Original Paper

Analysis on the Causes and Countermeasures of Network Security Threats in the Era of Big Data

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Abstract

In the context of the information age, computer network technology continues to innovate and plays an increasingly prominent role in social production and life, but correspondingly, it also brings a series of security risks. Due to the openness of the Internet, information exchange and communication in cyberspace may lead to cyber crime, resulting in leakage and damage of important data and information. Big data is a product born in response to the explosive growth of network data scale, and it is particularly crucial to do a good job in computer network protection under big data, which is highly valued by all sectors of society. Therefore, grasping the characteristics of the big data era in the new era, promoting innovation and upgrading of computer network security protection technology, has profound significance for ensuring user information security and social harmony and stable development. Big data is a new stage in the development of information technology, and it is also a new situation in the development of information technology. Based on information technology, it mainly involves data and data processing. The era of big data has greatly changed the living, learning, and working conditions of modern society. The research object of this paper is the network security threat in the era of big data. By analyzing the cases of network security threats in the era of big data, this paper puts forward strategies and suggestions to solve the problems based on big data theory and technology.

Keywords

DNS threats, Protection against DDos attacks, Big data technology, Protection against malware/Trojan horses

1. Introduction

The arrival of the Internet era and the rapid development of data technology have made cyberspace an important venue that cannot be ignored in various countries. From the current practical application of

the internet, ensuring network security in the context of the big data era is actually protecting national security, which is closely related to social stability and economic development speed. The related industries of network information in our country are in a booming state of development. Therefore, purifying the network environment to ensure network security is an important part of our country's path towards becoming a network power.

2. Network Security Issues in the Era of Big Data

2.1 The Overall Network Security Environment is not Perfect

Generally speaking, in order to effectively improve the stability of computer network operation in the era of big data, the corresponding network must manage users to a certain extent. However, at present, the network management in China is mostly poor, and the operating environment of many websites is poor, and even some network problems have appeared. If these problems are not repaired in time, it will bring great challenges to the security of computer networks. When users' safety awareness is low, coupled with the lack of certain standards and network management problems, this may lead to users' information leakage. In addition, there is no clear system and security management law for network vulnerabilities in the network, which will lead to poor maintenance of computer networks, which will also increase the risk of being attacked invisibly. Secondly, the network communication protocol is relatively backward, and the basic connection protocol is the network communication protocol, but one of the main problems of this protocol is that computer users can't clearly understand the content of the protocol, which also brings some hidden dangers to users' network security. For example, if someone is malicious and grasps the characteristics of this architecture, it is easy to find loopholes in the system and launch attacks on computer networks, user information and data, which is very unfavorable for maintaining computer network security.

2.2 There are Loopholes in the Computer System

Nowadays, in the process of computer development, the system needs to be updated regularly according to users' habits and needs, so no matter which maintainer is updating and maintaining, there will always be some loopholes in the system. In addition, when users use computers to download software, the downloaded software may be associated with pirated software at the same time, and vulnerabilities can use these factors to pose a certain security threat to computer networks. In real life, it is not difficult to repair computer vulnerabilities, but because some users lack a certain degree of security awareness, when downloading software, they usually try to find software that is considered unsafe on the network to download, thus causing computer security vulnerabilities, which will lead to poor security of the computer network itself. If the user is currently transmitting data, some criminals can even obtain information about the user's usage anytime and anywhere by using some technologies, thus endangering the security of the user's network. With the rapid development of social economy, people gradually understand the computer network and apply it to their lives. In addition, with the spread of computer network, the number of viruses on the computer itself is also increasing, which also

poses a certain threat to the security of computer network to some extent. For example, it will affect the operation of computer networks, and spread in the middle and late 19th century. Viruses attack computer networks. This virus is malicious code, which can spread and copy quickly, thus achieving the purpose of destroying computer networks.

2.3 Virus Update

Because the virus is constantly updated, there are fewer bugs (vulnerabilities) in the computer itself, but these system vulnerabilities are more and more difficult to detect and have strong attack ability, which further increases the security risks of the computer network. First of all, the constant updating of viruses creates conditions for viruses to invade computers and the self-updating of computer network viruses is fast, which are the main reasons that threaten the security of computer networks. If the computer network cannot be reliably protected, the virus will invade the computer network and spread at a very fast speed, and the internal system of the computer will be quickly paralyzed due to the replication of a large number of viruses. Secondly, there are some defects in the computer itself. Computers are intelligent machines created by human beings. Although they are constantly updating and innovating, some mistakes are still inevitable. The existence of computer security loopholes gives some lawless elements an opportunity, which has a very adverse impact on the security of computer networks

2.4 Some Network Users Have a Weak Sense of Security

With the continuous popularization of computer networks, more and more people come into contact with computer networks. However, some users lack awareness of network security, and when they use computer networks, they perform unsafe operations because of their weak awareness or neglect of security precautions. These may bring hidden dangers to computer network security, which also causes certain troubles to the maintenance of computer network security. Today, under the background of big data, some criminals use some emerging technologies to illegally obtain some information of users, which also has a very negative impact on the development of computer network security.

3. The Necessity of Network Security in the Era of Big Data

3.1 Complexity of Network Information Elements

With the continuous development of computer network, its application scope in various fields of society is expanding and permeating into all fields of human life. Because of the huge amount of information contained in computer network system and the complex network information structure, various security risks are inevitable. For example, when shopping online, because users need to provide personal identity information on the Internet platform and leave the transaction information of the purchased goods, in this process, the Internet system records a lot of transaction data, and some phishing websites use hackers and other means to intercept or steal users' personal information, which may harm users' interests. Therefore, we must pay more attention to the importance of network security management to ensure people's information security and promote the stable development of computer

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networks.

3.2 The Security Requirements of Network Information are Constantly Improving

Up to now, the use frequency of computer network in some major industries and social sectors in China is increasing gradually. The function of computer network can help people to transmit information quickly and conduct related online transactions, thus improving the efficiency of information transmission in an all-round way, which greatly facilitates people's daily life and greatly improves people's quality of life. Because some lawless elements attack the network everywhere, it puts forward higher requirements for the security of computer structure. In order to effectively protect computer data in the complex Internet environment, high-level security software and technology are needed to ensure the security of computer data, which will help promote the safe development of the network environment.

3.3 Suggestions for Network Security in the Era of Big Data

In the era of big data, the network has been integrated into all walks of life, so network security issues are directly related to the country's financial environment and information security. Only by ensuring the security of network information can national security and social information security be reliably guaranteed. Network is an important foundation of information society, and cyberspace is a key field of national security and economic and social development. There is no national security without network security, and there is no modernization without informationization. Network security and informatization are important strategic issues related to national security and development, and to the work and life of the broad masses of people. Network security has become one of the most complex, realistic and severe non-traditional security problems facing our country. Therefore, this paper puts forward some suggestions on network security in the era of big data for domestic big data services and big data applications.

Conduct a national cybersecurity review of important big data applications or services. Important big data applications or services involving the national economy and people's livelihood and the government's governance should be included in the scope of national network security review, and clear security assessment norms should be formulated as soon as possible to ensure that these big data platforms have strict and reliable security measures to prevent hackers and hostile forces from invading and stealing data.

Innovation and flexible application of big data protection technology improve the protection of network security. Big data protection technology is the foundation of big data security and privacy protection, which can effectively ensure the storage and processing of data information in the database field. Under the condition of modern science and technology, we not only need to refine the sources and records of data information, but also need to visualize data symbols. Be sure to mark and verify the data information in time, so that the real data information can be highly restored. To do this, we must improve the innovation of big data protection technology, and then strengthen network security. In the era of big data, in many cases, users need to reconfirm their identity information and strengthen data

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information protection technology to maximize the protection of users' privacy, reduce unnecessary losses and negative effects, and avoid bringing economic losses and personal property hidden dangers to users.

Strictly supervise and restrict the cross-border flow of data implemented by overseas institutions. For applications or services involving big data provided by overseas institutions in China, we should conduct stricter network security audit, ensure that their data are stored in domestic servers, and strictly limit the cross-border flow of data.

4. Summary

To sum up, this paper mainly analyzes the network security problems of computers in the era of big data and the corresponding protective measures for using big data technology. Big data resources are of great strategic value in national security, so in addition to efforts in infrastructure construction, network attack monitoring and protection, it is hoped that related technologies can be popularized on the network and made known to a large number of computer users. We should firmly believe in establishing a clean network environment, resolutely crack down on the illegal acts of stealing network data and information, realize the effective protection of computer network data and information, and make people feel safe enough when using the network to transmit data.

In the era of computer Internet, various networks provide users with a large amount of data information in an open way, and various big data information are connected to each other. Due to abnormal usage, data information poses a series of security risks, and some computer users do not properly handle their own computer security measures. Their personal awareness of prevention is relatively weak, and their awareness and measures for protecting their own account usage are weak. For example, frequently using the same secret to log in to multiple accounts, setting one's own password is relatively simple and easy to decipher, with inadequate security protection in terms of usage permissions, too many open account permissions, no remote access control permissions set, allowing arbitrary login and intrusion of any computer port, seriously damaging one's own computer data and also damaging the public information source of data information, Causing serious security risks to computer network data. The computer network environment is also undergoing varying degrees of transformation with the different needs of users, with the massive growth of big data information and the emergence of new security issues in the new network environment. The larger the amount of information stored, the more security risks and vulnerabilities there are, and the greater the difficulty of supervision. Some enterprises collect, buy and sell user information through different channels and fields, and obtain improper profits. The reason for these improper channels is the result of inadequate supervision of computer networks. The information collection program created through abnormal channels does not have any network security protection measures, which seriously affects the health environment of computer networks. Due to the lack of formal computer management policies, network regulatory security cannot be scientifically and effectively supervised and managed. In response to the network security issues in the era of big data, it

is necessary to pay attention to the application and innovation of network security technology to enhance network security defense capabilities. Especially, big data centers need to pay attention to the construction of network security systems, adopt protection techniques for common types of network attacks, and strengthen data protection. And it is also necessary to introduce intelligent technology from the perspective of technological innovation to build a network security knowledge brain, so that the network security defense system has self-learning ability, timely updates the database, and strengthens the detection of network security issues, achieving the goal of effectively strengthening network security protection.

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