China
MINSHENG
BANK

China Minsheng Bank

Huawei Helps China
Minsheng Bank
Build Next-Generation DCN

Background

Digitalization has gradually penetrated into every corner of society in the digital era, which features expanded customer groups, new channels, and new business models. Some of the major challenges facing the banking industry include achieving improved service capabilities and accelerated business transformation through scientific and technological innovation.

Challenges

Digital transformation cannot be achieved without the innovation and construction of data center (DC) IT infrastructure. This is because infrastructure is the pillar of all digital economies and essential to provisioning and guaranteeing agile, innovative services. As cloud computing and virtualization technologies develop rapidly, new architectures and technologies are being introduced to DC IT infrastructure. As one of the three major components of DCs, networks must have the following capabilities in order to quickly respond to service requirements and support service innovation:

- Support auto scaling and resource pooling to improve resource utilization and avoid isolated, repeated network construction.
- Allocate network resources on demand to meet requirements for fast iteration and deployment of Internet financial apps.

- Provide flexible traffic steering and precise management to meet differentiated requirements of different services.
- Enable network-wide traffic visualization, simplify O&M, and ensure compliance. Visualization of network-wide traffic helps prevent the blind spots of network traffic monitoring in a cloud environment.

Solution

After comprehensive research and testing at the initial stage of digital transformation, China Minsheng Bank decided to build a next-generation DC network (DCN) based on SDN architecture. It adopted Huawei iMaster NCE to build digital operation capabilities based on SDN and big data. In addition, it conducted innovation with regard to network architecture, network self-service, and intelligent O&M and seized the opportunity to construct a development & test cloud for branches to build pilot SDN networks. By doing this, China Minsheng Bank avoided the need for repeated network construction across branches, maximized resource utilization, enabled the development & test networks of different branches to meet the requirements of frequently adjusted test services, and made it possible to monitor network traffic in virtualization environments.

DCN reconstruction for network resource pooling management

With the rapid growth of services and users, traditional DCs face increasing challenges in terms of space and efficiency. Traditional DCs are deployed per project and servers are deployed per application. In addition, the deployment process is slow, server density is low, and capacity expansion is difficult. As services and applications continue to grow, networks become increasingly complex and inefficient.

Huawei's DCN solution adopts SDN overlay technology, which applies the large Layer 2 design in network architecture. This solution uses VXLAN networking to separate physical transport networks from logical service networks, and it uses iMaster NCE for centralized management and automated deployment of networks.

The solution offers the following benefits to networks: First, by decoupling physical networks from service networks, it enables flexible migration of virtual machines (VMs).

Services can be flexibly deployed in any position, VMs can be accessed from anywhere and at any time, and network auto scaling is possible. Second, network resources are pooled, and iMaster NCE is used to allocate resources on demand as well as manage networks in a centralized manner. This significantly improves network utilization and simplifies network management. Third, tenant-based management effectively isolates services. Based on China Minsheng Bank's actual situation, branch users share hardware resources but are logically isolated. Different service departments or network service areas are logically isolated for differentiated management and security policy deployment.

DCN architecture with cloud-network synergy, enabling service provisioning within minutes
Network deployment automation is of great significance to the next-generation DCN. In traditional DCs, network devices need to be manually configured or configured using scripts, and configurations need to be frequently adjusted, which is an error-prone, time-consuming, and inefficient process. In addition, separated computing, storage, and network resources pose great challenges to the rapid rollout of new services.
iMaster NCE interconnects with OpenStack to enable cloud-network synergy in the DC architecture, enabling this architecture to centrally manage computing, storage, and network resources as resource pools, schedule resources on demand, and automatically deploy services rapidly. This improves application deployment efficiency and shortens service provisioning time from hours to minutes. In addition, this architecture provides the service capabilities of logical switches, logical routers, distributed virtual firewalls, and virtual load balancers through APIs, and it provides secure, isolated logical network planes for branches and internal tenants, enabling automated E2E service provisioning in real sense. Deployment efficiency is 10 times higher than that of the traditional solution, significantly accelerating service rollout across China Minsheng Bank's branches. This solution enables China Minsheng Bank to provide better services to customers externally and improve office and management efficiency internally.

Visualized network O&M, improving network O&M capabilities
Large, dynamic, automated next-generation DCs pose higher requirements on network O&M. It is impossible to learn the flexible changes of logical networks and services from the traditional device layer, and VM management only displays the information of virtualized elements.

As a result, network administrators cannot learn the overall network and service status in traditional management mode.
To solve this problem, iMaster NCE restores the topology of services delivered by the OpenStack cloud platform, displays the physical, logical, and application networks and their mappings based on the physical network topology, and detects service forwarding paths between VMs on demand. Network administrators can use iMaster NCE to learn the mappings between services and physical networks, overall network status and performance, as well as network-wide resources, traffic, and service paths, improving network O&M and compliance.

Effectiveness

Innovative technologies enable China Minsheng Bank to build an automated, intelligent next-generation DCN. Through joint innovation with Huawei, China Minsheng Bank started digital transformation from the most basic digital network platform and successfully tested the next-generation DCN architecture, which features cloud-network synergy. This architecture effectively improves service provisioning efficiency and deployment reliability, marking the first step towards digital transformation.

Follow-up Plans

China Minsheng Bank will extend its innovative practice to AI, big data analytics, and automatic fault rectification to comprehensively carry out intelligent network reconstruction. The WAN optimization solution is being deployed. With iMaster NCE's network-wide visualization and optimization capabilities, this solution effectively provides application-level steering and management of WAN traffic between DCs and between branches and the headquarters of China Minsheng Bank.

In line with the principle of "From the People, For the People", China Minsheng Bank is committed to providing more efficient and high-quality services through digital transformation that features proactive O&M, fault prediction, and intelligent network management.

Services Provided by Huawei

iMaster NCE is based on the unified cloud platform. It flexibly packs feature modules based on application scenarios and provides multiple offerings, such as NCE (Super), NCE (IP Domain), NCE (Transport Domain), and Agile Controller-DCN. A single-domain iMaster NCE product can evolve towards the multi-domain iMaster NCE architecture. In addition, the Manager, Controller, and Analyzer modules of iMaster NCE can be purchased and deployed on demand.