

## Thailand's Largest Power Company Goes Smart

PEA's power services cover 99.98% of Thailand. PEA has 512 substations, 914 offices, and 24,000 kilometers of optical fibers.

### Challenges

With the development of its Smart Grid, new IP services have increased rapidly, and PEA's legacy transmission and distribution network no longer meets service development requirements:

- Devices on the live network are old, and some spare parts, such as board chips, are no longer available on the market, increasing O&M costs.
- Legacy SDH equipment cannot provide adequate bandwidth for new online services, such as video surveillance.
- Services such as SCADA are going IP, which is not supported on the existing network.

As a result, it is pressing for PEA to upgrade its power transmission and distribution network.

### Solution

As one of the most important electric power companies in Southeast Asia, PEA has been exploring the application of advanced ICT technologies in its Smart Grid. The power transmission network is the backbone of a Smart Grid; therefore, determining the evolution and direction, as well as choosing the right technologies for the power transmission network have been important research projects.

Based on a good understanding of PEA's needs, Huawei has been working with the company since 2014 on their network transformation. A large number of mission-critical production and PCM services are running on the live network; therefore, smooth switchover of such services is required to ensure quality and security. In addition, due to the rapid development of the Smart Grid and the emergence of new services, the new network must support flexible access and capacity expansion.

After analyzing PEA's needs, Huawei has performed multiple experiments and tests to custom-design a universal transport solution for PEA. Through the customized network migration tools, Ethernet over Dual Domains, and reuse of the existing NMS and devices, this solution brings



*"The new network solution should integrate Power Transmission and Transformation solution, which carries production and office services on one network. This solution provides powerful performance and offers flexible scalability, helping us shift to IP and ensure reliable service transmission in the next 3 to 5 years. In addition, Huawei proprietary technologies such as built-in WDM and ultra-long-haul transmission simplify our network and reduce construction costs."*

*SUPATAT INKHOW Design Manager  
of PEA Communication Network*

### Executive Summary

#### Industry

Smart Grid

#### Customer Requirements and Challenges

- A great deal of SDH equipment on PEA's live network has been running for ten years. The equipment is going to reach its EOS and spare parts are difficult to provide, failing to meet future service development requirements.
- Services on the old network need to be migrated to the new network. Reliable transmission and smooth migration of mission-critical services must be ensured.
- Production services such as SCADA are becoming IP-based, posing challenges on the existing network bandwidth.

#### Solution

##### Huawei Hybrid MSTP Solution

- Support unified service transmission through soft and hard pipes. TDM services, such as telephone, SCADA, and relay protection, are carried through mature and reliable SDH hard pipes to ensure low latency and jitter.
- Uniformly manage old and new network devices. Reuse of existing devices reduces investment, and smooth service migration reduces network migration costs.
- Support 4 x 10 built-in WDM to provide super high bandwidth, meeting bandwidth requirements of video surveillance in the Smart Grid industry and future AMI.

#### Benefits

- Soft and hard pipes uniformly transmit production and office services, supporting the transformation to All-IP.
- The old and new networks are seamlessly interconnected, ensuring secure, reliable, and smooth network evolution.
- Built-in WDM and ultra-long-haul transmission simplify networks and minimize investment.

# CASE STUDY



PEA's power transmission and distribution network to the new era.

## Secure and seamless network evolution

Unlike regular enterprise networks, power networks are the foundation of a nation's economy and everyday life. As such, the reliability and security of service cutover must be ensured during network upgrade and transformation. Huawei avoids service interruption through customized migration tools during the switchover from the old network to the new one, supports access of new services, and provides spare parts for up to ten years, achieving seamless network evolution.

## Unified production and office services through hard and soft pipes

TDM services, such as dispatching telephone and relay protection, are carried through mature and reliable SDH hard pipes to ensure low latency and jitter. Video surveillance and Office Automation (OA) services are carried through flexible and efficient MPLS-TP soft pipes to maximize the reuse of existing network resources in compliance with PEA's strategy on the evolution to All-IP.

## Built-in WDM, ultra-long-haul transmission: Simplifying networks and minimizing investment

To solve existing fiber resource shortages, the built-in WDM solution not

only provides high bandwidth, but also minimizes the need for optical fibers because multiple services can be carried through one fiber pair. In addition, the built-in optical amplifiers support long spans (80 kilometers to 200 kilometers) on the live network, minimizing regeneration sites and network construction costs.

## Benefits

Huawei's universal transport solution for power transmission is custom-made for PEA. The solution uses innovative technologies, such as built-in PCM and Smart 40G, to provide both production and office services on one network, supports the transformation to All-IP, and ensures the reliable transmission of mission-critical services. Unique technologies, such as built-in WDM and ultra-long-haul transmission, are also used to simplify the network and minimize network investment. Huawei also provides spare parts service for up to 10 years and a professional technical team for network planning, ensuring stable network operation. In addition, the ultra-high bandwidth and flexible scalability meet future development needs for three to five years. With Huawei's universal transport solution, PEA's network architecture is more stable, giving PEA technological advantages in the upgrade and transformation of power transmission networks.

For more information about Huawei Smart Grid ICT Solution, please visit:  
<http://e.huawei.com/en/solutions/industries/smart-grid>

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