The Development of Data Storage Security Issues under Cloud Computing

Hu Yang¹, Su Lin²

Abstract

Internet-based super computing model has aroused great concern, while also facing a growing number of security issues. Data security issues for cloud storage system in the application process facing, this paper presents secure data storage architecture based on cloud computing. The architecture study security issues of cloud computing from the data storage and data security aspects are proposed based Cache data storage model based on third-party certification and data security mode, thus improving data availability, data transfers from storage the establishment of appropriate protective measures, to achieve effective protection of cloud data.

Keywords: cloud computing; data security; infrastructure; research

1 INTRODUCTION

With the rapid development of Internet technology, cloud computing (Cloud Computing) technology as an emerging Internet technology research and applications, more and more people's attention, and in the past two years has been rapid promotion and popularity. How to efficiently, safely stored and transmitted to generate a lot of business data in the cloud, has become the industry focus of the study. More and more applications want to be able to securely store, manage, share and analyze large amounts of complex data, to determine patterns and trends; especially both want to reduce equipment investment and management costs, and the need of high capacity scalable extension for online service providers, cloud storage is a good solution. A characteristic of resource allocation and scheduling policy determines the cloud storage security challenge is the data owner cannot control where the data is stored. Therefore, to ensure the safety of commercial application of the cloud, we need to maintain in this process untrusted data security. Migrate data to the cloud, so that business users in terms of data security and availability of its highly constrained by the cloud storage server vendor. For many enterprises to migrate their data to the cloud is very difficult, it can be said security and availability concerns enterprises to the cloud storage mode paramount factor. Once these problems are resolved, cloud storage will adapt commercial repository of information needs. The initial backup can be done within the device may be otherwise obtained data backup protection device on the outside of the cloud storage. Taking into account only the new data will be migrated to the cloud, it supports automatic incremental backup technology is most appropriate. Automated incremental backup provide an efficient strategy, namely Broadband incremental backups to reduce the pressure at the same time, automation features also saves employee time related operations daily.

¹Airport Management College, Guangzhou Civil Aviation College, Guangzhou 510403, China
²Department of Computer Science and Engineering, Guangdong Peizheng College, Guangzhou 510830, China
2 Cloud services and cloud computing
Cloud service providers or researchers have proposed many concrete and feasible cloud storage security solutions. But these measures have not yet been generally recognized and reliable security solutions acceptable. Moreover, previous research has not systematic and in-depth on the user's own security risks, user organizations and cloud management loopholes, as well as laws and standards of analysis and discussion. This paper will draw on the theory and practice of domestic and foreign cloud storage research results on the basis of security issues, based on the entire life cycle of cloud storage as a new perspective, based on the principles of both the technology and management of the cloud, the user's own existing data security risks in-depth analysis and research, explore user data is stored under the new cloud security solutions to environmental problems, hope results of this study can effectively reduce the security risks of cloud data storage environments. Cloud computing has a natural advantage in solving large-capacity storage and query number prefixes, first hardware infrastructure on a large-scale low-cost server cluster interconnect between each node using the commonly used gigabit Ethernet. Second, the application and the underlying services collaborative development maximize the use of resources. Finally, cloud computing through redundancy between multiple inexpensive servers, make software for high availability. Through these techniques, cloud computing has a high scalability and high availability. Scalability expressed cloud can seamlessly extend onto large-scale clusters, even with thousands of nodes simultaneously treated well make up for deficiencies of the prior art memory bank. There are millions of servers in the cloud, because the cloud storage platform is generally backed up three or more, even if a station fails, cloud computing by means of backup mechanism, the data from the other rack servers copy restore to another machine, which is very important for the banks is to ensure data security.

3 Cloud computing and cloud storage
3.1 Cloud computing
Under the technical conditions of the Internet provides a form of cloud computing technology, cloud computing can provide a dynamic and scalable virtual can be characterized calculation mode. "Cloud" is a metaphor, is an abstract concept, is actually a computer and the Internet at work. Cloud computing a large amount of data on the computer, the computer does not refer to the local computer, but the remote server, companies can accord their actual needs, and access to computer storage systems, organizations can put a lot of information resources they are converted to objective application up. That is, the computer is just become a simple terminal, do not need to make any calculations or stored directly to host functions to the cloud.

3.2 Cloud storage
Extends cloud based on the concept of a new concept that is cloud storage, cloud storage and cloud concept is very similar to that distributed file systems and grid technology as a basis for clustering applications, with application software to computer a variety of storage devices for effective centralized, so that each can collaborate. Its function is to provide external services related to data storage and access. Essentially, the current storage mode for innovation is cloud storage. Cloud storage architecture also special a service, in particular, some of the wide area network or the Internet is transparent to the application is concerned. Related application software is the key point cloud storage between storage devices combination of organic transition services performed by this effective software makes between the device and the device.
3.3 Construction in the cloud data storage system
In practice, the data storage system includes a data center and cloud service interfaces and service agreements; the data center is the basis of data stored in a cloud environment, the storage management, distributed file systems and storage backup components. Cloud storage device can be either a storage device in the development process of enterprises specialized in the application, but also the basis of a PC, the system design is based on the client and server mode. These are indeed proven to complete a lot of work to store data, and the effect is very satisfactory. This structure is suitable for use in storage among cloud server, it can be extended within a certain range, and the transmission efficiency is relatively high.

4 Cloud computing security issues
Encryption attribute-based research aspects, mainly in the direction of improving efficiency, increase the flexibility of top security and access structures. Efficiency is mainly reflected in the cost of storage and computing overhead. Security is reflected in the security model, to select safety is a basic requirement to achieve complete security is further requirements. Flexibility of access structure is reflected in the specific form of access to the structure. Structural attributes "and" door that allows the program is simple and very efficient. In addition, the protection of the privacy of the message recipient is also one of the needs of reality; hidden structure can prevent users from accessing attack system, but also allows the storage service provider cannot obtain permission to any information message.

Dual data storage technology, data entry in the traditional way, real-time communication corresponding contrast can instantly locate the differences in data units, the data itself is stored procedure errors means a highly efficient shielding. In this scenario cited improved security and development nature can bring a lot to enhance the security and fault tolerance data. Asymmetric encryption technology itself is not afraid of storage or transmission characteristics of the process revealing passwords or information, there is no case to obtain the private key will get is useless information, these cases are decided asymmetric encryption technology is ideally suited as upper identity verification the control node encryption cloud storage architecture. As improve data storage security price. Control node and a corresponding increase in the backed up data pool certain tasks. In addition to Asymmetric encryption algorithms, safe and reliable characteristics areoutside. According to its encryption principle indeed there are excessive computing encryptions, encryption takes too long. However, based on cloud computing architecture cost-efficient, flexible and easy expansion characteristics to the appropriate computing power in exchange for security enhancement, it is entirely reasonable and optimal solution.

In the information field, from the beginning of storage and security of data it has been a hot topic. Involved in cloud computing brings new challenges and opportunities, reasonable options optimized architecture can result in higher data security. Traditional local data storage, administrators have to spend energy and financial resources to the software or network layer software or disposed of defense such as firewalls and other defenses. In this regard, improved dual-channel data storage scheme is proposed architectures layer directly address security issues made once the deployment is optimized with asymmetric encryption technology, centralized computing platform under a small amount of specialized software and cloud and defense defense equipment constituting the data security system, in a lot of cost savings, improve efficiency, streamline the structure of the situation to ensure the security of data storage stable even in the traditional mode of promotion.
5 Cloud storage is the foundation of cloud computing

Cloud storage is not only an important foundation for cloud computing, but also its core applications. Its basic principle is on the basis of functional clustering applications, grid technology and distributed file systems, network application software to model different storage facilities combine to make a unified whole and coordination in order to achieve to the outside world provide data storage and service access function. Commonly referred to as cloud storage service is not just a single storage device, but to use the whole cloud storage data access services provided by the system. Cloud storage is through the application of software and storage infrastructure to work together, which is the basis of a storage facility on offer cloud storage services to users through the application software.

5.1 Cloud service provider’s risk

Long-term operation and regulatory risks. Long-term operational and regulatory risk mainly includes the following three aspects: When the user selects a certain cloud service providers, cloud service providers in the future operating condition is unpredictable period of time, if this operator bankruptcy or acquisition, then the user's cloud services may be forced to interrupt the migration or unstable. In the current cloud service providers, most of which are relatively mature technology and management of international business, such cross-border provision of cloud services enable users to store data in the cloud may be scattered in different countries and regions, and therefore, since the data cannot be a government and governments of different cloud service providers and supervision legally binding direct result of the increase in users of cloud service providers difficulty of monitoring, thereby increasing the risk of cloud data.

Trust risks. Cloud service providers and users agree with the signing of a trust agreement, agreement on security issues upload, download, edit, and management of data, and thus the cloud data management platform to achieve oversight mechanisms, and to constrain the behavior of cloud service providers. Even signed a corresponding agreement, whether the cloud service providers to comply with certain legal constraints policies and agreements, and related policy and legal constraints cloud service providers in efforts to what extent, these are the users need to consider. Security risks for Network. Cloud storage is used to transmit data over a network; the network security risks may have caused data to the cloud: service interruption caused by malicious attacks, data corruption, data loss or tampering, causing data integrity, availability, confidentiality was to destruction.

6 CONCLUSIONS

Cloud computing tasks distributed in a large number of computer resource pool configuration that allows users to demand access to computing power, storage space and information services. Here are the hardware and software resources and is packaged as a service, users can access and use on-demand through the network. It's like we turn now powered by a centralized power plant model from the old single generator model of their own design. This means that computing resources can be denominated as a commodity to trade, life as we use water, electricity, gas, etc., the dispersion of resources together is easier to manage, user-friendly and inexpensive. The biggest difference is that it is transmitted through the Internet. In cloud computing, IT services are usually distributed in a large number of resource pool computer configuration, these resource pools including computing servers, storage servers, communications resources, bandwidth resources, software resources, internet
resources, and these resources together, through specialized software to automate the management of these resources, because without the cumbersome details and distress, managers can focus more on their business, it is easy to efficiency, cost reduction and technological innovation. Cloud computing will be a traditional form of self-style application into a focus on providing services to users, centralized management, in which the hidden implementation details, more user-friendly to use.

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