China Telecom calls on Cisco for Next Generation WAN Performance

China Telecom Corporation Limited (China Telecom) deploys Cisco ASR 1000 Series Aggregation Services Router as the platform to address increasingly demanding WAN aggregation and Internet edge requirements.

EXECUTIVE SUMMARY

CHINA TELECOM CORPORATION LIMITED

- Telecommunications
- Beijing, China
- Number of subscribers: 210 million fixed line, 40 million broadband

CHALLENGE

- Added millions of new customers due to corporate merger
- New 3G license expected to spur growth in new mobile subscribers and increase network traffic
- Improve customer service and front-end customer operations

SOLUTION

- Upgrade to a secure, scalable and high performance solution to consolidate number of devices application delivery optimization

BUSINESS RESULTS

- Improved network performance, capacity and availability
- Reduced energy and operational costs in addition to physical space savings
- Enhanced security with trusted firewall and threat-protected VPN technology

Introduction

With 210 million fixed line subscribers and 40 million broadband subscribers, China Telecom is the world's largest wireline telecommunications and broadband services provider. Headquartered in Beijing, China, China Telecom provides telecommunications and information services including voice, data and multimedia to consumers and small, medium and large enterprises.

China Telecom was established in September 2002 with service areas in Shanghai, Guangdong, Jiangsu and Zhejiang and now provides services to twenty-one provinces, municipalities, and autonomous regions across the country. 2008 marked a watershed year for the telco as it completed a major CDMA business acquisition and launched its mobile services operation which has successfully brought on board over 28 million additional mobile subscribers.

Business Challenge

China Telecom operates more than 2000 branch offices across China. Like many companies, branches function as customer touch points and are an important strategy to cultivate and maintain customer relationships. The branch network is a channel that allows China Telecom the valuable opportunity to up-sell or cross-sell additional services and products.

The core system that supports and enables China Telecom's front-desk customer agents is the Billing Support System (BSS). BSS comprises the following functional applications:

- Billing Information Gathering and Transport
- Billing Report Generation, Delivering and Management
- Partner/Reseller Information Management

As such, the BSS system network carries mission critical data such as billing and customer information, therefore, reliability, performance and scalability along with security are top

priorities. In its current state, there are opportunities to further improve and optimize the design and implementation of the BSS system network.

The current BSS network is utilizing an outdated 2M leased line and comprises a number of inadequate multi-vendor low end routers including previous generation Cisco routers. In addition to support and maintenance issues and the cost of managing multiple vendor hardware, the heterogeneous network environment introduces inflexibility into the network design which will, in the long term, affect China Telecom's ability to operate a business-strategic and technically-optimized network infrastructure.

Furthermore, as China Telecom acquires new subscribers from the recent CDMA business acquisition and the introduction of 3G mobile services, the BSS network will be expected to significantly deliver and handle more data in terms of volume and geographical outreach as additional customer service branches are integrated into the existing branch network infrastructure.

As part of the telco's corporate social responsibility, China Telecom, with this project, is taking proactive steps towards sustainability and energy savings. Therefore, among the key criteria in the tender was for a solution that not only addressed network capacity but to comply with reduced power consumption and energy efficiency requirements.

Solution

The BSS network infrastructure upgrade project was part of an overall larger project which comprised a multi-vendor solution for desktop PCs, servers and applications. "We were leaning towards a Cisco solution because our existing routers were Cisco and we internally had administrators who were comfortable with the Cisco platform," says Mr. Li Jun, the Project Manager. "But we wanted to carefully evaluate all the offerings to make sure that we would be getting the solution that best meets our requirements. After a thorough evaluation process, Cisco ASR 1000 was the clear winner against the competitive lineup."

The solution put forward by the team to address China Telecom's requirements for capacity growth, and robust performance recommended the deployment of multiple Cisco ASR 1002 Aggregation Services Routers to the WAN edge. This Cisco Validated Design was architected in collaboration with Cisco partner, Digital China with valuable contributions from the customer's systems engineer, Mr. Li Feng.

The Cisco ASR 1000 series routers are designed to operate under highly oversubscribed conditions bringing unprecedented performance benefits and higher bandwidth to the BSS systems in the telco's converged WAN. Positioned as an upgrade to China Telecom's existing multi-vendor routers, the Cisco ASR 1000 series routers outperform the old routers in terms of processing power by up to forty times.

In addition, the inherent 5 level quality of service (QoS) on Cisco ASR 1000 series routers will enable China Telecom to meet service-level agreements and improve the service delivery of the BSS application over the WAN.

Due to the critical nature of the BSS system, resilience and up time are major factors for consideration. The Cisco ASR 1000 Series router's support for In-Service Software Upgrades (ISSU) was a strong selling point according to Mr. Li Feng. "It was important for us to have the ability to roll out new features, services and fixes without having to take the router out of service," said Mr. Li Feng. "With the ASR 1002, we could perform a complete upgrade of the Cisco IOS-XE software image and do it quite easily with minimal to zero downtime. This effectively addresses our high availability concerns with the BSS system".

In addition, the Cisco ASA 5500 Series Firewall and ASR 1000 built-in firewall enhances security with identity controlled access while allowing the customer to deploy new applications securely. The Cisco ASA 5500 is designed to be future-ready by providing China Telecom the flexibility to integrate additional layers of protection including intrusion prevention, antivirus and anti-spam. The VPN capabilities which enforce identity-based policies to network traffic lets China Telecom extend their BSS network to partners and resellers securely.

> "The benefits of ISSU are very compelling. The old network solution didn't support this feature. So when we wanted to roll out an update or a fix, the entire BSS system had to be taken down for scheduled maintenance. With ISSU, updates and fixes can be applied in-service resulting in zero downtime and no disruptions to business."
>
> - Mr. Li Feng, Technical Lead, China Telecom Design & Institute Center

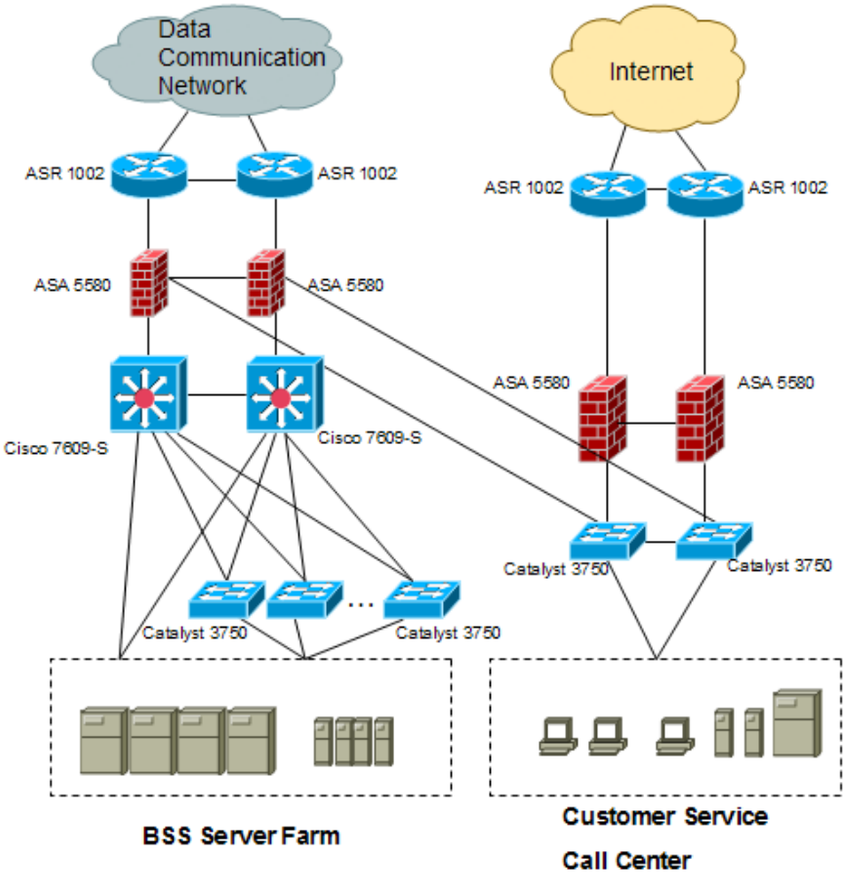
China Telecom will be replacing the majority of its current multi-vendor installed base of routers with 54 units of Cisco ASR 1002 Aggregation Services Routers; introducing more than 40 units of Cisco ASA 5550 and 5580 Series Firewalls for network separation and secure communication services as well as a number of high performance and highly available Cisco 7600 routers.

Cisco's experience and strategic vision in network infrastructure architectures combined with strong, reliable and high performance solutions were key deciding factors for China Telecom to choose a Cisco platform to build its critical BSS network."Cisco's ability to deliver, not only a total solution but a clear strategic roadmap has proven Cisco to be a valuable technology partner. This was a crucial factor that contributed to China Telecom selecting Cisco over the competition," said Mr. Li Jun.

Results

China Telecom is committed in optimizing its WAN infrastructure to support growing business demands. Project implementation started in October 2008 and was completed within 3 months.

The Cisco ASR 1000, ASA 5550 Firewall and Cisco 7600 Routers are currently in production and fully operational.



The initial roll out will cover branches in nine provinces located in northern China. “Our preliminary impressions from the systematic tests are positive, with results indicating the Cisco routers to be reliable, simple to manage and resilient,” said Mr. Li Jun.

The solution proposed by Cisco consolidates network services within a single high-performance, resilient, service-rich platform. This design attains many tangible benefits for China Telecom such as reduced rack-space and power requirements, simplified single-point management and monitoring, transparent service integration with routing and concurrent deployment of multiple high-touch services. Taken together, these advantages significantly simplify the network architecture lowering capital and operational costs while providing the agility to scale with business demands.

Furthermore, a test report conducted by Miercom found the Cisco ASR 1000 Series routers to provide 54% overall savings in operational costs and are three times more energy efficient in comparison to the industry average[1]. China Telecom can expect even greater reduction in energy and physical footprint costs as a single Cisco ASR 1000 Series router is capable of replacing many of the current individual routers.

[1] Miercom Test Report Mar 09. cisco.com/en/US/prod/collateral/routers/ps9343/asr1000_series_green.pdf

Next Steps

Mr. Li Feng says that they are evaluating the Cisco ASR platform as a standard router platform for all provinces in China. Also, China Telecom is exploring other application areas that may benefit from network optimization.

"We're definitely interested in seeing how we can extend the Cisco ASR to all provinces in China," said Mr. Li Feng. "As we look toward some of the Web 2.0 applications developed in-house around Cisco products such as IPTV, Unified Communications and WebEx, there looks to be much opportunity to optimize the performance of that application tier in our infrastructure".

PRODUCT LIST

Cisco Routers and Security Solutions:

- Cisco ASR 1002 Aggregation Services Routers
- Cisco ASA 5500 Series Firewalls
- Cisco 7600 Series Routers

For more information:

For more information on Cisco Router Solutions, visit: http://www.cisco.com/go/routers
For more details on Cisco Security Solutions, visit: http://www.cisco.com/go/security

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at **www.cisco.com/go/offices.**