Mobile Cloud Data Services –A Transfer from Mobile Databases

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Abstract— Just now, mobile cloud computing, has been named as the peak one emerging technology .This gives a strong demand on new emergent mobile data service solutions and technologies in the mobile computing and implies more innovative mobile data service solutions are required to support on-demand elastic and large-scale mobile data service requests. This paper focuses on mobile data service examines the issues and challenges on mobile data service in mobile cloud computing.

Keywords: data-as-a-service, mobile cloud computing, mobile databases, mobile cloud database

I. INTRODUCTION

The cloud-based data, applications, and services that have been designed specifically to be used on the mobile devices are broadly referred to as the Mobile Cloud. Mobile Cloud is defined as a combination of mobile development with cloud-based services. Typically, in framework of mobile cloud, the storage, applications, computing, and services are all delivered through cloud. Even though the mobile devices are prepared with native apps and resources, almost all the processing is passed out on the cloud server located remotely and every application is accessed through the browser, as a replacement for doing so locally. There will be a strong demand to have innovative mobile enabled database technologies and mobile data access service to address the current issues, requirements and needs in mobile cloud computing, the advancement of mobile computing leads to quite a lot of mobile database technologies, methods, and solutions that are developed to meet up the demands of mobile data services in mobile applications. However, existing solutions have the restrictions in supporting on-demand elastic and scalable mobile data services with mobility and multi-tenancy. With the progress of mobile cloud computing, new innovative mobile data services technologies and solutions are needed.

II. MOBILE DATA SERVICES ON CLOUDS

Mobile Cloud Computing (MCC) is a developing mobile cloud paradigm which leverage mobile computing, networking, and cloud computing to study mobile service models, develop mobile cloud infrastructures, platforms, and various service applications for mobile clients. Its purpose is to deliver them with secure mobile cloud resources, well organized service applications, and data using energy-efficient mobile cloud resources in a pay-as-you-use model. MCC is known to be a hopeful solution for mobile computing because it overcomes obstacles in mobile computing such as improving data storage capacity and processing power by enabling mobile users to store/access data on the cloud. So the new mobile data service technologies and solutions are required to deal with the new demands on mobile data services in mobile cloud computing. There are some needs

and requirements for mobile cloud data service technologies in the mobile cloud computing prototype. The important features are Offer on-demand mobile data services on a mobile cloud based on service-level agreements, Pay-as-you-use business model, off-load computing power demands from mobile devices to clouds, Multi-tenanted mobile data service, Highly elastic and scalable data services, Decidedly reliable and available mobile data service.

III. NEEDS AND REQUIREMENTS

There will be a lot of challenges and issues in mobile data services on clouds. Here list the issues in three main areas, there are (i) privacy and security in mobile data service, (ii) multi-tenancy and customization in mobile data service, (iii) mobile data transaction management.

A. Privacy and Security in Mobile Data Service

Privacy is the important thing in everywhere, Protecting and supporting user privacy and data confidentiality is main thing to preserve users' trust in the mobile platform. This leads several security issues in providing cloud-based mobile database solutions, the main issues are mobile user privacy and data security.

1) Mobile User Privacy:

Several security model are developed for location based services using outsourced databases to attain location security in both privacy and authentication. Such as Where Store: Location-based Data Storage for Mobile Devices Interacting with the Cloud is a device store that uses filtered replication for caching data in mobile cloud computing. They predict the possible future locations of a mobile node from the past location history and cache the information about that location. Then the transition graphs are used for prediction of future location from the current location.

2) Data Security:

The reliance of cloud-based, infrastructure-centric and multi-layered security solution combined with endpoint solutions could serve as the foundation for possible solution of data security. Two additional issues are, The Power-efficiency and intelligent partition. Designing and developing security mechanism for mobile cloud databases should focus more on power-efficiency and delay of such security algorithms and how to partition them on cloud and mobile devices. The security mechanism is considered to be highly scalable, if the users' increase can be adaptively handled without degradation in database performance. The computational requirements, scalability, and assumptions play a very important role in the successful application of security mechanism for mobile cloud databases.

B. Multi-Tenancy & Customization in Mobile Data Service

1) Multi-Tenancy:

Multi-tenancy is one of main feature of mobile cloud computing and mobile SaaS. This requires the support of

multi-tenanted mobile data services. There are three main challenges and needs to address this demand. – How to develop and design well-defined data-oriented multi-tenancy models to represent the datasets and its access and services , and control mechanisms, and next generation mobile data-as-a-service applications and DB technologies.

2) User Scalability:

Management of large amount of users effectively is crutial for mobile cloud databases. Besides, there are many factors that could affect the user scalability of mobile cloud databases such as multi-tenancy architecture, resource utilization and data access load.

3) Mobile Data Transaction Management:

Distinct from relational data model in the mobile database, NoSQL data models are more popular in the mobile cloud databases. The main issues on transaction management are Query on encrypted data. An easy way to address data security is to encrypt the database, but an encrypted database cannot be easily queried. Processing aggregation queries is usually achieved by using a special encryption scheme called homomorphic encryption that allows addition and multiplication on cipher-texts without the need for decryption.

IV. CONCLUSION

With the advance of mobile cloud computing, new innovative mobile data service technologies and solutions are needed, existing solutions have the restrictions in supporting on-demand elastic and scalable mobile data services with mobility and multi-tenancy. This paper focuses on mobile data service examines the issues and challenges on mobile data service in mobile cloud computing.

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