

# Research on Computer Network Security Technology and Preventive Measures

Hongqiang Zhao

Liaocheng Vocational and Technical College, Liaocheng, Shandong, 252000, China

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**Abstract:** With the rapid development of information technology, computer network technology has been gradually applied in various industries, and has entered a new stage of development. With the increase of computer network usage frequency in the industry, network security issues have gradually become prominent, which has been highly valued by different industries. In view of the security problems existing in the current computer network, it is particularly important to put forward corresponding preventive measures. In this paper, through the analysis of the current advanced computer network technology, and study the main factors affecting computer network security, and put forward corresponding preventive measures, in order to improve the security awareness of the majority of users, to create a good and healthy environment for the use of computer networks.

## 1. Research Background

### 1.1 Literature review

With the rapid development of Chinese society, relevant science and technology have been promoted. He Jing analyzed the computer network security problems and combined with the relevant influencing factors, discussed the specific protection methods of the computer network security problems, and the corresponding security countermeasures, which is conducive to the application of different protection measures in the relevant industries, and created a good environment for the operation of computer network (He,2017). Under the background of information age, Liu Lifeng explores how to take effective measures to better maintain computer network security. Starting from several important problems affecting computer network security, the study of computer network security precautions shows that it is helpful to reduce the incentive of system virus intrusion and improve network security (Liu,2012). In the actual application process, the computer network has a certain vulnerability. Many bad people use the computer network to commit network crimes, which greatly reduces the security of users using the computer network. Zhou Wei analyzed the current computer network security problems and proposed corresponding solutions, which is of great significance to the study of computer network security technology (Zhou,2012). Under the background of the emergence of network security problems, based on the related problems of computer network security, Zhang Xue deeply discussed and analyzed the computer network security precautionary technology, and then put forward corresponding precautionary measures according to the application characteristics of different technologies, which plays an important role in the use of computer network for human beings (Zhan) G, 2015). Wang Yongjuan and Hao Jiabao, under the background of the gradual growth of Internet technology, analyzed the possible threats to China's network information security and put forward corresponding countermeasures, which are conducive to maintaining network security (Wang and Hao,2015).

### 1.2 Purpose of research

In recent years, with the gradual acceleration of international informatization process, computer technology has been developed by leaps and bounds in all walks of life (Zhao,2013). For the application of computer technology in related industries, there are gradually traditional and simple internal network applications, which have been transformed into complex external network and corresponding data processing systems, and information sharing systems without boundaries have

been established worldwide, providing a very convenient way for the application of data in all walks of life (Zhang,2018). However, in the process of computer technology being widely used in all walks of life, the possibility of computer network being attacked is increasing gradually. Relevant computer networks at home and abroad are affected by the internal and external environment. In the process of using computer networks, many industries lack a certain sense of security, which leads to the frequent occurrence of network security accidents in the application of computer network systems by relevant personnel, which is not conducive to the effective use of computer networks by relevant industries. Therefore, in the process of using computer network, network security not only protects computer system, but also ensures the validity and accuracy of relevant data. Therefore, in the process of applying computer network, the industry should attach great importance to network security, promote the use of network information technology in relevant industries, and promote the in-depth development of computer technology. Therefore, by analyzing the current computer network security technology and the potential risks, and putting forward the corresponding preventive measures, it is conducive to the effective application of computer networks in relevant industries, and promote the steady progress of information technology.

## **2. Analysis of Current Computer Network Security Protection Related Technologies**

### **2.1 Structural safety**

Maintainability of main network equipment services has redundant space to meet peak demand period and broadband peak service period of various parts of the network. Establish a secure path before connecting the service terminal to the server. Draw a network topology map that matches the current operation, including device name, model and IP address, and provide configuration information such as network segment, routing and network strategy.

### **2.2 Access Control**

Under the influence of network restriction, related computer systems can control some access channels and devices, and then realize the control of user access. Different systems will generate access control lists, target ports and protocols according to the access situation, allowing related data to enter and exit, and improving the effectiveness of data use. With the help of computer network security technology, users can deny or use corresponding access system resources through the corresponding access control list, which provides great convenience for users to use data. Moreover, through computer network security technology, access control ports and channels are effectively controlled to ensure data access security and create a good and secure data use environment for users.

### **2.3 Network Equipment Protection**

Identify users who log on to network devices. With login failure processing function, it can perform session termination, restriction of illegal login, setting up timeout and automatic termination of network login links, etc. When remotely managing network equipment, take necessary measures to prevent identity information from being stolen in the process of network transmission.

## **3. Main factors affecting computer network security technology**

### **3.1 Security Threats Originating from Intranet Users**

Most enterprise users have their own network system. Therefore, if employees do not pay enough attention to and understand the network security, and they do not take preventive measures, internal system security incidents are likely to occur. It brings a series of potential safety hazards. The fall of internal network system will not only bring economic losses to enterprises, but also bring great problems to the business development of enterprises, and even affect the operation of enterprises.

### **3.2 Computer Security System Vulnerabilities and Hacker Attacks**

No system can be perfect without loopholes. Some of the loopholes threatening computer security are carried by the system itself. Others are caused by computer users misusing pirated software or neglecting network security. Computer network attack has a strong destructive power, and has a wide range of coverage. Therefore, strengthening network management and using scientific and sound means of network security prevention can greatly avoid the serious consequences caused by network vulnerabilities. If you want to reduce the risk of computer security vulnerabilities, you must be diligent in checking Trojan horses and scanning vulnerabilities, timely discovering and repairing security vulnerabilities, and prevent vulnerabilities. Not yet.

Under the background of the information age, hackers attack computer networks more and more frequently, which results in serious economic losses and bad social impact. Slowly, some hackers with professional technology begin to attack the Internet, and they are vulnerable to computer system vulnerabilities and network attacks. Point and other computer knowledge have a strong understanding. Hackers can use all kinds of computers skillfully, invade computer systems illegally, and use computers to steal customer information, destroy internal networks, or attack firewalls to obtain enterprise data, which makes it difficult for computer users to use and operate normally, and leads to serious consequences such as information leakage and system crash. It has caused enormous economic losses and political impact. In fact, many opportunities for attacking computer systems are not created by hackers. They only discover vulnerabilities in computer networks and use powerful programming capabilities to ultimately achieve the purpose of attacking.

### **3.3 Lack of mature assessment and monitoring methods**

In daily practice, the maintenance of computer network security pays more attention to the precautions and remedial work after the accident happens. The evaluation and monitoring of the accident is not perfect enough, and there is no mature response and solution to the accident, which directly leads to the instability of network security.

## **4. Preventive Measures of Computer Network Security Technology**

### **4.1 Increase the ability of important data maintenance in system**

Establish and improve the recovery and backup mechanism. Attribute security control includes the connection of network server and useful attribute network equipment while effectively ensuring the security of computer network system according to restriction security. Network attributes not only can effectively control data, file sharing, data replication, project execution and other projects, but also can protect important directories and files within the enterprise, while effectively avoiding malicious modification, execution and deletion of files and other malicious violations. Timely backup of RAIDS application system can effectively avoid man-made damage to storage devices. The recovery of critical data and database triggers can maximize the recovery of critical computer data and effectively reduce economic losses.

### **4.2 Increase the ability of security maintenance in policy**

To establish a network security maintenance organization for routine maintenance of computer network security, computer administrators need a high level of professional knowledge and timely and effective emergency management plan. In addition, administrators need to maintain level boundaries and understand related network issues. It is equally important to control the access level of the whole network system effectively, and at the same time, to strengthen the management of partition and limit rights. With the rapid development of computer network technology, computer virus Trojan horse has become more and more complex, and it is more and more important to create a secure network environment, but the premise is to further strengthen the prevention and control of computer virus. In the daily use of network users, in addition to strengthening the control and monitoring of local information and resources, it is more important to find and eliminate network viruses, so as to strengthen the prevention of virus intrusion. Therefore, it is necessary to establish a

network security maintenance organization.

#### **4.3 Increase the ability of prevention and defense in management**

The security management of computer network depends not only on the user's security technology and preventive measures, but also on the implementation of management measures and the enforcement of laws to protect computer security. Only by combining the two can the security of computer network be ensured.

Computer network security management includes the security of computer users, the establishment of appropriate security management institutions, the continuous improvement and strengthening of computer management functions, and the strengthening of computer security management and network security laws and law enforcement. Through the principles of conscious use of information, legitimate users, resource limitation and open information, relevant organizations consciously fight against all illegal crimes, maintain the security of computer network system.

#### **4.4 Enhancing the capability of prevention and defense system in technology**

In terms of technology, computer network security technology mainly includes system real-time scanning technology, computer real-time monitoring technology, firewall, integrity protection technology, virus status analysis report technology and management technology. Generally speaking, system security can take the following measures:

**Network access control.** Access control is the basic method to prevent and protect network security. The main task is to ensure that network resources are not used for illegal use and access. One of the most important strategies to ensure network security. Access control includes a variety of technologies, including access control, network access control, directory control and attribute control.

**Apply cryptography technology.** The implementation of encryption technology is the core of information security technology. Encryption means can ensure information security. Digital signature and password authentication are one of the most important methods to ensure information integrity. Cryptography technology mainly includes single key cryptography, classical cryptography, public key cryptography, digital signature and key management.

**Cut off the route of transmission.** Do virus checking and killing for hard disks and computers invaded by Trojans. Do not use U disks and programs from unknown sources at will, nor download suspicious information and software from the network at will. Improve the function of network anti-virus technology. In addition to real-time screening by installing virus firewalls, information files on network servers are scanned and monitored regularly, and reliable anti-virus cards are used to enhance network directory settings and file access. On the network, file limits can only be executed by internal servers. The application of firewall technology, after careful configuration, can reduce the network security risk by providing secure network protection between internal and external networks. However, only using firewalls and network security is not enough. More attention should be paid to real-time intrusion detection.

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