One Net: Connect Everyone, Connect as One

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Huawei provides a full series of network infrastructure products and solutions such as routers, switches, Wi-Fi, WLAN, network security, optical transmission, microwave, PON, and network management. Through the collaboration between different technologies, such as network and security, wired and wireless networks, datacom and access, DCN and storage, Huawei can help enterprise customers build their network infrastructure platforms covering campus, branch offices, wide area connections, and data centers, to provide comprehensive enterprise network solutions.

One Net: Connect Everyone, Connect as One
In Fair Weather Prepare for Foul: ABC Network Reconstruction

Huawei Helps ABC Build a First Class Data Center Network

Agricultural Bank of China (ABC), China’s first state-owned commercial bank, has earned high recognition. In 2012, ABC was ranked No. 84 in Fortune’s Global 500 and No. 5 in the Banker’s "Top 1000 World Banks" list in terms of profit before tax for the year 2011. Regardless of these high rankings, ABC still needs a development strategy to deepen its bank reform and service transformation to successfully compete.

Network Upgrade Prior to Release of a New Service System

In 2012, ABC decided to optimize and reconstruct their network to provide access for three data centers, five service processing centers, more than 20,000 business outlets, and hundreds of thousands of employees, and implement the Integrated Operation Big Platform strategy. In this environment, ABC plans to launch a new-generation global core service system. A data center network is the core of the entire bank system; therefore, it gains top priority during the bank system's upgrade and reconstruction. The core service system will be released to meet service development needs over the next five years, but only when the network infrastructure meets the demands for bank reform and service transformation. ABC has established its business outlets in cities and towns all over China, with 23,472 branch outlets, including the Head Office, the Business Department of the Head Office, three specialized institutions managed by the Head Office, 37 tier-1 branches (including branches directly managed by the Head Office), 348 tier-2 branches (including business departments of branches in provinces), 3,482 tier-1 sub-branches (including business departments in municipalities, business departments of branches directly managed by the Head Office and business departments of tier-2 branches), and 19,600 other...
State-owned banks must provide not only deposit and loan services, but they also must reform, transform, and offer diversified services to meet new challenges. In fact, some competitive state-owned banks have been actively upgrading their software and hardware to increase service types and improve processing efficiency to cope with increasingly fierce competition.

establishments. ABC’s international branch outlets consist of four branches and five representative offices. ABC also has nine Chinese subsidiaries and three international subsidiaries.

ABC’s network architecture is complex, with large differences for Chinese business outlets and international institutions, and the network architecture is difficult to optimize and upgrade.

Huawei, with industry-leading products and solutions, rich network delivery experience, and a positive brand image, won the bid for ABC’s network reconstruction. Huawei plans to reconstruct ABC’s entire network architecture, covering the tier-1 backbone network and all 36 tier-1 branch data centers. Huawei plans to use only one physical network to carry production and office services, implementing network convergence. The reconstruction project is estimated to last for two years, with the entire project scheduled for completion in 2014.

Huawei Offers Strong Support for ABC’s Smooth Network Reconstruction

Presently, ABC’s data center network architecture is as follows:

- Each branch’s production network has eight zones, and the office network has five zones.
- Two separate sets of physically isolated networks carry out production and office services, with some overlapping functions.
- Firewalls are deployed between different service zones to ensure security control of service flows.

Huawei comprehensively researched ABC’s current network status and planned a structural adjustment of its data center network architecture to successfully implement network
upgrade and reconstruction. Huawei designed a network architecture based on the principle of Multiple Centers for Multiple Areas to ensure fast disaster recovery, implementing 24x7 service capability. All core devices use a redundant design, such as dual main control boards, multiple switch fabric units, and power modules, to achieve 99.999% reliability at the core nodes. The network reconstruction covers the tier-1 backbone network as well as the 36 tier-1 branch data centers.

The first aim of network reconstruction is to solve the functional overlap between the production network and the office network. Huawei plans to combine production and office network zones that provide identical functions to reduce the number of network zones from 13 to 6. Combination of network zones largely simplifies ABC’s network architecture and increases scalability. The combined network zones have higher security requirements; therefore, Huawei will deploy firewalls at the local access zones, open platform zones, and development test zones to improve security control of service flows.

The second aim is to transmit services more smoothly and securely. Huawei uses the same Local Area Network (LAN) and extranet for the production network and office network, which are connected to different Wide Area Networks (WANs).
Important core nodes support hot standby to improve network reliability. Meanwhile, Huawei deploys high-performance CE12800 switches at the core and aggregation layers to ensure non-blocking service forwarding.

The third aim is to simplify network architecture with clear hierarchy. Each zone network uses a three-layer architecture: core layer, aggregation layer, and access layer.

The project involves reconstructing ABC’s entire network. The target network combines the production network and office network by using only one physical network for both production and office services.

After network reconstruction, ABC deploys CE12800 as DC core switch, NE40E as backborn network high end router. After CE12800 switches are deployed, the core network bandwidth will be upgraded from 2.5 Gbit/s to 10 Gbit/s, which can further be smoothly upgraded to 100 Gbit/s to embrace 10G switching network era. Network bandwidth will be sufficient and accessible by three data centers, five service processing centers, more than 20,000 business outlets, and hundreds of thousands of employees. Switch loads will be 10% of their total capacity or lower. In addition, the reconstructed network will ensure a successful launch and stable operation of the new-generation core service system and service transformation, meeting ABC’s service development needs over the next five years.
Helping China UnionPay to Construct a Next-Generation Data Center Network

China UnionPay Data Center Project

Background
Established in March 2002, China UnionPay is a joint-stock financial institution operating under the approval of the State Council and the People's Bank of China. Headquartered in Shanghai, Presently unionPay has about 400 domestic and overseas associate members. China UnionPay has established and operated a nationwide inter-bank information exchange network by incorporating advanced IT technologies into a modern corporate management mechanism. This network makes it possible to use bankcards across China and in helping drive the further development of China's bankcard industry. China UnionPay is also striving to extend its service offerings beyond China and around the world.

Key Challenges
China UnionPay has experienced fast growth for many years, which sets continually higher requirements for network performance. Based on the updated analysis of its entire network architecture, China UnionPay has determined that the corporation's data center network faces the following challenges:

• Serious aging of the existing network equipments
  China UnionPay's core production network was constructed in 2004. Most backbone devices were purchased before 2004 and have been running for more than six years. These devices are aging quickly, incurring high security risks for the information center.

• Equipment performance must ensure efficient operation of business systems
  The data center network is the groundwork of service systems, and to ensure the operation efficiency of the service systems, the core switches must be upgraded to achieve better performance and access capabilities.

• System reliability must be enhanced
  China UnionPay is the only bankcard association
China UnionPay is growing at a high Compound Annual Growth Rate (CAGR), which is exponentially increasing their data center loads. To keep up with this growth, China UnionPay has chosen Huawei S9700 high-end high-performance switches to improve service quality and support the aggressive IT development required to meet future service demands. 

in China with a large number of subordinate organizations, and the data center network plays a critical role in their entire network. To ensure reliable and stable operation of these organizations, the data center network must be further optimized.

- **Business system risks must be eliminated to ensure high security**
  The data center network must be protected with more security measures to prevent unauthorized access to data center servers and to prevent interactions with external businesses.

- **Poor network compatibility limits scalability**
  All devices on the original network were from non-mainstream vendors. These devices are based on the Enhanced Interior Gateway Routing Protocol (EIGRP), a proprietary protocol that does not easily interconnect with equipments from other vendors, thus compromising network scalability and resilience.

**Solution**

Huawei had proactively engaged China UnionPay and delivered a comprehensive audit of their data center network. One result of this survey was the decision by the two parties to deploy Huawei's high-end switches on the core backup nodes. With these switches, China UnionPay has improved its production network's performance, reliability, security, and compatibility. The organization has taken a firm step toward accomplishing the goal of "comprehensively protecting business-critical systems."

The high-end switches provide a variety of compelling features, including the following:

- **High performance**
  Huawei deployed S9700 series switches in China UnionPay's data centers at the Beijing and Shanghai information centers. The S9700 series switches are high-end, TB-level core switches, designed to provide multiple services. They can provide up to 3.84 Tbit/s switching capacity (up to 5.12 Tbit/s in the future) and a maximum of 2880 Mpps forwarding capability (up to 2
5,760 Mpps in the future). In addition, the S9700 series switches support high 10GE port density, with a single switch supporting as 576 10GE ports, helping China UnionPay progress towards a 10GE era.

• Carrier-class reliability design for service continuity
The S9700 series achieves a high reliability of 99.999% by adopting redundant backup design for key components, including Main Processing Units (MPUs), power supply modules and fans. All of which are hot swappable. The S9700 switches also support In-Service Software Upgrade (ISSU) upgrades, further reducing service interruption. Additionally, the S9700 switches innovatively implement the Cluster Switch System (CSS) function through switching fabrics, an innovation that efficiently addresses the problem of low switching efficiency caused by multiple switching processes between line cards across multiple chassis. The CSS provides an industry-high 256Gbit/s bandwidth. Link usage is improved via inter-chassis link aggregation, preventing single-point failures.

• A value-added firewall board for flattened network architecture and service security
Services in the data center are often isolated using independent firewalls for different sections based on their service characteristics. The deployment of independent firewalls increases service delay, incurs service forwarding bottlenecks, and leads to more Single Point of Failures (SPOFs). The S9700 switches use an embedded centralized firewall board to achieve similar functions as independent firewalls. This board supports virtual firewalls and Network Address Translation (NAT) multi-instance functions and provides a large number of Access Control Lists (ACLs).
• Heterogeneous multi-vendor support design for enhanced network reliability, compatibility, and scalability
Huawei S9700 switches were deployed at core nodes and formed a heterogeneous, redundant backup network with original devices from other vendors, reducing network risks and improving network reliability. The S9700 switches are in strict compliance with international standards and can be easily integrated with devices from other vendors. They improve network scalability and compatibility by changing the original proprietary routing protocol to a universal routing protocol. The switches also support standard Simple Network Management Protocol (SNMP) and provide standards-compliant Management Information Bases (MIBs). These two features enable the S9700 to be seamlessly integrated with the existing network management system.

Customer Benefits
Huawei's high-end switches bring many benefits to China UnionPay, such as:
• The performance, reliability, security, compatibility, and scalability of China UnionPay's data center network are all significantly improved. These improvements have laid a solid groundwork for building a next-generation stable network and helped China UnionPay comprehensively protect business-critical systems.
• China UnionPay has increased its Return on investment (ROI), which is significant for future network developments and upgrades.
High-end Networks for Better Business

Huawei Helps Ancheng Insurance Develop the Efficient, Reliable, and Secure Data Center Network

**Background**
Ancheng Insurance, established on December 29, 2006, is China's only property insurance company that focuses on security insurance. By utilizing high-quality services, Ancheng has seen rapid development over the past seven years; growing from having only a single subsidiary to owning 113 affiliated agencies, including 14 subsidiaries, 31 level-1 branches, 55 level-2 branches, and 13 marketing services departments. Ancheng Insurance made great efforts to improve its ICT infrastructures. And these infrastructures, in return, improve the company's service quality and brand strength in the market. Zhejiang Insurance Industry Association's report shows that Ancheng Insurance is Zhejiang's best insurance company in speed of settlement claim in 2013.

**Key Challenges**
In its seven years of rapid development, Ancheng Insurance experienced massive expansion and service data explosion. The company faced the following challenges:
- **Outdated network**
The legacy network had a limited capacity that could not fully meet the Ancheng Insurance's service requirements. The company's production center had an Ethernet-based network that did not support virtualization and automatic distribution of network resources. This led to a number of problems, such as limited resource usage, difficult operation, administration, and management (OAM), as well as low flexibility and scalability.
- **High security risks**
The legacy network lacked security protection measures in Internet and third-party access areas. Users were prone to various forms of cyber attacks, viruses, and Trojan Horses, and suffered considerable security risks during network interconnection.
- **Low reliability**
To help Ancheng Insurance solve its network problems, Huawei leveraged its self-developed, innovative network information system methodology and made a systematic evaluation of the live network in the following areas: Reliability and maturity, Maintainability, Availability and scalability, Security and Advancement.

Huawei formulated a suite of solutions for Ancheng Insurance's data center service development, suitable for the next 5 to 10 years and eventually won the bid for the production center network upgrade and reconstruction project.

The core devices used in the already-in-place network have GE-level capacity, resulting in slow system access and webpage browsing. Some nodes suffered certain risks of single point of failure (SPOF). Ancheng Insurance needed to develop a new basic network for the production center to better support production and office services in the HQ. The network must support 24/4 uninterrupted operation and provide comprehensive security protection for service data.

Solution
Huawei utilizes its innovative network system methodology to analyze Ancheng Insurance's network from five aspects, namely reliability, maintenance, availability and scalability, security, and advancement. Based on the analysis results, Huawei provides a comprehensive network solution to meet Ancheng Insurance's data center service requirements in the next five to ten years. The solution has the following features:
• Efficient data transmission
  The network uses the following design to ensure data transmission speed:
  • Overall design
  Huawei uses a modular design to divide Ancheng Insurance's production center network into multiple sectors, including the MAN access, third-party access, public network access, core switching control, database service, application service, and web service sectors. This design will facilitate the company's future network expansion.
  • Flat network
  The solution develops a flat network that consists of only the core and access layers. At the core layer, the solution deploys Huawei's CE12808 data center core switch that features the industry-leading performance. At the access layer, the solution uses Huawei's S5700 next-generation energy-saving GE switch. This dedicated flat network enables fast data transmission.
• **High-end device**

CE12808's slot forwarding capacity reaches up to 2 Tbit/s, while the industry's average is 500 Mbit/s. The board supports 24 x 40GE or 96 x 10GE interfaces. A single switch has a maximum forwarding capacity of 48 Tbit/s, while the industry's average is 16 Tbit/s. The Clos network ensures non-block forwarding and supports a maximum of hundreds of Tbit/s capacity, allowing smooth expansion in the future.

• **Secure intranet**

The solution provides comprehensive security protection services that give Ancheng Insurance full confidence in its intranet security.

• In the core switching control area, the solution virtualizes a physical device into several independent logical ones. The CE12808 core switch and USG5560 core firewall support a maximum virtualization rate of 1:8. (One physical device can be virtualized into eight logical ones). The system supports a maximum of 100 logical devices. Device virtualization brings service isolation. The solution distributes database, web, and application services to different logical devices to protect system security and privacy.

• In the Internet access area, the solution deploys high-end UTM USG5150 and SVN2260 (a secure sockets layer virtual private network product) to protect the production center system from cyber attacks, viruses, and Trojan horses and allow mobile office users safely access to the network.
• In the third-party access area, the solution installs the high-end UTM USG5150 to ensure network access security.

  • **Highly reliable network**

  Huawei deploys key devices and components in redundancy to improve network reliability, preventing service interruption caused by SPOF. CE12808 uses Huawei's CSS trunking technologies to virtualize two physical core switches into a single logical one to improve system reliability. Network devices in the data center connect to the core switch in dual-link mode to ensure network stability.

**Customer Benefits**

Huawei's network solution optimizes Ancheng Insurance's production center network. The solution brings the following benefits:

• The new network features high system stability, secure network access, and fast data transmission.

• This unified and open network is highly scalable, capable of meeting Ancheng Insurance's future service requirements.

• The solution uses innovative energy-saving devices to lower the system's total power consumption and carbon emissions.
Building a Financial Artery and Information Bridge

Level-1 Backbone Network Project for the People's Bank of China

Background
The People's Bank of China (PBC) is the central bank of China, which formulates and implements monetary policies, regulates financial markets, prevents and mitigates financial risks, and maintains financial stability. The PBC has more than 30 branches throughout China, and its backbone network supports many business-critical systems. The backbone network of PBC has become the IT artery of China's financial system.

Key Challenges
Due to its direct impact on China's financial security, the PBC's backbone network must be highly reliable and secure. In addition, with PBC's business growing, new service modes, such as voice communications, remote videoconferencing, and collaborative office, brought higher requirements on the performance and scalability of network equipment running on the backbone network. PBC needed an optimized backbone network to address challenges in the following areas:

• System reliability

The original network was vulnerable to Single Points of Failure (SPOF), because it used a single-link, single-device architecture without redundancy protection.

• System security

Due to inadequate security and monitoring measures, equipment running on the original network failed to cope with ever-changing attacks, resulting in many security risks.

• Service scalability

The capacity and performance of devices running on the original network could not fully support growing business and required improvements and upgrades.

Solution
Huawei offered PBC a highly customized solution to solve existing network issues and cover network requirements for the next five to ten years. This solution defined a "dual-panel + heterogeneous support" architecture to ensure high reliability, strong security, and high scalability.
In addition, this solution adopted comprehensive security protection measures, flexibility, and scalability technologies. Several of the solution's compelling features held strong appeal for the PBC:

- "Dual-panel + heterogeneous support" architecture to improve data network reliability
  Since the devices running on the original network were old and with low performance, Huawei defined the legacy data network as the secondary plane and newly deployed Huawei data network as the primary plane. These two planes provided backup for each other, which significantly increased the reliability of network services. In addition, Huawei devices and the original devices from other vendors backed each other up at the same node, forming a heterogeneous architecture. This architecture alleviated impact caused by faults in any vendor's device, improving network reliability. In addition to the network-level reliability features, Huawei used comprehensive equipment level and link-level reliability technologies in the solution. For example, reliable equipment design and redundancy back-up for key hardware components ensure equipment-level reliability, while Bidirectional Forwarding Detection (BFD) and Fast ReRoute (FRR) guarantee link-level reliability, with end-to-end 200 ms protection switching. These technologies lay a solid foundation for the stable operation of PBC's backbone network.

- Comprehensive security measures to protect the system from network attacks
  The finance industry has innate security requirements for services, applications, systems, and networks. The old equipment running on the PBC's original network had inadequate security features, which brought high security risks to the backbone network. Huawei’s equipment incorporates Symantec security technologies and employs an anti-attack architecture. In addition, Huawei's equipment adopts ARP/TCP attack defense, application layer linkage prevention, and dynamic link protection technologies – all of which ensure that the devices are highly secure and free from attacks. At each core node, Huawei also deployed a NetStream board that helps monitoring key service streams. This board implements traffic monitoring and analysis and generates reports in real time for each type of service streams.

- Scalable architecture that can dynamically adjust to changing capacity demands
  One of the most obvious characteristics of finance industry is that banks have a large number of branches, and the number still increases due to business growth. Furthermore, the constantly arising new services bring additional challenges to network bandwidth and architecture. Huawei's solution adopted a modular and scalable architecture. NE40E, Huawei's flagship product for WAN backbone networks, functions as a 400 Gbit/s platform, and its slot bandwidth can upgrade from 40 Gbit/s to 400 Gbit/s. This super-large capacity ensures future system scalability. Additionally, all service boards support the flexible use of various sub boards, protecting the customer's previous investments and making the system easier to deploy and maintain.

Customer Benefits

Huawei's solution brings PBC many benefits, including:

- Enhance network reliability and ensure years of smooth service operation
  Huawei provides steady and secure communication infrastructure which helps PBC better fulfill its responsibilities of preventing and mitigating financial risks.

- Significantly improve the network security
  PBC can monitor and analyze network traffic in real time to understand detailed information about services running on the backbone network. This approach significantly increases network security and safeguards national financial security.

- Dramatically improve the operation and maintenance (O&M)
  The scalable architecture solution enables flexible configuration and ondemand network expansion. New services are easy to deploy, and the architecture is simple to adjust.
Brazilian ATM Operator Upgrades Remote Connections with Huawei Solution

Huawei Unified Security Gateway (USG2110) Guarantees Secure ATM Connections for Bank Customers

**Background**

Brazil’s Tecnologia Bancária S.A (TecBan) offers self-service banking to customers of a large number of banks. With more than 45,000 Automatic Teller Machines (ATMs) throughout Brazil, TecBan has more ATMs than any other provider. Although TecBan is renowned for its high levels of availability, quality, and security, the company saw the need to cost-effectively upgrade the inter-connections of its massive network of ATMs, especially those in remote sites.

**Key Challenges**

All TecBan ATMs are connected to the headquarters data center and cash dispensed via the Internet. This can pose security and reliability challenges. Unified
Banks faced challenges of remote ATM interconnection for integration, multiple connections, security and high reliability. Huawei provided an industry-leading solution with the Unified Security Gateway USG2110 to meet the requirements for TecBan.

Security Gateways (USGs) enable ATM connections and address the following issues:

- **Secure transmission** – The ability to handle IPsec and MPLS VPNs, and SSH and HTTPS security protocols.
- **Multiple connections** – Interfaces necessary to handle Ethernet\ADSL\3G\Wi-Fi connections.
- **High availability** – Guarantee that a VPN tunnel stays up even if one of the WAN links fails. The 3G links (or one 3G link and an ADSL link) should work as backups to provide high availability. Highly stable embedded 3G modules are preferred.
- **Comprehensive management** – Provide event logs for connections and VPN tunnels, plus statistics from SNMP and command lines, including connection up-time and the last time the USG shut down.
- **Compact, with low power consumption** – Compact enough to be installed inside an ATM, which has very limited space. Power consumption should be low to save energy and reduce heat.
- **Cost effective** – Capital Expenditure (CAPEX) should be low even with high-volume deployment.

**Solution**

Huawei offered a market-proven solution:

- Installed a USG2110 in each ATM.
- Deployed ADSLs as the primary links, with 3G wireless modules as backups. If an ADSL link failed, it would automatically fail-over to a 3G link. When the ADSL was fixed, it would automatically come back on-line and take over from the 3G module. In places unreachable by ADSL, 3G access was used.
- Provided two built-in 3G modules for each USG2110 for added reliability. Most other vendors simply plug in a USB 3G card, which is not as stable as a 3G module. In addition, it is difficult to attach an antenna extension cable to a USB card.

**Customer Benefits**

The USG2110 provide the following benefits:

- Build VPN tunnels between an ATM and the firewall in the data center. All information transmitted is encrypted and ensures excellent network security protection for the ATM.
- A Small Office/Home Office (SOHO) gateway, is small enough to be installed inside an ATM, yet powerful enough to use Huawei’s VRP carrier-grade software platform. VRP is based on a fully distributed architecture that ensures performance, scalability, reliability, and carrier-class management and maintenance.
- Reduce expenses with low power consumption (< 18 W).
- The Huawei gateway’s outstanding VPN, firewall, and routing features enable TecBan to build a fast, efficient, and secure network for remote access to ATMs.
Custom Solution Ensures Security of Bank Data Center

Anti-DDoS System of China Everbright Bank

Background
China Everbright Bank (CEB) is headquartered in Beijing. By the end of 2012, CEB serves customers in 60 major cities in 25 provinces, municipalities, and autonomous regions with over 600 branches and banking outlets. CEB is now a nationwide joint-stock commercial bank with profound social influence. CBE wants to transform into a top-rated listed bank, and a secure data center is crucial to that goal.

Key Challenges
CEB realized that its data center must be more efficient in supporting backend services, sharing information, and providing 24/7 support for services such as banking, telephone, self-service, enterprise, and mobile banking. Among CEB's challenges, one of the most important was whether the data center was capable of providing uninterrupted availability, even when faced with a Distributed Denial of Service (DDoS) attack.

- DDoS attacks
A DDoS attack is a common network attack that can cause severe damage. Under the DDoS attack, a data center may be overwhelmed by a large number of malicious service requests, preventing it from responding promptly to legitimate service requests.

- Quicker response and defense needed
CEB understood that traditional anti-DDoS network gateways need a few minutes to detect DDoS attacks and start defending against them. The delay of DDoS detection directly affected the financial services controlled by the data center and undermined the bank's reputation. CEB looked for a new anti-DDoS solution that provided quicker response and defense against DDoS attacks.

- Simple, reliable anti-DDoS defense system
An anti-DDoS system is usually deployed at a network's egress. CEB wanted an advanced data center with highly secure network access backed by an anti-DDoS system. This DDoS system would require high stability and self-defense capabilities, yet not negatively affect the existing network.
Aiming at the bottleneck of China Everbright Bank (CEB) data center, Huawei provided a tailor-made anti-DDoS solution at the management plane, detection and cleaning centers, which improved bandwidth utilization and mitigated risks to network stability, resulting in continuous service and higher customers' satisfaction.

Solution

After analyzing CEB's service demands and existing data center conditions, Huawei offered an anti-DDoS solution (USG 5300) that would help improve the bank's competitive edge. This solution defended against DDoS attacks from the Internet and ensured that the data center provided uninterrupted support to CEB's banking services. Huawei's solution protected CEB's data center from DDoS attacks at the management plane and at the detection and cleaning centers. This solution had a variety of compelling features:

- **Quick response for fast and accurate defense**
  This solution mitigated traffic model self-learning and packet-by-packet deep inspection technology to ensure quick and accurate responses. Once abnormal traffic or packets were detected, the defense mechanism was activated within two seconds. In addition, Huawei's Abnormal Traffic Inspection and Control (ATIC) system promoted the defense performance of the whole system and effectively guaranteed the network security of CEB's data center. The ATIC system implemented layer-by-layer filtering in seven aspects: IP address reputation, transport layer, application layer, signature identification, session defense, cyber behavior, and traffic shaping.

- **Separation between detection and cleaning centers for improved efficiency and reliability**
  The detection and cleaning centers were deployed separately. If the cleaning center failed, the detection center ran properly and continued generating detection reports and alarm notifications in real time. This approach helped CEB learn about every attack to its network.

- **Flexible management and high scalability**
  Huawei's anti-DDoS solution had three defense modes: detection without cleaning, automatic detection and cleaning, and manual interactive defense. The flexible use of these three modes fulfilled CEB's requirements for mitigating risks and increasing availability when new services go live.

Customer Benefits

Huawei's anti-DDoS solution brings many benefits to CEB:

- **Improve bandwidth utilization**
  With Huawei's solution, CEB sees "zero" network security incidents triggered by DDoS attacks on its data center's online services. In addition, invalid traffic is stopped from consuming bandwidth and server resources, which helps increase CEB's economic benefits.

- **Mitigate risks to network stability and service continuity**
  Huawei's anti-DDoS equipment was deployed in bypass mode. This approach do not change the existing network architecture and incur no network cutover risks or single point of failure, thereby ensuring service continuity while reducing implementation and operating costs.

- **Increase customer satisfaction**
  Huawei's anti-DDoS solution helps CEB create a sturdy network environment. This network environment provides customers better experience with CEB's online services like online banking and online services checking, so on and so forth, thereby increasing customer satisfaction and enhancing customer loyalty.
With the development of cloud computing, Huawei offers customers storage, servers, cloud computing and data centers, and ICT products and solutions. Huawei also cooperates with more than 400 partners such as Intel, SAP, and CA, to provide IT industry solutions. These solutions enable customers to build advanced, efficient IT platforms which help them adapt to changes in enterprise business.

Make IT Simple,
Make Business Agile
Make IT Simple, Make Business Agile
CCB Works with Huawei to Develop an Efficient and Scalable ECM System

Background
China Construction Bank (CCB) is one of China's five major commercial banks. CCB now has affiliated agencies in Hong Kong, Taiwan, and Melbourne, and owns multiple international financial institutions, such as China Construction Bank (Asia), CCB Financial Leasing Corporation Limited, and CCB International. CCB ranked No.2 in 2014 Forbes Global 2000. By the end of June 2013, CCB ranked No.5 among the world's listed banks with an aggregate market value of US$ 176.7 billion. Currently, CCB manages a total of US$12 trillion assets.

Key Challenges
CCB's legacy enterprise content management (ECM) system used web pages to archive, obtain, modify, and delete contents. Every day, CCB uses the ECM system to record 20 million transactions processed in the headquarters and 38 branches spread all over China. The transaction data was stored in online and near-line modes. By the end of June 2013, CCB's ECM system managed a total of 1850 TB online and 1700 TB near-line data. The ECM system usually stores data in online mode for 3 years and then archives the data in DVDs for long-term storage. Rapid service expansion led to explosive data growth. Therefore the legacy storage system could no longer meet today's service requirements due to the following shortcomings:
• Writing speed: CCB generates massive transaction data every day. Writing data on DVDs was a time consuming process.
• Query efficiency: CCB now has 10 billion transaction records, and this number will increase to 40 million in the next few years. Users could not efficiently retrieve and query data when these records were stored in DVDs.
• Storage capacity: CCB must store its transaction data for 15 years, which will take a total of 60 PB storage space. The legacy storage mode did not support data storage of such scale.

Solution
• CCB plans to upgrade its data archiving mode with network attached storage (NAS) to improve data query efficiency. NAS allows the long-term storage of massive transaction records. After a meticulous study on mainstream industry products, CCB selects one Chinese vendor and two non-Chinese vendors for further comparison, and then
"Huawei's OceanStor 9000 uses the industry-leading scale-out distributed architecture to provide optimal reliability, scalability, performance, and maintainability. The system supports concurrent access of multiple nodes, offering storage services that feature high bandwidth, low latency, and sound concurrent processing capabilities, meeting CCB's service requirements."

- CCB

singles out the best one. The study process consists of the following two parts:

- Desktop assessment: CCB listed storage technical specifications based on its service requirements and invited NAS vendors to join the bidding. These vendors provided solutions based on their technical strengths and functions. And CCB assessed these solutions by content, matching degree, and vendor capability.
- Product test: Based on its service requirements and future development plans, CCB designed test cases that cover reliability, scalability, product performance, software features, and system O&M. Eventually, Huawei's OceanStor 9000 big data storage products won CCB's favor and entered the short list.

In the follow-up negotiation, Huawei utilized its nation-wide service capabilities, comprehensive technical support, and optimal cost-effectiveness to win the project. CCB decided to use Huawei OceanStor 9000 with 4PB capacity to install the DVD near-line storage in its ECM system, providing storage services for unstructured data, such as check images.

The solution has the following features:
- 38 sets of OceanStor 9000 in 4 service regions for data storage and archiving.
- Configuration of N+M redundancy, ensuring data reliability

Customer Benefits

CCB chose Huawei to develop the efficient and flexible content management system. Huawei customized the OceanStor storage solution that provided the following customer benefits:

- Efficient data retrieval and query: The solution uses NAS, instead of DVDs, for data archiving. This allows CCB to directly manage tens of billions of files, significantly improving data retrieval and query efficiency.
- Simplified management: The solution adopts the single file system and the unified device management system to simplify system operation.
- Future-proof design: OceanStor 9000 utilizes the distributed architecture that features high scalability and linear expansion based on service requirements. This meets CCB's requirements on 15-year data storage.

*CCB's engineers gave high appraisal:* "Huawei's OceanStor 9000 uses the industry-leading scale-out distributed architecture to provide optimal reliability, scalability, performance, and maintainability. The system supports concurrent access of multiple nodes, offering storage services that feature high bandwidth, low latency, and sound concurrent processing capabilities, meeting CCB's service requirements."

CCB plans to develop four data storage regions in its HQ and synchronize data stored in its affiliated agencies to these storage regions. This will enhance the relationship between CCB's HQ and branches and improve CCB's data management efficiency. Huawei will work hand in hand with CCB to develop a more intelligent and efficient ECM system.
ABC Cooperates with Huawei to Develop an Efficient, Cost-Effective Image Storage System

Background
Agricultural Bank of China (ABC) is China's first state-owned commercial bank. The bank now provides high-quality services for 350 million individual customers (including 14 million VIPs) and 2.6 million enterprise customers. ABC has 23,461 branches, including its HQ, 32 level-1 branches, 5 tier-one branches, 316 level-2 branches, 3479 level-3 branches, 19573 basic-level outlets, and 55 other organizations.

Key Challenges
As a listed bank, ABC uses innovative technologies to lead service development and to gain competitive edges. However, ABC faced the following challenges during its service expansion:
• Massive data

ABC’s service operation involves a number of certificates, checks, reports, and archives, generating about 200 GB data every day. ABC needed to optimize its content management policies to improve data management efficiency.
• Difficult expansion
ABC’s global branches generate massive unstructured data, such as audio, video, images, and emails. In ABC’s legacy storage area network (SAN), the space of a single file system was usually less than 2 TB, and that of a single storage system was usually no more than 100 TB. This brought performance bottlenecks to the system.
• High investment costs
The legacy storage system did not support data sharing, disabling cross-system collaboration. To meet service requirements, ABC had no choice but to procure new devices, bringing additional investment costs. ABC needed a high-performance, cost-effective network attached storage (NAS) system to meet data storage requirements.
"We have thoroughly studied Huawei’s storage devices and put them into trial use for a year. The result shows that Huawei’s N8500 can fully meet our image storage requirements. Different from traditional NAS system, N8500 uses dedicated engine that supports concurrent service processing, significantly boosting the system’s read and write performance. The system has flexible architecture, a variety of storage unit types, and optimal configuration solutions for diverse services, which can help us reduce the project’s overall investment costs."

- ABC

Solution
Based on ABC’s service requirements, Huawei deployed over 40 sets of N8500 devices in ABC’s HQ, branches, and data centers including:
• One set of 380 TB enterprise-grade NAS server in 7 branches (including the Shanghai branch) for image storage
• One set of 280 TB enterprise-grade NAS server in 29 branches (including the Beijing branch) for image storage
• Three sets of 120 TB enterprise-grade NAS server in Beijing data center for project development, device upgrade, test center construction, and resource pool expansion
• Four sets of 80 TB enterprise-grade NAS server in Shanghai data center for project development, resource pool expansion, and architecture adjustment

Customer Benefits
ABC closely cooperated with Huawei to deploy NAS systems across its branches spread all over China. One set of NAS system can store up to 1 billion files, meeting ABC’s requirements on data storage. Additionally, Huawei’s service team provides optimal configuration, delivery, and support services, allowing quick service deployment and ensuring stable system operation.

An engineer from ABC’s IT department said, "We have thoroughly studied Huawei’s storage devices and put them into trial use for a year. The result shows that Huawei’s N8500 can fully meet our image storage requirements. Different from traditional NAS system, N8500 uses dedicated engine that supports concurrent service processing, significantly boosting the system’s read and write performance. The system has flexible architecture, a variety of storage unit types, and optimal configuration solutions for diverse services, which can help us reduce the project’s overall investment costs."

Another engineer gave the following comment on Huawei’s N8500 storage system:

"Huawei’s N8500 storage system has a well-designed architecture and optimal capability of managing massive un-structured data. The unified storage function allows data index storage, reducing device procurement costs. Huawei has customization capabilities, quick service response, localization services, and reliable technical support. These are factors that we value."

ABC will develop more intelligent and efficient ICT systems to further promote service development. Huawei will enhance its cooperation with ABC to develop more financial IT systems, facilitating ABC’s ICT-based development.
Infocast Builds an Efficient Securities Trading Cloud Platform with Huawei FusionCube

**Background**
Infocast is a leading solutions provider for the securities industry. It is the first and the only to provide one-stop financial trading and settlement services in Hong Kong and has a proven track record for major banks and brokerage firms.

**Key Challenges**
Infocast connects to Hong Kong Stock Exchange (HKEx) and provides real-time financial trading and settlement services for over 10 commercial banks and 300 brokerage firms in Hong Kong. In September 2013, HKEx unveiled the Orion Market Data Platform (OMD) offering a new suite of datafeed products for HKEx securities and derivatives markets. Accordingly, Infocast released the iInvestor real-time stock quote system to simplify trading and settlement operations, allowing the access of smartphones and tablets.

In this context, Infocast required a securities trading platform to bear the iInvestor software and Input/Output Management System (IOMS) database as well as to provide reliable and efficient real-time trading and settlement services for customers.

The new securities trading platform must meet the following requirements:
- **High performance**
  The platform must provide high performance to ensure real-time smooth processing of massive data.
- **High reliability**
  The platform must deliver high reliability to meet zero-failure requirements.
- **High integration and simplified O&M**
  The platform must offer a high integration capability to reduce the equipment footprint and simplify operation and maintenance (O&M).

**Solution**
In response, Huawei proposed the all-in-one FusionCube cloud platform.
- **All-in-one cloud platform**
  The FusionCube is an all-in-one cloud platform that
"We favor the features of Huawei FusionCube: unified management, software-defined storage, and high-density design. We are also impressed by Huawei's professional services and quick response. We have regarded Huawei as our strategic partner in the ICT sector and recommended Huawei FusionCube to our friends."

- Infocast >>

smoothly integrates computing, storage, network, and management modules. The FusionCube allows Infocast to deploy the applications, middleware, and database on a single platform.

- Pre-integration, one-stop delivery, and simplified O&M

In addition to the cloud operating system, the FusionCube also pre-integrates blade servers, distributed storage devices, and switches into its 12 U cabinet. The FusionCube can be delivered in one-stop mode, allowing users to build a robust private cloud within hours.

Users can centrally maintain computing, storage, network, and management modules on a platform, dramatically reducing maintenance workloads and allowing users to focus on their core businesses.

- High performance and reliability

The FusionCube uses the distributed storage software to virtualize storage resources, improving parallel processing performance. It enables linear resource expansion, maximizing platform performance.

The FusionCube also uses redundancy design to enhance platform reliability.

Customer Benefits

Huawei's FusionCube solution has brought the following benefits to the customer:

- High performance

The FusionCube has made performance optimizations for various software and hardware, improving parallel processing performance.

- High reliability

The FusionCube uses the redundancy design to meet "zero-failure" requirements and deliver high reliability.

- Maximized resource utilization and reduced OPEX

The all-in-one platform smoothly integrates computing, storage, network, and management modules, maximizing resource utilization and reducing the operating expense (OPEX) by about 30%.

- High scalability

The FusionCube provides high scalability to accommodate future business growth.

- Quick service deployment

The FusionCube pre-integrates a variety of software and hardware to accelerate service deployment, helping the customer gain an edge over its competitors.
Huawei Dorado Helps CSS Insurance Achieve Sustainable Growth

Background
CSS Insurance is an insurance company of long-standing tradition, headquartered in Lucerne, Switzerland. Established in 1899, CSS Insurance is the second largest medical insurance company in Switzerland. With over 120 agencies throughout the country, CSS Insurance had a premium volume of 5.1 billion francs in 2012. To date, CSS Insurance has 1.73 million individual clients and 18,850 corporate clients.

Key Challenges
Data centralization is common in the finance and insurance industry. Insurance companies tend to centrally store service data, such as customer profiles, insurance, premiums, and claims, in company-controlled data centers for unified management and application support. This helps companies improve operational efficiency, reduce business risks, ensure service quality, and reduce IT investment costs. Apart from many compelling benefits, data centralization has also brought a number of technical challenges in data center construction, such as data disaster recovery, information security, and response speed — which has recently become a major concern for Chief Information Officers (CIOs) in insurance companies due to its direct impact on operational efficiency and customer satisfaction. For insurance companies who rely on database applications, improving the Input/Output Operations Per Second (IOPS) for storage devices is a major area of focus. CSS Insurance understands the significance and benefits of responsive data processing for corporate operations, so they focus on technical innovation and improvement of IT systems. The company has two production data centers in Lucerne. In 2009, to improve the responsiveness of key database applications, they deployed a full Solid-State Drive (SSD) storage system to provide high-speed storage services for its core business systems.

The SSD storage system played a significant role in relieving access pressure and improving customer satisfaction, but after years of continuous business growth, the SSD storage system faced the following challenges.

• Performance bottleneck
“Huawei’s Dorado2100 G2 is comparable in performance with the devices from the second vendor. In scalability, however, the Dorado2100 G2 allows CSS Insurance to smoothly expand system capacity by simply adding enclosures without purchasing new devices. This flexibility ideally meets our requirements for capacity expansion.”
— Michael Tschuck, CSS Insurance Data Center Director

The growing customer base meant that CSS Insurance data centers had to handle a massive number of service requests each day. In the second half of 2012, employees, brokers, and customers started to complain about slow access to the system during peak hours.

The main cause was that the SSD storage system supporting the core business systems encountered an IOPS performance bottleneck: The IOPS performance (maximum 150,000) could not respond to access requests during busy times. According to an estimate from the IT department, the SSD storage system needed an IOPS of up to 300,000 to meet business needs for the next three to five years.

• **Capacity bottleneck**

The amount of data requiring high-speed storage increased with the number of customers. In CSS Insurance’s largest production data center, for example, the data volume was only 2 TB in 2009 but had exceeded 5 TB by the first half of 2013. The amount of data increased not only because of more customers but also because of new insurance products.

The existing SSD storage system had a designed maximum capacity of 5 TB, which had been reached after several expansions. As a result, purchasing a new SSD storage system was required. The IT department predicted that the maximum storage capacity of the new SSD system must be greater than 10 TB to meet business requirements.

• **Reliability pressure**

As the existing SSD storage system aged, it suffered the deterioration of two reliability indicators: Annualized Return Rate (ARR) and Annualized Failure Rate (AFR), causing increased operation and maintenance costs and threatening the stable operation of key applications.

Facing the preceding challenges, Mr. Michael Tschuck, Data Center Director of CSS Insurance, said, “Purchasing a new SSD storage system was inevitable. The question was whether we kept the existing devices. After thorough discussions about possible solutions with the integrator, Infoniqa, we decided to deploy a new SSD storage system and replace all existing devices.”
Solution
At the very beginning, Infoniqa recommended SSD devices from two vendors, not including Huawei. The SSD devices from these two vendors, however, behaved unsatisfactorily in a trial that involved long-time stress and function tests.

"The devices from one vendor did not pass the stress test, because the access delay remarkably increased when the IOPS exceeded 300,000. We phased out this vendor, for it did not meet our requirements," Mr. Tschuck explained. "The devices from the other vendor passed the stress test, but its scalability was far from satisfactory. We would have to expand capacity by purchasing extra devices, which would result in additional investment costs."

Because of this, CSS Insurance started to consider solutions from other vendors. Huawei released its second-generation SSD product, Dorado2100 G2, at the end of 2012, which attracted Infoniqa's attention. The Dorado2100 G2 uses a proven full-SSD architecture to deliver a superb performance of up to 600,000 IOPS and support a storage capacity of up to 40 TB by adding enclosures, meeting CSS Insurance's requirements. As a result, Infoniqa recommended Huawei's Dorado2100 G2 to CSS Insurance.

After almost two months of stress and function tests, Huawei's Dorado2100 G2 was chosen based on its superb and reliable performance, storage capacity, and flexible scalability.

Mr. Tschuck explained: "Huawei's Dorado2100 G2 is comparable in performance with the devices from the second vendor. In scalability, however, the Dorado2100 G2 allows
CSS Insurance to smoothly expand system capacity by simply adding enclosures without purchasing new devices. This flexibility ideally meets our requirements for capacity expansion.*

CSS Insurance deployed three sets of Dorado2100 G2s (with an initial capacity of 10 TB for each set) to update its SSD storage system:

- One Dorado2100 G2 was deployed for each production data center to support production services and replace two existing SSD devices.
- One Dorado2100 G2 was deployed to implement function tests for new services.

**Customer Benefits**

In September 2013, CSS Insurance began officially operating Huawei’s Dorado2100 G2, which helped the company solve its problems with data acceleration.

The Dorado2100 G2 supports a maximum of four enclosures, using enterprise Multi-Level Cell (eMLC) technology SSD disks to achieve an IOPS of up to 150,000 for a single enclosure. Increasing enclosures provides a nearly linear increase in IOPS without affecting access speeds. A single Dorado2100 G2 offers a storage capacity of up to 10 TB.

Thanks to these performance and capacity advantages, the Dorado2100 G2 has relieved access pressure, enhanced operational efficiency, and improved customer satisfaction. The Dorado2100 G2 also ensures cost effectiveness by using an architecture design that allows CSS Insurance to economically configure immediate and future storage capacities, maximizing its short-term and long-term Return on Investment (ROI).
Huawei's MicroDC Solution Helps Bank of China Expand into Portuguese Market

Background
The Bank of China is one of the most internationalized and diversified banks, BOC provides comprehensive financial services to clients among more than 36 countries around the world, BOC are looking for a way to quickly and efficiently build an ICT system which effective supports business development in the process of business rapid expansion.

With the further development of European business, Bank of China decides to quickly build Europe fifth branches, the first branch in Lisbon in Portugal, and search for a solution of rapid deployment of the ICT system for the new branch.

Key Challenges
As the first BOC branch in Portugal, it plays a significant role in enhancing BOC’s presence in the country, so, a high-performance IT system was needed to ensure the efficient operation of banking services.

The Lisbon Branch also needed to be open for businesses within the shortest-possible time. Therefore, it built an end-to-end ICT system with IT devices, network, Office Automation (OA), and videoconferencing systems as quickly as possible. Moreover, it is known throughout the industry that such an end-to-end ICT system involves a broad variety of devices, requires complicated deployment, and poses stringent system performance requirements. It usually takes four to six months to complete such a comprehensive ICT system, which is another extremely unfavorable challenge for the branch to quickly open for businesses.

In addition the traditional method of procurement and disbursement involves multiple vendors whose products may comply with different design, management, and maintenance standards. This greatly complicates deployment, delivery, management, and maintenance.

The above mentioned challenges have continuously bothered the branch executives since the very beginning of the plan to establish this branch.
Huawei's MicroDC solution—standards-compliant integrated ICT solution—helped Bank of China (BOC) Lisbon Branch establish a high-performance data center in a short deployment period and with the minimum in labor costs. This solution provided efficient and stable business operation and accelerated BOC's market expansion in Portugal.

Solution
After detailed research into the customer and service requirements, Huawei offered a MicroDC solution designed for branch build-outs. Huawei’s MicroDC solution was developed to build highly scalable integrated micro data centers for quick deployment and simple maintenance. All ICT devices requested for a branch IT operation, including the equipment room, server, storage, router, switch, power distribution and supply, and enterprise communication, that enables the branch to have one-stop ICT device deployment.

- **Deployment efficiency**
  All ICT devices are premade and pre-integrated before installation to enable immediate connection and operation of the MicroDC, reducing the deployment time from three to six months to less than one month.

- **High performance**
  Multiple Spanning Tree Protocol (MSTP) and redundancy backup are used for high stability, availability, and security.

- **Unified management makes maintenance operation easy**
  Unify management covers the internal cabinet power supply, DC environment, network and servers, support remote monitoring and configuration, greatly improves the operation efficiency, simplify maintenance work.

- **Data center facilities improvement services**
  Huawei offers data center facilities improvement services to neatly arrange labels, cables, and spacious surroundings, which provides a user-friendly, elegant appearance in the equipment room and permits engineers/technicians to conduct routine maintenance checks more easier.

- **Expert end-to-end services**
  Huawei delivers end-to-end services, from consulting, planning, design, and delivery, to maintenance and assures customers with customer-centric quality services throughout the data center life cycle.

Customer benefits
Huawei successfully helped the Lisbon Branch implement, test, commission, and accept an entire set of ICT devices. The MicroDC came online on time and supported the stable efficient operation of branch businesses. This standardized solution design greatly shortens the deployment period and saves both procurement time and labor resources. Huawei's industry-leading products comprehensively address the business operating requirements of the branch, which will fuel Lisbon Branch's market expansion in Portugal. Huawei's dedicated after-sales teams conducted on-site and remote fault locating and rectified faults occurring on the live network. Therefore, the customer did not need to employ additional maintenance personnel and could concentrate on business-critical service development. In addition, since all the devices run on the customer's live network are Huawei's products, Huawei ensures high maintenance efficiency.

The chief of the Lisbon praised Huawei's professional services at the end of the project. In a letter of thanks he said, "Huawei's project teams have done a great job and helped us deal with varied tough tasks. Their relentless efforts ensured the great success of the project and also helped us establish a good partnership with Huawei. I look forward to working together again with Huawei."
Huawei’s five core products – unified communications, contact centers, converged conference, telepresence, and video surveillance – provide solutions that free industrial customers from geographical and space limitations and help to build unified and efficient teams. Familiar applications include remote education, banking, offices, consultation, court sessions, and transportation monitoring.

Bringing Multi-modal Enterprise Collaboration to Your Fingertips
Providing Unified Communications Services for ICBC

Background
Industrial and Commercial Bank of China (ICBC), founded in 1984, is the largest bank by assets in China. With 400,000 employees, 20,000 of whom are IT-associated personnel, ICBC provides services in 13,000 branches in China and numerous branches located in over 30 countries and regions globally. The application cases and development mode of the ICBC IT system have far-reaching influence in the industry. The ICBC unified communication (UC) system is regarded as the benchmark for the development of UC systems in Chinese banking.

Key Challenges
ICBC started to reform its loan approval service in 2011, optimizing the internal management mode and service process and switching service from local operation models to centralized management models. The new loan approval service process needs improvement in communication efficiency between centralized loan approval personnel and dispersed credit officers, and requires technical support for post-event analysis services. The legacy IT system for ICBC cannot meet these requirements due to the following disadvantages:

- Disparate communications systems
  Due to outdated technologies, the legacy communications systems, such as videoconferencing, contact center, instant messaging, and voice communications systems, work independently from each other. ICBC demands a comprehensive UC solution to integrate these systems and provide unified messaging, voice communication, videoconferencing, and file sharing services.

- Inefficient global communication
  The Bank’s rapid globalization has posed great challenges to legacy communications systems that cannot cope with the requirements of high-efficiency communication worldwide.

Solution
Huawei provided eSpace UC solution for ICBC. By deploying core platforms in ICBC’s northern and southern data centers and voice access gateways in all branches and affiliated agencies, Huawei enables voice, video, instant messaging, status display, and conferencing services for all clients. The solution offers highly efficient communication methods to support centralized loan approval services, records voice...
communication and text chat data to enable post-event analysis, improves the bank's risk and compliance rules and deploys voice access gateways.

The Huawei eSpace UC solution provided outstanding performance during competitive testing and won ICBC's approval with the following advantages:

- **Advanced design**
  The solution uses cutting-edge designs to meet current and future requirements of customers.

- **High compatibility**
  The solution seamlessly integrates with ICBC’s legacy communications systems.

- **Customized services**
  Huawei provides customized services to meet ICBC’s requirements for managing address books, user rights, and service monitoring.

**Customer Benefits**

- **Provides efficient communication and collaboration methods for centralized loan approval services**
  The solution provides integrated voice, video, instant messaging, file transfer, and conferencing services for ICBC, which meets their communications requirements and ensures a smooth loan approval process.

- **Integrates with legacy communications systems to improve work efficiency**
  Integration with existing communications systems provides optimized unified communications services. For example, integration with the contact center system allows agents to provide advanced services to customers. In addition, integration with the videoconferencing system enables employees to join a video conference from meeting rooms, PCs, and tablets.

- **Reduces communications costs**
  The solution uses IP-based communications services to replace PSTN-based communications methods, which lowers communications costs.
Innovation Making Change for Future Banking

Shenzhen Branch of Bank of China VTM Official Commercial

Background
In 1912, found of the Republic of China, build up Bank of China (BOC) and BoC has more than 100 years history. In the end of 2011, Bank of China has a total of 10,951 domestic and foreign institutions, among them, 10365 institutions in the Chinese mainland, and 586 institutions in Hong Kong, Macau, Taiwan and other countries. In the commercial bank part of China mainland, BOC has 37 primal branches, 296 secondary branches and 9,891 grassroots branches.

Key Challenges
In recent years, branch transformation is mainstream trend for traditional branch. Due to service cost of low value of transaction service is very expensive. Banking try to migrate these services into e-Channel such as internet banking, mobile banking and etc. but there are still lots of issue list below:

- Inherent behavioral habits
  Lots of consumers still want to go to branch to process service with agents via face to face which make them feel reliability.

- 5*8 limitation
  The service time of traditional branch is only 5*8, and lots of office worker cannot go to branch so that they have lots of complain.

- Inability to concentrate resources, service costs are expensive
  There are lots of agents distributed in different branches which cost very expensive and these services cannot provide addition profits for banking.

Solution
To meet banking requirements, Huawei provided innovative solution: VTM (Virtual Teller Machine)
This project is the first time innovation application for banking. Huawei provides a integration solution with IPCC, multimedia, collaboration, innovation self-design terminal and etc. With this innovation solution, Huawei helps BOC Shenzhen Branch replace traditional transaction service with VTM, help banking release more human resource for more value-added service. In additional, more and more consumers recognized VTM and like self-service on VTM.

with the following features:

• **HD Video Tech**
  Huawei solution integrated HD video tech which make video communication between end user with agent in background which meet consumer face to face communication requirements and also unified traditional counter agents.

• **Collaboration Tech**
  The agents in background can help and guide end user finish service process.

• **Intelligent Route Tech**
  In Huawei solution, Huawei use intelligent route tech in IPCC to realize dynamic assign agent resource for VTM and front-end user. This is different with other vender due to they can only support 1 to 1 service model which cannot save agent resource. With Huawei innovation VTM solution, Huawei can help banking:
  • Migrate nearly 90% traditional counter service into VTM to save more counter agents to join value-added service.
  • Extended service time from 5*8 to 7*8 to provide more service for main stream consumer such as office workers to improve consumer satisfaction and loyal.
  • Provide an open architecture for third-party and banking to self-define different service running on VTM according to requirements.

**Customer Benefits**

This innovation solution provided following commercial values for BOC Shenzhen:

• **Improve the efficiency of E-channel, Reduce channel cost**
  Along with the rapid development of information technology, the trend of the banking industry development is investing more in the construction of electronic channels, providing a variety of services from electronic channels are gradually replacing the bank outlets physics counter service. Bank of China has been committed to improve the performance of electronic channels, and constantly explore emerging technologies to reduce distribution costs

• **New channel, extension of counter service**
  Branches of Bank of China in Shenzhen have become saturated. Building new outlets is very difficult. VTM is a new channel between counter service and the electronic banking service. With HD video, authentication, and other means, the customer can talk with banking service employees, make business process directly. It was an extension of the counter service.

• **Gradual transition easy things first**
  The customer front-end services and bank processing center are under construction simultaneously, implemented part of the counter business, and embedded with some self-service. After the constitution, relying on the bank centralized processing center’s operation, to achieve further docking of the VTM system and the bank’s core system and non-cash counter business.

• **Applying new card as first business to get more customers**
  Applying new card is the primary business in this construction to help BOC get more customers firstly.
Huawei Helps Ping An Build the Largest Telemarketing Contact Center in Asia-Pacific

Background
Ping An Insurance (Group) Company is the first Chinese insurance company to integrate securities, trusts, banking, asset management, and annuity services into a tightly coupled, efficient, and diversified financial holding group. Ping An ranked 242 in Fortune Magazine's Global 500 in 2012 and is China's second largest life and property insurance company. Currently, more than 20,000 Ping An Insurance agents and 41,000 attendants are focusing on telemarketing services. Existing Ping An telemarketing contact centers are located in Shanghai and Shenzhen, with sales personnel distributed in many areas.

Key Challenges
With the rapid development of telemarketing services, existing Ping An contact centers face the following challenges:
• Growing number of agents
  In just one year, Ping An Insurance has grown to thousands of agents, and the existing Ping An contact centers are frequently overloaded due to the stacked platforms at the small contact centers, which causes down-time.
• Rapid service changes
  Insurance services are experiencing rapid changes, requiring contact centers to be centrally managed, flexibly adjusted, and quickly expanded; however, the existing Ping An contact centers are difficult to centrally manage due to small platform stacking, and cables must be laid out again if the agent numbers must be adjusted. In addition, migrating services from the existing contact center to a new contact center requires 30 days preparation in advance.
• One-fold function
  Due to system restrictions, some key roles such as attendants, group leaders, and supervisors lack the necessary service functionalities and utilities, leading to repetitive manual operations and low work efficiency.
After large-scale rigorous POC test, Huawei E2E solution ranked No.1 for the best performance. As a result of selecting Huawei, Ping An has increased revenues daily by more than RMB10M through its telesales and marketing.

Solution
Huawei’s solution offers Ping An the following:
• Large-capacity voice platform can be smoothly expanded to 20,000 agents.
• Dual-center networking model allows all agents to connect to the voice platform through the intranet in IP mode, drastically reducing communication costs.
• Customized applications for telemarketing dedicated attendants, group leaders, and supervisors.
• Integration with the CRM system in web mode.
Ping An Insurance chose Huawei for the following reasons:
• Provision of a super-large-capacity call center
The Huawei-provided contact center can be easily expanded to 20,000 agents in single-node mode, which conforms to the centralized and quantitative management concepts of Ping An Insurance.
• Outstanding stress test performance
Huawei successfully passed the demanding stress test required by Ping An and is the only vendor whose contact center does not overload during high-volume stress tests. Stress test required by Ping An includes more than 1,000 attendants simultaneously using the loudspeaker to sign in, make calls, and sign out.
• Strong customization capabilities
Huawei customizes applications for the contact center key roles, from attendants to supervisors. Some benefits for each role include the following:
  • Attendants: The solution retains the attendants’ operational preferences and allows them to log in to the system from any location within the agent workspace. All call records and recording files are stored in a centralized manner. Attendants can invoke, query, and collect statistics on call records and recorded files through a single portal.
  • Group leaders: Group leaders can monitor, listen to, and query attendant calls and recordings under their management.
  • Supervisors: Supervisors can obtain each group’s call related Key Performance Indicators (KPIs), manage multiple remote groups’ call data, and analyze collected KPIs and call data to find ways to improve attendant work efficiency.

Customer Benefits
• Lower communications costs
The Huawei contact center solution is an all-IP based cloud center solution, which cuts communication costs in half.
• Improved work efficiency
Customized attendant applications can be seamlessly integrated with the existing Ping An CRM system. Compared with the original contact center, the Huawei contact center solution eliminates four manual operations, reducing attendant call processing time by 10 seconds and improving work efficiency by 13 percent.
• Helps Ping An Insurance quickly seize market share
The Huawei-provided contact center implements centralized resource management for attendants logging in to the system from any location within the workspace. Agent resources are automatically adjusted, and the system automatically compensates and adjusts when agents are migrated to other locations. Response time to the agent position migration is reduced from 30 days to only one day, enabling Ping An to quickly push new services ahead of its competitors and seize market share.
Remote Conferencing and the Ultimate HD Experience

Telepresence Solution for Bank of China

Background
As one of the most internationalized and diversified banks in Asia, Bank of China (BOC) provides a full range of financial services in China (mainland, Hong Kong, Macau) and 31 other countries. As one of three banks issuing banknotes for Hong Kong and the designated clearing bank in Hong Kong for transactions involving RMB, the Bank of China (Hong Kong) Limited plays a significant role in the internationalization of the currency and maintaining exchange rate stability.

Key Challenges
Increasing remote communications among internal institutions and branches, particularly between Beijing-based headquarters and BOCHK executives, has posed great challenges to the existing video conferencing system, which cannot fully meet the current internal communication needs due to the following deficiencies:

- Poor conference visual experience: Outdated technologies deliver only Video Compact Disk (VCD)-grade quality video, which cannot meet requirements for executives' conferences.
- Complicated operation: Dedicated conference secretaries are required to effectively operate the system due to the complicated commands and conference configuration parameters, which translates to low work efficiency.
- Insufficient lighting and acoustics design: Insufficient lighting conditions compromise facial clarity and poor sound absorption causes unwanted ambient noise and echoes.
- Lack of professional and dedicated services: Lack of responsiveness by Original Equipment Manufacturer (OEM) maintenance engineers to repair or orders for maintenance prolong system downtime, negatively impacting overall operations and internal communications.

Solution
Through in-depth analysis into customer requirements, Huawei has earned BOC’s trust by providing an end-to-end solution that consists of
Through in-depth analysis into customer requirements, Huawei has earned BOC's trust by providing an end-to-end solution that consists of "telepresence + decoration and acoustic design + OEM services." Huawei's telepresence solution gives BOC executives an immersive conference experience, so immersive that many participants feel that they are sitting right next to each other, although they are thousands of miles apart.

The Huawei solution delivers the following benefits:

- **Optimal conferencing experience:** The solution delivers HD 1080p 60 fps video clarity that is a 20 times higher resolution than the pre-existing system. Huawei's solution is fully capable of portraying meeting participants in true-to-life dimensions, allowing participants to read body language and make close eye contact, similar to an in-person experience. The sound clarity enables recognition of where sounds are coming from, and presentation materials can be displayed in a variety of ways during sessions.

- **Ease of use:** Touch-screen control operations, combined with Huawei's proprietary technology, SiteCall, allow executives to hold conferences as easily as placing a phone call. Participants merely select a conference site from the address book and tap the Call key. Users control conference settings with the touch-screen control module, synching all aspects and desired parameters of the meeting to control all terminals.

- **Professional design:** Conference room decoration and acoustic design are crucial to ensure the quality of experience from high-end video conferencing systems. All factors, including room dimensions, lighting conditions, acoustic properties and matching sound system capabilities, cable layout schemes, and flooring, were considered to deliver optimal sound and video quality which improved participant comfort.

- **Dedicated services:** Huawei provides professional video conferencing service engineers in regions where BOC branches are located to perform preventive maintenance inspections and to quickly resolve all issues, minimizing system interruptions.

**Customer Benefits**

Huawei's telepresence solution gives BOC executives an immersive conference experience, so immersive that many participants feel that they are sitting right next to each other, although they are thousands of miles apart.

- **Face-to-face communication experience:** HD 1080p 60 fps video clarity with true-to-life dimension display let meeting participants read body language and make close eye contact, similar to a face-to-face meeting.

- **Simplified operation:** Attendees can easily power on the system, join a conference, and control it with touch-screen pads, freeing up staff to perform other daily tasks instead of spending large portions of the workday administering conferences.

- **Efficient decision making:** The telepresence solution bridges the communication gap between BOC executives in Beijing and Hong Kong, ensuring high decision-making efficiency and speeding BOC’s responses to financial affairs.
Optimizing Customer Service Management and Building a First-Class Telesales and Marketing Banking System

95555 Call Center Project for China Merchants Bank

Background
China Merchants Bank (CMB) was founded in 1987 as the first joint-stock commercial bank wholly held by corporate legal entities. In 1999, Huawei helped CMB build its 95555 call center. After 14 years' development, it has evolved from a simple financial advisory service into a remote banking center involved in financial consulting, trading, marketing, and wealth management. CMB's 95555 call center has three sites – two in Shenzhen (Futian and Shekou) and the other in Chengdu. The three sites have a total of 2,500 agents, who provide top-notch bundled services to more than 60 million customers in retail and wholesale banking.

Key Challenges
Before the 95555 call center was established, CMB had built a voice card-based telephone banking system in branches throughout the country. Due to technical and management limitations, CMB's telephone banking system faced the following issues:

• Decentralized, unreliable systems and massive workloads
  CMB's original telephone banking system had a distributed structure, with equipment and data scattered everywhere, resulting in information sharing failure and waste of resources. By 1998, CMB had over 200 branches throughout the country and had established partnerships with over 630 banks around the world. The increasing number of customers with growing data and traffic led to exceeding of original system capacity, which brought increasing maintenance workload and security risk.

• Service scope and quality limited by too few access modes
  The original telephone banking system could be accessed only via phone, fax, and so on. Each
The IPCC solution helps China Merchant Bank transform its call center from simple financial advisory service into a remote banking center and from cost center to profit center.

access mode used its own system, and information could not be shared between them, severely restricting the telephone banking system's scope and quality of services. The system would require complete redevelopment to enable more access modes.

- Limited functionality
The original telephone banking system provided only a limited number of banking services. It adopted an Interactive Voice Response (IVR) system, which could not be integrated with manual customer service or provide differentiated services for customers with other priorities. These shortcomings hindered market segmentation and service customization. In addition, the original consultation function was limited and unable to process services efficiently in real time.

- Insufficient information utilization and lack of marketing functions
With the original telephone banking system, customer information was inconsistently recorded. Without a complete customer information system, the telephone banking system did not offer customer relationship management or decision-making support. In addition, the original system did not support statistical analysis of service indexes, could not monitor system operations, and had inadequate background management functions. In most cases, the system received calls from customers and provided only what customers requested. The outbound call function was limited; therefore, the original system was not conducive to marketing CMB's broad range of products.

Solution
- Multi-center architecture for unified services and secure operation
Huawei proposed the construction of a multi-center call center based in three cities. The three call centers connect to each other to achieve remote disaster recovery, resource sharing, unified management, and distribution of human resources and services between the three centers. If one of the three centers fails, the other two can take over its services.

- Multi-media access for Triple A (Anytime, Anywhere, and Anyway) service experience
Huawei call center's multi-media feature allows flexible access modes to improve customer satisfaction. Huawei's solution uses enhanced Web-Enabled Call Center (WECC) functionality to support web access, including multi-media channels for text talk, click-to-talk, escorted browsing, and call-back request. In addition, the solution supports e-mail/fax call access and video call access. Integration of the on-line, telephone, and mobile banking, based on multi-media access technology, allows the 95555 call center to provide services to customers anytime, anywhere, and anyway.

- Targeted and differentiated services for enhanced customer experience
From Huawei's call center platform, CMB developed a new-generation 95555 personalized telephone banking system with customized menus to provide personalized IVR service which enables CMB to develop new services according to their requirements. The 95555 personalized telephone banking system offers the following features:
  - Customized menus
  - Customized service processes
  - Personalized care and marketing information
  - Intelligent guideline
  - Close interaction between automatic response and manual response
  - Intra-system voice menu roaming
The 95555 call center provides customers with faster, more convenient access to new telephone banking services, all in one place. The customized service strategy is also reflected in such features as customer segmentation, FAQs, a complaint handling system, and VIP hotline. In addition, the telephone banking system offers bilingual services and an estimated wait-time for callers on hold.

- Outbound call management system for enhanced marketing functionality
The automatic outbound call management system is an important extended function of Huawei's solution. It provides a flexible service interface, a variety of out-bound call modes, and comprehensive out-bound call management functions. These features allow the call center to perform integrated marketing, provide value-added services, and make the transition from a cost center to a profit center. The 95555 call center also provides out-bound
services for notification purposes. For example, using the 95555 manual outbound call services, CMB can initially contact customers via phone, fax, or e-mail. The bank can send all types of information to the customer, including requests for loan capital or interest repayment, transaction details, financial services applications and complaint correspondence, notifications, and service introductions or advertisements. In addition, the call center actively promotes a variety of CMB products and services to the customer using different out-bound services, gaining profits through targeted cross selling.

**Operation management platform for enhanced management capability**

The 95555 call center's background management system offers integrated functions for system monitoring, automatic alarm reporting, log generation and recording, customer service adviser performance evaluation, service quality inspection, and report generation. Huawei's call center platform provides a Graphical User Interface (GUI) for monitoring, allowing maintenance personnel to monitor the system and resource operational status.

To ensure customer service quality, the background management system uses the evaluation and quality inspection functions to closely manage, measure and analyze the working status of each customer service adviser. The call center can use the report generation tool to customize reports, and new data management and mining functions facilitate analysis of customer behavior.

**Customer Benefits**

- **Improved customer satisfaction**
  According to a survey,
  - 75 percent of customers who have made payments through CMB's 95555 service hotline felt that it was "convenient to make a payment over the phone".
  - 80 percent felt that they could make payments anytime, anywhere.
  - 71 percent reported that they could "trust the telephone banking system". Huawei's call center solution not only meets the customer's technical requirements but also improves the customer services.

- **Higher profits**
  CMB's 95555 call center combines IVR and attendant services to offer customers a variety of new services, including financial consulting, service handling, overthe- phone payments, and other value-added services. Since 2006, CMB's Telephone Banking Center has profited by helping customers handle financial transactions on the phone.

- **Electronic operation and management**
  The CMB Telephone Banking Center's operation and management is fully automated. Now, the call center can measure overall service levels, perform operation effect evaluations and performance assessments, and predict service development trends, all electronically.

- **Awards and recognition**
  The 95555 call center has a great reputation and is a strong influence on the call center industry. It has won the Best Call Center in China award for seven consecutive years (2005-2011), and holds the following titles:
  - Top 10 Call Centers with Highest Service Quality in China
  - Best Customer Service Center in China
  - Asia Pacific Customer Service Golden Award of Excellence
  - 10-Year Achievement Award of China's Call Center
  - Most Influential Call Center Brand in China.

  The 95555 call center has also risen from a level-3 department of CMB to a level-1 department.
Huawei Enterprise Business Group ("Huawei Enterprise") is one of the three business groups of Huawei, a leading global information and communications technology (ICT) solutions provider. By leveraging our strong R&D capabilities and comprehensive technical expertise, Huawei's strategy in the enterprise domain focuses on close cooperation and integration with partners to deliver a wide range of highly efficient customer-centric ICT solutions and services that are based on a deep understanding of customer needs. In line with our strategy, we offer a broad portfolio of innovative ICT solutions that cater to global vertical industry and enterprise customers across government and public sector, finance, transportation, energy, large enterprises, communications and multiservice operators (MSOs), and small and midsize enterprises (SMEs). Our portfolio covers enterprise networking, unified communications & collaboration (UC&C), cloud computing & data center, enterprise wireless, network energy and infrastructure services.