

TDM Service Evolution with Packet

Tejas XTN Solutions

In the 1960s, the first digital modernization of the global telecommunications network introduced TDM interfaces. Over the next 50 years DS1, DS3s and eventually OC-n interfaces became the de facto standard for transport networks. When evolving the network ensuring that legacy interfaces are not only supported, but smoothly transitioned, will help revenue and cost optimization.

The large volume of customer and network services that depend on these interfaces require updated approaches that go beyond just providing a few DS1s to a customer. An approach that has existing SONET infrastructure as an integral part of the transition while maintaining OAM and reliability standards is vital to ensuring ongoing customer satisfaction.

Circuit Emulation of TDM Services allows traditional TDM traffic to be transported over packet networks. This is done by packetizing the incoming traffic, labelling each service with a unique identifier and transporting the traffic to the destination node using the appropriate addressing.

Maintaining the performance of TDM services when transporting them over a packet infrastructure is important. Using the appropriate packet technology, packet size and timing methods can limit jitter, overall latency and protection switch times.

Providing reliability for customers who come to depend on the robustness of the SONET network is a key part of a viable evolution plan. Having a solution that can provide redundant interfaces and switches, combined with sub 50ms protection across the entire network is important. Not only must the network be reliable but it must remain so as the number of TDM services scales.

Not all packet networks are equal when it comes to meeting key performance and reliability objectives. IP networks do not guarantee each packet of a service takes the same path between nodes. This can increase jitter, latency and protection switch times. Ethernet networks are limited by provisioning and fault isolation difficulties. MPLS-TP provides the predictability of SONET with the efficiency of packet.

Transport Network Evolution can come in many ways with two technologies, packet and OTN, emerging as dominant solutions. When future network requirements are best served by a packet solution, circuit emulation ensures a smooth migration as services move from TDM to packet.

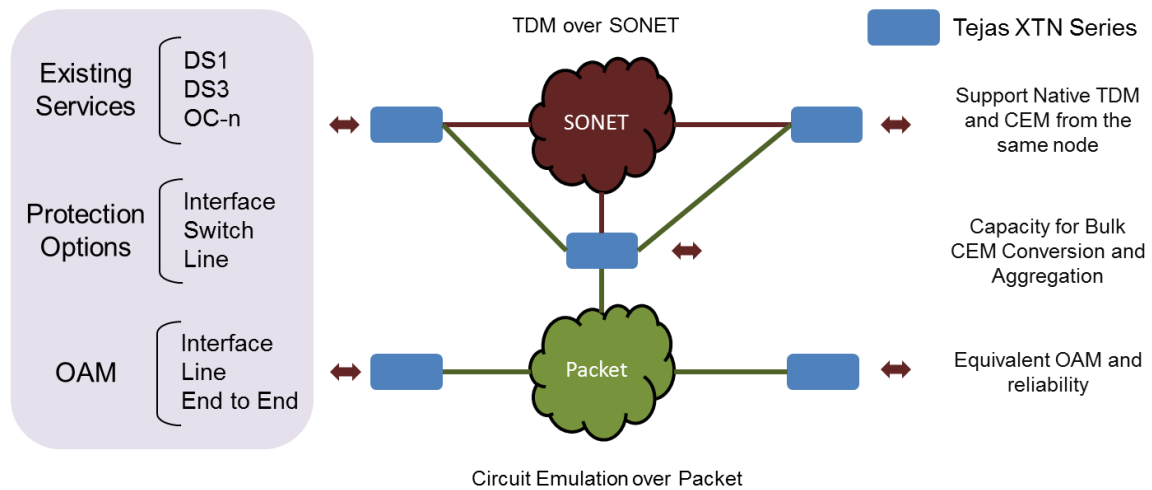
TDM Digital Cross-Connect Integration into a packet network becomes easier with an XTN based Circuit Emulation solution. With bulk circuit emulation capabilities, integrated testing and interface density the XTN solution is able to be a gateway between the TDM and packet networks.

Pacing the network transition to include a larger amount of packet switching for TDM services allows for lower CAPEX and operations costs. XTN MPLS-TP Circuit Emulation better matches traditional SONET practices reducing the number of changes for the operations teams during the transition. Through better reuse of existing TDM equipment an XTN solution reduces CAPEX, engineering and installation costs.

Creating a simpler Evolution Path is possible with the flexibility of XTN. By supporting packet, SONET, OTN and DWDM, XTN allows operators to better match expenses to revenue, operations excellence to new services and installed equipment to network growth. XTN's high reliability, redundancy and density allow for a smooth, economical transition.

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Maintaining TDM services while evolving to Packet

XTN Technologies for Circuit Emulation

PDH

DS1 and DS3 interfaces with protection and Transmux.

SONET

Full suite of OC-n SONET interfaces, rates and protection.

MPLS-TP

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

Carrier Ethernet

High reliability configuration with the redundancy and protection capabilities of SONET

MEF8 and RFC 4553

Protocols for transporting TDM services over a packet network.

Ethernet OAM

Ability to support 802.1ag, Y.1731 and BFD for CEM

Flexible Interface Modules

Per port selectable handoff to various transport layers.

Modules capable of supporting TDM and Packet

Flexible Network Protection

1:1, 1:N, Linear, ring and software defined.

Synchronization

Traditional BITS/SONET plus SyncE and 1588v2.

Network Management

Multi-Layer provisioning across all technologies.

XTN Circuit Emulation Solutions

TJ1400P 1U PTN Transport

TJ1400 7 Slot CPO and PTN Transport

TJ1400 18 Slot PTN Transport

TJ1600C 11-Slot CPO and PTN Transport

TJ5000 Network Management System

**upcoming release specifications subject to change without notice*

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