

ISSN: 2582-7219



International Journal of Multidisciplinary Research in Science, Engineering and Technology

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)



Impact Factor: 8.206

Volume 8, Issue 6, June 2025

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET) (A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

A Review on Network Load Balancing Approaches in Cloud Computing

Deekshitha B

Department of Computer applications, St Joseph Engineering (Autonomous) College, Vamanjoor, Mangalore, India

ABSTRACT: With only an internet connection, cloud computing allows you to access sophisticated computing resources, such as a supercomputer, from any location in the globe. It's a technical revolution that's changing how traditional methods of data maintenance and application access are done. Load distribution in the cloud has evolved from simple, fundamental methods to adaptable, complex algorithms. This ensures optimal resource use and application performance. Simple load distribution was employed at first, but as cloud computing matured, more sophisticated strategies like auto-scaling and predictive algorithms emerged to distribute resources more effectively, boost performance, and adjust to shifting workloads. Load balancing is essential to cloud computing because it distributes incoming communication or computational activities among multiple servers or resources. This not only guarantees optimal resource use but also prevents individual servers from being overworked. The difficulties in distributing load in diverse computing settings are reviewed in this work and also presented in a tabular format.

KEYWORDS: Algorithms, Approaches, Cloud Computing, Load Balancing, Resources

I. INTRODUCTION

The changing and accessible characteristics of cloud systems has made load balancing important to cloud computing. In traditional technology, applications were hosted on single servers, leading to challenges such as uneven resource utilization and performance bottlenecks. A collection of distributed servers is used to supply services in the cloud, which has increased the demand for successful balance of loads. Cloud platforms handle diverse andfluctuating workloads from various users and applications. By dividing these tasks equally among multiple servers, load balance optimizes the use of resources, avoids system overload, and increases system performance total. To put it briefly load distribution has evolved as a fundamental component of cloud infrastructure, enabling enhanced scalability, resilience, and responsiveness for a wide variety of applications as well as services. In cloud, network load balancing entails strategically splitting of incoming network activity among multiple servers or services to guarantee optimal utilization and performance. The fundamental purpose is to keep preventing any one server from overloading by lot of traffic, avoiding potential bottlenecks and improving overall system stability and responsiveness. Load balance's which are placed between clients and servers, intelligently route requests depending on various algorithms that considers parameters like response times, capacity, and system security. This strategy not only maximize resource efficiency but also improves fault tolerance by shifting workloads in case of server loss.

Network load division is essentially an essential cloud architecture technique that guarantees the high availability, scalability, and stability of cloud-based applications and services. The research articles covered in the context given here address a variety of subjects related to distributed object computing environments, software-defined networking, cloud processing, and the problem of load balancing in distributed systems. In order to solve the issues of load distribution, system performance, and resource usage in heterogeneous computing environments, the study analyzes a variety of load balancing methodologies, algorithms, and systems.

II. LITERATURE REVIEW

[1] The author Moumita Chatterjee and S K Setua, they have focused on A new clustered load balancing approach for distributed systems. The paper proposes a novel clustered load balancing approach specifically designed for distributed systems. It tackles the inherent challenges of load balancing in such systems by emphasizing local balancing to minimize global communication overhead. This approach aims to achieve a scalable and dynamic load balancing solution that is well-suited for heterogeneous distributed systems. One of the key contributions of the paper is the introduction of a 3-tuple load metric that incorporates CPU utilization, memory utilization, queue

ISSN: 2582-7219| www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|International Journal of Multidisciplinary Research in
Science, Engineering and Technology (IJMRSET)
(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

length, and response time to provide a more nuanced assessment of workload. A two-level strategy, organizing the network into domains, efficiently enhances load distribution, minimizing response and completion times in real-world scenariosThe conclusion highlights the algorithm's adaptability to heterogeneous environments, offering a promising solution for distributed load balancing.

- [2] The author Liaqat, M., Naveed, A., Ali, R. L., Shuja, J., & Ko, K. M,they have focused on Characterizing dynamic load balancing in cloud environments using virtual machine deployment models. The primary objective is to characterize dynamic load balancing by addressing limitations in current VM placement schemes The paper evaluates the performance of existing OpenStack schedulers and introduces a load analyzer algorithm for capturing CPU utilization during VM placement. The paper's accomplishments include a multi-resource-based approach to virtual machine placement that improves application performance; an assessment of OpenStack schedulers that highlights the schedulers' inadequacies in taking CPU utilisation into account; the introduction of a useful load analyzer algorithm that optimises VM allocation; and experimental validation of the suggested approach's efficacy in enhancing load distribution and application execution times. The paper concludes by emphasizing the necessity of considering CPU utilization in VM placement for efficient cloud resource management.
- [3] The author Lee, J. B., Yoo, T. H., Lee, E. H., Hwang, B. H., Ahn, S. W., & Cho, C. H, they have discussed on High-performance software load balancer for cloud-native architecture. The main goal of the study is to provide a high-performance software load balancer for cloud-native architecture while concentrating on containerised cloud environments. The algorithm used in the paper is the Maglev hashing mechanism. This algorithm is utilized to arrange the entries in the hash table, supporting minimal disruption and efficient load balancing in the proposed high-performance load balancer architecture. The paper achieves an extensive of cloud technologies, emphasizing containerized environments and load balancers, advocating for automation, efficient deployment, performance considerations and related work. The paper's conclusion explains background research and performance factors to take into account when putting a high-performance software load balancer into a cloud-native architecture.
- [4] The author Nezami, Z., Zamanifar, K., Djemame, K., & Pournaras, E ,they have highted on Decentralized edge-tocloud load balancing: Service placement for the Internet of Things. The paper introduces the EPOS Fog, a multiagent system for IoT service placement, and evaluates its performance against two other approaches: Cloud and First Fit. By creating EPOS Fog, the main goal is to handle load balancing issues in fog computing. This includes minimising service execution costs, distributing workload evenly over the network, and offering a decentralised load-balancing method for IoT service placement. The study concludes by introducing EPOS Fog, a decentralised load balancing strategy for IoT service placement in fog computing, and demonstrating how well it works to balance workloads and reduce service execution costs. The experimental results position EPOS Fog as a promising solution for optimizing fog computing environments, particularly tailored for IoT services.
- [5] The author Shafiq, D. A., Jhanjhi, N. Z., Abdullah, A., & Alzain, M. A., they have focused on A Load Balancing Algorithm for the Data Centres to Optimize Cloud Computing Applications. The paper introduces a Load Balancing Algorithm designed to optimize cloud computing applications, concentrating especially on dynamic load balancing. The paper's main goal is to perform a thorough examination of the current cloud computing load balancing and task scheduling algorithms. In order to enhance the overall performance of cloud applications, the study highlights the need of taking QoS parameters and priority into account while scheduling tasks. The study presents its findings on cloud computing task scheduling and load balancing. In particular, it addresses issues with workload transfer, job rejection, and effective resource allocation. It presents a revolutionary load balancing algorithm created to optimise cloud computing applications. Finally, by offering a load balancing algorithm designed specifically for optimising cloud computing systems, the research offers a substantial contribution.
- [6] The author Wang, S. C., Yan, K. Q., Liao, W. P., & Wang, S. S, they have focused on Towards a load balancing in a three-level cloud computing network. This research presents a two-phase scheduling approach that integrates the concepts of load balance min-min (LBMM) and opportunistic load balancing (OLB) for load balancing in a three-level cloud computing network. The research aims to tackle the difficulties associated with cloud computing by putting forth a sophisticated scheduling technique that facilitates effective load balancing within a three-tier cloud network. The study provides insights into the difficulties and possibilities associated with cloud computing. an innovative two-phase scheduling technique designed to maintain load balancing and maximise resource utilisation

ISSN: 2582-7219| www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|International Journal of Multidisciplinary Research in
Science, Engineering and Technology (IJMRSET)
(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

in a three-tier cloud computing network by combining OLB and LBMM. By suggesting an advanced two- phase scheduling technique for load balancing in a three-level cloud computing network, the research concludes with a significant contribution.

- [7] The author Marc H. Willebeek-LeMair and Anthony P. Reeves. They have focused on Strategies for Dynamic Load Balancing on Highly Parallel Computers. The paper introduces five dynamic load balancing strategies: Sender Initiated Diffusion (SID), Receiver Initiated Diffusion (RID), Hierarchical Balancing Method (HBM), Gradient Model (GM), and Dimension Exchange Method (DEM). The main objective of the article focused on dynamic load balancing solutions was to reduce the execution time of individual programmes that are running concurrently on multicomputer systems. In addition to evaluating the effects of task granularity and system size, the research achieves an in-depth analysis of five dynamic load balancing strategies of analysis of five approaches.
- [8] The author Lap-Sun Cheung. The paper have focused on A Fuzzy Approach to Load Balancing in a Distributed Object Computing Network. The paper introduces Fuzzy logic as a paradigm for load balancing in distributed computing environments. The primary purpose of the paper is on the application of fuzzy logic in load balancing within distributed computing environments, particularly emphasizing its relevance in distributed object computing (DOC) networks. The author suggests a dynamic fuzzy load balancing service and discusses the difficulties brought on by global state uncertainty in DOC contexts. The overall achievements of the paper explores fuzzy logic's application in load balancing, emphasizing its significance in DOC environments, introducing it as a powerful paradigm, and proposing a dynamic load balancing service. In conclusion, the paper provides a valuable exploration of fuzzy logic's application in load balancing within distributed computing, especially in distributed object computing networks.
- [9] The author Al-Tam and N. Correia. They have focused on Load Balancing via Switch Migration in Software-Defined Networking. In order to handle the switch migration problem for load balancing in software-defined networking (SDN), the research presents a heuristic technique with solution shaking. The main goal is to point out the shortcomings and stress the importance of finding a productive and well-managed way to deal with the difficulties associated with load balancing in SDN through switch migration. In this study, load balancing via switch migration in SDN is comprehensively analysed, along with its drawbacks. The research concludes by providing an examination of load balancing via switch migration in SDN, along with a list of constraints and gaps that have been found.
- [10] The author Barker, K., Chernikov, A., Chrisochoides, N., & Pingali, K. They have focused on A load balancing framework for adaptive and asynchronous applications. The work stealing scheduler technique is used by the study to test and assess the runtime software system and load balancing framework that it proposes. Evaluating the performance of the runtime software system and load balancing framework for adaptive and asynchronous applications is the main goal of using the Work Stealing Scheduler technique. One of the paper's main accomplishments is the methodical choice of the Work Stealing Scheduler as the algorithm for analysing the load balancing structure, which demonstrates a concentrated attempt to evaluate the system's performance in relation to this scheduler. The careful choice of the Work Stealing Scheduler as the method for analysing the load balancing framework is one of the paper's major accomplishments; it demonstrates a concentrated attempt to evaluate the system's performance under conditions related to this scheduler. Through comparison analysis with various load balancing methods, the paper highlights the effectiveness of the proposed framework in achieving superior load balancing results. The paper also achieves a thorough performance evaluation of the proposed load balancing framework and runtime software system, with a critical emphasis on the specific context of a three- dimensional tetrahedral advancing front parallel traffic load balancing by introducing robust methods that minimize worst-case performance and consider estimation errors effectively. The study investigates possible trade-offs between robustness and average link utilisation while utilising Cramer-Rao lower bounds for variance and covariance estimation. The conclusion of the paper may emphasize the effectiveness of the introduced Robust and Bounded Robust methods in enhancing network traffic load balancing, especially in comparison to traditional methods [12] The author Zhang, H., & Guo, X. They have focused on "SDN-based load balancing strategy for server cluster". The paper introduces and implements two load balancing algorithms within the context of the latest Software Defined Networking (SDN) architecture. First, there is OpenFlow Round- Robin, a static load balancing

ISSN: 2582-7219| www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|International Journal of Multidisciplinary Research in
Science, Engineering and Technology (IJMRSET)
(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

technique; second, there is OpenFlow Least-Connections, a dynamic load balancing algorithm. The research aims to tackle the problem of load imbalance in server clusters through the implementation and assessment of two SDN-based load balancing methods. The implementation of two load balancing algorithms, OpenFlow Round-Robin and OpenFlow Least-Connections, in the most recent SDN network architecture is a major accomplishment for the paper, and it makes a significant contribution to the practical use of SDN-based load balancing strategies. The study concludes by effectively illustrating the use and assessment of SDN-based load balancing techniques and highlighting the better efficacy of the dynamic approach (OpenFlow Least- Connections) in attaining improved load balancing and overall server cluster performance.

- [11] The author Tang, F., Yang, L. T., Tang, C., Li, J., & Guo, M.They have focused on A dynamical and load-balanced flow scheduling approach for big data centers in clouds. The study presents a novel solution for global load balancing in data centre networks: dynamic load-balanced scheduling, or DLBS. The paper's main goal is to analyse data centre mesh generator. The conclusion of the paper likely summarizes how well the system performed under the Work Stealing Scheduler and other load balancing methods, emphasizing the achievements and potential implications of the study.
- [12] The author Ilmari Juva have focused on paper Robust Load Balancing .The paper introduces two novel techniques: the Robust method and the Bounded Robust method. The goal is to enhance network
- [13] network flow scheduling, with a focus on OpenFlow-based and cloud data center-oriented resource scheduling. The report presents its findings on load balancing and flow scheduling in data centre networks. In conclusion, the study contributes to the field's growth by demonstrating the importance of DLBS in attaining dynamic and load-balanced flow scheduling in large data centres.
- [14] The author Li, J., Chang, X., Ren, Y., Zhang, Z., & Wang, G.. They have focused on "An Effective Path Load Balancing Mechanism Based on SDN. The paper discuss about scalable load balancing algorithms, and load balancing systems based on OpenFlow technology within the context of Software Defined Networking (SDN). The paper aims to explores various technologies related to path load balancing, providing insights into the challenges, limitations, and potential of SDN in implementing effective path load balancing mechanisms. The paper achieves path load balancing in SDN, scalable load balancing algorithms, load balancer architectures, and systems based on OpenFlow technology. In conclusion, the paper establishes the potential of SDN in implementing effective path load balancing mechanisms globally, setting the groundwork for future advancements in the field.
- [15] The author Ravibabu, P., Venkatesh, K., & Kumar, C. S. The paper "Implementation of Genetic Algorithm for Optimal Network Reconfiguration in Distribution Systems for Load Balancing". The purpose of this research is to investigate the application of evolutionary algorithms to load balancing in distribution systems in order to achieve optimal network reconfiguration. It emphasises how power engineering issues like unit commitment, load shedding, and optimal power flow can be solved by genetic algorithms. The focus of the study is on finding solutions for load shedding, unit commitment, feeder reconfiguration, optimal power flow, and load balancing.the paper discusses the problem formulation and highlights the effectiveness of genetic algorithms in minimizing line losses and achieving load balancing in distribution systems. In conclusion, the paper provides a detail on the application of genetic algorithms for optimal network reconfiguration in distribution systems, specifically targeting load balancing

REVIEW TABLE

AUTHOR	ALGORITHM	REMARK	ADVANTAGE	DISADVANTAGE
Moumita	Clustered Load	It proposes 2-level load	Effective workload distribution	Increased complexity
Chatterjee and S	Balancing (CLB)	balancing for distributed	in heterogeneous environments,	and communication
K Setua		systems, optimizing	optimizing local balancing.	overhead, potentially
		global		impacting scalability in
		performance.		large systems.

© 2025 IJMRSET | Volume 8, Issue 6, June 2025|

DOI:10.15680/IJMRSET.2025.0806089

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Misbah Liaqat,	Load Analyzer	The paper enhances	The proposed multi-resource	Existing schedulers lack
Anjum Naveed,		OpenStack VM	VM placement approach	consideration for CPU
Rana Liaqat Ali,		placement,	improves application	utilization during VM
Junaid Shuja, and	L	optimizing CPU for	performance by considering	deployment,
KwangMan		improved performance	CPU utilization and load	emphasizing the need
Ko.			distribution, demonstrating	for improved load
			more efficient cloud resource	balancing strategies in
			management.	cloud environments.

Jung-Bok Lee, Tae-Hee Yoo, Eo- Hyung Lee, Byeong- Ha Hwang, Sung-Won Ahn, and Choong-Hee Cho	The Maglev hashed-based consistent hashing algorithm.	The paper showcases a high-throughput load balancer for cloud- native environments.	Quick deployment time (less than 3 seconds) facilitates efficient scaling and management of cloud resources.	Potential need for container image size optimization to further reduce deployment time, as the current size may affect the speed of deployment.
Zeinab Nezami, Kamran Zamanifar, Karim Djemame, and Evangelos Pournaras.	Cloud and First Fit.	The paper introduces EPOS Fog, a decentralized approach for IoT load balancing, emphasizing improved workload balance and QoS.	EPOS Fog excels in minimizing service execution cost and improving QoS.	Potential overload and higher utilization variance error if local objectives prioritize.
Dalia Abdulkareem Shafiq, Noor Zaman Jhanjhi, Azween Abdullah, and Mohammed A. Alzain.	Load Balancing algorithm.	The paper optimizes cloud applications through a novel load- balancing algorithm.	It improves resource utilization and performance metrics, demonstrating effectiveness in efficient load balancing for cloud computing applications.	While the document highlights the algorithm's performance, it may not extensively discuss potential limitations or scenarios where the algorithm might be less effective.

Shu-Ching Wang,	A two-phase	The paper introduces a	Integrated OLB and LBMM	Potential for
Kuo- Qin Yan,	scheduling	two-phase scheduling	enhance load balancing and	inadequate
Wen-Pin Liao and	algorithm that	algorithm, combining	resource utilization efficiency.	consideration of
Shun-	combines	OLB and LBMM, for		current node loads,
Sheng Wang	Opportunistic Load	efficient load balancing		risking
	Balancing (OLB)	in a dynamic three-level		imbalances.
	and Load Balance	cloud computing		
	Min- Min	network.		
	(LBMM)			
	scheduling.			

© 2025 IJMRSET | Volume 8, Issue 6, June 2025|

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Marc H.	The five dynamic	The document analyzes	Dynamic load balancing	Complexity,
WillebeekLeMair and	load balancing	DLB strategies,	strategies analysis.	communication
Anthony P.	(DLB)	emphasizing accuracy	,	overhead, system
Reeves.	strategies: Sender	versus		size.
	Initiated Diffusion	balancing overhead.		
	(SID), Receiver	0		
	Initiated Diffusion			
	(RID),			
	Hierarchical			
	Balancing			
	Method (HBM),			
	Gradient Model			
	(GM), and			
	Dimension			
	Exchange			
	Method (DEM).			
Lap-Sun Cheung	fuzzy logic load	The paper introduces a	The fuzzy logic load	The proposed fuzzy
	balancing	dynamic fuzzy load	balancing system improves	load balancing
	algorithm, a	balancing system for	load distribution and reduces	system may
	prioritized	DOC.	chent response times	thur doning hand
				effect
	round-robin		compared to traditional	causing potential
	algorithm and		approaches	degradation in
	random/load		approaches.	overall system
	distribution, and			performance when
	round-robin load			forwarding all
	distribution			requests to a server
	approaches.			with the highest
				service rank.
F. Al-Tam and	Heuristic algorithm	The paper introduces a	The heuristic algorithm	The computational
N. Correia.		novel heuristic	significantly improves load	complexity varies
		algorithm enhancing	balancing, outperforming	with network size
		SDN load balancing.	existing approaches by up to	and may require
			14% in some scenarios.	tuning for a balance
				between speed and
				accuracy.

Kevin Barker,	Work Stealing	The paper introduces a	The load balancing framework	The system's reliance
Andrey Chernikov,	Scheduler	load balancing	demonstrates	on multithreading
Nikos		framework yielding	significant runtime	may introduce
Chrisochoides, and		significant runtime	improvements in adaptive	complexity, and
Keshav Pingali		improvements.	applications	customization of load
				balancing algorithms
				could
				increase development
				effort.

© 2025 IJMRSET | Volume 8, Issue 6, June 2025|

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206| ESTD Year: 2018|



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Ilmari Juva	"Robust" load balancing method and the extended "Bounded Robust" method.	Innovatively tackles load balancing, emphasizing robustness over diverse traffic matrices	The paper introduces robust load balancing methods, enhancing performance over varied traffic matrices.	The proposed methods, especially Bounded Robust, may be complex for practical implementation.
Hailong Zhang and Xiao Guo	OpenFlow Round- Robin and OpenFlow Least- Connections.	The paper introduces OpenFlow-based load balancing algorithms for efficient server clusters.	OpenFlow-based load balancing replaces expensive hardware, providing cost- effective and flexible cluster operation.	Limited research and development may hinder comprehensive understanding and implementation of OpenFlow-based load balancing.
F. Tang, J. Li, and M. Guo	Dynamical Load- Balanced Scheduling (DLBS) algorithm	The paper introduces DLBS for improved data flow in data centers.	The paper introduces a novel DLBS approach, significantly improving data center network performance.	Requires a deep understanding of networking, potentially limiting accessibility.
Jun Li, Xiangqing Chang, Yongmao Ren, Zexin Zhang, and Guodong Wang	scalable load balancing algorithms	The paper proposes SDN and FSEM for effective path load balancing.	The paper introduces an effective path load balancing solution using SDN and FSEM, enhancing network reliability and performance.	The assumption of uniform node and link capabilities may limit generalizability.
P. Ravibabu, K. Venkatesh, and C. Sudheer Kumar	Genetic algorithm	The paper introduces a genetic algorithm for optimal network reconfiguration in distribution systems, aiming to balance feeder loads and eliminate overloads.	The integration of OLB and LBMM in the scheduling algorithm enhances load balancing and task execution efficiency in the cloud computing network.	The algorithm may not fully consider current node loads, potentially leading to load imbalances and impacting system performance.

IV. CONCLUSION

The document's reviewed papers conclude that the new load balancing approaches effectively address the complexities of distributing workload and maintaining performance in diverse computing contexts. Network load balancing is emerging as an important and essential component of cloud computing. As cloud systems handle various workloads from numerous users and applications, efficient network traffic distribution across multiple servers becomes critical. Load balancing technologies are critical for optimising resource utilisation, eliminating performance bottlenecks, and improving the overall responsiveness and reliability of cloud systems. The ability to effectively allocate requests based on criteria like server health and capacity ensures a scalable and fault-tolerant architecture. As cloud computing evolves, network load balancing remains an important technique for attaining optimal speed, scalability, and high availability in the delivery of cloud-based services and applications. Overall, the conclusions from the research papers contribute to the advancement of load balancing techniques and systems, providing valuable insights into addressing load balancing challenges and improving system efficiency in various computing environments.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 8.206 | ESTD Year: 2018 |



International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

REFERENCES

- Chatterjee, M., & Setua, S. K. (2015, February). A new clustered load balancing approach for distributed systems. In Proceedings of the 2015 Third International Conference on Computer, Communication, Control and Information Technology (C3IT) (pp. 1-7). IEEE.
- [2] Liaqat, M., Naveed, A., Ali, R. L., Shuja, J., & Ko, K. M. (2019). Characterizing dynamic load balancing in cloud environments using virtual machine deployment models. IEEE Access, 7, 145767-145776.
- [3] Lee, J. B., Yoo, T. H., Lee, E. H., Hwang, B. H., Ahn, S. W., & Cho, C. H. (2021). Highperformance software load balancer for cloud-native architecture. IEEE Access, 9, 123704123716.
- [4] Nezami, Z., Zamanifar, K., Djemame, K., & Pournaras, E. (2021). Decentralized edge-to-cloud load balancing: Service placement for the Internet of Things. IEEE Access, 9, 64983-65000.
- [5] Shafiq, D. A., Jhanjhi, N. Z., Abdullah, A., & Alzain, M. A. (2021). A load balancing algorithm for the data centres to optimize cloud computing applications. IEEE Access, 9, 41731-41744.
- [6] Wang, S. C., Yan, K. Q., Liao, W. P., & Wang, S. S. (2010, July). Towards a load balancing in a threelevel cloud computing network. In 2010 3rd international conference on computer science and information technology (Vol. 1, pp. 108-113). IEEE..
- [7] Willebeek-LeMair, M. H., & Reeves, A. P. (1993). Strategies for dynamic load balancing on highly parallel computers. IEEE Transactions on parallel and distributed systems, 4(9), 979-993.
- [8] Cheung, L. S. (2001, May). A fuzzy approach to load balancing in a distributed object computing network. In Proceedings First IEEE/ACM International Symposium on Cluster Computing and the Grid (pp. 694-699). IEEE.
- [9] Al-Tam, F., & Correia, N. (2019). On load balancing via switch migration in software-defined networking. IEEE Access, 7, 95998-96010.
- [10] Barker, K., Chernikov, A., Chrisochoides, N., & Pingali, K. (2004). A load balancing framework for adaptive and asynchronous applications. IEEE Transactions on Parallel and Distributed Systems, 15(2), 183-192.
- [11] Juva, I. (2007, November). Robust load balancing. In IEEE GLOBECOM 2007- IEEE Global Telecommunications Conference (pp. 2708-2713). IEEE.
- [12] Zhang, H., & Guo, X. (2014, November). SDN-based load balancing strategy for server cluster. In 2014 IEEE 3rd International Conference on Cloud Computing and Intelligence Systems (pp. 662-667). IEEE.
- [13] Tang, F., Yang, L. T., Tang, C., Li, J., & Guo, M. (2016). A dynamical and load- balanced flow scheduling approach for big data centers in clouds. IEEE Transactions on Cloud Computing, 6(4), 915-928.
- [14] Li, J., Chang, X., Ren, Y., Zhang, Z., & Wang, G. (2014, September). An effective path load balancing mechanism based on SDN. In 2014 IEEE 13th international conference on trust, security and privacy in computing and communications (pp. 527-533). IEEE..
- [15] Ravibabu, P., Venkatesh, K., & Kumar, C. S. (2008, July). Implementation of genetic algorithm for optimal network reconfiguration in distribution systems for load balancing. In 2008 IEEE Region 8 International Conference on Computational Technologies in E.





INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com