

Research on Computer Virus and Prevention Mechanism under the Background of Big Data

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Abstract: With the continuous progress of China's science and technology, big data and related concepts receive the wide attention from all sectors of society, network technology is extensively popularized and applied in the era of big data, and many changes appear in people's daily life under the influence of new technology. Big data is realized by cloud technology, and it refers to mass data resources stored in computer network system. Under the background of big data, the methods for people to obtain information change greatly. The application of big data technology in computer and network terminal is significantly advantageous. At the same time, various security flaws in network system and computer viruses bring serious security threat to users. Therefore, it is necessary to study strengthening prevention mechanism to ensure the secure and stable operation of network system.

The popularization of computer network promotes the development of all walks of life. Whereas, various computer network securities bring troubles to users, even serious economic loss, which already arouses the attention of all sectors of society. At present, many institutions have stipulated measures for network system security problems to avoid system faults. The era big data brings great opportunities for improving network security and preventing computer virus. Therefore, relevant technicians shall strengthen research, formulate perfect control measures and prevention mechanism of network security, make use of new technology and give play to the advantages of network system, so as to make contribution for national development.

1. Introduction to Computer Virus in the Era of Big Data

Big data refers to mass network data stored in computer system and various large amounts of data traffic. With the progress of science and technology, data resources of computer system are gradually diversified, and a large quantity of data information need to be conducted high-quality processing through scientific technology. With the advent of big data era, the mode for people to obtain computer data information changes. Resources can be comprehensively acquired by wired network, wireless network and various terminal devices, with high-speed information processing, increasing information quantity and decreasing information density. Under the background of big data, computer network security also faces threat, so it is urgent to strengthen network security [1].

At present, big data technology is widely applied in all walks of life. Individual or enterprise users face network security problems in using network system, mainly including personal information disclosure, enterprise website attacked by virus, data stolen, etc. Thus, relevant institutions shall comprehensively intensify the emphasis on network system security. Nowadays, information technology is increasingly mature, network security protection measures also are improving, and various network attack technologies appear constantly, which are with strong penetrability and elusiveness, rapid speed, and large range of influence, and attack techniques become comprehensive attack from traditional single attack. The trend of network security is severe. The application of big data technology in prevention and control of computer virus can provide effective guarantee for network system security and plays a significant role in the era with popularization of computer network, which deserves in-depth study.

2. The Common Attack Techniques in Computer Network

With the improving science and technology, computer network technology develops greatly. Constrained by technology ability, there are large security flaws in computer network. Many computer software need to constantly repair after publish and using, so as to avoid network attack by attackers in flaws of software system, protect information security of users and improve the reliability of system. At the same time, in continuous development of network system, people's communication mode changes to the wide application of video call, email, QQ and WeChat. Among them, email is an important method, whereas, many hackers stole user information by sending junk mail, bring major threat to network security [2]. Besides, it is necessary to set passwords when using network system to realize the effective protection of personal basic information. However, in setting passwords, attackers can implant computer virus by techniques to break the code, so as to obtain various information resources. Denial of service is also a common attack means. Due to the limited operation ability and resources, many attackers can falsify the required virus to the user's computer, resulting in service failure and system paralysis.

3. Problems in Computer Network Security in the Era of Big Data

3.1 Threats of computer virus

While computer network security system continues to develop and improve, the types of computer viruses are also increasing. The current common computer viruses include destructive program virus, backdoor virus, script virus, worm virus, system viruses, Trojan horse virus, etc. Among them, Trojan horse virus is able to steal basic information of users, which is an especially serious threat for cyber security. In the era of big data, the values of information are comprehensively explored and utilized. Especially for departments of national defense, enterprises and public institutions, information is particularly important. In the new era, computer viruses cause more impacts, and new types of viruses such as ransomware lead to serious loss to enterprises and individuals, which requires intensified prevention [3].

3.2 Security risks in operating system

The operating system has strong openness, allowing users to perform the transfer of executable file through Internet. In this process, there is security detection to monitor comprehensively, however, some stubborn viruses will immediately execute program once downloaded. There is not enough time for various network security control measures to control, which also indicates that the response ability of security architecture of computer operating system when encountering problems is insufficient. The operating system makes use of different processes to comprehensively control the operation of computer programme. However, many safeguarding processes belong to virus. These programme will regularly wipe data resources in hard disk system, so that lots of data unsaved will be lost and cannot recover. Once the hard disk is completely wiped, it will cause serious loss to users [4].

3.3 The vulnerable computer network system

The main characteristics of computer network system is openness, with the information transfer in network environment. Once viruses attack a certain network link, the entire network system will be seriously break down, which causes severe impacts. In addition, computer network system is highly free, without any limit to user transfer and data downloading, which also brings opportunities for various viruses. Many hackers have higher computer level, and individual users cannot cope with it, which causes that network system face serious security threats.

3.4 The insufficient awareness of network security

In the era of big data, people can timely find out required valuable information in computer system, and their life and work convenience improves. Whereas, network security risks also

simultaneously increase. The users' lack of sufficient awareness of security prevention, and the negligence of managing staff cause the disclosure of personal information and privacy. Many users have insufficient security awareness, lacking clear understanding of various private information in their network system, so the disclosure of personal privacy always occurs. Enterprises and public institutions, as the subject of local area network, contain lots of personal private information. When managing staff lack sufficient security awareness, there will be problems in the management of private information, which finally results in the serious disclosure of personal privacy and irreparable loss for related institutions [5].

In modern society, Internet is the necessary tool for people's daily life and work and enterprises' operation, promoting national economic and social development. In order to ensure the security, users are required to fill in their information, including name, address, telephone number and so on in many platforms such as e-commerce website and social website. In this way, lots of private information of users are stored on network. The current adopted management system of network security cannot meet the basic requirements of computer network system. Many Internet platforms can easily obtain network information resources, and some illegal businessmen even make use of these information for personal use, which results in serious unsecure problems in network environment and affects the harmony development of society.

4. Main Advantages of Network Security Technology in Big Data

Network security technology under the background of big data has stronger computational ability, and can realize the simultaneous connection of hundreds of servers. The cloud computing provided by big data, without the limit of place, can complete data computing at any place and time, and the convenience improves. The cloud computing can provide services for many users at the same time, improving resource utilization and avoiding waste. In the mode of big data, users' data is stored in cloud system, and data operation is completed in cloud system. Compared with traditional technologies, information security is obviously strengthened. Technicians are just required to strengthen the security construction of cloud system to ensure the security of data information. The network system of big data has good shareability, users can share data resources in cloud operation, and the operation process is simple.

5. The Prevention Mechanism of Computer Virus under the Background of Big Data

5.1 To build prevention system of big data information security

In essence, big data is the mass data information generated in the rapid development of computer Internet technology, which can be shared in network platform. To maintain network security, it is necessary to protect individual information security in sharing data resources, so that people can use safely when enjoying the convenient computer system. To study deeply computer network security is practical significant. The applied, complete and confidential protection of data can improve the utilization value of data resources. In the era of big data, computer network system security plays an important role in individuals and enterprises, also is irreplaceable for national development. For instance, the famous Snowden incident is an information leak caused by computer network security issues, which indicates the serious threat of computer network issue. Countries around the world attach great importance to computer network security and have formulated a series of security prevention mechanisms. Affected by the scientific and technological development, the construction of relevant systems in China is relatively late, and various mechanisms are not perfect. It is required to actively study the development experience of western developed countries, combine our actual conditions, vigorously cultivate professional and technical personnel, and establish perfect prevention mechanisms of computer virus, so as to promote the healthy development of network security in China.

5.2 Prevention measures in technology, management and users

From the perspective of technology, the prevention of database risk shall be intensified. Since the

database is the entry of various data resources, it is necessary to back up the database regularly, so that it has a relatively strong data recovery function, and the data is copied and saved from the source. Even if the loss of the data resources caused by viruses, there will not be problems in data copied and saved, to reduce the loss suffered by users to the lowest. At the same time, if data is not backed up in time, it is necessary to make full use of various software of recovering data for processing. The operating system used by computer also needs to keep pace with the times, constantly optimize and repair various system vulnerabilities, and needs to promptly remind the security detection of executable files, predict the possible hardware damage, and timely back up the data to avoid serious impacts because of viruses.

In terms of management, it is required to vigorously implement network purifying. In response to the data resource security threats prevalent in the era of big data, optimize, rectify, ban, and close some websites, and improve the security of the transfer channel. It is necessary to formulate a sound data security transfer system, reduce the probability of network systems being attacked by various attacks, standardize the use of network, and improve security awareness [6].

For users, all network users shall form good online habits, avoid browsing unstandardized websites and strange websites, including gambling websites and pornographic websites, standardize online behaviors and avoid becoming data stealer. They should learn data backup and recovery technology and system conversion technology, correctly solve various little cyber security problems, and improve themselves to comprehensively enhance their prevention ability of cyber security.

5.3 To establish security system to prevent virus

Various computer viruses can directly damage the security of computer network system, which is also the main security risk of the current computer network. Therefore, it is necessary to establish an anti-virus security control system, and timely process when a virus is found. Various anti-virus software can be used to regularly maintain and inspect each network system device, and find out the existing security vulnerabilities in a timely manner. In order to ensure network security, users shall use copyrighted software, make sure the security of download contents before downloading and detect when there is not any problem. Junk software shall be timely cleaned to avoid the network security issues because of viruses carried. It is necessary to focus on the research on static anti-virus technology, collect and analyze the bottom resources and thoroughly control computer network system, to remind users timely once virus is found.

5.4 To strengthen the education on network system security

In the era of big data, all walks of life increasingly depend on network information, so it is necessary to intensify the security awareness of common people to avoid that personal information is disclosed in network environment to be sold and used by illegal people. Relevant departments shall intensify the punishment on network illegal behaviors, constantly perfect laws and regulations on network security, strengthen the management of institutions such as network service suppliers and strictly penalize behaviors of using information of other people for personal gain to ensure the network security [7].

6. Conclusion

At present, computer virus and network security receive extensive attention of the society. With the wide application of computer Internet technology, it is urgent to strengthen network security. Big data technology provides comprehensive support for establishing prevention mechanisms of computer virus. Therefore, relevant technicians shall strengthen the research, formulate perfect prevention measures and comprehensively improve network security.

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