Financial Network Convergence and Security Solution
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1 Customer Challenges
2 Huawei Solution
3 Success Cases
Service innovation and process reform based on mobile, video, and big data technologies, meeting future development requirements

### Product and service innovation

- **500 million+** online banking users
- **300 million+** mobile banking users
- 46% banking users hope require video-based services
- 73% banks believe that customers require video-based services

### Process-centric banking

Process-centric banking, the third revolution in the China commercial banking industry

- Service process reform
- Department reform
- Service center development

### Integration and mixed operation

- The banking industry will be the greatest beneficiary in the tide of big data.
- Data integration, sharing, and exploration attract much attention from CIOs.
- Alibaba provides financial services for 200,000+ small-sized companies. And the bad debt rate is only 0.9%.

- Unified access and authentication for multiple types of terminals, services, and roles
- Multimedia (voice and video) data transmission
- Blurred security boundary

- Check image data stream transmission
- More horizontal data transmission
- Higher requirements on network delay and reliability

- Service data isolation
- Explosive growth of data center LAN traffic
- LAN data access efficiency
Status quo of financial services networks

- The production network is isolated from the office network, hard to support service convergence.
- Tree architecture involves a lot of network layers, which cannot support the development of multiple service centers.
- The data is highly centralized, bringing heavy pressure to core nodes.

Network architecture

- Networks cannot effectively support multiple services (audio and video) simultaneously.
- Massive bandwidth resources are needed to support the operation of browser/server (B/S) applications.
- The QoS mechanism can be further optimized.

Service and transmission quality

- Key areas need more comprehensive security protection.
- Terminals receive limited protection. Mobile terminal access brings new security risks.
- Service convergence requires data isolation for security purposes.

Network security
New requirements, new networks

1. Convergent
   - Convergence of multiple services including production and office
   - Multimedia (audio, video, and image) convergence
   - Unified bearer of mobile and traditional services

2. Efficient
   - Flexible branch access, and highly efficient service collaboration
   - Quick transmission of image and service data
   - High-speed cross-region data mining, and accurate marketing and decision making

3. Secure
   - Multi-service security isolation
   - Secure network access and strict access control
   - Internal system protected against attacks, and core assets free of leakage

4. Future-proof
   - Dynamic resource scheduling and cross-device IT resource sharing
   - Software-defined, service-oriented, and network model change on demand
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Convergent network: one enterprise, one network

**Efficient service access**
- Flexible access and deployment
- Report and risk control based on data mining
- Accurate marketing based on customer behavior analysis

**Unified media resource bearer and QoS guarantee**
- Traditional production and office service flows
- Check image service flows
- Audio and voice service flows

**Unified service channel access**
- Unified access of production and office terminals
- Unified access of wired and wireless terminals
- Unified authentication and authorization

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**Production system**
- Apps
- Office system
- Other financial services

**Convergent network**
- Securities
- Insurance
- Banking
- Bank production

**Other services**
- Remote wealth management
- Online banking
- ATM
- Counter
- Telephone banking
- Mobile service

**Service types**
- Bank production
- Counter
- ATM
- Online banking
- Remote wealth management
- Mobile service
Flattened network architecture and the decoupling of the data center from the network center

- **Lighter-loaded** data center: data center decoupled from the network center
  - **Core layer**: ring-shaped for high-speed data forwarding along the optimal path
  - **Convergence layer**: convergence by region, unified security policy control, and bandwidth allocation by service priority
  - **Access layer**: multiple access points available; flexible access to multiple service centers

- **Architecture remodeling**: a complete change from the tree architecture; flexible service center and branch access

Graphical representation of the network architecture: a flattened network with layers for core, convergence, and access, showing data center, geographic redundancy, local branch, centralized operations center, and telephone banking center.
Secure network: comprehensive security hardening, and layered protection

- **Control strategies, three horizontal security domains**
  - **Service domain**: The domain is subdivided by system and data security level.
  - **Channel domain**: Different protection policies are implemented for diverse access domains.
  - **User domain**: Control measures are taken based on user role, service type, and terminal type.

- **Security protection methods**
  - Data center domain isolation
  - WAN linkage transmission encryption
  - Terminal user access control

### Service domain
- **Core system**
- **Testing system**
- **Office system**
- **O&M system**

### Channel domain
- 1. **Access control**
- 2. **Rights management**
- 3. **Encrypted transmission**
- **IPS**
- **IDS**
- 1. **Dual-firewall**
- 2. **Anti-virus, anti-attack**
- 3. **Rights management**

### User domain
- **External users**: online banking users, corporate users, and regulatory agencies
- **Internal users**: terminals within the bank (local and remote)
Future-proof network: programmable network, allowing intelligent and dynamic distribution of information resources

- Programmable network, allowing service-based network resources distribution
- Unified control for decentralized resources, improving network resource usage
- Detection for network service quality, enabling timely and accurate fault positioning
Implementation: analyze status quo, implement strategies step by step, and hold advantages to some extent

Short-term: convergent flattened network
- Multi-service network convergence for branches, outlets, and data centers
- Flattened network reform (canceling level-2 backbone network)
- Security hardening for branch, subsidiary, and data center networks

Middle-term: high-speed core bearing network
- Three-layer network (core, aggregation, and core) architecture evolution
- High-speed core bearing network development
- Virtualized computing and storage

Long-term: application-oriented intelligent network
- Evolution from campus networks, data center networks, and WANs to SDNs
- Application- and service-oriented networks, allowing unified service management and resource dispatch
Huawei network convergence and security solution: efficient flattened network, bearing multiple services in a unified manner

1. **Financial campus**
   - Convergence of three networks
   - Isolation of three types of services
   - One universal account

2. **Branch**
   - Branch/Service center, flexible nearby access
   - Flattened architecture, highly efficient horizontal access

3. **Data center**
   - Efficient cross-system data access
   - Smooth VM migration, improve resource usage

4. **WAN core network**
   - Industry-leading core switches and routers
   - Fast link protection switching (ms level), with five-nine carrier-class reliability
   - Optimized QoS

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Huawei enterprise ICT solutions: a better way.
Solution products

Data center switch
- CloudEngine 5800/6800
- CloudEngine 12800
- S9700
- S7700

Aggregation switch
- S7700
- S6700
- S5700

Data center DR transmission
- OSN1800
- OSN6800
- OSN8800

Core router
- NE20E
- NE40E-X1/X3/X8/X16
- NE5000E

Core switch
- CloudEngine 12700
- S6700
- S5700

Aggregation switch
- S3700
- S2700

Access switch
- AR 12/22/32

Access router
- AR 12/22/32

HUAWEI ENTERPRISE ICT SOLUTIONS A BETTER WAY

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NMS: network management system
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Huawei in the global FSI

Serves 200+ financial institutions
Including 5 of the world’s top 10 banks

Success cases

- Tier-1 backbone network for PBOC
- Branch network (one-stop deployment) for ICBC
- Tier-1 backbone network and 36 provincial branch data centers for ABC
- Convergent campus network for BOC
- Shanghai-Beijing remote disaster recovery transmission system for CCB
- Core network for the CCB Wuhan data center
- CCB BYOD Anyoffice secure network access sandbox
- Branch network for IPCC
- Data center disaster-recovery network for SSE
- Video surveillance network for SSE
- Access server for SCB
- Comprehensive networking products for Santander Group (Spain)
- One-stop network access solution for CAIXA (Brazil)
- Backbone network solution for CIRC
- 600 access routers for AXA

PBOC: People’s Bank of China
ICBC: Industrial and Commercial Bank of China
ABC: Agricultural Bank of China
BOC: Bank of China
CCB: China Construction Bank
PICC: People’s Insurance Company of China
SSE: Shanghai Stock Exchange
HKEX: Hong Kong Stock Exchange
SCB: Standard Chartered Bank
CAIXA: Caixa Econômica Federal
CIRC: China Insurance Regulatory Commission

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Next-generation core backbone network, supporting ABC's service development in the next decade

ABC

- Network integration, lowering O&M costs by 50% and preventing duplicate investments
- Hundreds of thousands of users, accessing from 36 level-1 branch, 3 big data centers, and 5 major service centers
- Core network performance, evolving from 2.5GE to 10GE (supporting smooth evolution), meeting ABC's service development requirements in the next decade

ABC: Agricultural Bank of China
Data center DR network, helping CCB develop most secure DR network

- Local backup center + remote backup center, allowing 0 data loss and 0 service interruption
- 40 x 10GE ultra-large transmission bandwidth, supporting smooth evolution to 100GE
- Unified network device management and easy system O&M

CCB: China Construction Bank
O&M: operation and maintenance
Anti-DDOS solution, offering security protection for CEB's data center

**CEB**

- **297 million** online transactions **per day** and **0** security incident caused by DDOS attacks
- Security protection against **100+** types of DDoS attacks and network attacks from layer 2 to layer 7, offering **Tier 3** security protection for the CEB headquarters
- Significantly improved online service access speed and network egress bandwidth usage
All-in-One device, offering one-stop access services for CAIXA

CAIXA

- Unified access to PCs, IP phones, and ATMs
- **Simplified network** that carries multiple services in a unified manner
- One-stop network access, lowering network development, operation, and maintenance costs
Huawei brings success to customers

World's leading ICT solutions provider

15 years of experience in the FSI

Comprehensive product lines

Why Huawei

100+ FSI and ICT partners worldwide

Professional services

Actively participate in ICT standard development

Consulting

Optimization

Management

Design

Deployment