Huawei Government Industry Solutions

Government Industry Scenarios

- Government
  - GovernmentNational Security Network
  - Industrial Park Network
  - e-Government Network
- Education
  - Education Backbone Network
  - School Informatization
- Public Utilities
  - Safe City
  - Intelligent Transportation
- Medical
  - Medical Informatization
- Huawei Intelligent Campus Solution
- Huawei Strong Backbone Solution
- Huawei Proactive Defense Security Solution
- Huawei Video Surveillance Bearer Network Solution

Features of Government Industry Networks and Services

- Security
  - Protection for Layer 4 through Layer 7
  - Strong protection performance
  - Integration of AV, IPS, AS, DDOS, and URL filter
- High Reliability
  - Reliability of better than 99.999%
  - Protection switchover within 50 ms
  - Superb virus detection capabilities
  - Integration of AV, IPS, AS, DDOS, and URL filter
- Multi-service support
  - Independent services transport, vertical interconnections, and horizontal interoperability
  - Multi-service integration
- Visualized operations using a unified network management system (NMS)
- Multi-service integration
- Mature, reliable unified software platform

- High Bandwidth
  - High bandwidth
  - High scalability
- High Security
  - High security
  - High scalability
Huawei Intelligent Campus Solution
(For Government Office Buildings, Economic Development Zones, Industrial Parks, etc.)

Network challenge:
- The connected terminals are of high density.
- The network security requirement is high.
- There are too many services to carry.
- The reliability and QoS requirements are high.

Huawei solution:
- Egress layer: deploys two NE40E devices to carry video, voice, and data services across the entire network.

Solution Highlights

Huawei solution advantages:
- Virtual campus and multi-service support
- Implements vertical virtualization by using MPLS VPN technology to achieve multi-service isolation; supports horizontal virtualization by using cluster and stacking technology to increase network switching capacity and achieve multi-service support; and uses H-QoS technology to implement multi-service scheduling and ensure excellent customer service experience.
- Wired and wireless integration
- In addition to wired Ethernet deployment, APs are deployed in places that do not support wired deployment to provide flexible access for users. Wired and wireless deployment provides a consistent user experience, which fully integrates wired and wireless networks at a campus and ensures a high level of security and reliability as well as AC integration with the convergence device.
- Network access control (NAC)
- Huawei’s NAC provides customers with secure and comprehensive device access control, and implements authentication and authorization for wired, wireless, branch, and remote networks.
- Service flexibility
- The intelligent multi-service gateway AR G3 supports multi-service integration, provides complete interface types, enables flexible networking, and enhances network scalability.
- Simple operation and maintenance
- Huawei offers a unified NMS to uniformly manage full-series network equipment. Services are automatically deployed to equipment using the NMS. This simplifies operation and maintenance and greatly reduces the OPEX.
Huawei Intelligent Campus Solution for the Uganda National Communications Network Project

Challenges Faced by the Ugandan Government

- The lack of a nationwide communications system led to limited communication, high management costs, and poor government efficiency.
- Most ministries failed to use email for communication.
- The Ugandan government hoped to centralize the government and had made a plea for a more easily maintained communications network.

Huawei Solution

- Used 2 x 2.5 G DWDM to build a national fiber transmission backbone network.
- Built a national e-Government IP backbone network to bear multiple services.
- Created a data center that supports redundancy backup.
- Provided service systems, including VoIP, video conferencing, and OA.

Customer Benefits

- The government was able to provide e-government offices and e-commerce.
- The government was able to provide convenient public services for citizens.

Uganda e-Government

- The productivity accountability and efficiency of government were greatly improved.
- A new chapter was written in public participation and democracy.
Overview

Strong backbone
- The Huawei strong backbone solution provides node redundancy, thereby achieving good service continuity without any interruptions.

Hierarchical network
- The government WAN is segmented into hierarchical smaller networks based on government size. Each-level network is further divided into a backbone network, a metropolitan area network (MAN), and a government affairs access network.

VPN isolation
- Various government departments are securely isolated using MPLS VPNs. The priorities for VPNs are controlled.

Highlights

Strong backbone
- equipment-level reliability of better than 99.999%; network recovery within 50 ms to 500 ms; industry’s most comprehensive BFD designs; full-service protection switching

Flexible structure
- MPLS/VPN for cross-autonomous system (AS), cross-partition, point-to-multipoint (P2MP) management; MPLS-TE and hierarchical QoS (H-QoS) to ensure high-quality video conferencing and highly reliable key data

High security
- multiple encryption designs for network devices themselves and between them, helping build a strong security network for government affairs

Guarantee of key services
- end-to-end fault detection and recovery; video frame retransmission; MPLS H-QoS

Network scalability
- modular design; support for GR/ISSU/NSR/NSF; high-speed 40G/100G ports; IPv6 compatibility
Huawei Strong Backbone Solution for the Senegal National e-Government Network Project

Challenges Faced by Senegal
- No unified government network, many ministries are not connected;
- No unified data centre, high maintenance cost;
- Low bandwidth, can not meet the government’s requirements;
- Has no ability to do the network planning

Huawei Solution
- National government network which covers 11 regions and 40 ministries;
- Adopt NE80E and NE40E for three core nodes, deploy 2.5G RPR ring to guarantee carrier-class reliability;
- Centralized Data center
- Providing applications such as data, Voice, Video, OA, Portal and document exchange system, etc.

Huawei Senegal Government Benefited
- Set the pace for Africa e-Government development;
- Reduce digital divide, advance government force;
- Improve government working efficiency greatly;
- Cultivate next generation high-tech officials, increase national core competitive ability.

- Switching capability: 1.44 Tbit/s
- 8 service slots and 32 sub-slots
- Maximum port density: 320 x GE/320 x FE/32 x 10GE

- Switching Capacity: 640 Gbit/s
- 3 service slots and 12 sub-slots
- Maximum port density: 120 x GE/120 x FE/12 x 10GE

- Rich choices of interfaces: OC-192c/STM-64c POS/ OC-48c/STM-16c POS/OC-12c/STM-4c ATM/OC-3c/STM-1c POS/ Channelized OC-3/STM-1/OC-3c/STM-1c ATM/4*10GE-WAN/LAN/10GE-WAN / LAN/40*GE/ATM/CT1/CT3/CT11/CT1/CT1
- Industry’s most complete MPLS H-QoS, high-priority but low-delay forwarding
- End-to-end reliability: unique ISSU/NSR/GR technology to ensure good service continuity

- Switching capability: 2 Tbit/s
- Hardware-based cluster with a bandwidth of 256 Gbit/s
- Maximum port density: 576 x GE/576 x FE/480 x 10GE
- Board cache capacity: 200 ms/GE
- End-to-end ETH/MPLS OAM protection switchover of 50 ms
- More than 30% energy saving

- Multi-core distributed service processing
- Non-blocking switching, with a maximum forwarding capacity of 3.5 Mpps and WAN performance of 1000 Mbit/s
- Dual-mode network and flexible access
- Converged multiple services
- Integrated and open designs
- iStack, simplifying network structure and management
- Support for ring/tree link protection protocols, such as STP/RSTP/MSTP, RRPP, BFD, etc.
- Easy deployment: USB-based rapid deployment, auto configuration, HGMP, and web management

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Overview

Extranet Protection
- The Huawei Eudemon 8000E series firewalls and anti-DDOS boards are used to prevent intrusions and DDOS attacks.
- The Huawei SVN 3000 equipment (or Eudemon series firewall) is deployed for secure VPN access.

DMZ Protection
- The Huawei Eudemon 1000E-X (or E200E-X) series firewalls are used to provide Layer 7 protection to the DC and O&M Center.
- The DDOS protection system at the extranet protection area can also protect the DC and O&M Center from DDOS attacks.

Intranet Protection
- The Huawei NIP1000 is used to monitor intrusions coming from the government intranet.
- The TSM endpoint product protects terminals (such as PCs) used in the government.
- The DSM system uniformly manages confidential files and securely distributes them.

Highlights

E2E proactive defense
- end-to-end Layer 7 proactive defense solution
- NO.1 in key performance indicators of firewalls, and industry-leading reliable software and hardware systems
- robust UTM features, including AV/AS/IPS/URL filtering
- comprehensive terminal and document management platform to secure the intranet

Global security capability center
- NO.1 in both the virus detection rate and the update speed of the virus signature library
- leading reliable software and hardware systems
- robust UTM features, including AV/AS/IPS/URL filtering
- comprehensive terminal and document management platform to secure the intranet
Challenges
- The Weifang Government, Shandong Province, China wanted to improve its e-government network to benefit from more secure and effective communications.

Huawei Solution
- Deployed the high-performance Eudemon 1000E series firewalls for remote access security, intrusion protection and anti-DDOS protection
- Used Secospace TSM for intranet terminal security management

Customer Benefits
- The Weifang Government established a highly secure e-government network.

## Huawei Proactive Defense Security Solution for the Weifang e-Government Project

<table>
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<tr>
<th>Device</th>
<th>Specifications</th>
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| E200E-X  | - Packets per second: 1.5 Mpps  
|          | - Overall FW throughput: 3.9 Gbps  
|          | - Number of new connections per second: 40,000  
|          | - Number of concurrent connections: 1,200,000  
|          | - Number of concurrent SSL VPN users: 200                                   |
| E1000E-X | - Maximum throughput: 15 Gbps  
|          | - Number of new connections per second: 200,000  
|          | - Number of concurrent connections: 4,000,000  
|          | - IPSec VPN throughput: 7 Gbps  
|          | - Number of IPSec VPN tunnels: 15,000  
|          | - Number of SSL VPN concurrent users: 500                                   |
| TSM      | - Number of concurrent clients per server: 10,000  
|          | - Number of concurrent clients per server: 20,000  
|          | - Number of concurrent requests per server: 2,000/min                      |
| DSM      | - Probes: 4  
|          | - Maximum throughput: 1 Gbps                                               |
| E8000E   | - Maximum throughput: 160 Gbps  
|          | - Packets per second: 60 Mpps  
|          | - IPSec VPN performance: 96 Gbps  
|          | - IPS performance: 64 Gbps  
|          | - Number of new connections per second: 4,000,000  
|          | - Number of concurrent connections: 64,000,000                              |
| SVN 3000 | - Maximum number of SSL VPN concurrent users: 2,000  
|          | - Maximum number of SSL VPN concurrent connections: 12,000  
|          | - SSL VPN throughput: 100 Mbps  
|          | - Maximum number of IPSec VPN concurrent tunnels: 500  
|          | - IPSec VPN throughput: 220 Mbps                                             |

Weifang e-Government
Huawei Video Surveillance Bearer Network Solution
(For Safe City, Intelligent Transportation, Safe Campus, etc.)

Network challenge
- The coverage is large.
- There are a large number of devices with various models.
- The network architecture is complex.
- There are too many services to carry.
- The reliability and QoS requirements are high.

Huawei solution
- Control center layer: deploys the NE40E device to carry video, voice, and data services across the entire network, connects to the backbone network through the WDM, and uses the MPLS VPN isolate services.
- Video aggregation layer: uses the S9300, adopts the Layer 2 VPN networking to prevent loops, connects to the HQ core equipment, and deploys video servers to support multicast services. Uses OLTs or aggregation switches to achieve traffic convergence, and deploys video servers to release or receive videos of the region.
- Video collection layer: The cameras are connected through ETH or Wi-Fi interfaces, while the data is uploaded through XPON or ETH interfaces.

Solution Highlights
Huawei solution advantages
Proven solution
- Huawei has delivered a unified IP bearer platform. The FTTx and MAN Ethernet solution consisting of switches, routers, PON, WLAN, and related products has been widely used around the globe. This solution provides mature and stable network, high bandwidth, and multicast, as well as QoS technology to ensure the transmission quality of video surveillance streams. With a number of success stories, this solution can be applied to metro-based video surveillance scenarios.

Wide coverage
- The MA 5600T supports a maximum of 128 ONU connections, enables multi-level optical splitting, increases coverage, reduces fiber needs, and supports a full range of TYPE B/C/D trunk and branch protection and dual-homing protection mechanisms. The intelligent multi-service gateway AR G3 supports multi-service integration, provides complete interface types, and enables flexible networking.

High stability and reliability
- Huawei’s full range of switches and routers support Ethernet, IP/MPLS, and L2/L3 VPN, support unicast/multicast services, enable multi-level QoS scheduling, support hardware-based BFD, adopt IP/VPN FRR reliability technologies, comprehensively improve the reliability of the entire network, and help achieve real service continuity.

Simple operation and maintenance, Cost-effectiveness
- Huawei offers a unified NMS to uniformly manage full-series network equipment. Services are automatically deployed to equipment using the NMS. This simplifies operation and maintenance and greatly reduces the OPEX. Huawei’s end-to-end solutions and products feature excellent interoperability and feasibility, and help customers reduce TCO. Solutions and products can be provided where an IP network is available and can be deployed on EPON. The EPON deployment can occur without laying a large number of optical fibers and analog optical transmission devices, which enhances cost effectiveness. This greatly reduces the maintenance workload as well as the TCO.
# Products of the Huawei Video Surveillance Bearer Network Solution

(For Safe City, Intelligent Transportation, Safe Campus, etc.)

## Product Introduction

<table>
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<tr>
<th>Equipment</th>
<th>Features</th>
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| NE40E-X8, NE40E-X3 | - Branch aggregation or MAN core equipment  
- Switching capability: 640 Gbit/s or 1.44 Tbit/s  
- Port density of each slot: 48 x GE/48 x FE/4 x 10GE  
- Throughput: 300/1600 Mbps |
| S9300 | - Access aggregation or MAN aggregation equipment  
- Switching capability: 2 Tbit/s  
- Maximum port density: 576 x GE/576 x FE/480 x 10GE  
- End-to-end ETH/MPLS OAM service protection capability of 50 ms  
- Power consumption: 30% lower than the industrial average power consumption |

**AR-G3**
- Flexible access equipment  
- Non-blocking switching architecture and multi-core distributed processing capability  
- Maximum forwarding capability: 3.5 Mpps  
- Maximum WAN performance: 1 Gbit/s  
- Multiple networking modes: ETH, WLAN, 3G, etc.  
- Integration of voice and data services, built-in intelligent development platform

**ONU MA5626**
- Flexible access equipment  
- Uplink: 2 port SFP/GPON/GE  
- Downlink: 8 FE (supports POE.)

**OLT MA5603T**
- Access Aggregation equipment  
- Dual control board and six service slots  
- 4/8 port GPON service boards  
- Uplink: 2 x 2 GE/10GE/STM-1

**Indoor AP WA603DN**
- Complies with the IEEE 802.11 a/b/g/n standards (802.11a for the WA603DN). The WA633SDN supports 2.4 GHz/5 GHz dual-frequency and a maximum rate of 600 Mbit/s.  
- Supports QoS protocols and implements priority scheduling by service type (voice, video, or data). Supports the integrity check for a wired link.  
- Supports the WEP, WPA/WPA2, WAPI, and IEEE 802.1X authentication/encryption. The hardware encryption does not affect forwarding.  
- Automatically selects the transmission rate, channel and transmit power, adapts to various RF environments and prevents interference in real time, improves signal noise ratio (SNR), and increases throughput and access rate.

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