

# Tejas XTN Solutions

## SONET Modernization and Network Evolution

Modernizing an in-service transport network is said to be like “trying to upgrade an aircraft in flight”. Replacing existing technologies while trying to maintain existing services often seems a risky task that could negatively impact customers. The risk rises when the speed of evolution is dictated by the new technology being deployed, not the business requirements of the network. However, the risk can be controlled. Network operators can maintain existing services and deploy new services, cost effectively, by pacing network evolution such that it is quick enough to avoid outages caused by aging equipment and deliberate enough to avoid outstripping operational expertise. This can be done by melding the best of existing and new technologies.

**Converged Network Solutions** combine several transport technologies into a single network element. The convergence of SONET, PDH, Packet and DWDM helps create networks that can support traditional (SONET, PDH) and new (Packet) services over the most cost effective transport (OTN, DWDM) throughout the network.

**Maintain Existing Services.** A converged solution maintains existing interfaces such as DS1, DS3, OC-n and Layer 1 Ethernet with “transport over any optical “ technology. A converged platform also provides redundant PDH interfaces and useful features such as Transmux and TDM and packet. This makes it the perfect bridge for network evolution.

**Stabilize Operations.** The versatility of a converged network helps to stabilize the network architecture for many years by flexing to service changes as required. This means there is no need for a radical change in the network nor is it hostage to an ever diminishing supply of spare parts for old equipment.

**Lower Costs.** Network modernization removes the need for expensive maintenance contracts on aging equipment and grey market purchases with an ever increasing price tag. Pacing the evolution keeps initial trainings time low by using familiar technology while future training plans can match service evolution and yearly expense profiles

**New Revenue Streams.** Converged networks are not limited to SONET MSPP interfaces, services, or bandwidth. MEF Carrier Ethernet or IETF VPLS services can be delivered at a variety of bit rates over Ethernet, OTN, DWDM or SONET. Scalable Ethernet UNIs allow customers to grow from less than 10Meg to 1G on the same interface while allowing the selection of the most efficient transport protocol.

**Evolving MSPP Networks** to Converged Networks allows for replacement of old equipment with up to date platforms that provide a clear evolution path while having a faster Return On Investment than installing an overlay packet network.

**Creating an Evolution.** Path becomes easier with the flexibility to introduce new technologies as required with out expensive network redesign. Some examples are:

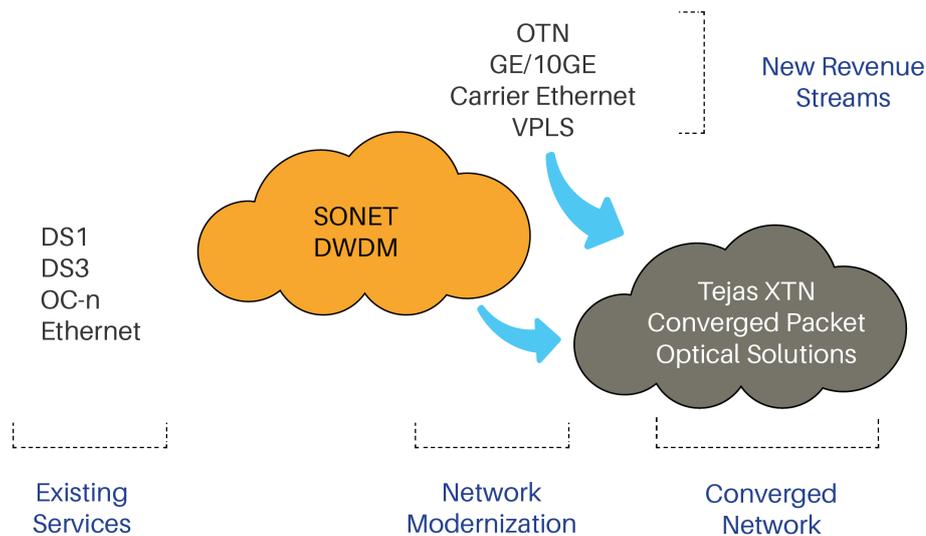
**MPLS-TP** to the edge of network for more advanced Ethernet services with the control and OAM required for strict Service Level Agreements (SLAs).

**OTN** to the edge of the network for high ca-pacity services with a lower cost on-ramp to the net-work core.

**Circuit Emulation** of DS1/DS3s for trans-ported legacy services as required to match evolving network transport.

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## Technologies of XTN Converged Networks

### PDH

DS1 and DS3 interfaces with protection and Transmux.

### SONET

Full suite of SONET interfaces, rates and protection.

### MPLS-TP

Connection oriented, packet based transport, with predictable paths, protection, and OAM from end to end.

### Ethernet

High capacity ports with per port UNI/NNI configurability to increase network flexibility.

### OTN

Cost effective high bit rate service switching and transport with easy DWDM layer integration.

### DWDM

Lower cost optical transport with very high capacities.

### PDH / TDM Circuit Emulation

Transport over packet infrastructure when required. Per interface port selectable of packet or TDM transport.

### Flexible Interface Modules

Per port selectable handoff to various transport layers.

### Flexible Network Protection

1:1, 1:N, Linear, ring and software defined (ASON/SDN).

### Synchronization

Traditional BITS/SONET plus SyncE and 1588v2.

### Network Management

Multi-Layer provisioning across all technologies.

### XTN Converged Product Solutions

TJ1400 7-Slot 2U CPO

TJ5000 Network Management System