

T-Marc[®] 3208SH

ADVANCED MOBILE BACKHAUL AND SDH/SONET REPLACEMENT DEMARCATION DEVICE

The T-Marc 3208SH mobile backhaul demarcation device supports Carrier Ethernet/MPLS demarcation allowing service providers and mobile operators to backhaul multiple 2G, 3G and 4G cell sites. It offers future-proof and flexible deployment by implementing multiple transport technologies, including Carrier Ethernet (IEEE802.1Q and TLS) and IP/MPLS L2VPN to provide data services such as Virtual Private Wire Services (VPWS), Virtual Private LAN Services (VPLS) and Hierarchical VPLS (HVPLS) with no licensing fees, allowing for better transport technology utilization that fits providers' needs today and in the future.

T-Metro 3208SH offers flexible traffic and services control through a wide set of QoS and HQoS features allowing service providers to have granular control over the traffic behavior and services in their networks.

TDM Evolution Support

As most operators are evolving their networks from legacy TDM networks, towards packet technologies, some services remain TDM-based and require a migration path. T-Marc 3208SH has two expansion slots that can accommodate line cards providing TDM emulation using Circuit Emulation Services (CES) with up to 16 E1/T1 ports.

Enhanced Synchronization and Timing

As part of the RAN evolution for LTE and LTE Advanced, and the transition from TDM to packet-based backhaul, backhaul networks need to support strict frequency and phase synchronization demands. T-Marc 3208SH provides a comprehensive set of synchronization options optimized for mobile backhaul wholesale providers and mobile operators' time synchronization needs. It supports Synchronous Ethernet (SyncE), IEEE 1588v2 client and transparent clock, adaptive clock recovery (using CES), external clock, and phase source via BITS interface.

Advanced Hardware-based OAM

OAM is essential to support service providers in their efforts to reduce OPEX.

PRODUCT HIGHLIGHTS

- High capacity, wire speed non-blocking MPLS / Carrier Ethernet demarcation switch
- Carrier-grade, highly resilient, flexible design
- Circuit Emulation Services (CES) for delivery of traditional TDM or leased line services
- MPLS capabilities to provide access to VPWS, VPLS and HVPLS
- Hierarchical Quality of Service (HQoS) and service granularity support
- Extensive field-proven operations, administration and maintenance (OAM) support
- Extended operating temperature: -40°C to 70°C (-40°F to 158°F)
- MEF, IEEE, ITU-T and IETF standards compliance for multivendor interoperability
- EdgeGenie Service Management Platform for full lifecycle support of Ethernet services
- ETSI 300 compliant, 1.5RU height, 10" deep, 19" rack mountable

Provisioning, monitoring and troubleshooting every service, while providing maximum functionality implemented from the NOC, saves service providers on truck rolls, and technicians and network experts troubleshooting time, and shortens the service activation time. By embedding a comprehensive set of OAM and SLA monitoring and testing tools in its hardware, the T-Marc 3208SH can provide real-time accurate network measurements and service turn-up testing and verification. With industry-standard features ranging from link level IEEE 802.3ah EFM, IEEE 802.1ag Connectivity Fault Management (CFM) protocols and ITU-T Y.1731 for loss and delay measurement, to Y.1731 SLM for E-LAN testing, RFC2544 for service testing and Y.1564 for service activation testing, T-Marc 3208SH is one of the leading OAM-enabled devices on the market today.

Carrier Grade Resiliency

Telco Systems' T-Marc 3208SH provides a carrier grade level of resiliency through its physical design, including a high port count, by implementing a wide variety of resiliency protocols, and through the use of LAG and LACP for port resiliency. The device offers link-level protection mechanisms such as Resilient-link, FRR and dual homing, network-wide mechanisms such as xSTP and G.8032, and service-level mechanisms such as G.8031 and BFD*.

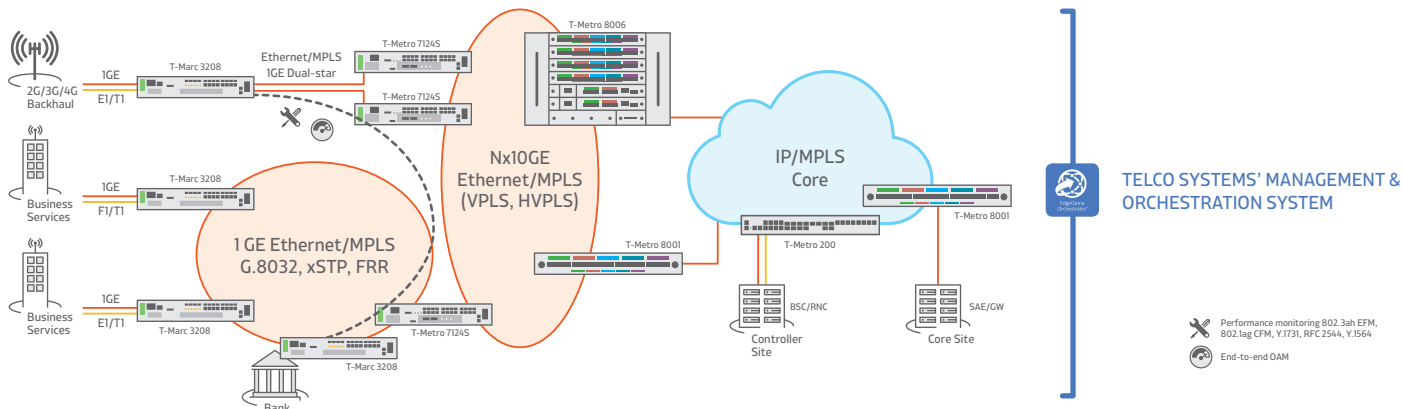
Carrier Class Design

The T-Marc 3208SH supports 8 dual fiber/copper Gigabit Ethernet interfaces, 4 dual-speed (100/1000) Ethernet plug-in (SFP) ports, BITS frequency and phase clock interfaces, and two expansion slots for add-on line cards.

The 3208SH supports hot-swappable, redundant power supplies (either AC or DC) and includes a fan tray. The T-Marc 3208SH is fully manageable using Telco Systems' EdgeGenie service management system as well as via standard mechanisms (CLI, SNMP, both in and out of bound).



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PRODUCT SPECIFICATIONS

Hardware Characteristics	4 x 100FX/1000BaseX SFP ports 8 combo ports (10/100/1000BaseT or 100FX/1000BaseX) Optional 8/16 T1/E1 using TDM CES (up to 2 plug-in optional line cards) Non-blocking 14Gbps FD platform Dual AC and wide range 24-72VDC power supplies Hardened temperature (-40°C to + 70°C)
Services	All MEF services, IEEE 802.1Q bridging, IEEE 802.1ad Q-in-Q (TLS), MPLS L2VPN - VPWS, VPLS, HVPLS, Dynamic routing and signaling utilizing OSPF, IS-IS, RSVP-TE and T-LDP for path computation and signaling, Virtual OSPF support; CES: SAToP, CESoPSN, CESoMPLS
Timing	SyncE, IEEE 1588v2 PTP, BITS and Phase Clock, ACR (Adaptive Clock Recovery), ITU-T G.823/G.824 synchronization
Resiliency	Sub-50ms G.8031 EPS, G.8032v2 R-APS and MSTP Fast Ring Sub-50ms FRR, HVPLS dual homing, secondary LSP xSTP, resilient link, LAG (static/IEEE 802.3ad LACP), hot swappable, redundant AC/DC power supply
Quality of Service	Per Port/EVC/flow single/dual rate limiting, hierarchical rate limit per EVC, SP, WRR and Hybrid frames scheduling, CoS marking and mapping per EVC; IPv6 data path support
Multicast Management	IGMP snooping v1/v2/v3 IGMP proxy, Multicast VLAN registration (MVR)
OAM	Hardware-based IEEE 802.3ah EFM, IEEE 802.1ag CFM OAM over VPLS (OAMoVPLS)
Testing and Monitoring	ITU-T Y.1564* and RFC2544 test head and service performance analyzer ITU-T Y.1731 PM, SM and SLM, per-port/EVC/VLAN/COS, hardware-based flexible MAC-based loopbacks*
Management	Console, Telnet, SSHv2, Radius, TACACS+, SNMP v1/2/3, xFTP, NTP, DNS resolver, DHCP client and Zero-Touch provisioning*
Security	ACLs, RADIUS, SSHv2, SNMPv3, SFTP, port security, broadcast storm prevention, secured access, IS-IS authentication
General Specifications	Dimensions (W x H x D): 483 mm (19") x 67 mm (2.625") x 253 mm (10") Weight: 5.2 kg (11.5lb) Operating Temperature: -40°C to 70°C (-40°F to 158°F) Humidity: 5% to 95% non-condensing Input power: 100-240 VAC, 50/60 Hz, -36VDC to -72VDC
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 Environmental Compliance: RoHS Compliance

KEY APPLICATIONS

- Mobile backhaul and mobile backhaul wholesale
- Small cell dynamic IP/MPLS to the demarcation site
- Multi-tenant, multi-service HVPLS spoke (using MPLS or Q-in-Q)
- CES capable demarcation for SDH replacement
- Advanced HQoS and OAM requirement deployments

ORDERING INFORMATION

Part Number	Description
TMC-3208SH-AC-x*	T-Marc 3208SH Base System inc. fan tray, one (1) AC PSU, blank plates (PSU & module slot), accessory pack, AC power cord
TMC-3208SH-DC	T-Marc 3208SH Base System inc. fan tray, one (1) DC PSU -48Volt with DC feed connector, blank plates (PSU & module slot), accessory pack
LC-3208-8xT1/E1	Plug-in line card with 8 x T1/E1 RJ-45c CES interfaces (up to 2 line-card per T-Marc 3208SH system)

Note: 'x' specifies power supply and cord types: NA for North America, EUR: for Europe, UK: for United Kingdom

*Future feature



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