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Distributing Immediate Social Video Facility across Multiple Clouds

E.Sasi, E.Dhilipkumar

[1]PG Student, [2]Associate Professor

1, 2, Department of mca,dhanalakshmi srinivasan Engineering College of technology

Abstract:

Instant social video sharing which combines the online social network and user-generated short video streaming services, has become popular in today's Internet. Cloud-based hosting of such instant social video contents has become a norm to serve the increasing users with user-generated contents. A fundamental problem of cloud-based social video sharing service is that users are located globally, who cannot be served with good service quality with a single cloud provider. In this paper, we investigate the feasibility of dispersing instant social video contents to multiple cloud providers. The challenge is that intercloud social propagation is indispensable with such multi-cloud social video hosting, yet such inter-cloud traffic incurs substantial operational cost. We analyze and formulate the multi-cloud hosting of an instant social video system as an optimization problem. We conduct large scale measurement studies to show the characteristics of instant social video deployment, and demonstrate the trade-off between satisfying users with their ideal cloud providers, and reducing the inter-cloud data propagation. Our measurement insights of the social propagation allow us to propose a heuristic algorithm with acceptable complexity to solve the optimization problem, by partitioning a propagation-weighted social graph in two phases: a preference-aware initial cloud provider selection and a propagation-aware re-hosting. Our simulation experiments driven by real-world social network traces show the superiority of our design

I.INTRODUCTION

Over the last years, cloud computing has become an important theme in the computer field. Essentially, it takes the information processing as a service, such as storage, computing. It relieves of the burden for storage management, universal data access with independent geographical locations. At the same time, it avoids of capital expenditure on hardware, software, and personnel maintenances, etc. Thus, cloud computing attracts more intention from the enterprise.The foundations of cloud computing lie in the outsourcing of computing tasks to the third party. It entails the security risks in terms of confidentiality, integrity and availability of data and service. The issue to convince the cloud clients that their data are kept intact is especially vitalsince the clients do not store these data locally. Remote data integrity checking is a primitive to address this issue. For the general case, when the client stores his data on multicloud servers, the distributed storage and integrity checking are indispensable. On the other hand, the integrity checking protocol must be efficient in order to make it suitable for capacity-limited end devices. Thus,based on distributed computation, we will study distributed remote data integrity checking model and present the corresponding concrete protocol in multicloud storage.

II EXISTING SYSTEM

Today, a number of online multimedia services can be deployed over the geo-distributed cloud and network infrastructure . Intuitively, multi-cloud hosting provides better geographical diversity for servers, since no single cloud provider is able to cover all the regions/ISPs across the Internet, to serve users with their ideal servers. The growing trend of social application and the existing geo-distributed deployment for online multimedia applications lead to the idea of multi-cloud instant social video hosting, or multi-cloud hosting in short, in that the instant video contents are dispersed to multiple cloud service providers, rather than a single cloud provider.

III PROPOSED SYSTEM

We will show how to efficiently host an instant social video system with multiple cloud providers based on partition of a propagation-weighted social graph. First, we conduct large-scale measurements to study the benefit of hosting social video contents with multiple cloud providers, the challenges with such multi-cloud hosting, and design guidelines from social propagation characteristics. Second, we formulate the multi-cloud hosting as an optimization problem, which is proven to be NP-hard. Third, based on our measurement insights, we propose to solve the problem heuristically by dividing the partition into two phases: an initial preference-aware cloud selection (so that users can upload/download the instant videos to/from their ideal servers), and a propagation-aware re-hosting (so as to reduce the cost of replicating the content across the boundary between multiple cloud providers caused by the social propagation). Since only a small set of social connections incurring a large amount of replication cost are re-hosted in our design, the algorithm can efficiently partition large-scale social graphs.

IV.SYSTEM DESCRIPTION

It includes modules like Hosting Users Instead of Contents,Diverse Regions/ISPs Improve Service Quality,Multiple Cloud Providers Cover More Service Regions,Instant Video Uploads and Requests.

A. Hosting Users Instead of Contents:

Social connections determine how contents propagate between users in the online social network . Content propagation over these social connections turns an online social network to a "user-subscribing" network, *i.e.*, each user acts as a source which generates the contents to be subscribed by others . For this reason, in our study of the multi-cloud hosting of a social video sharing system, we focus on handling the hosting of users, *i.e.*, contents generated or shared by a user will be hosted by the same cloud provider assigned to host the user, and different cloud providers are assigned to host different users. Note that content instead of users is physically stored and served by the cloud servers. These contents can be either static (e.g., photos uploaded by users), or dynamical (e.g., pages generated according to different contexts). The users are actually "logical" instances, which generate and propagate contents in the online social networks. Since users instead of content are the key to social propagation, using users as logical instances to determine which content should be hosted by which servers is thus a simple design for propagation aware multi-cloud hosting.

B.Diverse Regions/ISPs Improve Service Quality:

Diverse server deployment improves the service quality in instance social video sharing, we study the performance of users downloading contents from servers at different geographic locations. In particular, we measure the time users (PlanetLab nodes) spend on downloading contents from the servers allocated at different locations (7 Amazon regions are selected). The content size is 1 MB, and users download the content over HTTP, from the same type of web server. We repeated these download experiments in one week, and calculated the average download speeds of the users, to infer their preference of servers deployed at different regions.

C.Multiple Cloud Providers Cover More Service Regions:

Today's cloud providers are scaling their services globally, by building datacenters at different regions and with different ISPs around the world. However, it is difficult for a single cloud provider to cover all the possible regions/ISPs that an instant social video sharing system requires, to serve the users with servers deployed at their ideal regions. It is promising for a social video sharing system to allocate servers from a larger range of regions and ISPs, by utilizing more cloud providers.

D.Instant Video Uploads and Requests:

we measure the content uploads and requests in an instant social video sharing service. We first study the statistics of the number of video uploads and requests in one day. The two curves in this figure represent the number of instant videos uploaded/requested by users in each time slot (1 hour) over time. We observe that both the upload and request curves demonstrate daily patterns, with the peak hours at8pm and 10pm, respectively. We also observe that the average number of requests is around 100x larger than that of uploads, indicating that it is likely for the popular videos to be requested by many users, located at different regions. It is thus necessary to deploy these contents into multiple clouds.

E. Implementation

Figure 1,2,3,4 shows the Implementation part of the paper.

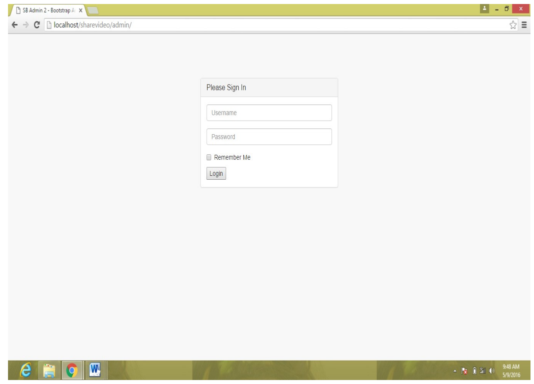

Fig 1

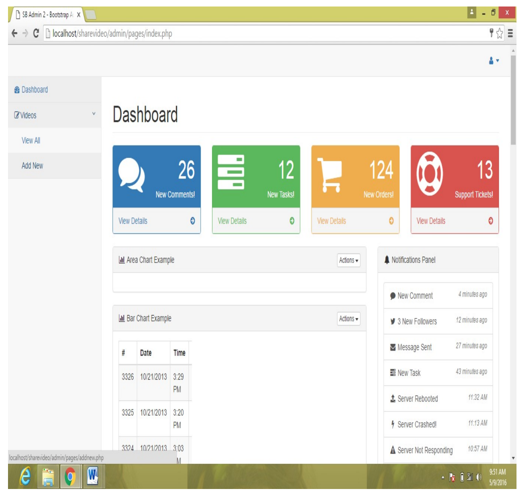

Fig 2

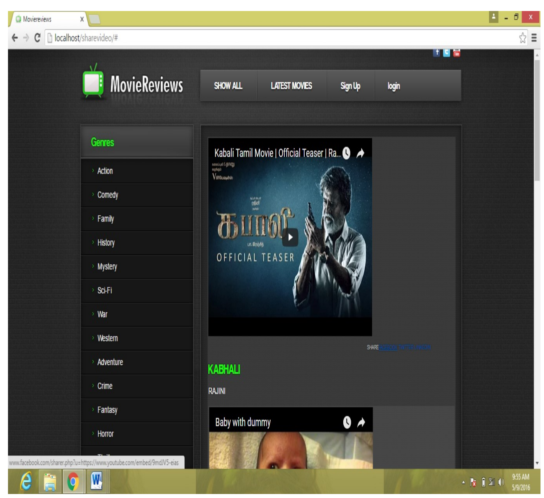

Fig 3

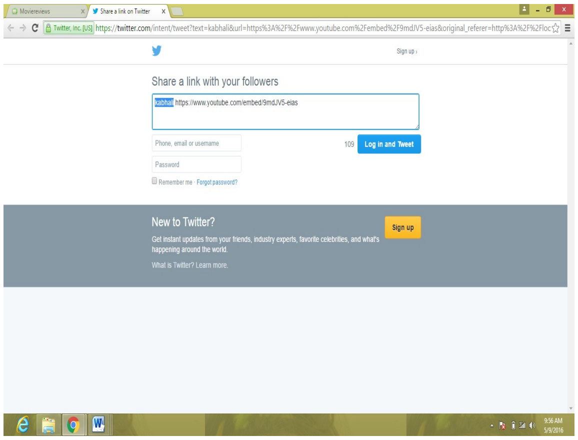

Fig 4

V.CONCLUSION

The ability to deploy your applications on different cloud providers has the clear advantage of reducing dependency on a single vendor. The resulting lower level of lock-in improves your position in negotiating with vendors for better SLA and/or costs. The ability to easily switch vendors means that you can take advantage of the most attractive offers available at any given time.You can keep some applications on-premises and others on one or more public clouds, based on a variety of considerations, such as security, performance or cost optimization. For example, a hybrid cloud solution can also be used to provide faster service, particularly if your customers are located in different countries. Deploying your applications on a cloud that is closer to your customer's geographical location can result in better response time and performance.Different cloud providers support different platforms and offer constantly changing packages of capabilities. Some features, for example, Database as a Service, might not be supported by all cloud providers. It might be a good idea to shop around, comparing the various cloud offerings to identify which providers offer the best fit for you. You might prefer to pay more for specific deployments if it means you get special capabilities, while continuing to take advantage of lower costs offered by a different provider for resources where those capabilities are not relevant.

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