

Research on Computer Network Security under Big Digital Background

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Abstract: Big data is an inevitable outcome of the rapid development of computer network technology. It mainly refers to the data sets that are difficult to be processed, managed and captured by conventional software in a specific period of time. It has the characteristics of authenticity, low density, diversity, high speed and mass. However, massive data resources spread on the network, and information sharing is becoming stronger and stronger, which increases the risk of network security. Therefore, it is urgent to take effective measures to strengthen network security in relevant industries. Based on this, combined with the influence factors of computer network security under the background of big data, the computer network security protection measures under the background of big data exhibition. In the current environment of big data era, communication technology develops at a fast speed, and computer network system is widely used. The computer network system not only runs efficiently, but also has good expansibility and sharing. In the process of using the network, people are prone to data damage or theft accidents, which lead to personal information material damage, but also let the psychological shadow of the stolen. From the perspective of network security, this paper analyzes the data privacy encryption algorithm in the era of big data, and classifies the factors that may threaten computer network security one by one, so as to carefully analyze how to prevent security problems, and make certain reference for personal and company information security.

1. Introduction

The arrival of the era of big data makes network security management more complicated. Specifically, data protection should be improved from the perspective of data security [1]. In recent years, the development of computer technology in China has been attached great importance, especially in the context of big data. The rapid development of data storage, processing capacity and security has brought economic benefits to various sectors of the society, and promoted the development of social productivity to a large extent. At the same time, it has also brought great security problems. Big data and the Internet show a mutually promoting and interdependent relationship. In the development of the Internet, network security is a very important content, network security also plays a vital role in the development of big data. And do a good job of network security prevention and control work, can ensure that network data and information is not leaked, damaged, changed and infected, so that the data information is better protected. In the context of the explosive growth of data, big data technology can make huge changes in the way of information processing, storage and transmission, enable the exchange of massive information and data, break through space-time constraints, and improve the dependence of data information. People have higher and higher requirements for network security, while traditional computer network security management methods and network security protection measures are obviously unable to cope with the current network security risks and the actual needs of users [2]. And with the popularization of intelligence in human society, personal information and property security should be paid more attention to. Therefore, in order to achieve the goal of ensuring network security and preventing information leakage, it is necessary to analyze and classify different types of data, and establish a platform controlled by the state on this basis. Therefore, in the context of the era of big data, it is necessary to do a good job in computer network security, so as to ensure the security of computer network system information, which is not only a new challenge brought by big data, but also an inevitable requirement of the development of network technology. This paper analyzes the

computer network security prevention technology, analyzes the causes of network security in the context of big data, and also studies the prevention scheme of computer network security problems [3].

2. Problems of network security in the context of big data

2.1 Data privacy encryption algorithms in the era of big data

At present, in the context of big data, the most common network security problems are information data leakage, network application technology and equipment compatibility problems, and computer failures caused by external network attacks [4]. Information sender to the receiver send clear will be through a variety of encryption algorithms into ciphertext, the transformation process of the encryption algorithm needs specific encryption keys, and the recipient after obtain ciphertext, by convention good decryption algorithm and the decryption key converting ciphertext to clear, big data for industry transformation and upgrading of management provides an important support, Especially in the construction of new industries, the application of big data technology has obvious advantages. Big data has various structures and complex types, including not only conventional structured data, but also unstructured data such as pictures, audio, text and video. Can make the network data present a diversified, three-dimensional development trend. Big data has changed the way people obtain resources. In the past, people needed to obtain resources through wired network, wireless network and other technical equipment, but in the context of big data, people can quickly obtain the information resources they need through computers, wireless intelligent terminals and so on. Big data has the obvious advantages of large quantity, rich resources and high processing efficiency, so it has become a key technology in the field of information and has been widely used worldwide.

2.2 Risk Analysis of computer network security in the context of big data

At present, computer equipment plays an important role in People's Daily life and work, but in the application of computer network, people's awareness of network security is generally not high, and even some users do not have the basic awareness of network security risk prevention, think that the development of computer network technology has been relatively mature. There is no need to take additional protective measures to ensure network information security. In the context of big data, modern enterprises and network users are easily threatened by network security problems. According to relevant data surveys, more than 10,000 new phishing websites are added every day in China, 89% of which are usually machine-generated, and it is difficult for network security personnel to identify and diagnose them with anti-phishing systems [5]. The application of big data leads the new development mode of Internet. Big data and computer network are inseparable. Big data brings great challenges to information security, and computer network security prevention is of great significance to the development of big data. In the context of big data, the normal and stable operation of computers has a great space for development. With the rapid development of science and technology, inferior products related to the Internet also emerge in an endless stream. If the performance of computer software is not high enough, users' information will be leaked, which greatly increases the risk of computers. The encryption and decryption algorithms are generally open, and the key must be kept secret. The security center provides the key to both sides of the communication. If the key needs to be sent to both sides of the communication over the network, the communication channel with a higher security level must be selected to transfer the key. Because the source of the software can not be effectively controlled, there may be certain loopholes in the development of software programs, or special back doors for software management, these loopholes and back doors will provide opportunities for network hackers to invade the computer network system. According to the statistics of "National Internet Center of China", 6 million computers were found to be infected with zombie or Trojan virus in IP in 2019 [6].

3. Problems of computer network security in the context of big data

3.1 Safety management system construction is not perfect

Computer network security problems are common in the context of big data. In order to effectively solve network security problems, it is necessary to actively build a perfect network security management system to provide more convenience for the overall arrangement of security work. In the process of using a computer, the performance of the operating system plays an important role in its operation. In the case of the same computer, different types of computer operating system may appear different faults, and then can not run normally. Asymmetric encryption as the name implies, the key used by the sender and the receiver is different. The key is divided into public key and private key. The sender uses the public key to encrypt the information, while the receiver uses his private key to decrypt the information, so it is also called public key encryption [7]. In big data technology in the process of gradual development and perfection, network hacker intrusion methods and invasion target also had the new change, in order to effectively resist hackers on the computer network system, relevant staff need to constantly improve the computer network security technology, from the perspective of the technology, the network hacker intrusion behavior, and take effective technical measures to prevent, Ensure cyber security. At present, network security technology in China are lack of innovative products, the core technology problems such as dependent on western countries, the serious influence to the security and stability of computer network in our country, in the software level, 89.93% of the computer operation in our country mainly the Microsoft platform, domestic is still difficult to open the computer operating system market. Based on the actual work, there is a lack of audit strength in the professional aspects of network security skills in China, and some professional training and examinations are not paid attention to, which leads to the lack of technical standardization of professional personnel, network security maintenance work is not in place. In the era of data opening and sharing, there are many risk factors. Assuming that the performance of computer security protection is poor, user operation is not standardized, external risk factors and the loopholes of the system itself will lead to the failure of the software, and then the existence of large computer failures [8]. In order to ensure information security when users use network service products, NETWORK service providers need to upgrade the software to improve the security level. The network attack mode is shown in Figure 1.

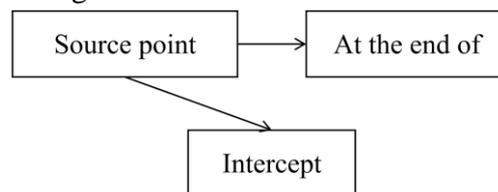


Figure 1 Network attack mode

3.2 Computer network security precautions

It is far from enough to rely only on the national government to crack down on network crimes and improve the network environment. Only when computer users improve their own security awareness and have basic security awareness operation can the probability of network injury be reduced [9]. In the computer network security system, it is necessary to integrate data information and create a corresponding hacker attack model so that computers can resist attacks [10]. In the current situation of prominent computer network security problems, it is necessary to pay attention to and improve the comprehensive quality of computer network security management personnel, to provide an important guarantee for the orderly development of network security work. In addition, in the context of big data, network users have obvious dependence and dependence on massive data information, which increases the frequency of users receiving and processing information. If non-standard operations occur in the process of information processing and receiving, network security risks will increase. The trend of the number of vulnerabilities included in China's National Information Security Vulnerability Platform from 2017 to 2021 (unit: unit) is shown in Table 1.

Table 1 Trend of the number of vulnerabilities included in China's National Information Security Vulnerability Platform from 2017 to 2021

Year	2017	2018	2019	2020	2021
Quantity	7865	9154	8021	10825	15995

4. Conclusions

To sum up, in the era of big data, the ways and means of obtaining network information resources have changed, and network security problems are gradually increasing and becoming more complicated, which requires more attention. To sum up, in the era of big data, the ways and means of obtaining network information resources have changed, and network security problems are gradually increasing and becoming more complicated, which requires more attention. Based on the background of big data, we should work out the prevention strategy related to network security to ensure the security of China's computer network. We will establish a comprehensive law on cybersecurity management, so that big data and Internet technology can better serve the people, instead of becoming a hotbed of cyber crimes. In the next step, I hope to complete a simulation experiment aiming at these theoretical studies to summarize the shortcomings and advantages of the defense technology, so as to provide a strong research foundation for ensuring network security in the future.

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