Tejas Networks Implements Smart Rail Network for Indian Railways

RailTel is one of India's largest telecom infrastructure providers under the Ministry of Indian Railways owning a pan-India optic fiber network on exclusive Right of Way (ROW) along railway tracks. RailTel has created over 45,000 RKMs of fiber network connecting over 4,500 cities/towns on the network, including several rural areas. The network is supported by multiple of 10G/2.5G based STM-64/16 system rings and long 100G/100G+ DWDM network. Further, RailTel is rolling out several prestigious Government of India projects like National Knowledge Network (NKN), National Optical Fiber Network (NOFN), and North East OFC project under the USOF scheme.

Customer

Indian Railways – World's 4th largest railway network

Challenge

Customer needs an efficient communication network that can handle various challenges:

- Reliable communication network for its captive applications
- Ease of introduction of new services and technologies
- Interoperability with other vendor equipment and networks

Solution

- TJ1400 is a versatile and compact metro access platform that can deliver both traditional TDM and premium data services in carrier networks
- Unified and multilayered management using TJ5500 Network Management System

Results

- TJ1400 SDH equipment used across the railway communication network
- Network upgrade plans in many segments due to increased bandwidth demand and EoL for deployed equipment

Customer Requirements

Indian Railways proposed to create an end-to-end communication network that can serve the needs of its captive applications. The network should be able to handle the following challenges:

1. **Effectively support captive applications :** The network should support applications like Passenger Reservation System, Freight Operations Information System (FOIS), Unreserved Ticketing System (UTS), hotline telephone services, railway communications (voice and data services, employee internet access), display panels, and internet kiosks.

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

3. **Support for new technologies :** The network can be easily modernized to a packet based network.

4. **Interoperability challenges:** Railways network is built using equipment from multiple partners. Each partner should address interoperability challenges for the smooth functioning of the network**.**

5. **Harsh operating environment :** The network should function smoothly even in difficult operating environments such as extreme temperatures, high EMI/EMC interference, and dust.

Tejas Networks Solution

Tejas has implemented an end-to-end network solution from sub-station access to national core for RailTel. Tejas TJ1400-7 next generation products are deployed across the railways network.

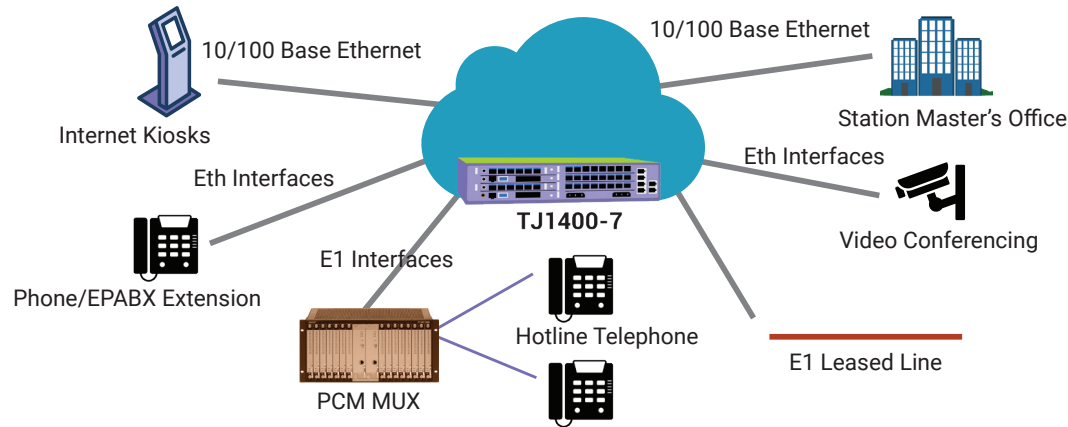- TJ1400-7 is a versatile, yet compact Access/Aggregation platform for rail networks. TJ1400 is one of the first products in its class to seamlessly bridge voice and packet worlds with support for MSPP, POTP, and PTN configurations on the same chassis. The platform is designed to support advanced transport standards in Carrier Ethernet, MPLS-TP, and OTN areas to optimally serve transport needs for data centers, wireless backhaul, enterprise, and wholesale services.

- Tejas Network Management System 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.
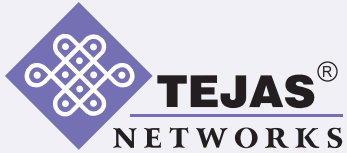
> We are happy to build a smart rail network for the Indian railways. Our SDH, DWDM and PTN products are used across the railway network. The same product can be upgraded to support future technologies thus significantly reducing capital expenditure costs.
>
> **-Mr. Arnob Roy,**
> COO, Tejas Networks

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.

Results

Tejas has supplied more than 5,000 equipment to Indian Railways for their pan-India network. Tejas Networks is one of the preferred vendors for future plan expansion and modernization of the telecommunication network of Indian Railways.

Why Tejas Networks

After the evaluation of multiple alternatives, the customer selected Tejas SDH, and Network Management products as the best fit for smart rail 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 5 9's (99.999%) reliability which makes it apt for deployment in critical networks. Tejas products meet 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 and 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.