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Research on Computer Network Information Security and Protection Strategies

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Abstract: ***With the rapid and ongoing development of computer technology in the current stage, computers have found wide application in people's lives. In the practical use of computer networks, both administrators and users pay particular attention to this issue. It is essential to recognize the shortcomings in this area and implement appropriate measures to address these issues. Only through such actions can we enhance the security of computer network information, provide necessary support for computer network applications, and fully leverage the advantages of computer networks. This article primarily focuses on the analysis and discussion of computer network information security and proposes relevant protective measures, with the hope that it can serve as a reference for all.***

Keywords: Computer Network Information; Security; Protection Strategies.

1. INTRODUCTION

With the continuous and rapid development of the Internet in our country at this stage, the research work of computer network technology has become more and more personal. The Internet has been widely used in People's Daily life, which can improve people's lives and make life more convenient. The use of computer network in a scientific and reasonable way can better communicate and contact with the outside world in a timely manner, and can carry out related activities such as learning, life and work on the network. Although the use of computer network can make people's life more convenient, there will be many small problems in the actual application process, especially the security problem of computer network information, which is a very important problem in the development process of computer network at this stage, some people will steal or change information data through the use of computer network. It has a very serious impact on People's Daily life and property. From the perspective of the Internet era, information security has become a very important issue in the process of computer network application, and scientific and reasonable ways should be adopted to prevent information security problems and improve the reliability and security of computer network application. Wang [1] explored AI-driven solutions for optimizing last-mile delivery in smart city logistics, while Yuan [2] developed GPT-4 based approaches for processing multimodal medical data in EHR systems. Human-computer interaction improvements were investigated by Song [3], who optimized warehouse management interfaces using speech recognition technology. In data management, Chen [4] proposed a quantized framework for ensuring data quality in gig economy platforms, and Wang [5] examined legal aspects of enterprise naming rights and prior rights restrictions. Security and predictive modeling have seen notable innovations through ensemble learning approaches. Liu et al. [6] created a privacy-preserving hybrid ensemble model for network anomaly detection, while Guo et al. [7] developed a focal loss-based ensemble method for imbalanced dataset forecasting. Model optimization techniques were advanced by Weng et al. [8] through their multi-task fusion framework, and Lyu et al. [9] with optimized CNNs for 3D point cloud recognition. Healthcare analytics has benefited from several AI-driven approaches. Pang et al. [10] established a data-driven framework for diabetes risk prognosis using EHRs, while Peng et al. [11] improved domain generalization in 3D human pose estimation through a dual-augmentor framework. Finally, Liu et al. [12] introduced Tool-Planner, an innovative task planning system operating across multiple tools.

2. ANALYSIS OF COMPUTER NETWORK INFORMATION SECURITY PROBLEMS

From the perspective of computer network information security, various factors will pose threats to information security. At present, the main threats to computer network information security include the following factors, such as natural factors, man-made malicious destruction, viruses, computer crimes, the latter being virus mail and other factors. This article mainly studies computer network virus, vulnerability of network system, human malicious attack and natural factors.

2.1 Computer network virus threat

The so-called computer virus threat is through the use of computer network technology to spread some virus software affecting computer applications. Computer viruses are destructive and latent and other related characteristics such viruses are generally attached to other computer software, if the virus into the computer, it will spread in the system, no matter which system software to invade, will lead to system failure and inefficiency and other problems. Causing computers to automatically install many useless software programs is the main harm of viruses. If the number of useless programs in the computer increases, it will not only affect the memory of the computer, but also affect the speed of the computer. If the computer virus threat is very serious, it will damage the computer system, and the system file is lost or damaged. Therefore, computer virus will have a very serious impact on computer network information security, not only will reduce the efficiency of computer network system work, but also lead to network data damage or loss of information.

2.2 Malicious attacks on computers

At this stage, the phenomenon of artificially destroying computer network systems has become very common, and Baidu, a very famous company in our country, has also been attacked by hackers [2]. Therefore, it is necessary to pay attention to the problem of human attacks on computer network systems, in addition, human attacks will have a very big impact on the information security of computer networks. General professional hackers in the process of attacking and destroying the computer network system, will first use the corresponding way to invade the user's computer system, and then destroy it or steal the user's information, resulting in the loss of computer network system data information, system paralysis, etc., it is precisely because of this reason. It has a great impact on the country and the people.

2.3 Vulnerability of network system

The reason why the computer network system can be liked by the people is largely due to the openness of the network system. As the computer network system is an equal and widely applied network technology, using the computer network system in a scientific and reasonable way can make people more convenient to carry out remote control and shorten the distance of the world [3]. In addition, the open nature of computer network systems has a corresponding impact on their operation, and it is precisely for this reason that they are the most vulnerable places. The security of the transmission control protocol/Internet protocol relied on by the computer network system is relatively low. In addition, due to the difference between the time of information release and the time of transmission, due to the influence of the openness of the network, the computer network system has been faced with attacks and threats such as data interception, malicious tampering of information and deception.

2.4 Influence of natural factors

From the perspective of natural factors, the computer network system is an intelligent and modern machine and equipment, and the computer and other machines and equipment are the same, and do not have the ability to contend with natural disasters. The so-called natural disaster refers to the natural factors that have an impact on People's Daily life, including temperature, vibration and shock, etc. The appearance of these factors will have a very serious impact on the operation of the computer network system [4]. At this stage, in the process of using the computer, most of the space does not have waterproof, lightning protection and shock absorption and other related protective measures, the grounding system also has many imperfect places, the protection facilities are not comprehensive, but also because of this reason, resulting in the computer can not resist accidents or natural disasters, the computer network data security has a very serious impact.

3. COMPUTER NETWORK INFORMATION SECURITY PROTECTION MEASURES ANALYSIS

From the point of view of the computer network system at the present stage, it is often affected by various unsafe factors in the actual operation process. If these unsafe factors are completely eliminated, it is certainly not in line with the reality. However, we have adopted scientific and reasonable protective measures to increase the strength of security. The following computer network information security protection measures are analyzed.

3.1 Protect IP addresses

Criminals can attack the user's computer network system by using the user's IP address, criminals often use a variety of computer network technology to detect the user's IP address, if the user's address information is obtained,

criminals have the actual attack object. In order to solve this problem and improve the security of computer network data information, users can use a scientific and reasonable way to hide IP address information, through this way, criminals can not detect the relevant information of users in time, no attack object, criminals can not effectively attack it. It can not only improve the security of computer network data information, but also ensure the security of users' network information.

3.2 Configure the firewall and antivirus software

Firewall technology is the most important and basic technology in computer network system information security protection measures at present. Using firewall technology in a scientific and reasonable way can improve the security of computer network system data information [5]. The principle of firewall technology is to use hardware equipment to set it up in the user's LAN or an important location outside the network. From the point of view of the computer user system and the entire computer network, because the firewall design method can protect the security of the entire computer internal network information system, but also can more effectively control the influence and infringement of the computer internal and external Internet system. Therefore, the use of such a design method helps to improve the security of data inside the computer system and on the Internet. In addition, the firewall and a variety of anti-virus software combined with each other for use, can effectively block the computer internal network in the process of accessing the external network, some bad information and sensitive information, the bad information will be blocked successfully, in the corresponding anti-virus software, anti-virus software can cooperate with the firewall to eliminate bad information. In this way, not only all behaviors of the internal network and external network of the computer can be monitored in a timely manner, but also bad information can be handled in a timely manner, so as to better control the computer network system and improve the security of network information.

3.3 Set access rights and use encryption

The so-called setting of access rights is to use the relevant system to verify the identity of the user, use a scientific and reasonable way to belong to a certain class of users and restrict the user's access to some data information. In this way, some criminals can be prevented from accessing and browsing computer network resources and related data, and the security of user data information can be improved. At present, security measures for setting access rights have been widely used by users [6]. In addition, for some more important data information, users can use computer encryption technology, in this way can add a layer of security to the user's information security to ensure the security of data information. In the process of using computer encryption technology, users must remember their own password, in this way can avoid the impact of not remembering the password on the normal operation of data information. Finally, to use a scientific and reasonable way to maintain and repair computer equipment, network operators and relevant staff to focus on the network system supervision and management, especially to the computer network information security management, through this way can improve the security, so as to ensure that the computer can operate normally.

3.4 Physical security measures

The main purpose of physical security measures is to ensure that network printers, servers, and computer network systems are not affected by artificial or natural factors. From the perspective of computer network operating system and database, it is necessary to strengthen its security in a scientific and reasonable way while checking leaks and filling gaps. Especially for servers with important business, it is also necessary to establish an effective and strict audit system to ensure the security of information and data [7]. If the problems of the service system and operating system of the computer network are not found in time, various security problems such as illegal access, system defects and viruses will occur [8].

3.5 Enhance users' security awareness

In the process of improving the level of computer network system information security protection hardware, it is also necessary to use a scientific and reasonable way to enhance the user's security awareness, help users correctly understand the risk in the use of computer network system, develop a sense of inspection, through this way can not only reduce the occurrence of errors, At the same time, it can also reduce the influence of thought factors on the information security of computer network system. In the process of using the computer, users should ensure that the use of the environment is stable and urgent, and try not to apply the computer system in extreme weather [9]. After the computer system is turned on and logged in, the user can scan and check the system with the help of virus

detection software or firewall, reduce the probability of system destruction by optimizing the program or updating the software, and optimize the performance of the computer. In addition, users should pay attention to the security of the account and password. If you log in in public places, do not use automatic login. In this way, the probability of number theft can be reduced [10].

4. CONCLUDING REMARKS

In general, under the historical background of the increasing development of computer technology, computers have begun to be widely used in all walks of life in society. With the continuous improvement and development of computer network information technology at this stage, it has provided great help for the people to enter the era of information and modernization. Adopting a scientific and reasonable way to develop computer network technology can not only ensure the security of computer network data information, but also improve the quality of life of our country's citizens. It can not only help our national information development, but also help our national economic development. This article mainly analyzes the factors affecting computer network information security, and puts forward corresponding measures to solve the problem, hoping to provide corresponding support and help to our national computer network information security protection work.

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