

Research on Computer Network Security in Cloud Computing Environment

Ma ZongBao

Xi'an University, China,710001

Keywords: Cloud computing; computer; network security

Abstract: In recent years, with the continuous progress of science and technology, cloud computing technology has been widely used in the field of Internet. The application of cloud computing brings great convenience to our life, but the current cloud computing has some security problems, which to a certain extent threaten the security of people's information property, so we need to pay more attention to the security of cloud computing. This paper analyzes the security of computer network in cloud computing environment.

1. Overview of Cloud Computing

Cloud computing belongs to the dynamic and scalable virtual Internet computing. It is the collaborative development of distributed computing, parallel computing and network computing. A typical cloud computing consists of six layers: infrastructure, services, platforms, applications, storage and users. Users here refer to the computers provided by special cloud service providers, which are composed of hardware, software and application services. Cloud applications are stored in cloud framework software, which can effectively reduce terminal applications. Cloud storage provides data storage services, usually using the storage volume as the settlement benchmark. Cloud computing infrastructure mainly includes computer software and hardware facilities, which is usually called virtual cloud resource pool. The basic principle of cloud computing is based on computers, which distribute a large number of computing to different computers, rather than distributed on the remote server of the computer. The operation mode of data center is more similar to that of Internet data, so that users can easily place their resources in the required position, and then design the storage system to access the computer according to their own needs, forming a revolutionary new computing model. This is like the transformation from the traditional single generator power supply form to the centralized power supply form of the power grid. This kind of change makes the computing power circulate effectively as a commodity, which is cheaper and more convenient to use, and has the incomparable advantage of the traditional single computer.

2. Current Situation of Network Security in Cloud Computing Environment

With the development of IT technology, users can find the calculation data quickly and conveniently at any place at any time when there is a computing demand through a terminal that can access the Internet. They don't need to care where the storage and calculation occur, and don't need to worry about the loss of the data. In the era of cloud computing, we can completely abandon mobile storage devices such as USB flash drives. As long as we enter the cloud computing interface, create new documents, edit the effective content, and then directly send the document storage address to the required party, the other party can directly access the relevant pages through the browser, without worrying about the data loss caused by the loss or damage of personal terminals. However, cloud computing is a new way of service. The application of cloud computing has not been popularized yet. Its demand for information security and how to solve it are still in the exploratory stage. At present, there is no specific regulatory department to formulate specific industry security regulatory norms for cloud computing service providers. Cloud computing companies have not yet formulated standards for data transmission, services and other directions, nor can they reasonably prove to users that the operating environment of the data is safe and reliable. In China's current laws and regulations, there are no restrictions on cloud computing security, such

as personnel management, trace reservation, system audit and so on.

2.1 Software problem

The main sources of computer data are hardware and software, both of which have the function of storing information data for users. In today's computer environment, there are security risks in the computer system itself, so that in the process of data transmission, there are security risks. In terms of hardware, the data stored in the hardware is often lost due to the instability of the system. At the same time, the related software will be lost or even can not be repaired very well. In software, network data is likely to be stolen by network hackers or other illegal elements, which will make the user's information leaked, even used by others in serious cases, causing certain economic losses.

2.2 Computer virus

With the current widespread application of computer technology in society, most of the staff in the development of computer system software, the computer software will be released directly, the computer does not carry out a thorough system security inspection. For this reason, after sharing user resources for many times, it creates a good transmission environment for the network virus, which to a large extent causes the network security risks. The common viruses in computers are trojans and worms. When users surf the Internet, if they inadvertently open the web page with potential security risks, they will cause computer viruses to flow into the computer when downloading the Internet. Hackers can attack the information stored in the computer at will, which is likely to cause damage to the property security of computer users. In serious cases, they can also cause electricity Brain system can not operate normally, which threatens the security of information transmission to a great extent.

2.3 System FLAM

Network hackers can not only attack the computer through trojan virus, but also destroy the network security according to the loopholes in the system itself. Nowadays, the vast majority of computer systems in China are imported from abroad, and many systems have certain loopholes when they are written. For example, hackers can use the problem of buffer overflow to deliberately send out execution commands that exceed the buffer identification processing capacity, which can cause the identification confusion within the system. Hackers will take advantage of the original loopholes of these systems to enter the computer system and bring Trojans to the system. They can also steal information in the background when users implement network operations, which will lead to a straight-line decline in the computer network security coefficient and even affect people's normal life.

3. Measures to improve network security in cloud computing environment

3.1 Network security measures of management and operators

The security of cloud computing system itself, in the absence of the above several aspects, is difficult to have a reliable security guarantee. Therefore, when users consider using cloud computing services, they inevitably have concerns about the security of the cloud platform. In the cloud computing environment, if you want to put the huge amount of computing and database of customers into the cloud safely, you can use the global network threat information aggregation method to effectively intercept the computer or network when the insecure factors threaten it. Of course, this is actually a complex work, which can only be completed with the active cooperation of all parties. First, the government should strengthen the legislation, clarify the responsibilities and obligations of cloud operators and cloud users, and increase the supervision and management terms of cloud services in view of the new situation and problems in the cloud computing environment; second, the management and technology departments should implement security certification for cloud computing enterprises, and those who fail to meet the certification standards should be rectified within a time limit. At the same time, they should implement mandatory security

specifications for cloud computing enterprises To effectively supervise the security of its services; thirdly, the technology companies responsible for security research should also take the initiative to undertake the analysis of malicious programs and the research of network security in the cloud environment. In case of any hidden danger, they should give an early warning in time and take effective measures to prevent it, so as to reduce the probability of network security accidents; fourthly, the cloud computing service providers should take sufficient protective measures, such as Anti virus deployment, intrusion prevention, access control, data leakage prevention, network content audit, etc., to ensure the security and reliability of cloud computing services; fifthly, the government, industry, enterprises and research institutions should establish a cloud security linkage mechanism, timely grasp the security situation, accurately assess the security situation, effectively prevent security risks, and respond to new security threats at any time, so that cloud services It is developing in security.

3.2 Strengthen the management of computer software and hardware

In order to effectively ensure the network information security in the cloud computing environment, we should also strengthen the effective management of software and hardware. Every day, the user must insist on the virus detection and killing of the computer system. The virus can be monitored in real time by downloading the anti-virus software with high safety coefficient. When the system has problems, the virus detection and killing and the effective recovery of the system functions can be carried out in time. The anti-virus software can be used to intercept all suspicious data and illegal software, which can effectively achieve the user system Security isolation of threats. In addition, users should also download the patch of the system to update the files, which can further improve the vulnerability of the system. When downloading the patch software, users should also pay attention to using a reliable software platform to download the software, and should not shut down the anti-virus software because of the pursuit of online fluency.

3.3 Strengthen the use of firewalls

The use of firewall plays an important role in protecting the information security of computer network. It is an effective way to ensure the security of computer system, which greatly improves the security of computer network. Firewall is a security line between the internal network and the external network of the computer. When the network program and suspicious data are changed in the computer network, the computer can be protected.

4. Conclusions

With the surge of data computing, data computing capacity has become a strategic capital and resource. How to implement effective measures to ensure the security of cloud computing has become an important issue in the field of Internet technology. With the continuous development of cloud computing technology, cloud computing has become a revolutionary computing model, which makes people's work, learning and life have changed completely. Therefore, it is a powerful guarantee to promote the sound and rapid development of national economy to carry out the research on computer network security in the cloud computing environment and guarantee the information security in the cloud environment. In the current cloud computing environment, there are still many network hidden dangers and network problems. Relevant personnel should attach great importance to this, and carry out substantive exploration to solve these problems, find corresponding solutions, and lay a good foundation for the development of cloud computing in China.

References

[1] Ha Guiting. Computer network security technology in cloud computing environment [J]. Electronic technology and software engineering, 2015, 23 (9): 211-212

- [2] Yao yuanyao. Zhang Yumin's cloud computing application in the field of network security [J]. Science and Technology Plaza 2009 (7)
- [3] Cai Zhifeng. Analysis of computer network security dilemma in "cloud computing" environment [J]. Computer knowledge and technology, 2015, 14 (32): 253-254
- [4] yuan Rui. Research on computer network security in cloud computing environment [J]. China management informatization, 2016, 36 (12): 156-157