Tejas Networks modernizes a US based rural telecommunications provider's network infrastructure while maintaining revenue generating existing TDM services

The customer is a telecommunications provider, whose mission is to provide people in coastal North Carolina, USA with quality communications services at an excellent value. They were challenged with an impending end of support of their existing equipment, high operating costs and the inability to support packet based services. Tejas' circuit emulation solution enabled a smooth transition to a modern Ethernet services platform while continuing to support existing SONET/PDH services minimizing revenue risks and lowering operational costs. The "pay as you grow" solution while transforming the traditional network architecture, also minimizes the capex spend and enables easy scale up as the business grows.

Customer

The customer is one of the largest member-owned cooperatives in the country. They provide 150K+ customers with broadband, voice, data, enterprise and business connectivity

Challenge

- The deployed MSPP products are in End of Support stage with no replacement available from the vendor
- The customer was spending more on power and cooling due to the aging infrastructure
- Maintain the existing legacy services but another SONET/SDH product was not desired

Solution

- Deployed TJ1400-7 and TJ1400P which provides a single platform for delivering Ethernet and PDH/SONET/SDH services
- Utilizes MPLS-TP for transport, providing scalability and a familiar environment for MPLS network
- Easy to use NMS (TJ5500) with point and click provisioning to manage both Ethernet and Circuit Emulation services remotely

Challenges faced

The rural telecommunications provider deployed a legacy TDM network that was consuming too much power, space and money to support. The customer was seeking to mitigate the below challenges:

- End of Life: The deployed Cisco 15454 is a legacy product that is in End of Support Stage with no replacement available from the vendor
- High Cost of Support: Available spares are expensive
- High Opex: The 40+ node network was increasingly expensive to maintain as it was consuming more space and required increased spend on power and cooling
- Complex setup and maintenance: Legacy equipment had complex manual management systems that required high setup time. This severely impaired the ability to dynamically configure the system for variable data demands
- Limitations with the technology: The highest deployed rate is limited to 40 Gb/s for the OC-768 or STM-256 circuit
- Synchronization issues: A previous attempt at migrating to CEM with a packet switch vendor had failed due to timing slips. Customer was concerned about timing options and testing

Tejas Networks Solution

Tejas deployed the Ultra-converged broadband product TJ1400, that supports dense circuit emulation and allows easy transition from circuit switched to packet switched networks without changing service end-points. Circuit emulation service is a proven approach used to convert the circuit based traffic into packets which are then transported over packet networks. Circuit emulation service leverages the strengths of the packet networks while using the existing legacy infrastructure. TJ1400 has robust synchronization features for TDM to Packet conversion with simplified testing, operations and provisioning. Tejas products are standards-based with proven inter-operability. It also provides integration of access technologies and transport in one integrated box reducing the number of equipment types required for managing the network. Tejas' Software-defined hardware allows for easy upgrades through software for features that may require hardware upgrades for other vendor's products.

- The TJ1400-7 is a 2 RU solution that supports massive-scale Circuit Emulation with 1+1 APS. It supports DS1, DS3 modules for carrying TDM traffic with the reliability and performance of legacy TDM networks. It supports access technologies such as Active Ethernet (based on CE2.0), GPON, XGS-PON, ERPSv2, Open ERPSv2 and transport technologies such as PTN and MPLS-TP
- The TJ1400P is a 1 RU product deployed in the DS1 only sites to enable end-to-end pseudo-wire and Ethernet multi-point services
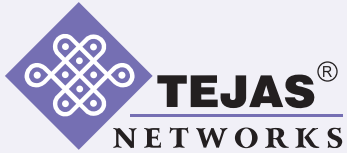
> Our optical networking products are multi-purpose platforms that provide a robust, dense, reliable, proven and cost-effective solution to support circuit emulation services. These provide advanced features for tomorrow's mobile backhaul, enterprise, business, data center, cloud and infrastructure services.
>
> **-Rob Adams,**
> CTO, Vice-President,
> Business Development
> North America,
> Tejas Networks
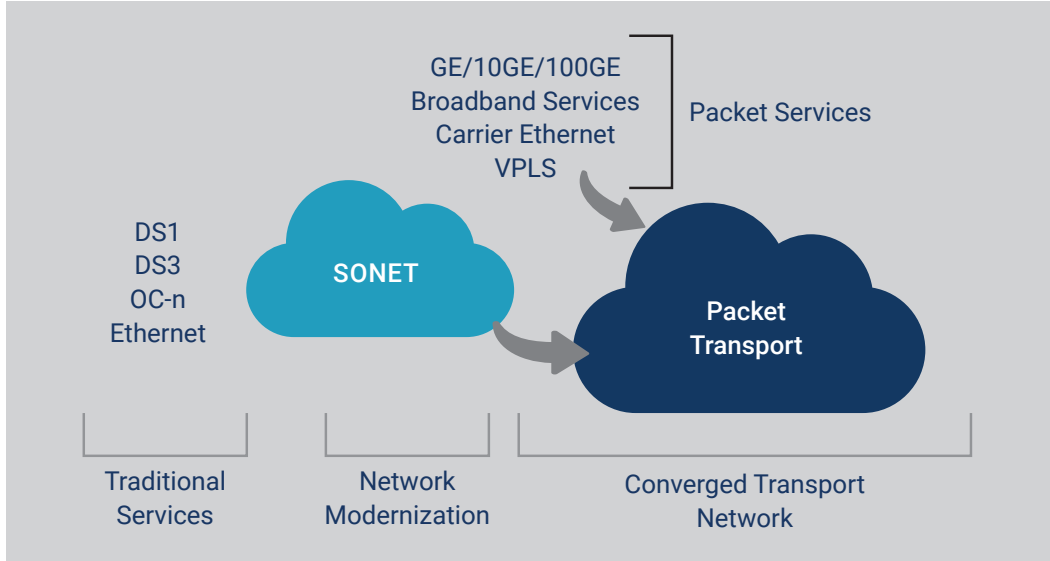
- The Tejas Network Management System (TJ5500) is a unified, multi-layered management platform with full FCAPS (fault-management, configuration, accounting, performance, and security) functionality for the complete range of Tejas products and technologies.

Why Tejas Networks

After a thorough evaluation, the customer selected Tejas' circuit emulation solution as the best fit for their application needs based on cost-effectiveness, proactive support and product reliability. The key features of Tejas solution are:

- One of the few solutions available with high density PDH/SONET/SDH that includes both structure-agnostic and structure-aware emulation services as per relevant ITU/IETF/MEF standards

- Single platform for legacy SONET/PDH services, business Ethernet Services, and PON with support for WDM optics for integration with an existing or new WDM network

- Utilizes MPLS-TP for transport, providing scalability

- Much lower power and footprint than the existing equipment being replaced

- Implementations are fully interoperable with third-party standards-based offerings

- Adaptive Clock Recovery (ACR) or Differential Clock recovery (DCR) is used for clock extraction. The CES module has a stable clock source with temperature controlled crystal oscillators

- Synchronization information of these packetized TDM signals is maintained and distributed end-to-end through packet-based methods or Synchronous Ethernet (SyncE) as defined in physical layer standards ITU G.8261 and ITU G.8262

- Easy to use manager with point and click provisioning makes provisioning services simple and consistent

- Uses templates and wizards to simplify provisioning

- Highly redundant deployment at the service level, cards level, and system level. Product provides switch and processor redundancy

Results

The legacy services were migrated in three phases; with the 11 CISCO 14545s in 3 bays collapsed to a few TJ1400s in a fraction of a single bay. The customer continues to report 99.999% uptime and is happy with the reliability offered by the product, reduced service cost, and support offered by the local sales and support teams. This has enabled the customer to increase the subscriber base with a lower cost per bit.

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