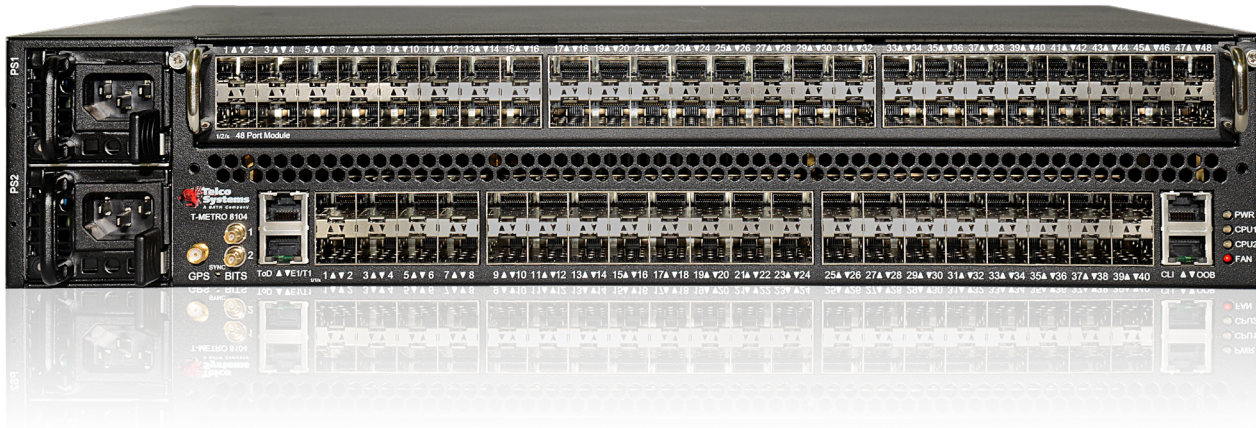# T-Metro 8104

MODULAR 1.2Tb MULTI-SERVICE AGGREGATION PLATFORM

THE NEED

VERSATILE & ROBUST Network Edge platforms are essential for telecom providers, aiming to cater for multi-service offerings. In order to be able to adapt to offer traditional WAN connectivity blended with added-value services, the demand today is for a high-performance rapidly deployed service platform with advanced features and low cost per port.CoS marking and mapping per EVC

THE SOLUTION

Telco Systems T-Metro 8104 is the Industry's leading MEF CE3.0-ready, modular, multipurpose, ultra-high capacity 1.2Tb service aggregation platform. It enables L2/ L3 VPN services, aggregate impressive number of 1/10Ge interfaces and hence assure rapid adaptability to service providers' changing service offerings while staying in line with business strategy.

- Interchangeable modules: Expand-as-you-grow

- 100GE hardware OAM capabilities

- L2/L3 over MPLS functionality

- Hot swappable power supplies and fans

- CPU redundancy*

- Compact 13.7" deep chassis

The T-Metro 8104 offers   next-generation capabilities. It combines a high-density, standalone and SLA-embling Carrier Ethernet platform with powerful switching capacity of up to 1.2Tb. Its service scalability, carrier-class resiliency, and advanced features include L2 & L3 VPN, QoS & OAM, for multiple use cases, including Off Net aggregation, Direct Internet Access (DIA), mobile backhaul (MBH), and optional testing diagnostics.

Telco Systems T-Metro 8104 is offered as a basic future-proof 2U high full rack unit, with optional cards for expanding the number of ports. Its advanced features include 100GE OAM, CPU redundancy*, hot-swappable fans, dual power supplies (AC/DC).

The innovative **T-Metro 8104** is built from the ground up to be a leading adaptable and dependable aggregation platform in the Telecom market.

Business agility growth: Rapidly deploy new services and grow at your own pace. The Telco Systems modular design supports multiple use cases, saves on training, support, and TCO.

Reduce OPEX and CAPEX: Significantly reduce cost of deployment and management with a single, flexible platform. One platform that handles impressive number of traffic sources for multi-service environment.

TELCO SYSTEMS
THE NETWORK CUTTING EDGE

BUSINESS SERVICESL2/L3 VPN
- Off-net/on-net
- Multi-tenancy support
- 100GE Hardware OAM
- Flexible SLA Management

E-RATE/EDUCATION
- Campus network interconnectivity and aggregation
- 100GE Hardware OAM
- Flexible SLA management
- Modular (configured via software)
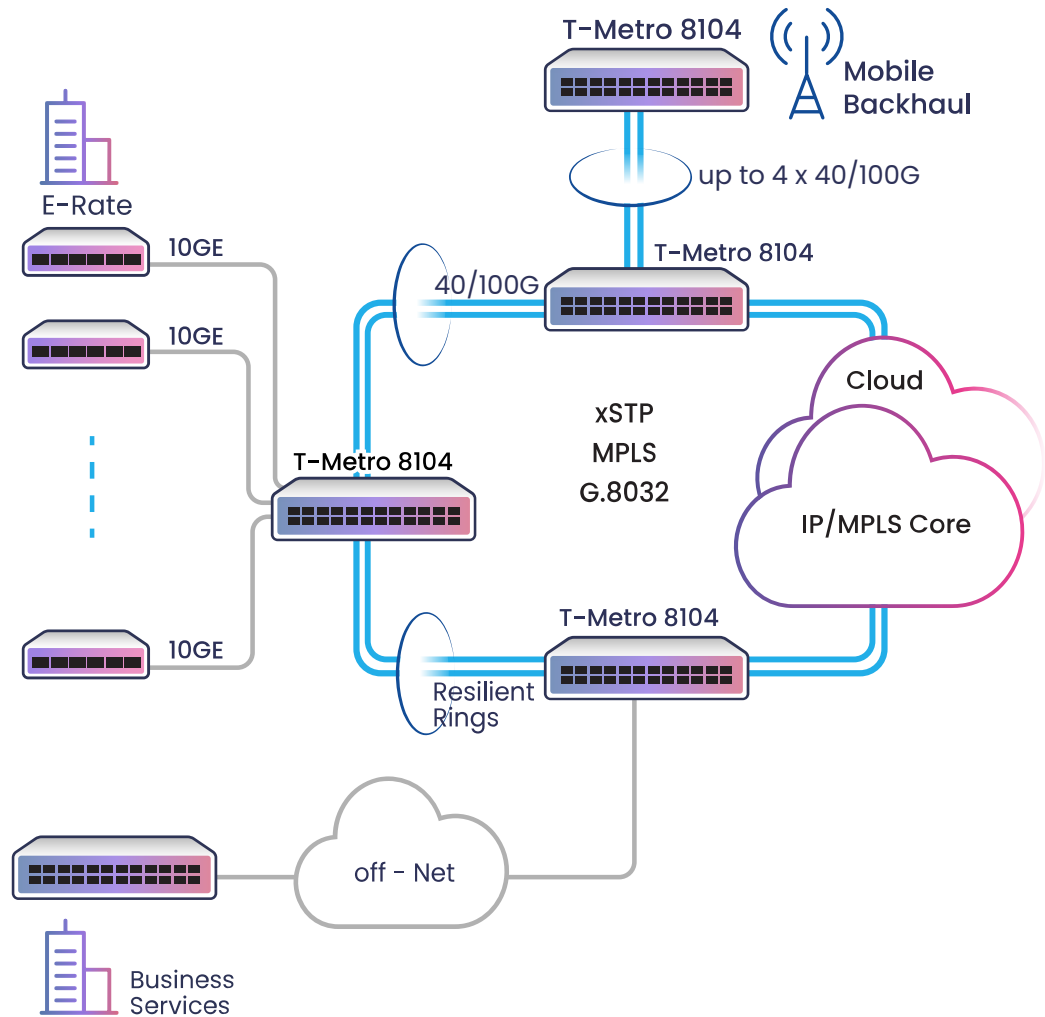- Multi-tenancy support

CLOUD & DATA CENTER CONNECTIVITY
- Any cloud
- High bandwidth
- Low latency
- Flexible SLA management
- Assured conenctivity

MOBILE BACKHAUL
- 100GE HW OAM
- Segment Routing*
- Flexible SLA Management
- Synchronization*
- Low Latency

T-Metro 8104 — Mobile Backhaul

up to 4 x 40/100G

T-Metro 8104

40/100G

E-Rate

10GE

10GE

10GE

T-Metro 8104

xSTP
MPLS
G.8032

Cloud

IP/MPLS Core

T-Metro 8104

Resilient Rings

off - Net

Business Services

Interfaces	Service Assurance	Supported Services	Resiliency	Synchronization*

Up to:
• 40 x 1/10GE + 4 x 40/100GE
• 88 x 10GE
	• Hardware-based CFM
	• ITU-T Y.1564 and RFC2544 test head and service performance analyzer
	• In-service testing capabilities
	• TU-T Y.1731 SLM/DMM per port/EVC/VLAN/COS
	• MEF 46,48,49 - SAT Power Play
	• TWAMP
		• MPLS L3 VPN over BGP
		• IEEE 802.1Q bridging
		• IEEE 802.1ad Q-in-Q
		• 2-tag management (push / pop / swap) for c-tag and s-tag
		• MPLS L2VPN
		• Full VPLS PE, MTU, HVPLS, VPWS
		• BFD support
			• Sub-50ms RSVP-TE FRR
			• TI-LFA*
			• Dual-homing VPLS/HVPLS
			• Secondary LSP
			• ITU-T G.8032, xSTP, resilient links
			• LAG (Static/IEEE 802.3ad LACP/Multi-chassis)
			• Up to 44 LAGs
			• CPU redundancy*
				• IEEE 1588v2 PTP
				• Synchronous Ethernet
				• External Timing Interfaces:
				  • Bits in or out (1.544Mb/s, 2.048MHz and 2 Mb/s)
				  • Frequency in or out (1.544MHz, 2.048MHz, and 10MHz)
				  • 1pps and ToD in or out
				  • (NMEA 0183, MSTS)

TECHNICAL SPECIFICATIONS

Hardware Characteristics	40xSFP+ or 4xQSFP28 + 40xSFP+ or 88xSFP+ ports. Wire speed non-blocking up to 1.2Tbps full duplex switching capacity in 2RU
Services	EEE 802.1Q bridging, IEEE 802.1ad Q-in-Q (TLS), MPLS L2VPN- Full VPLS PE, MTU HVPLS, VPWS, MPLS L3 VPN (BGP), can act as CE and PE
Timing*	SyncE, IEEE 1588v2 PTP External Timing Interfaces: -BITS in or out (1.544Mb/s, 2.048MHz and 2 Mb/s) -Frequency in or out (1.544MHz, 2.048MHz, and 10MHz) -1pps and ToD in or out (NMEA 0183, MSTS
Resiliency	Sub-50ms RSVP-TE FRR,TI-LFA, secondary LSP ITU-T G.8032, G.8031, xSTP, resilient link, dual homing VPLS/HVPLS LAG (Static/IEEE 802.3ad LACP/Multi-chassis), CPU redundancy*
Quality of Service	**Per port/EVC/flow single/dual rate limiting** Hierarchical rate limit per port/EVC/flow SP,WRR and hybrid frames scheduling CoS marking and mapping per EVC
Multicast Management	IGMP v1/v2/v3
OAM	Hardware-based IEEE 802.1ag CFM, IEEE 802.3ah EFM
Testing & Monitoring	MEF 46, 48, 49 ITU-T Y.1564 and RFC2544 test head and service performance analyzer In-service testing capabilities, ITU-T Y.1731 SLM/DMM 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, NETCONF
Network Protocols	MPLS/L3: IS-IS, OSPF, BGP, RSVP-TE, LDP, Segment Routing L2: xSTP, G.8032, LACP, MC-LAG, L2-Tunneling
Security	ACLs, RADIUS, SSHv2, SNMPv3, SFTP,port security, broadcast storm prevention, secure access
General Specifications	Dimensions 2RU H x 19"W x 13.7"D (133.35 x 482 x350mm) Weight: 9kg – 14.5kg Power: Dual redundant, hot-swappable AC or DC 24/-48VDC Max power consumption: 400W Operating temperature: 0ºC to 50ºC Humidity: Up to 95%, non-condensing Fan: Load sharing, speed controlled, hot-swappable
Regulatory Compliance	European CE marking, EN 55022 Class A, CISPR 22 Class A, EN55024:1998+A1, EMC Immunity, Harmonics: EN 61000- 3-2/ IEC 61000-3-2, Voltage fluctuations: EN 61000-3-3/ IEC
	61000-3-3, ESD: EN 61000-4-2/ IEC 61000-4-2, RFI-AM: EN 61000-4-3/ IEC 61000-4-3, EFT: EN 61000-4-4/ IEC 61000-4-4, Surges: EN 61000-4-5/ IEC 61000-4-5, Conducted: EN61000-4-6/ IEC 61000-4-6, Voltage DIP: EN 61000-4-11/ IEC
	61000-4-11, EMC Emissions, FCC 47 CFR Part 15 Class A, ICES-003 Issue 4 Class A (Canada), EN 300386, Telcordia GR-1089 issue 4
Environmental and Safety	Full RoHS, NEBS3 compliant UL 60950, EN 60950, IEC 60950, IEC 60825-1, CSA 22.2 No. 950, Class 1 Laser product safety (eye safety)

ORDERING INFORMATION

Part Number	Part Number
TM8104-BASE-2XX	T-Metro 8104 Aggregation Platform High Capacity, 2RU Chassis includes: 40x1/10GE SFP+ ports, 48x1/10GE SFP+ Line Card, hot-swappable Fan Tray, Y = HW OAM module, hot-swappable redundant AC or DC PSU (XX= AC or DC).
TM8104-88S-Y-2XX	T-Metro 8104 Aggregation Platform High Capacity, 2RU Chassis includes: 40x1/10GE SFP+ ports, 4x40/100GE QSFP28 Line Card, hot-swappable Fan Tray,Y = HW OAM module, hot-swappable redundant AC or DC PSU (XX = AC or DC).
TM8104-4QS-Y-2XX	T-Metro 8104 Aggregation Platform High Capacity, 2RU Chassis includes: 40x1/10GE SFP+ ports, 4x40/100GE QSFP28 Line Card, hot-swappable Fan Tray,Y = HW OAM module, hot-swappable redundant AC or DC PSU (XX = AC or DC).
TM8104-48SFP+	Expansion Line Card for T-Metro 8104 Base with 48x1/10GE SFP+ Ports
TM8104-4QSFP28	Expansion Line Card for T-Metro 8104 Base with 4x40/100GE QSFP28 Ports
TM8014-OAM	Expansion module for T-Metro 8104 Base. Enables HW OAM acceleration capabilities
TMM8104-ACPS	T-Metro 8104 110/220V AC PWR SUPPLY AC PWR Supply + Plug type
TM8104-DCPS	T-Metro 8104 48V DC PWR SUPPLY
TM8104-BRKT-XXIN	XX (XX = 19 or 23) - inch Ear SIDE BRACKETS for T-Metro 8104
TM8104-FAN	Fan for T-Metro 8104

* Subject to Roadmap

ABOUT TELCO SYSTEMS

Telco Systems delivers a portfolio of Network Edge (Carrier Ethernet and MPLS) demarcation, aggregation, and uCPE solutions that enables service providers to create intelligent, service-assured, CE 2.0-compliant networks for mobile backhaul, business services, and cloud networking. Telco Systems end-to-end Ethernet, SDN/NFV-ready product portfolio delivers significant advantages to service providers, utilities, and city carriers competing in a rapidly evolving telecommunications market. Telco Systems is a wholly owned subsidiary of BATM Advanced Communications.

To learn more, visit Telco Systems at http://www.telco.com