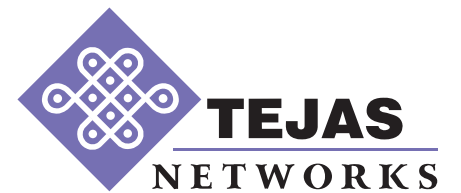


# TJ1400-7

Packet transport Network



## Product Highlights

- ✓ Convergence of CE and PTN in a compact chassis
- ✓ Range of front-haul and back-haul solutions for 4G/LTE and 5G
- ✓ Technologies: Carrier Ethernet, MPLS-TP

## Key Features and Benefits

TJ1400-7 is one of the industry's most feature-rich packet access and aggregation platforms. It provides unparalleled integration of Access, transport networks and introduces a revolutionary way of building modern-day telecom infrastructure, bringing down the cost of network build-outs dramatically. TJ1400-7 is designed for cost-optimized delivery of Mobile Backhaul, Broadband Access, Utility networks and Enterprise Services. It is a highly reliable platform providing redundancy, low power consumption, and high service scale in a compact next-generation platform.

Key features include:

- Access technologies ERPSv2, Open ERPSv2
- Transport technologies such as PTN, MPLS-TP, Massive-scale Circuit Emulation with 1+1 APS support of TDM technologies such as PDH/SDH (E1/DS1/E3/EC1/STM-n/OC-n), Synchronization Services
- VR/VRF over MPLS-TP.

**Software-defined Hardware™ and Modular Architecture:** Software-defined Hardware™ allows easy upgrades as per new protocols and technology standards. TJ1400-7 increases network reliability by providing optional redundant switch fabrics and the

ability to support protected UNIs and NNIs across interface cards. Modular interfaces decrease meantime to repair by requiring only the affected module to be replaced, not the entire unit.

**Dense Circuit Emulation for Network Modernization:** TJ1400-7 supports dense circuit emulation and allows easy transition from circuit switched to packet switched networks without changing service end-points.

**Advanced Ethernet Features:** TJ1400-7 provides best-in-class packet switching to create networks with the highest performance. Ingress rate limiting ensures that every packet entering the network is within the SLA bounds thus preventing any one customer/service from congesting/choking the network. Each packet is classified so that the appropriate network policies (like prioritization and scheduling) can be applied. Eight hardware CoS queues, and scheduling algorithms ensure that there are sufficient options available to manage the data traffic efficiently. The platform supports 802.1q VLANs, 802.1ad provider VLANs (Q-in-Q), and G.8032 ERPSv2 (Ethernet Ring Protection Switching). ERPSv2 provides 50ms protected packet rings for greater resiliency. Multiple ringlets and multiple ring topologies are supported.

**Ethernet OAM:** Allows real-time monitoring of end-to-end circuits, connections or trunks thus enabling quick detection and isolation of faults to a particular subnet, trunk, link or node. The TJ1400-7 supports BFD based Fault OAM and ping/traceroute at tunnel/pseudowire level. It also supports MPLS-TP based performance OAM for pseudowire services., Y.1731/IEEE 802.1ag based CFM OAM, Y.1731 PM counters, IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and built-in RFC 2544/ITU-T Y.1564 are supported.

**Flexible Network Architectures:** TJ1400-7 can build a flexible architecture best suited for all services: Linear for rapid deployment, Hub and spoke for cost-effective aggregation, Ring and ringlet for high utilization and resiliency and Meshed for low latency and flexible protection. This is achieved with a unique combination of functionality and ability for every optical port to be an UNI or an NNI.

**Multi-Service Support:** TJ1400-7 supports high speed enterprise services through Ethernet and MPLS-TP, Network modernization through circuit emulation, legacy TDM applications on SONET/SDH, residential multiplex and next-generation mobile

backhaul as well as legacy 2G/3G backhaul.

**Enterprise Services:** Advanced packet synchronization and circuit

- Supports a versatile mix of services ranging from low speed E1 (2 Mbps), STM-16/, 10GE (10 Gbps)
- Carrier Ethernet for interoperable E-Line, E-LAN and E-Tree Business Ethernet services
- High-density circuit emulation cards for DACS replacement applications while retaining legacy TDM leased line services

**Mobile Backhaul:** TJ1400-7 can be used for 2G/3G/4G and 5G backhaul; simpler converged packet optical equipment with PTN/MPLS-TP and Carrier Ethernet support instead of using expensive IP/MPLS in the access.

- Operators can reuse their existing investments in L2 transport; selective introduction of L3 functionality (e.g., L3 VPN) for 5G mid-haul without requiring expensive network overhaul features for pure-packet backhaul of 2G/3G voice and TDM services.
- Ease of evolution to SDN architecture with centralized control plane and compatible with E2.0 traditional transport-style operations.

## Technical Specifications

### Packet Switching Capacity

300 Gbps bidirectional switching capacity

### Interfaces

- Upto 20\*10GE (SFP+)
- Upto 50 \* GE (SFP)
- Upto 40 \* 10/100/1000 Base-T, 100LX/FX
- 1 x RJ-45 1000BASE-T management Ethernet port (MGMT)
- BITS (1.544Mb/s, 2.048MHz and 2 Mb/s)
- Local console port

### Services

- MEF2.0 compliant Carrier Ethernet (E-Line, E-Lan, E-Tree)
- L2 VPN Services - PW, MS-PW, VPLS & H-VPLS services
- VRF/VR over MPLS-TP.
- Circuit Emulation
- Topologies: Mesh, dual homing, multi-ring, ring, star, linear

### Controller Cards

- CEF4: 2\*1G + 2\*10G
- CEF8-1: 5\*1G/10G
- CEF8-2: 1\*100G+2\*10G

### Line Cards

- CEL6 : 8xGE Ethernet Line Card (8xSFP Ports)
- CEL 13: 2x10GE Ethernet Line Card (2xSFP+; single slot)

### PDH, CEM, Line Cards

- ST63E1 CEM: 63xE1 Ports
- CEM1: 8\* MRO Ports (2\*STM16; 8 \*STM1/4)

### Ethernet/MPLS-TP OAM

- MPLS-TP OAM RFC 5860
- BFD
- ITU-T Y.1731
- 802.1ag OAMP
- LSP/PW Ping and Traceroute (RFC6426)
- ERPS (G.8032)
- 1:1 Linear Protection
- On demand LM/DM at VLAN level
- Port Mirroring and Loopback
- Link integrity (LLCF/LLR)
- 802.1ad LLDP
- In Built RFC2544/Y.1564

### Other features

- LACP (Protection and Distribution)
- Static LAG (Protection and Distribution)
- SyncE

- Jumbo Frame
- Multi-Segment Pseudowires
- VLAN Translation
- NTP
- Performance Monitoring
- Hierarchical Protection
- VLAN Tagged MPLS-TP

## QOS

- Supports 8 Hardware Queues
- Traffic classification based on priority/DSCP, Shaping, Scheduling (WRED/Tail-Drop), Policing (sTCM, srTCM, trTCM)
- IEEE 802.1p/DSCP based classification/EXP bits.
- Storm Control

## Security

- ACLs
- RADIUS
- TACACS + Authentication
- Secure Protocols: HTTPS,SNMPv3

## Management

- All configurations via TJ5500: Point and click simple and user friendly GUI supports FCAPS functionality
- Supports both Cloud based and On-premises deployments.

## Circuit Emulation Services

- SDH,CEM: STM1/4/16, PDH/Electrical CEM: E1 and E3

## Electrical Specifications

- Input Voltage: -40V to -72V DC
- Input Voltage: 100V AC to 240V AC
- Maximum Power: 600 Watts maximum per unit

## Environmental

- Operating Temperature : 0°C to 50°C
- Storage Temperature : -40°C to 70°C
- Operating Humidity: 5% to 95% RH
- ETS 300 019-1-1, Class 1.2 Storage
- ETS 300 019-1-2, Class 2.3 Transportation
- ETS 300 019-1-3, Class 3.2 Operating stationary use
- QM333 –Standard for Environmental Testing of Telecommunication Equipment

## EMI/EMC

- FCC Part-15, Subpart B, Class-A
- ICES-003, Class-A
- EN 55032 Class-A/CISPR-32 Class-A
- EN 61000-3-2 and EN 61000-3-3
- EN 55035/CISPR 35 (EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11, and EN61000-4-29)

## RoHS compliant

- Directive 2011/65/EU and Directive

## Safety

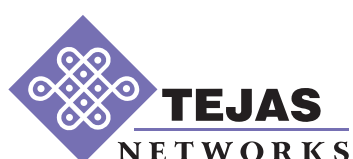
- Certified for CB - Scheme
- IEC 62368-1/EN 62368-1
- UL 62368-1

## Laser Safety

- IEC 60825-1/EN 60825-1
- IEC 60825-2/EN 60825-2
- 21 Code of Federal Regulations (CFR) 1040

## Physical

- Rack Size: 2RU
- Dimensions (W\*H\*D in mm): 482.6x88.5x237
- FAN: Hot Swappable
- Airflow: left to right



**HQ: Bangalore, India**  
 New Delhi | Gurgaon | Mumbai | Kolkata | Chennai

[www.tejasnetworks.com](http://www.tejasnetworks.com) | +91-80-4179-4600  
[info@tejasnetworks.com](mailto:info@tejasnetworks.com)

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