IPTV'S Video on Demand (VoD) Outsourcing Optimally through virtualization in Cloud Computing.

Bhanuprasad M R
M.Tech, Computer Science Department,
PES College of Engineering, Mandya,
Karnataka, India

Swetha M K
Asst. Prof., Computer Science Department,
PES College of Engineering, Mandya,
Karnataka, India

***Abstract* - Virtualized cloud infrastructure supports on-demand services in flexible manner by scheduling bandwidth, storage space and resources. IPTV transmits television content over an IP infrastructure with the potential to enrich the viewing experience of users by integrating data applications with video delivery. IPTV's service Video on Demand (VoD) requires substantial bandwidth and optimizing resources to handle the real time requirements.**

IPTV streaming techniques incur delays to fill the play-out buffer. But, when viewers switch or surf channels, it is important to minimize this user-perceived latency. We propose a resource provisioning framework that allows this service to co-exist on a common infrastructure by taking advantage of virtualization. We propose an optimal algorithm that could set the restriction parameter for the number of user's trying to access it for the service in order to avoid network traffic. We create the instances for the centralized servers to multicast the service for the nearest users in the elegant manner.

Keywords* - *Virtualization, IPTV, Video on demand (VoD), optimal algorithm.

I. INTRODUCTION

The demand of IP-based video delivery is increasing dramatically, meanwhile demands placed on service provider resources also increased. Service providers provision their resources for peak demands of each service across the subscriber population. However, provisioning for peak demands results in the resources being under utilized in all other periods.

Our goal is to take the advantage of infrastructure service from the virtual cloud servers which were created by the instances of the centralized server. The difference in workloads of the different IPTV services to better utilize the deployed servers. For example, Video-on-Demand (VoD) is also supported by service providers, with each request being served by a server using a Unicast stream.

As a result, there have been many attempts to support instant channel change by mitigating the user perceived channel switching latency. With the typical ICC implemented on current IPTV systems, the content is delivered at an accelerated rate using a Unicast stream from the server. The play out buffer is filled quickly, and thus keeps switching latency small. Once the play out buffer is filled up to the play out point, the set top box reverts back to receiving the multicast stream for the new channel.

Unicast transmission is the sending of messages to a single network destination identified by the by a unique address. In this kind of transmission network topology is no where dependent.

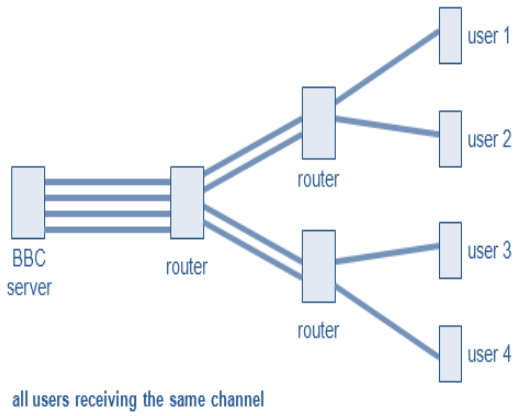

Figure 1 Unicasting transmission

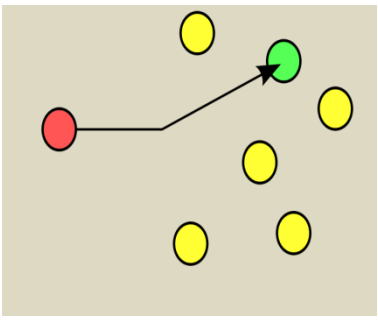

Figure 2 Unicasting topology

VoD has a relatively steady load and imposes "not so stringent" delay bounds. By taking advantage of statistical multiplexing across this service, we can minimize the resource requirements for supporting these combined services.

Multicasting is the delivery of a message or information to a group of destination computers simultaneously in a single transmission from the source. Copies are automatically created in the other network elements, such as routers, but only when the topology of the network requires it.

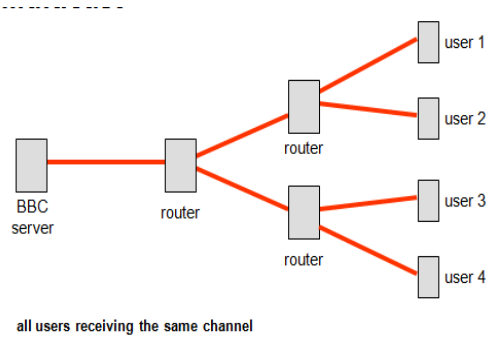

Figure 3 Multicasting Transmission

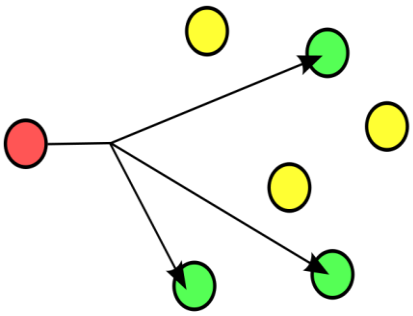

Figure 4 Multicasting topology

In this paper, we propose;

a) To use a cloud computing infrastructure with virtualization to handle the VoD workload. Virtualization gives us the ability to flexibly and dynamically shares the server resources across services
b) To provide a general optimization framework for computing the amount of resources to support multiple services without missing the deadline for any service.
c) We create the instances for the centralized servers to multicast the service for the nearest users in the elegant manner.

II. MOTIVATION

There exist various tools and technologies for cloud, such as cable and Digital television (DTV) is a telecommunication system for broadcasting and receiving moving pictures and sound by means of digital signals, in contrast to analog signals in analog (traditional) TV. It uses digital modulation data, which is digitally compressed and requires decoding by a specially designed television set or a standard receiver with a set-top box.

The VoD has the play-out-buffer that could increase the delay of steaming the video and hence increase the network traffic. The Unicast transmission holds not good for this kind of data transfer.

The existing system has to provide additional functionality for the channel to take changes quickly. For each channel change, the user has to join the multicast group associated with the channel, and they have to wait for enough data to be buffered before the video is displayed; this takes time.

III. APPROACH

Describes a system where a digital television service is delivered using the Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. For residential users, IPTV is often provided in conjunction with Video on Demand and may be bundled with Internet services such as Web access and VoIP. The commercial bundling of IPTV, VoIP and Internet access is referred to as a Triple Play. Adding the mobile voice service leads to the Quadruple Play denomination.

IPTV is typically supplied by a broadband operator using a closed network infrastructure. This closed network approach is in competition with the delivery of TV content over the public Internet. This type of delivery is widely called TV over Internet or Internet Television. In businesses, IPTV may be used to deliver television content over corporate LANs and business networks. Perhaps a simpler definition of IPTV would be television content that, instead of being delivered through traditional formats and cabling, is received by the viewer through the technologies used for networks.

Virtualization gives the ability to share the server resources dynamically across services. It anticipate the changes in the ICC workload ahead of time and preloads the VoD content on STBs, thereby facilitate the shifting of resources from VoD to ICC during the bursts. It provides a general optimization framework for computing the amount of resources to support multiple services without missing the deadline.

The Service provider put his services on the cloud, so that the instances have been created for every virtual server. We describe a system where a digital television service is delivered using the Internet Protocol over a network infrastructure, which may include delivery by a broadband connection. For residential users, IPTV is often provided in conjunction with Video on Demand and may be bundled with Internet services such as Web access and VoIP. The commercial bundling of IPTV, VoIP and Internet access is referred to as a Triple Play.

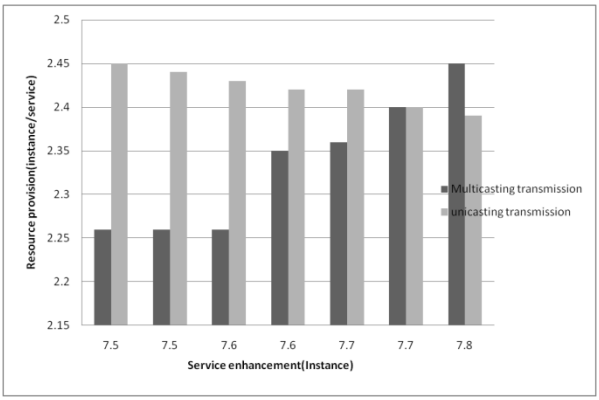

Figure 5 Unicasting v/s Multicasting

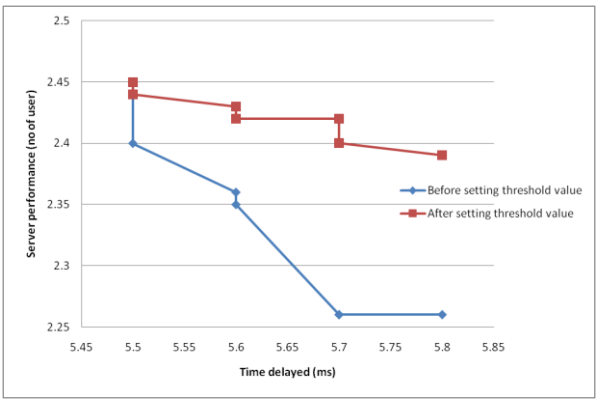

Figure 6 Variations of performance on changing threshold value for servers

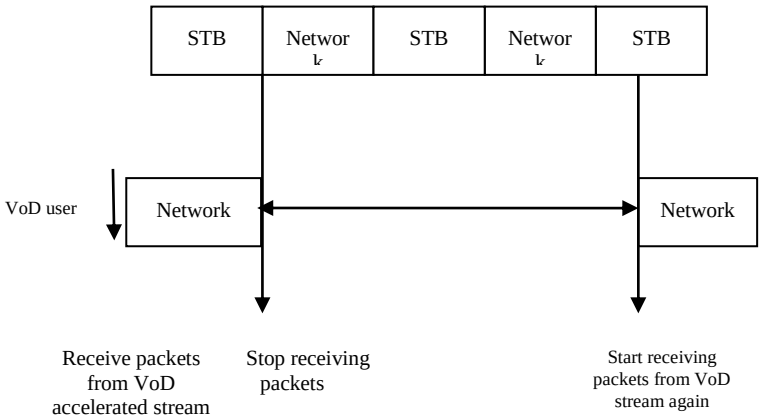

Figure 7 Architecture of VoD

IV. CONCLUSION

We studied however IPTV service suppliers will leverage a virtualized cloud infrastructure and intelligent time-shifting of load to higher utilize deployed resources. Time shifting reduces the workload as well VoD delivery as example.

We studied that we will benefit of the distinction in workloads of IPTV services to schedule them befittingly on virtualized infrastructure. Formulate to develop as a general optimization problem and computed the quantity of servers needed in line with a generic value operate.

We studied multiple forms for the value operate and solved for the best variety of servers that are needed to support these services while not missing any deadlines.

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