Customer

Asia Consultancy Group (ACG), a leading independent private company providing Telecommunications infrastructure, managed and engineering services across Afghanistan. ACG with its headquarters in USA, is a full life-cycle managed network service provider.

Solution

- TJ1600-6 & TJ1600-11 for DWDM/OTN for the metro and core/backbone network
- TJ1400-7, TJ1400-P for Access/ Aggregation
- TJ5500 for end-to-end network management

Results

With Tejas' superior support, ACG has delivered on their committed SLAs and ensured vital connectivity where it's most needed. The deployment enabled profitable transport and delivery of high-quality bandwidth services to Afghan operators and businesses at the lowest cost per bit.

ACG selects Tejas Networks to build Afghanistan's high-capacity National Optical Transport Network

After three decades of conflict and instability, Afghanistan now has a fast-growing telecom sector. ACG is rolling out the national fiber optic transport backbone network in Afghanistan. This network will provide connectivity between major cities and international interconnect with Uzbekistan, Tajikistan and Pakistan. Expansion plans include adding new customer segments such as wireless operators, enterprises, government, public safety, security agencies and broadcast network operators to provide internet or leased circuit bandwidth. In addition, ACG plans to lease dark fiber cores. As a core technology partner to ACG, Tejas deployed its state-of-the-art 100G-600G capable DWDM/OTN and PTN products to build the high-capacity national backbone and packet access network in Afghanistan.

Network Requirements

ACG is building a scalable and robust optical infrastructure which is planned over a 5-year period, given the terrain and geo political situation. The planned network is to connect multiple PoP sites across Afghanistan over few years. The traffic is distributed as Backbone traffic between major PoPs, inter-province traffic between small PoP and major POPs, and metro PoPs.

- **Cost-effective and Scalable Solution:** The wholesale telecom carrier required the scale-up of their network capacity in cost-effective increments and align their capex investments in line with their services and revenue growth.
- **Multi-technology support including Legacy:** The client network runs on multiple technologies and interfaces with support to a wide variety of technologies such as SDH, OTN and CE. Support for legacy interfaces such as E1, STM1. The connection speeds desired ranges from megabits to gigabits.
- **Product Flexibility:** The optical platforms used should not be rigid and must have the necessary flexibility to continuously evolve and support an arbitrary mix of circuit and packet services. The product architecture should use reprogrammable hardware and software modules to ensure greater reusability in dynamic network scenarios.
- **Redundancy:** Another key requirement is the ability to offer redundancy at various levels.
  - 1+1 Protected power supply
  - 1+1 protected fabric and controller
  - Protection for the optical path
  - Protected clients and line ports
  - Protection for the line side

Tejas Networks Solution

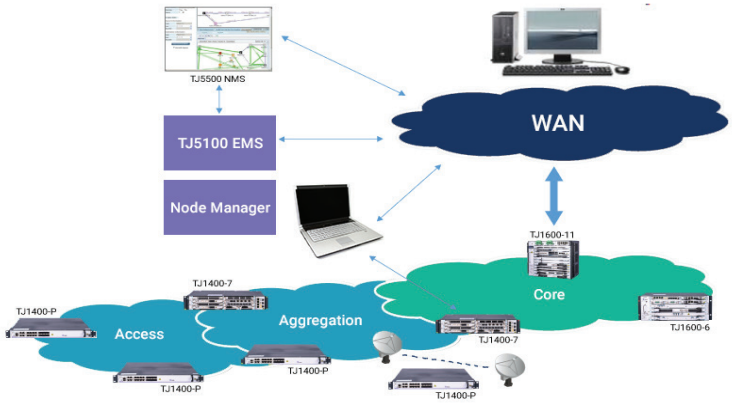
Tejas deployed the terabit-scale optical transport network/DWDM equipment - TJ1600, the TJ1400 PTN, and the centrally managed by universal and versatile SDN-ready network management system (NMS).

Every PoP location is configured with an OTN switch and DWDM Mux. DWDM/OTN Solution is deployed using two layers - the OTN Groomer and OTN transponder. The major PoPs will connected using 100GE connectivity configured as a mesh. Metro network consists of a DWDM ring. The OTN switch accepts STM-1/4/16 from TDM traffic sources and 10GE/1GE from the MPLS routers, grooms it to 10G/OTU2 or OTU4. Multiple OTU2s or OTU4 are then transported over DWDM layer.

- Interface cards handles grooming of client signal. This is "colored" in to a particular DWDM wavelength for

transmission. The central fabric handles circuit level protection.

- 10GE or STM-64 is colored using an OTN transponder. Client Protection is at port level.
- The 10G Interfaces from the groomer are added/dropped and protected using optical switch (ROADM).



TJ1600-6/TJ1600-11 are versatile 100G/400G+ DWDM/OTN systems for core and backbone networks, which supports a programmable mix of SDH/SONET, Ethernet, OTN, Storage and MPLS-TP client services using a combination of transponders, muxponders and switching cards.

TJ1400-7 and TJ1400-18 are Ultra-Converged products that provides unparalleled integration of Access, Transport and IP Network technologies in one chassis.

The TJ5500 NMS solution features:

- TJ5K application layer
- Network Management solution covering SDH, CE, DWDM and FTTX product lines
- Focus on easy workflow for NoC and support personnel
- Accurate depiction of network topology with support auto-discovery, NE synchronization and modeling of 3rd party network elements

Why Tejas Networks

ACG's objective was to monetize assets by providing variety of services other than plain vanilla bandwidth services. Operator was looking for an innovative and cost-effective network architecture that can optimize the CAPEX and OPEX. Our products provides the following benefits:

Support for GPON/XGS-PON: In metropolitan area of Afghanistan, ACG can deploy GPON (upgradeable to XGS-PON) based access network to address customers such as small enterprises, cyber cafes, premium enterprises and government agencies.

Tera-bit OTN Switch: Flexible OTN switching capability catering to wide range of applications like bypass routers bandwidth at select locations, thus saving on the more expensive router ports as well as ODU0 grooming for optimized network capacity utilization.

4G LTE Support: Remote areas can be covered using wireless LTE based access network. Tejas product (TJ1400) supports LTE 4G access network on the same platform.

Programmable Hardware: Our products are based on software-designed Hardware™, which can be easily configured to operate as a multi-rate optical interface.

Results

The cross-border link is functional between Afghanistan, Uzbek and Pakistan. The project has improved international connectivity and the customer is delighted with the reliability offered by the product, reduced service cost, and support offered by the local sales and support teams in their local language. The phase 2 of the project is scheduled to start in Aug 2021.

> "At ACG, we are committed to develop a state-of-the-art, terabit-scale optical network that can cost-effectively address the escalating network capacity requirements of our service provider customers. After a rigorous evaluation process, we selected Tejas' TJ1600 Metro and Long-haul DWDM/OTN products and TJ1400 PTN products for this important build-out. We are truly impressed by their scalability, extreme flexibility and operational simplicity when compared to other competitive offerings in the market today"
>
> **-Dr. Dzung Nguyen, CTO, ACG**

TEJAS NETWORKS
Software Enabled Transformation

Plot No 25, JP Software Park,
Electronics City Phase 1, Hosur Road, Bengaluru, Karnataka 560100, India.
www.tejasnetworks.com | +91 80417 94600

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