



# Cost of Dynamic Migration of Content and Load Balancing Dissemination Services into Hybrid Clouds

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## Abstract

*Cloud computing technology is impulsively used to get to adaptable asset for different applications. Cloud computing give administrations (e.g. SaaS, PaaS, IaaS) to end client to varnish their need. A substance circulation administration is a noteworthy piece of prominent Internet applications. Content supplier switches a substance or information progressively on various clouds. There are two undertakings one is movement of substance to distributed storage, second to disperse their web administration load. In proposed framework we utilized half breed cloud. We are used both cloud private cloud and open cloud. One server farm is distributed every area. The test is usage of the cloud and in addition their current on-reason server base, to furnish content solicitations with administration reaction time ensure at all times and also the base operational expense. To minimizing operational expense by utilizing the Lyapunov enhancement procedure. A dynamic control calculation is configuration for load balancing on cloud servers. A submit substance and dispatches demands on different server farms to minimize general operational expense after some time.*

## Keywords

Content-Distribution; Dynamic Resource Allocation; Load Balancing; Dynamic Migration; Lyapunov Optimization

## 1. INTRODUCTION

Now a day's Cloud computing technology is used rapidly to access resources for various

applications. There are different types of resources are Computational resources, Networking resources (Computational resources such as Memory, CPU, Storage and Networking resources such as Bandwidth). Cloud provider's activities for utilization and allocating resources are with in time of cloud environment. It required the type and of resources needed by each application to complete a user job. Order and time of allocation of resources are also an input for optimal resources allocation. In proposed system we used hybrid cloud to utilization of public cloud and private cloud. CDN (Content Distribution Network) when it accessing data it request to cloud server and it search file on CDN. DCN (Data Content Network) it provide access key to user to access file. In dynamic migration technique used cold spot and hot spot. Hot spot technique is used for distribute load. This technique is help to achieving load balancing, increase performance as well as throughput. Two important tasks are concerned a shift to migrate contents towards cloud storage, and allocate web service load towards cloud basis services. The important issue is to make use of cloud as well as application provider existing private cloud, to provide unpredictable requests by service response time assurance, while sustaining of least operational expenditure. While it might not be moreover tricky to propose an effortless heuristic, we propose a solution by assured cost optimality above long run of system comprise intimidating challenge. We focus on cost minimization in migration concerning general application content distribution that is on basis of differentiated charging models concerning various



data centres In our work we provide a general optimization structure for active, minimizing relocation of the services concerning content distribution into hybrid cloud that consist of private cloud as well as public geo-distributed cloud applications. Lyapunov optimization was introduced from optimization theory of stochastic networks and was functional in routing as well as channel allotment in wireless networks, in addition to few networks types that include peer-to-peer networks.

## 2. LITERATURE SURVEY

Siva Theja Maguluri, R. Srikant and Lei Ying[2] cloud computing is a omnipresent and to serve resources to various applications. Cloud computing, when jobs are arriving to process are request to resources (e.g. Memory, VM's, CPU, Bandwidth, Storage space etc.) there a problem of resources allocation such as load balancing problem, job scheduling problems, VM configuration. Stochastic model in cloud computing cluster is for load balancing and scheduling.

Seematai S. Patil, Koganti bhavani[3] cloud computing server there services to client/ users based on user need to complete their job. They are presenting a system that uses virtualization technique to allocation of data centers resources dynamically based on application demand. Proposed virtualization technology is to serve resource dynamically on the basis on necessity. Concept of skewness used to minimize server overload. Utilization of virtual machine (VM) and maintain overload.

Mayanka Katyal, Atul Mishra [7] now days there are increases the demand for cloud services. User wants to access services on the basis of their requirement. Resources are needed to serve more efficiently manner to user. Selective algorithm is used for serve cloud resource dynamically to user on-demand. Selective algorithm is based on min-max algorithm which reduces overall time of task on the machines and provides QoS.

Tejinder Sharma and Vijay Kumar Banga [9] now a day's number of user accessing resources but there is one of challenge is resource scheduling problem. Load balancing is a technique to distribute workload on

different computers to achieve utilization minimum data processing time, minimum average response time, and avoid overload. Proposed efficient enhancing scheduling algorithm reduces load balancing. This algorithm is efficiently handling request to executing job and minimizing server overload.

Shaolei Ren, Yuxiong He and Fei Xu[10] limited computational resources need to fairly allocated among different organization. Resources are allocated to end user on demand. Fei Xu. proposed the GreFar algorithm which is optimizing energy cost and fairness among different organization. This algorithm is achieving energy cost, latency as well as fairness.

Ninad Shinde and J. Ratnaraja Kumar [11] user send request on different Cloud services for accessing their resource. The Main challenges in cloud computing is to provide efficiently resources to end user. If respected resource is not available on the time then request is in longer delay. To eliminate longer delay problem have to use optimization resource allocation techniques.

Prabhjot Kaur and Dr. Pankaj Deep Kaur[12] user access cloud service and their services to client anytime and anywhere. Request is depend on need to complete their job. User only pays for those resources they want to be use. Now day's demands are rapidly increases so the need to creation of large scale data centers. Prabhjot Kaur and Dr. Pankaj Deep Kaur proposed a method to allocate resources efficiently based on load of virtual machine. This method is the solution of the problem of VM resource scheduling in cloud environment.

Haitao Li, Lili Zhong., Jiangchuan Liu, Bo Li, Ke Xu[13] clients are demanding for VoD (Video on Demand) service rapidly increases with the time in one day period. VoD providers are pay by bytes for bandwidth resources, potentially leading to saving a cost if the unit rate to rent a machine from a cloud provider is higher than the rate to own one. They are take a challenges to design and predictable benefits in migrating VoD service onto hybrid cloud-assisted deployment, where user send a requests are partly served by the self-owned servers and partly served by the cloud.



M. Pathan, J. Broberg, and R. Buyya[16] In content delivery cloud e.g. MetaCDN it provide content delivery service to end users. Using MetaCDN measure utility of content delivery capture system-specific perceived. Using this utility for request redirection policy is to improve the performances of content delivery. There also one prediction for content provider having the benefits from MetaCDN based on user prehension performances. Conducting test bed experiment is proof-of-concept for MetaCDN to demonstrate the performance and disclose the observation on MetaCDN utility.

Mohamed Esam Elsaid, Christoph Meinel[17]cloud computing provide service as a platform as a service, Infrastructure as a service and Software as a services on demand with low cost and scalability to improve performance of application . In data center virtualization have a most important feature is live migration. Failure recovery, load balancing, dynamic resource allocation, power saving is all depending on live migration for VM. Resource management technique is improving utilization of resources, less cost and high availability. Using mathematical formulation to predicates the live migration, power consumption, and network throughput before taking the decision of live migration. Network admin can be alerted with estimated overhead to confirm the live migration request or to postpone it to another optimum time for minimum interruption on the running applications.

L. Dhivya, Ms. K. Padmaveni[18] cloud computing providing services to end users as well as it also handle big data specially for business customer. Virtualization is one of the powerful techniques for cloud computing which is physically infrastructure, it is easy to use and handle. Virtualization is allocated on the need of end user requirements and support green computing. Skewness is minimizing to combine different workload to improve utilization of server. Maintain overload avoidance as well as achieve better performances.

### 3. SYSTEM STUDY

#### 3.1. Existing System:

- Two major components exist in a typical content distribution application, namely back-end storage for keeping the contents, and front-end web services to serve the requests. Both can be migrated to the cloud: contents can be stored in storage servers in the cloud, and requests can be distributed to cloud-based web services.
- Hajjat et al. developed an optimization model for migrating enterprise IT applications onto a hybrid cloud. Their model takes into account enterprise-specific constraints, such as transaction delays and security policies.
- Zhang et al. propose an intelligent algorithm to factor workload and dynamically determine the service placement across the public cloud and the private cloud.
- Chen et al. propose to build CDNs in the cloud in order to minimize cost under the constraints of QoS requirement

#### Disadvantages of Existing System:

- Onetime optimal service deployment is considered.
- They only propose greedy-strategy based heuristics without provable properties.
- It focuses on balancing the data access load, by considering social relationships and user access patterns in the data storage.

#### 3.2. Proposed System:

- In this paper, we present a generic optimization framework for dynamic, cost-minimizing migration of content distribution services into a hybrid cloud (i.e., private and public clouds combined), and design a joint content placement and load distribution algorithm that minimizes overall operational cost over time, subject to service response time constraints.
- Our design is rooted in Lyapunov optimization theory, where cost minimization and response time guarantee are achieved simultaneously by efficient scheduling of content migration and request dispatching among data centers.
- Lyapunov optimization provides a framework for designing algorithms with performance arbitrarily close to the optimal performance over a long run of the system, without the need for any future information.
- We propose a generic optimization framework for dynamic, optimal migration of a content distribution service to a hybrid cloud consisting of a private cloud and public geo-distributed cloud services.
- We design a joint content placement and load distribution algorithm for dynamic content distribution service deployment in the hybrid cloud. Providers of content distribution services can practically apply it to guide their service migration,

with confidence in cost minimization and performance guarantee, regardless of the request arrival pattern.

#### Advantages of Proposed System:

- We tailor Lyapunov optimization techniques in the setting of a hybrid cloud, to dynamically and jointly resolve the optimal content replication and load distribution problems.
- We demonstrate optimality of our algorithm with rigorous theoretical analysis and prototype-based evaluation. The algorithm nicely bounds the response times (including queueing and round-trip delays) within the preset QoS target in cases of arbitrary request arrivals, and guarantees that the overall cost is within a small constant gap from the optimum achieved by a T-slot lookahead mechanism with information into the future.

#### 4. SYSTEM ARCHITECTURE:

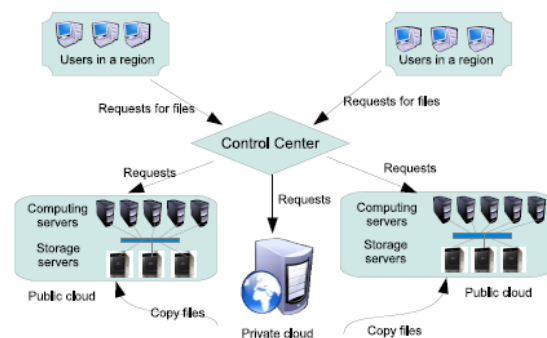


Fig 1. System Architecture

In proposed framework we utilized on strategies is Lyapunov streamlining procedure to minimization of expense. Their need to overhaul cost progressively when number of client solicitation from the cloud server. Principle objective of proposed





framework to minimization of operational expense after some time for cloud supplier and also accomplishing load adjusting and give security. To give security we utilized figure content strategy calculation. Applying verification method to confirm the client validation. In the event that client is approved to get to administrations then and at exactly that point send setup key to utilize. Client can get to or utilized just key access pages. Client can't get to or utilize different pages. Utilizing of the procedure of advancement, we plan dynamic control to place substance as well as convey solicitations in crossover cloud foundation, which diminishes general working cost above time.

Our work focus on cost minimization in movement concerning general application content conveyance that is on premise of separated charging models concerning different information focuses. It may not be hard to propose easy heuristic expected for fiery substance position notwithstanding stack dispersion inside half and half cloud interestingly, proposing of an answer guaranteeing of cost optimality is a captivating test. We make a thought of substance dissemination application that gives gathering of substance, to clients spreading over various land areas. There is a private cloud that is claimed by substance circulation supplier that amass genuine substance duplicates. The private cloud contains general transfer transmission capacity for serving the client substance. There is open cloud that incorporates server farms that are situated in various land areas. There are two interconnected servers in each of the information stockpiling servers in backing of information stockpiling, and additionally registering servers that bolster provisioning of virtual machines. Servers inside the same server farm can get to each other by means of a specific Data Center Network. The patron of substance dissemination application gives its administration by method for abusing half breed cloud basic outline that incorporates geo-circulated open cloud and additionally private cloud.

## 5. CONCLUSIONS

In this paper we are concentrated on different procedures and calculations are load balancing, work booking to use of assets in legitimate ways. Virtualization techniques are one of effective element of the distributed computing. Live relocation is to enhance execution and accessibility. In this paper ideal relocation of a substance dispersion administration to a crossover cloud comprising of a private cloud and

open cloud administrations. Utilizing the Lyapunov advancement system which can minimizes the operational expense of the application with Quality of administration certifications. Accomplishing effective load balancing and in addition give high security.

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