Discussion on the Application of Cloud Computing Scene as a Service Model

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Abstract: In the context of the digital economy, Diversified application scenes have created a huge space for the cloud computing market. In response to the diversity and complexity of cloud computing industry operation and maintenance scenes, this paper proposes scene as a service model based on diversified scenes for the integration and coordination of horizontal and vertical cloud computing services. The framework model of scene cloud scheme and the realization process of ScaaS model are discussed, so as to promote the implementation and operation of scene cloud solution.

1. Introduction

The new generation of digital technologies has become an important driver of the digital economy, represented by 5G, artificial intelligence, cloud computing, the Internet of Things, blockchain, and big data. Digital intelligence has penetrated into every aspect of society and gradually become an important way to support industry, government affairs, infrastructure or daily life. With the promotion of multiple factors such as the upgrading of industrial digital transformation, the breakthrough of digital technology capabilities and the release of market demand, the digital transformation of traditional industries will inevitably gradually transform from the macro digital economy to micro links such as industrial business processes and management.

With the deepening of technology application and the increasing complexity of business scenes in key industries, industrial digital transformation has encountered many difficulties. The cloud computing industry as the support of industrial digitalization has also entered the deep water period. Cloud service solutions have gradually penetrated from Internet and IT enterprises to traditional government and enterprise institutions. Cloud solution based on scene analysis, powered by cloud computing and integrating 5G, Internet of Things, big data, artificial intelligence and other emerging technologies, has become a powerful tool in the process of industrial digital transformation and provides efficient support for long-term innovation and development across various industries. This paper discusses the service model of scene-based cloud solutions from the perspective of the development of cloud computing industry, aims to enhance the speed and efficiency of cloud-based information systems across various industries, and advance overall digitalization processes rapidly.

2. Challenges Faced by the Cloud Computing Industry in Various Business Scenes

Cloud computing is an Internet-based computing paradigm, shared hardware and software resources and information can be provided to computer terminals and other devices as required[1]. The core of its function is to deliver on-demand information technology services, such as encompassing virtual machine computing services, network storage services, database services, and IoT machine learning. Today, the promotion and development process of information technology must take into consideration the integration with the cloud. The design architecture of the program should take into account the deployment and operation of the cloud environment[2]. With the rise of the digital economy and the promotion of new infrastructure, cloud computing has assumed the role of a similar "operating system". It is a crucial convergence point for communication network infrastructure, computing infrastructure, and emerging technology infrastructure to collaborate synergistically, serving as an integrated platform that harnesses the technical capabilities of both "network" and "computing"[3].

In the context of the digital economy, diverse application scenes have generated a vast expanse for cloud computing technology. Many enterprise customers seek to obtain market information through online channels in order to achieve efficient management. They also demand customized, accurate, all-encompassing digital solutions and expect higher quality services. The cloud trend is unstoppable, but the process of cloud is not smooth. With the increasingly sophisticated and complex business system migration to the cloud, enterprises face a range of issues including multi-scene cloud deployment, multi-cloud complexity, and multi-cloud operation and maintenance.

In line with the diversity and complexity of operation and maintenance scenes, cloud solutions exhibit significant variations and limited adaptability, including the underlying architecture of cloud networks, technology and platform integration, as well as response mechanisms. The increasing granularity and complexity of services present a significant challenge for cloud service providers. Therefore, it is imperative to integrate horizontal and vertical cloud computing services based on diverse scenes and promote standardized solutions for various fields in the cloud.

3. Scene as a Service Model

The entire field of information technology is progressing towards a business-centric and service-oriented architecture. The ability of cloud service providers to deliver solutions that can promptly and effectively address the diverse needs of enterprises, while keeping pace with their evolving requirements and market dynamics, has emerged as a critical yardstick for measuring solution success. The application scenes are diverse, and the industry is in urgent need of a specialized cloud deeply rooted in specific scenes and businesses. The blooming of industry clouds in vertical industries will bring about large-scale construction opportunities[4]. From the perspective of the cloud computing industry, providing scene-based cloud solutions has become the mainstream direction for developing cloud service models. The model of "Scene as a Service", or "ScaaS" for short, used to differentiate from Software as a Service (SaaS), aims to standardize the business scenes of cloud computing service products, thereby enhancing the overall market adaptability and expediting delivery of service solutions.

ScaaS offers cloud computing solutions that leverage the core capabilities of cloud service providers, drive scene innovation through convergence, integrate infrastructure and stack platforms, unify data and applications, streamline operations with an integrated portal. ScaaS will emerge as a significant development direction for cloud computing service models, following the footsteps of IaaS, PaaS, and SaaS.

ScaaS incorporates a unified portal and operations platform, surpassing previous service models. On top of the data application layer, the integrated portal centrally organizes cloud resources,

applications, users and their related data interfaces into a unified portal. It integrates various cloud services provided by different service providers according to logical standards to achieve centralized coordination and a standardized entrance. The portal can be personalized, customized and adjusted based on each enterprise's unique system foundation. Cloud operation is a comprehensive behavior of designing, implementing and managing the whole life cycle of cloud services and cloud applications[5]. The operational platform assist customers in building a compatible team, securely and efficiently migrating to the cloud, and achieving higher service capacity rates. Operation services focus on full-stack cloud evolution and post-life cycle operation, enabling businesses to add value to their data, optimize platform resource utilization, accelerate business innovation, and sustain rapid growth[5]. Operation services not only compensate for the lack of technical human resources within an enterprise, but also enable better tracking of implementation effects and shortcomings of standard field cloud products. This allows timely feedback to cloud service providers and supports solution updates and iterations.

Under the ScaaS model, enterprise users can focus solely on rationalizing their business logic layout, gradually freeing themselves from dependence on underlying network and hardware infrastructure, intermediate platforms, data and application logic. By leveraging common cloud fields provided by cloud service providers, businesses can quickly achieve a cloud-based solution that is tailored to their needs through personalized integration customization and continuous operation and maintenance tracking services.

4. Implementation and Application of ScaaS Model

The implementation of ScaaS mode involves five stages: scene cloud modeling, core scene matching, deployment of scene cloud, personalized debugging, and professional operation and maintenance. Figure 1 illustrates the application flow of the ScaaS schema from modeling to implementation.
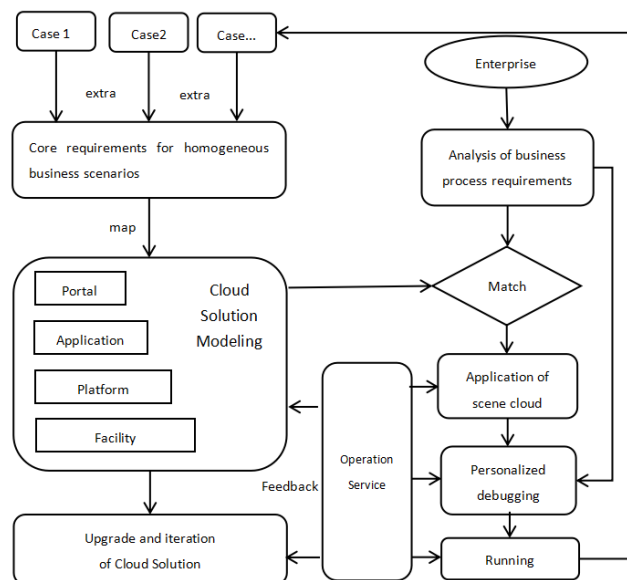

Figure 1: The implementation and application process of ScaaS

Scene cloud modeling is a crucial and intricate challenge in the contemporary cloud computing industry. In the initial stage of modeling, it is imperative to conduct thorough investigations and gather a substantial amount of case data pertaining to similar scenes. It extracts common business processes and system core requirements for similar scenarios and maps them to cloud service

solutions. The modeling process is based on the Open API and SDK provided by the open platform, and relies on the cloud service provider's own full-stack technology and develop comprehensive solutions, encompassing infrastructure layer, capability center platform layer, business application layer and integration portal. Figure 2 can serve as a reference for the architectural scheme of the scene cloud model, as well as for the hardware and software facilities and technologies involved in all levels of modeling process.
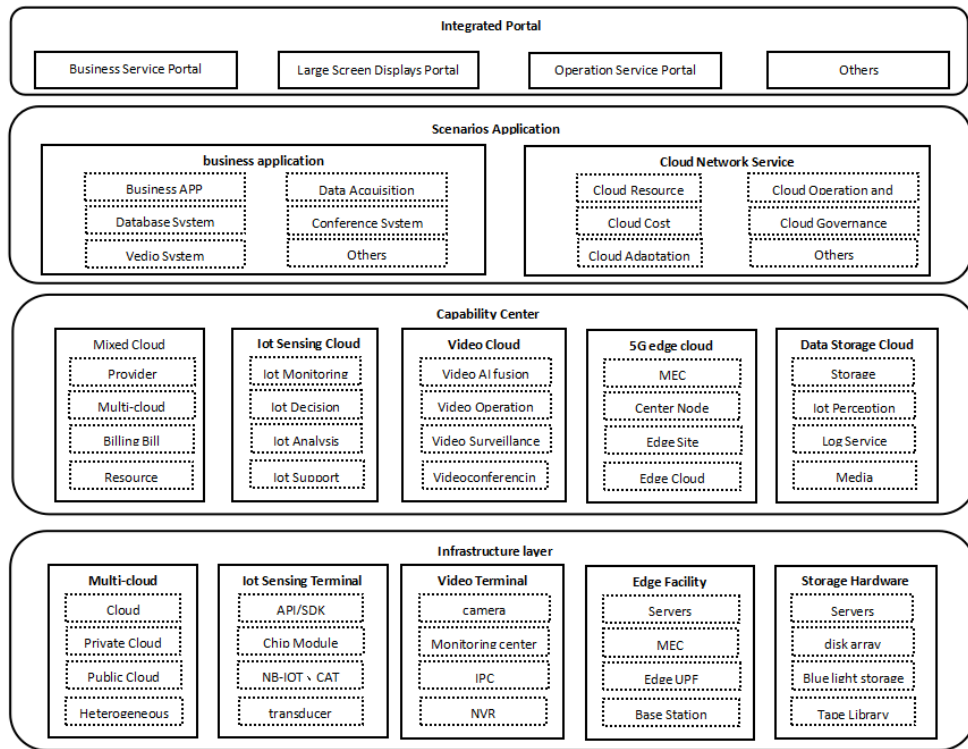

Figure 2: The implementation and application process of ScaaS

After the establishment of the scene cloud solution, the cloud service provider can rapidly select a highly compatible solution based on enterprise demand characteristics. Personalized configuration will be carried out from enterprise business process transformation and solution implementation until the matching process is completed. The service provider offers professional operational personnel to continuously manage and operate the cloud application, track and report on the implementation effect of the cloud solution while assisting in the smooth operation of enterprise cloud solutions. This ensures continuous improvement and iteration of scene cloud, forming a closed loop for excellent service.

5. Conclusion

The ScaaS cloud computing service model significantly shortens the enterprise system cloud cycle and truly realize the flexibility and elasticity of customized cloud services that address diverse business scenes. It enables fast delivery by integration and operational services and addresses the issues of inadequate timeliness and exorbitant costs associated with enterprise cloud.

ScaaS enhances the service process of the cloud computing industry by standardizing and packaging operation services. It also offers tailored debugging solutions to meet the unique requirements of each scene, resulting in accelerated adoption across industries. This will help to create an integrated ecosystem for cloud computing product development and operation, and foster the profound integration of digital economy and real economy.

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