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 SFP+ 10GbE, 4-port SFP GbE and 4-port 10/100/1000Base-T 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® interface cards. Advanced networking features of the JumboSwitch® 10G include:

- **Complies with Carrier Ethernet 2.0 specifications** including IEEE 802.3ah MAC Layer OAM, IEEE802.1ag Ethernet CFM, ITU-T Y.1731 Ethernet OAM Performance Monitoring, ITU-T G.8031 Ethernet Linear Protection Switching, ITU-T G.8032v2 Ethernet Ring Protection Switching (ERPS) and IEEE 1588v2 PTP.

- **Advanced networking features** such as Rate Control, VLAN, QoS and Security. Rate Control gives users, especially data service providers, the ability to control or limit bandwidth. Password protection provides secure user administration via HTTPS, SSH, SNMPv3, SSL, and 802.1X security features.

- **Diagnostics** include Temperature, Power Monitoring and Traffic Statistics.

- **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.

- **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.
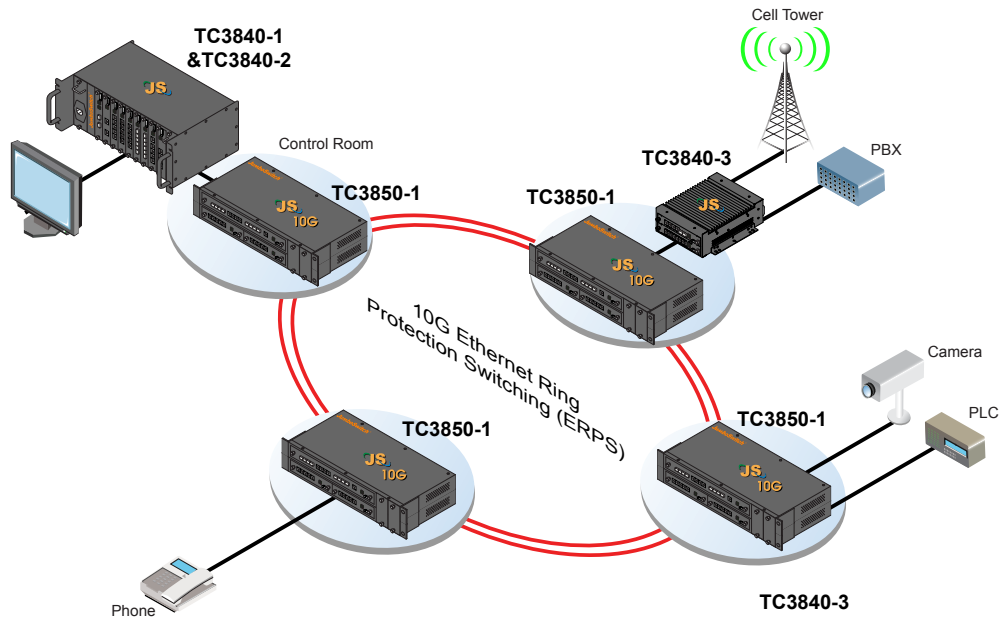
■ Applications

Built for mission critical and industrial communications:

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

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JumboSwitch® Series

Feature	Description
Ethernet	
Spanning Tree Protocol (STP)	• Spanning Tree 802.1d • Rapid Spanning Tree (RSTP) 802.1w • Multiple Spanning Tree (MSTP) 802.1s
Aggregation	Link Aggregation Control Protocol (LACP) IEEE 802.3ad • Up to 14 groups • Up to 8 ports per group
VLAN	Support for up to 4K VLANs simultaneously (out of 4096 VLAN IDs) • Port-based VLAN • 802.1Q tag-based VLAN • MAC-based VLAN • Management VLAN • Private VLAN Edge (PVE)
Voice VLAN	Voice traffic is automatically assigned to a voice-specific VLAN and treated with appropriate levels of QoS
Generic VLAN Registration (GVRP)	Protocols for automatically propagating and configuring VLANs in a bridged domain
DHCP Snooping	DHCP snooping provides security by filtering un-trusted DHCP messages and by building and maintaining a DHCP snooping binding table
IGMP v1/v2/v3 snooping	IGMP limits bandwidth-intensive multicast traffic to only the requesters; supports 1024 multicast groups (source-specific multicasting is also supported), IETF RFC 3376
IGMP Proxy	IGMP Proxy reporting is supported in IGMP snooping
MLD v1/v2 snooping	Deliver IPv6 multicast packets only to the required receivers, IETF 4604
MAC Table	Up to 32K MAC addresses
Link Layer Discovery Protocol (LLDP) with LLDP-MED extensions	Used by network devices for advertising their identity, capabilities, and neighbors on an Ethernet local area network, 802.1AB
Broadcast/Multicast Storm Control	Policing with leaky bucket storm control and protection from broadcast, flooding, and multicast.
Layer 2 Control Frame Tunneling	Supports Layer 2 control protocol peering, forwarding, and tunneling.
Quality of Service	
Hardware Priority Queue	Eight QoS class queues per port
CIR, CBS, EIR, EBS	Committed Information Rate & Excess Information are supported per-port, per-VLAN, and per-CoS
Scheduling	Strict priority and deficit weighted round-robin (DWRR)
Classification	• Port based; 802.1p Class of Service Bits (CoS) • IPv4/IPv6 precedence and type of service (ToS) • DSCP based; Differentiated Services (DiffServ) • DSCP translation and remarking
Rate Limiting	Ingress policing, egress shaping and rate control, per CoS, per port

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Feature	Description
Carrier Ethernet Protocol and Features	
IEEE 802.3ah Ethernet EFM	Simple link fault management (LFM) for Ethernet links is defined in IEEE 802.3ah
IEEE 802.1ag Ethernet CFM	IEEE 802.1ag Ethernet CFM function that provides connectivity fault management
ITU-T Y.1731 Performance Monitoring	ITU-T service OAM standard Y.1731 divides a network into maintenance domains in the form of hierarchy levels
Provider Bridging	Provider Bridging (Q-in-Q) 802.1ad
ITU-T G.8032v2 ERPS	G.8032v2 provides the standards-based method of delivering high-performance Carrier Ethernet services over a multi-node ring protection switching (This is important as carriers want to move away from SONET/SDH to a native Ethernet based infrastructure)
IEEE 1588v2 PTP	IEEE 1588v2 delivers implementation for nanosecond accurate network timing and synchronization for IP networks
Security	
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 browser-based management GUI in the switch
IEEE 802.1X	IEEE802.1X: RADIUS authentication, authorization and accounting, MD5 hash, guest VLAN , single/multiple host mode and single/multiple sessions Supports IGMP-RADIUS based 802.1X Dynamic VLAN assignment
Layer 2 isolation Private VLAN Edge (PVE)	PVE (also knows as protected ports) provides L2 isolation between clients in the same VLAN, supports multiple uplinks
Port Security	Locks MAC Addresses to ports, and limits the number of learned MAC addresses
IP Source Guard	Prevents datagram with spoofed addresses from being in the network
RADIUS/TACACS+	Supports RADIUS and TACACS+ authentication. (Client functionality only)
Storm control	Prevents traffic on a LAN from being disrupted by a broadcast, multicast, or unicast storm on a port
ACLs	Support for up to 256 entries Drop or rate limitation based on source and destination MAC, VLAN ID or IP address, protocol, port, differentiated services code point (DSCP) / IP precedence, TCP/UDP source and destination ports, 802.1p priority, Ethernet type, Internet Control Message Protocol (ICMP) packets, IGMP packets, or TCP flag
Management	
Web GUI interface	Built-in switch configuration utility for browser-based device configuration (HTTP/HTTPS). Supports configuration, system dashboard, maintenance, and monitoring
Dual Image	Dual image provides independent primary and secondary OS files for backup while upgrading
SNMP	SNMP v1, v2c and v3 with support for traps, and SNMPv3 user-based security model (USM)
Remote Monitoring (RMON)	Embedded RMON software agent supports RMON groups 1,2,3,9 (history, statistics, alarms, and events) for enhanced traffic management, monitoring and analysis
IPv4 and IPv6 dual stack	Coexistence of both protocol stacks to migration
Firmware upgrade	• Web browser upgrade (HTTP/HTTPS) • Upgrade through console port (TFTP) • TCView® to deploy the switch firmware
Port mirroring	Traffic on a port can be mirrored to another port for analysis with a network analyzer or RMON probe. Up to N-1(N is Switch's Ports) ports can be mirrored to single destination port. A single session is supported.
Diagnostics	Syslog, NTP, cable/link diagnostics, ping, chassis status

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Typical Application Using the TC3850-1 to form an Ethernet Ring Protected Switching Network

Data Rates

10 Gbps
10/100/1000 Mbps with Rate Control

Optical

Transmitter.........................LASER*
Receiver..............................PIN Diode
Wavelength
..................................SFP: 850nm MM
..........................SFP: 1300/1550nm SM
SFP+ Optic
  Connectors...............................LC
  Port..4
  Interface.............10GBASE-SR/ER/LR
SFP Optic
  Connectors...............................LC
  Port..4
  Interface............................1G LX/SX

Electrical

Ethernet
  Connector.............................RJ45
  Female Ports...................................4
  Interface.................10/100/1000M
Console
  Connector.....................RJ45 Female
  Ports..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, SPEED, LINK STATUS, UNIT ALARM, SYSTEM ALARM, MGMT, VCC

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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Certified System ™
SAI GLOBAL
ISO 9001
Quality

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Note: Information contained in this data sheet is subject to change without prior notice.

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FC CE

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