



Customer

Delhi Metro Rail Corporation (DMRC)

Challenge

Customer needs an efficient network that can

- Work on less power requirements
- Easily introduce new services
- Recover without delays in fiber cuts
- Guarantee 99.999% uptime

Solution

- TJ1400-7 is a versatile and compact aggregation platform that can handle both TDM and data traffic.
- TJ1600-11 is a metro core platform that integrates multiple technologies in one platform with best-in-class density and feature set

Results

- Customer wants an Indian based vendor to handle the smart rail connectivity project
- Customer selects Tejas Networks for phase – 4 expansion



Tejas Networks build smart communication network for one of India's largest metro rail service

Delhi Metro Rail Corporation (DMRC) is an ambitious venture started in 1995 by Govt. of India and Govt. of NCT Delhi to enable connectivity across Delhi. DMRC wants to enable smart communications network across its existing metro stations for enhanced customer experience, improved safety and better performance of the rail system. The smart communications network also enables transport of application data from SCADA, EPABX, IP-EPABX, Radio, AFC(Automatic Fare Collection), PID (Public information Display) /PAS(Public announcement system), UPS and IT services between central location and different Metro stations. The network expansion is done in phases as and when new phase is launched.

Customer Requirements

The Customer is deploying the first smart rail network in the region and wants to ensure that the proposed solution can handle the various complexities

- 1. Non-disruptive Upgrades:** The network should support seamless expansion without affecting existing services by simply adding additional boards/modules/cross connect/sub-racks/racks.
- 2. Scalability:** The network should support additional capacity without the need for large investments or massive rewiring.
- 3. Network Reliability:** The network should be able to recover without delay in case of fiber cuts and ensure an uptime greater than 99.999%.
- 4. Power Requirements:** The network should have less power consumption

to reduce operating expenditure.

- 5. Terrain requirements:** The network roll out is across both underground and elevated metro stations
- 6. Network Resilience:** The network should be constantly alert to adverse changes in quality of experience and instantly "self-heal" through pro-active re-routing of traffic from congested or deteriorated links before an actual network failure.

Tejas Networks Solution

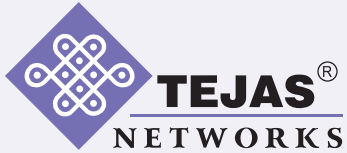
Tejas solution comprises an end-to-end smart rail network including i) TJ1600-11 and ii) TJ1400-7

- TJ1600-11 is a leading-edge and compact Metro Core and Metro Aggregation offering which supports DWDM, SDH/OTN DXC and PTN through common reconfigurable hardware, thus

allowing an operator to flexibly reuse or redeploy the system based on requirements. The multi-service line cards can be added or removed when the system is working.

- TJ1400-7 is a versatile, yet compact, Metro Aggregation platform that cost-effectively delivers both traditional TDM and premium data services in rail networks. TJ1400 supports 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 rail networks.

DMRC currently uses 6 TJ1600-11 CE and 96 TJ1400-7 CE modules from Tejas Network to enable smart rail network connectivity. TJ1600-11 is located at main



“ We are extremely proud to build a smart rail network for DMRC, the largest metro rail network in India. The network connects all the metro stations and enables transport of all the Application Data from central location to different Metro stations. We are currently implementing network connectivity for phase -3 of DMRC project and are all set to participate for phase-4 ”

-Sanjay Nayak,
CEO and MD,
Tejas Networks

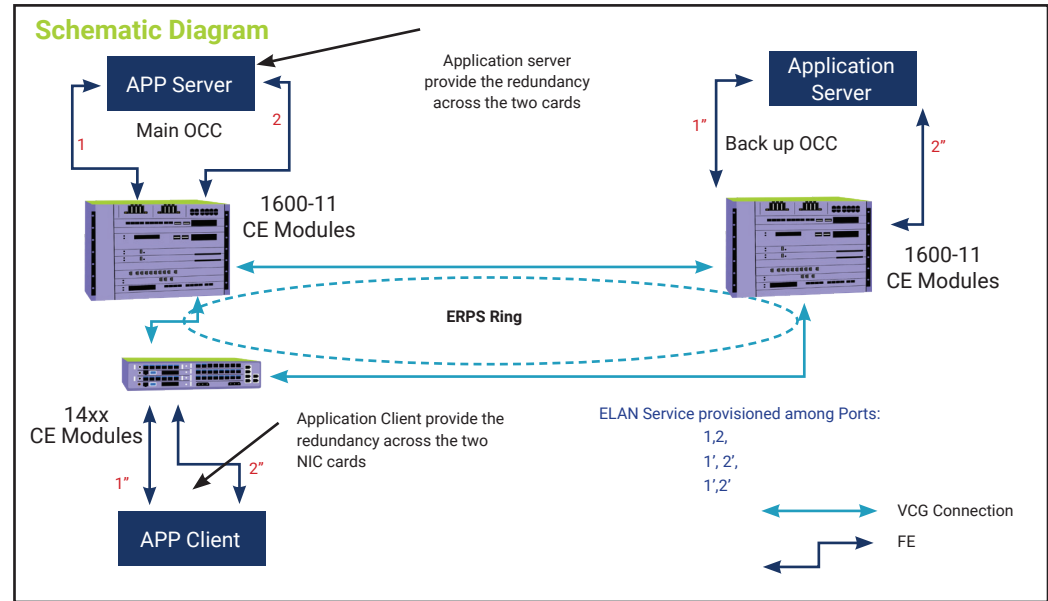
Operational Control Center (OCC) at Metro Bhavan, backup OCC at Vinod Nagar and 4 major metro stations (Azadpur, Rajouri garden, INA and Mayur vihar). OCC is the central location that controls everything through the network - the time-table, train speed, security, traction or electricity, auxiliary equipment like air-conditioning and ventilation system in underground tunnels, and even the crowds in the station. TJ1600-11 CE module in OCC connects to other TJ 1600-11 4 CE modules located at metro stations which in turn connects all TJ1400-7 96 CE modules located at other metro stations through ERPS ring. This enables connectivity and service provisioning to all metro stations.

Why Tejas Networks

After evaluation of multiple alternatives, the Customer selects Tejas Carrier Ethernet products as the best fit for smart rail connectivity.

The key benefits offered by the Tejas solution are:

Indian vendor advantage : DMRC prefers using an Indian vendor as they want to use the same vendor for future expansion plans



Advanced Protection Mechanisms: TJ1600 supports advanced traffic protection features to handle multiple fiber cuts in the network.

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

The rail expansion and network deployment is happening in phases. Tejas Networks successfully completed the roll out of 102 metro stations as part of phase -3 of DMRC rail network connectivity project in record time.



Software Enabled Transformation

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