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Application and Research of Telecommunication Business Support System Based on Cloudy Architecture Platform

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Abstract: With the continuous development and innovation of telecom services, building an efficient, flexible and reliable business support system has become a key demand of telecom operators. The article combines the application status quo of telecom business support system, and then starts from the construction of cloud architecture platform, plays the advantage of PaaS mode, and explores its application process in telecom business support system (BSS). Based on the research of this paper, it aims to provide a set of feasible cloud architecture platform application solutions for telecom operators to enhance their business support capability and market competitiveness, and to meet the ever-changing user needs and industry development trends.

Keywords: Cloud architecture; Telecom business support system; Integrated services

Introduction

Telecom business support system (BSS) mainly consists of several systems such as customer relationship management (CRM), billing, partner (PPM), etc. Due to the influence of historical reasons, under the traditional mode, each system is built independently, which leads to differences in the software architecture, development model, data model, hardware equipment types and configurations, etc., and it is difficult to realize the integration between each system. This leads to differences in software architecture, development models, data models, hardware equipment types and configurations, etc., and makes it difficult to realize integrated operation among systems. At the same time, the above construction mode reveals such shortcomings as low utilization rate of equipment, poor investment efficiency, and great difficulty in resource deployment. Based on this, it is of practical significance to propose a telecom service support system solution based on a cloud-based architecture platform in combination with the development of modern technology.

1. Research Overview

At this stage, BSS is part of the operator's IT system, based on the private cloud environment built by the telecom operator, relying on SaaS, PaaS, IaaS three-layer distributed architecture construction model to build a business support system, this distributed architecture can solve the traditional architecture can not be horizontally scalable, synchronous call process is long, to ensure the stability and reliability of the system. Comprehensive optimization and innovation have been carried out in architecture, technology, services, etc. Advanced technologies such as cloud computing, big data, artificial intelligence, etc. have been adopted to achieve high efficiency, intelligence and personalization of business processing, and emphasis has been placed on the integration and synergy with other systems such as OSS (Operation Support System), MSS (Management Support System), etc. The system has been developed in a way to ensure the stability and reliability of the system. Support System), MSS (Management Support System) and so on, in order to provide more comprehensive and efficient business support to ensure that the telecommunications business support system to achieve intensive management.

2. BSS Cloud Architecture Requirements Analysis

2.1 Data Model

BSS system includes several subsystems such as CRM, Billing, PRM, etc. During the operation of these systems, they are characterized by high data interaction frequency and large data throughput. At the same time, the underlying data model generated by the above subsystems is basically the same, with strong adaptability. Based on their characteristics in terms of data model, it is feasible to realize core data sharing and unified planning.

2.2 Technical Architecture

In the telecom business support system, the CRM system adopts containerization technology, Devops, private cloud technology, distrib-

uted database, etc. The front-end representation layer, business logic layer, and data layer adopt multi-layer microservicing technology architecture, with the separation of WEB servers and application servers, layering of front-end and back-end business microservices, separation of data storage, reading and writing, and the distributed architecture is realized through elastic deployment and linear expansion. High concurrency capacity support, central service capacity standardization external capacity sharing, laying the foundation for providing a unified capacity sharing cloud-based resource platform [1].

2.3 System Integration

System integration is the key to ensure the effective operation of the cloud-based architecture telecommunications business support system. It is necessary to realize seamless docking with external systems such as billing system and CRM system. By formulating unified interface specifications and data standards, accurate data transmission and sharing is ensured. Deploy service capability sets using a private cloud sharing platform to realize communication and collaboration between different systems. During the integration process, give full consideration to system compatibility and interoperability, and conduct rigorous testing and verification to ensure the smoothness and efficiency of the entire business process.

2.4 Performance Requirements

The telecom business support system with cloud-based architecture has high performance requirements. The response time of the system should be short to ensure real-time feedback of user operations and enhance user experience. When dealing with large-scale data, ensure the efficiency and accuracy of data processing. Optimize the database query and storage process to improve the concurrent processing capability of the system. At the same time, establish a performance monitoring mechanism to identify and solve performance bottlenecks in a timely manner, so as to ensure that the system can still run stably and efficiently under high load conditions.

3. PaaS Platform Architecture

PaaS provides support for the complete life cycle of applications, and with the help of this platform architecture, it can reduce the complexity of user acquisition, management and deployment of applications. In the telecom business support system, with the help of PaaS mode and the advantages of automation, self-optimization and other technologies, it can be ensured that the system can dynamically meet various functional and non-functional requirements during the application life cycle in real time.

3.1 Technical Infrastructure

The technical infrastructure of the PaaS platform includes servers, storage devices and network facilities. Servers need to have high performance and scalability to cope with growing business needs. Storage devices should ensure safe and reliable data storage and provide fast data access. Network facilities should have low latency and high bandwidth to ensure fast data transmission. Cloud computing technology is adopted to achieve dynamic allocation and management of resources and improve resource utilization.

3.2 Basic Service Provision

The PaaS platform provides rich basic services, such as database services, message queue services and application server services. The database service should support multiple types of databases to meet the needs of different applications. Message queuing service guarantees reliable communication between components in the system. Application server services provide a stable operating environment to support the deployment and expansion of applications. The high availability and stability of these basic services are the key to support the upper layer applications [2].

4. Application analysis of telecom business support system based on cloud-based architecture platform

4.1 Analysis of Application System Cloudization Strategy

When considering the application cloudization of telecom business support system, a comprehensive analysis of multiple strategies is required. First, it is necessary to evaluate the architecture and functions of the existing application system to determine which parts are suitable for migration to the cloud platform. For core business modules, optimization and refactoring may be required to adapt to the elasticity and high availability requirements of the cloud environment. Second, the scale and configuration of cloud resources should be reasonably planned based on business requirements and development forecasts to avoid wasted or insufficient resources. It is also necessary to consider the strategy of data migration to ensure data integrity and security. At the same time, it is crucial to choose the right cloud service provider and evaluate its service quality, technical strength and cost-effectiveness. In addition, develop a sound contingency plan and rollback mechanism to deal with problems that may arise during cloudization. Through comprehensive and detailed strategy analysis, a solid foundation and guarantee is provided for the cloudization of telecom business support systems.

4.2 Overall design scheme of BBS cloudization

4.2.1 Design Ideas

The design idea of BBS cloudization should be centered on improving system performance, flexibility and scalability. Make full use of the advantages of cloud computing, adopt distributed architecture, decouple the system function modules, and realize independent deployment and expansion. Focus on data storage and management, adopt efficient data storage technology, and ensure data security and reliability. Introduce automated operation and maintenance mechanism to reduce operation and maintenance costs and improve system stability. Guided by user needs, optimize the system interface and operation process to enhance user experience. At the same time, follow the industry standards and norms to guarantee the compatibility and integrability of the system [3].

4.2.2 Overall Architecture

The overall architecture of BBS cloudization should include infrastructure layer, platform layer and application layer. The infrastructure layer consists of computing, storage and network resources provided by cloud service providers to realize the elastic allocation of resources. The platform layer is responsible for providing services such as runtime environment, middleware and database to support application development and deployment. The application layer covers various business function modules, such as user management, business acceptance, billing and settlement. The layers communicate with each other through standardized interfaces to form an organic whole. In addition, a perfect monitoring and management system should be established to monitor the system operation status in real time, find and solve problems in time, and guarantee the stable operation of the system.

5. Conclusion

In summary, with the application of cloud computing, it provides guidelines for the development of BSS for telecom operators. In this context, based on the cloud-based structure and taking advantage of the PaaS model, the telecom business support system is comprehensively analyzed and explored to realize the virtualization and pooling of servers, storage, networks and other equipment. At the same time, strengthening technical exploration and constructing a more integrated and intelligent unified function system can more effectively respond to the challenges brought by business growth and business changes.

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