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Research on ERP enterprise management information system in the cloud computing model

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ABSTRACT

With the development of the market economy, enterprise competition is much fiercer, and the modern enterprises need to work to enterprise information management, to improve the management efficiency. Currently many companies have set up the complete ERP enterprise management information system. However, with the constant expansion of the enterprises, enterprise management is also increasing exponentially, so ERP enterprise management information system can't keep up with the pace of development of enterprises. With the rapid development of computer technology, the concept of cloud computing has been greatly promoted and applied, so to build better ERP enterprise management information system is a very important task. To integrate cloud computing in ERP enterprise management information system enhances the management efficiency greatly. This article explores the ERP enterprise management information system on the basis of cloud computing.

KEYWORDS

INTRODUCTION

In the last century since the 60's, in order to effectively address the lack of inventory replenishment, the material requirements planning is proposed. After three phases of development, today's ERP enterprise resource planning system is developed. Because the establishment of ERP is expensive and needs a lot of conditions, its application in small and medium enterprises is low, though big companies are using more. However, the management data multiplies which leads to the fact that ERP cannot meet the needs of large enterprises. The emergence of cloud computing can change the present status of ERP enterprise management information system. To apply cloud computing into ERP enterprise management information system can increase the usage and success of ERP enterprise management information system. This article explores the ERP enterprise management information system on the basis of cloud computing.

THE CONCEPT OF CLOUD COMPUTING AND THE CONCEPT OF ERP SYSTEM AND DEVELOPMENT HISTORY

The concept of cloud computing technologies

On the basis of distributed computing, grid computing and parallel processing, the cloud computing was developed. The cloud computing is a new business model, but people's understanding of cloud computing is continuously changing. The cloud computing has no universally agreed definition. Now there are two definitions of cloud computing: a narrow cloud computing and a broad cloud computing. The narrow cloud computing refers to the fact that manufacturers construct data center through virtualization and distributed computing, provide them to customers by free of charge or on-demand rental to meet costumers' needs, such as data storage, analysis and calculation. For example, Amazon data warehouse rental in business. Broad cloud computing is that manufacturers establish web server clusters, provide different customers with online software services, data storage, calculation and analysis of hardware leasing to meet customers' needs. For example, Manufacturers such as UF, kingdee launched online financial software, and Google released Google Apps set and so on. Our understanding of cloud computing is a "cloud" resource, it exists on a cluster of servers of the Internet, including servers, hardware resources such as CPU, memory, and also software resources like software applications and integrated development environment. If the local calculators have a demand, then demand is broadcast via the Internet. At the far end there are a number of computers to provide needed resources for the local computer, but also can send the results to the local computer. The advantage is that the local computer does not need to do anything, and cloud providers will have all the processing completed.

The concept of ERP

ERP enterprise management information system is the management platform on the basis of the information technology that provides running means for decision-making to corporate executives and employees by using systematic thought of management. ERP is a business system for optimum utilization of all resources. Generally speaking, accounting is the core of enterprise management information system. It can identify and make plan about enterprise resources. It is an easier way to obtain customer orders, to process and interact, ultimately receive customer payments in order to achieve revenue and profit. ERP systems is integration of all resources within the enterprise, and can optimize and make plan of procurement, production, costs, sales, transportation, inventory, finance, and human resources to realize optimal combination of resources, so that enterprises can maximize profits. Now, ERP has been widely used in enterprise management and its application makes the enterprises' mode of operation improved and offers a huge role in improving corporate profits.

The development history of ERP

Over the past more than 50 years, the ERP system has been continuously developed and improved, roughly divided into several phases.

MRP (Material requirements planning)

In the 1950 of the 20th century, in order to effectively avoid the backlogs and shortages of inventory management, the MRP (material requirements planning) management method was developed. The MRP technology resolves the business material contradiction, avoids the backlog or shortage of materials, and enables enterprises to handle changing requirements with ease.

Closed-loop MRP

In the 1970 of the 20th century, along with the continuous development, Closed-loop MRP appeared. It effectively integrates production capacity planning, procurement plans, original material requirements planning and shop floor planning, so that a closed loop system is formed between the planning and the control of resources.

MRP II (Manufacturing Resource Planning)

Although closed-loop MRP's planning and control is more perfect, but without the cost planning and control content. Some companies also want to synchronize the financial information into the system, which means funding of the financial system that can synchronize can be obtained by the financial system to achieve the control on manufacture and to

meet the Organization's overall strategy. In the 20 century 80's, the MRP II (manufacturing resource planning) appeared, which fulfill the control on both the enterprise financial cost and the supply chain.

ERP (Enterprise resource planning)

In the early 90's, MRP II (manufacturing resource planning) could not meet the requirements of economic globalization. In this background, United States Gartner Company proposed the concept of ERP, which makes the supply chain management integration more comprehensive, and integrates all links of enterprises business. Today's ERP enterprise management information system is derived from the enterprise resource planning.

SHORTCOMINGS OF TRADITIONAL ERP ENTERPRISE MANAGEMENT INFORMATION SYSTEM

ERP system is the combination of information technology and modern management which plays a very important role in enterprise management. After years of exploration and improvement, ERP system is much more convenient and flexible, but because of restrictions on traditional patterns, current enterprise ERP products remain the following disadvantages:

Dominated by rich client

Traditional ERP Enterprise Management Information System needs to install client software on each the terminal. Its requirements for client hardware and software are very high. If a problem occurs, the client's usages will be affected. Therefore, the traditional ERP Enterprise Management Information System requires a large amount of investment in human and material resources in the process of implementation and maintenance, which also leads to a waste of money and is not conducive to improve the efficiency of enterprises.

Initial investment is huge and high risky

Traditional of ERP enterprise management information systems not only needs user purchased software, also requires user to purchase supporting of server and network equipment, some of which needs to have all of computer for replaced. It undoubtedly leads to huge inputs of funds, and implementation effect of ERP is not satisfactory. If it fails, the early Enterprise large investment will be irreversible and will also lead to enterprise business problems because of the lack of funds, so the ERP with large investment and high risk is not suitable for enterprise development.

Post maintenance of the complex

Traditional ERP enterprise management information system maintenance is provided by ERP vendors. If ERP system breaks down, ERP vendors will send professional engineers to the company for maintenance, so that there are certain problems in maintenance mode: firstly, engineers are provided by ERP vendors who do not understand the business process and performance and only solve technical problems. Secondly, when the enterprise ERP system in the state of failure, needs ERP vendors to help, the engineer cannot arrive at the enterprise in the first time, so the enterprise will be affected. In the maintenance, because the engineer is without the support of ERP vendor's technical resources, some problems cannot be solved, which fails to ensure efficiency and effectiveness of maintenance.

The existence of risk data security

Some companies lack the sense of security for ERP enterprise management information system, and lack professional IT technicians. They ignore the offsite backup of data, which leads to the fact when emergency occurs, the system will not be able to work, which can lead to loss of data and is difficult to recover.

CLOUD COMPUTING MODEL OF ERP

The cloud pattern classification of ERP

According to deployment options, the cloud computing can be divided into a public cloud, private cloud, hybrid cloud and community cloud. Because our research is applied in enterprises, so cloud communities are not discussed. Because the interaction of the private and public cloud is too complicated, we stick to the discussion of ways to categorize the ERP model of cloud computing. We follow the classification of cloud computing services to divide the cloud computing into infrastructure as a service (IaaS), software as a service (SaaS), and platform as a service (PaaS). We refer to the classification of the cloud computing model that the cloud computing model can perform one of the following categories. According to the different ways of deployment, the cloud computing ERP can be divided into private cloud ERP and public cloud ERP. According to the different way of service models,cloud computing ERP can be divided into IaaS mode ERP, PaaS mode ERP, SaaS mode ERP. We combine two ways and discover that IaaS mode ERP and PaaS mode EPR conflicts with the private cloud deployment, So this article will follow the classification of private cloud ERP, PaaS mode ERP, IaaS mode ERP, SaaS mode ERP, and each one will be introduced followed:

ERP stage framework of the Private cloud

      Private cloud ERP appeared earlier than other ERP cloud computing patterns and the system is better. In private cloud ERP procurement stage, ERP vendors and hardware vendors are the main participants. Network equipment is provided by the hardware vendor for the enterprise. The hardware vendor capable of carrying ERP system server is provided for the enterprise, so ERP vendors are based on business needs to develop ERP software for businesses, and some also provide off-the-shelf ERP product for the enterprise. During the implementation phase, hardware vendors, IT departments and ERP companies' suppliers are the main participants. The enterprise network and server configurations are provided by the hardware vendor. Enterprise IT departments can assist or complete independently. The ERP vendors offer ERP implementation services and training for staff. Enterprise employees are main participants of the ERP. IT departments and the ERP vendor are leading players in the maintenance phase. The ERP vendors shoulder the major ERP system maintenance work while IT department is responsible for simple ERP maintenance and hardware maintenance. The Private cloud ERP stage of the framework is shown as Figure 1.
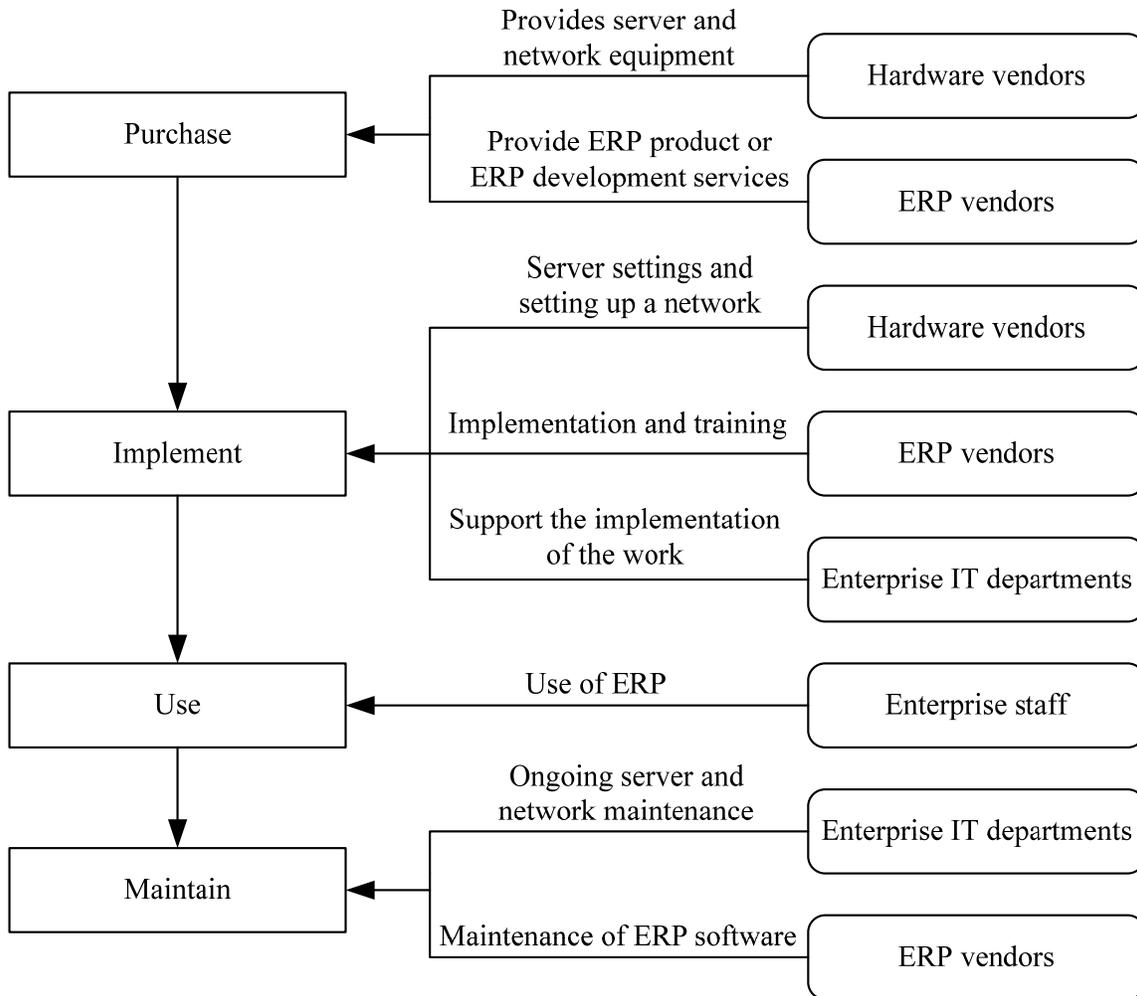

Figure 1 : Private cloud ERP stage of the framework

ERP stage framework of the PaaS mode

      During the ERP procurement stages of PaaS models, cloud computing vendors and ERP vendors are major participants. Enterprise development platform, network servers, equipment rental services are provided by the cloud computing provider. ERP vendors develop ERP software for enterprises on the basis of cloud computing vendors. During the implementation phase, cloud computing vendors and ERP vendors are major participants. Cloud computing vendors assist the ERP vendor's work and ERP vendors offer employee training and the concrete implementation of the enterprise services. Employees are the major players of the Use phase. Cloud computing vendors and ERP vendors are the major players of maintenance phase. Cloud computing vendors are responsible to the maintenance of hardware and networking systems in the cloud, ERP vendors are responsible to complete ERP system for maintenance work. The paaS mode ERP stage of the framework is shown as Figure 2.
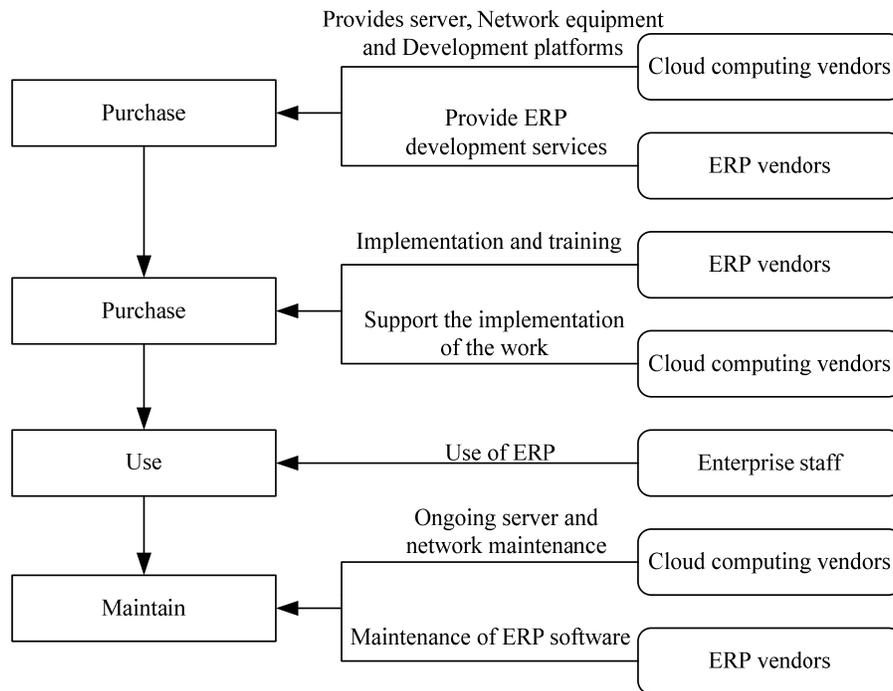
Figure 2 : PaaS mode ERP stage of the framework

ERP stage framework of the IaaS mode

In the ERP procurement stages of IaaS models, ERP vendors and cloud computing vendors are major players. Cloud computing vendors provide network equipment and server rental services. ERP vendors according to business needs develop ERP software for enterprise, and also provide businesses with existing ERP products. During the implementation phase, ERP vendors and cloud computing vendors are major players. ERP vendors are responsible for the training of employees, and also the concrete implementation of the enterprise services. Cloud computing vendors assist the ERP vendor's work. Employees are the major players of the Use phase. Cloud computing vendors and ERP vendors are the major players of maintenance phase. Cloud computing vendors are responsible to complete the maintenance of hardware and networking systems in the cloud while ERP vendors are responsible to complete ERP system for maintenance work. The IaaS mode ERP stage of the framework is shown as Figure 3.
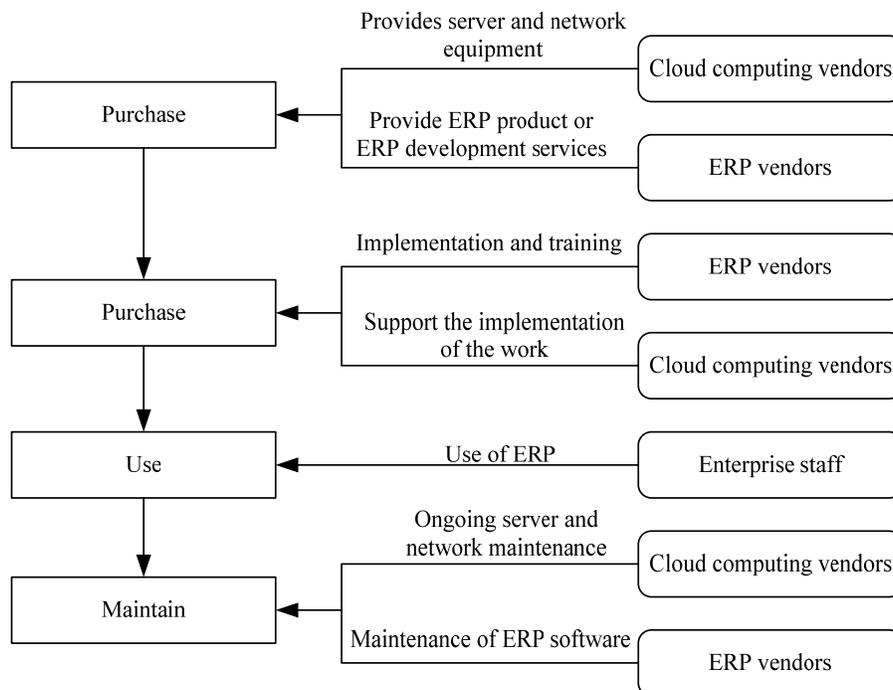

Figure 3 : IaaS mode ERP stage of the framework

ERP stage framework of the SaaS mode

In ERP procurement stages of SaaS models, Cloud computing ERP vendors are the major players. It needs to provide leasing service of network devices, servers and ERP software. Employees are major players of the implementation phase and operational phase. Cloud computing ERP vendors are the maintenance phase of the major players, who are responsible for cloud servers, software and network maintenance. The SaaS mode ERP stage of the framework is shown as Figure 4.
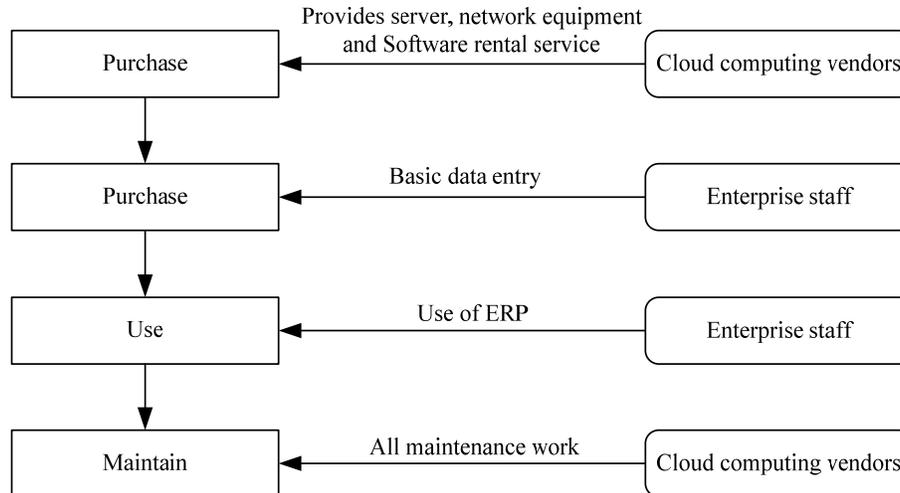

Figure 4 : SaaS mode ERP stage of the framework

ERP ENTERPRISE IN THE CLOUD COMPUTING MODEL'S FUNCTION AND APPLICATION OF MANAGEMENT INFORMATION SYSTEM IN ENTERPRISES

The role of ERP Enterprise Management Information System in the cloud computing model

Because of the cloud ERP systems advanced technical features and its important role on the enterprise management, cloud computing mode ERP Enterprise Management Information System in enterprise application is inevitable trend of development. Based on the current actual situation, ERP enterprise management information system in the cloud computing model in the Enterprise has the following functions:

The using rate of enterprise information is increased

The economic business of the enterprise is quite a few, so there are substantial data information to process. The traditional ERP systems can only achieve the general data processing. Its processing efficiency and effectiveness be hard for enterprise content, and it cannot fully take advantage of enterprise information data. The construction of ERP Enterprise Management Information System in the cloud computing model can improve and complement the traditional ERP systems. It can not only increase the ERP system capabilities, but also increase the usage of enterprise information.

To promote the development and application of ERP system

After ERP enterprise management information system in the cloud computing model getting promoted and applied, the use of ERP management system will increase, which allows comprehensive usage and analysis of enterprise information and data. To a certain extent, it can promote the enterprise's operation and management, and can improve the grade of enterprise information management. Advantages of ERP Enterprise Management Information System in the cloud computing model are numerous. The processing of the internal management information data is very appropriate, which will promote the development and application of the ERP system.

The effects of ERP systems can be promoted

Because of the characteristics of ERP Enterprise Management Information System in the cloud computing model, the use of cloud computing in the enterprise ERP system is the inevitable trend. The ERP system in the cloud computing model can aggregate and process enterprise internal management data which promotes the application of ERP system in cloud computing model in enterprises. According to the actual effect, the application effects of ERP Enterprise Management Information System in the cloud computing model have greatly promoted.

The application of ERP Enterprise Management Information System in the cloud computing model in enterprises

The application of ERP Enterprise Management Information System in enterprise cloud computing mode has positive impact on enterprise operation and management and the processing of information. It highly promotes enterprise

information data management efficiency and effectiveness. ERP Enterprise Management Information System in the cloud computing model has been applied in enterprises mainly in the following areas:

The major application of ERP enterprise management information system in the cloud computing model in the financial systems

Generally speaking, Enterprise's accounting system will involve a lot of financial data, and the traditional manual book-keeping is hard to meet the needs of enterprise. In order to improve enterprise efficiency and enable enterprises to finance more promptly and efficiently, it is necessary to apply the ERP enterprise management information system in the cloud computing model into the business accounting system. Depending on the current application of the corporate financial system, its advantages are significant, making financial information processing processes optimized and the financial system improved. It also can increase the methods of financial information processing. Its secondary role for the financial system is dramatic, with obvious secondary effects. It also promotes the financial work.

The important application of ERP enterprise management information system in the cloud computing model in sales system

During the sales of enterprise products, the statistics of sales data and indicators is necessary, because these marketing information data can help companies develop a more rational policy and marketing. The application of ERP Enterprise Management Information System in the cloud computing model in sales of enterprise systems can make a comprehensive reflection of sales through the sales data and indicators. According to the application of the system, ERP Enterprise Management Information System in the cloud computing model has the sales data analysis capabilities of enterprise improved, and has the efficiency of management improved as well, which enables enterprise sales data to be processed more quickly, to develop a more rational marketing policies by analysis results, to further enhance enterprise sales force and to make a higher profit.

ERP enterprise management information system in the cloud computing model has been widely applied in inventory management system

Inventory management is a very important in the business management, whose advantages and disadvantages are very important for the inventory management of product. The inventory management data is critical for enterprise sales policies. Therefore, to apply ERP enterprise management information system in the cloud computing model in the inventory management system can achieve very good results, making enterprise inventory management meet the needs of enterprises. The analysis of enterprise inventory management data help to develop enterprise's overall development strategy. So we can say that the application of ERP enterprise management information system in the cloud computing model in the inventory management system inventory management is more effective.

CONCLUSION

As the current global economic slows down and competition among companies increases, management of enterprises is very important. So it is necessary for enterprises to introduce the most advanced ERP Enterprise Management Information System in the cloud computing model, which is helpful for the enterprises to control cost, production and various links of sales. It is also good for the enterprises to make full use of all resources, which is very beneficial for enterprises to gain more profits.

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