Optimization of Prediction Intensity of Big Data Clustering Algorithm Integrated with Distributed Computing in Cloud Environment

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Abstract

Through the existing hardware resources such as servers and storage in the data center, the use of virtualization technology to integrate hardware resources and network resources, etc., build a data center private cloud management platform, which can optimize the highly standardized servers and fully improve the hardware Resource utilization. Through a unified private cloud management platform, the rapid deployment of hardware resources can be achieved and the operability of data can be enhanced. It can meet most analysis tasks, quickly respond to analysis needs and improve the efficiency and quality of system management. Realize the rational allocation of data resources with minimal management cost and workload. During the period of continuous adjustment of the business system, the school can use the cloud data center to allocate resources according to the needs, meet the real-time deployment requirements of IT and carry out real-time risk monitoring of cloud data, identify threat programs for isolation processing and feedback and perform daily business operations Abnormalities are collected and hidden dangers are discovered and early warning is given in time. On the other hand, service providers can also develop customized security services based on the level of corporate information security requirements.

Keywords: Big Data, Algorithm, Optimization;

1. Introduction

The cloud environment information is mainly stored in the network cloud provided by the service provider and the company does not know where it is stored. Cloud environment service providers have special permissions. If they are not aware of security responsibilities, they may illegally tamper with or leak accounting information with others. Although data encryption technology is used to solve the security problems of information storage, the reliability of encryption algorithms and the integrity of data management of cloud environment service providers will threaten the security of stored accounting information. Cloud accounting information is still stolen, tampered with and leaked.

Security threats. And although there will be data backups, the corresponding paper backups are usually incomplete. Once the cloud fails, it may bring risks such as information loss.

2. Converged cloud environment analysis

2.1. Simplify the implementation process and save informatization costs

Under the traditional informatization model, companies need to purchase multiple hardware and software facilities at a time, such as corresponding software, licenses, storage servers, database servers, etc. and spend time and expense on debugging and deployment between various devices. In daily use, companies also need to arrange venues and set up

special management positions for daily maintenance and upgrading of the system. Larger costs will be incurred in terms of procurement, maintenance and personnel. The cloud service is different from the traditional model. Enterprises only need to pay to rent the facilities of the cloud platform and use them directly. Environment construction, facility update and maintenance, data security management and other tasks are completed by the service provider and the problems in daily use are handled by the provider. The customer conducts network guidance to solve. In this mode, users save the cost of purchasing equipment, daily maintenance and hiring professionals and the cost of informatization is greatly reduced[1]. The data cloud system is in the figure below.
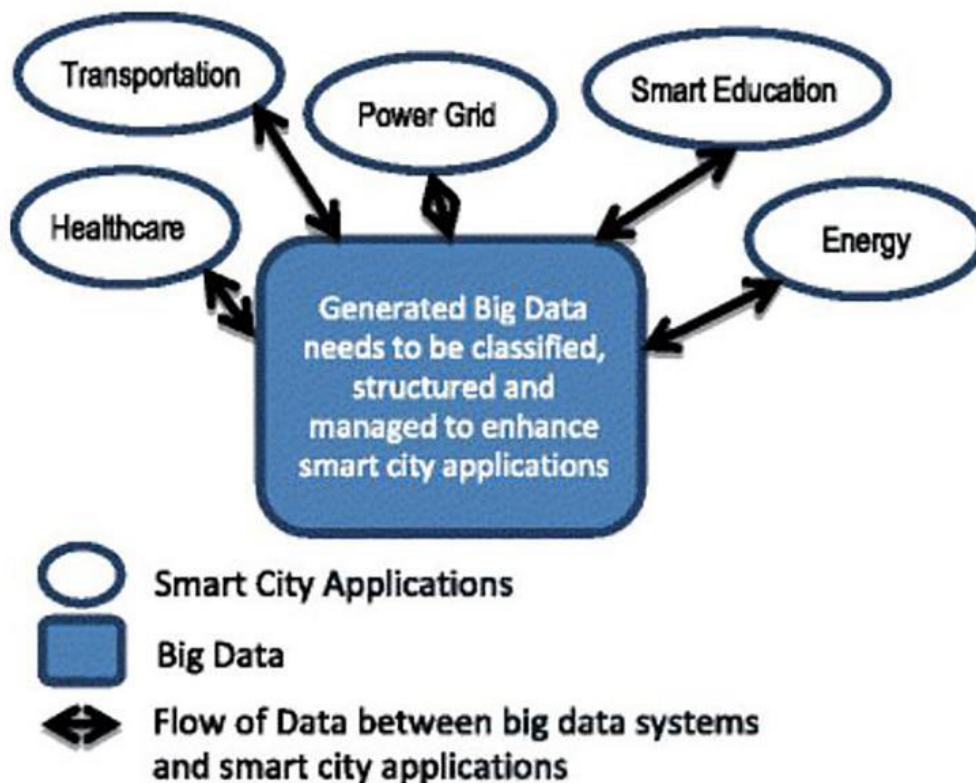

Figure1. Data cloud system.

2.2. Concentrate corporate resources and develop core business

Under the cloud service model, enterprises do not need to purchase related facilities, so these one-time fixed costs are transformed into variable costs of pay-as-you-go, reducing capital pressure and at the same time because it does not take time to deploy facilities, you can quickly enjoy professional and efficient information Service. SMEs can also gradually adjust the quality and scope of cloud services they accept according to their own financial status and business needs. On the contrary, under the traditional model, after enterprises purchase specific facilities themselves, they may limit future business adjustments. Under the cloud service model, companies do not need to spend resources on daily system maintenance, upgrades, data management, etc. and can more concentrate corporate resources for their core business development and truly

promote the improvement of corporate competitiveness. The data cloud management system is in the figure below.

Figure2. Data cloud management system.

2.3. *Adapt to market changes, flexible and easy to expand*

In order to meet the needs of various users and adapt to the access of various types of users, the platform provided by cloud service providers is flexible and easy to expand, enabling customers to log in to the platform through the client anytime and anywhere to obtain various resources. The platform always pays attention to market changes, adjusts platform facilities in a timely manner with efficient processing speed and lower adjustment costs and responds to the needs of individual product adjustments or service changes that appear at any time. For small and medium-sized enterprises with large market variables, shortage of funds and limited resources, this low-cost and easy-to-expandable information service has greatly enhanced the competitiveness of enterprises. The data hadoop cloud system is in the figure below.
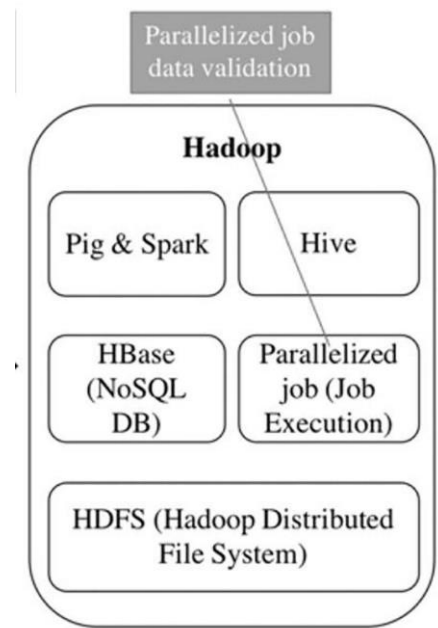

Figure3. Data hadoop cloud system.

3. Research on Distributed Computing Security Model

3.1 Firewall

Firewalls are well known as the most common network security technology. As the name suggests, if you compare network threats to fire, then firewalls are the most direct tool to resist network threats. As a "wall", firewalls are often built on routers in local area networks and external networks. By setting specific access conditions, they can filter out unsatisfactory access to achieve the purpose of resisting cyber threats. The firewall can be established through the port filter, by allowing or disallowing the port number side, even if the administrator does not log in, it also has the purpose of filtering threats and ensuring the security of the computer network. Application network management is usually used with firewalls and the two complement each other. The application gateway is responsible for file transfer and e-mail processing, combined with a firewall that is set to only allow internal machines and external specific systems to communicate through the router to form a virtual link. This virtual link is because the data is

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packaged and sent during data transmission. It greatly strengthens the security of data transmission, avoids the threat of data loss and ensures network security under the careful management of the administrator[2]. The data cloud processing system is in the figure below.
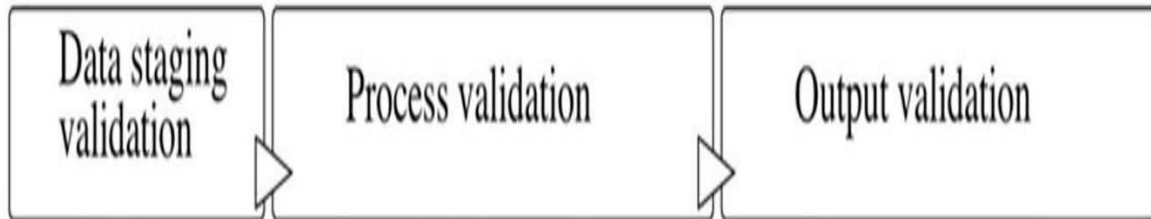

Figure4. Data cloud processing system.

3.2 Access control

Access control can also be called access control. This control method is to define and set the access rights of different users, to specify the accessible persons and to describe the allowed behavior of the visitor by calling the interface and other methods, so as to control the execution behavior of the visitor. In addition, it is also conducive to the identification and filtering of accessing member identities, reducing threats and hidden dangers for computer network access security. In order to reduce and avoid the theft of important information and data, network encryption strategies can be adopted and encryption algorithms are used to encrypt computer network distributed systems. The network encryption strategy is mainly to solve the malicious theft, destruction or tampering of important information by criminals. In order to avoid the loss caused by network security, the management of distributed systems in computer networks should be treated in various ways. The encryption of important files guarantees the safety of users' interests[3]. The data cloud system is in the figure below.
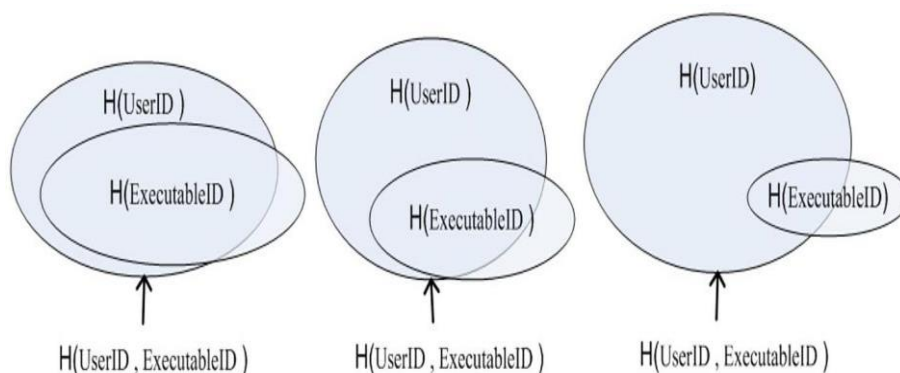

Figure5. Data cloud system.

3.3. Website management

With the massive growth of users, the traditional single-server model can no longer meet daily user requests and multiple servers are needed to respond to user needs. Moreover, with the development of the mobile Internet, terminal devices for users to access servers have also shown various forms and applications for accessing servers have also appeared in different types. In the traditional web architecture, a single server deploys a three-tier architecture at the same time and a single server must process three-tier functions at the same time. When user requests increase, in order to ensure the normal operation of

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the server, the single server must be improved. Hardware requirements. The hardware configuration of a single server is limited and the increase in the number of user requests is unlimited. Therefore, we adopt a distributed architecture of multiple servers, which is an inevitable realistic requirement.In this case, how to upgrade the web development architecture of a single server to a distributed architecture of multiple servers is a topic we must study. Through analysis and research, we can migrate the three layers of the control layer of the traditional web development architecture to different web servers to meet the requirements of distributed processing tasks[4]. The data cloud node system is in the figure below.
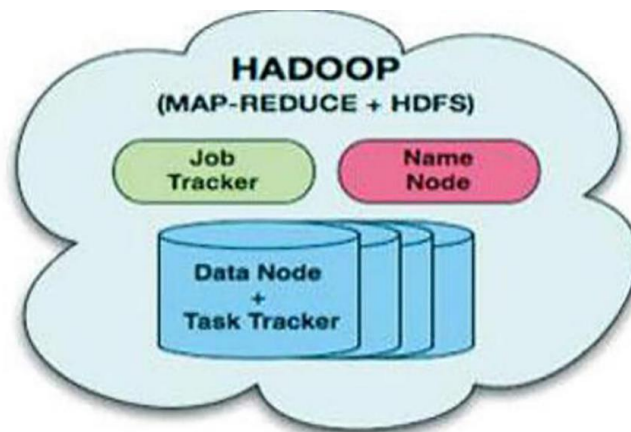

Figure6. Data cloud node system.

4. Big data clustering mode

4.1 Analysis of the role of cloud data management technology

At present, driven by computer technology, cloud data management technology is developing rapidly. Due to the wide application of cloud data management technology, data storage and management have been effectively improved, mainly because of the extensive integration of cloud data management systems Distributed storage management, which can improve the reliability of data storage and management and at the same time ensure the security of data. In addition, a large number of applications of cloud data management technology can also analyze and manage errors in parallel and efficiently solve these errors[5]. In the process of protecting the cloud computing space environment, it is necessary to strengthen the research and development of firewall technology to avoid viruses and hackers on the largest scale. During technical supervision, technical management should be strengthened, and the scope of use of safety certificates should be expanded. When developing some system technologies, we can learn from the excellent experience of foreign countries and combine our own network development characteristics to better carry out security construction. It is also necessary to apply information security assurance technology to the cloud computing environment through the cooperation of social institutions and universities, to improve and optimize the security of cloud computing information data transmission, and to improve the management level of the entire environment. Strengthen the management of authority   Use technology to manage the user's authority in detail, and restrict the user's authority from many aspects. In the process of cloud computing, key information is fully protected to prevent hackers from intruding. It is also necessary

to carry out extensive publicity of this management work, so that users can realize the importance of this work, and avoid sensitive operations in the process of technical exchanges. When repairing and improving information data, additional permissions must be added to ensure the security of information applications. Through the confidentiality of data information, some advanced encryption technologies should be introduced to make the data information more secure and stable during transmission. If you want to create a more secure cloud computing application environment, you should increase your own security awareness. Because there are more internet users in our country, there will be more security problems in the process of using technology. If you want to fully protect the network problems, you need to protect the user's operations in many ways. As far as my country's current situation is concerned, in the process of security protection, the user's own management should be strengthened. It is not only necessary to conduct comprehensive publicity and education on network security information, but also popularize measures to avoid network security risks. This enables users to protect their privacy during the process of using the technology and avoid the problems of personal information leakage and loss. Users should have a comprehensive understanding of network security vulnerabilities, and effectively avoid these risks during the operation. In summary, the arrival of cloud computing technology has provided more convenience for the development of my country's informatization. The Internet industry is also facing new development opportunities, but related companies are also facing more challenges in the development process. Because cloud computing technology has more risk problems in the application process, it is necessary to effectively avoid and solve these risk problems and realize the sustainable development of enterprises. It is necessary to give full play to the advantages of cloud computing technology to provide users with more convenient services. In the process of using computer network technology, users should raise their own vigilance to

ensure that their operations are correct. In order to reduce the probability of security incidents and ensure that the cloud computing application environment is more secure and reliable. When protecting the cloud computing client on the network, the necessary user information security protection measures are usually implemented after the agent or the user performs effective identity verification. This is the general maintenance of the cloud computing structure. In order to verify service provider information, it is necessary not only to ensure information security, but also to ensure that the information and data provided are of high quality. After passing the authentication system, the client needs to protect the security information of the general system to a certain extent during the application authentication period and prevent users from divulging specific private information. Only in this way can malicious third parties interfere with the information security system.

4.2 Analysis of core technology of cloud data management

At present, the most advanced technology in cloud data management systems is GFS. This technology is also relatively practical and widely used in cloud data management systems. GFS technology can process a large amount of data information at the same time, which can greatly improve the efficiency of information processing. In addition, this technology can also integrate several application technologies, so it can improve the data processing efficiency of cloud computing. In addition to the GFS technology in the cloud data management system, the most advanced technology in cloud computing is Dynamo technology. It can realize the uniform storage of data and at the same time can realize the efficient self-management of the system, so that each storage point can achieve good development. There is also an advanced technology in the cloud data management system, which is also a core technology, which is BigTable technology. This technology is developed based on the

architecture of Google Apps. Since Google has relatively more data information, BigTable technology can be used to store these various data side by side and at the same time, it can greatly improve the ability to read data information. It will play a role in promoting the development of cloud data management technology in the future and at the same time can improve the service level of the network and have a positive role in promoting the progress of the informatization level of the entire industry. With the rapid development of all walks of life and the continuous advancement of science and technology, there will be more and more data management technologies. At the same time, we must pay attention to data security issues while processing data. The current cloud data management system has The requirements of cloud computing management technology are not very high. Therefore, it is necessary to strengthen security management in cloud computing management technology, pay attention to the application and optimization of core technology, continuously improve the data processing efficiency of the cloud data management system and ensure cloud computing technology and cloud data management Continuous improvement of technology[6].

5. Conclusion

The access to the underlying data is realized by two parts: the access interface and the functional module. The storage and management of the data is realized by the three data technologies of the storage layer. The structured data is still stored in the Oracle database and the graphs are not structured. The data is stored by Hbase and the indexing of the data is completed by Lucene. In order to ensure that the data in the database is sufficiently complete and prevent data loss, HBase, which is responsible for unstructured data storage, follows the transaction processing mode in its operation. At the same time, to ensure that HBase services and data can be seamless when the server is down. To run with a backup server, the designer also needs to provide a dual-system hot backup solution just in case. The interface layer of the Hadoop computing framework defines a standard data processing interface. Its function is to facilitate the user to call each module. Because of the data processing in the cloud environment, the management of the catalog and the query of the station message need to use different systems Therefore, the standard data processing of the interface layer is required to have reusable functions such as combined query and access control.

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