International Journal of Research
Available at https://edupediapublications.org/journals
p-ISSN: 2348-6848
e-ISSN: 2348-795X
Volume 03 Issue 14
October 2016

Diminishing Substantial traffic loads in a Cloud Based Multimedia Storage System for QoS Provision

K. Uma
M.Tech, Computer Science &Engineering
Sahasra College of Engineering for Women, Warangal.
N Srikanth
Assistant Professor, Department of CSE
Sahasra College of Engineering for Women, Warangal.

Abstract: *With the appearance of numerous multimedia applications, service and devices, multimedia delivery is predictable to become the foremost traffic of Internet which will keep cumulative rapidly. In order to assist such large scale multimedia applications, more and more service providers store their data assets in the cloud and distribution streaming to their consumers cross cloud. Different Cloud providers are not in a position where they can easily build multiple Clouds to service dissimilar geographical areas like they do with services that run on distinct servers. Hence, a new method for service delivery will take into account which will improve QoS in order to provide better DoE to the clients and better load management to the providers, as well as helps to reduce network congestion on a global scale. This work describesanintuition that as the demand for specific services increases in a location, it might be well-organized to move those services faster to that location using an analytical framework. This will help to decrease high traffic loads because of multimedia streams.*

Index Terms: Quality of Service (QoS), Multimedia, Cloud computing, content delivery system and Communication system traffic control.

1. INTRODUCTION

Cloud computing is a fast, growing and emerging technology that could provide elasticity, scalability, ubiquitous availability, and cost-effectiveness. There have been numerous studies about the definition and categories of cloud computing in fact, the "cloud" is more often used as "Megaphoning the Internet" where "Cloud-based" means network-centric. More and more new topics are being studied from prior research fields which combine the concept of cloud. Multimedia cloud (or media cloud) aims to leverage cloud computing technologies for multimedia applications, services and systems. Researchers have proposed various kinds of media or multimedia cloud from different orientations. An emerging technology Cloud computing, aims at providing over the Internet various storage and computing services. It generally incorporates platform, software and infrastructure as services. Providers of Cloud service rent datacenter software and hardware to deliver computing and storage services via Internet. Through cloud computing, users of internet can access services from a cloud as though employing a super computer. Instead of storing data in own devices they could be stored in the cloud making possible to access ubiquitous data. With software deployed in the cloud, Could also run their applications on cloud computing platforms which are more powerful, mitigating the users' burden of continual upgrade and full software installation on their local devices.

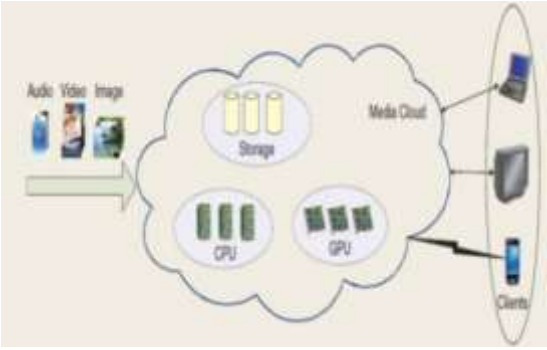

Fig 1 – Fundamental Concept of Multimedia Cloud Computing

For multimedia services and applications over mobile wireless networks and Internet there is a strong demand for cloud computing, as significant amount of computation is needed for serving millions of mobile or Internet users at the same time. Users process and store their multimedia application data, In cloud-based multimedia computing paradigm , cloud data is stored and processed in a distributed manner, eliminating full installing on users' device or computer the media application software and thus alleviating the burden computation of user devices and saving the battery of mobile phones.

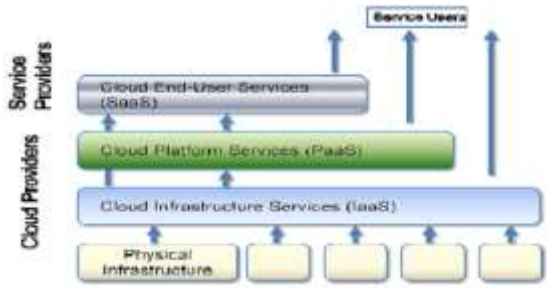

Fig 2: Cloud Infrastructure

Mobile devices (e.g., smart phone, tablet pcs, etc.) are increasingly becoming an essential part of human life as the most effective and convenient communication tools not bounded by time and place and can access services through wireless network. Mobile Cloud Computing is a promising solution to bridge the widening gap between the mobile multimedia demand and the capability of mobile devices. Thus, when it comes for data available in the form of videos Cloud allows its customer not only to access videos that are on demand but also application in the form of services to view and manipulate. This paper is based on Cloud Based Mobile Media Service delivery. In this, services are mainly populated on local clouds. As per the user's demand idea services on local cloud have the capability of moving these services to the nearby clouds. This may result in less traffic congestion on network which results in improving QoS on the network and also providing better DoE to the clients.

2. RELATED WORK

An automated resource allocation is recently proposed architecture which improves the performance of cloud technologies. This architecture aims to improve the QoS and Quality of Experience (DoE) for multimedia applications. This is achieved by a ―Cloudlet‖ of servers running at the edge of a bigger Cloud. This architecture mainly handles requests closer to the edge of the Cloud and hence helps to reduce latency. If further processing is needed, then requests are sent to the inner Cloud, so the Cloudlets‖ are reserved for QoS sensitive multimedia applications. This aims to divide the network hierarchy within the Cloud, in such a way that physical machines that are closer to the Cloud's outer boundaries will handle QoS sensitive services. Since these machines reside on the border of the Cloud, the data has to travel less distance within the Cloud before it is sent out to the clients. This not only improves DoE for clients but it also reduces network congestion within the Cloud. Furthermore, all the research at present assumes that only one entity (the provider) is in control of a Cloud and as a result different providers cannot ―share‖ resources in a manner that can improve the utilization efficiency of their hardware. This can potentially lead to problems in the future as mobility and multimedia-rich content becomes more popular and high bandwidth data streams will have to travel great distances and reach moving targets. Cloud providers may find themselves in situations where their hardware resources are not adequate and they may have to create more Clouds to handle the load and relieve network congestion.

3. SYSTEM ARCHITECTURE

As referred to the prior background and related works, is necessary to design and deploy the storage system with QoS provision for a multiple class-aware multimedia delivery service. The design goals and requirements for a such storage system should include that the system can be deployed in cloudland also can be used flexibly in large, medium and small size environments and has features of scalability, considerable fault tolerance, security and other basic requirements. Furthermore, system needs to provide differential service between different users and dispatch resources properly in a heavy load situation. If the storage space is large, more objects can be stored on the cache storage and the probability of finding an object in the cache is thus high. The cache performs better. If the storage space is limited, only a few objects can be stored in the cache storage, and the probability of finding an object in the cache is low. As a result, the cache performance becomes low.

Therefore, the cache size influences the cache performance. Since caching stores some previously fetched objects on the storage devices, the presence of an object exists on the storage devices significantly affects the efficiency of the caching. When a new object is being accessed, the cached mission policy decides whether an accessed object should be stored on to the cache devices. Since the cache performance increases monotonically with the number of objects in the cache, the cache storage space is often full in order to keep the most number of objects in the cache. When an accessed object needs to be stored and the cache space is full, the cache replacement policy decides which object should be deleted from the cache storage to release space.

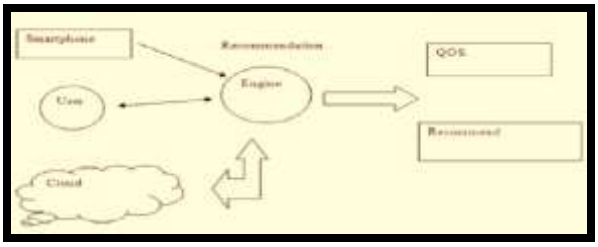

Fig 3: System Architecture

The majority of QoS research at the network layer has focused on the QoS routing. A multimedia application often has stringent requirements on the delay. QoS routing determines the delivery path for flows taking into account both the availability of network resources and the QoS requirements of the flows. There are active researches in providing QoS aware routing algorithm for mobile multimedia applications. Researches in the recent QoS routing in mobile ad hoc networks have been covered.

One of the major functions at the transport layer is congestion control and the TCP protocol is the dominant protocol at the transport layer. TCP protocol is designed for the wired networks and is not efficient for wireless networks. It reduces the transmission rate when there is a packet loss, which suffers great performance degradation since the wireless channel generates a higher bit error rate. The transport layer protocol should be able to differentiate the packet losses generated by the congestion and by the channel errors.

4. IMPLEMENTATION

There are several factors that need to be considered in the provision of QoS, such as the limited resources on the mobile devices, heterogeneity, and roaming characteristics in the mobile computing environment. Power-efficient design of QoS is the common solution to address the limited battery on the mobile device. Context-aware middle-ware is used to overcome the heterogeneity issue in the mobile networks and provide context-aware QoS. Handover is essential in mobility management which provides QoS when the mobile devices move from one network to another network. The evolution of new applications and technologies,

such as social multimedia and cloud computing, poses many challenges in the provision of Rosin order to gather QoS data and know the network conditions in a specific area, we are using another mechanism that we call the QoS Monitor.

This is the first process whenever a user makes a service request. System needs to decide which service user requires and then prepares the necessary configuration for that service. To reduce management complexity and protect the integrity of the system, a layered architecture of the configuration has been proposed. Rare changes and related importance parameters can be compiled for fast execution after the adjustment. Changed parameters can be stored separately to reduce management complexity, while retaining the flexibility of the system. Meanwhile, in this step, the system will do some basic verification of user supplied data. If it fails, system will refuse to provide services and an error message will be generated to notify the user.

The power-aware multimedia solutions jointly design the video coding parameters and channel parameters to adapt to the video contents and underlying network conditions to minimize the total energy consumption. An efficient system should jointly consider three factors: bit rate, power consumption, and video quality. A balance needs to be achieved between power consumption in computation and communication to provide energy efficient multimedia applications. The goal is to minimize the total power consumption, subject to three constraints: the maximum video distortion to ensure satisfactory video quality, maximum end-to-end delay required by the application, and the maximum computational complexity provided by the mobile multimedia devices. Another goal is to minimize the video distortion, subject to the maximum power consumption allowed, maximum end-to-end delay, and maximum computation complexity. Power-rate-distortion analysis adds a new dimension power to the traditional rate-distortion analysis. The complexity parameters of the video encoding scheme can be dynamically adjusted to maximize the video quality under the energy constraint of the mobile device. It is considered to be part of the SCL and acquires such data by querying the clients for network conditions. The mechanism that we are assuming here that can resolve human-friendly service names to unique Service IDs. In the SDL we need mechanisms that will connect service subscribers to the correct instance of a service for service delivery purposes. A record of Service IDs and in which Clouds their instances are running and also uses input by the QoS Tracking are maintained by the Service Tracking and Resolution or STAR. STAR will make a decision on which Cloud is better suited to service a client request based on the location of the client, using this information. STAR achieve this functionality is by look up routing tables in order to identify which Cloud is closer to a user. Service to reject the new client and forward them to another Cloud if possible. This gives control to service providers and also becomes a contingency mechanism in case STAR makes a wrong decision. The STAR server can be scaled similarly to the DNS system since it is essentially the same type of service albeit with some extra parameters. Once a Cloud ID is found, then the ID is resolved into the IP addresses of the Cloud controllers that the client can contact to access the service. The process is shown in the Fig. 3. It should be noted that alternatively the Cloud ID can be returned to the client, at which point, the client will have a choice of which DNS to use to find the IP addresses.

5. CONCLUSION

Efficient search on encrypted data is also an important concern in clouds. The clouds should not know the query but should be able to return the records that satisfy the query. Accountability of clouds is a very challenging task and involves technical issues and law enforcement. Neither clouds nor users should deny any operations performed or requested. In this paper, we studied the challenges which are faced by the mobile user in future networks. The service delivery models which are used currently are not that much sufficient and not consider the needs of mobile user in future. A cloud storage system was proposed in order to provide robust, scalable, highly available and load-balanced services. In the meantime, the system also needs to

provide quality of service provision for multimedia applications and services. The proposed system achieves the QoS in distributed environment which make the proposed system especially suitable to the video on demand service. It often provides different service quality to users with various types of devices and network bandwidth. We believe that our implementation will provide the better quality of service (QoS) as well as better quality of experience (DoE) to the user.

REFERENCES

[1] PalivelaHemant, Nitin.P.Chawande, AvinashSonule, HemantWani, " Development of Server in cloud computing to solve issues related to security and backup" , in IEEE CCIS 2011.

[2] Jianyong Chen, Yang Wang, and Xiaomin Wang, "On demand security Architecture for cloud computing", 0018- 9162/12, published by the IEEE Computer society in 2012.

[3] John Harauz, Lori M. Kaufman and Bruce Potter,"Data security in the world of cloud computing" published by the IEEE computer and reliability societies in July/August 2009.

[4] 2012 V. Varadarajan, et al., —Resource freeing attacks: improve your cloud performance (at your neighbor's expense), || ACM Computer. Commun.Security Conf.

[5]. Govinda .K, Pavan Kumar Abburu, GangiPrathap Reddy Govinda .K et.al / International Journal of Engineering.

[6]. Technology (IJET), Vol 5, Jun-Jul 2013, ISSN: 0975-4024.

[7] W. Zhu, C. Luo, J. Wang, and S. Li, "Multimedia cloud computing,"IEEE Signal Process. Mag., vol. 28, no. 3, pp. 59–69, May 2011.

[8] S.-K. Kim et al., "A Personal Video casting System with Intelligent TV Browsing for a Practical Video Application Environment," ETRI J., vol. 31, no. 1, Feb. 2009, pp. 10-20.

[9] K.I. Kim et al., "Cloud-Based Gaming Service Platform Supporting Multiple Devices," ETRI J., vol. 35, no. 6, Dec. 2013, pp. 960-968.

[10] H. Wen et al., "Effective Load Balancing for Cloud-Based Multimedia System," Int. Conf. EMEIT, Harbin, Heilongjiang, China, vol. 1, Aug. 12-14, 2011, pp. 165-168.