
Navigating Risks and Future Trends in Cloud Computing Network Information Security

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Abstract:

This paper elucidates the potential risks associated with cloud computing network information security, delves into the strategic application of network information security technologies, and forecasts the future development trends in cloud computing network security. The ultimate goal is to ensure the robust protection of network information within the cloud computing environment.

Keywords: Cloud computing, network information, information security.

1. Introduction

In the information age, the cloud computing approach reflects the positive significance of many aspects. The cloud computing mode usually determines the payment standard according to the usage amount, satisfies the needs of the user network access, and realizes the freely configured shared pool computing resource to achieve the purpose of resource scalability and meeting user requirements. However, in addition to seeing the advantages of cloud computing in the process of using users, it is more important to pay attention to the disadvantages of cloud computing. People are likely to have potential risks when accessing information and sharing information. Information security has become a widespread concern. Information security is also a fundamental condition for the development of the information society. The use of cloud computing models must ensure the absolute security of network information[1].

2. The concept and advantages and disadvantages of cloud computing technology

2.1 Cloud Computing Concept

Cloud computing is a data set operation processing technology derived from the development of information technology. Cloud computing can realize data parallel processing in specific applications. At the same time, after completing the Internet-related architecture, all Internet-related functions within the framework can be used normally. The advantages of cloud computing technology in its actual operation are the ability to handle batch data with excellent performance and the ability to integrate massive amounts of information, which are not attainable by traditional computer Internet technologies. The ability of cloud computing technology to have these capabilities is brought about by the continuous innovation of Internet technology. The computing power of cloud computing is characterized by tolerance. The technical approach of cloud computing is more focused on diversified standards. In the process of processing large amounts of data, cloud computing can apply its diverse technical capabilities to meet user needs accurately and quickly. Compared with Internet computing methods and Internet data processing technologies, cloud computing technology has superior controllability, and its ability to process massive amounts of data is amazing[2].

2.2 Advantages and Disadvantages of Cloud Computing

People have been accustomed to the application of traditional computer Internet computing technology, and computer Internet data processing technology has been widely promoted. However,

cloud computing technology has emerged, and its characteristics of high fault tolerance, fast computing speed and operability show The big difference between traditional computer Internet technology. The advantages are embodied in: (1) the convenience of the allocation process, the user operation platform is simple and clear, and the convenience brought by the cloud computing is more prominent. (2) Cloud computing can be compatible with other computing power design work, and the diversity of operating channels is outstanding, so cloud computing has a strong expansion. In the process of large-scale data information cluster computing, traditional computer technology can not expand the cluster of computing data. However, cloud computing can achieve this goal, achieving work efficiency and reducing time cost. (3) The fault tolerance of cloud computing is strong, and the node compatibility of cloud computing is more prominent. Once any error occurs in the computing node, cloud computing can selectively ignore the wrong nodes that will not affect the computing process, making the computing efficient. Features. This advantage can ensure that a computing node has an error or a computing node fails, still can maintain normal system operations, and will not cause the computing system to crash due to problems in the computing node[3].

Traditional computing technology has many security problems in the calculation process, which has not been properly solved, and its service quality is not high. The shortcomings of cloud computing are very obvious. Its controllability is not high. If there are mistakes or other problems in the calculation process, it will be difficult to guarantee the stability of the calculation. Therefore, the service quality of cloud computing cannot be guaranteed, and the service quality level has been difficult to improve. . At the same time, the two technologies of traditional computing technology and cloud computing technology show that cloud computing capability processing lacks a reliable operating system. Therefore, the transition from traditional computing technology to cloud technology is likely to cause monopoly[4].

3. Important factors that pose a threat to network information security

Cloud computing can effectively organize massive information resources, which helps patients to obtain information in a timely manner and store information. However, cloud computing network security issues are also very serious, and the factors that affect network information security are as follows.

3.1 Measures for the safe release of network information

Most websites set up a protective wall, which effectively magnifies their permissions, but once they are ignored, they will provide space for criminals to abuse their permissions.

3.2 Network system presents vulnerability characteristics

(1) Communication protocol and communication system aspects. Generally speaking, E-mail and WWW are inevitably vulnerable, so the process of mail transmission and information dissemination will be attacked by criminals and become a potential security issue.

(2) Computer operating system aspects. There are many problems in the computer operating system itself, so the vulnerability of the system is particularly obvious. In the process of attacking the computer operating system, the attack traces can be easily eliminated, and the user accessing the system takes effective measures to obtain all the information.

(3) Database aspects. The function of the database is to organize and store information. However, in the process of sorting and storing, there is no confidentiality work, so there is a potential security risk, which causes the user to store information to face the possibility of being maliciously attacked.

3.3 Network environment presents complexity characteristics

With the further breakthrough of computer technology, computers have been integrated into all aspects of people's production and living environment. Currently, they are facing the promotion and use of cloud computing. The scale of computer network users is gradually increasing. This situation will bring about an open network environment. More potential security issues. For example, malicious transmission of viruses, hacking, etc., will seriously affect network information security.

3.4 Network system needs to be improved in terms of stability and scalability

The network system is not designed with security issues in mind. The network expansion effect and stability effect are not ideal, which makes the network information easy for the illegal elements to steal and tamper with.

4. Expertise for network information security

4.1 Intelligent Firewall Technology

A smart firewall is a technology based on the characteristics of database ambiguity. Intelligent firewall technology restricts access to certain users after identifying the corresponding information. The intelligent firewall technology analyzes the eigenvalues generated by the network behavior and matches the analytical data results to the computer to achieve the effect of controlling access. Intelligent firewall technology usually covers a variety of content: (1) Intrusion prevention technology, which is reflected in the way that data packets will be blocked when they attempt to enter the host. This will affect the communication of information. The use of intelligent firewall technology can effectively deal with the security problems caused by data packets; (2) Anti-spoofing technology, media access control in the process of attacking the network, will be attacked in a disguised manner, intelligent firewall can achieve the role of limiting media access control, to avoid network information is destroyed (3) anti-scanning technology, once the hacker attacks the network, usually adopts the method of intercepting the data packet, the intelligent firewall will effectively deal with this situation, the application software will limit the hacker attacking the network; (4) the anti-attack technology, by identifying the malicious Data can prevent malicious data from flowing into the host, causing damage to the host and ensuring network security.

4.2 Encryption Technology

Encryption technology has been promoted and used worldwide as the most frequently used information security technology. Faced with the problem of network information security in the era of cloud computing, the application of encryption technology can guarantee the security of network information. The encryption technology converts the readable white information into a password form that cannot be directly read by applying an encryption algorithm. To read the information in the form of the password, the corresponding password must be input. At present, the encryption technology used in the cloud computing mode is embodied in: (1) an asymmetric encryption technology, which can present the decrypted key and the encrypted key in separate and separate forms, even if others master The algorithm is also difficult to correctly infer the password. Therefore, this method can improve the security effect of the network information. (2) The encryption technology with symmetry characteristics, the encryption technology needs to apply the encryption key to crack the password, thereby grasping the algorithm. A password is obtained to protect the network information.

4.3 Anti-virus technology

With the increase in the number and types of computer viruses, the security of network information is becoming more and more serious. Anti-virus technology is gradually innovating under such circumstances. Usually anti-virus technology presents two categories: one is dynamic anti-virus technology. This technology can monitor the virus status in real time, and can achieve excellent anti-virus effect. The application of dynamic anti-virus technology can achieve close contact with the underlying resources, achieve the purpose of comprehensive and effective control of system resources, and can immediately issue an alarm once the virus invades. It is conducive to rapid disposal and guarantees the security of network information; the other is static anti-virus technology. This technology does not monitor the operation of the computer in real time, so it is impossible to clearly understand the real state of the computer and to determine whether the computer is infected with a virus. Considering that the shortcomings of anti-virus technology are obvious, in order to protect the security of network information, other technologies have been adopted instead of anti-virus technology.

5. Future direction of network information security technology

According to the characteristics of the current network attack technology, in the face of the cloud computing environment, the information technology continues to break through today, the network attack technology also shows the characteristics of diversity and concealment. The cyber attack technology has a significant improvement in attack speed, attack penetration rate, and attack concealment. Synchronized with the development of the times and technological innovation, the network attack technology also breaks through the original unilateral attack effect and transforms into a full-face attack, a multi-level stereo attack, and a comprehensive attack. At present, representative network attacks include Trojans, denial of service, etc. These all reflect the effective combination of multiple attack methods, forming a stronger attacking effect and bringing huge security risks to network information security. A full analysis of the current characteristics of network attacks and network information security can be concluded that the future network information technology in the cloud computing environment will present the following development trends: the application of innovative firewall technology filters and filters information in the form of proxy application layer. To achieve effective protection against viruses, to prevent malicious elements from maliciously invading the network; to carry out rigorous testing, to re-integrate all current security technologies to achieve a more comprehensive firewall effect; the development trend will be diversified, hierarchical, functional, Comprehensive features. With the innovation of information technology, it will drive the improvement and upgrade of network information security technology, and gradually establish and improve the network information security system to ensure network information security.

6. Conclusion

As the era progresses, the innovation in information technology will be propelled forward, accompanied by an evolution in cyber attack techniques. Network information security within the cloud environment continues to face critical challenges. Therefore, it is imperative to conduct an in-depth analysis of the significant factors influencing network information security and implement specific protective measures to ensure its safety. Enhancing users' preventive awareness and securing network information within cloud computing environments are essential.

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