

# JumboSwitch 10G

MEF Carrier Ethernet 2.0 Compliant

# TC3850-1

## Features

- E-Line, E-LAN, E-Tree, and E-Access Services
- Ethernet OAM Service Assurance
- Sub-50ms Protection Switching by ITU-T G.8032v2 ERPS
- IEEE 1588v2 PTP Time Synchronization

## Configuration

- 4-port 10G SFP+, 4-port 100/1000M SFP, and 4-port GbE RJ45
- 2 Open Slots for JumboSwitch® Ethernet and TDM Interface Cards
- 2U Chassis



JumboSwitch® 10G Multi-Service Ethernet Platform Front View

## Description

The JumboSwitch® TC3850-1 is a 10G Multi-Service Layer 2 Switch supported in a modular chassis design with 2 open slots compatible with JumboSwitch® expansion cards. Advanced networking features of the JumboSwitch® 10G include:

- **Complies with Carrier Ethernet 2.0** including IEEE 802.3ah MAC Layer OAM, IEEE802.1ag Ethernet CFM, ITU-T Y.1731 Ethernet OAM, ITU-T G.8031 Ethernet Linear Protection Switching, ITU-T G.8032v2 Ethernet Ring Protection Switching (ERPS) and IEEE 1588v2 PTP.
- **VLAN, QoS and Rate Control** which allows network segregation, isolation, prioritization and bandwidth control.
- **Diagnostics** include Temperature, Power and SFP Monitoring, and RMON.
- **Management** is through Web, SNMP, or Command Line Interfaces. Settings can be saved and loaded to simplify network administration, and firmware can be remotely upgraded.
- **Security** features such as 802.1X, RADIUS/TACACS+, AAA, SNMPv3 and SSL provide both network and management security.
- **Durable and reliable operation.** The TC3850-1 is designed with extended temperature, shock/vibration, and surge ratings. The modularized chassis comes with a pair of redundant power supplies that can be configured to use AC, DC or mixed AC/DC power sources.

## Applications

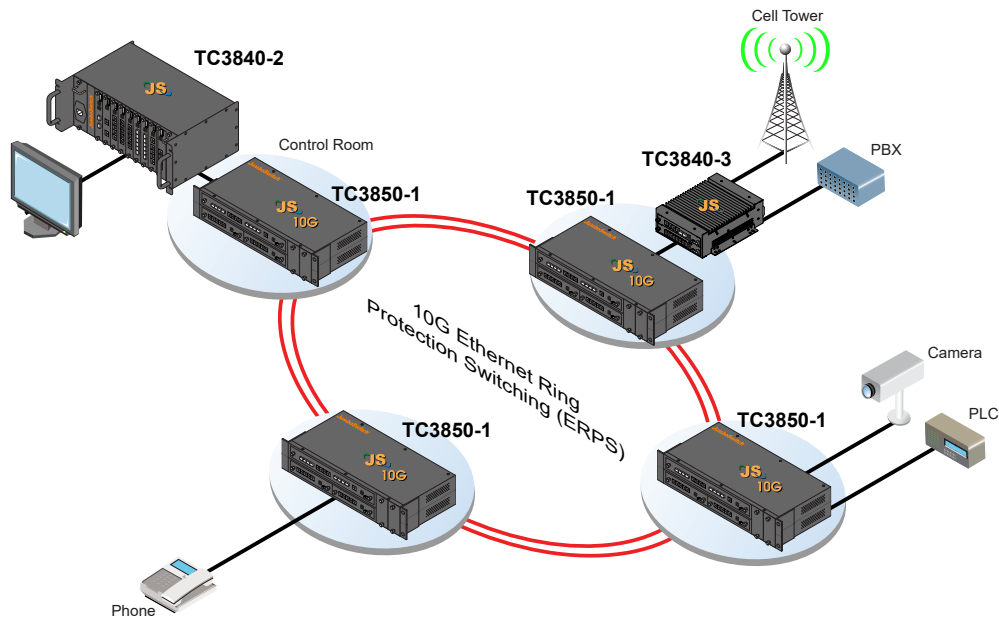
Built for mission critical and industrial communications:

- Teleprotection
- Internet Service Provider (ISP)
- Public Safety
- Air Traffic Control
- Oil & Gas

Feature	Description
<b>Ethernet</b>	
MAC Table	Up to 32K MAC addresses
Spanning Tree	<ul style="list-style-type: none"> <li>Spanning Tree Protocol (STP) IEEE 802.1D</li> <li>Rapid Spanning Tree Protocol (RSTP) IEEE 802.1w/802.1D-2004</li> <li>Multiple Spanning Tree Protocol (MSTP) IEEE 802.1s/802.1Q-2005</li> </ul>
Aggregation	Link Aggregation Control Protocol (LACP) IEEE 802.3ad <ul style="list-style-type: none"> <li>Up to 32 groups</li> <li>Up to 16 ports per group</li> </ul>
Virtual LAN (VLAN)	Support for up to 4094 IEEE 802.1Q VLANs simultaneously <ul style="list-style-type: none"> <li>Port-based VLAN</li> <li>MAC-based VLAN</li> <li>Protocol-based VLAN</li> <li>Private VLAN</li> </ul>
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS
Generic VLAN Registration Protocol (GVRP)	Dynamic VLAN for automatically propagating and configuring VLANs in a network
IGMP v1/v2/v3 Snooping	Provides IGMP (IPv4 multicast group) support on Layer 2 switches.
MLD v1/v2 Snooping	Provides MLD (IPv6 multicast group) support on Layer 2 switches.
Link Layer Discovery Protocol (LLDP)	IEEE 802.1AB standard for advertising their identity, capabilities, and neighbors of network devices
Storm Control	Policing and protection from broadcast and flooding
<b>Quality of Service</b>	
Hardware Priority Queue	8 QoS class queues per port
Scheduling	Strict priority and deficit weighted round-robin (DWRR)
Classification	<ul style="list-style-type: none"> <li>Port based; 802.1p Class of Service (CoS)</li> <li>Port Tag Remarking</li> <li>DSCP based; Differentiated Services (DiffServ)</li> <li>DSCP translation and remarking</li> </ul>
Rate Limiting	Ingress policing and egress shaping per port and per CoS
<b>Carrier Ethernet Protocol and Features</b>	
Ethernet CFM	IEEE 802.1ag standard that provides connectivity fault management
Service OAM	ITU-T Y.1731 Ethernet OAM standard for dividing a network into maintenance domains in the form of hierarchy levels
Provider Bridging	VLAN stacking (Q-in-Q) IEEE 802.1ad
Bandwidth Profile	Policing with leaky bucket (CIR/CBS & EIR/EBS) are supported per service
Ethernet Ring Protection Switching (ERPS)	ITU-T G.8032v2 provides sub-50 ms protection switching for Ethernet ring topologies
Precision Time Protocol (PTP)	IEEE 1588v2 protocol provides sub-microsecond range network timing and synchronization for Ethernet networks

## Technical Information (cont.)

Feature	Description
<b>Security</b>	
Secure Shell (SSH) Protocol	SSH secures Telnet traffic in or out the switch, SSH v1 and v2 are supported
HTTPS	SSL encrypts the HTTP traffic, allowing secure access to the web based management GUI
Network Access Control	IEEE 802.1X defined: <ul style="list-style-type: none"> <li>• Port based authentication</li> <li>• MAC based authentication</li> <li>• Single host mode</li> <li>• Multi host mode</li> </ul>
AAA	Authentication, Authorization and Accounting provides management security with a central RADIUS or TACACS+ server
RADIUS/TACACS+	Supports security through central RADIUS and TACACS+ servers
Port Security	Locks MAC Addresses to ports, and limits the number of learned MAC addresses
DHCP Snooping	Provides security by filtering un-trusted DHCP messages, and by building and maintaining a dynamic IP address database
IP Source Guard	Prohibits IP packets with invalid IP addresses from accessing the network
ARP Inspection	Protects from Address Resolution Protocol (ARP) spoofing attacks
Access Control Lists (ACL)	Support for up to 256 entries for permitting or denying Ethernet packets based on variety of parameters
<b>Management</b>	
Web GUI Interface	Built-in switch configuration utility for browser-based device configuration (HTTP/HTTPS). Supports configuration, system dashboard, maintenance, and monitoring
SNMP	SNMP v1, v2c and v3 with support for multiple trap hosts
Remote Monitoring (RMON)	Supports RMON groups 1,2,3,9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring and analysis
Network Time Protocol (NTP)	Protocol for providing clock synchronization. NTP Authentication is also supported.
IPv4 and IPv6 Support	Both IP version 4 and version 6 are supported
Firmware Upgrade	<ul style="list-style-type: none"> <li>• Web browser upgrade (HTTP/HTTPS)</li> <li>• Upgrade through console port (TFTP)</li> <li>• TCView® to deploy the switch firmware</li> </ul>
Dual Image	Dual image provides independent primary and secondary OS files for backup while upgrading
Diagnostics	Syslog, cable/link diagnostics, ping, chassis status



Typical Application Using the TC3850-1 to form an ERPS Network

**Data Rates**

- SFP+ ..... 10 Gbps
- SFP ..... 100/1000 Mbps
- RJ45 ..... 10/100/1000 Mbps

**Optical**

- Wavelength
- Multimode ..... 850nm
- Single Mode ..... 1310/1550nm
- SFP+ Optic
- Connector ..... LC
- Port ..... 4
- Interface ..... 10G BASE-SR/ER/LR/ZR
- SFP Optic
- Connector ..... LC
- Port ..... 4
- Interface ..... 1G-LX/SX , 100M-FX

**Electrical**

- Ethernet
- Connector ..... RJ45
- Port ..... 4
- Interface ..... 1000 Base-T
- Console
- Connector ..... RJ45
- Port ..... 1
- Interface ..... RS-232

**Regulatory Approval**

- CE, FCC Part 15, CISPR (EN55022)
- CLASS A, IEC 61850-3, IEEE 1613,
- NEMA TS-2, EN50155, AREMA

**LEDs**

- PWR A, PWR B, VCC, MGM, FAN,
- UNIT ALARM, SYSTEM ALARM,
- LINK, SPEED

**Power**

- AC ..... 115/230V, 50/60Hz
- DC ..... 12/24/48/125V

**Operating Temperature**

- High Temp ..... -20°C to 70°C

**Storage**

- Temperature ..... -40°C to 90°C
- Humidity ..... 95% non-condensing

**Physical (Rackmount Card)**

- Height ..... (8.9 cm) 3.5"
- Width ..... (48.3 cm) 19.0"
- Depth ..... (26.7 cm) 10.5"
- Weight ..... (6.8 kg) 15.0 lbs

\*Contact factory for higher requirements



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ISO 9001  
Quality

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