

# Henan Unicom gets enterprising with distributed cloud data centers

*In February 2017, China Unicom subsidiary Henan Unicom rolled out its distributed cloud data center (DC). Deployed with Huawei, the DC solution meets the growing demand for cloud services from government departments, SMEs, and healthcare and education organizations.*

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## New challenges

**W**ith the traditional telecoms market well and truly saturated, big data, IoT, and artificial intelligence

have created new sources of growth for operators. These new services also mean that operators need to transform – a process that is fraught with challenges.

For Henan Unicom, the construction of all-optical networks left more than 100 of its PSTN equipment rooms idle. However, fully using resources in its widely distributed equipment rooms is the key to reducing CAPEX.

Henan Unicom has launched its 4K HD video service. This will allow it to expand their video business to hundreds of thousands of IPTV users in each county across the province. But, to support a 30 Mbps data rate and average user concurrency of 30 percent, the operator needs a scalable network with ultra-high bandwidth. It also requires a content delivery

network (CDN) that supports cloud video services and can be opened to third parties to drive B2B revenues. A large-scale SDN was the right tool for forging new business opportunities.

Local government, healthcare, education, and SME customers require diverse cloud services, including active-active hot standby, desktop cloud, cloud gaming, and machine-to-machine (M2M), all of which require low latency to guarantee a good user experience. Moreover, some government and enterprise customers need resources from nearby data center sites due to policy requirements or preference, with each customer's services isolated.

Network operators require open devices on all network layers so as to adapt to current development trends and reduce equipment costs. As increasing numbers of customers have differentiated service requirements, operators need to provide open interfaces to support customized development and thereby attract new customers with a one-



stop self-service model. With the growth in data center services, new security risks arise from multi-tenancy, dynamic virtual machine (VM) migration, and disappearing network borders. Guaranteeing the reliability and security of cloud data center networks that run complex services has become a new issue for operators when it comes to cloud transformation.

## CloudFabric

Aiming to drive cloud transformation, Henan Unicom teamed up with Huawei and the Network Technology Research Institute under China Unicom Group to deploy a secure and reliable cloud data center network solution for localized cloud services.

The solution uses the following innovative 1+4+N distributed architecture: **one** provincial management platform for cloud

data centers, **four** areas (North, East, South, and West), and **N** municipal data centers. The management platform interconnects various cloud platforms by leveraging CloudFabric's network-and-network synergy capabilities, centralizing management, operations, and resource scheduling for municipal data centers.

CloudFabric uses Virtual Extensible LAN (VXLAN) technology to connect networks within or across the four areas. The municipal data centers offer localized cloud services and rack/bandwidth leasing services. The solution provides scalability, openness, and security guarantees, helping to support Henan Unicom's cloud business.

## Localized service

Henan Unicom has transformed some of its equipment rooms – those with robust

transmission, power and air conditioning capabilities and key resources – into Virtual Data Centers (VDCs) to offer reliable and secure localized cloud services that maximally reuse resources and extend the CDN network to customer premises. The solution guarantees latency-sensitive services, such as active-active hot standby, desktop cloud, cloud gaming, and M2M, and lets government and enterprise customers obtain resources from nearby equipment rooms.

Government operations are kept secure on a more reliable network environment, and Henan Unicom can maintain infrastructure as a Service (IaaS) applications more easily. The localized cloud service model significantly improves service experience, improving the competitiveness of Henan Unicom against OTT service providers.

## Scalable network = scalable business

Henan Unicom's large-scale cloud DC network uses spine-leaf architecture from the Huawei CloudFabric solution, with CloudEngine 12800 switches at the core layer and CloudEngine series top-of-rack (ToR) switches at the access layer.

The CloudEngine switches provide high port densities, high bandwidth without oversubscription, and large buffer sizes capable of supporting more than 20,000 servers in each DC. Controlled by the Huawei Agile Controller, CloudEngine switches automate network configuration to quickly provision bandwidth-hungry services such as HD IPTV and virtual reality (VR). The

network resource pooling function creates a scalable network environment for flexible VM migration.

In the future, the network will need to accommodate multiple access media such as physical machines, VMs, and Docker containers. The CloudFabric solution can adapt to these access scenarios and reuse existing resources to create flexible and scalable networks that maximize resource utilization.

## Open and secure

Huawei CloudFabric provides open architecture and interoperability with third-party cloud platforms, controllers, VAS devices, and virtualization platforms. Moreover, Huawei works with more than 20 ICT vendors and standardization organizations, including VMware, OpenStack, Brocade, Puppet, and F5. The open network architecture is compatible with heterogeneous network devices on different layers, and supports interoperation with customers' cloud platforms, offering more options for customers to build their networks.

The solution isolates services through domain- and rights-based user management, and employs security technologies like anti-DDoS, IPS/IDS, and an antivirus engine (AVE).

The partnership between Henan Unicom and Huawei has established a cloud DC solution that delivers high-quality localized cloud services for government and enterprise customers, making Henan Unicom more competitive in the blue-ocean cloud service market. 