. Cloud analyst is used to study the performance of social application which is put up on cloud. It is the newer edition of CloudSim.

In [9] authors have discussed lots of load balancing algorithm which are circular robin algorithm, imperative queuing algorithm and Randomized algorithm, their investigation is connected on MIPS vs. VM and MIPS versus HOST ground work. Their result demonstrate that these calculations can no doubt fortify the response time all together of greatness, with appreciate to amount of VMs in Datacenter. Execution judgment of the impersonation demonstrates that the change of MIPS will affect the response time. Expanding MIPS versus VM reducing the response time.

In [13] authors addressed execution of three load balancing algorithms examined the inadequacies and researched why it is unrealistic to have Centralized Scheduling policy during the cloud condition. Author inspected three possible solutions which are Honeybee Foraging Behaviour algorithm, Random Sampling algorithm and Active Clustering algorithm proposed for load balancing.

In [14] authors made study on Modified Throttled algorithmwhich protects a list table of virtual machines. An effort has been taken to recover response time & achieve viable use of virtual machines. The proposed agenda utilizes a technique for picking a VM for handling out client's demand where, VM at first list is principally assigned relying on the condition of the VM. In the event that the VM is existing, it is allocated with the demand & id of VM is returned to Data Center, else - 1 is returned.

In [15] author made comparison of two load balancing algorithms that is Round Robin and Throttled algorithm. In this swot Round Robin and Throttled algorithm were used with Optimize Response Time Service Broker Policy and simulation is done to calculate overall response time, datacenter processing time & total data transfer cost. After performing simulation, Throttled algorithm with Optimized Response Time policy had improved performance when compared with round robin In [16] author made study on four different load balancing algorithms. The performance of Round Robin, Throttled, Execution Load and FCFS algorithms was compared on the basis of average response time, average datacenter request servicing time and cost. According to simulation results, it says that round robin has best performance.

3. OBJECTIVE

To perform load balancing, various algorithms were proposed. All previous algorithms focused on balancing the load in datacenters. Balancing the load between datacenters is so effectual that it distributes the workload equally among datacenters which is approved by datacenter brokers and simulates this approach appropriately. The proposed system consists of two stages in load balancing system the first policy is CloudAppServiceBroker which manages routing from users to datacenters. The three datacenter policies are Closest datacenter. Optimize Response Time, ReconfigP dynamically with load. The second is provided by VM load balancing algorithms. Three common algorithms are Round Robin, Throttled, and ESCE which will be compared with these three policies. A Cloud Analyst simulates these approaches and results will be on different Parameters which are Overall Response Time, Datacenter Processing Time etc. It mainly focuses to get better response time for respective algorithms. The result will specify the finest possible solution. The further part will be discussed on simulated scenario and broker policy.

4. SYSTEM MODEL



Fig 1: Load Balancing Approaches used in Cloud Analyst

4.1 Round Robin Algorithm

Round Robin is one of the commonly used algorithms which utilize the control called time cuts. It designates the solicitations in a round manner to the current virtual machine without considering the current load on the machine. The downside of this algorithm is that it takes a great response time which will bring down system performance.

4.2 Throttled Algorithm

Throttled algorithm starts by appointing appropriate virtual machine when customers send demand to load balancer. This

VM load balancing algorithm confines the quantity of solicitations being prepared in each virtual machine to a throttling edge. The primary part of throttled load balancer is to care for a file table of all virtual machine together with their states delineating occupied and accessible mode. If the customer demands making this limit be surpassed in all accessible virtual machines, load balancer returns - 1 and datacenter lines the demand until a virtual machine is accessible.

4.3 Equally Spread Current Execution Algorithm

Equally Spread Current Execution algorithm adjusts the assignments among accessible VM's in an approach to try and out the quantity of dynamic errands at any given time on each VM. ESCE depends on system workload priorities. By inspecting the size, ESCE arbitrarily distributes workload and will transfer the stack to the available virtual machine which has fewer loads. It searches for the virtual machine which has less no of allocation so that all virtual machine is equally distributed among the Vm's.

5. IMPLEMENTATION DETAILS

In the experimental part a cloud analyst tool has been used to evaluate three algorithms which are Round Robin, Throttled and Equally Spread Current Execution. Simulation is done for six userbase with same or different regions for each user. In this simulation four datacenters are taken into addition which is named as DC1, DC2, DC3, and DC4. Cloud Analyst is open resource toolkit which simulates and evaluates various cloud services. Cloud analyst allows modeller to simulate simple experiments with a little variation in parameters in a swift way. Cloud analyst is equipped with a feature called GUI. It is an extended version of CloudSim.

The experimental part consists of detailed information about simulated scenario and datacenter broker policies.

5.1 Simulated Scenario

Figure 2 shows the simulated picture in CloudAnalyst simulator. Datacenter 1 is placed on R0 but has no userbase in R0. There is no datacenter placed in R1 but has one userbase, where R4 has datacenter 2 and one userbase. R2 has no datacenter and no userbase where R5 has only one userbase and no datacenter .By this type of scenario it simulate all possible ways for simulation process.

5.2 Datacenter Broker Policies

Three datacenter broker policies will be introduced in Cloud Analyst Simulator. First policy, Closest Data Center policy which routes the traffic to nearest datacenter from userbase. Second policy, Optimize Response Time policy defines the time occupied to send data from userbase to datacenter. Third policy, Reconfigure Dynamically with Load will share the load with different datacenter's when the presentation of datacenter degrades above the doorsill value.



Fig 2: Cloud Analyst



Fig 3:Main Configuration

The above fig shows the configuration simulation consisting of simulation duration, userbases and application deployment configuration. In Simulation Duration, it defines the interval taken by the simulation which is in mins, hours and days. Userbases table define a no of users along with their regions, request per user, data size per request etc. In Application deployment configuration, service broker policy provides 3 different policies namely closest datacenter, optimize response time and reconfigure with dynamically with load to be chosen. It also contains the details of the data like storage size, memory, bandwidth and virtual machines owed to each datacenter.



Fig 4 :Datacenter Configuration

Fig shows the datacenter configuration which defines a list of datacenters with the information like regions, OS, VMM, Cost per VMM, Storage cost etc.It also provide the details of the physical hardware of the datacenters with the information like Id,Memory,Storage, No of processors etc.

6. RESULTS AND DISCUSSION

In this three algorithms are compared with different policies. After Performing Simulation, results will show which policy is best for which algorithm and also calculates the average response time by region, overall response time and data center processing time.

6.1 Closest Datacenter Policy

The ClosestP policy simulates all three algorithms RR, Throttled, ESCE. Below Figure illustrates the complete details of userbase and datacenter which displays the average response time of all the userbases and datacenters.

verall Response T	me Sumn	nary				
	Average (ms)	Minimum (ms)	Maximum (ms)			Export Results
verall Response Time:	301.96	237.80	398.53		_	
ata Center Processing Time:	1.39	0.79	2.04			
esponse Time By Regio	n					
Lesponse Time By Regio	n	Avg (ms)		Min (ms)	Ma	x (ms)
Lesponse Time By Regio Userbase JB1	n	Avg (ms) 297	.056	Min (ms) 254.53	Ma	x (ms) 332.82
Lesponse Time By Regic Userbase JB1 JB2	on 	Avg (ms) 297 304	.056	Min (ms) 254.53 266.569	Ma	x (ms) 332.82 355.271
Userbase Userbase JB1 JB2 JB3		Avg (ms) 297 304 300	.056 .853 .961	Min (ms) 254.53 266.569 264.948	Ma	x (ms) 332.82 355.271 344.437
Userbase Userbase JB1 JB2 JB3 JB4		Avg (ms) 297 304 300 301	.056 .853 .961 .375	Min (ms) 254.53 266.569 264.948 237.805	Ma	x (ms) 332.82 355.271 344.437 368.945
Userbase Userbase 181 183 183 184 184	on 	Avg (ms) 297 304 300 301 301	.056 .853 .961 .375 .713	Min (ms) 254.53 266.569 264.948 237.805 255.986	Ma	x (ms) 332.82 355.271 344.437 368.945 398.527

Figure 5:Response Time by Region(Avg ms under closest policy for Round Robin)

	Average (ms)	Minimum (ms) Mi	aximum (ms)	Export Results
Overall Response Time:	301.95	237.80 39	98.78	
Data Center Processing Time:	1.39	0.82 2.0	04	
Response Time By Regio	in			
Response Time By Regio	in	Avg (ms)	Min (ms)	Max (ms)
Response Time By Regic Userbase UB1	in	Avg (ms) 297.08	Min (ms) 38 254.53	Max (ms) 332.56
Response Time By Regic Userbase UB1 UB2	n 	Avg (ms) 297.08 303.69	Min (ms) 38 254.53 36 266.569	Max (ms) 332.56 355.271
Response Time By Regic Userbase UB1 UB2 UB3	n	Avg (ms) 297.08 303.69 301.5	Min (ms) 18 254.53 16 266.569 16 264.948	Max (ms) 332.56 355.27 344.667
Response Time By Regic Userbase UB1 UB2 UB3 UB4		Avg (ms) 297.08 303.69 301.50 301.50	Min (ms) 18 254.53 16 266.569 16 264.948 16 237.805	Max (ms) 332.56 355.271 344.667 386.682
Response Time By Regic Userbase UB1 UB2 UB3 UB4 UB5	n 	Avg (ms) 297.08 303.69 301.5 301.5 303.50	Min (ms) 18 254.53 16 266.569 16 264.944 16 237.805 11 2255.986	Max (ms) 332 56 365 271 344 667 368 663 398 76

Figure 6: Response Time by Region(Avg ms under closest policy for Throttled

	Average (ms)	Minimum (ms) Ma	aximum (ms)		Export Results
Overall Response Time:	301.97	238.00 39	98.78		
Data Center Processing Time:	1.40	0.81 2.0	04		
Response Time By Regio	n				
Response Time By Regio	on ,	Avg (ms)	• Min (r	ms)	Max (ms)
Response Time By Regio Userbase UB1	on ,	Avg (ms) 298.01	• Min (1	ms)	Max (ms) 368.75
Response Time By Regio Userbase UB1 UB2) 	Avg (ms) 298.01 303.7	• Min (1 15	ms) 254.53 266.569	Max (ms) 368.75 355.27
Response Time By Regio Userbase UB1 UB2 UB3) ()	Avg (ms) 298.01 303.7 301.76	• 15 76 34	ms) 254.53 266.569 264.948	Max (ms) 368.75 355.27 344.66
Response Time By Regic Userbase UB1 UB2 UB3 UB4) 	Avg (ms) 298.01 303.7 301.76 299.86	• 15 76 84 38	ms) 254.53 266.569 264.948 238.002	Max (ms) 368.75 355.27 344.66 358.13
Userbase Userbase UB1 UB2 UB3 UB4 UB4	on () () () () () () () () () () () () () (Avg (ms) 298.01 303.7 301.76 299.86 304.0	• 15 76 54 38 35	ms) 254.53 266.569 264.948 238.002 256.229	Max (ms) 368.75 356.27 344.66 358.13 358.13 338.7

Figure 7: Response Time by Region(Avg ms under closest policy for ESCE)

6.2 **Optimize Response Time Policy(Optp)**

The OptP policy simulates all three algorithms RR, Throttled, ESCE. Below Figure illustrates the complete details of userbase and datacenter which displays the average response time of all the userbases and datacenters.

	Average (ms)	Minimum (ms)	Maximum (ms)		Export Results
Overall Response Time:	299.96	235.11	380.88		
Data Center Processing Time:	1.39	0.77	2.04		
Response Time By Regio	n				
Response Time By Regio	n	Avg (ms)		Min (ms)	Max (ms)
Userbase	n	Avg (ms) 297	.181	Min (ms) 247.257	Max (ms) 338.557
Userbase Userbase UB1 UB2	on 	Avg (ms) 297 299	.181	Min (ms) 247.257 265.421	Max (ms) 338.557 350.692
Userbase Userbase UB1 UB2 UB3		Avg (ms) 297 299 293	.181 .731 .547	Min (ms) 247.257 265.421 235.105	Max (ms) 338.557 350.692 344.876
Userbase Userbase UB1 UB2 UB3 UB4		Avg (ms) 297 299 293 30	.181 .731 .547 0.28	Min (ms) 247.257 265.421 235.105 260.67	Max (ms) 338.557 350.892 344.876 341.834
Userbase UB1 UB2 UB3 UB4 UB5	2000	Aug (ms) 297 299 293 30 301	.181 .731 .547 0.28 .836	Min (ms) 247.257 265.421 235.105 260.67 242.756	Max (ms) 338.557 350.692 344.876 344.876 348.834 348.834 380.881

Figure 8: Response Time by Region(Avg ms under optp policy for Round Robin)

	Average (ms)	Minimum (ms)	Maximum (ms)		Export Results
Overall Response Time:	299.96	234.89	380.61		
)ata Center Processing Time:	1.38	0.77	2.04		
Response Time By Regio	n				
Response Time By Regio	n	Avg (ms)		Min (ms)	Max (ms)
Response Time By Regio Userbase JB1	on 	Avg (ms) 29	5.91	Min (ms) 247.009	Max (ms) 338.817
Response Time By Regio Userbase JB1 JB2	n	Avg (ms) 29: 301.	5.91	Min (ms) 247.009 265.141	Max (ms) 338.817 353.719
Response Time By Regio Userbase JB1 JB2 JB3	on 	Avg (ms) 29: 301. 293.	5.91 144 343	Min (ms) 247.009 265.141 234.888	Max (ms) 338.817 353.719 330.936
Response Time By Regio Userbase JB1 JB2 JB3 JB4		Avg (ms) 29: 301. 293. 301.	5.91 144 .343 .642	Min (ms) 247.009 265.141 234.888 260.953	Max (ms) 338.817 353.719 330.936 341.834
Response Time By Regio Userbase UB1 JB2 JB3 JB4 JB5	n 	Avg (ms) 29: 301. 293. 301. 302.	5.91 144 343 642 622	Min (ms) 247.009 265.141 234.888 260.953 242.509	Max (ms) 338.817 353.719 330.936 341.834 380.609

Figure 9: Response Time by Region(Avg ms under optp policy for Throttled)

	Average (ms) Minimum (ms)	Maximum (ms)	Export Results
Overall Response Time:	299.95 234.89	380.88	
Data Center Processing Time:	1.38 0.77	2.04	
Connence Time By Regis			
Response Time By Regio	n		
Response Time By Regio	Avg (ms)	Min (ms)	Max (ms)
Userbase	Avg (ms) 296	Min (ms) 535 247.0	Max (ms) 19 338.557
Userbase Userbase JB1 JB2	Avg (ms) 296 301	Min (ms) 535 247.00 779 265.42	Max (ms) 338.557 21 371.734
Response Time By Regic Userbase JB1 JB2 JB3	Avg (ms) 296 301 293	Min (ms) 535 247.00 779 265.43 532 223.48	Max (ms) 9 338.557 21 371.734 8 344.876
Response Time By Regic Userbase UB1 UB2 UB3 UB4	Avg (ms) 296 301 293 301 301	Min (ms) 535 247.00 779 265.42 532 234.83 583 260.0	Max(ms) 19 338.557 19 371.734 18 344.874 17 344.824
Response Time By Regic Userbase UB1 UB2 UB3 UB4 UB5	Avg (ms) 296 301 293 301 300 3	Min (ms) 535 247.01 779 265.42 532 234.88 593 260.1 545 242.75	Max (ms) 9 338.557 21 371.734 18 344.876 37 344.837 36 380.881

User Rase Hourly Average Response Times

Figure 10: Response Time by Region(Avg ms under optp policy for ESCE)

6.3 Equally Spread Current Execution Load Policy(ESCE)

The ReconfigP policy simulates all three algorithms RR, Throttled, ESCE. Below Figure illustrates the complete details of userbase and datacenter which displays the average response time of all the userbases and datacenters.

overall Response Ti	ime Sumn	nary			
	Average (ms)	Minimum (ms)	Maximum (ms)		Export Results
Overall Response Time:	306.48	239.38	398.53		
Data Center Processing Time:	5.93	0.86	18.62		
Response Time By Regio	'n				
Response Time By Regio	n	Ava (ms)	N	lin (ms)	Max (ms)
Response Time By Regio Userbase JB1	n	Avg (ms) 302	.088	lin (ms) 262.358	Max (ms) 368.511
Response Time By Regio Userbase JB1 JB2		Avg (ms) 302 308	.088 .669	lin (ms) 262.358 268.669	Max (ms) 368.511 360.866
Response Time By Regic Userbase JB1 JB2 JB3		Avg (ms) 302 308 305	088 669 638	lin (ms) 262.358 268.669 264.948	Max (ms) 368.511 300.866 346.507
Userbase Userbase JB1 JB2 JB3 JB4	on 	Avg (ms) 302 308 305 305	088 1669 1638	lin (ms) 262.358 268.669 264.948 239.383	Max (ms) 368.511 360.866 346.507 358.686
Userbase Userbase JB1 JB2 JB3 JB4 JB5	on 	Avg (ms) 302 308 305 305 305 307	N 1088 1669 1638 1058 1383	lin (ms) 262,358 268,669 264,948 239,383 257,682	Max (ms) 368.511 360.866 346.507 358.686 396.527

Figure 11: Response Time by Region(Avg ms under Reconfigp policy for Round Robin)

Overall Response Time Summary

Overall Response Time:	Average (ms) 308.07	Minimum (ms) N 239.38 3	Naximum (ms) 199.03		Export Results
Data Center Processing Time:	7.51	0.85 1	18.51		
Response Time By Regio	n	ton for all	Her for all		Harrison
Userbase	n	Avg (ms)	Min (ms)	000.050	Max (ms)
Userbase USerbase	n	Avg (ms) 303.	Min (ms)	262.358	Max (ms) 345.3
Userbase Userbase JB1 JB2		Avg (ms) 303. 309.7	Min (ms) 75 68	262.358 266.361	Max (ms) 345.3 365.771
Userbase Userbase JB1 JB2 JB3		Avg (ms) 303. 309.7 307.0	Min (ms)	262.358 266.361 265.181	Max (ms) 345.3 365.771 352.717
Userbase Userbase JB1 JB2 JB3 JB4		Avg (ms) 303 309.7 307.0 307.7	Min (ms)	262.358 266.361 265.181 239.385	Max (ms) 345.3 365.771 352.711 368.945
Userbase Userbase JB1 JB2 JB3 JB4 JB5		Avg (ms) 303. 309.7 307.0 307.7 309.2	Min (ms) 75 68 006 22 29	262.358 266.361 265.181 239.385 262.776	Max (ms) 345.3 365.771 358.717 368.945 399.03

Figure 12: Response Time by Region(Avg ms under Reconfigp policy for Throttled)

Overall Response Ti	me Sumn	nary			
	Average (ms)	Minimum (ms)	Maximum (ms)		Export Results
Overall Response Time:	306.65	238.59	398.78		
Data Center Processing Time:	6.10	0.85	17.52		
Response Time By Regic	'n	Avg (ms)		Min (ms)	Max (ms)
Response Time By Regic Userbase UB1	in	Avg (ms)	101.5	Min (ms) 262.61	Max (ms) 345.3
Response Time By Regic Userbase UB1 UB2	in	Avg (ms) 308	01.5	Min (ms) 262.61 266.361	Max (ms) 345. 365.08
Response Time By Regic Userbase UB1 UB2 UB3	in 	Avg (ms) 308 308 308	01.5 .616 .238	Min (ms) 262.61 266.361 265.413	Max (ms) 345. 365.083 352.711

Figure 13: Response Time by Region(Avg ms under Reconfigp policy for ESCE)

309.001

UB6

257.439

358.722



Figure 14:Graph under ClosestP

The above graph shows the comparison of load balancing algorithms with datacenter broker policy ClosestP. After performing simulation, Throttled algorithm shows minimum average response time under closest p compared to other algorithms.



Figure 15: Graph Under OptP

The graph shows the comparison of load balancing algorithms with datacenter broker policy OptP. After performing simulation, Throttled algorithm shows minimum average response time under OptP when compared with other algorithms.



Figure 16:Graph Under ESCE

The graph shows the comparison of load balancing algorithms with datacenter broker policy ReconfigP. After performing simulation, RR algorithm shows 'minimum average response time' under ReconfigP when compared with other algorithms.

Table 1-	Comparison	among load	balancing	policies
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VM Load balancing algorithm	Best Policy	Avg Response Time(ms) (Simulation Result)
Round Robin	ReconfigP	306.46
Throttled	Closest Data center policy, optimize response time	301.94 299.91
ESCE	Closest Data center policy	301.94

The above table shows the performance factors of load balancing algorithms with different policies. The desk shows that RR algorithm is best for ReconfigP policy; Similarly, Throttled algorithm shows the best average response time for ClosestP and for optimize response time. The ClosestP policy is best policy for ESCE algorithm.

 Table 2- Performance factors of load balancing algorithms
 (For Overall Response time and Data processing time)

VM Load Balancing Algorithm	Overall Response Time	Data center processing time
Round Robin	301.96	1.39
Throttled	301.95	1.39
ESCE	301.97	1.40

The above table shows the overall response time and data processing time for Round Robin, Throttled, and ESCE. Throttled algorithm shows better response time when compared with other algorithms.

7. CONCLUSION

The proposed effort mainly focused on implementing and analyzing different load balancing algorithms which are compared with datacenter broker policies. The proposed simulated scenario is used for evaluating performance factors. The performance factors are simulated on cloud analyst. The simulation outcome shows that Throttled algorithm has best average response time" for the policies ClosestP and Optimize Response Time, ESCE algorithm has minimum response time for the policy ClosestP and Round Robin algorithm has ReconfigP as best policy with minimum response time. In this manner three algorithms are compared with three different policies showing that which policy is best for which algorithm. The simulation outcome also shows that Throttled algorithm has improved performance since it uses a threshold value and prevents the virtual machine being overloaded, when compared with other algorithm.

As of future work, it can be expanded by examining these exploratory outcomes by assessing the more VM load balancers in cloud computing and under the diverse situations by considering the more evaluation factor and parameters for having a complete overview

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