Protection Measures of Computer Data Information Security

Xu Wei[1.2], Leng Jing[1.2.*]

[1]Department of Information Technology, Hubei University of Police, Hubei, Wuhan 430034

[2]Hubei Collaborative Innovation Center of Digital Forensics and Trusted Application Hubei, Wuhan 430034

*Corresponding author E-mail: 8026@hbpa.edu.cn

Keywords: data information; security protection; protection measures

Abstract: Starting from overview of computer data information security, this paper elaborates the importance and measures of computer data information security protection from different angles. The detailed analysis provides reference for protection measures of computer data information security.

1. Introduction

In the new era, the level of computer technology keeps improving and the scope and fields of its application is constantly extending, which leads to the wide concern of computer data information security protection. Therefore, starting from the protection of data information security, the storage, transmission and research process should be protected from the perspective of computer hardware and software, to prevent the loss or damage of data information. In order to eliminate such problem fundamentally, we should actively innovate security protection technology and strengthen the data information security protection to guarantee the security and effectiveness of using computer data information.

2. Analysis of overview on computer data information security

2.1 Analysis on factors influencing the computer data information security

Development of science and technology brings out a series of new technologies, in which computer technology develops rapidly and has been widely applied in different industries, providing effective guarantee for people's work and life. Meanwhile, there are various problems and challenges, especially related computer data information security brings some interference to users. The factors influencing security are as follows: the first factor is the inappropriate usage. Wide popularity of computer brings lawbreakers a chance to steal and destroy internal data information through various forms of network fraud, hacking and network virus attacks, leading to different levels of threats to security of computer data information. The second factor is non-human factor, mainly external interference causing the damage of hardware device and the loss of internal data information, such as fire and hardware failure.

2.2 Analysis of external conditions on computer data information security protection

Importance should be attached to the following two factors to improve the security of computer data information. First of all, the security of computer itself should be guaranteed. Users' information data is mainly in computer storage device so that the security of computer data information should be strengthened to lay a foundation for data security protection. At the same time, we should strengthen the security protection of computer software and hardware, carry out regular inspection and maintenance according to the actual condition, guaranteeing normal operation of computer and safe and stable operation of internal hardware and software. It's crucial to protect the software comprehensively through common antivirus software such as Master Lu and 360 Total Security. Secondly, the security of communication should be guaranteed in the transmission of computer data information. Loss of data information caused by transmission failure

  DOI: 10.25236/iccse.18.053

should be prevented and paid high attention in safety technology, providing effective guarantee to data information security.

3. Analysis of importance on security protection of computer data information

3.1 Analyse importance on security protection of computer data information from the technical perspective

Innovation of computer technology is highly valued and concerned due to the convenient service provided. Analysis of relevant data shows that most people manage data information primarily through computer so that protecting computer data information security is of great significance to people's work and life. Threats to the data information security of computer users would bring not only inconvenience in work and life but also different degrees of economic loss, which causes high value on security of computer data information. With the increase of daily transactions, the actual amount of data is also increasing, which demands the improvement on the ability of computer to process information. Meanwhile some system bug would emerge so regular repair and maintenance should be carried out to effectively enhance the performance of computer to process data information, providing guarantee for security protection of data information.

3.2 Analyse security protection of computer data information from the perspective of production and culture

Constant innovation in computer technology can expand the scope and field of application, which is mainly applied to enterprise management and people's daily life and work, bringing convenience to their life and work. Once the security of data information is threatened, people's normal life would be disturbed. Therefore, the security protection of computer data information should be strengthened to prevent such situation and guarantee the quality and effectiveness of production brought by computer. From the perspective of security culture, problems in security of computer data information is bound to have negative impact on application environment of communication technology and computer technology and people's initiative in using computer. Therefore, protection of data information should be strengthened to create a better application environment.

4. Research on protection measures of computer data information security

4.1 Analysis of identifying security measures through information digest and integrity

Firstly, information digest is mainly applied through a value corresponding to the unique message and text so that the data information can be encrypted by information digest in the transmission. Recipient decrypts the data information using decryption key and sender would receive the corresponding feedback to verify. If both information digests are unified, the data information isn't affected and damaged in the process of sending, transmitting and receiving. Secondly, integrity is mainly applied to verify the system to protect the security of computer data information and functions in information technology, key and users' identity. It can systematically identify the project parameters of computer users in practical application and analyse the corresponding numeric to check if there is damage or security problem.

4.2 Analysis on security measures of encryption key management and encryption confirmation

First of all, encryption key management is to protect security of computer data information with encryption key. In the actual application, administrative key plays an important role and the main ways are to store key medium, including disk encryption, memory encryption and mobile hard disk encryption, which can effectively guarantee the normal use of key and protect the computer data security. Second, encryption confirmation protects the transmission range of data information in limiting mode, which can prevent lawbreakers' theft and tampering and fake information, making

sure the normal and complete data transmission. At the same time, acknowledgement message and identity authentication would be used to verify the effectiveness and security of information.

4.3 Analysis on encipherment protection of transmission and storage

Generally, the process of using computer data information is divided into 2 links: storage and transmission. However, security problems would appear in those 2 links, such as loss or damage of data information. So security protection should be strengthened. Firstly, the application of storage encryption is conducted by Ciphertext storage and storage control. Ciphertext storage is realised through encryption algorithm conversion while storage control is mainly to distinguish the validity and limit the users to realize the data information security protection. Secondly, the application of transmission encryption includes Point-to-point encryption and line encryption. Point-to-point encryption, protecting the data security in a way difficult to identify, is completed before the transmission and recipients can decode to get corresponding information. Line encryption mainly protects the security through encrypting the transmission line and applies specialised key to encrypt and decrypt to effectively secure the data information.

5. Conclusion

With the improvement of scientific and technological level, the application field and scope of computer technology is constantly expanding and the information stored, transmitted and processed is increasing. In order to ensure and improve the security of users' data information, we should actively apply modern techniques, give full play to the advantages of encryption technologies and innovate data information protection technologies. On the basis of flexibly using data information and providing all-round protection, corresponding secure measures should be taken according to various links of data application, specifically develop protection system and ensure the security and effectiveness of data information from hardware and software.

Acknowledgement

Fund projects: 1) 2017, Hubei Provincial Department of Education,The project of "excellent talent of Jingchu"Synergistic Education Plan

2) Hubei University of Police research project support

References

[1] Zhang Xiaoqiang.Research status of computer information system security and the discussion of security measures [J].Science and Technology Innovation Herald, 2012 (16):34-35

[2] Feng Qingxi. Research and application of security technology of computer information system [J].Computer Development & Applications, 2012(30): 27-28

[3] Fang Ling, Zhong Weijun, Mei Shu’e. Research on information system security technology strategy based on threat [J]. Journal of Wuhan University of Technology Information & Management Engineering, 2014(06): 857-861

[4] Jin Lin. Research and application of computer information system security technology [J].Computer CD Software and Applications, 2014(20): 168-170