Growth creates challenges
Mobile phone service is one of the most desired amenities in almost every country in the world. It’s an important reason why Hubei Unicom, in south-central China, has 100 million customers and is adding about one million customers a year.

Favorable as it is, such growth is not without its problems. Hubei Unicom now has three petabytes of data to protect. About 10 terabytes of new and changed data must be backed up successfully each night, and the data must be recovered quickly if necessary to maintain service.

Potential bottlenecks threaten database operations
Backing up the data within the required backup window was proving to be difficult. The company had been using EMC Networker but switched to Veritas NetBackup software in 2005. “We found that NetBackup was much easier to manage than Networker,” Mr. Guan says. As data grew, however, the disk-to-tape backup infrastructure became more complex. “Any issue with backup required considerable staff time to address,” says Guan Jun, IT manager at Hubei Unicom. “We also were scheduled to upgrade our three tape libraries and network connections in our backup environment—it would be expensive.”

Hubei Unicom
Reducing Backup Time by 72 Percent and Saving Millions with Veritas Data Protection Solutions
Growing fast, Hubei Telecom needed a new backup strategy to adequately protect three petabytes of data. The company engaged Veritas Consulting Services to design and build a custom Veritas NetBackup server networked with other NetBackup appliances in each of its three data centers. Results include 4x faster recoveries of a key database, reduced exposure to potential losses, millions in savings from deduplication, and 100 percent payback the first time the database needs to be recovered.

Organization profile
Website: www.chinaunicom.com/city/hubei/
Industry: Communications
Headquarters: Wuhan, Hubei Province, China
Employees: 9,000

Key challenges
Fast-growing Hubei Unicom needed to streamline data protection of three petabytes and speed up potential recovery of a critical database.

Solution
The company worked with Veritas Consulting Services to design and deploy a custom-built Veritas NetBackup™ server networked with NetBackup appliances in each of its three data centers.

Benefits
Data Protection
• More data backed up in 72% less time (5 hours vs. 18 hours previously)
• 4x faster database recoveries
• Reduced exposure to as much as CN¥2.5 million (US$400,000) per hour losses if database is down
Cost Savings/Operational Efficiencies
• CN¥13.1 million (US$2.1 million) in storage savings from 85% deduplication
• CN¥2 million (US$321,000) in reduced tape operations
• Estimated 3x faster deployment from Veritas Consulting Services (one month instead of three)
• Projected 100% payback the first time a key database needs to be recovered
Another challenge was protecting a 10-terabyte database catalog for a key Oracle database that drives the company’s custom CRM application. The database catalog was backed up once a minute, but running the copy to tape took up to three minutes. The result was a potential bottleneck that could disrupt database operations. An IT employee had to constantly monitor the process and delete old copies of the catalog if necessary.

Making a big problem smaller

To streamline the process, the IT team evaluated new backup strategies and engaged Veritas Consulting Services. “We wanted to find a new backup approach that would simplify backup operations and reduce management time,” Mr. Guan says.

The combined team designed a solution based on a custom Veritas NetBackup server. To generate the highest backup I/O speeds, the server integrates Veritas NetBackup software with built-in, tiered storage that includes four terabytes of solid-state drive space. It also uses the NetBackup Fibre Transport (FT) Media Server feature to create Fibre Transport pipes that offer high bandwidth for backup data. “The server is capable of 800 megabits per second backup transfers,” Mr. Guan says. Its role is to back up the Oracle database catalog.

The team also deployed a Veritas NetBackup™ 5220 Appliance in each of the company’s three data centers. Each appliance eliminates the need for a separate media server, storage, software, and deduplication capabilities; and is pre-configured and performance optimized for backup and deduplication.

The result is that Hubei Unicom has a networked backup environment spread over its three data centers, 10 to 20km apart and connected by fiber-optic cable. The team configured the environment into a single backup domain to simplify management.

4x faster database recoveries

Many benefits have resulted. One of the most important is that the Oracle database catalog is now backed up successfully once a minute, as required, with no bottlenecks to date. The IT employee who used to constantly monitor the process has now been re-assigned to more valuable tasks.

“The entire database can be recovered almost four times faster than in the prior environment, at 400 megabytes per second compared to 120 megabytes per second,” says Mr. Guan. “Faster recoveries improve our support for customer service operations.” The new strategy involves rapid recovery of the database catalog from the custom NetBackup server while one of the NetBackup 5220 Appliances restores the database itself.

Rapid recovery is critical. If the Oracle database crashes, as it did several years ago in the prior environment, downtime disrupts worker productivity and exposes the company to potential revenue losses as high as CN¥2.5 million (US$400,000) per hour.

72 percent less backup time, saving millions

NetBackup Data Protection Optimization enables Hubei Unicom to deduplicate backup data both at the source (client) and target (within each appliance). The new solution is achieving an average 85 percent deduplication rate, reducing the size of 3 petabytes of backed up data by 2.55 petabytes. As a result, the company avoids consuming CN¥13.1 million (US$2.1 million) in drive space.*

In addition, because NetBackup deduplicates data at its source, the data stream on the network is reduced 30 to 40 percent, lowering network utilization. “Deduplication enables our other applications to perform better and our network can be more productive,” Mr. Guan says.

Technology environment

- Applications: Internally developed billing and CRM, and Business Operation Support System (BOSS) for Telecoms
- Databases: Oracle 10g RAC
- Storage: EMC Symmetrix DMX-4, HDS 9970
- Tape library: Sun StorageTek L700E and 3000

Solutions

- Veritas NetBackup™ 7.x
  - NetBackup Data Protection Optimization (deduplication)
- Veritas™ NetBackup 5220 Appliances

Services

- Veritas Essential Support Services
- Veritas Consulting Services
By employing deduplication and switching from a disk-to-tape backup strategy to disk-to-disk-to-tape, Hubei Unicom has reduced backup time from 18 hours to 5, a 72 percent reduction.

The company also avoids the need to upgrade tape libraries and reduces the cost of tape operations, saving an additional CN¥2 million (US$321,000).

Having load balancing and fail-over options

When Hubei Unicom evaluated new backup strategies, it considered one that used EMC Data Domain technology, but that would have required deployment of a centralized 72-terabyte Data Domain Deduplication Storage System.

By deploying NetBackup instead, the company could take a decentralized approach and put a 4-terabyte NetBackup appliance in each of the three data centers instead, while saving 50 percent over the EMC solution, Mr. Guan says. Hubei Unicom also gains the ability to fail over backup workloads between the different NetBackup appliances if needed, or move workloads between them to load-balance, achieving greater flexibility.

Simplifying management

The IT team is able to use NetBackup OpsCenter from one single console to remotely manage all appliances from a central location. Three people each spend about 10 hours a week managing backup.

“Because of NetBackup, we haven’t had to add resources to the backup team in years, despite the growth of data,” Mr. Guan says. There are two OpsCenter reports that are especially valuable, he adds. One shows the backup schedule policy by node, and the other shows the backup time by node. Both help the team optimize operations and plan future resource needs.

To simplify deployment, Hubei Unicom turned to Veritas as well. “Working with Veritas Consulting Services, deployment took a month,” recalls Mr. Guan. “Without them, it would have taken three times as long.”

The company contracts with Veritas Essential Support Services to have 24×7 access to Veritas experts. “Veritas support has been helpful,” Mr. Guan reports.

As Hubei Unicom grows, the new backup solution affords first-rate service, even as it supports an expanding data store. “We hope the database never crashes again, but if it does, the new Veritas NetBackup solution will pay for itself the first time it recovers the database,” says Mr. Guan.

For more information

Contact your local Veritas Sales Representative or Business Partner, or visit our website at www.veritas.com.

Veritas World Headquarters

500 East Middlefield Road
Mountain View, CA 94043
+1 (650) 933 1000
www.veritas.com

* 85 percent deduplication × 3 petabytes of data = reduction of 2.55 petabytes × (estimated 5,000 yuan per terabyte storage value × 2.55 petabytes (or 2,611 terabytes) = CN¥13,100,000 (US$2.1 million) in storage space savings.