Huawei Financial Industry
IP Solutions
Huawei Financial Industry IP Solutions

Build an Ubiquitous, Secure, Business-Continuity IP Network for Your Enterprise with Huawei’s 25 Years Experience in Communication Industry.

Huawei is a leading global information and communications technology (ICT) solutions provider. Through our dedication to customer-centric innovation and strong partnerships, our products and solutions have been deployed in over 140 countries, serving more than one third of the world’s population. Huawei is TOP 3 vendor in many product domain. Such as router, switch, transmission network product, wireless product, etc.

Huawei began its transformation from CT vendor to ICT (Information & Communication Technology) in 2009. Huawei has been providing solution and service for various of industry, such as, financial industry, government, energy industry, etc. And Huawei IP solution for financial industry has been accepted by many financial enterprises in China, Spain, Brazil, Mexico, HK, Germany and Russia.

Introduction to Huawei IP Solution for Financial Industry

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<td>Based-on “Three Centers at Two Places” to build a highly reliable data center.</td>
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<td>Security-Enhanced Branch Access Solution</td>
<td>Deploys firewalls to build security connections between branches and HQ, data center.</td>
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As online banking, algo trading and other financial services grow rapidly, the transaction speed of the finance industry is greatly improved. Any data center failure tremendously affects the financial business. The finance industry requires a highly reliable data center to accommodate the fast-growing services while ensuring the transaction speed.

**Huawei Business Continuity Data Center Solution**

Based-on “Three Centers at Two Places” to build a high available data center facilities.

- Huawei business continuity data center solution consists of Real-time local backup and remote backup. It eliminate information silos and preventing data loss and service impact due to system interruption
- Dedicated storage network that is separate from the LAN network, ensuring backup between storage devices without server intervention (server-free backup)

**Highlights of the Huawei Business Continuity Data Center Solution**

**[Local Backup]**

- **Multiple interfaces**: up to 14 types of interfaces that cover almost all the IP and SAN service interface types
- **Rich certification**: certified by EMC, HP, IBM, SUN, McDATA, Brocade, etc.
- **Low delay**: effective resolution of long-distance delay, which extends the coverage of disaster recovery to 200 km and meets large-capacity disaster recovery for multiple physical nodes
- **High reliability**: multiple device-level and network-level protection mechanisms for service switchover within 50 ms
- **Large capacity**: transmission capacity of up to 3.2 Tbit/s (80 x 40 Gbit/s), which can smoothly scale to 8 Tbit/s (80 x 100 Gbit/s)

- **Hybrid transmission of multiple services**: simultaneous transmission of multiple services over a single wavelength, resulting in improved bandwidth utilization (any rate and protocol)

**[Remote Backup]**

- **Multiple interfaces**: up to 14 types of interfaces that cover almost all the IP and SAN service interface types
- **High reliability**: multiple device-level and network-level protection mechanisms for service switchover within 50 ms
- **Full isolation**: physical isolation of private networks to ensure the security of remote disaster recovery networks
- **Longer transmission distance**: support for FC full-rate transmission and FC distance extension functionalities to expand the coverage of remote backup
Business Continuity Data Center Solution

Successful Case & Product Portfolio

Huawei Local Backup Center Solution for Santander

Challenges

- The Santander Group is the world’s fourth largest bank.
- The Santander Group wanted to build a backup center for Mexico Data Center. Network switchover time must be less than 100 ms and service recovery time less than 10 minutes.
- It must support multiple interfaces, such as 10GE/GE/FC400.

Huawei Solution

- Deploy 4 OSN6800 and 13 λ * 10G to carry services, 6 * 10GE, 16 * 1GE, and 10 * FC400 interfaces.
- The bandwidth can be extended to 40 λ * 10G or 40G, which can scale to 80 λ * 10G or 40G.

Customer Benefits

- Better disaster recovery capabilities. The network switchover time is less than 50 ms and services can recover within 480 seconds.
- Higher bandwidth and easy to deploy new services in the data center.

The Other Successful Case of Huawei Business Continuity Data Center Solution

- Dual-plane data center backup solution for the People’s Bank of China (PBC).
- Remote backup center solution for China Construction Bank

Huawei Products for a Business Continuity Data Center

Products for Local Backup

- **OSN 1800 II**
  - 2M to 10G full rates
  - 8-ch Single Box
  - Full Interface. Up to 14 types of interfaces that cover almost all the IP and SAN service interface types
  - Large-capacity, long-distance WDM optical transmission system
  - High available. 1+1 redundancy for the centralized switching unit, the system control unit, the communication unit and the AUX
  - Low latency.

- **OSN 8800 T16**
  - 640G/1.6T ODUk

Products for Remote Backup

- **OSN 3500**
  - TDM: 200G/40G
  - PKT: 100G
  - MSTP/SDH optical transmission system that supports multi-service access: TDM/ETH/IP/SAN.
  - Advanced technology, secure and reliable products
  - High available. Redundancy for key components and multiple network-level protection mechanisms
  - Simple, efficient, visualized, transparent and end-to-end management
Resilient Backbone Solution

Financial application get more complicated in recent years. Because of enriched financial service, bigger trading volume and higher trading speed, it need higher quality backbone network to satisfy various of requirement:

- Highly available (99.999%). All traffic is carried over the backbone network, so the backbone network must be highly reliable.

- Adaptable. Financial companies rent large amounts of leased lines, such as E1, SDH, ATM, MSTP, and MPLS VPN. The leased lines are frequently changed. Therefore, the backbone network must support multiple leased line technologies to mitigate the impact of frequently changing leased lines.

- Multi-service carrying. Besides traditional trading and OA services, financial companies have introduced many new real-time services, such as telepresence, UC, and multimedia CC. The backbone network must carry these services and ensure their quality.

**Huawei Resilient Backbone Network**

- **Huawei NE40E-X16/X8/X3** products (at the HQ/data center) + leased lines + Huawei NE40E-X3/X8 (at subsidiaries).

- Financial services companies deploy routers at the HQ/data center/subsidiaries by themselves and rent transmission links from telecom carriers.

**Highlights of the Huawei Resilient Backbone Solution**

- High availability: multiple network-level and equipment-level reliability technologies to ensure network switchover within 50 ms.

- High performance: 400G platform, 100G ports. 3200 Mpps forwarding and large routing capacity.

- Easy to manage: one platform for All products. Learn 1 time, use for any product. Visualized management.

- Good interoperability: support for any types of leased lines. Integration of different leased lines through UCMP.

- Multi-service: support 5-level HQoS and MPLS HQoS for service quality assurance.

- Environmentally-friendly and energy-efficient designs: reducing 30% power consumption and 40% space.
**Huawei Resilient Backbone Solution**

**Successful Case & Product Portfolio**

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**Huawei Resilient Backbone Solution for PBC**

**Challenges**
- The People’s Bank of China (PBC) is the Chinese central bank that has 36 subsidiaries throughout China. It required a highly reliable and easy-to-expand backbone network to carry its complex financial services.

**Huawei Solution**
- Deployed 55 NE40Es to upgrade the backbone network.
- Set up a dual-plane backbone network architecture for improved availability, where the Huawei NE40E was deployed to build a master link while the Cisco 7609 was used to build the backup link.

**Customer Benefits**
- Fast network building and easy O&M
- High network reliability to ensure stable running of services for many years.
- Good interoperability. The Huawei NE40E works with the Cisco 7609 very well.
- Flexible, large network capacity and easy to deploy new services.

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**The Other Successful case of Resilient Backbone Solution**

- Build resilient backbone for the Agricultural Bank of China (ABC).

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**Huawei Products for a Resilient Backbone Solution**

- Various interfaces such as E1/CE1/ATM/POS/CPOS/GE/10GE that can interoperate with any types of leased lines
- IPSEC (20G encryption/board), DPI, and NAT to ensure strong security
- Multi-service support and 5-level HQoS for quality assurance
- High reliability (50 ms switchover) through hardware redundancy and ISSU/NSR/NSF/GR, BFD and FRR technologies
- High-performance, most compact 400G routers that have high port density: 1320GE/rack, 2304GE/rack (bidirectional), 240*10GE/rack
As the economy development, people need better financial service. Traditional manual service can’t satisfy the requirement in any country. Financial enterprise must build a nationwide or world-wide service network to provide 7*24 hours financial service. The network must be:

- Security, and easy to share. Build a private network for all financial companies.
- Long distance, to connect all branches dispersed anywhere.
- Large capacity, to carry various applications. Such as, trading, email, UC, video conference.
- Low latency, to satisfy the low latency requirement of securities exchanging.

**Huawei Security-Enhanced Backbone Network**

- Build secure backbone with WDM and router:
  - Builds transmission links with WDM products. All $\lambda$s can be grouped into several transmission planes. Each plane carries different services.
  - Builds a datacom network with NE40Es. The datacom network can be virtualized into several planes using MPLS L3 VPN/L2 VPN.
- Financial services companies can lease some planes to other companies.

**Highlights of Huawei Security-Enhanced Backbone Solution**

- High security and low latency: ensures high security and reduces latency for services by allowing financial services companies to exclusively occupy the entire link resources.
- Flexible business modes and easy to improve the countrywide financial services. The most popular commercial mode is: central bank builds the network and leases it to commercial banks.
- High performance: supports $80 \lambda \times 40G$, separates different services using $\lambda$s and complies with PCIDSS v2.0.
- IP & optical synergy for high efficiency and high availability of 99.999%.
- Easy to manage: achieves visualized and unified management of IP and optics.
Challenges

As one of the global largest banks, HSBC has a large number of branches. HSBC was in great need of a highly efficient network that linked the operations of these branches to deliver a wide range of international products and services in order to adapt to local customer needs.

Huawei Solution

- Core layer: The OSN7500 was deployed to provide multi-service aggregation and grooming as well as MADM.
- Aggregation layer: The OSN1500 was deployed to access all services and provide industry-leading comprehensive network-level and equipment-level protection.
- Access layer: The Metro100 CPE that features easy installation and maintenance was used, which reduces TCO.
- All OSN series products supported the ASON feature.

Customer Benefits

- Comprehensive network-level protection and equipment-level protection
- Big aggregation direction and large VC12 aggregation number
- Convenient OAM. Fast service provisioning

Huawei Products for Security-Enhanced Backbone Solution

<table>
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<tr>
<th>Routers</th>
<th>WDM products</th>
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<tr>
<td>NE40E-X3</td>
<td>OSN 8800 T16</td>
</tr>
<tr>
<td>NE40E-X8</td>
<td>640G/1.6T ODUk</td>
</tr>
<tr>
<td>NE40E-X16</td>
<td>OSN 8800 T32</td>
</tr>
<tr>
<td></td>
<td>1.28 T/3.2 T ODUk</td>
</tr>
</tbody>
</table>

- Security. Support IPSEC (20G encryption/board), DPI, and NAT.
- High-performance, most compact 400G routers that have high port density: 1320GE/rack, 240*10GE/rack.
- Multi-service support. MPLS VPN/L2VPN, 5-level HQoS for quality assurance.
- High reliability (50 ms switchover). Hardware redundancy, ISSU/NSR/NSF/GR, BFD and FRR.

- Large-capacity, long-distance WDM optical transmission system that supports physical isolation to meet the needs of private networks.
- High available. 1+1 redundancy for the centralized switching unit, the system control unit, the communication unit and the AUX unit.
Converged Campus Network Solution

As the popularization of electronic service channel, the task of financial company’s employee is transforming from “trading” to “sales, service and risk management”. In order to improve service quality, many multi-media application is introduced into financial enterprise, such as, UC, video conference, e-education, mobile working. These multi-media applications request lots of requirement:

- Converged carrying. The campus network must carry all services. Such as, trading and OA services, monitoring, smoke sensor, TP, IP phone, etc.
- Mobile working. A converged office network must be set up to support both fixed access and mobile/Wi-Fi access so that the staff can continue on working when they are moving.
- Security. Especially for avoiding information risk from employees.
- Green and health.

### Huawei Converged Campus Network Solution

- Build campus network with high quality switch. 3-layer network architecture:
  - Core switch: S9300 cluster.
  - Aggregation switch: S9300 cluster or S7700.
  - Access switch: S6700, S5700 or S3700
- Converged switch for core and aggregation switch. Integrates the switching, routing, wireless AC, firewall, netstream, and load balancing functions to 1 box.
- Deploy NAC solution for terminal security check, authentication, authorization and audit.

### Highlights of Huawei Converged Campus Network Solution

<table>
<thead>
<tr>
<th>Security</th>
<th>Converged Network</th>
<th>Converged Service</th>
<th>Converged Equipment</th>
<th>Converged Management</th>
</tr>
</thead>
</table>
| • Authentication, authorization and audit for staff
• Avoiding information risk form staff. | • Integration of wired network and wireless network
• Mobile working | • Converged carrying: VoIP, OA, TP, UC, etc.
• Converged power supply: Support POE, POE+ | • All in one: switching, routing, firewall, AC, IPSec VPN, netstream, load balancing. | • Converged managed of switch, terminal, router, firewall, servers. |
Challenges

The ABC is one of four leading banks in China and it has 19,702 branches. It required a highly reliable and secure office network to facilitate the office work for thousands of employees in its Beijing Office.

Huawei Solution

• Deployed the S9300s to build an office network for each building and connected all the office networks as an integrated OA working platform.
• Deployed high availability technology.

Customer Benefits

• The network was enhanced, with higher performance and better anti-attack capabilities.
• The switchover time was less than 50 ms.
• The network provided multi-service support, which facilitated new service rollouts.

The Other Successful Case of Converged Campus Network Solution

• Build converged campus network for the Bank of China.
• Build converged campus network for the second call center of the Agricultural Bank of China.

Huawei Products for Converged Campus Network Solution

- S9300: high-end terabit routing switch that can be deployed as a core switch or aggregation switch. “All-in-One equipment (switching, routing, wireless AC, firewall, netstream, and load balancing)”, “Three-Dimensional expansion”, and “Six energy-saving innovations”.
- S7700: high-performance aggregation switch. Its highlights include: high port density, abundant service features, easy to expand, etc.
- S6700: 10GE access switch that can connect to 10GE servers.
- S5700: GE access. It also has 10GE uplink ports.
- S3700: Layer-3 access switch.
One-Stop Branch Access Solution

As the popularization of electric financial service channel (online banking, algo trading, self-service banking, etc.), most of trading is transferred from branch to internet. It decline customer’s loyalty while making financial service convenient. In order to improve the capability of sales and service, improving customer’s loyalty, many financial enterprise begin to transform branch from “trading branch” to “sales & service branch”. So many multi-media applications is introduced into financial industry, such as, UC, TP, e-education, etc. It need a high quality network:

- Ubiquitous access. The branch access network must be able to connect each branch, no matter where it is.
- High available and multi-service carrying. The branch access network must be more reliable and support differentiated services and high bandwidth.
- Remote management. Branches are generally far away from the HQ and it is very expensive to manage them locally. Therefore, a remote management solution is required for high efficiency and cost reductions.

**Huawei One-Stop Branch Access**

- Deploy NE40E(at subsidiaries) + AR G3(at branch) to build ubiquitous branch access network.
- Comprehensive product, satisfy the requirement of branches of all size.
- Configure IPsec for security.
- Configure BFD between subsidiaries and branch for 200ms failure detection.

**Highlights of Huawei One-Stop Branch Access Network Solution**

<table>
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<tr>
<th>Multi-Media branch</th>
<th>Mobile Branch</th>
<th>Remote Management</th>
<th>Green Branch</th>
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<tr>
<td>Large capacity solution, It comply the performance requirement of multi-media applications.</td>
<td>Based on Huawei’s 3G/ LTE technologies, it provide a stable wireless network with high bandwidth.</td>
<td>Support configuring by USB disk, auto-config and remote management.</td>
<td>Green solution. Reduce carbon emission.</td>
</tr>
<tr>
<td>Accelerate the transformation process.</td>
<td>It extend the service scope.</td>
<td>Reduce the cost of branch network building and managing.</td>
<td>No noise. Use silent switch to build branch network.</td>
</tr>
</tbody>
</table>
Huawei One-Stop Branch Access Solution
Successful Case & Product Portfolio

Huawei One-Stop WAN Solution for Caixa in Brazil

**Challenges**
- The Caixa Bank is an important financial services institution in Brazil.
- It required a reliable and feature-rich access router to support services.

**Huawei Solution**
- Deployed AR series routers that provide abundant interfaces to access various applications.
- Rolled out the built-in voice, high speed Internet access, VPN and PBX functionalities of AR routers across all branches.

**Customer Benefits**
- Quick service rollout: 426 sets of AR series routers were deployed in 3 months.
- Good interoperability with the existing Cisco network.
- All-in-One boxes were used to reduce operational costs.

The Other Successful case of Huawei One-Stop Branch Access network Solution

- Build One-Stop branch access network for PICC.
- Build One-Stop branch access network for Kunming Rural Credit Cooperatives.

### Huawei Products for One-Stop branch Access Network Solution

<table>
<thead>
<tr>
<th>Routers for Branch Aggregation at HQ or Subsidiaries</th>
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<tbody>
<tr>
<td>AR 3260 (Agile Router For Small Subsidiaries)</td>
</tr>
<tr>
<td>- Compact router: 160G platform, 3.5 Mpps, 3U height</td>
</tr>
<tr>
<td>- Abundant interfaces: E1/1/PRI/VE1/E1/GE/CPOS</td>
</tr>
<tr>
<td>- All-in-One device that integrates the functionalities of the router/switch/firewall/IPSec/QoS/Voice gateway</td>
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<thead>
<tr>
<th>Product for Branch Access</th>
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<tbody>
<tr>
<td>AR 1220/1220V/1220W</td>
</tr>
<tr>
<td>- Third-generation architecture and powerful performance</td>
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<tr>
<td>- Multiple branch access modes: 3G, E1, SDH, MSTP, MPLS VPN, etc.</td>
</tr>
<tr>
<td>- One-Stop branch terminal access</td>
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<tr>
<th>Access Switch and Aggregation Switch</th>
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<tr>
<td>SS700: GE switch. For access switch or aggregation switch</td>
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<tr>
<td>S3700: Layer-3 access switch.</td>
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<tr>
<td>S2700: Layer-2 access switch.</td>
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Huawei Financial Industry IP Solutions
The popularity of new technologies has improved the service capability of financial companies. But information risk is more severe in consequence:

- The online banking and mobile phone banking change the financial enterprise’s network from “isolated” to “open.” Many virus and hacker attacks threaten financial services.
- The IP leased-line and MPLS VPN make it possible to attack branch and subsidiaries network.

### Highlights of Security-Enhanced Branch Access Solution

<table>
<thead>
<tr>
<th>Security</th>
<th>High Availability</th>
<th>Wireless Access</th>
<th>High Performance</th>
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<tbody>
<tr>
<td>• Provides 3-layers through 7-layer protection to defend attack and information risk.</td>
<td>• Comprehensive redundancy to ensure business continuity without interruption.</td>
<td>• Provide quick, secure wireless access to facilitate network rollout and reduce costs.</td>
<td>• Adopts industry-leading architecture to address network bottlenecks.</td>
</tr>
</tbody>
</table>
Security-Enhanced Branch Access Network Solution

Successful Case & Product Portfolio

Huawei ATM Access Solution for Brazil TecBen Bank

Challenges

• Brazil’s TecBan wanted to increase the number of ATMs to 29,000 by 2014 from about 12,000 now.

Huawei Solution

• Deployed the E200E X1-A-GW access ATMs and used ADSL as a primary link and 3G as a backup link.
• Adopted IPSEC VPN and dual uplinks to ensure high network reliability.

Customer Benefits

• VPN ensured high security and reliability for ATM access.
• One small box integrating ADSL and 3G interfaces reduced the number of network devices as well as fault nodes of the network system.
• The compact and energy-efficient designs of equipment reduced TCO.

The Other Successful Case of Huawei Security-Enhanced Branch Access Network Solution

• Build secure branch access network for Postal Services Bank of China.

Huawei Products for Security-Enhanced Branch Access Network Solution

Products for HQ

E1000E-X6
E1000E-X5
E1000E-X3
E8000E-X3
E8000E-X8
E8000E-X16

• New platform: smaller, better, and faster
• Industry-leading architecture: Multi-core+ NP+ Distribute (E8000EX) and Multi-core (E1000EX) break network bottlenecks.
• Professional 7-layer security protection and use of Symantec’s security database
• All-around VPN

Products for Branch

E200E-X1
E200E-X2
E200E-X3
E200E-X5
E200E-X6
E200E-X7

• Various choices of interface cards to support multiple services
• Professional 7-layer security protection
• All-around VPN
• Integrated network, security, and service functionalities into one box, simplifying network structure