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A Review of: An approach to security improvement for Mobile Video Streaming and Sharing in the cloud

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Abstract: Cloud computing is a leading technology which has aim to provide cloud services to the user on demand. It provides number of services to users such as Infrastructure as a service (IaaS), Platform as a service (PaaS) and software as a service (SaaS) with greater flexibility, scalability and availability. IaaS provide space for data storage on the cloud. Storage on the cloud has number of advantages like fast data access and store, the main advantage is to access of data anywhere in the world. On the basis of this principle, storage of videos which are always bulk in size on the cloud, will give access of videos faster. It will help less configurations mobile users and the users who get affected by signal strength i.e. weak signal. Cloud computing can also be used to share the videos that are on the cloud within the group or in public depending on the privileges. In this paper, we are going to show who cloud computing can be used for mobile phones to help faster access and share videos.

Keywords: Social activities, Video streaming, Video Buffering, Encryption, Decryption, cloud Computing.

I. INTRODUCTION

Over the last decade video traffic has increased on the internet. There are number of different factors that lead to increase in video traffic over internet like different formats of video data like MPEG, AVI, 3GPP, MKV etc. These different formats differ in Video size and quality of videos. The video quality demands leads to increase in size of videos in bulks. Such a bulk of data leads to interruption and long buffering time. Generally, it will badly affect to mobile users which are also increasing in numbers. Mobile phones have low configurations and always affect by signal strength. For such mobile users, there is need of faster and interrupt less access of videos.

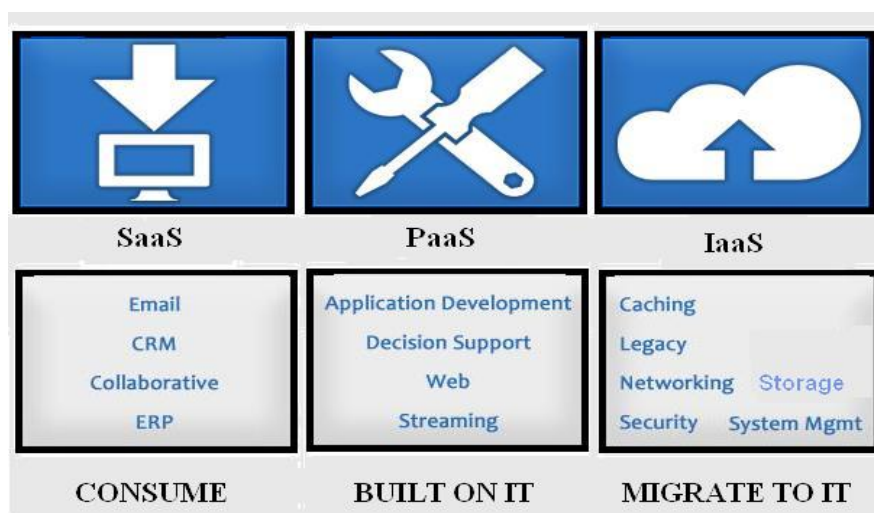


Fig. 1 Different uses of Cloud Computing Services

Cloud computing can solve this problem, cloud computing which is leading and latest technology, which provides number of services to users on demand with different service models such as, Infrastructure as a service (IaaS), Platform as a service (PaaS) and software as a service (SaaS) with greater flexibility, scalability, reliability and availability. Fig. 1 shows how cloud computing services can be used for different purposes of a user. As shown in Fig. 1, SaaS can be used for storing different applications on the cloud, So that any user that has connected to the internet can access the application according to requirement i.e. On demand. Also, PaaS can be used for developing application in distributed environment and requirement of hardware for development is much more costly or with high configuration. As shown in Fig. 1, IaaS can be used for caching, storage etc. Storage on the cloud has number of advantages like access of data worldwide and ease to maintain consistency, easy to provide security, the main advantage is to access of data anywhere in the world. On the basis of this principle, storage of videos which are always bulk in size on the cloud, will give access of videos faster.

Cloud computing can also be used for video sharing purpose. Currently, everyone is on the social media sites and wants to share the video in community, public, and in subscribed users. The video that has stored on the cloud, are easy to share. Sharing on the cloud is as simple as linking the video to other user.

II. RELATED WORK

Cloud services are provided by number of different vendors and these vendors are not trust worthy. Cloud computing services are given irrespective of geo-location. On cloud environment location transparency is maintained from cloud users and Sometimes there is risk of stealing data on cloud by hackers and there is also possibility that cloud service provider may not be cloud operator, but provides a value added services on top of another cloud providers service.

To maintain data privacy user data is stored in encrypted form, So that the malicious user or the intruders cannot access data. There are different types of cryptographic technique like Symmetric and Asymmetric keying. These types are made based on sharing of encryption key for decryption at the recipient. Symmetric key cryptographic type uses single key for both encryption and decryption. But, Asymmetric key cryptographic type uses different keys for encryption and decryption purposes.

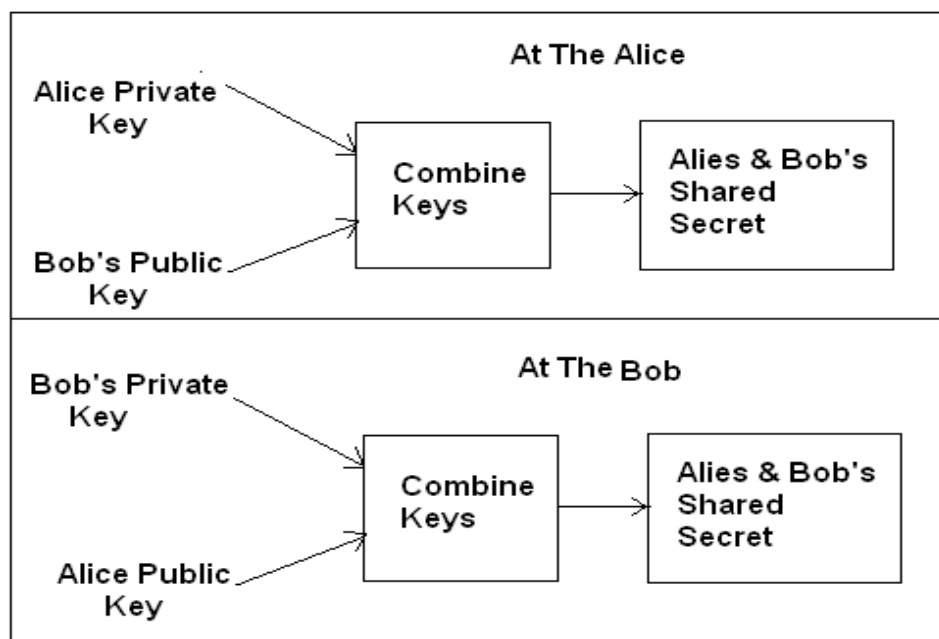


Fig. 2 Shows Generation of Secret Key in Diffe- Hellman Algorithm

It has shown that asymmetric cryptography technique is tenable than symmetric cryptography. In asymmetric cryptography Diffie- Hellman Algorithm is the best one and cloud uses same for the data encryption [22]. Diffe Hellman Algorithm generates both public and private key at both sides of communication end. Then, they share their public key to each other. After getting of valid public key to each other, they generate shared secret key at both end which is shown in Fig. 2. At Alice side, Alice uses

public key of Bob and private key of Alice to generate shared secret key. And at Bob's side, Bob uses public key of Alice and private key of Bob to generate shared secret key. After generation of it, they start their secure communication.

III. LITERATURE REVIEW

Nowadays Mobile phones becomes essential part of every person and that is most likely to be with all. Also mobile phones has becomes more sophisticated device with number of functionalities like camera, multimedia player, video shooting and GPRS, Wi-Fi, 3G like network support etc., due to such a functionalities users are using mobile phones as high end device. With the invent of such a technologies, users also need more sophisticated, faster and stream less access and sharing of videos over internet. But videos are bulk in size and different in formats. Such formats produce challenge [1] in searching and faster download of videos [2]. Formats differs in quality of data, because it's a current need of mobile users in which they want quality of video [3]. Mobile phones are low in configuration and always get affect by low signal strength of network. Such mobile users will get affected from low quality videos sharing. It leads to use of encoding technique and compression technique [4], [5]. Signal strength and wireless nature will leads to noisy communication and causes unreliable transmission problem, solved by using session in [6] and by using light weight verification algorithm [7]. These challenges influence towards use of cloud computing as a solution to above problem [8].

Cloud computing is growing technology in IT sector and provide number of services to user. It provides services on demand [9] and with great comfort [10]. Infrastructure as a service (IaaS) of cloud services can be used for storing videos on the cloud [8], [11] so that it can be accessed faster and easily. Cloud computing has number of benefits [12] for users like on demand service, pay per use, scalability and availability services. Cloud services are on demand that is resources are allocated [13] according to users requirement and are available all the time. But there are number of challenges in adapting cloud services which is discussed in [20], such as security [21]. Videos that has stored on the cloud can be shared in group [22], in friends or in public [16]. Sharing of videos can be done by using profile matching [27], [29], by using social relationship [32] etc. Videos has to be shared streamlessly and without buffering [16]. Video streaming has to be done on prediction basis by using social activities such as sharing in friends, in subscribers, in group or in public is explained in [16]. As discussed videos are in different format [1], such a videos has to be viewed or searched and download effortlessly [30]. But there is security threat in adoption of cloud services, because cloud venders are not trusty.

Mainly security threat for data stored [21] on the cloud that can be hacked, steeled etc. Even though cloud providers are fake or not trusted, how to identify is explained in [18]. There has also provided multicloud architecture [31] for security improvement by using security at multiple cloud simultaneously. Security, while travel of data in transmission line can be solved by using cloud based center for security check, explained in [14], [19].

There are number of solutions provided for storing data on the cloud so that data stored is secure [23], [24]. In that solutions, main solution is to store the videos after encryption [22] by using cryptographic technique. The data that has stored after encryption, will only decrypt by users or intruders who has decryption key. The privacy of user data is one of the biggest challenge which has solved in [17], [22], [23], [24], [25], [28]. The data that has stored after encryption and shared by authorized users can create multiple copies of data in [16], is solved in [26] which has given revocation list for secure sharing purpose.

IV. RESEARCH OBJECTIVES

Designing of cloud based application for mobile users will give number of advantages for mobile users that want mobility services and want to share and download videos. The research objectives are,

1. To provide scalable and faster video sharing and download.

2. To provide stream less experience of video sharing and download.
3. To provide security of user's private data and videos that will be stored on cloud.

Such a system will also be used to access the videos that are already on the cloud or on other portals like videos on the YouTube, TED etc. It's main objective is to provide a solutions for mobile users that has low configurations, but wants to download and share videos which are bulk in size.

V. CONCLUSION

Mobility and availability of large spectrum is the main factor that leads to increase in mobile users tremendously in last decade. Due to increase in such a large users leads to number of inventions in mobile phones. It is a current need of mobile users to download video faster and streamlessly. Such a need can be solved by using cloud computing which provides number services. By using Infrastructure as services for storing videos on cloud will give faster video download and share. But, cloud service for storage of data is not trusted, they are less secure. For such a reason security has to be provided, security can be provided by using Cryptographic techniques for encryption and decryption of data.

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