Research on Computer Network Security and Firewall Technology Based on Large Data Analysis

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Abstract: With the development of information technology, the popularity of computers has become more and more extensive. Computer network is commonly used in all fields of people's production and life, and people have entered the information age of big data. Big data gives new application value to information. It also requires further construction of security protection system to ensure computer information security. Under the trend of big data, many important information is stored in virtual cloud space. In order to ensure the security of data on the force network, it is necessary to further innovate relevant security technologies to minimize risks. In a networked environment, the security of the network environment is the basis for ensuring the safe use of the Internet in all areas. In the field of network information security, firewall technology is an important core technology and has received widespread attention. The application of firewall technology has a positive effect on computer network information security.

1. Introduction

In the era of big data, people's life and production are inseparable from the application of computers. While the network provides convenience for people, it also presents the problem of information security [1]. In the information age, more and more fields join the Internet, using computer networks to promote economic development and facilitate people's production and life. In order to make use of big data to realize new format and development, it is necessary to further strengthen the importance of computer information security prevention in order to improve the application value of big data [2]. Under the trend of big data, many important information is stored in virtual cloud space. In order to ensure the security of data on the force network, it is necessary to further innovate relevant security technologies to minimize risk generation [3]. The problem of network information security should be clarified, and specific protective measures should be found to improve the security of information and ensure people's normal life [4]. Firewalls are the first level of barriers to maintaining network security, so it is necessary to pay full attention to the goal of the security network [5].

Network information technology has become an important driving force for the development of modern civilization. The arrival of the era of big data is an important manifestation of the development of modern civilization. Big data is becoming an important force in the development of social and economic development and a new productive force. However, under the open network environment, attacks by viruses and hackers are becoming an important factor affecting the security of computer information, which restricts the effective application of big data [6]. In the networked environment, the security of the network environment is the basis to ensure that all fields can use the network safely. It is urgent to do a good job of network security protection and safeguard the personal privacy and interests of the broad masses of the people. Effective management and protection measures should be taken to ensure users'information security, make full use of firewall technology, and build a security application system.

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2. Overview of Big Data and Computer Network Security

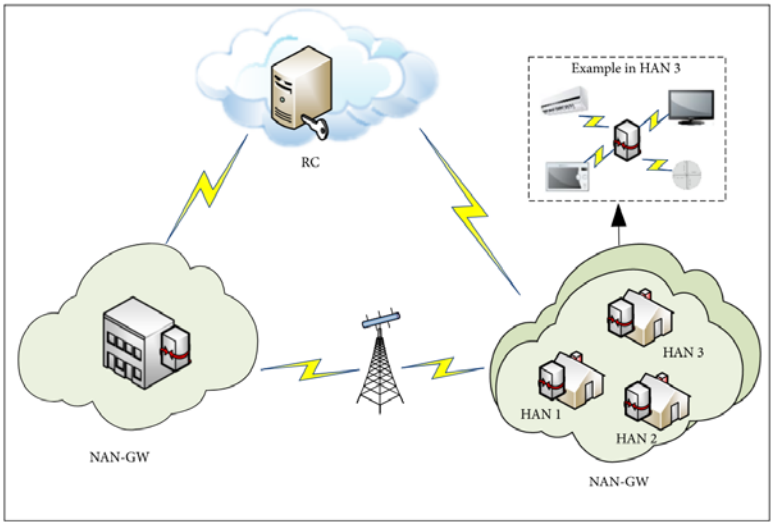
2.1. Network Security in the Context of the Times

Computer network has the characteristics of openness, which makes the internal information vulnerable to attacks and security problems. Only when we think deeply about how to reform the security firewall technology and improve the network security coefficient, can we really avoid the network environment risk. The popularization of computer network technology has changed the pace of social development and the general environment, and brought great convenience to the development and production of various fields. In the new era, big data has a new value and become an important resource for scientific development [7]. In particular, the exploitation and utilization of information resources has opened the door to the information age and promoted the development of modern civilization. After the generation and rapid spread of big data cloud technology, the transmission, storage and retrieval of military information are more efficient [8]. Due to the influence of the external environment, some information in the computer network may be lost, affecting the user's use, resulting in insecure network information. The host firewall monitors the communication through the IDS in the network. Once the dangerous information is found, the alarm can be immediately alerted, and the hacker who attacks the network is shocked.

2.2. Computer Network Security and Its Potential Threats

In order to protect computer network security, especially to prevent network from being attacked by virus, we should focus on using anti-virus technology to improve network security in the era of big data. Users may use the complete and open Internet in specific operations to promote information exchange and sharing. When deciding whether the information can pass, it is mainly checked according to the data destination address and the source address of the packet. Packets that satisfy the filtering conditions can be transmitted to the corresponding address. In the era of big data, computer network information security protection involves different technologies and different fields, and various technologies can give computer network security. Attacks on external network information require not only technical maintenance, but also scientific and effective management [9]. Firewall technology can combine network security solutions to improve the overall security of the network.

Establish a safe prevention system and create a secure network information environment, and further strengthen the construction of computer information security. Better adapt to the development environment of the big data era and strengthen the scientific application of big data. In the network model, as shown in Figure 1, it is assumed that one neighboring area network covers multiple area networks.



RC: Registration Center
NAN-GW: the Gateway in Neighborhood Area Network
HAN: Home Area Network

Fig.1. Simplified communication network model

3. Security Strategy of Computer Network

3.1. Improving the Awareness of Network Information Security

Defects are too strict auditing environment, which affects the normal use of the system and greatly increases the difficulty of system management. In the era of big data, information has infinite application value, but the open network environment has a great impact on computer information security, and information security has become a key factor restricting the application of big data. In the normal operation of the network environment, we need to ensure the confidentiality, accuracy and security of information through network management means and some related protection technology, so as to make the data reliable and timely. At present, many users have the problem of imperfect management system and do not pay attention to the daily maintenance of computer networks. After the anti-virus software is installed on the computer, the virus killing work can be started regularly to prevent the computer from being attacked by the virus to a certain extent. Different firewalls have different protection methods, different uses, and different optimization measures. It is necessary to think about security policies in a targeted manner.

Only when computer information security breaches, data loss and other issues occur, will realize the importance of security. The cloud server can store a large number of training sets and training set selection rules. It can dynamically assign training sets to node hosts for training so that different node hosts become concrete and dynamic. Figure 2 shows the workflow of the scenario steps.

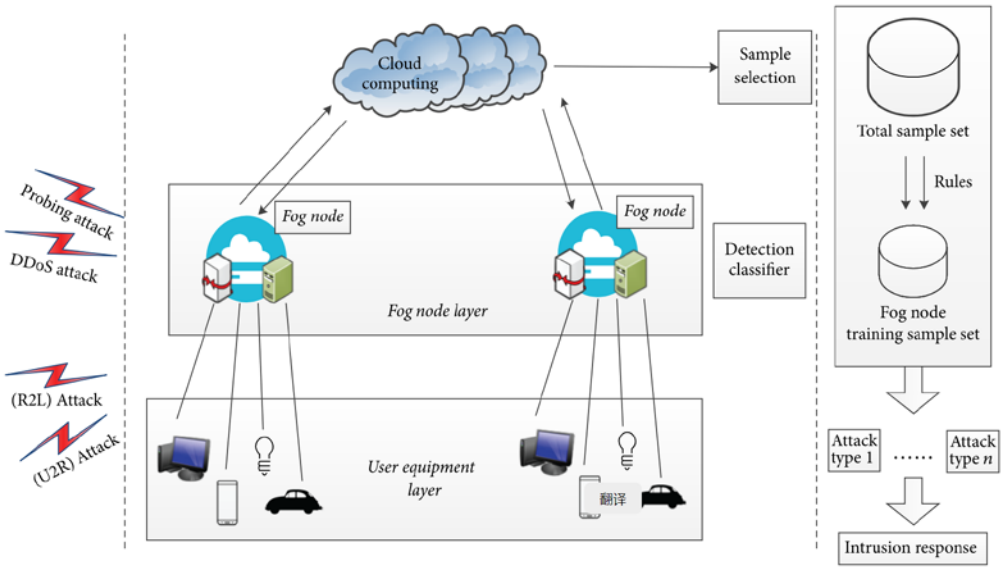


Fig.2. Network intrusion detection scheme

3.2. Perfecting Safety Management

Firewall technology is a common network security technology, which always protects users'network security and enables users to use the network safely. When using anti-virus technology, we should pay attention to the compatibility between software and computer system. It is possible to install an anti-virus software in a computer. The firewall establishes a new network environment, monitors the behavior of the external network, prevents the external network from entering the internal network, steals data and information, and brings losses to users. The key to computer information security lies in strengthening the establishment of security system and the repair of system loopholes. If the user thinks that the external network is secure and has usage requirements, it can also allow access by the external network [10]. The content recorded in the dynamic connection table can be not only the previous communication information but also other application information. Get the information you need while protecting important information. Some computer software needs to do software updates and other work due to lack of design. Monitoring technology can prevent the rapid dissemination and replication of spam, and establish a spam interception mechanism on the user side to further optimize the network environment.

4. Conclusions

With the continuous advancement of computer networks, computer network information security protection technologies must be continuously improved to solve the security problems of various network systems in a timely manner. In the era of big data, the network is closely related to people's lives, facing the main security problems of current network information, and the importance of protecting network information security is becoming increasingly obvious. With the emergence of cloud technology, more and more information is gathered on the network, especially many important confidential information. All in all, the era of big data requires the effective construction of computer information security to ensure the effective application of big data. Building a secure computer information system is the key to realize the development and utilization of data resources in the era of big data. In the new environment, we should consider from different aspects, use various advanced computer technology to protect network security and improve the security of network information. From the point of view of computer use at this stage, there are many security risks in its software and hardware, and corresponding solutions are urgently needed. Firewall technology is an important barrier to the safe use of the network. In the new environment, we should constantly update and improve to meet the security needs of users and ensure the safety of computer network information.

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