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Huawei Cloud Data Center Solution



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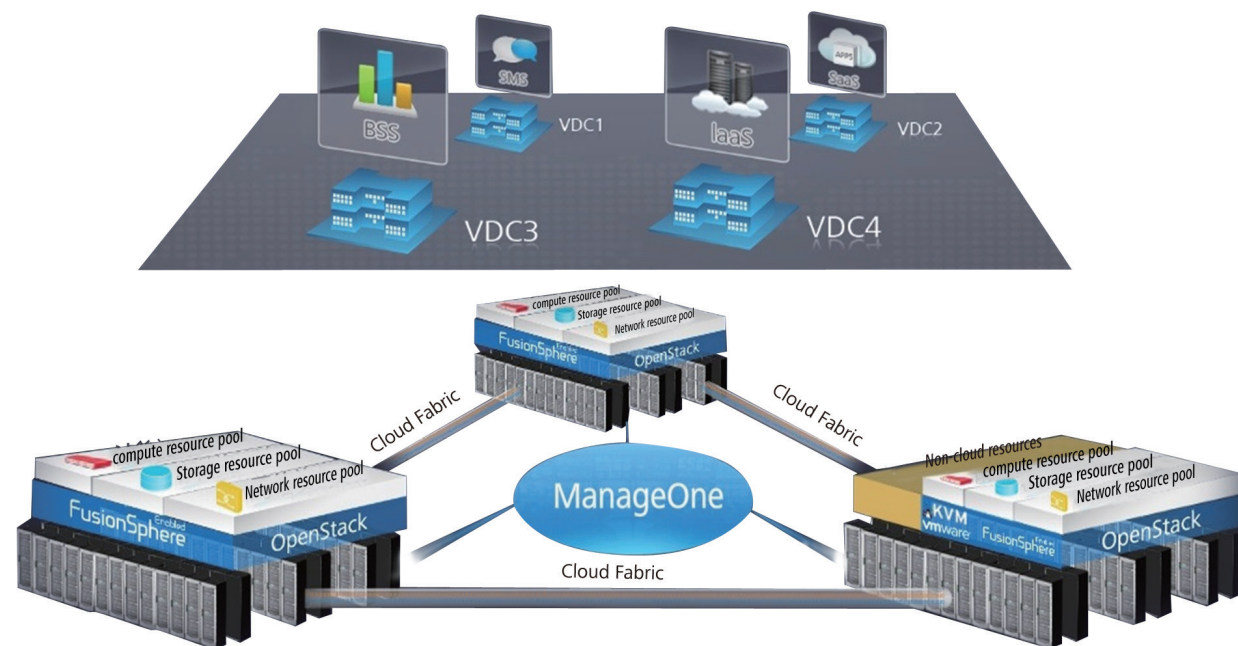
Huawei Industrial Base
Bantian Longgang
Shenzhen 518129, P.R. China
Tel: +86-755-28780808
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www.huawei.com

INNOVATIVE ICT
BUILDING A BETTER CONNECTED WORLD

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Huawei Cloud Data Center Solution Overview

Business Demands

Enterprise business develops rapidly, especially group enterprises all around China and the world. How to meet enterprise business development requirements and provide the best IT service and experience for business departments becomes a huge challenge for IT department during the enterprise informatization construction. The business development requires that IT systems must be able to:

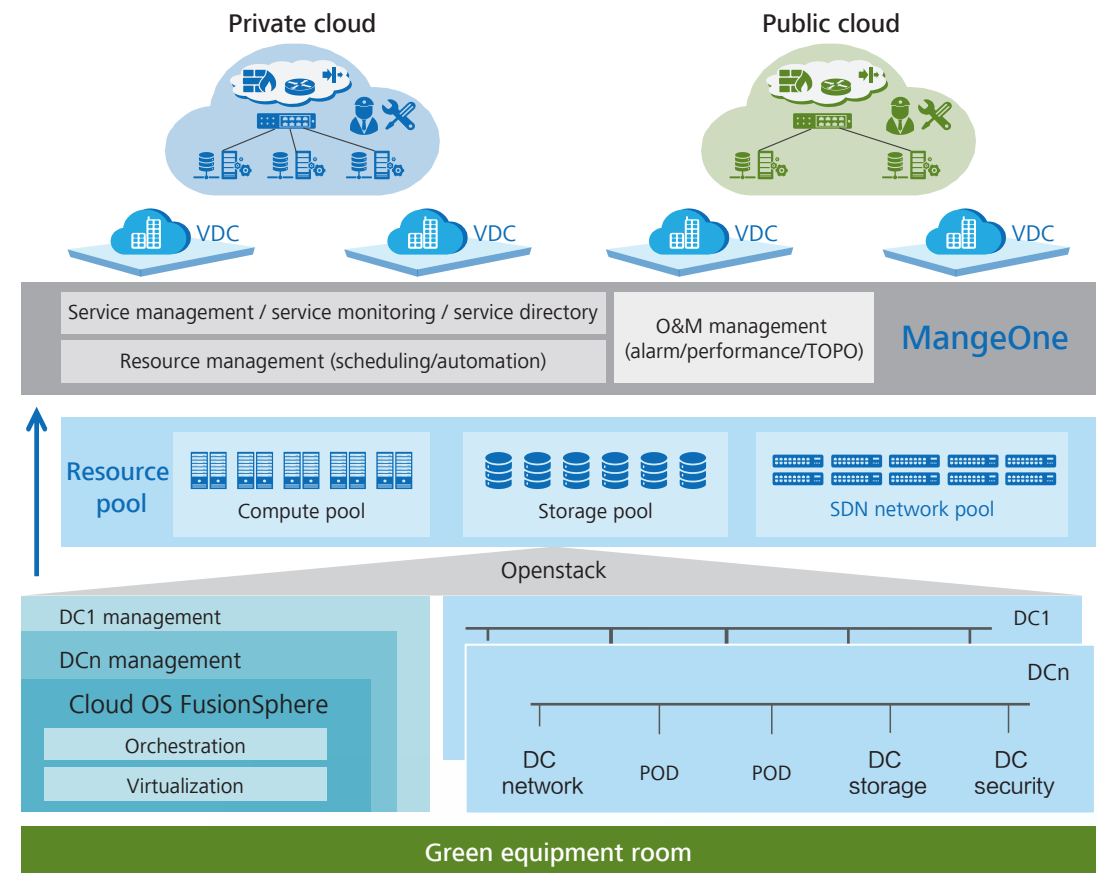
- Support fast service rollouts, ready to deal with organization business adjustment and changes, rapidly adapt business peaks and troughs, and flexibly adjust resource usage based on business features.
- Meet the standardized architecture requirements in the next few years to protect existing investment and improve resource usage; quickly recover services when a disaster occurs.
- Support a cross-regional unified business model to satisfy the globalization requirement of business development.

To address these challenges and problems, Huawei proposes the Service-driven distributed cloud data center (SD-DC²) Reference architecture. SD-DC² provides innovative virtual data center cloud services, supports separation of data center physical and virtual resources, implements data center as a service (DCaaS), and provides customers with new experience. The values of SD-DC² are as follows:

- Provides decision-making basis for customers' IT construction investment.
- Supports distributed IT architecture and comprehensive O&M management to reduce TCO, optimize cloud resource provisioning agility, enable rapid service rollout for business departments, and improve business department IT experience.
- Implements active O&M and visible DR decision-making to improve IT O&M capabilities, reduces IT operation risks, and ensures the business continuity of key enterprise services.



Design Concept



Main idea of SD-DC²: Resources are physically distributed, logically managed.

Virtual data center (VDC): A physical data center can generate multiple virtual data centers for various services.

Unified management, ManageOne: Multiple physical data centers are managed as a whole.

SDN network resource pool: Flexible networking and quick service deployment.

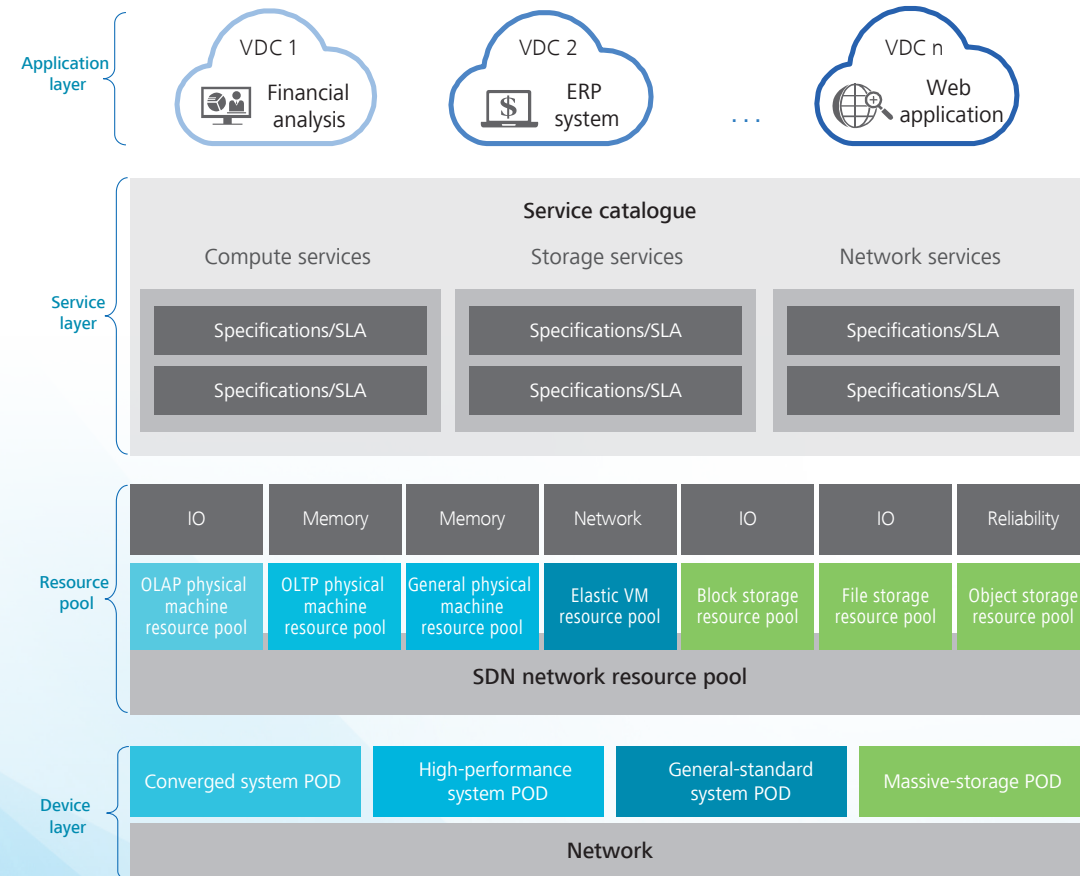
SD-DC² is no longer limited to providing the capability and user experience of a physical data center, it also unifies all data center physical resources (of multiple data centers or a physical data center) as a whole. By providing cross-DC management, resource scheduling, and DR design, SD-DC² integrates multiple physical data centers into a unified logic data center. SD-DC² adopts key technologies such as the cloud OS FusionSphere, the O&M management system ManageOne, the large layer 2 SDN-based ultra-broadband network, and the software-defined data center VDC.

SD-DC² Features

Business Agility

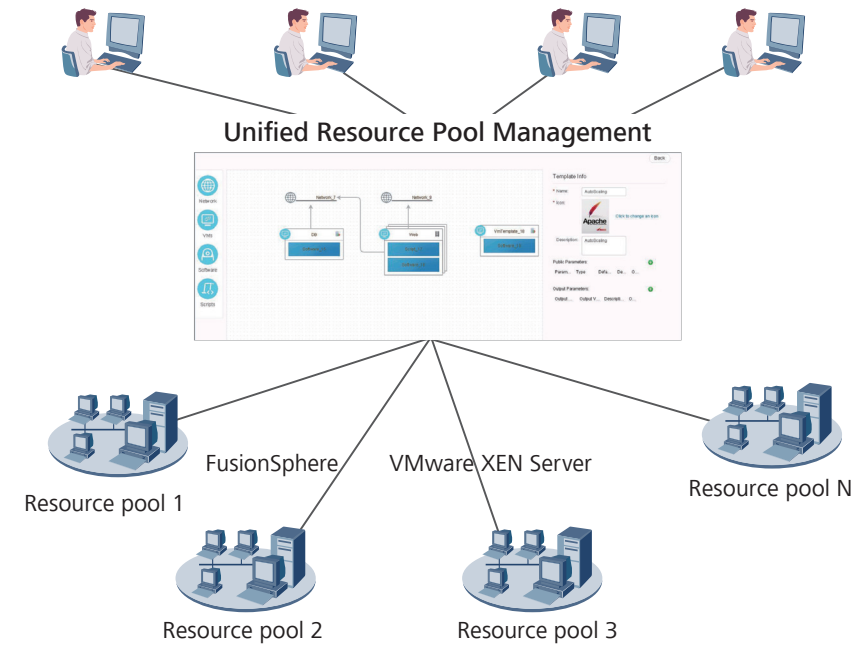
Service-driven: SD-DC² flexibly allocates resource using VDCs based on organization or enterprise business requirements, implements visible and one-click deployment to support minute-level service rollout, offers differentiated gold, silver, and copper service capabilities for different services, and provides end-to-end SLA.

Software-defined: SD-DC² virtualizes computing, storage, network, and security resources, and supports on-demand infrastructure deployment, improving resource utilization.



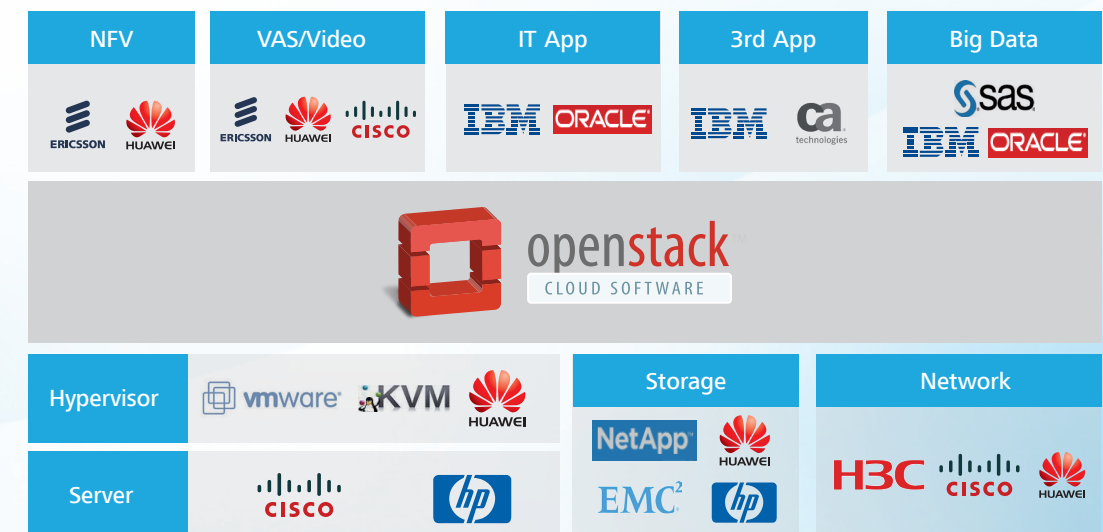
Efficient Management

SD-DC² supports unified management of multiple data centers, physical resources and virtual resources, heterogeneous resources, and operation and maintenance, improving data center management efficiency.



Openness and Collaboration

Based on OpenStack architecture, SD-DC² supports virtualization products of multiple vendors and is compatible with heterogeneous IT devices, meeting the requirements of public cloud, private cloud, and hybrid cloud application scenarios.



Cloud Data Center Solution Industrial Cases

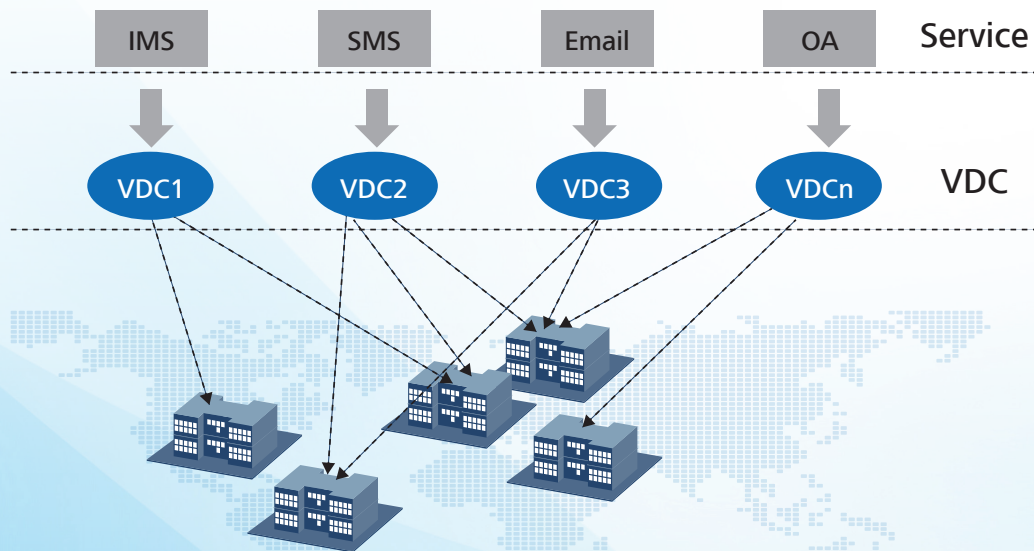
Solution for carriers

Customer issues

- High investment: Billions of US dollars are invested for nearly 100 data centers and 10,000 servers.
- Low efficiency: The deployment of a new service requires six to nine month, and the creation of a VPN requires several weeks.

Huawei solution highlights and benefits

- Data center consolidation: The regional center and subnet in each area adopt the double layer network architecture, implementing unified resource allocation.
- The SD-DC² provides the VDC solution, reducing the service deployment duration to only one week.
- The IT and telecom services (IMS/SMS/SDP) run on the unified cloud platform, reducing the TCO by 54% in three years.
- Current progress: The phase 2 PoC test has been passed 100% and the commercial bidding is on the agenda.



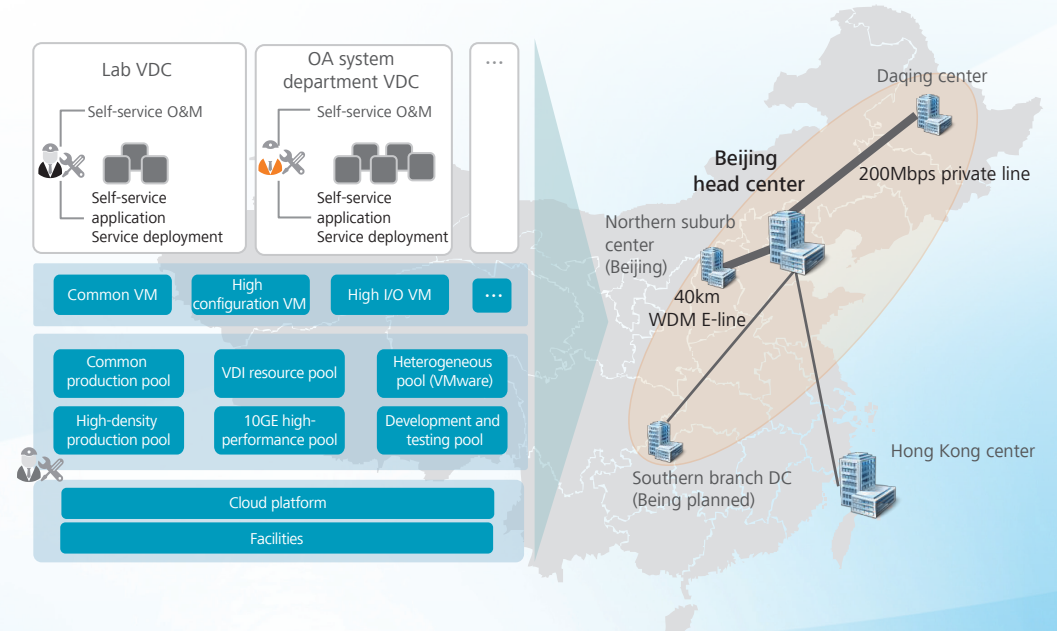
Solution for the media industry

Customer issues

- Data centers are centrally deployed in the headquarters. The branches use the resources of the headquarters remotely. The efficiency is low and the experience is poor. The service development in the region cannot be effectively supported.
- Data centers in the headquarters are maintained and managed separately. There is no centralized resource scheduling management and the utilization is low.
- The O&M workload is heavy, but the O&M personnel are insufficient, which cannot handle the O&M pressure and challenges brought by the cloud platform centralization.

Huawei solution highlights and benefits

- The SD-DC² adopts the two-level architecture. Data centers in the headquarters support core services and data centers in the branches support regional services. VDCs in the two-level physical data centers allow the surrounding small branches to use the VDC resources in self-service mode.
- Unified management of multiple data centers is supported. The computing, storage, and network resources of multiple data centers as well as their usage can be managed and monitored centrally, providing the cross-DC O&M management, service management, and self-help service capabilities.
- The SD-DC² management solution is provided. Based on the VDC self-help management function in the resource use layer, the management workload of the headquarters is reduced. By adopting the two-level rights- and domain-based architecture on the device maintenance layer, the maintenance work can be allocated to the level-2 unit.
- Based on the effective support of the branch data centers and VDCs, the regional services can adopt the localized deployment. As a result, the efficiency is greatly improved and the services increase rapidly.
- The entire company uses one cloud, implementing resource integrated management. The resource utilization is improved from 15% to 50%, the service rollout speed is improved, and the new media service application rollout period is shortened from 90 days to one week.
- The maintenance efficiency is improved. Without any personnel added, the maintenance and management workload of three new data centers is supported, and the number of devices maintained per person is improved from 50 to 300.



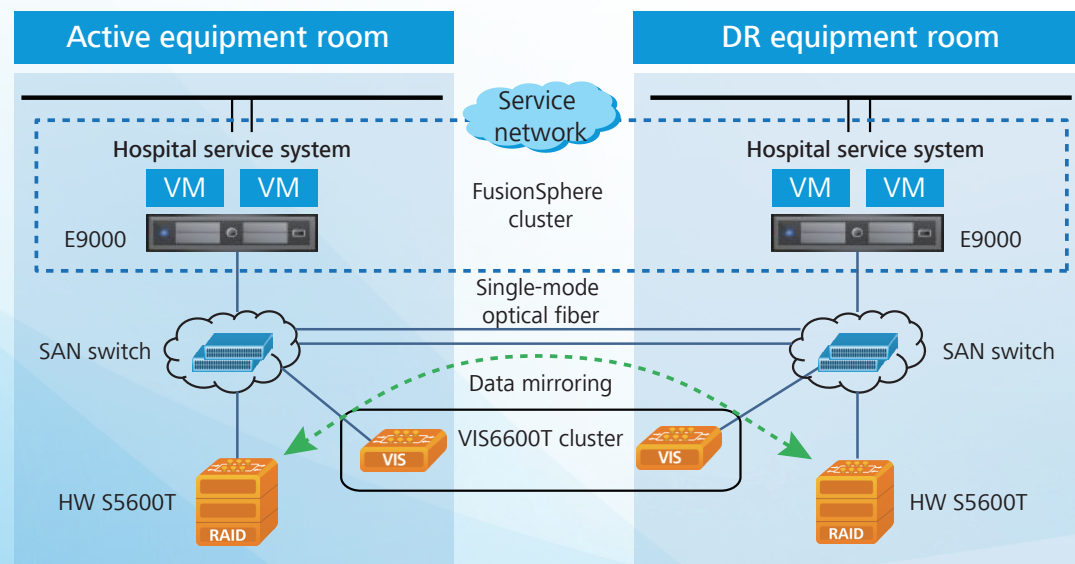
Solution for the healthcare industry

Customer issues

- Open-E is installed on the application server to implement data dual-write to the two storage devices in the live network. As a result, the performance is decreased by about 50% and services are greatly affected.
- A DR center needs to be built for the hospital service system to ensure secure data storage and protection and to meet the 24/7 service continuity requirement of the hospital information system.

Huawei solution highlights and benefits

- Based on Huawei cloud computing and servers, a virtualization platform is built and DR architecture is constructed at the computing layer to implement redundancy protection on service servers.
- Active-active DR + cloud computing cluster: An Active-active DR solution at the storage layer is implemented by VIS. Data is synchronously written to the storage of two equipment rooms to implement image redundancy of service system data. An Active-active DR solution at the computing layer is implemented by the FusionSphere cluster. When the DC is faulty, FusionSphere can perform automatic Switch-over to the DR system.
- Improved resource usage: Based on the server virtualization and Huawei cloud platform, the resource usage is improved.
- Enhanced performance: By implementing data dual-write at the storage layer using VIS, the performance decrease problem due to the live network Open-E is resolved and the service system performance is enhanced.
- Secure and reliable data protection: Active-active DR solution is implemented between the active and standby equipment rooms to ensure data security and business continuity when any equipment room is faulty.



Agile Efficient Open Huawei SD-DC²

