Tejas Networks builds Smart Communications Network for Power Grid

Power Grid is the only Telecom Service Provider in the country having Pan India overhead optic fiber telecom network on its Extra High Voltage transmission lines. The company delivers bandwidth and connectivity services to ISPs, government agencies, defense, enterprises and supports Government of India projects like National Knowledge Network, BharatNet etc. Power Grid delivers multiple telecom services like Point to Point Leased Lines, MPLS/VPN, Dark Fiber, Co-Location services, Data Center services, Video Conferencing, VoIP, Wi-Fi, Smart Cities and Communication services. Power Grid has an all India broadband telecom network of 41,988 Kms.

Customer

Power Grid - One of India's largest power utility company

Challenge

Customer needs an efficient network that can

- Work on OPGW and underground terrains
- Ease of introducing new services
- Recover without delays in the event of a fiber cuts
- Guarantee 99.95% uptime

Solution

- TJ1400-7 is a versatile and compact aggregation platform that can handle both TDM and data traffic.
- TJ1600-11 is a metro core platform that integrates multiple technologies in one platform with best-in-class density and feature set

Results

- End-to-end network deployment for both captive and commercial applications
- Tejas DWDM and PTN products are deployed across Power Grid network

Customer Requirements

Power Grid is deploying one of the largest smart utilities networks with Pan-India coverage and wants to ensure that the proposed solution can handle the various complexities–

1. **Versatile communication backbone:** To power utilities and serving all the data communication needs

2. **Support for video-based applications:** Like CCTV surveillance and video conferencing, which are extremely sensitive to service parameters such as jitter and packet loss and need to be handled effectively.

3. **IEEE C37.94 Tele protection (Distance & Differential):** To operate reliably even under the most demanding conditions and environment

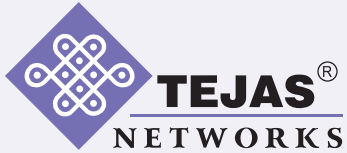4. **Support for Captive Applications :** PMU data transmission, SCADA data & Control signals & Voice, Digital data for internal ERP & LAN and Data Supervision & Acquisition

5. **Non-disruptive Upgrades:** The network should support seamless expansion without affecting existing services by simply adding additional boards/modules/cross connect/sub-racks/racks.

6. **Network Reliability:** The backbone network should have an uptime greater than 99.95%.

7. **Terrain requirements:** The network roll out is across both Optical Fiber Ground Wire over high voltage Transmission line (OPGW) and underground cables.

Tejas Networks Solution

Tejas solution comprises an end-to-end smart utility network including i) TJ1600-11 and ii) TJ1400-7

- TJ1600-11 is a leading-edge and compact Metro Core offering which supports DWDM, SDH/OTN DXC and PTN through common reconfigurable hardware, thus allowing an operator to flexibly reuse or redeploy the system based on requirements. The multi-service line cards can be added or removed when the system is working.

- TJ1400-7 is a versatile, yet compact, Metro Access/Aggregation platform that cost-effectively delivers both traditional TDM and premium data services in rail networks. The platform is designed to support advanced transport standards in Carrier Ethernet, MPLS-TP and OTN areas to optimally serve transport needs of utility networks.

Power Grid currently uses TJ1600-11 DWDM and DXC modules and TJ1400-7 SDH/SONET modules from Tejas Network to enable smart grid network connectivity. TJ1600-11 is located at main centers for long distance connection between various cities and TJ1400-7 is used for intra city and small distance connections. A large portion of Power Grid Telecom backbone network is built on Tejas SDH/DWDM/DXC products. Detailed deployment for Power Grid is shown in below diagram.
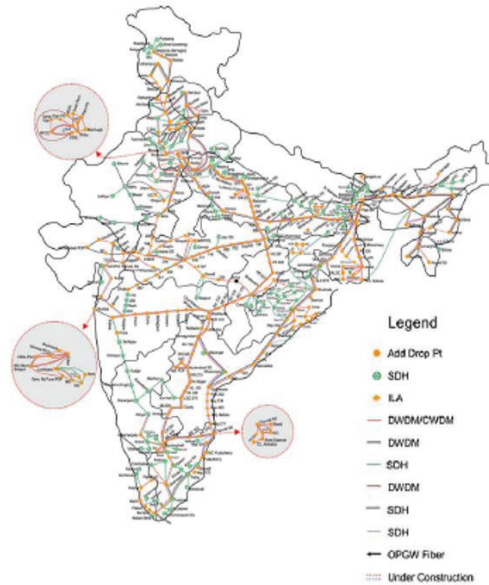
Why Tejas Networks

After evaluation of multiple alternatives, the Customer selected Tejas DWDM, SONET/SDH and Data Center Interconnect products as the best fit for smart grid connectivity.

The key benefits offered by the Tejas solution are:

Advanced Protection Mechanisms: Tejas products support advanced traffic protection features to handle multiple fiber cuts in the network.

Reliability: Tejas products ensure a Five 9s (99.999%) reliability which makes it apt for deployment in backbone networks. Tejas products are Level-4 IEC certified and meet

> We are happy to support Power Grid in building the largest smart utilities network in India. Our deployed equipments are supporting critical applications to ensure that both the captive and commercial network requirements of Power Grid are met.
> **-Arnob Roy,**
> COO, Tejas Networks

Source: POWERGRID

stringent reliability, safety and security requirements.

Future-ready : Software-defined Hardware™ architecture for phased transition from traditional SDH to modern-day PTN networks offering same level of performance & determinism.

Unified Management: Universal NMS with SDN capabilities for secure and

centralized management of mission-critical communications.

End-to-end Solution: Covering everything from access to core and can support both captive and commercial applications.

Low Latency: Tejas products support OTN which increases performance and capacity thus saving cost and reducing latency.

Sophisticated Quality of Service: Tejas products support multi-level Hierarchical QoS (HQoS) with advanced traffic management features such as congestion-based service prioritization and granular hardware-based performance counters for real-time billing and monitoring of service parameters like latency, jitter etc. This is especially useful for delivering premium SLA-driven services.

Scalability : Scalable capacity from 10G to 100G/100G+ wavelengths combined with 96 channel DWDM support in a compact form factor ensures that cloud data center infrastructure can be fully leveraged and monetized in a cost-effective manner.

Results

Tejas Networks successfully deployed smart grid solution for Power Grid.