Research on the Application of Big Data Technology in Network Security Analysis

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Abstract—China's information technology development and scientific and technological undertakings have entered a period of rapid development, and big data technology, as an important technical support and management tool, plays an increasingly prominent role in ensuring network security analysis. Faced with various deficiencies in network security analysis and data management at this stage, we must optimize network security analysis by applying network security data analysis platforms and big data core technologies. In particular, the multi-functional file management and technical integration in the data analysis process are conducive to the continuous improvement of file management, statistical efficiency and platform quality. Through scientific distribution and optimization of structure distribution, the efficiency of data and information storage management can be improved, and network security prevention capabilities can be improved to a large extent. This article first briefly explains the importance and necessity of big data technology, and analyzes the status quo of the problems in the process of data collection and analysis. The author further proposed the strategy of optimizing big data technology and promoting file management management to effectively guarantee the development quality and economic benefits of online statistical data and offline analysis technology.

1. INTRODUCTION
The enhancement of China's technological development level is the guarantee for the development of large-space cloud storage technology. At the same time, this also puts forward higher requirements for the application level of modern big data technology. Traditional data analysis and management methods intelligently collect data around specific problems, which may lead to errors in the results of network security analysis, and the efficiency and value of work cannot be effectively guaranteed [1]. Faced with the complex situation in network security management at this stage, we must focus on optimizing the use of big data technology to achieve the analysis of security data results and the refinement of data storage management. This is conducive to promoting the optimal utilization and system construction of big data technology in the new era.

2. THE IMPORTANCE OF OPTIMIZING THE APPLICATION OF BIG DATA TECHNOLOGY IN THE INTERNET

2.1. Ensure the Reliability and Work Efficiency of Network Security Analysis Results
Network security analysis is a complicated process. Many factors are involved in the process of network security problem solving, among which a large amount of data information will inevitably be involved. In the process of network security analysis, all process nodes related to network operation...
will have an impact on data processing and data collection. At this stage, we need to conduct more extensive collection and analysis of various information and data generated in cyberspace. This is not only the requirement of the technological age, but also the informatization and intelligent development of social industries. If we still adopt traditional data analysis and management methods in the process of data collection, we will not be able to meet the high-efficiency requirements for processing data and information in practice. Traditional data analysis and management methods collect information in this area intelligently around specific problems and conduct unilateral analysis. This is likely to cause errors in the network security analysis results, and the efficiency and value of the work cannot be effectively guaranteed. In this context, the birth and application of big data technology has become an obvious trend.

In order to effectively solve the problems related to large-capacity and unstructured data in the process of data processing, we must adopt the core technology of big data to extensively collect a large amount of data information generated in cyberspace, and apply information technology to realize the efficient processing of large-capacity information. For one thing, the core technology of big data can enrich the content of data to a large extent and broaden the breadth and depth of data. For another, through the application of the network security management system, information and data can be effectively screened, which can be used to draw more reliable and safe conclusions in the network security analysis. All in all, the continuous rise of modern technology can not only realize the value of network management technology, but also realize the update and upgrade of network security system in practical applications. The core technology of big data is an important measure to ensure the quality and work efficiency of data information analysis and management. In the process of network security information analysis and risk prevention and control, attention should be paid to the performance of its distributed data collection, based on technical analysis and research, and the systematic construction of big data technology. This will help promote the improvement of risk prevention and control in the process of distributed computing and automatic testing, and enhance the actual value of network security management through efficient analysis and research. Meanwhile, stronger scientificity and stability information transmission can be realized under the technical support of big data technology. In short, the network security data analysis platform, the distributed computing and automatic testing of the core technology of big data cannot be ignored. In the new era, we should respond to the market economy with a new and intelligent application of big data technology. For example, in the face of various deficiencies in traditional network security analysis and data management, we must optimize the multi-functional file management and technical integration in the process of network security analysis by applying network security data analysis platforms and big data core technologies. Only in this way can the efficiency of file management and statistics and the continuous improvement of platform quality be realized [2]. All in all, only with a scientific and reasonable big data technology mechanism as the guarantee of network security management can the value and role of the information system be brought into play.

2.2. Develop the Application Scope of Big Data Technology
The integration of big data technology and network security analysis can effectively deepen network security management and continuously expand the application scope of big data technology. In the process of network security data analysis platform and big data core technology, the value of resources and comprehensive development strength can be enhanced. Through the use of modern information technology, the informatization, standardization, and systemization of network security management and monitoring settings can be continuously promoted. This is also conducive to enhancing the standardization and efficiency of data analysis indexing methods, and realizing the upgrading of network security analysis and data management models. In network security management, we can make full use of data collection and storage indexing methods. The deep integration of big data technology with other information technologies in the technological era can realize the intelligent and systematic application of technology. This can not only realize the full use of specific information technology means in specific applications, but also effectively expand the use of big data technology, and to a
certain extent expand the application range of big data technology. In the meantime, network security data analysis platform and big data core technology optimization are also important measures to reduce network security management costs and enhance economic benefits. By realizing the scientific and stable operation of network security management, many unnecessary capital wastes in the development of various industries can be reduced, and resource value and comprehensive development strength can be enhanced [3].

| Characteristics of Big Data Technology | High Capacity | High Precision | Fast and Efficient |
|---------------------------------------|---------------|----------------|-------------------|
| Application in Network Security Analysis | Data Collection | Data Storage | Data Retrieval and Analysis |

3. KEY CONTROL OF BIG DATA TECHNOLOGY IN THE PROCESS OF NETWORK SECURITY ANALYSIS

3.1. Analysis of Network Security Data Results and Refinement of Data Storage Management

In practice, network security data analysis and data storage management need to be refined continuously. For one thing, the application experience of big data technology at this stage is still insufficient, and the data collection, storage, indexing method and management process are not perfect. In order to solve the shortcomings of traditional network security analysis and data management, we must base on the active mode of network security analysis and data management to realize the systematic and efficient management and control of system information and network security data. However, the current online statistical data and offline analysis technology in the data collection storage index method is not clear, and the process of information sharing and data intelligent analysis is not perfect. The docking of different networks in the network management network is inherently complex. Because big data technology must achieve large-scale resource value, we should analyze the data information of different levels of the network management network in the integration of network security data. If you cannot fully utilize the high-tech technologies of data collection, storage, indexing and information exchange and analysis, you may face many difficulties and limitations in the actual operation process, and the efficiency and scientificity of data retrieval and data analysis cannot be realized. For another, there is a lack of unified standards in the construction of big data technology, network system management has not been refined in time, and network security information tracking and feedback are not timely enough. In this way, problems can easily occur in the process of network security risk identification, and comprehensive network security protection cannot be achieved. Through scientific distribution and optimization of structure distribution, the efficiency of data and information storage management can be improved, and network security prevention capabilities can be improved to a large extent. At this stage, the big data technology system for network management networks is still far from perfect. The concept of data collection, storage, indexing, and security assurance mechanism is still at a relatively lagging stage. Moreover, all aspects of information technology, risk management, and high-efficiency concepts need to be improved to improve the data collection and storage index method and the application mechanism management system [4].

Figure 1. Network Information Security
3.2. Optimize the Application of Large-space Cloud Storage Technology and Communication Technology
The application of big data technology in the communication field can effectively enhance the convenience of people's production and life. Modern online statistical data and offline analysis technology need to be widely applied to large-space cloud storage technology. In addition, if the model innovation of online statistical data and offline analysis technology is neglected in the development process, or the model innovation process of big data technology fails to choose the correct innovation direction, it may undermine the efficiency and quality of big data technology. The data management process arrangement of big data technology needs to consider various factors. At this stage, the degree of informatization and automation of data collection, storage and indexing is still not enough, and the scientific and technological construction of big data technology has surfaced problems. Otherwise, technological big data technology cannot be fully applied either. In order to promote the self-improvement of traditional big data technology, we must eliminate certain management methods that are not incompatible with the development of the times. Because big data technology cannot meet the needs of the information age, we must continuously improve the work efficiency of big data technology and promote the informatization process of big data technology.

4. Strategies to Improve the Level of Big Data Technology and the Development of Internet Technology

4.1. Optimize the Security Protection Mechanism of the Overall Network Management
The application of big data technology in the field of network management should focus on improving the security protection mechanism and operation and maintenance mechanism, and optimizing the security protection mechanism of the overall network management. Besides, we also need to fully coordinate the relationship between big data technology and the network, realize the integration and systematization of technology applications, and achieve more optimized economic benefits and comprehensive strength [5]. The application process of the data collection and storage index method should first be based on the development status, development goals, and the construction direction of big data technology. In the process of system information and data management, we should make full use of cloud computing technology and large-space cloud storage technology. We can use SPARK technology, STROM technology and other efficient technical means to realize the intelligent analysis and rapid integration of data information. Through scientific distribution and optimization of structure distribution, the efficiency of data and information storage management can be improved, and network security prevention capabilities can be improved to a large extent. We need to establish a data collection and storage index method and an information exchange platform suitable for the status quo of network security management under unified technical standards. This is conducive to the continuous advancement of real-time exchange and accurate analysis of data information. In the process of application of information technology, system management and control are highly efficient and convenient. This requires a strict and comprehensive data collection, storage index, and data guarantee system to carry out timely security protection. In this way, security risks caused by uncertain factors can also be avoided, and network security protection and management also need to be paid attention to in other types of applications.

4.2. Effectively Integrate and Analyze Data Information
Big data technology can effectively integrate and analyze data information. In the process of data collection and analysis, the application effect of big data information technology is very significant. Big data technology can improve the efficiency and quality of automatic analysis by means of data storage with unique value. The division of data structure can be achieved through big data information technology. On this basis, effective integration and analysis of large-capacity data is conducive to continuous optimization of information and data management. In the process of integrating various network data, the staff should pay attention to the sharing and intercommunication of network data.
information and big data technology data information, and attach importance to the integration of large-space cloud storage technology and the Internet. Simultaneously, this can also optimize the scientificity and rationality of application technology integration. Among them, the knowledge and concepts of statistics will also be applied. In the process of analyzing the types and structures of massive data, staff need to adopt statistical mathematical thinking to effectively divide and classify massive data in a timely manner, and improve the orderliness and logic of data classification and integration. Scientific distribution and optimization of structural distribution can not only improve the efficiency of data and information storage management, but also improve network security prevention capabilities to a large extent [6].

4.3. Optimize the Application of Big Data Core Technology in Data Collection

In the basic stage of data collection, big data technology can not only efficiently integrate and process data information through STORM, FLUME and other related technologies, but also timely classify the collected data information. This helps staff to reasonably judge the type and value of data, realize the high-quality advancement of network security work, and provide solid data support and security guarantee for the application of network security technology [7]. The application of big data technology needs to improve the effect of data information analysis and structure type management. We need to build a complete technical standard and big data technical process on the basis of optimizing network security management [8]. Objectively speaking, in the current stage of development, we must strengthen the application effect of the big data technology system, complete and perfect data collection and storage indexing methods, and security guarantee mechanisms. This can play an important role in network security management [9]. We need to set a unified standard for the application of big data technology and fully implement the role of large-space cloud storage technology [10]. In order to ensure the security of data systems, we need to always pay attention to the analysis and integration of data in the process of network security data analysis platform and big data core technology, and realize the scientific operation of network system during the construction of data collection and storage index methods. The application of data acquisition and analysis system must pay attention to the analysis of safety data results and the refinement of the process. As a key application branch of big data technology in network security analysis, the data collection and analysis system has the function of very high-quality information transmission and display. The security of the network system operating environment is very important. We need to optimize the security risk monitoring and result analysis in the data collection process, and manage the data collection and analysis process in detail. This will help to give full play to the value of big data technology.

4.4. Realize Pre-processing of Collected Data Information

It is very important to realize the pre-processing of collected data and information in network security analysis. First of all, we need to adopt big data technology to collect massive amounts of information and data. Secondly, in the face of data information with very confusing structure and type, big data technology must be scientifically pre-processed. The staff needs to build an information pre-processing library according to the structure of the data to maintain the order and value of the data. For specific data, effective data pre-processing strategies need to be invoked to establish a clear database management. Thirdly, the core technology of big data has unique advantages that traditional network security technologies do not have. In the face of security threats in the process of data storage and management, big data structures can not only achieve higher-quality storage data structures, improve the utilization of data storage space, but also can achieve more complete network security management and give full play to intelligence the application value of modernized network security technology. This can prevent and control security risks at various stages such as data analysis and collection. In order to achieve the continuous increase in the utilization of space, it is necessary to continuously optimize the storage data structure and the hierarchical design in data management during the application of big data technology. This can avoid the shortcomings of large and empty storage data structures and waste data storage space. In the process of optimizing the system analysis and technology management mechanism,
it is first necessary to determine the analysis and technical value, and implement the information transmission and system adjustment in combination with the status of the information system and the operating status. Furthermore, we need to strictly analyze and control data information to form a comprehensive and comprehensive network security protection network. This is conducive to give full play to the scientific and technological big data technology [11].

5. CONCLUSION
In summary, the network security data analysis platform and big data core technology process can achieve enhanced resource value and comprehensive development strength. Through the use of modern information technology, the technical and innovative network security management can be continuously promoted. Big data technology must be scientifically pre-processed, build an information pre-processing library according to the structure of the data, and maintain the order and value of the data. The division of data structure can be achieved through big data information technology. On this basis, effective integration and analysis of large-capacity data can not only continuously optimize information and data management, but also give full play to the value of data collection and storage indexing methods and security assurance mechanisms.

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