Scalable Computing: Practice and Experience, ISSN 1895-1767, http://www.scpe.org
© 2022 SCPE. Volume 23, Issues 3, pp. 91–101, DOI 10.12694/scpe.v23i3.2001

OPTIMIZATION OF INTELLIGENT NETWORK INFORMATION MANAGEMENT SYSTEM UNDER BIG DATA AND CLOUD COMPUTING

LI MA *, RAJIV KUMAR GUPTA †, AND EDEH MICHAEL ONYEMA ‡

Abstract. With the economy and society development, big data storage in management has become a problem which can't be ignored. Task allocation management and optimization is a significant factor in the enterprise sustainable development. The enterprise information intelligent management has become management mode and presents information to the business managers in a more effective and lower cost. In order to solve the management problem under big data and cloud computing, a research on the optimization of intelligent network information management system is proposed. Firstly, build the overall model of big data diversion system under cloud computing platform, and design the architecture of Tiny OS operating system for big data diversion; Secondly, S3C2440 is used as the system control core to design the hardware structure of the shunting system; Finally, the software of the system is developed by using the dynamic loading method of functional subroutines in Linux operating system. The power supply voltage is DC 3.3 V and 1.25 v. DC 5 V is used as the overall power supply of the circuit board, and 0.1 is added at both ends of lm1117 chip F and 100 F capacitance for FIR filtering of power supply. Simulation experiments are carried out to verify the performance, which shows the superior performance of the big data shunting system designed in this paper.

Key words: Big data; Cloud computing; Intellectualization; Network; System optimization; Data diversion; Shunting system

AMS subject classifications. 64M14

1. Introduction.

In recent years, under the background of the continuous development of computer technology in China, cloud computing and big data technologies have also begun to penetrate into various industries in China. Multimedia teaching has always been one of the hottest topics in recent years. Many relevant personnel are actively exploring how to effectively combine modern information technology with educational technology. Management is a more important part in the development of various fields. Only by strengthening management can we better promote the smooth development of various work. Management informatization is not only an important trend of the development of the times, but also an effective means to optimize management and improve management efficiency. As an important concept of the continuous development of Internet information technology, information management is also an important measure to optimize and improve management in various fields. Under the background of cloud computing and big data era, carrying out management work according to the application characteristics of cloud computing and big data technology can promote the realization of management informatization [1]. Therefore, this paper explores the management informatization strategy in the era of cloud computing and big data. The Big data and network management under the cloud is shown in Figure 1.1.

The acquisition system demand is increasing; it is superior for the data processing performance for the electric information acquisition system improvement leading technology. The data generated by electricity is considerable, therefore the data storage and mining has become the important, including the database selection and the SQL statement optimization. These are precisely research direction. For the Henan electric power company implementation "three years for the quality of rural power enhancement", to support the Henan county company management, to deepen the measurement acquisition application, and measurement acquisition related business city and other work, on the basis of establishment of station expansion principle and electric information acquisition system function up gradation issued by the power grid and realized the management

*School of Information Engineering Yellow River Conservancy Technical Institute, Kaifeng, Henan 475004, China (lima098760@yahoo.com).
† Pandit Deendyal Energy University, Gandhinagar, India (Rajiv.gupta@sot.pdpu.ac.in).
‡ Department of Mathematics and Computer Science, Coal City University, Enugu, Nigeria (michael.edeh@ccu.edu.ng).

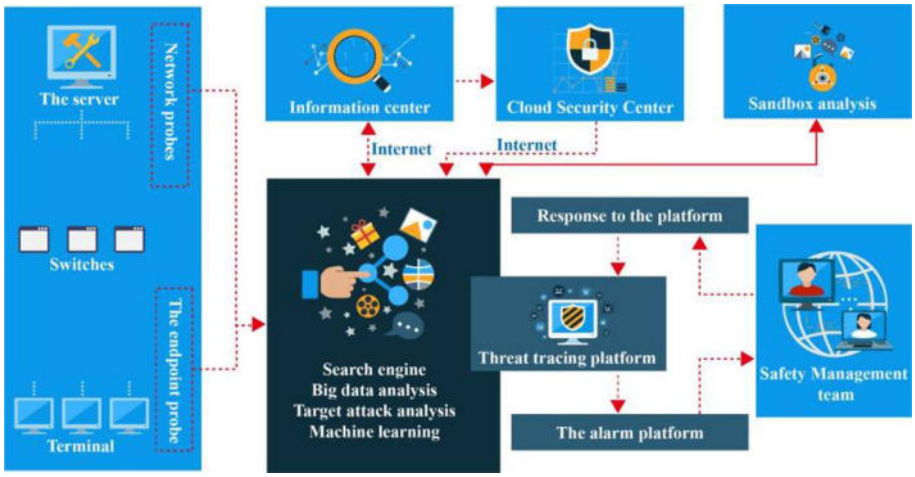

Fig. 1.1: Big data and network management under the cloud

system. The upper controllers improved their work efficiently and in the real time, they can observe the power which is of practical implication. Intelligent information management becomes the model in the age, which changes the way managers works. Firstly, the big data management in enterprises has become a problematic in modern times, while information management find the information more rapidly, and the work efficiency is improved greatly. Secondly, the enterprise data information management is organized and facilitate the company operation. Thirdly, as differentiated and modified management is becoming common, management software is highly effective and easy to operate.

2. Literature Review. Data refers to massive, fast-growing and diversified data, which is characterized by maximizing information resources for all walks of life and people's life. Informational refers to the process of cultivating and developing new productive forces represented by intelligent tools, better creating spiritual and material civilization, serving and benefiting the society. Under the unified planning, organization and leadership of the state, national informatization uses advanced modern technology in industry, agriculture, military, science and technology, integrates various information resources, and accelerates the process of realizing the development of national economy, science and technology. In the national informatization development strategy for 2006-2020, China clearly pointed out that informatization is the development trend of the world, an important force to promote social change and a catalyst for the development of social economy, education and other fields. Especially in the field of education, the application and development of information technology can greatly promote the cultivation of information talents, the construction and management of information resources, promote information exchange and knowledge sharing, continuously improve economic growth and the information development of education, and promote the progress of science and technology. The concept of cloud computing can be traced back to 2006. Kolodziej, J. launched elastic computing cloud EC2 service in March 2006 [2]. In August of the same year, at the search engine Conference (SES San Jose 2006), Google CEO Zhang, B. first proposed the term "cloud computing" [3].

He, X. L. and Song, Y. believe that data application talents will play an important role in the scientific decision-making process of enterprise development in the era of knowledge economy [4]. Jin, S. believes that the most precious information of mathematics in the data age is massive educational data, which is the core cornerstone of the development of intelligent education. Data mining technology and learning analysis technology are important fields under big data and cloud computing [5]. Moser, O. and others studied the management mode of big data discipline construction project with system engineering methodology, and put forward project man-

agement suggestions from four dimensions [6]. Tkachenko, O. and others studied the post evaluation method of applied mathematics discipline construction project by using fuzzy analytic hierarchy process, and gave the corresponding three-level evaluation index system [7]. Meena, V. and others believe that the construction project of applied mathematics discipline is discussed from the aspects of organizational structure, existing problems and project management mechanism, and some suggestions are given [8].

Based on the current research, this paper puts forward a research on the optimization of intelligent network information management system. Cloud computing is an important product of the information revolution. Through cloud computing and cloud storage, we can realize the collaborative management and scheduling of massive big data. At present, cloud computing information system is widely used in the scheduling and allocation of big data information resources. The power supply voltage is DC 3.3 V and 1.25 v. DC 5 V is used as the overall power supply of the circuit board, and 0.1 F and 100 F capacitors are added at both ends of LM1117 chip for FIR filtering of the power supply [9].

Author in this paper design a more effective, suitable and the big data management platform. The big data management system is designed firstly and according to the big data processing dataset, interface acquisition modules, platform alerting, marketing analysis and visualization are designed on the basis of communication big data architecture. To realize the data testing environment and experimental environments under the scenario of communication application and presented the big data system mechanism for production for experiments. Then design the corresponding scheduling module architecture process and built the corresponding scheduling rules [13]. Contribution: A research on the optimization of intelligent network information management system is presented in order to solve the management problem under big data and cloud computing. Firstly, build the overall model of big data diversion system under cloud computing platform, and design the architecture of Tiny OS operating system for big data diversion; Secondly, S3C2440 is used as the system control core to design the hardware structure of the shunting system; Finally, the software of the system is developed by using the dynamic loading method of functional subroutines in Linux operating system.

3. Optimization of intelligent network information management system under big data and cloud computing.

3.1. Introduction to concepts related to cloud computing and big data.

3.1.1. Cloud computing. Cloud computing was born in 2007, but after less than six months, it has attracted more attention than grid computing. Cloud computing is a super-computing model. In its data center, there are tens of thousands or even tens of millions of computers or servers. Therefore, cloud computing can even allow users to enjoy the computing power of more than 100000 billion times per second. Such powerful computing power makes - everything impossible [14]. Users can connect to the data center through handheld notebooks, mobile phones and laptops, and then use the cloud computing platform according to their own needs. Cloud computing will completely change the way of working and business model in the future. Of course, due to the application scenarios and social progress, new views on the definition of cloud computing are constantly emerging. In popular terms, cloud computing is a multi data center environment.

3.1.2. Cloud computing architecture. The architecture of cloud computing consists of five parts: resource layer, platform layer, application layer, management layer and user access layer. For users, it mainly obtains services through cloud computing, so the daily question of cloud computing is 3 and the question of four networks is X. The core is service [15]. The cloud computing architecture is shown in Figure 3.1.

3.1.3. What is big data. Big data first appeared in the 1990s. With the continuous development of cloud computing and the Internet of things, the emergence of a large number of data sources has led to the rapid growth of unstructured and semi-structured data, and the data unit has also crossed from TB level to ZB level. These data generated by a large number of informants have far exceeded the scope that human can handle at present. When people think about how to manage and use these data, they gradually explore a new field. The ”big” of big data refers not only to the size of capacity, but also to diversity, processing speed and complexity [16]. Whether people have paid attention or not, massive data has affected people’s lives, and the era of big data has come.

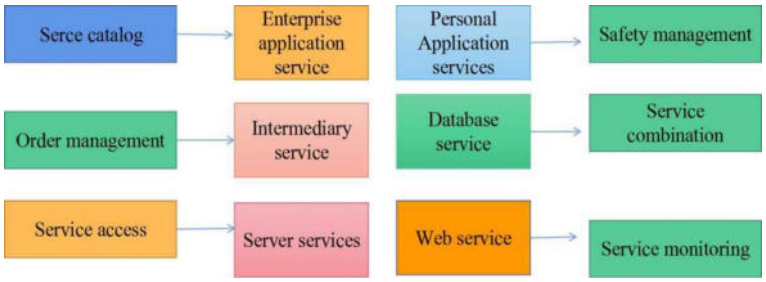

Fig. 3.1: Cloud computing architecture

3.2. Big data features. IBM believes that big data has 3V characteristics, namely diversity, scale and high speed, but these can not reflect the great value of big data. The industry represented by IDC believes that big data needs to have 4V characteristics, that is, add value on the basis of the previous 3V, indicating that although the overall value of big data is high, its value density is very low [17]. At present, it is recognized that big data has the following four characteristics: large data volume, multiple data types, fast processing speed and low data value density [18]. (1) Large data scale With the wide application of Internet technology, it is very easy for users to obtain and share data. In addition, users' clicking, browsing and sharing will quickly generate a lot of data, and the data has jumped from TB level to Pb level. And the amount of data is increasing. (2) There are many kinds of data Big data data types include not only traditional relational data types, but also unprocessed, semi-structured and unstructured information, such as data in the form of documents, audio, web pages, e-mail, video and so on. (3) Processing speed Another important feature of weighing big data is the frequency of data generation and update. One second law, which is the most significant feature that distinguishes big data from traditional data mining. For example, we chat, stock information and other data generated and updated by users all over the world are transmitted at any time, which requires that the data processing speed must be fast [19]. (4) Low data value density The amount of data grows rapidly, generally exponentially, but the growth rate of useful information implied in the data has not been significantly improved. Moreover, greater efforts need to be made to obtain useful data.

3.2.1. Clarify the important role of management informatization. When implementing management informatization in the era of cloud computing and big data, the primary task is to clarify the importance of management informatization construction and actively build a relatively perfect informatization management responsibility system, so as to effectively promote the smooth implementation of management informatization. Management itself is a very complex procedure and task. Assuming that relevant leaders do not pay enough attention to this work and do not vigorously support the orderly development of this work, it is naturally difficult to promote effective communication and cooperation among various departments, further increasing the difficulty of management information construction [20-22]. Therefore, relevant leaders must give full play to their role as leaders, continuously improve the cost investment in management information construction during work practice, and comprehensively build the fundamental project of information construction. During the development period, a representative and authoritative department can be built internally to provide a good guarantee for the construction of management informatization, so as to effectively promote the smooth development and implementation of various work.

3.2.2. Build a reasonable and comprehensive development goal and scheme of management informatization. For the orderly implementation of management informatization in the era of cloud computing and big data, it is necessary to build management informatization development goals and plans that can effectively meet their own development demands according to the documents issued by relevant national

departments and the actual situation of the school. Through this way, we can effectively build a highly targeted information development plan, so as to truly lay a good foundation for the development of management information construction. In this process, colleges and universities can actively build a more comprehensive education and teaching information management system, actively cooperate with reasonable education and teaching information management regulations, effectively guide and restrict the work of staff, and further strengthen the use of data information, so as to better promote the implementation of management information [23, 24]. In addition, we can also build a special information management platform in the development process to timely solve the problems related to the construction of management information, so as to provide a good platform for the implementation of management information work, so as to truly and effectively improve the efficiency and quality of management.

3.3. Overall design and functional module analysis of big data diversion system under cloud computing platform.

3.3.1. Overall design of big data diversion system under cloud computing platform. Big data streaming under the cloud computing platform is the basis for improving the parallel computing ability of cloud computing and realizing data clustering and pattern recognition. The big data diversion system based on cloud computing platform realizes the collection, processing and release of big data under cloud computing platform through feature extraction and data partition of multi-source information resources. Big data streaming system is the infrastructure to realize the integration of multi-source information resources under the cloud computing platform. As an open source framework, cloud computing information system can realize the wireless sending and receiving of data and data clustering through the streaming of big data under the cloud computing platform [25]. The big data streaming system under the cloud computing platform designed in this paper has the characteristics of scalability, stability, reliability and openness. Scalability means that the big data streaming under the cloud computing platform is open source, so it faces a wide range of objects. Through the big data streaming, it sends and receives the RF bytes of the upper layer of the notification to realize data serial communication and wireless transceiver; Reliability refers to the distributed processing method adopted in the cloud computing big data information diversion system. When one or several devices fail, it can notify the high-level active message components to carry out alternative work, including the later level data acquisition and processing system, which is scalable and open. The overall model of the big data diversion system under the cloud computing platform designed in this paper is shown in Figure 3.3.

Based on the overall model design of the system, the network design of the system is carried out. The big data shunting system under the cloud computing platform adopts the form of distributed weighted ad hoc network. The nodes in the cluster in the network consume energy when sending the data length to their corresponding cluster hair in each round. ZigBee communication technology is used to design CDMA module [26]. When the data distribution node of the shunting system elects to be the cluster head, set Ru to 0, and the transmission distance is greater than or equal to the threshold d0, the residual energy of the node gradually decreases. The power amplifier adopts the multi-path attenuation channel transmission model, and the energy consumption coefficient is mp. G is the set of nodes that were not selected as candidate cluster heads in the last 1p round. In the distributed weighted ad hoc network, 32-bit ARM processor and embedded gateway are used for data communication. The consumption of sending L B data by nodes exceeds the carrying capacity. 16934400 of them needs to be processed in Mach mini2440 to generate the power consumption of gap aliasing frequency band in dense channel. After compiling, the Linux kernel can be downloaded to the target board for operation to realize data diversion. Among them, the main controller is the core of the whole embedded gateway. The 32-bit RISC ARM920T Network Microcontroller produced by SamSung company in Korea is used as the core, and the 32-bit RISC microprocessor with ARM920T as the core is used to design the main controller of the big data shunting system. Tsxm, tsym, tsxp and tsyp are used as the four wire touch screen interface control signals.

4. Experiment and analysis.

4.1. Cloud computing environment modeling. Generally speaking, cloud computing is a multi data center environment. This paper studies the data migration of two common applications in big data in cloud computing environment. Therefore, this paper focuses on the differences of storage resources in data centers

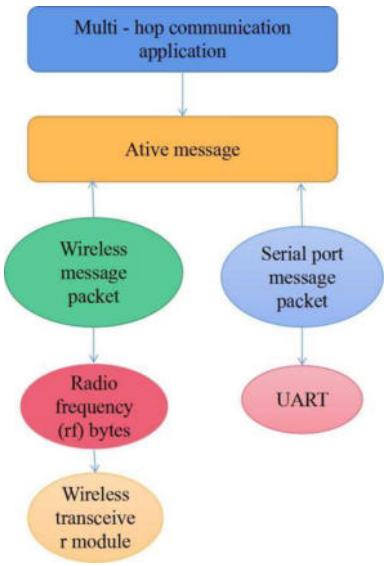

Fig. 3.2: Model of big data diversion system under cloud computing platform

and network bandwidth between data centers. Definition 1 cloud computing environment is represented as a collection of N data centers distributed in different locations. DC ={ dc1,de2... dcn}. These data centers are connected through different networks, and the bandwidth in these networks is different [19]. Where dcn is the data center numbered n. A real physical network can be abstracted as a logical network topology.

4.2. Key technologies of hardware design of big data diversion system under cloud computing platform. On the basis of the above hardware platform design, the system software is developed by using the dynamic loading method of functional subroutines in the Linux operating system. The telosB wireless module of crossbow company is used to build the network coordinator to realize the dynamic networking and data transmission of big data shunting node data. The software development platform adopts the open source Linux operating system [27]. The target board and the host computer are usually connected by 232 serial port, network cable and USB cable. The binary code compiled by GCC compiler is used in Linux. The default target platform of Linu2.6.32.2 is used to become the platform of arm, and the make file in the general directory is modified.

4.3. Functional module design of the system. The big data shunting module under the cloud computing platform designed in this paper mainly includes controller module, power management module, data memory module, transmission and communication module, Ethernet module and display module [28-30]. According to the overall design of the above data diversion system and the design of the data diversion system, TinyOS priority scheduling method is used to collect and schedule the characteristics of the big data information flow, read the characteristic sampling values of the big data, and carry out digital FIR filtering in DSP. As shown in Figure 3.2, the data is shunted to the PC or power amplifier for dynamic data processing, and then the data is sent to the PCI bus for data processing, as shown in Figure 4.1.

While (subci is not empty)
According to CF Δ I calculate the distance between SubCi and the center CenCj
of the data streaming cluster CJ of all cloud computing platforms,
and determine the minimum distance dist (Subck, Cencl), $l \in [1, k]$;
While (the central point of data clustering changes)
Select sound card suprt and add the cluster center subci of cloud computing big data to Cl, subci $\in$ CL;

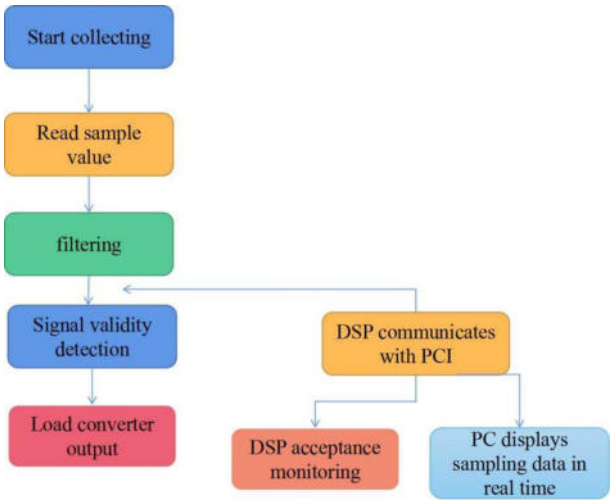

Fig. 4.1: Big data shunting process

$i \leftarrow i + 1$
Read in the new data clustering vector subci, subci $\notin$ Cl, $J \in [1, k]$;
function:
mkdir -p /var/lock
mkdir -p /var/run
mkdir -p /var/tmp
Calculate the sub cluster CenCj representing the cluster center in all data streaming clusters Cj,
and generate the root file system to minimize the system transfer function
from each sub cluster in Cj to its corresponding cluster center cencj //Thus, data diversion is realized.

4.4. Big data system control. The power control module is to provide power supply for the big data diversion system under the cloud computing platform. The arm processor is used to design the power control module. In the design of data memory module, one 128 MB flash chip and two SDRAM chips hy57v561620 are extended in parallel to meet the data storage requirements of arm and transferred into SDRAM for use. Since there is no need for external expansion equipment, only USB device control port is used for Linux terminal control through RS 232 to realize streaming cloud storage of big data. The design hardware circuit of data storage function module of big data streaming system is shown in Figure 4.2. Through TinyOS priority scheduling, each port can work in interrupt mode or DMA mode to improve data shunting performance.

4.5. Simulation experiment and result analysis. In order to test the performance of the system designed in this paper, simulation experiments are carried out. The test platform is a general-purpose PC and the CPU is Intel ® Coretm i7 2600 © 3.40 GHz, memory 4 × 4 GB DDR3@1600 99924Firstly, the hardware debugging of the system is carried out. In the debugging process, check is set as a timer to realize the connection between the developed PC and the embedded mobile development equipment; The dm9000 sensor module is used to collect data from the network, and then the dm9000 sensor module is used to transmit the data to the network.

The procedures for data sampling are: ecall ReadStream. postBuffer, pressureSamples, PRESSURE_ SAMPLES

On the basis of the above simulation environment settings, set the reversal parameters of the shunt system, as shown in Table 4.1.

The system adopts PHP and MYSQL to realize data diversion programming simulation. In the device

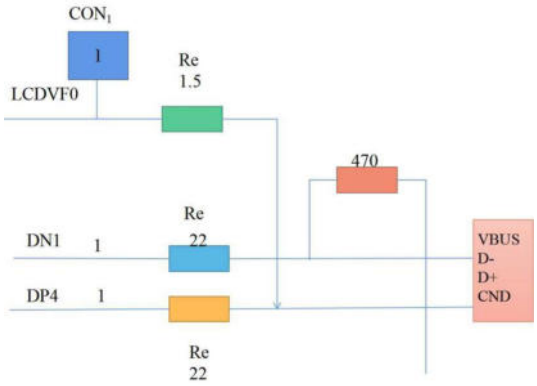

Fig. 4.2: Data storage function module of big data diversion system

Table 4.1: Simulation reference data

Parameter type	Value	Reference type	Value
Routing distribution	201*201	Member node energy	1
Number of topologies	12	Data split duty cycle	15b
Data return location	0.0	Transmission bit rate	3 b/s/Hz

drivers menu, select SD / MMC device to read the kernel image file of data streaming. The data reading interface system adopts PHP and MYSQL to realize the programming and Simulation of data streaming. Finally, the simulation results of the data system designed in this paper are obtained. Using the system designed in this paper, the data diversion is realized by clustering and feature extraction of big data under the cloud computing platform, dynamic loading according to the functional subroutine and TinyOS priority scheduling. The diversion accuracy is high, and the ability of pattern recognition is improved. The experiment of this paper is completed on the simulation platform of cloudsim. Firstly, according to the modeling of cloud computing environment, this chapter simulates the cloud computing environment composed of multiple data centers. This paper creates 600 data centers (the configuration of the data center is as follows: the virtual machine CPU is quad core, the host memory is 16g, the bandwidth is 1000mips, the image size is 100000m, and the processing capacity is 10mips). These data centers are connected through high-speed networks with different bandwidths. Then, according to the modeling of two kinds of special applications of big data, randomly simulate the test examples of two kinds of special applications of big data. These data sets have been stored in these 600 data centers according to Zipf distribution before the task. In this section, two special applications for big data cloud computing proposed in the paper are compared and analyzed. In the experiment, keep the number of overall data sets unchanged, and compare and analyze by increasing the number of tasks, as shown in Figure 4.3.

The large amount of data fusion work is required by the office system and it requires to have a humanization and office effect convenient network, so conducts system performance verification with the cloud computing and ML technique. First, the system's data fusion effect is evaluated and the results are shown in Figure 4.4.

The presented method is advantageous as compared to the existing techniques in data fusion. The data fusion is based on the cloud computing, so the data fusion speed is more beneficial. From the analysis it is seen that the system performs well in terms of data fusion in this paper and can basically meet the daily smart office needs. On this basis, a satisfaction survey is conducted in this paper on the office system and the system operating effect can be reflected through the degree of satisfaction. The statistical results are illustrated Figure 4.5.

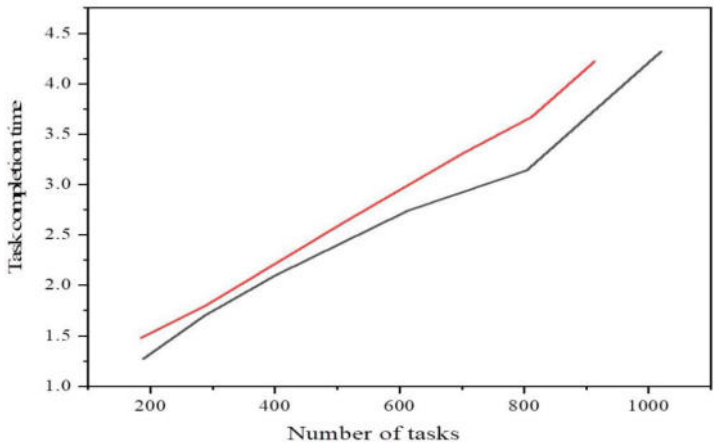

Fig. 4.3: Task completion time

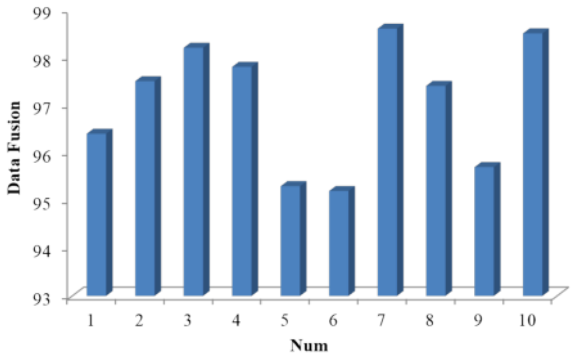

Fig. 4.4: System data fusion effect statistical diagram

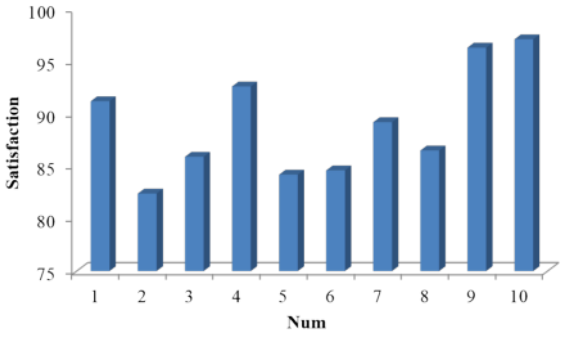

Fig. 4.5: Satisfaction survey of the intelligent office system

5. Conclusion. In the cloud computing environment, the sources of computing resources, storage resources and software resources have multiple attributes, forming the cloud computing and cloud storage of multi-source information resources. It is necessary to shunt the multi-source big data in the cloud computing environment, improve the accuracy of data clustering, and provide the basis for pattern recognition. This paper proposes an optimization design method of big data diversion system under cloud computing platform based on dynamic loading of functional subroutines and Tiny OS priority scheduling. Firstly, build the overall model of big data diversion system under cloud computing platform; S3c2440 is used as the system control core to design the hardware structure of the shunting system; Finally, the software of the system is developed by using the dynamic loading method of functional subroutines in Linux operating system. The experimental results show that the system designed in this paper can effectively realize the shunting processing of big data in cloud computing platform, and the performance is superior. The presented method is advantageous as compared to the existing techniques in data fusion. The data fusion is based on the cloud computing, so the data fusion speed is more beneficial. From the analysis it is seen that the presented system performs well and can basically meet the daily smart office needs. On this basis, a satisfaction survey is conducted on the office system and it can be reflected through the degree of satisfaction.

REFERENCES

[1] Novo, O. Qian, H. , Optimization of intelligent management andmonitoring system of sports training hall based on internet of things, Wireless Communications and Mobile Computing, 2021(2), 1-11., 2021.

[2] Kolodziej, J. , Khan, S. U. , ErolGelenbe, and Talbi, E. G. , *Scalable optimization in grid, cloud, and intelligent network computing – foreword*, Concurrency and Computation Practice and Experience, 25(12), 1719-1721, 2013.

[3] Zhang, B. , *Optimization of fp-growth algorithm based on cloud computing and computer big data*, International Journal of System Assurance Engineering and Management, 12(4), 853-863, 2021.

[4] He, X. L. , Song, Y. , and Binsack, R. V. , *The intelligent task scheduling algorithm in cloud computing with multistage optimization*, International Journal of Grid and Distributed Computing, 9(4), 313-324, 2016.

[5] Jin, S. , Wu, H. , Yue, W. , and Takahashi, Y. , *Performance evaluation and nash equilibrium of a cloud architecture with a sleeping mechanism and an enrollment service*, Journal of Industrial, Management Optimization, 16(5), 2407-2424, 2020.

[6] Moser, O. , Rosenberg, F. , and Dustdar, S. , *Domain-specific service selection for composite services*, IEEE Transactions on Software Engineering, 38(4), 828-843, 2013.

[7] Guo, Y., Guo, Y. , *Intelligent Network Office System Based on Cloud Computing and Machine Learning*. Mobile Information Systems, 2021.

[8] Tai, L., Li, L., Du, J. , *Multimedia based intelligent network big data optimization model*. Multimedia Tools and Applications, 78(4), 4579-4603, 2019.

[9] Qin, Y., Xuan, H., Zhang, B., *Intelligent Management System of Power Network Information Collection Under Big Data Storage*. In MATEC Web of Conferences (Vol. 100, p. 02028). EDP Sciences, 2021.

[10] Hsu, K. , *Big data analysis and optimization and platform components*. Journal of King Saud University-Science, 34(4), 101945, 2022.

[11] Tkachenko, O. , Tkachenko, O. , and Tkachenko, K. , *Actual trends of cloud computing and technologies in optimization of data storage*, Digital Platform Information Technologies in Sociocultural Sphere, 3(2), 192-208, 2020.

[12] Meena, V. , Gireesha, O. , Krithivasan, K. , and Sriram, V. , *Fuzzy simplified swarm optimization for multisite computational offloading in mobile cloud computing*, Journal of Intelligent and Fuzzy Systems, 39 (6), 1-13, 2020.

[13] Zhou, Q. , Zhang, Z. , and Y Wang. , *Research on safety management system optimization of b2c e-commerce intelligent logistics information system based on data cube*, Journal of Intelligent and Fuzzy Systems, 38(4), 1-8, 2019.

[14] Peng-Fei, G. , Wei-Wei, Z. , Wei-Xin, S. , Jun-Quan, Y. , Yi-Qun, Y. , De-Xin, T. , et al. , *Commissioning and operation of bioprocess intelligent optimization system in yangzhou liuwei wwtp*,China Water and Wastewater, 28(9), 5-8, 2012.

[15] Zhang, B. , *Optimization of fp-growth algorithm based on cloud computing and computer big data*, International Journal of System Assurance Engineering and Management, 12(4), 853-863, 2021.

[16] Zhu, D. D. , and Sun, J. Q. , *The path optimization algorithm of car navigation system considering node attributes under time-invariant network*, Mobile Information Systems, 2021(4), 1-20, 2021.

[17] Huang, C. H. ,and Wang, C. H. , *Optimization of preventive maintenance for a multi-state degraded system by monitoring component performance*, Journal of Intelligent Manufacturing, 27(6), 1-20, 2016.

[18] Sarma, P. , *Technology focus: digital data acquisition*, Journal of Petroleum Technology, 72(1), 70-70, 2020.

[19] Kwon, O. , *The potential roles of context-aware computing technology in optimization-based intelligent decision-making*, Expert Systems with Applications, 31(3), 629-642, 2006.

[20] Donciu, C. , Temneanu, M. , and Branzila, M. , *Sustainable irrigation based on intelligent optimization of nutrients applications*, Environmental engineering and management journal, 6(6), 537-540.

[21] Luo, A. , Chao, H. , and Peng, J. , *Adaptive inertia weight based particle swarm optimization for resource scheduling in*

medical cloud system, Journal of Information and Computational Science, 12(2), 589-599, 2015.

[22] Narayanan, M. , Kumar, R. G. , J Jayasundaram, Kumar, R. and Isaac, C. , *Big data analytics and an intelligent aviation information management system*, Turkish Journal of Computer and Mathematics Education (TURCOMAT), 12(11), 4328-4340, 2021.

[23] Mishra, B. , Das, H. , Dehuri, S. and Jagadev, A. K. , *studies in big data*, [studies in big data] cloud computing for optimization: foundations, applications, and challenges volume 39 || internet of cloud: security and privacy issues. , 10.1007/978-3-319-73676-1(Chapter 11), 271-301.

[24] Jian, H. , *Food safety and network resource optimization under the environment of cloud computing*, Advance Journal of Food Science and Technology, 11(5), 404-407, 2016.

[25] You, X. M. , Liu, K. , Liu, S. and Wang, Y. M. , *Study on dynamic resource allocation optimization model under cloud computing environment*, Xitong Gongcheng Lilun yu Shijian/System Engineering Theory and Practice, 34(s1), 234-238, 2021.

[26] Peng-Fei, G. , Wei-Wei, Z. , Wei-Xin, S. , Jun-Quan, Y. , Yi-Qun, Y. , De-Xin, T. , et al. , *Commissioning and operation of bioprocess intelligent optimization system in yangzhou liuwei wwtp*, China Water and Wastewater, 28(9), 5-8, 2012.

[27] Reshmy, A. K. and Paulraj, D. , *Data mining of unstructured big data in cloud computing*, International Journal of Business Intelligence and Data Mining, 13(3/4), 147, 2017.

[28] Drissi, S. , *Integration of cloud computing, big data, artificial intelligence, and internet of things: review and open research issues*, International Journal of Web-Based Learning and Teaching Technologies, 6 2021(1548-1093), 10-17, 2021.

[29] Chang, Victor , *Cloud computing for brain segmentation - a perspective from the technology and evaluations*, International Journal of Big Data Intelligence, 1(4), 192, 2014.

[30] Vakilinia, S., Zhang, X., Qiu, D., *Analysis and optimization of big-data stream processing*. In 2016 IEEE global communications conference (GLOBECOM) (pp. 1-6). IEEE, (2016, December).

Edited by: Vinoth Kumar
Received: May 5, 2022
Accepted: Aug 23, 2022