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Application of cloud computing technology in logistics public service information platform

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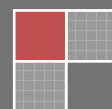
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ABSTRACT

The notion of cloud computing was first introduced in 2007. Because of its high accounting speed, limited storage and efficient resource distribution, cloud computing has gained lots of attention. Even logistics companies begin to apply cloud computing in its logistic information platform. Through study the traditional logistics information platform, this paper introduces a new information platform with informational, network and automation characteristic, which serves as a technological support for logistic companies to service faster and better, promoting the logistics industry to develop rapidly. Through applying cloud computing method in the traditional logistics information platform, this paper introduces a new public service information platform, which can effectively integrate logistics information and largely increase serving quality. Through analyzing the characteristics of cloud computing and logistics enterprise, this paper introduces a new platform integrated in cloud computing technology, which has been confirmed that it do better in information, network and lowing costs than traditional platform. Cloud computing technology's processing capacity and big storage has played an important role in logistics public service information platform, making our logistics service step to a higher stage.

KEYWORDS

The application of cloud computing technology to logistics; public service information platform model; framing research; mass information processing.



INTRODUCTION

With the development and spread of network, logistics service has experienced a remarkable change: it has gradually become an inevitable part of trading exchanges. More and more people choose politics as a way of shopping. But because our territory and population is too large, computers and network resources distribute unbalanced, and logistics population is not widely spread. Long-distance teaching platform can expose many problems so it needs to be promoted and upgraded. The notion of cloud computing was first introduced in 2007, high accounting capacity and unlimited storage are two distinguished characteristics of cloud computing technology, so it has won more and more attention. This paper studies the application of cloud computing technology to logistics public service information platform. The high accounting speed and unlimited storage of cloud computing could overcome the defect of the information platform. The study shows that the application of cloud computing can raise logistics service quality, logistics information and automation, extending logistics service scale. This paper, based on the study of cloud computing technology, introduces a new information platform for logistics industry.

THE OVERVIEW OF CLOUD COMPUTATION

Cloud computing advantage

Cloud computation is a kind of technology transforming data from PC or server to super computer group depending on network's high transforming speed. In nowadays because our network speed is not ideal, network and server cannot bear centralized access, so high-distance teaching schools always build several redirection evidences for studying center outside school, most of which adapt B/S model. The main campus sets up the central studying server and other study centers build their own teaching resources server. All systems' background server store studying resources including document resource and video resources provided for users. At present from the application efficiency, this operating model has two distinguished defects: (1) the studying resources storing in logistics system are so large that our present transmission capacity cannot support their transmission. So because the network transmission is not strong the resources stored in server cannot be shared at the same time, causing resources update untimely. (2) This assembly model requires users to register for several times because the username cannot share with different server, this means that users cannot use one server's username to download the other one's resources and students have to register once again. The automatic searching and intelligent selection of data transmission path provided by logistics public service information platform enable server to be the reserve for each other. Once one server breaks down the system would automatically change to another one most closed. So by this way students don't need to register when using another server. The possible of accessing all resources using one username realizes studying resources sharing and also raise the whole platform's reliability.

Cloud computing framework

The structure of logistics public service information platform introduced by this paper constituted by basic layer, serving layer and applying layer (shown in Figure 1) and divided into four modules including data processing, monitoring, processing program, deciding and basic module. The resources base in platform system need hardware, software and virtual technology to ensure basic resource base's reliability and stability. The basic player provide basic support for servers and the application layer. In processing capacity and storage capacity, the basic layer is the energy storage for platform system. Because system's business processing module designed in the application layer, so which is the core of the platform system. The business processing module can only be divided into: comprehensive monitoring, authority distribution, business processing program, system's automatic registration, document procession, information collection and searching. The application layer mainly provides interfaces for students and other procedures.

The data security is necessary for the application of cloud computation to long-distance education platform. Though background server, database management system data management can automatically formed. The whole system's maintain and upgrade are finished by professional service provider. Network is the basis of cloud computing operation, which needs network to transmit sending requirement and logistics data. So data transmission face high security threats. Although the requirements of security for logistics industry are lower than that of business and trade, the information about teacher, student, test content and especially testing answers need to be confidant. So when we design new long-distance teaching platform we should consider privative data's security.

One is database isolation, which means ever user has his own database, raising data security. But the financial input is higher. The second one is data schema isolation, referring that there only is a database in the teaching platform and ever username has its own independent model, providing logistic data isolation for every user, not the physical isolation. And one database can used by several users, efficiently reducing system's cost. The abstract isolation makes logistic relations more complex, so the management is more difficult. The third one is data model and database sharing, which means that the whole teaching platform only has one database and one data model. The isolation data list needs to be signed by ID to show the isolating target, so that the database sharing can reach the highest level. By this way cost can be reduced but the system's developers would face more challenge. The data in platform would be easy to lost.

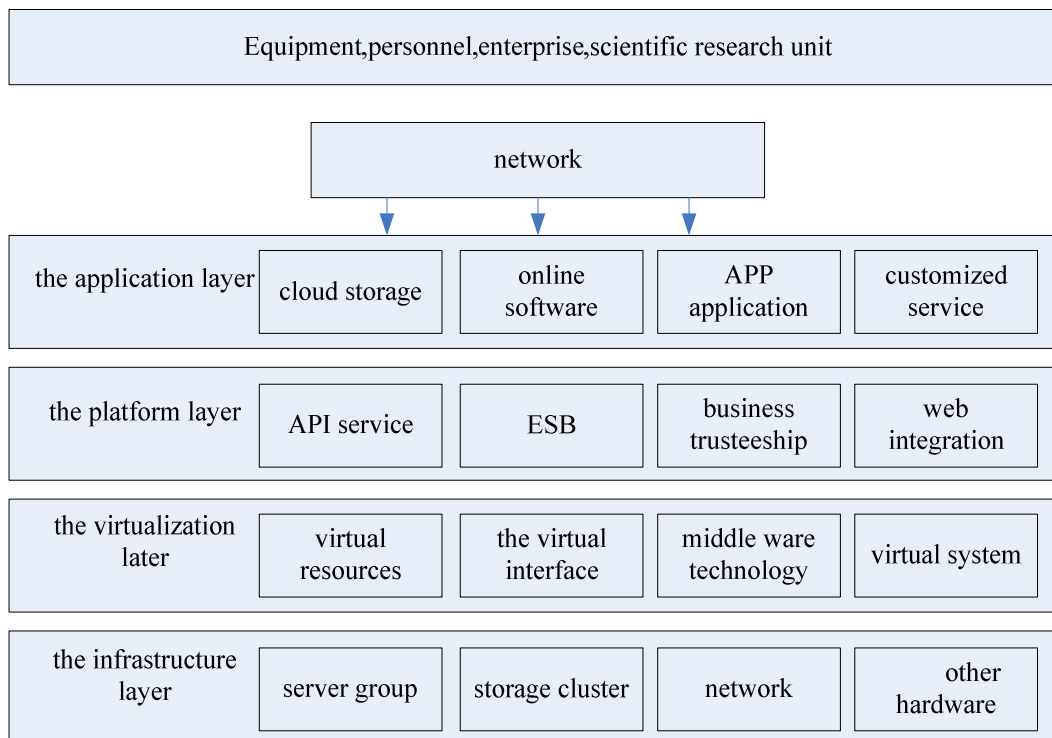


Figure 1 : Cloud computation's format

The application interface is constituted of five parts including logging interface, constitution management, cloud storage, cloud accounting and platform management and control. System users can upload personal information through registering in logging interface. Users can use platform's study resource after login system. Platform would provide resource selected from server to users. After users fill an information table, the community would manage these tables. Community has all information provided in platform. Community actually is a collection of user's demand, in which users with the same or similar demand would be categorized to an user living in a community and everyone has a manager. Platform users would commit to the community's regulations and rules and use community resource in a certain process. Managers, through learning about user's community behavior, understand their demand, so that to introduce resource meeting their demand to users.

In cloud computing model, all teaching resource are in cloud servers. Because strong accounting capacity of cloud computation can meet the demand of users, cloud service model can reduce the cost in network, firewall and load balancing equipment and solving problems in network security, complex computation and data integrity for users. Cloud computation use MXL to exchange data in the low layer. The system enables students to interact with teachers and also teachers to answer students' questions directly. System management module can control all resource in platform, including monitoring every module and interaction between teachers and students. All resource and operation of platform would be transparent.

THE CLOUD COMPUTING MODEL APPLIED TO LOGISTICS TECHNOLOGY AND PUBLIC SERVICE INFORMATION PLATFORM

The logistics technology and public service information platform is mainly designed to meet the demand of protecting logistics company's private data. This system strengthens the security protection of users' identity but not the information, because database management system has its own data security protecting system. Because system operators have the right to management information and data so it is necessary to add encryption to data to avoid being steel or public. This paper introduces a new cloud storage mean to ensure data security. In the developing of system users' data would be isolated from system to ensure users' data would be coordinated with database position, that means new data would be stored in a new system, ensuring data security. In the building and operation of system database would be encrypted. And sometime system's function would be changed to enable system to update data in time. Just as what is shown in Figure 2, system operator transmit data in server B to the new one, that means operator transmit data in the original server to his own mobile HD. Users has the right to transmit data to whatever the hardware they want. After transmitting, the original database would lose the visiting right for private data. The public logistics information platform are constituted of four parts of resource later, system layer, database or middleware layer and management layer, (shown in Figure 2).

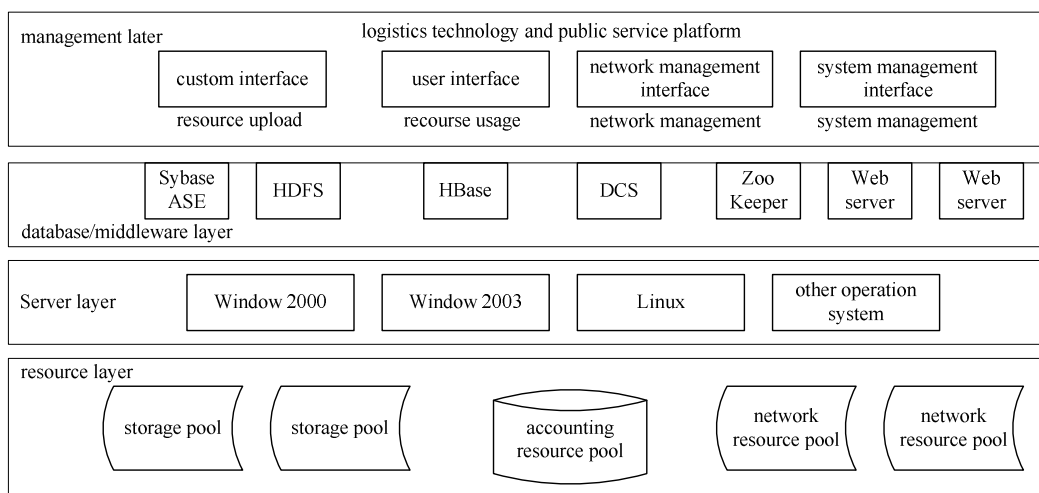


Figure 2 : Logistics technology and public service cloud platform's basic format

THE APPLICATION OF LOGISTICS TECHNOLOGY AND PUBLIC SERVICE CLOUD PLATFORM

The testing of the platform show the advantages of logistics public service information platform: first system has a strong service capacity, storage capacity and accounting capacity. Cloud computing technology's advantages has shown in this system, strengthening the platform's capacity for sharing information and computing; secondly, this system makes it possible to build a united logistics public service information platform and to share resource between different platform, largely reducing logistics' cost; finally, according to users' demand system can provide resource adepty, so users can design their studying system without need to change their codes. The system's structure is show in Figure 3.

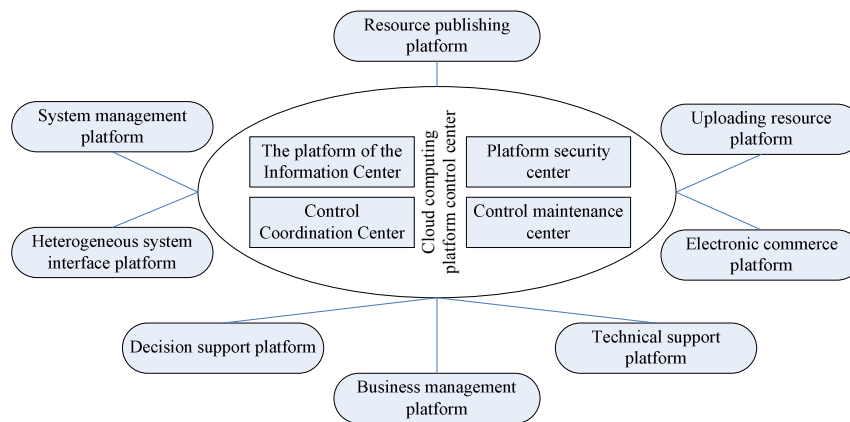


Figure 3 : Logistics technology and public service cloud platform's structure

Every user has his own database and every username has its own database, so this isolation plan would guarantee data security, but its defect is that the fiscal input is too large. The second model is that data isolation and database sharing. There is only one database in the whole education platform and every user has his own model, which will provide abstract data isolation but not actual physical isolation. And every database can server several users, reducing system's cost. Because it is abstractive isolation so the logic relation is more complete, increasing the difficulties in management. The third one is data model and database sharing. The whole education platform only has one database and one data model, like what is shown in Figure 4. According to application's specific format, the application of cloud information service platform to server logistics company can reach a high level.

System users can upload personal information through registering in logging interface. Users can use platform's study resource after login system. Platform would provide resource selected from server to users. After users fill an information table, the community would manage these tables. Community has all information provided in platform. Community actually is a collection of user's demand, in which users with the same or similar demand would be categorized to an user living in a community and everyone has a manager. Platform users would commit to the community's regulations and rules and use community resource in a certain process. Managers, through learning about user's community behavior, understand their demand, so that to introduce resource meeting their demand to users. In cloud computing model, all teaching resource are in cloud servers. Because strong accounting capacity of cloud computation can meet the demand of users, cloud service model can reduce the cost in network, firewall and load balancing equipment and solving problems in network

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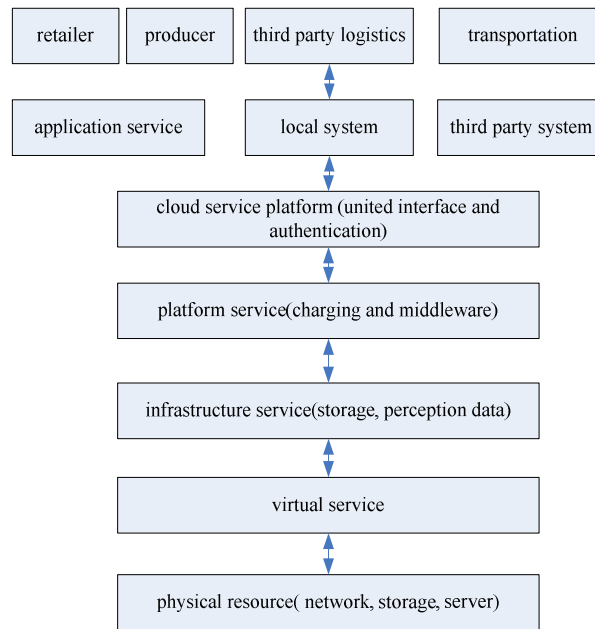


Figure 4 : Cloud computing platform's basic format

The testing of the platform show the advantages of logistics public service information platform: first system has a strong service capacity, storage capacity and accounting capacity. Cloud computing technology's advantages have shown in this system, strengthening the platform's capacity for sharing information and computing; secondly, this system makes it possible to build a united logistics public service information platform and to share resource between different platform, largely reducing logistics' cost; finally, according to users' demand system can provide resource adeptly, so users can design their studying system without need to change their codes. The application system in high layer is operated under the support of this software (shown in Figure 5).

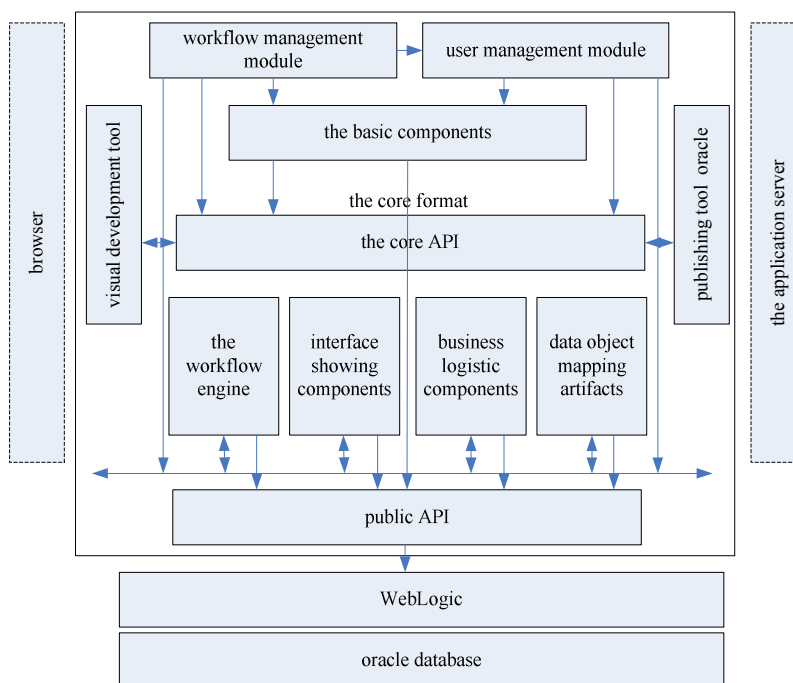


Figure 5 : The applicable structure of public service information platform for port logistics resource distribution

CONCLUSION

Through deeply studying the traditional logistics information platform this paper introduces a new platform with information, internet and automation, which can provide a strong support in technology for logistics company' fast growth and reform. In this paper cloud computation has been applied to logistics public service information platform, so the new platform would can integrate logistics service information, increasing logistics' service quality. Through studying characteristics of cloud computation and logistics company, this paper introduce a new platform. The test has shown that this platform is improved largely in information, network, low cast and flexibility.

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