Computer Network Information Security and Protection Measures under the Background of Big Data

Saie Liu
Yunnan Vocational College of Land and Resources Kunming, Yunnan, China

*Corresponding author e-mail: 623044261@ynghtxy.edu.cn

Abstract. With the rapid development of computer network era, there are computer networks in various industries. In the process of computer network application, there will inevitably be various network information security risks. The emergence of various problems leads to many illegal malicious thefts of network users' private information, causing great losses to the user's property security. The development of big data is important in computer network information security. Therefore, this paper studies protection measures. Using the demand of big data period, this paper analyzes the problems of computer network information security. Repeated testing to develop effective protection measures to continuously improve the security of computer network. To provide a more stable network environment for the general public, to avoid the problem of large-scale private information disclosure.

Keywords: Big Data; Computer Network Information; Security Risks; Protection Measures

1. Introduction
The era of big data [1-3] is the era of making computer to carry out diversified integration of massive data information. Big data technology can unify various data types in the practical application process. Big data has gradually become a very important part in the process of modern social and economic development and has become the direction of social and economic development. However, with the wide application of big data information and the continuous expansion of data range, it also puts forward better requirements for network information security management. However, although the current computer network information technology [4] is gradually applied to various fields of society, there are also a series of problems that threaten the security of computer network.

Computer network information security is a very good standard. With the birth of the Internet [5-6], Internet network security issues are divided into computer hardware security issues and computer software security issues. The security of computer hardware involves the material configuration of hardware, while the security of network software [7-8] involves a wider range and more complex technology. Because of the security problem of network software, it faces the problem of network opening. Compared with the security problem of network hardware [9-10], the security problem of network software is facing more and more complex factors. Therefore, it is more difficult to solve the security problem of network software.
This paper formulates appropriate computer network information security management of network information security problems, so as to speed up the pace of China's modern information construction. Firstly, it analyzes the factors of computer network information security problems; then it puts forward corresponding protective measures to maintain to give users a comfortable network experience; finally, through the questionnaire survey of network security maintenance personnel and users, the network information protection measures proposed in this paper are effective and can avoid many network security risks.

2. Causes of Computer Network Information Security Problems under the Background of Big Data

2.1. Natural Environment Impact
Data can create huge wealth and value for us, and data has become the most valuable part of big data operation. There are various uncertain factors in the natural environment. The occurrence of various natural disasters, the impact of various computer information engineering hardware facilities, the failure of our data, lead to the loss of value, such as: hardware facilities failure caused by high temperature, power failure caused by typhoon, hardware problems caused by humid climate, etc.

2.2. Human Impact
In computer intrusion, hacker intrusion is often used by criminals. Hacker intrusion has gradually developed into a very common information security incident, and the computer in China cannot get rid of the hacker's attack.

In the process of computer security, if the hidden danger of the computer is buried in the process of network security, it will have a negative impact on the security of the user.

The Internet itself has the characteristics of openness. All kinds of information on the Internet is open and shared. We can share all kinds of knowledge and information. Most computer networks do not have strong protection function, so they are very weak in front of computer viruses that threaten network security.

In the process of using network users, some incorrect operation or improper behavior habits may lead to some network security problems. For example: inappropriate Internet users cannot achieve sharing, it is recommended to integrate the original equipment and resources.

Computer virus has a high concealment, stored in a certain location of the computer system, the well-designed virus program usually does not attack immediately, but exists in the computer system, collects some important data information, and divulges the data information when the opportunity is ripe. Computer virus also has certain destructive, once the virus program runs, it will continue to spread, resulting in disk format, important data loss, computer system paralysis and other phenomena.

3. Protection Measures for Computer Network Information Security under the Background of Big Data

3.1. Experimental Ideas
We should also see the dust on the Pearl, that is, new security problems will appear in our network information security, which requires us to pay attention to and strengthen protection. In the big data environment, these information data not only contain a lot of private information, but also contain a lot of trade secrets. In order to effectively improve the comprehensive application, we must change from the perspective of security. Therefore, it is value to explore the security and protection measures of computer network information.

3.2. Experimental Design
In this experimental design, we selected two groups of personnel to carry out the division of labor investigation. The first group visited the local network information security maintenance personnel,
and learned the problems needing attention in the current big data environment of computer information network security. If there are any protective measures, list out the statistical items, and then conduct real-time statistics by questionnaire survey to the network security maintenance personnel in other places. The second group of personnel will also list the protection measures in the form of questionnaire survey, asking users about the satisfaction of the network security protection measures and make statistics. The results show that most people tend to add firewalls to computers and formulate a comprehensive network information management system to avoid malicious attacks by hackers to obtain user information, resulting in property security problems. There is a clear way to deal with the malicious behavior and purify the network environment of users. The results are shown in Table 1.

| Table 1. Network security protection measures |
|-----------------------------------------------|
| Content                                      | Network security maintenance personnel (%) | Users (%) |
| Popularization of firewall application        | 78                                           | 86        |
| Establish a complete information security      | 69                                           | 74        |
| management system                             |                                              |           |
| Effective information encryption               | 54                                           | 49        |
| Timely virus detection                        | 44                                           | 65        |
| Enhance the awareness of network security     | 52                                           | 57        |
| Real time monitoring                          | 34                                           | 41        |

4. Discussion

4.1. Survey on Satisfaction of Network Security Maintenance Personnel with Network Security Protection Measures under Big Data

![Figure 1](Figure_1.png) Figure.1 Satisfaction survey results of network security maintenance staff
Shown as Figure 1, we conducted a questionnaire survey on 240 network security maintenance personnel and users, including 120 in each group. Most of the staff are very satisfied with the network security protection measures proposed in this paper. Natural factors can be avoided, so it is necessary to maintain the hardware facilities regularly to strengthen the protection of natural hazards. Human factors are more common, network staff needs to create a sound computer network. Based on the background of big data, continuously optimize and improve the level of network information security, make full use of data encryption, firewall protection, data backup and other technologies to improve, so as to effectively maintain the network information security.

4.2. Expert Satisfaction Survey

![Figure 2](image)

Figure 2 Expert satisfaction survey results

Shown as Figure 2, we interviewed the local network security maintenance professionals, let the experts browse, give their personal opinions on the measures proposed in this paper, and score their satisfaction. Many experts think that computer network information security protection, the establishment of firewall is the important to ensure information. 30% people are satisfied with the network information security precautions.

4.3. Specific Contents of Protection Measures for Computer Network Information Security Problems under the Background of Big Data

Viruses and Trojans often invade computers and steal other people's information. Therefore, it is necessary to establish a firewall, firewall and upgraded computer network information security protection system when dealing with viruses, and then formulate a perfect network information security protection plan.

In order to effectively improve the effectiveness of computer network protection, it is necessary to establish perfect information security. Applying computer system, the importance of computer network information security guarantee, and need to accurately grasp, according to the actual situation, and operation in strict accordance with the relevant implementation standards.

By setting perfect network information security authority and adopting effective encryption processing technology. In general, most users need to set reasonable security permissions of computers. Some key information needs to be encrypted to effectively prevent illegal elements from invading computer systems and stealing personal information.

Users must fully realize the importance of network. Regularly modify the relevant online banking passwords, do not click on unsafe connections at will, prevent password leakage and strengthen
account management. Network information service providers play an important role in maintaining information security. They are providers of information and data. They have the ability to deal with the network information actively, and naturally they also take the responsibility of protecting the network security. Therefore, network service providers must actively accept the management and supervision of network information managers, strictly abide by relevant laws and regulations, and protect the rights and interests of users while reasonably developing information data.

System vulnerability includes software vulnerability, hardware vulnerability and program vulnerability. Unreasonable network configuration or design can also lead to network vulnerabilities. Therefore, in order to solve these problems effectively, some software manufacturers have developed patches, which can solve the loopholes caused by program problems to a certain extent. Do a good job in vulnerability detection; commonly used detection program is tiger software.

4.4. Significance of Computer Network Information Security Protection in Big Data Era

Big data refers to a system with a large amount of information data. If we only knew its name, it would have certain limitations. In other words, really big data is not made in a certain way. In essence, big data refers to the science and technology that can quickly obtain important information from massive data information. At the same time, related technologies will also be included in the category of big data.

As a powerful tool, the Internet has affected every industry in China. The Internet is not only an important window for information sharing, but also an important machine for liberating productive forces and using advanced systems to improve productivity and productivity. The related network security issues are not only the normal operation of each network information system, ensuring the healthy and orderly development environment of the network, but also the dissemination and protection of confidential and private information at all levels of government, enterprises and individuals. Once the network system is paralyzed, the software and hardware are destroyed, and the personal confidential information of government enterprises is illegally stolen, which may be engaged in criminal activities by criminals, which will bring security threats and losses to our lives, health, property security and other aspects.

In short, under the background of big data, it is very necessary to do a good job of computer network information security. The application of computer network technology in big data information processing can speed up the data transmission speed and achieve the ideal data processing effect. However, in daily life, computer network information security risks are common, at the same time, information security problems occur from time to time, and even damage the legitimate rights and interests of individuals. Therefore, in order to effectively protect the security of the country, enterprises and individuals, it is necessary to carry out security work, create a good network working atmosphere, so as to improve the efficiency of computer network security protection.

5. Conclusion

Whether the computer network runs smoothly through network security management, driven by big data, it is difficult to maintain massive data information. Therefore, it is imperative to perfect the network security prevention system and formulate reasonable information risk prevention and control measures. Through the prevention method proposed in this paper, through the questionnaire survey of network maintenance personnel and users, more than 50% of the experts expressed satisfaction with the prevention measures, and staff and users also gave a high evaluation. In short, in the context of big data, the security of network information must be guaranteed to provide users with more secure network services.

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