Research on Mode of Commercial Cloud of Tianjin Binhai New Area

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Abstract This paper commences commercial cloud model research around the ideas of wisdom Binhai construction. Combined with the diversified social needs of the Binhai New Area, the facts of the rapid development of cloud computing technology commercial services evolution, history and commercial services, this article explains the urgency and necessity of the commercial cloud development and uncovers the support points of commercial cloud model development, in order to enhance the wisdom- Binhai economic development and governance strategic advantageous position and decision-making levels.

Keywords Cloud • Commercial • E-government

1 Background and Significance of the Implementation of the Project

1.1 Background and Necessity of the Project

Eric Schmidt proposed the concept of cloud computing firstly in "Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate

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Online" [1] in 2006. After, Amazon pioneered the elastic compute cloud service model (EC2) of small and medium-sized enterprises based on computing power of data center [2]. At this point, cloud computing service began in commercial activities. IBM proposed a new business concept of the "Smarter Earth", "Intelligent Business" in 2008. It make the cloud computing and smart technology fully applied to social economic activities, expanding the concept of the business model [3]. Cloud computing reached a new height during the IT evolution, promoting enterprise and social progress, bringing a new, more efficient, flexible, collaborative mode. The cloud-related commercial projects are becoming the focus of future development, enterprise growth performance and technology research difficulty of Google, Amazon, IBM and Apple-Creating a business miracle, and pre-effect is appearing. As cloud computing technology continues to mature, business model changes that it brings are emerging, appearing the operation mode of the business competitiveness, such as the Salesforce cloud computing business model (2008) [4], the Amazon elastic cloud model (2007) [2], Google Apps (2009) [5], cloud computing "software + services" model (2009) [6] and private cloud business model (2008) [7]. Meanwhile, cloud computing applications have begun to expand from the business field to the government field. With its good scalability and resource sharing, cloud computing forms the collaboration and interaction between business and government. In the United States, the e-government platform based on "cloud" achieved good effect in the practice of supporting production services. Currently, the pace of development of China's cloud computing is remarkable. "Cloud" building has been identified as the basic mode of "government investment, supplemented by enterprises building". The State Ministry of Industry, together with the Development and Reform Commission issued a "Notice abort doing a good job of the cloud computing service innovation development pilot demonstration work". The notice identified five cities, such as Beijing, as pilot cities for cloud computing application development, and developed a corresponding cloud computing center planning respectively. "China Cloud Computing White Paper" forecast that the size of China cloud computing applications market will expand to RMB 60.678 billion in 2012 and 80 % of the commercial operation services will be provided by the cloud computing in 5 years [8]. Driven by multiple factors such as advances in technology, market demand, policy-oriented, effective and efficient, cloud computing technology and its commercial application show a wide range of prospects and development space in our country.

As China's economic development "growth pole", Tianjin Binhai New Area becomes the country's most dynamic region and shows a strong comprehensive strength, radiation and driving effect. Its GDP in 2011 reached a total of RMB 620.69 billion. Building industry position of high-end manufacturing base in China, makes the Binhai New Area continue to attract the supply chain upstream and downstream enterprises to enter and station, attract high-end management and technology professionals to join and modern services to join. The good economic foundation, business and cultural environment make the Binhai New Area have hosted development of cloud computing technology and economic strength.

This year, the Binhai New Area proposed "wisdom coastal" plan. Taking the "Milky Way One" as supporting platform, this program has been initiated administration of work safety and health systems projects. From the endogenous demand perspective, facing the complex internal and external economic environment, fierce regional competition and the need for further development of its own, the Binhai New Area still has the Is unbalanced, incoordination contradictions in the development process, such as the contradiction between supporting services to be perfect and the demand for services of high-speed development, the difference contradiction between development model planning and the reality of development practice, the contradiction between existing government service policies and system design and future development planning. The introduction of the "commercial cloud model" will facilitate the integration of existing business resources of the Binhai New Area. It is conducive to build on strengths and economic development and business services coordination, business planning and business practices synergies and business services chain balance.

The nature of cloud computing is the efficient integration and utilization of resources. It is a cloud-based IT platform, based on huge cloud database and provides the necessary resources through the shortest path. First of all, these technical characteristics match the business services requirements of the Binhai New Area, that is to say in the mass of information and the complex organizational and information network environment, it can complete the business service resource allocation swiftly in the shortest possible time. Secondly, cloud computing can form an extensible IT framework. Accessing the full range of government effective resources, it helps Binhai New Area Commission of Commerce be effective to control government services on the overall layout. Thirdly, the commercial cloud model will provide a cloud resource sharing mechanism. It combines internal and external resources, and it can share the already existing mature government services platform, e-commerce platform for commercial cloud platform. It implements a broad G2B, G2C, C2G, G2G, B2G, and has been the development results as we used to.

1.2 Benefits and Effect of the Commercial Cloud

1. The commercial cloud is the service model innovation of Binhai New Area
   The business service practice of putting the cloud computing into Binhai new area Commission of Commerce, not only is the simply duplicated at the technical level, but also focus on the formation of innovative government services mode to match the cloud computing. Cloud-based commercial service model innovation should be reflected in three aspects: (1) Service Virtualization, "Virtual cloud" can make the ever-present cloud resources in everywhere service for the practical needs all the time. The commercial cloud platform constructed by virtualization loosely coupled model will be based on demand, dynamic release, spin-off,

the reconstruction of physical and virtual resources, without attention to the underlying resource deployment, simply access the cloud computing services, that is it can be integrated to configure a large number of resources to achieve real-time applications. This capability in response to the demand for business services is particularly important in the process of the rapid growth of the Binhai New Area residential population from 2.5 to 6 million in the next few years. (2) Service Differentiation, facing the complexity and heterogeneous group that demand for business services of the Binhai New Area, the commercial cloud achieves the demand – function mapping to meet the requirements of complex multi-level business services through the data excavation of cloud computing resource pool, the acquisition of dynamic fine-grained resource and the accurate perception, capture and analyze the preferences and regularity of demand. (3) Services Customized, Commercial cloud takes pulling supply chain mode as a demand-driven, takes the flexible scalable platform as the interface. Facing the uncertainty of external resources or the client's needs growth, commercial cloud can be done in real-time, personalized end-to-end business services.

2. The core of commercial cloud is the solution to the Binhai New Area commercial governance issues
   From the appearance point of view, cloud computing is a leading IT technology, but its essence is reflected in governance issues. Commercial cloud model that we proposed is planning and constructing on the government business service functions, and for the practical need of the Binhai New Area of business governance directly. Commercial cloud model has obvious advantages for solving the three types of government governance issues: (1) From the point of view of business environmental governance, it helps to standardize and optimize the financial environment for investment, production environment and social living environment. Its main features include efficient allocation of social and economic resources, services network layout, market-conflict coordination, rapid integration and access to information resources. (2) From the point of view of functions of government services, it will help improve the efficiency and accuracy of government services, improve service quality, and establish the image of the high-end government services. The main function of the level includes government commercial service model design, the organizational structure and terms of reference reengineering based on the commercial cloud, lean agile service process design, government service performance evaluation design, service innovation system construction and risk control system. (3) From the point of view of government decision-making, it is conducive to the promotion of administrative decision-making change from the management model to a service type, from the "top-down" individual decision-making path to the "top-down" and "bottom-up" consultative one, and the transformation of the nets decision-making path. The main function of the level includes the decision-making path design, the nets decision-making information acquisition and information fusion model planning, the improvement of decision nodes and process design.

3. The key of commercial cloud lies in broadening the chain structure of Binhai New Area Business Services from the dual dimension
   Binhai New Area Business service chain includes all aspects of meeting the target's needs that directly or indirectly involved in. Overall, the commercial service chain includes three plates-business services, investment and foreign trade. According to the actual situation, it starts the business services sector firstly, and set aside the interface of other two plates. Binhai New Area commercial service chain shows double-structured: Internal is the commercial services chain between government and government or between government departments (G2G), between government and business (G2B), between the Government and independent groups or individuals (G2C); External is the commercial service chain in different regions of domestic and abroad, different industries and business areas. Its key role is: (1) Scalable service boundary. Rapid deployment of resources and services virtualized and dynamic scalable expansion can be by "service chain cloud" mode. The mode has the ability to deal with the geometrically increasing resources that the Internet can't be integrated to achieve the dynamic of value-added services. (2) The multi-level chain management. It can simultaneously manage many value chains and related business processes. It makes the value chains in commercial ecological environment be together by many-to-many link. It integrated the services into service components that includes general services, modular choice services, customized services and other type, and with the external market changes quickly, service components combine, split and recombine. (3) Differentiated agile service. It quickly responds to the needs of clients and service-driven market. It gives great flexibility of business processes and demand-triggered. (4) Improving core competitiveness. Basing on their respective core competencies, serviced enterprises enhance the core competitiveness of enterprises through sharing the advantage resources; Through knowledge spillovers, they share resources fully and improve the core competitiveness of the region in the overall.

This research will achieve the targets of three levels:

1. From the level of commercial cloud framework model, this research studies commercial cloud frame mode operation mechanism from a strategic height using cloud computing technology and management theory, and it innovatively introduces virtual resource sharing mechanism, the aggregation effect, the design of integration ability, cloud computing technology into the business model innovation practice.
2. From the level of commercial cloud path demonstration system, through designing the commercial cloud system module and function, this research studies building Binhai New Area commercial resource pool and virtual network linking mode, and plans Binhai New Area commercial cloud service functions to improve commercial cloud framework planning system, using planning leverage to leverage the construction of Binhai New Area commercial.

3. From the level of commercial cloud management applications, through the design of cloud-based commercial services platform system facilities planning, this research practices new business management service model in commercial cloud management application, and builds a service-oriented government to improve the quality and efficiency of government services, and plays the leading role of the Tianjin economic growth.

2 The Main Content of the Research Work

2.1 Binhai New Area Commercial Cloud Design Background

1. National policy research
   Instructions of general secretary Hu Jintao
   Premier Wen Jiabao put forward five requirements of the development
   State Department documents
2. Research of Binhai New Area's "Twelve Five" business strategic planning
3. Binhai New Area's development achievements
4. Present situation analysis of Binhai New Area commercial activities
5. Analysis of the core competitiveness of the domestic related regional
6. The mode needs and preferences analysis of service targets

2.2 The Theory and Mechanism of Commercial Cloud

1. Relations theory based on the strategic behavior of government services
2. Virtual Knowledge Management
3. Advantage resource-oriented strategic behavior theory
4. Business Intelligence and core competence theory
5. Knowledge Spillovers and innovation diffusion theory
6. Entropy theory of service management

2.3 Thematic Studies of Domestic and Foreign-Related Cases

1. Development status and trends of cloud computing commercial model
2. Electronic Technology industry service model of Shenzhen and productive service mode of Pudong financial center

3. Development status and trends of the United States, the European e-government and their production services

2.4 The Theory and Mechanism of Binhai New Area Commercial Cloud Frame Design

1. The basic framework of the commercial cloud
2. The logical model of the commercial cloud
3. Organization and management model and system design
4. Analysis of Cloud service model
5. Model design of Elastic information
6. Agglomeration effects and integration capabilities Chain Design
7. Mechanism design of sharing virtual resource
8. Investment financing mode
9. Operation mechanism and strategy mode

2.5 Cloud Platform Development Framework Model and Its Key Technologies

1. The basic framework model of the commercial cloud platform planning
   The basic framework model of the commercial cloud platform planning is as shown in Fig. 1. It is divided into three levels from bottom to top: Infrastructure as a service layer (IaaS), Platform as a service Layer (PaaS) and Software as a service layer (SaaS). Each commercial cloud service can be a separate cloud and be used by end-users directly, and also can provide services basing on lower cloud services or supporting the upper cloud services.
   - Infrastructure as a service layer (IaaS)
   - Platform as a service layer (PaaS)
   - Software as a service layer (SaaS)
2. Key technologies of commercial cloud platform development
   - Resource pool technology
   - RFID technology
   - Scalable N-layers heterogeneous platform technology
3. Study of commercial cloud platform risk and security management
   - Information security framework
   - Cloud security risk analysis and control
   - Viable cloud security strategy model and its architecture

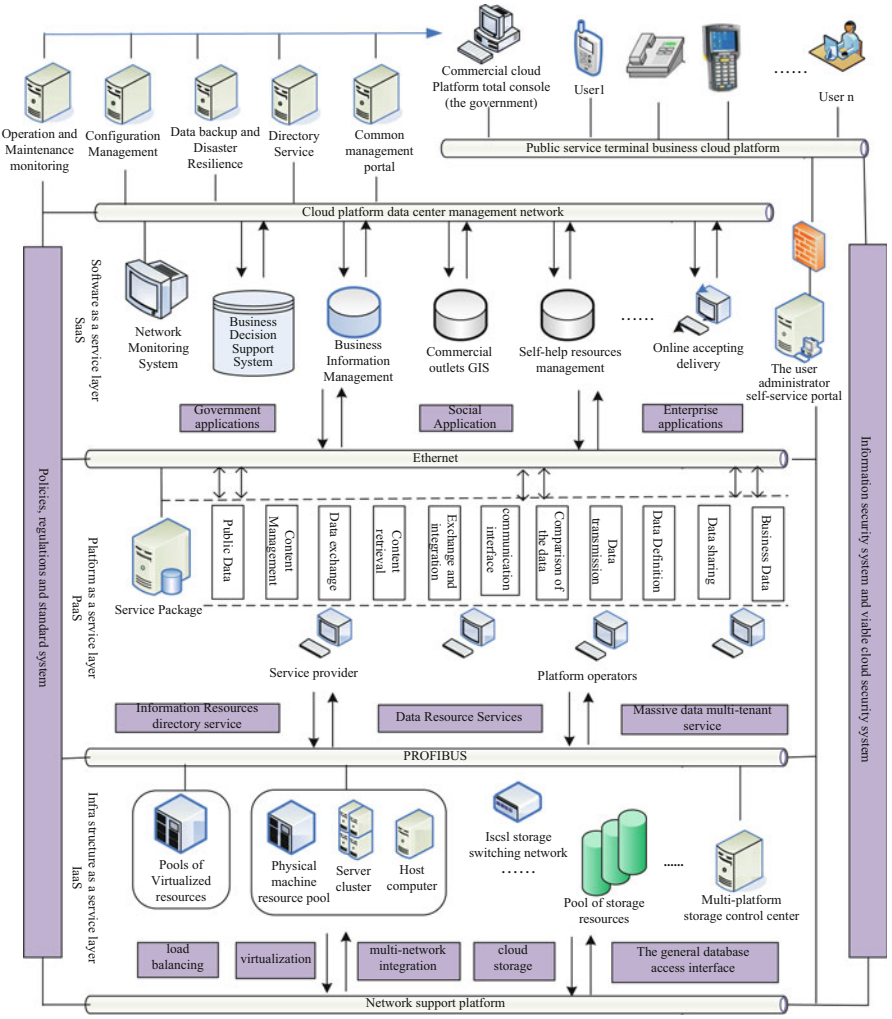

Fig. 1 Basic framework model of the commercial cloud platform planning

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