Research on Optimization Strategy of Computer Network Security Technology under the Background of Big Data Era

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Abstract. In the era of big data, network data will increase dramatically, which will face great security work. With the growth of data geometric multiple, we will face a variety of network security problems. Through computer network security technology, we can guarantee the security of network environment, which will play an important role in protecting massive data information. In the era of big data, we have greatly expanded the functions of the Internet, which greatly improves the data transmission speed. First, this paper analyzes the problem of network security. Then, this paper puts forward a variety of methods.

Keywords: Optimization Strategy, Computer Network Security Technology, Big Data Era

1. Introduction
With the rapid development of information technology, information data has been further mined, which has led to the explosive growth of data. With the proliferation of big data, it not only enriches people's life, but also brings many network security problems. Therefore, by promoting Internet security, we can better carry out network work, life and learning. In the era of big data, network information security has become the focus of attention. In order to ensure network information security, computer users should strengthen the application of security system, such as firewall, VIP, etc.¹ Through computer network security technology, we can guarantee the security of network environment, which will play an important role in protecting massive data information. In the era of big data, viruses and bad software will seriously affect the network information security, which needs to strengthen the technical means of security system. By means of technology, we can avoid the influence of bad factors on information security. Big data security is not limited to individuals, which will threaten the security of the country and enterprises. In the era of big data, information security is the most important, which is an important guarantee for the healthy development of society.²

2. Problems faced by computer network security
In the era of big data, network data will increase dramatically, which will face great security work. Computer network security technology will face many problems, as shown in Figure 1.
2.1. Hacker attack
Hacker attack has become an important threat in network information security, which will seriously threaten the normal operation of computer network. Hackers are a group that is proficient in computer technology. They are especially proficient in various programming languages and operating systems, which is the prerequisite for cracking enterprise information management. By attacking the enterprise information system, hackers will get information resources and data inside the system, which will cause irreparable losses. With the continuous development of computer technology, hacker's intrusion technology has gradually diversified, which has become more hidden. The main means for hackers to attack the network are shown in figure 2.

2.2. Virus invasion
Virus intrusion is a common means of network. Through technical means, hackers can plant viruses into personal computers, which will steal users' personal data, privacy information, bank information, etc. Therefore, virus intrusion is a means to obtain improper interests, which is a common type of computer security. The operation of computer virus is mainly dependent on the program or web page, which is a very hidden way of implantation. At the same time, the virus is highly infectious, which will quickly replicate and spread to mobile devices. Virus invasion can be large or small, which may cause local and overall system paralysis in the whole region. Therefore, the computer must be installed with full-featured anti-virus software, which will deal with the virus timely and effectively. The current virus types are shown in figure 3.
2.3. Information theft
In the computer network information security, spam is a very common phenomenon, which is one of the important problems that users often face. Computers have a lot of junk information, such as news, email, etc. This will become a loophole for lawbreakers. By stealing important information, lawbreakers will spread bad information, which will threaten the network security. The information theft are shown in figure 4.

3. Computer network information security protection strategy

3.1. Firewall technology
At present, firewall technology is the most common way of computer network security technology, which is completed with the help of subnet. In the middle of the network, we can build a subnet, which will ensure the security of the network environment. When two networks access each other, it is easy to be attacked by hackers. Firewall technology can restrict visitors, which will make it difficult for non visitors to enter. Therefore, it is necessary to install firewall technology in the process of accessing and transferring information between network and Internet or between each network. Through firewall
technology, computers can prevent danger. Firewall technology mainly plays the role of isolation and control, which will ensure that the network information flow can be controlled. The working mode of firewall technology is shown in figure 5.

3.2. VPN Technology
VPN application is an effective means of information encryption for network communication. Through VPN technology, we can connect the distributed network to form a virtual private network that can transmit media. The working mode of VPN technology is shown in figure 6.

![Figure 6. The working mode of VPN technology.](image)

3.3. Antivirus software technology
Antivirus software technology is the most commonly used network security technology in life. In the current market, most anti-virus software can prevent ordinary viruses. The most common antivirus software on the market are 360, Kingsoft, Ruixing, etc. At present, although the software on the market can’t absolutely guarantee that all viruses can be detected, the viruses that can be detected can be detected. Most of the software is heuristic scanning mode, which is determined by the standard features of database. Through computer scanning, we can find out whether the infected virus can solve the unknown virus.

4. Conclusion
Although the development of big data era provides convenience for life, it will cause major security risks. With the progress of the times, network attack means emerge in endlessly. Through the application of modern network technology, users improve the security of the network.

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