Innovation of small and medium enterprises management based on cloud computing

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Abstract

Market resources assessment in small and medium enterprise (SME) often shows weak strategic decisions owing to SME have insufficient abilities to cope with the changes in external environment, and is likely to be influenced by big business and market fluctuations. To solve this problem, this paper studied the cloud computing environment. The ways of innovation management for SMEs were investigated also. The results suggest that SME should focus on innovation management as following: the concept of innovation management, human resource management innovation, organizational structure innovation, and business model innovation.

Keywords: Enterprises; Management innovation; Cloud computing; Virtualization

1 Introduction

With the gradual increase of business scale and development of market diversification in recent years, the trend of corporate globalization tends to be increasingly apparent. In such background, in order to rapidly expand the businesses, the enterprises in China need to consider the outward development [1]. Domestic companies in various cities in China have developed new oversea business, multinational plans, and constructed their own branch offices and subsidiaries. Under such environment, a good business development strategy should firstly deal with the issues such as: as we know, a lot of manpower and material resources have been spent on enterprise information construction, how have those existing enterprise information been used in recent years? the information contains the newly established branch offices and subsidiaries of the IT environment; moreover, personnel works outside enterprise offices for a long term need the business report, business data updates more rapidly and conveniently. Thus market environment is increasingly complex; the issues arising from new business and increasing employees. If enterprises still employ traditional IT management, operating costs will surely be increased. The ways of facilitating simple and efficient IT management of enterprises and reducing operating costs require to be explored.

2 Background virtualization technology

If the computers of employees are directly installed with all office software, enterprises are supposed to set a large scale IT department with great working pressure [2]. How to have employees using external network at home in a night shift by connecting network between offices and home should be explored.

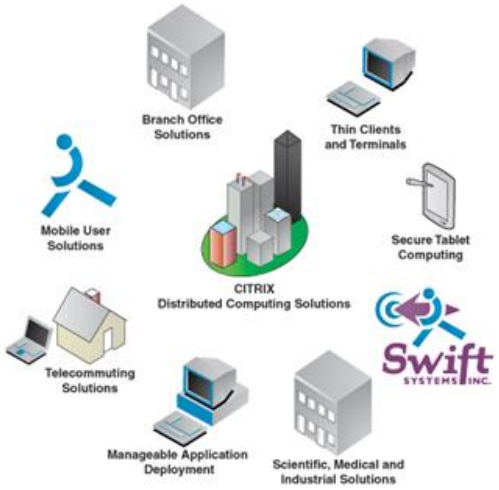

FIGURE 1 Virtualization solutions distributed application diagram

As shown in Figure 1, the virtualization technology can be practically applied to different clients access platforms, including mobile terminal, server, client PC and so on. Different individual client terminal applications, remote desktops, and thin clients access and manage the applications through the security gateway. Virtualization technology can realize data communication whether it is adjacent to the LAN clients indifferent cities, communication corporate headquarters and branch offices in different countries. Besides, it enables end-users depending on the access rights so as to control the level of access and security applications. Meanwhile, it allows access from any location enterprise servers and applications. In summary, based on the user needs abovementioned, virtualization technology has changed business development [3]. It can effectively improve the sustainable development and effective utilization of corporate IT resources, and reduce the cost of IT operations; while IT information in the business sector,

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customer information, and business information such as response speed have been greatly promoted. Virtualized IT resources will eventually realize.

3 Design and implementation of enterprise application platform virtualization

This research uses terminal services, data center, virtualization and other technologies such technology enterprise application platform virtualization [4]. The design is mainly conducted to create enterprise application center by using Citrix technology and VMware virtualization technology.

To achieve centralized management and application center sharing between each local client and the other branches use, the architecture system virtualized enterprise data center is mainly designed. The business sector can therefore take advantage of the front-end virtualized center. Such center provides a variety of services and applications, and maintains centralized data center managed as IT departments achieve savings of IT resources and green IT.

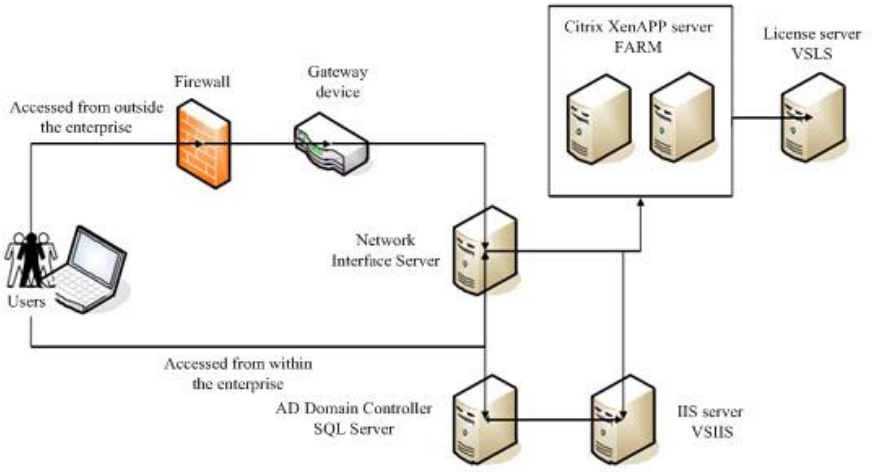

FIGURE 2 Network topology

As shown in Figure 2, when users access network outside enterprise office, the gateway device will be checked by the firewall. After users connect the Web Interface server through the network, the authentication of AD and Citrix Farm servers is validated. One is able to use all published applications available on the server XenApp, virtual desktop and web links. When the user successfully connects to the XenApp, the IIS server will access information stored on the SQL server. Meanwhile, the system administrator presents web statistics and query, and analyzes the situation of customers' resources to optimize the system improvements.

4 Creation and management of innovative applications customers

4.1 CONSTRUCTION OF HARDWARE PLATFORM

First, the company needs to equip with two physical servers to re-deploy the installation: the server A deploys Windows 2003 AD domain controller hosts, and is installed with SqlServer 2005 database; by installing VMware software on server B, a new VMware virtual machine is used to run 5 virtual Windows 2003 servers, which are VSWI, VSIIS, VSXenApp001, VSXenApp002, and VSLS.

The servers' rights abovementioned are illustrated as follows:

(1) For a physical server AD, DC which presents AD authentication provides support for identifying virtualization applications. It is installed on the server A SqlServer 2005 as a back-end database Citrix service; in addition, as a back-end database, it focuses on traffic statistics functions.
(2) B, as a central controller, is mainly a physical server virtual machine to management Citrix virtual machine. Once the virtual machine fails, the physical recovery is implemented through server B.
(3) For the virtual machine virtual server web interface (VSWI), it serves as Citrix's WEB interface of users to access virtualized resources for verification.
(4) The virtual machine Virtual Server IIS (VSIIS) and WEB IIS server are to deploy traffic statistics algorithm procedures and provide support for IIS.
(5) The virtual machine VSXenApp001 and VSXenApp002 mainly function as Citrix XenApp servers of publishing virtualized resources.
(6) The virtual machine Virtual Server License Server (VSLS) is installed with the Citrix License service.

4.2 STEPS OF BUILDING THE SOFTWARE PLATFORM

A software platform is constructed in following steps:

(1) Select "application virtualization"
(2) Select "Citrix XenApp" component, shown in Figure 3:

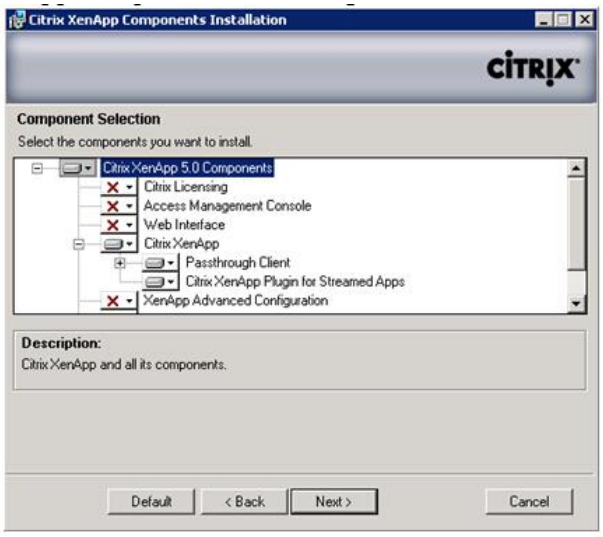

FIGURE 3 Select "Citrix XenApp" Component Interface Figure

(3) Enter the server address "localhost".

(4) Create a new Farm.

(5) Enter the Farm name and select "SQLSERVER" type database.

(6) Connect to the database physical server A "Server".

(7) Select the database authentication mode, and enter the name and password.

(8) Enter the administrator name and domain name.

(9) Enter the License server name VSLS as shown in Figure 4:

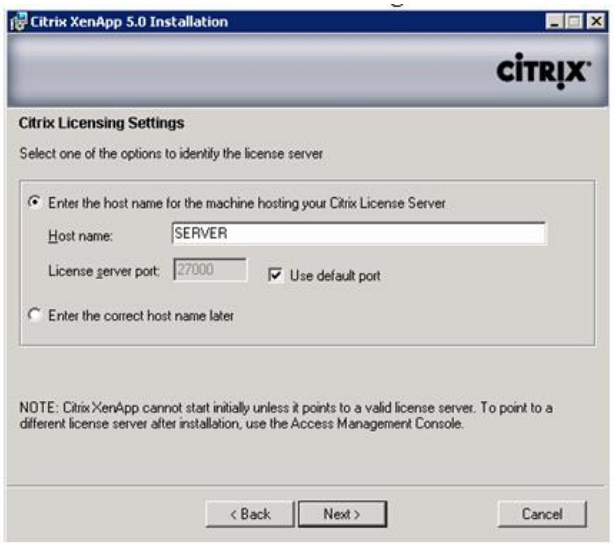

FIGURE 4 Entering License Server Name VSLS interface

(10) Because IIS is not installed on VSXenApp001 and 002, TCP\IP port 8080 is input.

(11) Confirming that the installation is complete, shown in Figure 5:

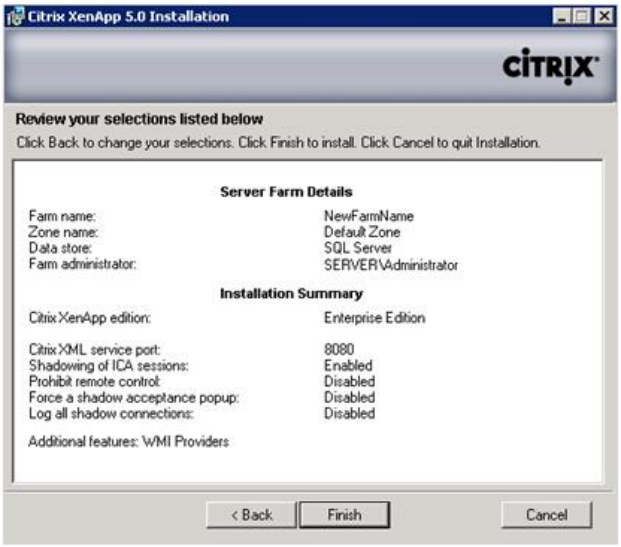

FIGURE 5 Installation confirmation screen

(12) Take effect by restarting the server configuration

5. Citrix virtualization and resource allocation

Citrix virtual resource includes three major application modes:

The first mode is Citrix published application virtualization. This model is applied as a pattern with the highest frequency. Enterprise IT departments' administrators firstly install the server application which needs to be virtualized using office software, and then use the Citrix console to publish the application installed on the server.

The second mode is to release the Citrix server desktop (operating system desktop) virtualization. It is available to the users work outside the enterprise, or frequently travel office personnel. For publisher desktop virtualization desktop, outside users can connect it via Citrix's ICA protocol and connecting to the internal network server. This is similar to execute programs on the internal network servers. The desktops for external users of using the server are same with their office desktops with a variety of desktop publishing applications and office software.

The third model is the site links and links to the share documents released by Citrix virtualization. Using Citrix, end users can access certain web site links which require frequent access and share documents. By merely clicking Citrix icon, one can connect the site and share documents through the enterprise network [5]. The virtualized resources are published and configured as follows.

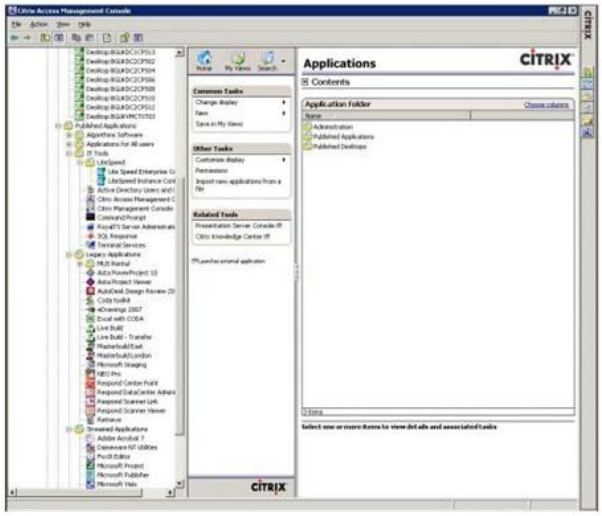

FIGURE 6 Published virtualized resources

As shown in Figure 6, a variety of desktops, application virtualization, applications, Web links and so on can be published using Citrix access the console.

Citrix administrator employs the login VSXenApp001 identity or VSXenApp002 server Renyiyitai to have Citrix accessing the console. This is because the server is configured as a server farm, there is no need to log in a server-specific software resources installed. One just logs in it to add to arbitrary member of the farm after the server publishes virtualized resources.

6 Innovation environment of cloud computing business management

6.1 MANAGEMENT CONCEPT INNOVATION

As the domestic buyer market has been formed, rising labor costs and the increasing fierce market competition enable small and medium enterprises relying on cheap labor for product cost-competitive mode by solving operation bottleneck. With the rapid increase in the rapid economic development and people's living standards, growing market demand presents a dynamic, personalized and diversification of SMEs in the past years. The pure pursuit of large-scale production philosophy no longer meets the requirements of economic development of modern social market. Higher requirements are put forward for changing external business environment for innovation capability of enterprises. This requires companies to seek market opportunities or create new ideas that can quickly organize innovation activities in a timely manner to satisfy the market demand for products and services. Therefore, the market competition is increasingly reflected by the competitive innovation ability. The core competitiveness of enterprises has transferred from the previous scale transition to business innovation. SMEs change the traditional production philosophy of increasing productivity by lower production costs. Without influencing the daily business operations, SMEs need to enhance creativity and gradually improve their innovation ability.

Under the cloud computing technology environment, increasing resources, scale and boundaries have been no longer an important criterion of measuring market competitiveness of enterprises; share of open cloud computing resource pool, SMEs can also interact with large enterprises with the improvement of their innovation capabilities. Two factors have changed enterprises' blind pursuit of economies scale in external environment to some extent. Innovation has become the core competitiveness of enterprises. For the innovation of traditional business model, innovation needs to be realized by limited resources within the enterprise such as organization of resources, knowledge and ability. Innovative activities of the elite monopoly control, fail to respond freely to meet the rapid changing needs of emerging markets. The emerging cloud computing technology has changed this situation. Innovation in public activities requires large available innovative resources.

Under cloud computing environment, small and medium enterprises transfer the market opportunity into a market resources by strengthening product development. SMEs should objectively evaluate their position in the industry, the industry chain and the entire society in the economy. The analysis can be utilized to re-establish the resource advantages outside enterprises on the basis of market position, optimization existing market resources and proactively seeking market opportunities, development gaps in the market demand, and large enterprises' competition on the market resources. In short, because the cloud computing platform and scalability, as well as their role in supporting SME innovation activities, SMEs should abandon the traditional market concept of improving defects, change the original developing ideas, re-establish market position, adjust its own development strategy, actively capture market opportunities, and increase market development capabilities.

6.2 HUMAN RESOURCES MANAGEMENT INNOVATION

SMEs are suggested to establish a modern human resource management philosophy by converting consumption concept of talent as "resources" concept. In the specific implementation process, SMEs establish a people-oriented concept as the core of human resource management concepts, learn the knowledge of human resource management, use modern human resource management practices and management tools, and rationally allocate corporate human resources. Current SMEs should learn advanced concepts of human resource management by considering the actual situation of human resource management, distinguishing the "ownership" from "management rights", using institutionalized management replace human management, standardized management instead of management experience, and the progressive realization of standardization and scientific human resource management. In addition, human resource managers of SME status instructions achieve effective human resource management by improving the quality of human resource managers, and ability to achieve human resource management specialization.

By transferring the relevant IT applications into the

cloud computing systems, enterprises use services actually by their own pay. The relevant IT infrastructure is not necessarily required, so the application of pre-construction IT systems formed in the operation and maintenance will greatly reduce the corporate investment. IT delivery paradigm shift will reduce the quantity demands for enterprise IT professionals and technical personnel; besides, IT departments achieve maximum weight loss. Prior to implementation of cloud computing, enterprise IT personnel are mostly technical, responsible for maintaining entire physical equipments of enterprises, technical failures structures, systems, software development, and network maintenance work. After using cloud computing, IT technical personnel requirements have changed.

6.3 ORGANIZATIONAL STRUCTURE INNOVATION

Under cloud computing environment, the organizational change of SMEs should subject to following directions:

(1) Flat organizational structure. Because cloud computing system shares resource pool, all of the information processing operations are carried out in a unified common platform. SMEs should take advantage of the feature of cloud computing technology to further increase control range and reduce management layers. Towering type and flat organizational structure are used except for the organizational structure for the structural characteristics of the relevant authority. SEMs in varied positions should shoulder the responsibilities; have the rights and interests in the analysis and appropriate corporation of decision-making center of gravity so as to improve organizational efficiency and resilience.

(2) Network. Since the traditional enterprises are basically divided into various departments with few communication and exchange, the information sharing is less among varied departments. Using cloud computing environments, as the unified platform for sharing resources, SMEs can further reduce the vertical division of labor and management levels, and constantly enhance the lateral division of labor and cooperation, so that organizational structure becomes relatively equal and independent. Moreover, the innovative spirits of small business unit or network organization of individuals are inspired.

(3) Flexibility. Under the cloud computing technology environment, SMEs utilize innovative business model to promote enterprise development. In enterprise, employees can provide their innovating ideas freely. Thus, the necessary resources need to be deployed to support research and development when new ideas are proposed. Meanwhile, SMEs should perform flexible organizations. Flexible organization refers to an organizational structure without a fixed and formal organization takes replace of some temporary, task-oriented, and team-based organization. For instance, a project team needs to achieve a particular goal by integrating different departments and professionals to organize temporary teams. Among which, each team is not fixed, and changes with the demands of project and adjustments.

6.4 BUSINESS MODEL INNOVATION

In the agricultural economy, due to the low developing level of productive forces, and the close association between producers and consumers, producers produce products that meet consumers' demands; while in the industrial economy, the productivity and economy scale increase rapidly due to business, research and development. The products that are finally sold to the consumers in labor division decrease. Large-scale production can reduce production costs and improve productivity; however, it increase the distance between producers and consumers.

With the rapid development of service sector, the proportion of output and employment in the service sector has risen throughout the economy. The role that services sector plays in promoting rapid economic development is growing. From the micro perspective, the competitions among enterprises leads to that product quality and cost levels have gradually penetrated into quality service, service level and quality of service businesses greatly promote business. With development of e-commerce and the Internet of Things technology in the cloud environment, SMEs should not only provide customers with tangible products, but also stress on different intangible goods and services concerning products themselves [6]. Taking Apple iPod\iPad\iPhone series as examples, the software development platform is set for cooperating and supporting the shadow video and software download store. It is a new business mode including both new players and a flexible and personalized content of the trading platform.

In summary, the SEMs business model innovation regarding cloud computing environment, customers' demands and values in this research lays an important basis for an in-depth understanding and guidance of the customer demands, and shows a great capability of integrating resources. Based on enterprises developing stages and different operating conditions, the resources which are owned or available to organize are optimized and allocated to therefore achieve optimum output.

7 Conclusion

This paper suggests that SMEs should adopt cloud computing services and enterprise virtualization which shows a promising developing trend. In addition, virtualization technology has been used in the actual management by many more far-sighted enterprises. Realization of a shared IT resource model can greatly improve business efficiency and flexibility, and gradually change the business model of enterprises development. This consequently promotes innovation and enterprise development. Meanwhile, the SMEs are expected to focus on the methods of manage innovation, Based on the concept of innovation management, this research investigated human resource management innovation, organizational structure innovation, business model innovation, management innovation and R & D innovation in areas such as marketing, management in depth.

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