T-Marc 3308/H

Carrier Ethernet 2.0, MPLS, IP and SDN-Enabled Premium NID

T-Marc 3308/H is a first-class quad-tech demarcation device, offering Carrier Ethernet 2.0, MPLS and IP (Layer 3), and SDN (NETCONF/YANG). Combining all of these capabilities into one device delivers the most cost-effective solution and provides operators with the flexibility to face any service scenario now and in the future.

T-Marc 3308/H Ethernet/MPLS/IP premium business demarcation device comes with Layer 3 (L3) support and is ready for future SDN-enabled networks. With the right feature blend, T-Marc 3308/H brings the highest available value for cost performance. T-Marc 3308/H is suitable for wholesale and business service providers to connect their customers efficiently between sites and into the cloud. T-Marc 3308/H enables service providers to choose whether to use Carrier Ethernet network capabilities or to use MPLS to the edge without any additional software costs. In addition, T-Marc 3308/H allows service providers to combine Layer 3 native services together with Layer 2 advanced OAM tools. By supporting SDN, T-Marc 3308/H allows service providers to smoothly transition to future SDN-enabled networks.

T-Marc 3308/H supports IEEE 802.1q, 802.1ad (Q-in-Q) and MPLS transport technologies, providing high flexibility in network design and thus "future proofing" the network. The device allows access to advanced data services such as virtual private wire services (VPWS), virtual private LAN service (VPLS) and hierarchical VPLS (HVPLS), simplifying the network and making it easier to manage, while gaining the added value of MPLS.

T-Marc 3308/H offers excellent value for performance in a compact size (1RU by ½ shelf width), with 4 x 10/100/1000BaseTx and 4 x dual-speed (100M/1G) fiber ports. T-Marc 3308/H comes with an internal power supply (AC or wide range DC) and with an optional external redundant AC power supply.

Flexible Control of Traffic and Services

To allow communications service providers to cope more efficiently with the increased demand for a more diverse range of services, T-Marc 3308/H embeds sophisticated and flexible QoS and HQoS capabilities such as hierarchical queuing, rate limiting and traffic shaping, advanced scheduling schemes, and intuitive service-oriented SLA configurations. This allows providers to benefit from the multiplexed nature of Carrier Ethernet while assuring SLA requirements during traffic congestion.

As an MPLS demarcation device, T-Marc 3308/H supports various traffic engineering technologies like LDP, BGP and RSVP-TE. These technologies allow service providers to engineer data paths based on several attributes while offering the highest level of protection and assuring that requested paths can meet defined SLA requirements. They also ensure fast switchover time to minimize degradation or interruption of services in case of failure, and provide high availability and sub-50ms resiliency using G.8032, FRR, and Fast Ring standards.

L3 Support

T-Marc 3308/H provides comprehensive solutions and services that best support IP (Internet Protocol) environment requirements– including Virtual Routing and Forwarding (VRF) support, IP static routing and dynamic routing protocols like OSPF and BGP. T-Marc 3308/H also supports Dynamic Host Configuration Protocol (DHCP) for dynamically distributing network configuration parameters, and Virtual Router Redundancy Protocol (VRRP).

OAM Support

T-Marc 3308/H supports a broad set of hardware-based OAM tools to help providers reduce their operating expenses (OPEX) and to assure their customers that they are meeting their agreed SLAs. T-Marc 3308/H supports IEEE 802.1ag connectivity fault management (CFM) and ITU-T Y.1731, allowing service providers to monitor services end-to-end, identify connectivity and performance issues, enable SLA enforcement, and remotely isolate problems to avoid expensive truck rolls. The device also supports IEEE 802.3ah EFM-OAM at the link-level, and complies with MEF requirements, definitions and monitoring. Using RFC 2544 based embedded test heads and Y.1564 EtherSAM, as well as MEF 46 Latching Loopback, T-Marc 3308/H enables providers to pre-provision and remotely test services (e.g., from a central office), thereby further reducing costly truck rolls, saving OPEX, and improving service quality. Additionally, T-Marc 3308/H supports Zero Touch Provisioning to reduce the need for expensive support when connecting new customers.

SDN Support

T-Marc 3308/H provides full SDN support with comprehensive adoption of NETCONF, the network configuration protocol, and YANG, its data modeling language.

Product Highlights

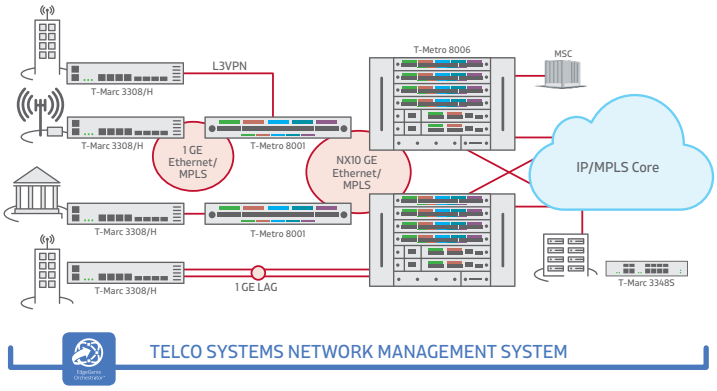
- Premium Carrier Ethernet, MPLS & IP service demarcation device
- Layer 3 features support: HW-based L3 forwarding with VRF support using static route, OSFP and BGP routing protocols
- Wire speed, full duplex, non-blocking switching
- Support for high scale of services using hierarchical QoS (HQoS)
- Multiple resiliency mechanisms
- Extensive, field-proven, OAM support
- MEF, IEEE, ITU-T and IETF standards compliance
- Multi-vendor interoperable
- Integrated with EdgeGenie Service Management System – simplifying full lifecycle of network deployment
- Small footprint, 1RU height, ½ shelf width
- Hardened temperature (-40°C to 70°C / -40°F to 158°F) **

Telco Systems
A BATM Company

T-Marc3308/H

Product Specifications

Hardware Characteristics	4 x 100FX/1000BaseX SFP ports 4 x 10/100/1000BaseT RJ45 ports 1 x Console RJ45 port Non-blocking 8Gbps FD platform 19" rack and wall-mounting options
Services	MEF Services: E-LINE, E-LAN, E-TREE, and E-ACCESS L2 Services: IEEE 802.1Q bridging, IEEE 802.1ad Q-in-Q and TLS MPLS Services: VPWS, VPLS and HVPLS MPLS Signaling: RSVP-TE, BGP, LDP/T-LDP and Static MPLS IP Services: VRF-Lite, DHCP client/server, VRRP IP Routing: Static Routing, OSPFv2, IS-IS and BGPv4
Resiliency	Sub-50ms ITU-T G.8032 R-APS, STP/RSTP/ MSTP, Fast Ring, FRR, HVPLS dual homing, secondary LSP, Resilient Link, LAG (static/IEEE 802.3ad LACP/Multi-Chassis), redundant AC/DC power supply
Quality of Service	Service classification per port/EVC/flow single/dual rate limiting, hierarchical rate limit per EVC. Hierarchical SP, DWRR and hybrid scheduling and shaping, with 8 queues per EVC / per port. CoS marking and mapping per EVC, flow control for congestion handling
Multicast Management	IGMP snooping v1/v2/v3, IGMP proxy; multicast VLAN registration (MVR)
OAM	IEEE 802.3ah EFM, Hardware-based IEEE 802.1ag CFM, OAM over VPLS, MPLS Ping
Testing & Monitoring	Hardware-based ITU-T Y.1564 and RFC 2544 test head, loopback and service performance analyzer, MEF46 Latching Loopback controller & responder, ITU-T Y.1731 PM, SM and SLM support, per-port/ EVC/VLAN/COS, hardware-based MAC Swap loopbacks, TWAMP w/auto-testing
Management	Console, Telnet, SSHv2, RADIUS, TACACS+, SNMP v1/2/3, xFTP, NTP, DHCP client/server, and Zero Touch Provisioning
Security	ACLs, RADIUS, SSHv2, SNMPv3, SFTP, port security, broad-cast storm prevention, secured access, ARP protection
General Specifications	Dimensions (H x W x D): 1.75" (1RU) x 8.7" x 9.25" (44 x 221 x 235 mm) Weight: 2.42 lbs (1.1 kg) Operating Temperature: T-Marc 3308: 0°C to 50°C / 32°F to 122°F T-Marc 3308H: -40°C to 70°C / -40°F to 158°F Humidity: 5% to 95% non-condensing Input power: 100-240VAC or 24/48VDC
Regulatory Compliance	Safety: NRTL certified: C-UL 60950, CSA 22.2 No. 950, EN/ IEC 60950, TUV/GS (EN60950),CB, EN 60825-1/2 EMC: CE Mark: EN50081-1: EN55022 Class A, EN60555-2/3; North America: FCC 47 CFR Part 15 Class A; ICES-003 Issue 4 Class A (Canada); Japan: VCCI Class A; Australia/NZ: CISPR 22 Class A Immunity: EN50082-1, EN/IEC 61000-4-2/3/4/6/11 RoHS compliance



Key Applications

- MEF CE 2.0 type of services
- Business services – MTU or site NID
- SDN networks with NETCONF/YANG
- Multi-service multiplexing for different customers and services while ensuring service separation
- OAM monitored network for SLA assurance

Ordering Information

Part Number	Description
TMC-3308-x	Ethernet/MPLS/IP premium multi-purpose demarcation: 4 x 10/100/1000Base-T UNI/NNI, 4 x 100Base-FX/1000Base-X UNI/NNI, 1 x RJ-45 ASCII management console port; Internal AC power supply with optional external AC power supply for redundancy (orderable separately)
TMC-3308-2DC	Ethernet/MPLS/IP premium multi-purpose demarcation: 4 x 10/100/1000Base-T UNI/NNI, 4 x 100Base-FX/1000Base-X UNI/NNI, 1 x RJ-45 ASCII management console port; internal DC power supply (24/48VDC), dual feed power supply
TMC-3X0-EXTPS-x	Optional, external redundant AC power supply
TMC-3308H-2DC	Ethernet/MPLS/IP premium multi-purpose demarcation: 4 x 10/100/1000Base-T UNI/NNI, 4 x 100Base-FX/1000Base-X UNI/NNI, 1 x RJ-45 ASCII management console port; internal DC power supply (24/48VDC), dual feed power supply and hardened temperature (-40°C to 70°C / -40°F to 158°F)

**Relevant for the TMC-3308H only

Int'l Headquarters
Tel: +972-9-866-2525
Fax: +972-9-866-2500
sales.emea@telco.com

US Headquarters
Tel: +1-800-221-2849
Fax: +1-781-551-0538
sales@telco.com

Latin America
Tel: +1-800-221-2849
Fax: +1-781-551-0538
sales.latam@telco.com

PN:3308/H-JANUARY18