Hunan Local Taxation Bureau Uses Huawei OceanStor 18500 to Offer Centralized Data Storage

"*Huawei OceanStor 18500 storage solution outcompetes the storage solutions from other vendors in the following features: high reliability, large capacity, high performance, flexible deployment, and online scalability.*"

- Hunan Local Taxation Bureau Information Center

Executive Summary

Industry

Government and Public Sector

Challenges

- Different models of devices that cannot be expanded or integrated
- Aged storage devices with low reliability
- Storage devices with the less than 0.5 million IOPS

Solution

- Deploy an OceanStor 18500 in the production center for centralized data storage
- Deploy an OceanStor 18500 in the DR center and use the Hyper series software to offer geographical disaster recovery
- Use the SSD, SmartTier, and SmartQoS to increase storage resource usage and provide SLA services for key taxation services

Customer Benefits

- 99.999% system reliability, enhancing data security
- Up to 4.5 PB storage capacity, providing growth for the next 10 years
- On-demand expansion, protecting the initial and long-term investment
- 1 million throughout capacity for big data storage and concurrent use

Introduction

Hunan Local Taxation Bureau, founded in September 1, 1994 as the department directly affiliated to Hunan provincial government, is responsible for collecting and managing up to 14 taxes, such as business tax, individual income tax, resource tax, and house property tax.

In 2012, Hunan Local Taxation Bureau collected CNY110.3 billion (USD$8B) in taxes from about 850,000 taxpayers. This places it number 15 among all provinces in China, up from number 18 in 2011.

Challenges

The efficient and timely collection of taxes is a key requirement of both governments and taxpayers. Hunan province, which is growing rapidly, joined with other provinces in beginning the implementation of a country-wide initiative called The Golden Taxation Project, in 1994. In 2008, Hunan Local Taxation Bureau started implementing Phase III, which would integrate all taxation service systems across Hunan province. Key capabilities to be implemented during this phase were tax payer registration and management, tax reporting, invoice management, ticket management, taxation accounting, online tax payment, and tax treasury.

To bring the benefits of ICT convergence to taxpayers and improve the overall efficiency of the tax system, Hunan Local Taxation Bureau implemented a broad range of internal and web-based tax functions, including a Treasury Information Processing System (TIPS), online tax reporting system, online tax payment system, taxation management system, and tax reduction or exclusion management system.

With the implementation of web-based self-service tax functions came the requirement that all services be available 24x7, which presented a number of technical challenges. At the same time, Hunan provincial authorities began to implement an e-Government project, which also relied on always-on information services.

In this critical situation, Hunan Local Taxation Bureau concentrated on how to ensure service continuity and enhance customer information by building up a new taxation system. The new system was expected to support high-speed access to taxation service systems. In addition to powerful access capabilities, Hunan Local Taxation Bureau also required a large-capacity and high-performance storage system to cope with increasing taxation services. Therefore, a

new-generation storage system was just what Hunan Local Taxation Bureau really wanted.

In 2012, Hunan Local Taxation Bureau thoroughly reviewed the original storage system in the data center. Finally, Hunan Local Taxation Bureau found that the key indicators (for example, scalability, reliability, and performance) of the original storage devices lagged behind the development of taxation services. Some of the key challenges with their existing storage systems were:

- Multiple vendors' products with low scalability

  Hunan Local Taxation Bureau operated multiple taxation service systems where devices of different models were deployed. The taxation service systems operated independently and were managed separately. The growing services required more storage space. Two options were evaluated for using the existing systems. One option was to expand storage space on the original storage devices, but the installed models could not be expanded to match the needed capacity. The second option was to integrate storage resources to capitalize on storage space. However, the original storage devices of different models were incompatible with each other and the total storage resource usage was less than 50%.

- Existing system reliability did not match new key applications

  As required by the Golden Taxation Project, Hunan Local Taxation Bureau had constructed a service processing platform that integrated all service systems across Hunan province. Some key systems such as tax collection must provide quality 24/7 services, which must be guaranteed by high-reliability devices. Unfortunately, 50% of the existing storage devices were at the end of their lifecycle and beginning to have higher failure rates. These aging devices had low reliability and could not cope with growing services.

- Expanded data storage and limited throughput capability

  With a philosophy of "large data storage and high data sharing", Hunan Local Taxation Bureau planned that the provincial data center be able to support taxation services for over 650 sub-bureaus and provide online taxation services for over 850,000 taxpayers in Hunan province. To meet these requirements, the provincial data center expected to support multi-thread access to several service systems, which required that the storage system be able to support over 1 million input/output operations per second (IOPS). However, most of the original storage devices had a capacity of less than 0.5 million IOPS.

To resolve these problems, Hunan Local Taxation Bureau decided to optimize its taxation system by constructing a high-performance and high-capacity centralized storage system to support the new taxation service systems and also to take over the storage requirements of the legacy systems.

Solution

Because of the critical role which the storage system played in the tax system, and the high profile of the system performance and reliability, Hunan Local Taxation Bureau embarked on a careful selection process. The result was a decision to purchase a Huawei OceanStor 18500 system. The primary determining factors were performance and a demonstrated track record of outstanding after-sale support.

In order to maximize the reliability, the decision was made to deploy a high-end OceanStor 18500 storage system respectively in the production center and disaster recovery (DR) center. The two centers were connected with an optical fiber, allowing full geographic redundancy.

The key advantages of the OceanStor 18500 were:

- Offered centralized data storage for up to 30 service systems, such as the individual income tax, invoice system, and arable land usage tax systems.
- Used the Hyper series software to support data snapshot, cloning, and copy from the production center to the DR center, and collaborated with the Oracle RAC scheme to offer data protection and 99.9999% service availability.
- Leveraged the solid-state drive (SSD), SmartTier, and SmartQoS to provide service level agreement (SLA) services for Hunan Local Taxation Bureau's key taxation services.
- Supported a maximum of 4.5 PB storage capacity and 1 million IOPS and enabled the storage capacity and IOPS expand with the increasing services, which capitalized on the initial and long-term investment.

In addition to the above-mentioned advantages, Huawei also provided SLA services (for example, 24/7 disaster recovery) to safeguard the operation of key taxation services.

Customer Benefits

By deploying Huawei OceanStor 18500 storage solution, Hunan Local Taxation Bureau optimized its taxation system by constructing a large-capacity, high-performance, reliable, and scalable storage platform, which laid a solid foundation for the Phase III Golden Taxation Project.

The person in Charge in Hunan Local Taxation Bureau said, "*The provincial data center plays a critical role in the taxation service development in Hunan. Therefore, we need an innovative storage solution that ensures high performance, large capacity, and scalability with the best cost-efficiency and most flexible deployment. After meticulous analysis and comparison of solutions from multiple vendors, we found that the Huawei OceanStor 18500 storage solution was what we were looking for.*"

On the unified storage platform, all storage devices were managed in centralized mode and O&M was greatly simplified, which was predicted to reduce O&M costs by 50% compared with the previous system.

Summary

When Hunan Local Taxation Bureau needed fast and reliable storage for a high-profile project to modernize the taxation systems, they turned to Huawei. Very few people enjoy paying taxes, but with innovative on-line taxation services, supported by the highly-reliable, high-performance OceanStor 18500 storage system, the taxpayers of Hunan province will get excellent service from the taxes they pay.