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# Research on the Application of Computer Information Management Technology in Network Security

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## Abstract

Computer technology has achieved a very high penetration rate in various industries in China today, and it has also played a huge role. But a very important link in the process of applying computer technology in all walks of life is the use of computer management technology. Only effective management of computer information technology can create a good information technology environment for users. Therefore, it is of great practical significance to deeply discuss computer information management technology under the network security situation. This paper mainly discusses the application of computer information management technology in network security.

## Keywords

Computer information management technology; Network security; Application

## Introduction

The application of network technology can not only drastically change people's lifestyles but also significantly improve their living standards and quality of life. In the 21st century, computers have become an indispensable part of people's lives. Computer network technology has also gradually become an important tool and means for people's daily production and practical activities. Network technology has gradually become an important reliance for people to carry out their work and practical activities. Under these circumstances, it is imperative to attach great importance to network security issues. Only by fully ensuring computer network security can the level of computer information management technology be comprehensively improved, our network environment be more secure, and we can provide more guidance and assistance for the progress and development of human civilization, as well as achieve a steady improvement in the level and quality of information technology.

## 1. Overview of Computer Management Technology

### 1.1 History of Computer Development

The computer I usually refer to is a computer. A computer is an electronic computer with high-speed computing capabilities. It can not only perform numerical calculations, but also perform logical calculations. Some advanced computers can even store memories. The world's first electronic digital computer was developed by the University of Pennsylvania in the United States in 1946. The computer itself was not very fast in terms of computing speed and transportation quality, and it was very bulky. After that, with the continuous development of technology, humans developed transistor computers. The emergence of transistor technology greatly promoted the development of



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computers and further promoted the development of computer information management (Cai, 2021). Subsequently, integrated circuit computers and large-scale integrated circuit computers gradually appeared. With the continuous development of technology, the computers that people can carry with them today and can perform some complex high-speed calculations have gradually been formed. Today, computer technology has undergone a qualitative leap. Moreover, computer technology has played a huge role in various fields such as military, astronomy and politics. With the development of various industries, the requirements for computer computing power and storage capacity are also getting higher and higher.

### 1.2 The Role of Computer Management Technology in Network Security

With the rapid development of science and technology and the continuous growth of social demand, computer management technology has emerged. In the field of network security, the development of computer information management technology plays an irreplaceable role, and at the same time, it has further promoted the prosperity of the world economy. As the times continue to progress, network security is also constantly innovating and changing (Zhou & Du, 2021). Computer information management technology is now widely used in China. People have also gradually realized that only by applying computer information management technology can a better and safer network technology environment be created, and better services be provided to people. In the field of network security, the application of computer management technology is mainly to detect and repair the vulnerabilities of the Internet in a timely manner. Although the current level of computer technology has developed to a certain stage, there are still many criminals who use various attack methods to threaten network security. Therefore, it is necessary to fully guarantee the reasonable application of computer information management technology in order to avoid the computer being invaded by viruses and hackers.

## 2. Causes of computer information technology security vulnerabilities

Computer information management technology is often vulnerable to security vulnerabilities due to the following reasons.

First of all, computer networks have inherent defects. Computer networks can provide people with global, time-zone-free communication. Therefore, computer networks themselves exhibit strong openness and sharing. This allows users to share and transmit various types of information and data anytime and anywhere without being restricted by time and space. However, this process can also easily lead to the leakage of personal information. For example, some criminals can use hacking attacks, virus implantation, and other methods to threaten the security of computer transmission lines. After being attacked by criminals, the network protocols and user data in the user's computer network will also be harmed. Even some important personal information and confidential documents may be stolen. If the computer networks of national security departments or financial departments are maliciously attacked, there may be irreparable losses (Ou, 2021).

Secondly, there are hacker attacks. Due to the open and shared nature of computer networks, anyone with a viewing device can access the network. Within a computer network, all users have identical attributes. Therefore, some criminals frequently exploit vulnerabilities in the computer itself to maliciously penetrate computer defense systems and steal important user information and data. Thus, it can be seen that malicious hacker attacks are also a significant factor threatening computer network security.

Secondly, there are software vulnerabilities. During the development of some software, due to developer negligence or other factors, vulnerabilities may exist in the computer language itself. In such cases, the computer software will also have defects or vulnerabilities. Hackers can exploit these vulnerabilities to intrude into personal computers, leading to the theft of personal information and, in some cases, remote control of the personal computer via the network.

Finally, computer users themselves lack sufficient security awareness. Computer technology has become an indispensable part of people's daily lives and work, and most people can operate computers proficiently. However, people still lack sufficient cybersecurity awareness when using computers, which leads to computer data being exposed to criminals.

## 3. Application of Computer Information Management Technology in Network Security

### 3.1 Utilization of various information security technologies

Fully utilizing various new information security technologies can fully guarantee the security of computer

information management technology. In the field of network security, there are currently various security technologies such as firewalls, antivirus software, and encryption technology. Firewalls themselves are an effective layer of protection for computers (Shi, 2020). This technology can effectively isolate the internal network from the external network, as shown in Figure 1 below. This can effectively protect user information data. Illegal requests can be isolated through firewalls, but traditional firewall technology does not have strong interception capabilities and intelligent identification technology. Therefore, computer users should strengthen the application of intelligent firewall technology in combination with the actual situation. Only in this way can illegal requests be automatically intercepted through the quality learning and automatic updates of the firewall, thus providing basic protection for information security.

**Figure 1. Firewall technology.**

Antivirus software can proactively detect and defend against illegal activities on the network. Installing antivirus software on a computer can automatically scan for computer viruses, and any file uploaded to the computer will be scanned by the antivirus software. Once a latent virus is detected, it can promptly issue an alert and monitor the system, reminding the user to handle the virus information data in a timely manner.

Furthermore, to fully ensure the security of user information data transmission in the future, encryption technology can be used to encrypt information data before transmission, thus guaranteeing the security of information transmission. When using encryption technology, the encryption method should be kept as secret as possible to enhance encryption strength and effectively prevent malicious theft and damage of various types of information data.

### 3.2 Using technical means

To further enhance network security, various computer network security tests should be applied reasonably. From a practical point of view, users should install firewall software when using computer networks. This will enable the formation of an effective technical protection barrier between private networks, public networks, intranets and extranets, and timely block various unsafe network behaviors from the outside world. It will also effectively prevent computer networks from being threatened by Trojan viruses. However, there are many types of firewalls available for computer users in the current market. The most representative types are filtering and proxy (Zhou, 2019). When choosing a firewall, computer users should combine the types of websites they frequently use and the frequency of network usage, and select a firewall technology with a high degree of matching after in-depth analysis. After making a decision on the firewall technology, the corresponding permissions should be set reasonably. This will improve the security of computer network use while providing convenience for network use.

In addition, it is necessary to equip personal computers with appropriate antivirus software. Currently, widely used antivirus software includes Kingsoft and 360. During the installation, use, and updates of antivirus software, its security needs to be monitored regularly to effectively prevent bundled or malicious links from appearing within the antivirus software, thus effectively protecting personal computer network security from threats.

In addition, regular network security checks are necessary, along with regular updates and maintenance of firewalls and antivirus software. When using computer security management technologies, any vulnerabilities discovered should be promptly addressed and resolved to further enhance the computer's ability to resist viruses. Simultaneously, regular detection of computer network intrusions is crucial to prevent security risks in network operations and to promptly eliminate malicious attacks and other unstable factors, thereby further improving the security and stability of network operations.

### 3.3 Improve the computer information management system

Computer networks have become an indispensable tool in people's lives and production. With the continuous increase in computer network users, ensuring the security of computer network use requires further strengthening of network security risk management. Only with a high level of information management and security awareness can the effective application of computer information technology be achieved. Current statistics show that most computer security vulnerabilities are caused by individual users' lack of security awareness. Insufficient understanding of the severity and importance of network security issues by computer users can pose a threat to computer network security. Therefore, as computer users, we must continuously improve our network security awareness, consciously enhance our computer information management skills, and engage in network security knowledge learning. This will effectively improve the efficiency of computer information management technology application. At the same time, we should continuously strengthen management of weak links in the computer network, promptly scan for and maintain security vulnerabilities, and ensure the security of network operation.

### 3.4 Application of intelligent analysis engine technology

Intelligent analysis engines have become a core component of modern network security management systems. They primarily enable in-depth analysis of the correlations between heterogeneous network product data, allowing for the timely identification of unstable and insecure factors within the network. During intelligent analysis, the system directly issues alarm signals upon detecting insecurity factors and provides timely and effective response solutions. Correlation analysis is currently one of the most significant technical challenges in network security management, playing a crucial role in network security correlation. Furthermore, correlation analysis is a critical step in building a network security management system. It requires detailed classification of security data from each component and comprehensive filtering and in-depth analysis of events occurring at different times and locations to improve the accuracy and precision of information analysis. Additionally, unified coordination of management technologies is essential to fully leverage the importance and advantages of security management.

### 3.5 Strengthen risk assessment

Strengthening risk assessments of computer networks can continuously improve the security awareness of computer users and operators. As computer network security professionals, we should continuously improve our learning abilities to accurately assess network security risks when facing security situations. At the same time, we must accurately assess potential network risks and vulnerabilities to promptly identify various factors affecting stable computer operation. After a detailed analysis of the severity of each factor, we can propose corresponding solutions as soon as possible, thereby ensuring the security and stability of network operation and minimizing network risks to computer users.

### 3.6 Enhance system protection

System protection is a crucial technical means in computer information management, ensuring the full security of computer information. Therefore, as internet technology continues to develop and improve, computer protection systems should be continuously improved, and any defects or vulnerabilities should be promptly addressed to effectively strengthen internet security capabilities. For example, using encryption technology to set permissions and passwords for various important computer data can prevent the loss of vital information.

## 4. Conclusion

With the rapid development of network technology, the application of computer information management technology is becoming increasingly widespread. To further strengthen network security and prevent personal losses for computer users, the application of various network security technologies, such as firewalls and antivirus software, should be strengthened. At the same time, timely optimization of various network security technologies is also necessary to effectively improve the level of computer information management technology. Only by strengthening risk control and comprehensively enhancing the security awareness of relevant personnel can the effective application of computer information management technology be realized in network security.

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