

Analysis of Quality of Service for IPTV in the Republic of Macedonia

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ABSTRACT

Quality-of-Service (QoS) is becoming a critical factor for user satisfaction regarding IPTV. This paper explores the level of satisfaction of customers of television over internet protocol named MaxTV provided by one Internet provider in the Republic of Macedonia. The data were gathered as representative example from one provider since it is most widely used. The results are valuable in terms of knowing how the users are evaluating the service. Analysis of these results will help IPTV providers to improve their service.

Keywords

Internet Protocol Television (IPTV), quality of service (QoS), MaxTv

INTRODUCTION

Internet Protocol Television is a system that provides digital television services over Internet Protocol at a lower cost. IPTV is a system capable of receiving and displaying a video stream using Internet Protocol. Users can get this service anywhere and anytime to their mobile devices. In order to use this service, telephone line and ADSL are enough. The most frequent use of IPTV is IPTV in a packet with Video on Demand and Voice over IP (VoIP).

IPTV services can be classified by their type of content and services. Video on Demand is one type where a customer can browse an online movie catalogue, watch trailers and select a movie. The second type is live content where a customer is required to access a particular channel for the content at a specific time, similar to accessing a conventional TV channel [1, 2, 3].

In the future, we expect a single network, the IP network, to provide services that have been carried by different networks today [4]. There are interesting services such as IPTV service over vehicular ad hoc networks (VANETs) where a quality of service (QoS) mechanism is needed to manage the allocate of network resources to the diverse IPTV application traffic demands [5].

IPTV SERVICE

Transmitting video over IP networks is an old idea. It dated from the very early stage of the Internet. But, there are major technical difficulties, such as the way IP network works, that prevent transmitting video over IP with satisfactory quality. The IP network is designed to be a best-effort network, which means that it does not provide guaranty of QoS. Packets on the third level (network level) are transmitted over the network without confirmation in order to improve speed. In order to get good quality, the network has to satisfy certain requirements on bandwidth, end-to-end delay, and jitter. Scalability is also very important. System performs well when the number of users is small. But, it will crash when there are thousands of users accessing the service at the same time, which is typical in a broadcasting TV system.

Figure 1 and Figure 2 show what is the difference between IPTV and standard TV signal transmission.



Fig. 1 Signal transmission for IPTV



Fig. 2 Signal transmission for standard TV

Types of IPTV

Regardless of being aware of that or not, people meet IPTV in everyday life. There are four basic forms of IPTV.

- Internet IPTV, which is transmitted over internet all over the World.
- Telco IPTV is transmitted over the telephone/Internet or cable provider often named as telecommunication provider. We can watch TV program the same way as Internet services. This service has a capability of providing live content and On Demand content.
- Broadcast IPTV is the service when the television broadcasts the content free of charge over PC. There are many channels broadcasted for free, but some of them are paid. For example, BBC iPlayer.
- Local IPTV or known as Building IPTV is a service to transmit television and video over the network of some object or campus via local area network (LAN). This is a replacement for traditional analog distributed system with flexible, adaptable cheap alternative.

Services of IPTV

Pay per View is a service used to watch content with higher cost.

Electronic Program Guide (EPG) is a service that appear on the screen with a detailed view of the content of each channel.

QoS for IPTV

The key to good customer service is building good relationships with the customers. It is very important for the customers to leave with a great impression and to thank them. Promoting a positive, helpful and friendly environment is essential to have a happy customer which will return often and also, would like to spend more. To be sure that the best customer service have been provided it is important that service provider knows what customers consider to be good customer service. Provider also have to take the time to find out customers' expectations, to follow up on both positive and negative feedback received, to continuously look for ways to improve the level of customer service delivered.

Some of the main elements of good customer service are: to have trained staff, to listen customer complaints, to know the products and also to build good customer relationships. Accomplishing the last one the most significant issues is to show customers that you understand what their needs are. This paper enables IPTV providers to understand customer's needs and behavior in the Republic of Macedonia.

In an IPTV system, users subscribe to the IPTV service through their Internet service provider, which sometimes also offers VoIP, service as an alternative to traditional telephone service. The combination of IPTV, VoIP, and Internet access is referred to as “Triple-Play” service. IPTV can make the TV viewing experience more interactive and personalized. IPTV also offers Video on Demand (VoD) [4], in which a user can choose movies from a database and play it immediately. However, IPTV also has its own limitations, because of video quality sensitivity to packet loss and delay. That is the reason why ensuring the QoS in a best-effort network like an IP network is a challenge topic.

DISCUSSION OF THE RESULTS AND CONCLUSIONS

For this research the survey was performed with 14 questions. Total of 84 persons were questioned from all ages, gender, place of living, etc. Table 1 summarizes answers from the customers on the first 6 questions where they answered yes or no. It can be seen that not many of the customers use the IPTV service (question 2.). Those that use it, are not very fond of paying for certain content (question 3.) and they do not buy program packets (question 6.).

Table 1. Answers from the customers

Question	Positive Answer (%)	Negative Answer (%)
1. Do you know that MAXTV is Internet TV	89	11
2. Do you use MaxTv	30	70
3. Would you like to pay to watch certain content	43	57
4. Are you satisfied with information accuracy in EPG	67	33
5. Do you watch TV on the Internet	61	39
6. Do you buy program packets	28	72

Figure 3 and Figure 4 summarizes satisfaction with quality of MaxTV services and usage of free videotheque.

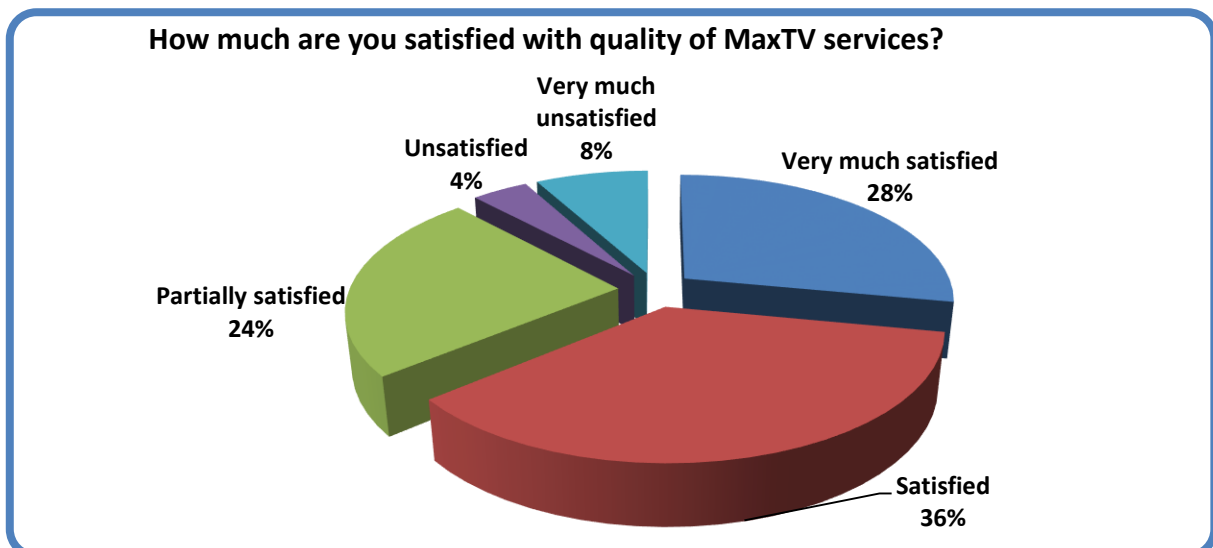


Fig. 3 Satisfaction with quality of MaxTV services

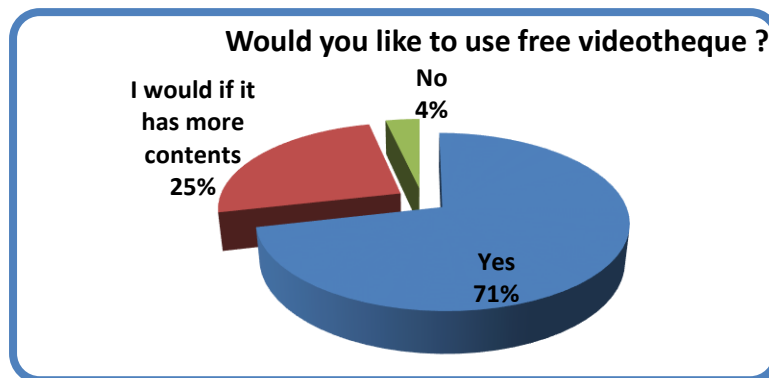


Fig. 4 Usage of free videotheque?

Figure 5 shows the results from the answers on the question ‘what kind of TV plug you have?’ The main reason for huge number of cable plugs is that it is the cheapest one and there are no obligatory contracts.

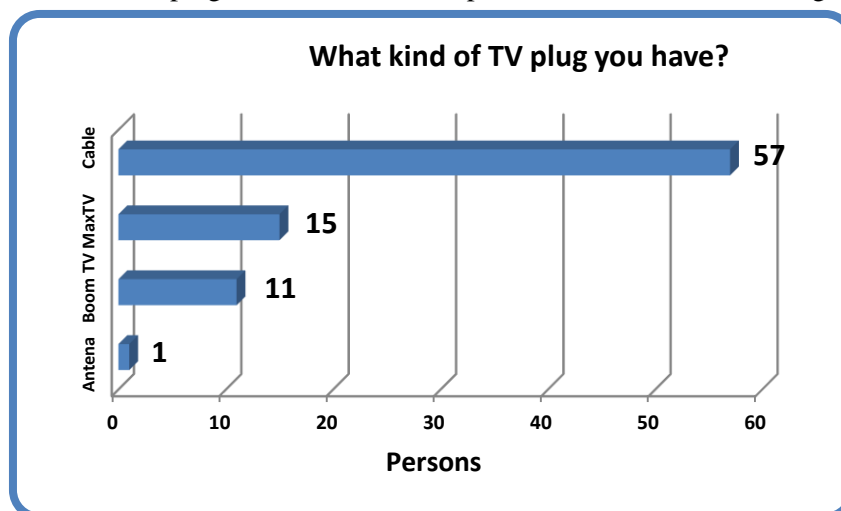


Fig. 5 Kind of TV plug

The question ‘If you buy program packet, what kind of packet would you chose?’ was answered by 83 persons and 59 would like to choose films, 34 sports, 14 music and 7 adults program.

How many packets would you like to buy? 81 persons answered this question. 58 would like to buy one program. 17 would like to buy combination of two packets. 2 persons would buy combination of three packets, and 4 persons answered: combination of more than three packets.

The question ‘Would you use additional functionalities that IPTV offers such as videotheque, TVthec, program shooting etc?’ was answered: ‘yes’ 63%, ‘no’ 18% and ‘partially’ 19%.

On the question ‘Would you like to pay to watch certain content?’ shown in Table1, most of the customers answered ‘no’.The reason for this it could be that there is no practice to pay for something additional that is not included in the subscription.

On the question ‘Do you buy program packets?’ shown in Table1, most of the customers, also, answered ‘no’.The reason for this kind of answers is that there is no custom to pay for additional service other than the offer in the subscription.



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