

Telco Systems E-Rate, School District and Campus Ethernet Solution enables local service providers to offer a future proof, cost effective, feature rich, intelligent, high bandwidth network. This network allows for primary and secondary schools, private schools, colleges and universities to save their operating expenses and capital expenditures by instead funding the delivery of high level education. By supplementing the network with Telco Systems' EdgeGenie Service Management System, service providers can implement a complete solution for the full life cycle of network deployment, from planning to managing, monitoring and maintaining the network and services. EdgeGenie understands how network resources are utilized and identifies and corrects problems quickly.

Telco Systems' products and solutions are designed to future-proof service providers' networks for higher scalability, traffic engineering and increased security, while utilizing Ethernet and MPLS on the same device with no licensing fees.

This MEF Carrier Ethernet 2.0 compliant, end-to-end solution fits any site requirement and any campus deployment scenario –fixed or modular, outdoor or indoor, E-Line, E-LAN, E-Tree, E-Access or TDM convergence, and single or multi-vendor networks, while supporting a wide range of capacity options.

Our solutions deliver carrier-grade equipment, providing a variety of protection mechanisms to ensure a high level of service availability, advanced operations, administration and maintenance (OAM), and Hierarchical quality of service (HQoS) to provide sophisticated and differentiated services. The EdgeGenie, an intuitive service management platform, is an integral part of the solution, and allows service providers to focus on generating services, rather than on managing their devices while providing complete simplified mechanisms to optimize the entire service lifecycle.

Telco Systems' E-rate, School District and Campus Ethernet Solution offers enhanced features including:

- Future-proofing your network with Ethernet and MPLS transport on the same platforms with a 'no licensing' policy
- MPLS to the edge increases scalability, improves traffic engineering, provides additional security and resiliency, and offloads expensive core resources
- Single/Multiple 1/10/100GE connections to the campus
- True HQoS using bandwidth profiles with hierarchical scheduling, shaping, and policing assuring the ability to offer a variety of services to meet customer needs
- Multiple resiliency mechanisms, such as xSTP, LAG, FRR, G.8031 and G.8032, meet sub-50ms restoration requirements
- Per service simultaneous OAM on all services and traffic flow – IEEE 802.3ah EFM, IEEE 802.1ag CFM to assure customer SLA and optimize network transport performance
- ITU.T Y-1731, ITU-T Y.1564 and RFC2544 embedded testing capabilities for end-to-end testing per port/EVC/VLAN/COS
- Low latency with enhanced QoS mechanisms supports traffic engineering on a per customer/per service basis
- Legacy integration/migration supports T1/E1, DS3/E1 and OC-3/STM-1 over fiber using circuit emulation
- MEF CE 2.0 certified, standards-based, multi-vendor interoperability
- Service management simplifies service turn up, service configuration, and network optimization to increase network operations center (NOC) efficiency

## DIFFERENTIATED END-TO-END SLA ASSURED SOLUTION

-  **T-Marc 280**  
Ethernet and CPE
-  **T-Marc 300**  
Ethernet CPE with Advanced OAM
-  **T-Marc 3308**  
Ethernet/MPLS CPE with Advanced OAM
-  **T-Marc 3312SC**  
All-in-one MPLS/Ethernet & CES
-  **T-Marc 3348S**  
1/10G Ethernet/MPLS CPE
-  **CloudMetro 10&100**  
Full MPLS-PE Aggregator
-  **T5C-XG**  
Ethernet Services Aggregation Switch
-  **T-Metro 7124S**  
MPLS and Ethernet Aggregation Switch
-  **T-Metro 8001 & T-Metro 8100**  
High Density Service Aggregation
-  **T-Metro 8006**  
High Density MPLS/IP Service Aggregation Platform

### CAMPUS DEMARICATION

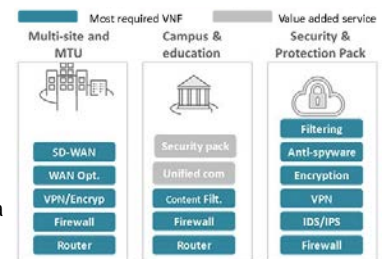
Telco Systems' T-Marc product line offers intelligent and remotely managed Network Interface Devices (NID) to deliver managed Ethernet services over Carrier Ethernet networks. The T-Marc product line allows service providers to use one demarcation device to deliver multiple services on separate customer interfaces, as well as multiple services over a single customer interface, both while assuring the QoS and SLA delivery per service. These products have been optimized for campus Ethernet service applications utilizing combo ports (10/100/1000BaseT copper ports or 100/1000BaseX fiber) and "any port, any role", where each port can be used as a user network interface (UNI) or network-to-network interface (NNI) to maximize deployment flexibility. Extended temperature and redundant power options make the T-Marc an ideal solution for service providers offering services to one or multiple schools, class rooms, offices, dormitories, libraries and meeting rooms. Telco Systems' T-Marc product line integrates extensive OAM service management tools that implement monitoring, line testing and loopback for fail-safe operation using hardware-based OAM, including IEEE 802.3ah EFM and IEEE 802.1ag CFM. Ethernet services can be assured using embedded Y.1564, RFC 2544, and Y.1731 mechanisms for service performance analyzing for transparent service turn up and troubleshooting. With this solution, backhaul services can be protected with sub-50ms recovery time using G.8031/G.8032, xSTP, Fast Ring and Resilient Link.

### SERVICE AGGREGATION

Telco Systems' line of Carrier-Ethernet/MPLS high density service aggregation products offer very high service scalability, carrier class resiliency, and an industry-leading feature set that supports Hierarchical QoS (HQoS), OAM, and L2VPN capabilities. These carrier-class devices offer MPLS provider edge (PE) solutions with integrated advanced MPLS/HVPLS capabilities, in a compact form factor and full featured high-density Ethernet switching. Ability and flexibility to aggregate multiple services over 1GE, 10GE, 40GE, and 100GE. Circuit Emulation Service (CES) functionality allows service providers to offer campuses and school districts the ability to maintain their legacy solutions (e.g. PBX trunks) by carrying T1/E1, DS3, and OC-3/STM-1 traffic transparently over their fiber networks. Advanced networking features allow for full flexibility in deployment, provisioning, and delivery of Ethernet/MPLS services. Physical and virtual networking capabilities provide automated address management and discovery, bandwidth profiles, advanced traffic classes, and complete control over how subscriber traffic is transported across a campus network. Its reliable, non-blocking architecture and redundancy features ensure maximum uptime.

### OPEN UCPE SOLUTION

**NFV Time** NFVTime is an open, service-ready, plug-and-play uCPE solution that easily scale and support flexible business models, reduce operation complexity and lower OPEX levels. NFVTime supports a rich ecosystem for SDN-NFV. Key VNFs include routing, firewall, security, VPN encryption, WAN optimization, SD-WAN, unified communications, anti-spyware, content filtering and IDS/IPS from leading VNF vendors. These VNFs can be used to implement a number of E-Rate Category 2 services.



### SERVICE MANAGEMENT

Telco Systems' EdgeGenie service management system offers a complete solution for the full life cycle of network deployment, from planning to managing, monitoring and maintaining Ethernet services. It also provides network and service management, resource management and optimization, network planning and real time SLA monitoring and statistics available through the customer portal. Assuring services end-to-end requires knowing how services are being delivered across the network. Understanding how network resources are being utilized and identifying and correcting problems quickly is a key to reducing customer churn.



**EdgeGenie**  
Service Management Platform