ISSN:2229-6093

V Hema et al, International Journal of Computer Technology & Applications,Vol 9(1),5-10

# A NOVEL MECHANISM FOR REQUEST DISTRIBUTION IN CLUSTER BASED DISTRIBUTED NETWORKS

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**Abstract:** In distributed networks, the request should be distributed to the servers in the separated networks. The distributed networks are clustered into groups with the heterogeneous systems and servers. In need to fulfill the availability of resources, the distributed systems are formed with resources but the cluster servers should not provide all the resources. The requests are transferred to the server which does not aware of the resources in the distributed networks. The major problem in the cluster based distributed networks is to obtain the load balancing and high latency. The request should be distributed to the servers which are load balanced. If it fails it leads to Denial of Service attacks in the server that needs more availability. There is lack in request distribution strategies to obtain the load balanced and low computational cost to make the server in available. To overcome the request distribution problems, the traditional machine learning techniques like round robin scheduling were used. In this paper, a novel mechanism for request distribution through data migration in cluster based distributed networks with resource aware and load balanced strategies with high latency and low computation cost. To illustrate this mechanism, here the simulations results are used and the algorithm proves through the request distribution in this networks.

**Key Terms:** Cluster based distributed networks, Availability, Load balancing, and Denial of Service attacks

## I. INTRODUCTION

Request Distribution and Load balancing [1][2][3] are most important parameters for the performance measures of the distributed networks. In distributed networks [1] [4], the resources need to be shared to the clients. Thus the server availability should be increased through the existing techniques to achieve the load balanced request distribution. In web server, the web services can be called through the client UI design. The web services are frequently monitored for the increase of availability in need of importance in that. To improve the effectiveness of the request distribution we proposed the Location Aware Request Distribution it's a specialized approach for content ware request distribution that improves the cluster performance.

In recent days, request Distribution is the most difficult process in the cluster based distributed networks with more number of web servers which process the web services.

Thus the requests are need to be transferred to the servers who can ability to process the system. In recent days, the main problem in cloud environment for Business Process as a Service is to obtain the fitness of the process of the request from the clients. Thus the business process should be technically solved through the secure and effective server. The server should capable of the data and the process efficiency.

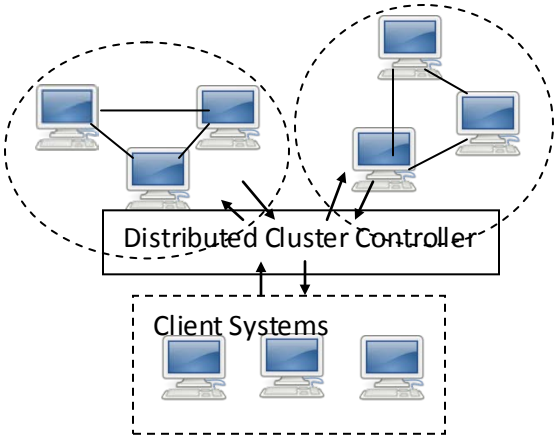


Figure-:1: Cluster based Distributed Networks

In this paper, the distributed networks main problems faced are discussed and try to improve the load balancing and proper request distribution through the data migration from the low power server to the high power server. Thus the server systems interconnected with each other it is easy to migrate the important contents to the active servers those having better configuration.

In this paper, the distributed networks are analyzed through the existing works and the recent related papers in section II. The mechanism for request distribution used is discussed in section III. The implementation results are discussed in next section to the mechanism.

## II. RELATED WORKS

Ricardo B and E.V.Carrera [12] has designed a model for the locality conscious request distribution within the cluster and perform the evaluation in cluster based server. In [6], the cluster based network servers are discussed with the requirements in the location based request distribution.

Mohit et.al. [8] proposed the scalable architecture for content aware request distribution in web server clusters. In this paper, they define a architecture with level 4 switch and distributes the incoming requests to a number of back end nodes. It also compares the existing approaches for scalability in request distribution.

Vinayak Sontakke et.al. [5] proposed the dynamic resource allocation strategy has been allocated. Thus the data migration process can be used as a virtualization in physical machines of cloud environment. In this paper, the authors used and compared the two algorithms such as First Come First Served and Shortest Job First algorithm for scheduling and allocation of resources in dynamic.

C.Wu and R.Burns [3] has proposed a protocol named adaptive load distribution protocol in clustered storage systems for logical volume IO workload. They obtain the request distribution from decentralized tunable hashing scheme. It also supports both replication and erasure coding data redundancy.

Narendran B et.al. [11] have design and analysis the load distribution algorithm for

obtain the scalable and fault tolerant server cluster that is based on the HTTP redirection. It allows for graceful degradation of the service in the event of transaction failures through load balanced among the remaining servers.

In existing work [2], L.Borzemski and K.Zatwarnicki has presented a novel algorithm for load distribution of user requests sent to the clustered web server systems driven by a web switch. They proposed an algorithm called Fuzzy Adaptive Request Distribution is a client and server aware, dynamic and adaptive dispatching policy.

Du Zeng-Kai and Ju Jiu-Bin [4] has proposed the content aware distribution policies getting more popular in cluster based web systems. They achieved scalable server performance through this by means of bottleneck. They named as DWARD as distributed dispatching policy.

Qingfeng Fan et.al. [10] defines the parameters and used the game theoretic approach Nash Equilibrium as a cost model for the query optimization in sensor grid database systems. Here they states new semantic cache scheme for the location dependent data queries. It is required to improve the existing works with the factors such as semantic, time and locations are investigated. Most of all it is very difficult to use semantic cache technique for query optimization due to the fact that more realistic multidimensional constraints have not been constraints. Y Tang and W Zhuang [14] proposed the compositional Multi Party Computation (MPC) for modular DQP and MPC-aware query optimizations. In this paper they concentrates on the interface gap between existing query processing in distributed systems and multi party computation software. This problem can be overcome through the novel framework building the secure multi party database systems for emerging federation networks.

The most realistic thing is the same problem of query processing and optimization can also been occurred in the Bid Data Environment. The jobs scheduled can be done as in the distributed manner with the initialization of job schedule based on the predictable job completion time by applying the chance-constrained optimization technique. Peng Li et.al. [9] proposed and formulate an optimization problem by jointly considering input data movement and task placement. In [7], they deal with the big data analytics from the multiple distributed data centers with reduced cost. In this paper, they concentrates on the optimization required for query processing through the cross connected data centers.

Bart Theetan and Nico Janseens presented the article [z14] with a streaming analytics platform tailored distributed clouds as a Continuous Hive. These types of streaming systems are used to operate in multiple huge heterogeneous data centers, considering unlimited bandwidth between data center nodes.

## III. PROPOSED METHODOLOGY

In this proposed work, the obtained requests should be transferred to the server for query processing. The request data for the

client is obtained and fitness calculated to obtain the processing time. The Request Controller for the cluster based distributed network systems should process the request from the users. The user requests initially transferred into the process time estimation. It calculates the processing time of the request obtained from the client systems. After the estimation of the process time, the server availability should be verified through the mechanism. If the server availability fulfills the needs of the request need to process, then the request transmitted to the server and it will process as usually.

In the worst case of process complexities, the request process can be distributed to the servers if unavailable. The server should be processed based on their capacity. Here the requests are transferred based on the load of the server system. The server system needs data migration if it satisfies the scalability of the requests. It also can be performed in the distributed networks through the controller.

Here the main goal is to reduce the access time for the huge number of request processing dynamically. The automated schemes are required to fulfill the on demand queries creation and processing. Thus the automation in this process makes difficult and also cost effective. Lorne Leonard et.al. [1] presented a framework called HydroTerre, it's an research prototype and also a platform with optimization strategies in the query request creation and optimized processing.

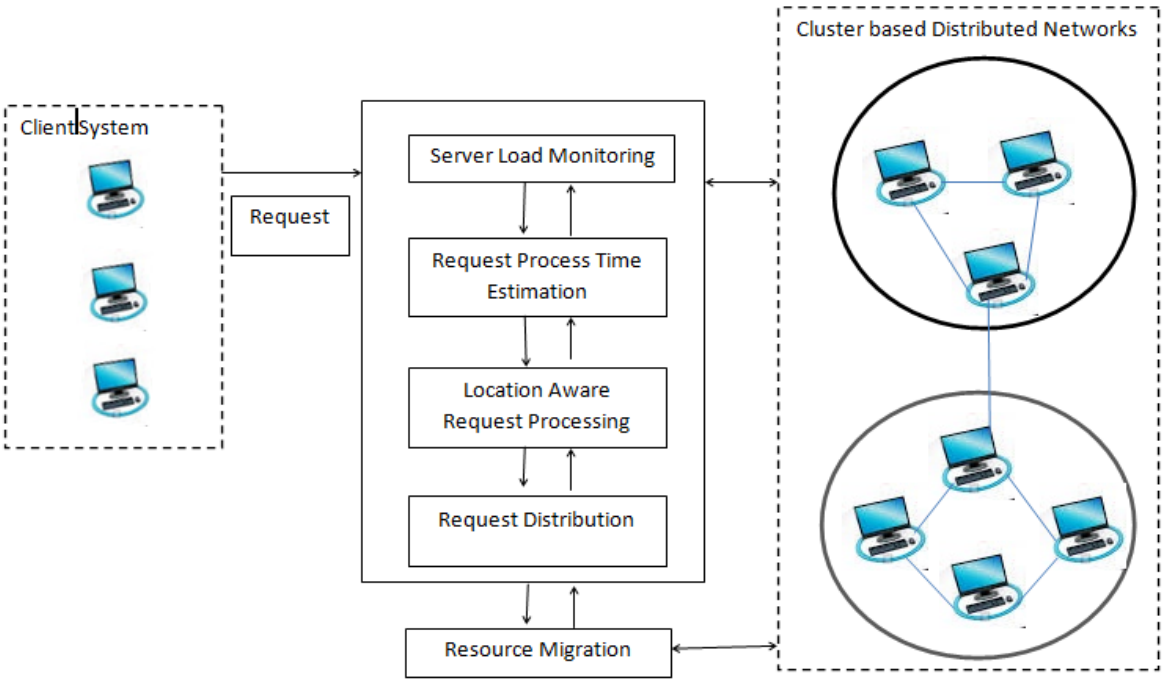


Figure-2: Illustrates the proposed mechanism

ISSN:2229-6093



## IV. IMPLEMENTATION RESULTS

Here the proposed work should be implemented for the proven of the mechanism. Here we use NS2 simulation tool for validating the mechanism results. Here we use the parameters of the efficiency as processing time, request delay and latency achieved in the request distribution.

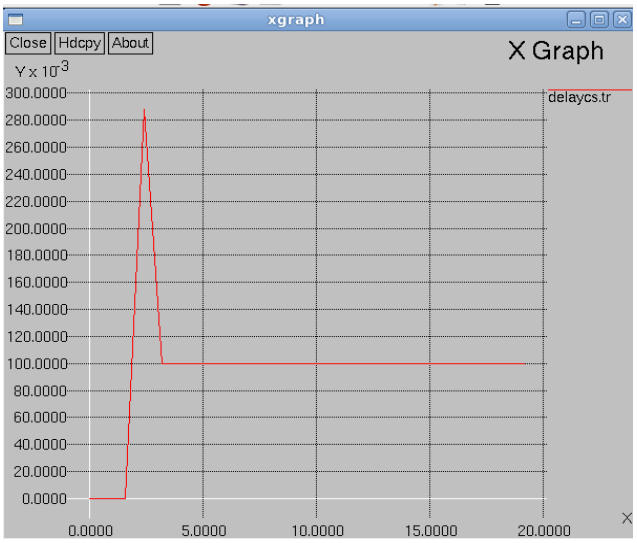


Figure-3: Request Delay obtained in the results

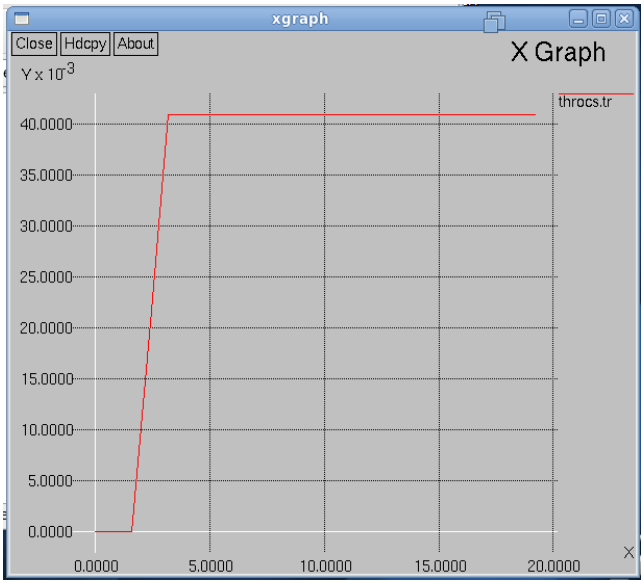


Figure-4: Throughput obtained

In Figure-3 illustrates the request delay from the simulation results. The performance of the delay reduction is high when compared to the other traditional techniques. In Figure-4 illustrates the request processing time as throughput of the results obtained. It might be improved results from the mechanism.

## V.CONCLUSION

Thus the paper illustrates the mechanism for the content aware request distribution in the cluster based distributed networks. In this paper, the results showed the efficiency of the improved mechanism from the obtained the request process delay and throughput of the request distribution. In future the request delay should be reduced through optimization techniques like Particle swarm optimization and Ant colony optimization.

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