Research on Computer Network Security Policy of Cloud Computing

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Abstract. Cloud computing is a special computing model, which provides growth, use, and delivery services for internet data. In the application of cloud computing technology, the security problems of the computer network in some cloud computing environments gradually appear, resulting in the security troubles of computer network applications. This paper attempts to study the computer network security problems in the cloud computing environment, and proposes the corresponding computer network security strategy, to promote the computer network security, reduce the adverse effects of security problems, for the relevant personnel to provide a reference.

Keywords: Cloud Computing, Computer, Network Security

1. Introduction

It is an era of information, with the increasing popularity and application of computer technology and network, a large number of Internet services and the provision of information make more data computing, storage and application functions for people to use, making people's life and work more and more convenient[1-2]. However, as an emerging computer technology based on the Internet, cloud computing not only provides reliable and secure data and convenient services for people, but also attracts increasing attention and concerns about the security of computer networks in the cloud computing environment[3-4]. Therefore, the computer network security in the cloud computing environment is firstly described in this article[5]. Also, the analysis and understanding of the current situation of network security of the cloud computing is mentioned later. Finally, we give some suggestion of strengthening network security[6]. We hope to promote the development of the information society for the security of the network environment, which is of great significance.

2. The connotation of cloud computing

In essence, cloud computing is a computing model, which mainly relies on distributed computing, grid computing, and parallel computing. The ultimate purpose of cloud computing is to provide users with comfortable and convenient services. For cloud computing functions, convenience is a big feature, such as the storage of data. Besides, cloud computing has the characteristics and advantages of a time-sharing system, mainly reflected in three aspects: first, different devices can also achieve the purpose
of network data sharing; Second, it has complete computing function and storage function; Third, the operation of the application is quite convenient, especially for users, whose terminal equipment are not high. As for the processing of data in cloud computing, it mainly covers two aspects: the collation work after data collection, and the search work within the system. If only from the data collection after the collation of the work, it includes data analysis and the results of the return. Overall, cloud computing is dedicated to providing a good experience for users.

![Figure 1](image1.png)

**Figure 1.** The schematic diagram of cloud computing model

3. Analysis of the current situation of computer network security of cloud computing

3.1. Technical problems
For the average user, all the data stored in the cloud will be unable to be acquired and processed, unable to operate, or even helpless when the service is interrupted due to technical factors. Also, due to technical reasons, there are a lot of security problems since cloud computing is openness and visibility under the current network situation. It is impossible to identify some false addresses and false identification.

As shown in Figure 2, based on neural network, computer network security situation can be evaluated by three parts: input layer, hidden layer, and output layer.

![Figure 2](image2.png)

**Figure 2.** Computer network security evaluation model

3.2. Security issues
Cloud computing has not yet achieved the complete confidentiality of computer network security, and its integrity and operability are uncertain. Many hackers treat cloud computing as an attack object. Besides, virus residing on users' computers will also launch malicious attacks from time to time, which
is one of the important reasons for the security problems in the computer network security under the cloud computing environment.

3.3. Network security laws and regulations need to be improved
At present, in our country's computer network security management, the legislature has not carried out the relevant laws and regulations such as supervision, protection and sanctions. It can be seen that this lack of legal protection is also one of the factors that cause the computer network security in the current cloud computing environment, which is also a drawback of China's network. The legislature should issue relevant laws and regulations as soon as possible to limit rampant network threat behaviors.

For the above reasons, it is necessary to strengthen the computer network security measures in the cloud computing environment.

4. Optimization strategy of computer network security technology under cloud computing

4.1. Data prevention optimization strategy
Under the background of economic globalization, with the development and popularization of Internet technology, mail and application programs have become important carriers of malicious data. Once the user does not have the standard operation, it will interfere the cloud computing database security. Most users will use certificates to protect the safe operation of the computer network. In the practical application, the single electronic file security level is low, there is a certain risk in the application. By integrating encryption technology and certificate technology, the information protection level of cloud computing can be comprehensively improved, the security of the computer can be fully guaranteed, and the probability of information theft and replication can be reduced.

In Figure 3, different types of cloud computing services and its proportions used by enterprises have shown. Obviously, email and file storage services are the most frequently used computer applications by cloud computing for enterprise employees.
4.2. User awareness strategy

In the cloud computing environment, once the emergence of computer network problems happen, users will be directly affected. To avoid user data theft, damage and other situations, it is necessary to strengthen the user awareness of prevention optimization. Through training, publicity and other forms of education can gradually enhance the user's computer security awareness. By raising the awareness of precaution, it can ensure the correctness of operation, reduce the occurrence of all kinds of security problems comprehensively, and maintain the stable operation of the computer.

4.3. Strategies for improving the legal system

In the legal society, laws and regulations have a strong binding force, which can effectively regulate individual behaviors and ideas. Compared with western developed countries, China starts late in the application of cloud computing. Although relevant departments in China have issued the corresponding legal system, the laws and regulations on cloud computing network security are not sound enough. There are big loopholes so that some criminals can take advantage of, leading to the loss of data and important information in the computer. According to the current legal system, for illegal means to steal data information, damage user data and other acts, the punishment is relatively low. Facing with huge remuneration, it will lead to all kinds of illegal acts and incidents.

Relevant departments should reasonably distinguish the types of computer network security problems according to the cloud computing’s characteristics. They should improve other laws, combined with the actual needs of users, based on the original legal system. In the process of optimizing the legal system, we should increase the punishment of computer network illegal acts appropriately. Give full play to the disciplinary effect of law, and comprehensively improve the level of computer network security in the cloud computing environment.

5. Conclusion

In the new information age, various network technologies have been popularized, bringing great convenience to people's life and work. However, while enjoying this convenience, people also need to be fully aware of the problem of computer network security in the cloud computing environment. Based on this security situation, there are mainly three aspects of security risks: the technical level, security, policy guarantee level. In view of these problems, we should strengthen the awareness of computer network security, promote the research and development of computer network security technology, accelerate the solution of the problem, to achieve the security development and application of computer network.

Acknowledgments

Research on Deploying the Minet Based on "Center-Node" in Active Defense of University Networks.

References

[1] Rajendra Patil, Harsha Dudeja, Chirag Modi, Designing an efficient security framework for detecting intrusions in virtual network of cloud computing, J. Computers & amp Security. (2019) 85.

[2] K. Maharajan, B. Paramasivan, Membrane computing inspired protocol to enhance security in cloud network, J. The Journal of Supercomputing. 75 (2019) 4.

[3] Zhen Chen, Fuye Han, Junwei Cao, Cloud Computing-Based Forensic Analysis for Collaborative Network Security Management System, J. Journal of Tsinghua university (science and technology). 1 (2018) 40-50.

[4] Zhen Chen, Wenyu Dong, Hang Li, Collaborative Network Security in Multi-Tenant Data Center for Cloud Computing, J. Journal of Tsinghua university (science and technology). 1
(2019) 82-94.

[5] Oltsik, Jon, Cloud Computing And Network Security Challenges, J. Network World. (2015).

[6] Meng Zong-Jie, Research on Network Security Model for Cloud Computing, J. Journal of Convergence Information Technology. 8 (2013) 9.