Huawei WAN Interconnection Solution: Overcoming Network Development Challenges

WAN Interconnection Trends and Challenges

IT and digital technologies are quickly being applied to the enterprise, as broadband and multi-service support development for enterprise networks continue to trend upward. Fixed infrastructure network construction has boomed in recent years. According to OVUM, the 2012 global WAN market will reach US$8.2 billion, of which a market share of US$3.5 billion is potentially available to Huawei and their channel partners.

Distance/Capacity Challenges
- Long-distance transmission is hindered by extreme interference.
- Continuous network capacity expansion raises costs.
- Energy consumption and costs skyrocket.

Obstacles to Reliability
- 200 ms service switchover fails requirements for high reliability.
- Hierarchical protection wastes resources.
- Protection effectiveness cannot be ensured.

O&M Inefficiencies
- Lack of a unified NMS hampers operation and maintenance.
- Massive alarms result in slow system recovery from faults.
- Inefficient fault locating results in many incorrect dispatches.
Huawei WAN Interconnection Solution

WAN Interconnection Solutions and Huawei Opportunities

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<th>Solution</th>
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| IP/MPLS Backbone Network Solution | IP technologies are growing in popularity around the world, driving a large number of IP/MPLS networks to be built worldwide. In response, Huawei has released an IP/MPLS Backbone Network Solution. Core routers used in this solution can groom network-wide services in a non-blocking manner. | - National IT transformation projects (national broadband projects)
- Integrated data network (IDN) projects of the electric power, transportation, and energy industries
- Backbone network projects for safe cities, distance education, and distance healthcare
- Backbone networks self-built by ISPs |
| Transport Bearer Network Solution | The worldwide demand for broadband applications is growing, inflating the demand for bandwidth. Huawei’s Transport Bearer Network Solution helps build a 7/24 aeroamphibious network using optical fiber and microwave resources. | - National IT transformation projects (national broadband projects)
- Basic bearer network projects for electric power, transportation, and energy industries
- Backbone networks self-built by ISPs
- Disaster recovery interconnection projects for the finance industry |
IP/MPLS Backbone Network Solution

IP/MPLS Backbone Network Solution Architecture

TDM service access, used for such scenarios as power substations and metro stations.

New! To be released in 2013 Q1.

Access
Convergence
Core
Solution Highlights

- Supports IP and optical synergy and provides the industry's first end-to-end 100 G solution (which can smoothly scale to 400 G in the future).
- Uses multi-layer reliability technologies to ensure service-always-online and end-to-end service switchover are completed within 50 ms.
- Allows for large-scale deployment of IPv6 networks (helping build the world's largest IPv6 network for China Education and Research Network (CERNET2)).
- Supports Synchronous Digital Hierarchy (SDH)-like pipelines, which are compatible with legacy time division multiplexing (TDM) services and makes for smooth migration of industry-specific networks to all IP networks.
- Uses a unified Versatile Routing Platform (VRP) platform for all products (global shipments of more than 4 million sets) to ensure strong stability and consistent user experience.
- Adopts advanced clock synchronization technologies and supports 1588v2 for hardware, which can be widely applied to electric power and railway industries.

Industry Scenarios

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| Government/ Education/Large Enterprise | • Emerging countries will incorporate national IT transformation projects (broadband projects) into their national strategies.  
• Safe cities, distance education, and distance healthcare will be quickly deployed.  
• Network coverage will grow as globalization and informatization are moving forward worldwide. | • Builds new IP WANs and expands the capacity of existing IP WANs.                     |
| Electric Power/ Transportation/Energy | • IP technologies are increasingly used worldwide. As a result, more IP backbone networks, which support legacy TDM services features (light load, service-centric and high requirements for latency, protection and OAM) will be constructed around the world. | • TDM network reconstruction  
• Builds new IP data networks and expands the capacity of existing IP data networks. |
| Internet Service Provider (ISP) | • Market competition is fiercer than ever. To stay ahead of the competition, customers need to quickly distribute multimedia content to the borders of metropolitan area networks (MANs).  
• Customers will begin to build their own backbone networks rather than continue leasing such networks due to bandwidth requirements and leasing fees. | • Self-built backbone networks  
(The Agisson has set up a media asset account department to deal with the ISP market.) |
Transport Bearer Network Solution

Transport Bearer Network Solution Architecture

Edge/Access  Metro/Convergence  Backbone/Core

Government  Smart Grid  Transportation  Finance  Energy

GE  PON  WDM  WDM  Router

MSTP  MSTP

Microwave

RTN 910  RTN950  RTN980  Metro100  OSN550/500  OSN1500/3500/7500  OSN 1800  OSN 8800T16  OSN 8800T32

Microwave  MSTP/SDH  WDM/OTN
### Solution Highlights

**Industry-leading WDM Solution**
- Greatly facilitates the construction of metro WDM networks through simple connections, without the need for professional planning.
- Uses Photonic Integrated Device (PID) technology for better energy conservation, simpler network structure and higher efficiency.

**Continued Microwave Improvement**
- Uses the RTN 980 (up to 14 directions and 5 U high) to gain advantages in networklized microwaves.
- Supports FO microwave to meet diversified outdoor deployments.

**End-to-End Hybrid Solution**
- Combines Hybrid MSTP with Hybrid Microwave to support end-to-end TDM and packet services (1+1 > 2).
- Supports Hybrid Transport, which future-proofs the OTN (1+1+1 > 3).

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| **Electric Power/ Transportation/Energy** | • Traditional TDM services (light load, service-centric, and high requirements for latency, protection and QAM) will exist far into the future.  
  • Simultaneously, video services will grow quickly, requiring more bandwidth resources. | • Builds new production networks, expands the capacity of existing production networks, and reconstructs production networks. 
  • Builds new Office Automation (OA) networks and expands the capacity of existing OA networks. |
| **Internet Service Provider (ISP)** | • Due to rapidly expanding bandwidth requirements, ISPs tend to build their own backbone networks. | • Backbone networks self-built by ISPs |