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A QOS AWARE FRAMEWORK FOR CLOUD BASED ENVIRONMENT

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ABSTRACT
Smartphones and tablets have replaced personal computers by providing network connectivity, mobility, and software functionality. In the future, these devices will switch between network providers through vertical handover. mechanisms for ensuring network connectivity at all times. This allows mobile devices to access Cloud Services without interruption as they move around. Current service delivery models require mobile devices to access services from their previous network, resulting in long-distance data transfers over the Internet backbone. As a result, Internet traffic will become more congested. To improve the Quality of Service and Experience of mobile media services, a new approach to resource management is needed. Cloud Based Mobile Service Delivery involves running services on localized public Clouds and populating other public Clouds in different geographical locations based on service demand. Streaming video has gained popularity among academia and industry due to the Internet's rapid growth and demand for multimedia content. The system also Reduces ambiguity during service migration and prevents migration of recently migrated services, resulting in less congestion

KEYWORDS: Quality of Service, Cloud Computing, Service migration, Mobile computing, network congestion.

INTRODUCTION
Cloud computing is found everywhere. Business organization are regularly looking for a new and improved method to calculate the profits and save expenses. These originations require a variety of methods that enable them to grow without burdening them with debt. Among the current technologies, cloud computing has emerged as a viable and intriguing option that offers pay-as-you-go access to virtual computing platforms, apps, and resources based on user demand. Users of cloud services can only pay for what they use and access what they need. Cloud computing is revolutionizing the way IT services are delivered, enabling consumers to enjoy all the conveniences of fundamental necessities like electricity and water. There are number of advantages of Cloud computing, such as effectiveness in terms of cost and access, scalability and ease of management, encourage more and more IT companies and service providers to follow it and offer their services via Cloud computing models. Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) are the three service categories offered by clouds. IaaS clouds offer a range of computer resources, including networks, storage, processing power, and other essential computing resources. A provider is in charge of overseeing the underlying Cloud infrastructure. Nonetheless, they are given the freedom to choose which virtual machine images to use when deploying these apps. Providers give customers the resources and services they need to create software applications under the Platform as a Service concept. Apart from the limitations of IaaS, PaaS users are unable to operate or manage their servers and virtual machine images. Customers can use web-based email, calendars, and other apps that run on cloud infrastructure thanks to SaaS providers. In this method, users have no control over the programs or the infrastructure. Due to the simplicity of Cloud computing, it has become very popular in recent years. With the help of mobile computing, Users can travel from one place to another while accessing and utilizing cloud services. Thus, laptops and other portable electronics gain popularity. Customers can move between different geolocations and still access cloud services. Thus, mobile computing and cloud computing made it possible to study a variety of topics. There are a lot of studies being conducted in this area.

RELATED STUDY
In order to distribute virtual machines across the available physical resources, researchers at the University of Minnesota have created a migration technique for virtual machines within a cloud that offers heterogeneity and dynamism in network architecture and task communication patterns [6]. Its goal is to physically close any virtual computers that communicate with one another often. Instead of letting traffic pass over slower connections between levels, they can employ that strategy to leverage quicker connections inside the same network hierarchical level. Given that the cloud is essentially a hierarchical computer network, it is clear that, depending on where data is processed and stored within the infrastructure, there may occasionally be a lot of traffic moving between different hierarchical levels.

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In contrast to the significantly faster linkages that exist within the same hierarchical boundaries, cross-border communication that occurs across slower network links will be reduced by putting virtual machines that carry out different portions of a larger task closer to one another. The benefit of this is faster communication between the two virtual machines (VMs), which enhances network performance and lowers congestion. It will increase the efficiency of Cloud resource utilization, which lowers provider costs and increases client savings. In order to allocate virtual machines on available physical resources, another strategy develops a method known as the decentralized affinity aware migration technique, which takes into account heterogeneity and dynamic in network architecture and task communication patterns [7].

It keeps track of the network affinity between virtual machine pairs and employs the bartering algorithm in conjunction with migration to dynamically modify the placement of virtual machines in order to reduce communication overhead. In other words, two virtual machines on different networks should be placed closer to one another (for example, on the same rack, cluster, node, or network links) if their communication cost is higher. Affinity-aware bartering and migration algorithms are utilized to improve speed and decrease traffic.

Restructuring the physical footprint of virtual computers in a cloud is the subject of another study conducted by the University of Minnesota [8–10]. By taking into consideration the affinities and conflicts between co-placed virtual machines, the goal is to improve hosted application performance and reduce operating costs for cloud providers. Virtual machine footprints are mapped and compared to accomplish this. The virtual computers are moved to the same physical location when footprint similarities are discovered. In order to accomplish a number of goals, including reduced power consumption, increased dependability, and improved performance, its goal is to develop control systems for cloud settings that produce such footprint reshaping. Additionally, it lowers expenses for providers and lowers the cost of Cloud services for customers.

PROBLEM STATEMENT AND PROPOSED SOLUTION

This paper explores a potential situation where media services' high bandwidth requirements and customer mobility lead to network congestion issues on the Internet. It searches for the elements that influence the Quality of Experience (QoE) and Quality of Service (QoS) for VoD services in such a mobile setting using an analytical framework. Lastly, it looks into a service delivery framework that uses a technique known as service filling and cloud services to solve this issue. Additionally, this approach eliminates the issue of ambiguity that arises from the service population. Additionally, it reduces network congestion brought on by recently relocated services.

This system makes advantage of many clouds and cloud service users. Let's say a user enters a certain cloud's area and requests a connection. After that, the cloud network's master node sends a request with the cloud IDs to STAR. The master node receives the specific cloud ID back from the STAR. Accordingly, the user's request is recorded, and a connection is made between the user and the cloud. Thus, the cloud offers that user a variety of services without any disruptions. However, because the user is mobile, if they move from one place to another or pass under the coverage of another cloud, they will continue to use the services from the prior cloud instead of the closer one, which causes network congestion. QoS of service also deteriorates at that point. GSPA periodically monitors the system's quality of service (QoS), and when it deteriorates, it notifies the cloud's master node's QoS manager to migrate. Then QoS manager finds the target cloud as per the location of user and traffic status of network and migrate that service to target cloud.

If the destination cloud is already experiencing a high load at the time a new cloud is chosen for the service transfer, it may reject the service. The user and new cloud are now instantly connected, and service access is not interrupted. It solves the congestion problem.

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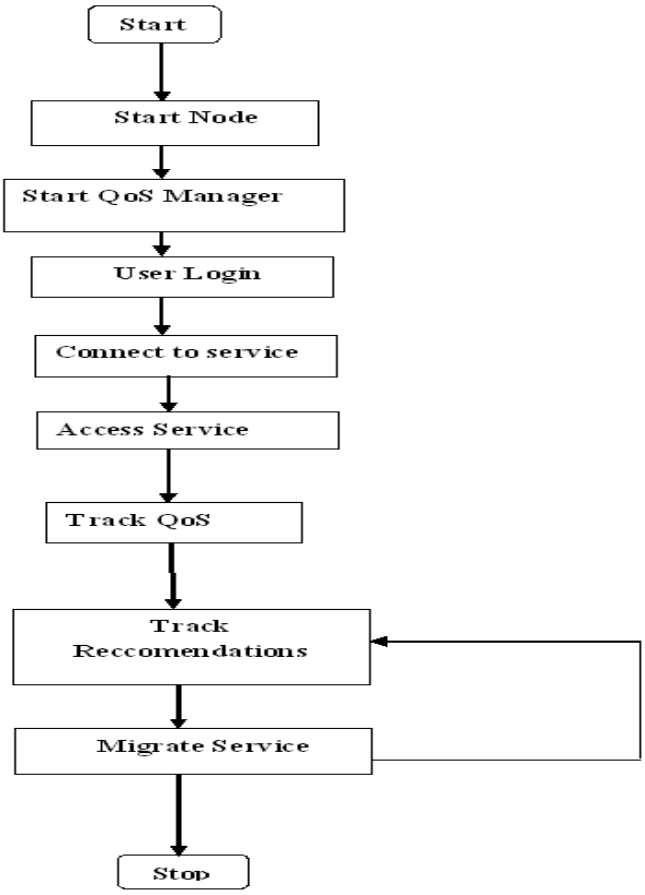

Figure 1: System Flow chart

RESULTS ANALYSIS

The Figure:2 shows the quality of service provide in existing and proposed system. In existing system when user changes his location the QoS degrades. But in proposed system when user changes his location the service is migrated to the location near to user and hence QoS does not degrade much.

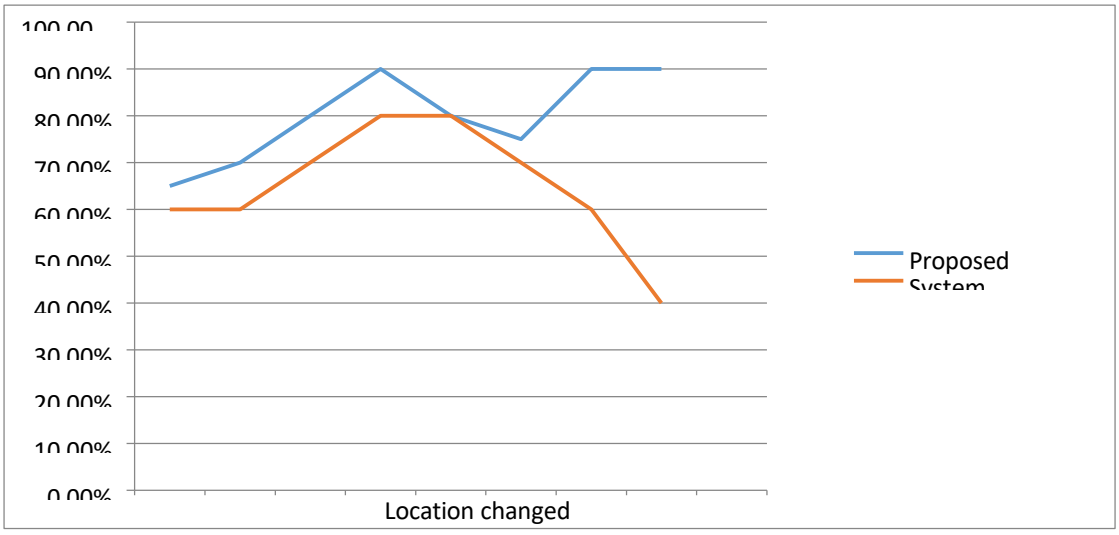

Figure 2: Quality of Service when user changes location

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CONCLUSION

The system has been used in this dissertation to illustrate the difficulties brought on by user movement in networks. These problems can be solved with the help of this innovative system. This solution enables users to move between locations and use cloud services with improved quality of service (QoS) without compromising service quality. Prior service delivery approaches were ineffective and unable to scale to meet all of the demands of mobile consumers. The existing paradigm works effectively to give clients good service and better resource management. The ambiguity issue that comes up when moving services from one cloud to another is resolved by the existing system. A technique that determines the pace at which latency increases while a user moves while streaming a video is presently being developed in order to advance the framework. The system also looks into how decision-making may be impacted by the number of clients. It suggested a quality-of-service-based public cloud service that determines the users' locations and offers a service to ensure optimal service delivery. Additionally, the system stops recently migrated services from migrating, which lowers load.

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