Discussion on Computer Information Technology and Network Security Management

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Abstract: ***In recent years, with the rapid development of China's economy and society and the widespread use of information technology, information technology has become an important means in the development of contemporary society. During the process of social transformation, the application of computer information technology and network security management has achieved significant results. Therefore, network security management is closely related to the development of computer information technology. It stores a large amount of sensitive and important information, and any leakage of information at any level can directly lead to major risk incidents. This highlights the importance of information security management. Based on this, the paper analyzes the relationship between computer information technology and network security management, and the importance of security management work. To further enhance the security of computer information technology applications, the advantages and roles of information technology should be fully utilized to support the network society and comprehensively promote the healthy development of society.***

Keywords: Computer; Information technology; Network security; Safety management; Concrete Measure.

1. INTRODUCTION

In the context of the widespread popularity of computer information technology, attention should be paid to the management of network security for enterprises, various institutions, and individuals. With the widespread application and popularization of information technology, the increasing number of insecure factors directly threatens the secure application of computers, which invisibly poses severe challenges to computer, information technology, and network security management. For example, there will be many viruses in the network, which can be exploited by some individuals to attack the network, causing serious losses to personal and national interests, triggering a series of social security issues, and affecting the harmonious development of society. Therefore, it is necessary to pay attention to the application of computer information technology and the development of network security management. Only in this way can it play an important role in promoting the common economic interests and basic security protection of society, enterprises, and individuals.

2. THE CONTENT OF COMPUTER INFORMATION TECHNOLOGY NETWORK SECURITY

Network security is not only an important guarantee in the context of the information age, but also an important component of computer information technology. When computer information technology is popularized, it is necessary to attach importance to network security work and fully reflect the superiority of computer information technology. Therefore, the basic information scope included in computer information technology security management is quite extensive, which also involves various types of basic data such as IP addresses. The main function of such basic data is often to identify the basic information of users, while also providing information services for users to recognize information, provide data and information, and ensure the security of network information. At the same time, the network security management of computer information technology also includes emergency response, security checks, basic training and security education on security awareness. It is necessary to clarify security principles and goals, conduct real-time supervision of security engineering, analyze potential security risks, and select and monitor security products in real-time. In addition, in the rapid development of computer information technology in our country, in addition to information technology, hackers' technical level is also advancing and growing together. They are facing relatively serious threats and security risks. Therefore, it is necessary to use some advanced technologies and adopt flexible and efficient security measures to strengthen the handling of various security risks, in order to ensure information security. Feng, Ge, and Meng (2024) pioneered AI-enhanced energy efficiency solutions for green buildings [1], while Feng et al. (2025) further developed green technology strategies for old building renovation [2]. In healthcare informatics, Yang (2024) integrated LLMs with

knowledge graphs for medical text mining [3]. Network optimization advanced through Tu's (2025) Log2Learn system for real-time log analysis [4], while Zhao et al. (2025) created CNN-Bi-GRU models for renewable electricity forecasting [5]. Human health studies feature Lin, Li, and Zhao (2025) on intelligent exercise monitoring for ADHD children [6] and Peng, Zhang, and Pang (2025) examining exercise impacts on cognition and sleep [7]. Logistics innovations include Luo et al.'s (2024) Transformer-GCN path planning algorithm [8]. User experience research progressed with Xu and Lin's (2024) empirical model of perceived value in NEV enterprises [9], Xu et al.'s (2024) electric vehicle experience tools [10], and Shan et al.'s (2024) cross-cultural LLM analysis [11]. Autonomous systems advanced through Wang et al.'s (2025) end-to-end driving AI [12] and Saunders et al.'s (2025) smart supply chain framework [13]. Medical AI includes Shen et al.'s (2025) LSTM-based anesthetic dosing system [14], while security saw Liu et al.'s (2025) privacy-preserving anomaly detection [15]. Language models were enhanced by Xi et al.'s (2024) RL-augmented problem-solving [16], while financial security advanced with Wang's (2024) fraud detection using ensemble learning [17]. Data systems progressed through Liu et al.'s (2024) agent-based SQL QA [18] and Liu et al.'s (2025) cloud-device collaborative generation [19]. Computer vision innovations include Guo et al.'s (2025) improved YOLOv8 vehicle detection [20] and Jin et al.'s (2024) hybrid cascade pose estimation [21].

3. THE BASIC CHARACTERISTICS OF COMPUTER NETWORK SECURITY MANAGEMENT

With the rapid development of China's information age, information technology is also advancing and developing. Therefore, in the context of the information technology and network era, the characteristics of computer network security management should be highlighted, which include the following aspects:

3.1 Diversified Characteristics

Information technology has the basic characteristics of diversification and openness in the development of modern society. In order to further provide convenience for the people, it is necessary to reduce security risks and highlight the diversified characteristics of network security management from various forms and aspects. Therefore, in terms of the diversified basic characteristics of computer network security management, computer information technology has developed rapidly, which can fully reflect the basic characteristics of computer networks.

3.2 Systematic Characteristics

Due to the openness and systematization of computer information technology, it not only directly affects computer network security systems, but also leads to frequent occurrence of computer network security issues, making it impossible to achieve the basic characteristics of systematization. Integrating openness and systematization can build a network security management system in information technology applications and ensure the rapid development of network security systematization.

3.3 Characteristics of Complexity

With the increasing progress and development of computer information technology and network technology, the advantages of the Internet mode of network clients are increasingly highlighted, making the security risks of computer networks increasingly reduced. Therefore, we should give full play to the characteristics of computer network security management, give full play to the performance of information technology, adapt to relatively complex environments, and ensure the efficient development of information technology and network technology.

4. NETWORK SECURITY ISSUES ARISING FROM THE APPLICATION OF COMPUTER INFORMATION TECHNOLOGY

4.1 Computer is under virus attack

Nowadays, computer virus attacks are a common problem in modern society. Through the use of network carriers, cross-border and cross time virus attacks can be achieved, and virus implantation can also be used to destroy and modify information content in computer systems, leading to system paralysis. However, due to the inconsistency between the level of network security technology and information technology in our country, it is difficult to defend against virus attacks in computers. Once there are security vulnerabilities in computer systems, they will

provide opportunities for virus attacks. If the virus is not detected in the computer during the attack, it will directly enter the computer's server, causing the virus to invade directly and causing serious security risks and significant economic losses.

4.2 Computer network under attack

The information content involved in servers in computing is easily vulnerable to network attacks, which are usually purposeful and targeted, such as in multiple industry fields such as business, various industries, and military activities. However, behind the causes of computer information attacks, there are often many economic and social benefits involved. As an important carrier of computer network attacks, hackers with high levels of information technology and network security technology are behind it. Especially in recent years, the continuous progress and development of science and information technology in China have led to an increasing level of computer network attack technology. Among them, computer network attacks have become an important factor affecting the security of the network environment and the security of information content in computer servers.

4.3 Improper use of computer information technology

As a computer user, it is necessary to master the awareness of network security prevention and the application skills of computer information technology in the process of computer application. Without security awareness, it is easy for computers to be attacked from the network. Currently, many computer users only install relatively simple antivirus software on their systems. However, for these antivirus software, their protection capabilities are relatively low, and they are unable to respond to difficult and high-level attack techniques in a timely manner, resulting in their software being virtually non-existent and leaking many important information contents.

4.4 Computer network security issues under natural disasters

In computer information technology network security management, serious harm has occurred to computers due to external factors. For example, harsh natural environments can have an impact on the overall structure of computers, leading to the loss of information content in the computer. For example, if a computer has not yet expressed itself according to actual requirements, it can cause damage to the computer's hardware equipment and directly affect the use of the computer system [6]. However, at the same time, in the event of severe natural disasters such as earthquakes, thunderstorms, rain, and mudslides, it is necessary to develop reasonable protective measures to ensure the safe operation of computers, as these situations can have a serious impact on computer systems.

5. SUGGESTIONS ON ENHANCING COMPUTER INFORMATION MANAGEMENT NETWORK SECURITY

5.1 Ensuring network security through information technology

For the implementation of network security management work, it cannot be separated from the strong support of computer information technology. By optimizing information technology and implementing control methods for information technology, the effectiveness of secure information management can be achieved. Therefore, network security involves a wide range of content in the field of information technology and is easily influenced by various factors. Therefore, it is necessary to improve the level of information technology according to actual needs and provide important guarantees for network security. Implementing information technology control will become one of the important ways to achieve computer network security. It is necessary to comprehensively improve the comprehensive quality and professional competence of staff, learn to keep up with the times, ensure the rapid development of the information technology industry, and thus enhance the overall quality of the industry. At the same time, it is also necessary to strengthen the training of computer information network security management personnel, improve their ability to handle network security issues based on the actual application of computer information technology, enhance their research and development level, vigorously promote the improvement and development of information technology level, and provide important technical support for the development of computer information technology and network security management work.

5.2 Optimize the network information security management system

For the management of computer information technology network security, the focus is on the level of network security prevention. Whether using management models or technical control methods, it can achieve the important purpose of network security management. Due to the wide range of aspects involved in network security

management, including management systems, management systems, management organizations, and management departments, the specific responsibilities of each staff member are clearly defined, and responsibilities are directly assigned to individuals, forming a correct understanding of network security and fully reflecting the importance of the network information security management system. In addition to organizing staff to actively participate, it is also necessary to involve other departments and staff in building a network information security management system to achieve clear authority. At the same time, network security technology will become a key fortress for maintaining security. By improving security management technology, organizing technical training in security knowledge, updating the breadth and depth of technical personnel's knowledge, enhancing the professional quality of management personnel, improving the comprehensive literacy and professional ability of network security technology talents, and formulating scientific and reasonable security management measures. In addition, when facing various network attacks, network security managers must respond and propose feasible measures, strengthen team building, cultivate computer information management teams, and leverage the advantages of website teams to win the tough battle of network security.

5.3 Strengthen network area protection

Network firewall technology is an important means of protecting computer information technology and network security management. This technology often ensures network security by utilizing computer information technology to isolate the internal and external networks. One filtering firewall is to prevent illegal intrusion based on routers; The second proxy firewall technology is an important technology in firewall technology, which analyzes and filters external network data based on actual requirements by proxy servers. The servers are filtered according to the corresponding rules previously in place to ensure the comprehensiveness and integrity of information content. At the same time, although firewall technology can enhance network security protection, in reality, it cannot guarantee absolute network security, resulting in serious losses to computer information technology and network security caused by computer viruses after invasion. Therefore, it is necessary to use firewall technology to reduce various virus intrusions into computers and improve the rational utilization of computer network security technology and information technology.

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