# Telco Systems
## A BATM Company

# T-Metro® 7124S

Multilayer 10 Gigabit Ethernet Enhanced Service Switch

The T-Metro 7124S multiservice aggregation device is a member of Telco Systems' field-proven T-Metro family of Carrier Ethernet switches.

The T-Metro family of products supports both Carrier Ethernet and MPLS with OAM (operations, administration and maintenance) tools and extensive QoS capabilities. This rich combination of technologies allows service providers to deliver enhanced service offering while maintaining competitive pricing.

The T-Metro provides access to advanced data services such as virtual private LAN services (VPLS), virtual private wire services (VPWS) and hierarchical virtual private LAN services (H-VPLS).

## Advanced Synchronization and Timing

The 7124S provides a comprehensive set of synchronization options optimized for cellular operators looking to backhaul their data and voice traffic from the Node-B\BTS to their core network over Ethernet\MPLS transport.

The device supports Synchronous Ethernet (SyncE), IEEE 1588v2, external clock source via BITS interfaces and clock distribution from one source to another for all source types. This flexibility allows any cellular operator to achieve a synchronization solution suitable for his own needs.

## Service Monitoring and Management

The 7124S service multiplexing capability enables service providers to deliver multiple, isolated, services on a per-port and/or a per-flow basis. Provisioning, monitoring and troubleshooting of each individual service can be done without impacting other services.

The 7124S supports industry-standards IEEE 802.1ag Connectivity Fault Management (CFM) and ITU-T Y.1731

allowing the service provider to monitor end-to-end services, identify connectivity and performance issues and isolate the problem from a remote location without truck rolls. The 7124S provides a wide set of QoS features that enables the service provider to have a granular control over the behavior of traffic and services in the network..

## Carrier-class design

Telco Systems' Internetworking Operating System (BiNOX) provides the robust administration, management, QoS, security, and performance requirements that allows the service provider to successfully deploy triple-play services, thus enhancing their competitive edge.

The 7124S boasts a wide variety of resiliency protocols. It offers link-level mechanisms such as resilient link and LAG with LACP, network-wide mechanisms such as MSTP, G.8032 and FRR and service-level mechanisms such as G.8031.

The 7124S offers the carrier an ideal solution, incorporating high capacity in a compact size (only 1.5RU in height, 10" in depth). The 7124S supports 24 dual-speed (100/1000) Ethernet plug-in (SFP) ports and one expansion slot for add-on line cards. The 7124S supports hot-swappable, redundant power supplies (either AC or DC) and hot-swappable fan-tray.
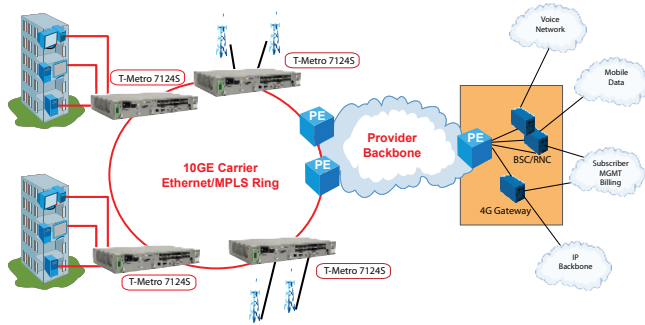
## Management

The 7124S is fully manageable via Netconf, SNMP or CLI with either In-band (IB) or Out-of-Band (OOB) management tools. The CLI complies with the de-facto industry standard

Telco Systems' EdgeGenie Service Management Platform simplifies management of the full lifecycle of network deployment from planning to managing, monitoring and maintaining Ethernet services.

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- 10 Gigabit Ethernet, wire speed non-blocking Carrier Ethernet Service Switch

- Purpose-built, highly available, Carrier Ethernet equipment

- MEF, IEEE, ITU-T and IETF standards compliance for multi-vendor interoperability

- EdgeGenie Service Management for full lifecycle support of Ethernet services

- Embedded BiNOX Operating System - learn once for all our platforms

- MPLS capabilities to provide access to H-VPLS and VPWS

- Enhanced Quality-of-Service (QoS) and Service granularity support

- Extensive, field proven, Operations, Administration and Maintenance (OAM) support

- Ideal for street cabinet installations
  o Extended operating temperature -20°C to 65°C (-4°F to 149°F)
  o Compact size (ETSI 300 compliant) 1.5RU height, 10" deep, 19" rack mountable

# T-Metro® 7124S

Multilayer 10 Gigabit Ethernet Enhanced Service Switch

## Key Applications

- Mobile backhaul (LTE, WiMAX, HSPA, GSM, etc.) traffic sorting, switching and aggregation
- Triple-play service and broadband aggregation
- 10G NID (E-NNI application)
- Hub & Spoke Layer 2 fiber aggregation
- Multi-tenant, multi-service H-VPLS spoke (using MPLS or Q-in-Q)
- Delivery platform for E-Line, E-LAN and E-Tree services
- High speed business applications access
- Data center consolidation

## Specifications

### Standards and Certifications

IEEE 802.1D; IEEE 802.1Q; IEEE 802.1P; IEEE 802.1ad
IEEE 802.1p Priority Queuing; IEEE 802.1u-2001
IEEE 802.3x PAUSE: flow control and back pressure
IEEE 802.1x; IEEE 802.3ad
IEEE 802.1d, IEEE 802.1w, IEEE 802.1s
IEEE 802.3; 802.3u; 802.3z; 802.3ab Ethernet
IEEE 802.3ah EFM-OAM
IEEE 802.1ag CFM
IEEE 1588v2 P-t-P timing
ITU-T G.8261/2,4 ITU-T G.781  Synchronous Ethernet
ITU-T Y.1731
ITU-T G.8031; ITU-T G.8032
ANSI*:  ANSI T1.102, ANSI T1.105, ANSI T1.107, ANSI T1.403, ANSI T1.404, ANSI T1.231,
Bellcore*:  GR-253-CORE, GR-499-CORE, GR-1244-CORE,
ITU-T*: G.703, G.704, G.706, G.707, G.732, G.775, G.781, G.783, G.813, G.821, G.823, G.824, G.825, G.826, G.831

### Interfaces

Flexible Ethernet combo-port interfaces
- Fiber SFPs (100M and 1000M)
- Dual-rate copper SFPs (100/1000M)
- Single-rate copper SFPs (1000M)
- Fiber XFPs*
- Sync Clock (2 x In, 1 x Out) Coaxial "1.0/2.3 R/A" interfaces*
- Phase Clock (2 x In, 1 x Out) Coaxial "1.0/2.3 R/A" interfaces*
Jumbo frames up to 9216 bytes
ASCII/RJ-45 management ports

### Security Features

Secure management protocols
- SNMPv3, SSHv2
Wirespeed Access control lists: Layer-2/3/4 and policy-enabled
Management VLAN
RADIUS and TACACS+ authentication

### Layer 2 Features

32k MAC addresses
802.1p, ToS, and DiffServ classification and remarking
Full range of IEEE 802.1Q based VLANs
Rate-limiting for bandwidth allocation
Transparent LAN Services
IGMP Snooping
Port mirroring

### MPLS Features

H-VPLS spokes
Dual homing with active and guarded LSPs
LSR functionality including FRR
RSVP-TE and OSPF-TE

### Traffic Management Features

QoS with ToS, and Differentiated Services
Eight system-wide traffic classes with flexible hybrid scheduling.
Classification by:
- Ingress interface, or port
- Ingress/egress rate limiting and egress shaping
- Source and/or destination MAC address
- IEEE 802.1ad priority code points (PCP)
- IPv4 TOS/DSCP field
- 2 rate 3 color (CIR/EIR) rate limiting
Congestion avoidance:
- Tail drop
- Weighted Random Early Detection (WRED)

### Protection Features

Resilient Link
Fast-Ring with sub 50ms switchover in fiber Ethernet rings
ITU-T G.8031
ITU-T G.8032
Link aggregation groups, including LACP with MAC address-based distribution
STP/RSTP/MSTP

### Management and OAM Features

Service management system
- EdgeGenie
Multiple management access protocols and tools
- SNMPv1/v2c/v3; Telnet, SSHv2, TFTP, NTP
- DHCP (client)
- SYSLOG
- NETCONF/YANG
IEEE 802.3ah EFM-OAM; IEEE 802.1ag CFM; ITU-T Y.1731
Embedded command line interface (CLI)
Direct IP-based management mode
RMON Group 1, 3, 4, and 10

### 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

### 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:   -20°C to 65°C (-4°F to 149°F)
Humidity:  5% to 95% non-condensing
Input power:         100-240 VAC, 50/60 Hz
                     -36VDC to -72VDC

*Using add-on line-card and future SW update, purchased separately.

## Ordering Information

Note: 'x' specifies power supply and cord types: NA for North America, EUR: for Europe, UK: for United Kingdom and DC: for -48V DC.

| Part Number | Description |
|---|---|
| TM-7124S-AC-x | Base System inc. Fan Tray, One (1) AC PSU, Blanking Plates (PSU & Module Slot), Accessory Pack, Console Management Cable and  AC Power Cord |
| TM-7124S-DC | Base System inc. Fan Tray, One (1) DC PSU -48Volt with DC feed connector, Blanking Plates (PSU & Module Slot), Accessory Pack, Console Management Cable |
| LC-7124-2XFP-B | Plug-in Line Card with 2 x 10G XFP Ports, Sync Clock (2 x In, 1 x Out) and Phase Clock (2 x In, 1 x Out) Coaxial "1.0/2.3 R/A" interfaces (One (1) line-card per T-Metro 7124S system) |