Analysis of Computer Information Network Security Encryption Technology

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Abstract: In the rapid development of the data nowadays, network security has become a topic of widespread concern. Everyone is closely related to network security, so the research on encryption technology has received more attention. The use of data encryption technology can effectively ensure the security of computer information networks, so it is of great significance to choose a reasonable encryption technology and make it fully function. This paper combines computer information network security encryption technology for analysis.

1. Introduction

Proper using of encryption technology plays a key role in maintaining computer information network security. Therefore, it is necessary to have sufficient knowledge of information encryption technology to select an effective encryption technology to ensure network security. With the continuous development of data and information technology, more and more factors threatening network security have emerged in the society. Although they cannot be solved one by one, the use of data encryption technology can effectively prevent the threat of network security. Rational use of encryption technology can effectively prevent data leakage and virus attacks, and improve the security of information networks.

2. Computer network security significance analysis

With the rapid development of the internet age, computer network security has attracted more and more attention. In particular, it is necessary to comprehensively strengthen the protection of computer network system equipment and data, improve the reliability and security of network system operation, and ensure the authenticity and effectiveness of digital information, which is a key factor in computer network security. Computer network security needs to be considered from the perspective of information and equipment, including the reasonable use of hardware and software, and the security of shared resources, especially in the process of resource sharing, which is vulnerable to network vulnerabilities or viruses. Currently, the commonly used protection measures are data encryption technology.

3. The concept and basic principles of information encryption technology

In the process of using computer networks, the existence of data encryption technology is mainly to ensure the security of data transmission. When the sender encrypts the plaintext into ciphertext, the receiver decrypts the received ciphertext into plaintext, thereby completing the file transfer. There are three main ways to encrypt data, namely, link deepening, end-to-end encryption, and node encryption. Data encryption technology can also be analyzed from two perspectives: symmetric encryption technology and asymmetric encryption technology. The symmetric encryption technology requires both parties to send and receive the same key, so that the receiver can infer the decryption key according to the encryption key when receiving the data, and the sender and receiver of the non-symmetric encryption technology use different keys. The public key and the private key can form a pair of keys. The method of using data encryption technology is mainly to camouflage

information, thereby avoiding external interference and preventing illegal access. Simple displacement encryption can match text and a set of numbers, and analyze it with relevant encryption rules to decrypt. A one-time password book requires the recipient to use the same password book, and the code table can only be used once. A simple substitute password can be called a one-letter password, in which the plaintext alphabet and the ciphertext are in a one-to-one manner [1].

4. The analysis of classical information encryption algorithm

In the information encryption technology, the key technology is cryptographic algorithm, and cryptographic algorithm can be analyzed from two angles: encryption algorithm and decryption algorithm. The encryption algorithm converts plaintext into secret text and converts plaintext input into ciphertext output. The commonly used encryption algorithms include DES algorithm and AES algorithm, and each algorithm plays an important role. The DES algorithm can be called a data encryption standard. It belongs to the symmetric data encryption technology. Before encryption, the plaintext is grouped into 64 units of length and encrypted into ciphertexts of length 64. The ciphertexts of all groups can be composed into ciphertext [2]. The DNS algorithm contains three basic parameters: original data, key and running mode. In the process of using this algorithm, the plaintext is encrypted into ciphertext by encryption. The main feature is that the computing speed is faster, but there are certain shortcoming is mainly that the decryption key can be derived by using the encryption key. The DNS includes two operations, displacement and displacement. The initial value of the plaintext is changed by the initial replacement function. After the key is obtained, the ciphertext can be output by means of the cryptographic function.

5. Application in computer information network security encryption technology

5.1 Application in data network database

In the process of using computer networks, we must pay attention to information network security, especially computer network operating system security. Computer network operating system is the key platform for database network management whose security level is mainly divided into C1 and C2. Under these two security levels, the computer network securitycan be basically guaranteed. However, the current public transmission channels of computers, especially information storage systems, still face prominent security threats. If there are situations in which individuals use the same type of device or the device itself is vulnerable, computer information network security won't be guaranteed and some data is easily stolen by malicious people. Therefore, data encryption technology is needed to further improve the security of the network. In the process of database access, although the method of setting permissions can be adopted, it is also necessary to pay attention to the rigor of the permission setting to ensure the information securityand the reliability for information transmission. In addition, cloud storage or other means can be used to ensure data storage security [3]

5.2 Application in software

With the development of the software market, there are many types of computer software available for people to use, including anti-virus software that can protect the computer network and solve people's network security problems. However, when downloading anti-virus software, it is necessary to carry out careful analysis, because in the process of data encryption, the computer is easily invaded by the virus carried by itself and affects the effect of the anti-virus software, this will lead to that the security of the data information cannot be guaranteed. Therefore, when encrypting data in computer network, people need to select an effective anti-virus software and also to monitor the encrypted information of the anti-virus software to ensure that it can be used normally. According to the specific requirements for data encryption, it is very important to encrypt the anti-virus software. Only by doing the relevant processing work can we further ensure the security of the computer network.

5.3 Application in e-commerce

The rapid development of e-commerce has provided more convenience for people's lives, meanwhile, it is continuously improving people's quality of life. Therefore, in the process of e-commerce development, Ensuring network security is essential. The application of data encryption technology is of great significance for creating a good network environment, ensuring people's information security and promoting the healthy development of e-commerce. Furthermore, the construction of e-commerce security system requires a secure network platform. Currently, digital certificates and set security protocols are commonly used as usual e-commerce encryption technology to protect the information security for both sides of the transaction, at same time,it will promote the healthy development of e-commerce [4].

5.4 Application in private network

The private network is mainly to establish a network to meet some special needs, especially in some enterprises to establish a corresponding network platform. The establishment of the network platform can connect user terminals in different fields, so it is necessary to ensure the security of the network. Data encryption can be applied in the VPN field to ensure the reliability of data transmission. In the process of data transmission, it will be automatically encrypted by the router hardware. After the receiver receives the information, it can decrypt the information by means of the router. In some enterprises' local area networks, data encryption technology plays an important role. Many enterprises have their own trade secrets. Therefore, in order to ensure that data is not leaked, it is necessary to make certain protections at the terminals of the network system and the devices that the host detects intrusion, and use some encryption software to complete the data storage. After encryption, file data and so on are mainly stored in cipher text. Only relevant personnel can open it and display it in clear text in the memory. If the environment in which it exists is changed, it will not be automatically decoded, thus effectively ensuring enterprise data. Information security.

6. Conclusion

Computer network security is related to the use of data information for everyone, so the use of data encryption technology is of great significance. The use of data encryption technology in computer network systems not only ensures network security in a timely manner, but also plays an important role in the construction and development of the network. With the continuous development of emerging industries，such as e-commerce and online transactions, data encryption technology will play an increasingly important role. However, the currently available data encryption technology still has certain deficiencies, so its development is also facing a huge test. In the rapid development of the Internet, it is necessary to continuously explore more reliable encryption technology to ensure the security of computer networks.

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