TR-S8500 Series

Carrier-class Core Switches

Product Overview

Techroutes S8500 Series, a new generation T-bit carrier-class core switch oriented for carrier's IP MANs and campus networks. Developed on the leading architecture of distributive multi-stage switching matrix and TRROS - a software platform Techroutes with its own independent intellectual property rights, TR-S8500 Series provides high-performance L2/L3/L4 wire speed switching capacity by integrating services such as IPv6, MPLS VPN, network security, flow analysis, virtualization, with high reliable techniques including continuous forwarding, graceful restarting and loop network protection, the work efficiency of TR-S8500 Series and its maximum running time are guaranteed. TR-S8500 Series supports the "Green Touch" architecture and "Smart@CHIP".

Product Characteristics

- ➢ **Advanced Hardware Architecture Design & Industry-Leading Processing capacity**
- ➢ With the leading architecture of distributive multi-stage switching matrix, the ASIC switch chip and the multi-core processor, the backplane of TR-S8500 Series is up to 12T and the data switching capacity is up to 5.12T.
- ➢ TR-S8500 Series supports high-intensity 10GE service boards and realizes the wire-speed switching of 3 layers without blocking.

Your Route to The Destination

➢ A single service board of TR-S8500 Series supports up to 512K MAC address entries and 200K layer-3 routing tables.

➢ **Carrier-class High Reliability**

➢ TR-S8500 Series adopts HPS (Hitless Protection System). The key components of TR-S8500 Series such as the power system and the fan system support redundancy design. All system modules support hot-swap and seamless switching without need of manual intervention.

➢ TR-S8500 Series supports redundancy protection mechanism such as STP/RSTP/MSTP protocol, VRRP protocol, ring network protection, dual uplink active/standby link protection and LACP link aggregation.

➢ TR-S8500 Series supports ISSU (In-Service Software Upgrade) and GR (Graceful Restart) for OSPF/BGP, guaranteeing the user data non-stop forwarding when the system is upgrading.

➢ TR-S8500 Series supports BFD and realizes fault detection and service recovery in seconds through linking with layer-2 or layer-3 protocol.

➢ TR-S8500 Series has perfect Ethernet OAM, 802.3ah, 802.1ag and ITU-Y.1731, which can real-time monitor the network operating state and rapidly detect and locate the malfunction.

➢ High Reliability (99.999%): MTTR of TR-S8500 Series is 50ms, meeting the requirement of the carrier-level service.

➢ **Innovative VSS Technique**

➢ TR-S8500 Series supports TRVSS (Techroutes Virtual Switch System), which can virtualizes multiple physical devices into one in logic. The virtualized system is superior to the independent physical device in performance, reliability, flexibility and management.

➢ Doubled Performance: The virtualized system makes the best use of each link in the device and avoids the blocking of STP to the link.

➢ High-reliability: Based on the advanced distributed processing technique and the efficient function of cross-physical device link aggregation, TR-S8500 Series provides with non-stop layer-3 routing forwarding and avoids single points of failure.

➢ Flexibility: With the function of TR-S8500 Series virtual cluster service cards, the distance of virtual cluster system can expand to 80KM, breaking the geographic restriction of traditional cluster technique.

➢ Easy Management: The whole virtual system realizes single IP unified management and simplifies the management of network device and network topology.

➢ **Comprehensive Service**

➢ TR-S8500 Series supports complete layer-2 and layer-3 multicast routing protocol and meets the access requirement of IPTV, multi-terminal high-definition video monitoring and high-definition video meeting.

➢ TR-S8500 Series supports complete layer-3 routing protocol and a super-large routing table capacity, which make super-large data center network, campus network, enterprise network and industry private networks available.

➢ TR-S8500 Series supports complete MPLS VPN of layer-2 and layer-3, which meets the requirement of industry private VPN users and enterprise network VPN users.

➢ **Comprehensive IPv6 Solutions**

➢ TR-S8500 Series comprehensively supports IPv6 Neighbor Discovery, ICMPv6, Path MTU Discovery and DHCPv6.

➢ TR-S8500 Series supports IPv6 based Ping, Traceroute, Telnet, SSH, ACL, meeting the need of IPv6 network equipment management and service control.

➢ TR-S8500 Series supports IPv6 multicast characteristics including MLD, MLD Snooping and IPv6 layer-3 routing protocols including IPv6 static routing, RIPng, OSPFv3 and BGP4+.

➢ TR-S8500 Series supports IPv4-to-IPv6 technologies including IPv6 manual/automatic tunnel, auto tunnel, IPv6-to-IPv4 tunnel, and ISATAP tunnel.

➢ **Comprehensive Security Mechanisms**

➢ TR-S8500 Series adopts advanced hardware architecture design, realizing the hierarchical scheduling and protection of the packet. It provides multiple security measures to defend against DOS or TCP attacks; and supports command line authority control based on user levels.

➢ Comprehensive Security Certification: TR-S8500 Series complies with IEEE 802.1x, Radius, TRTacacs+.

➢ Enhanced Service Security Mechanism: TR-S8500 Series supports the plain text or MD5 authentication of relevant routing protocol; uRRF.

➢ **Innovative Green Environmental Design**

➢ TR-S8500 Series supports the "GreenTouch" architecture. Its power consumption is no more than 1000W.

➢ Smart Power Management System: TR-S8500 Series adopts advanced power system architecture design which can realize the function of efficient power switching, private power monitoring, soft start, real-time monitoring, intelligent adjustment and energy-saving.

Your Route to The Destination

➤ Smart Fan Management System: TR-S8500 Series is designed with the intelligent fan and supports switching between front-back mode and back-front mode and fan automatic speed regulation.

➤ TR-S8500 Series supports Efficient Ethernet and complies with International standard IEEE 802.3az.

Technical Specifications

Item	TR-S8503	TR-S8506	TR-S8510
Backplane	3Tbps	6Tbps	12Tbps
Switching Capacity	1.28Tbps	2.56Tbps	3.12Tbps
Packet forwarding rate	360Mpps	720Mpps	1440Mpps
Total Number of Slots	3	6	10
Number of service slots	2	4	8
MAC Switching Capacity	Static configuration and dynamically learning of MAC address		
	Check and delete MAC address		
	Configuring of MAC address aging time		
	Limit on MAC address learning number		
	MAC address filtering function		
	Black-hole MAC items		
VLAN	4K VLAN entries		
	GVRP		
	1:1 and N:1 VLAN Mapping		
	Basic QinQ and selective QinQ		
	Private VLAN		
STP	802.1D (STP), 802.1W (RSTP), 802.1S (MSTP)		
	BPDU protection, root protection and ring protection		
Multicast	IGMP v1/v2/v3		
	IGMP Snooping		
	IGMP Fast Leave		
	Multicast group policy and multicast number limit		
	Multicast traffic cross VLAN duplication		
	PIM-SM and PIM-DM		
IPv4	Static routing, RIP v1/v2, OSPF and BGP		
	Policy routing.		
	Load balance through equal-cost routing		
	Graceful Restart of OSPF and BGP		

Your Route to The Destination

	BFD for OSPF and BGP
IPv6	ICMPv6, DHCPv6, ACLv6, IPv6 Telnet
	IPv6 Neighbor Discovery
	Path MTU Discovery
	MLD and MLD Snooping
	IPv6 static routing, RIPng, OSPFv3 and BGP4+
	Manual tunnel, ISATAP tunnel and 6-to-4 tunnel
MPLS VPN	LDP protocol
	MCE
	P/PE of MPLS VPN
	MPLS Traffic Engineering (TE)
	MPLS Operations, Administration, and Maintenance (OAM)
QoS	Traffic classification of each field of L2/L3/L4 protocol headers
	CAR traffic control
	802.1P/DSCP priority remark
	Multiple queuing algorithms such as SP, WRR or SP+WRR
	Tail-Drop, WRED
	Traffic supervision and traffic shaping
Security features	Identification and filtering of L2/L3/L4 based ACL
	Defend against DOS or TCP attacks
	Suppression of broadcast, multicast and unknown unicast packet
	Port isolation
	Port security, IP+MAC+port binding
	DHCP Snooping, DHCP Option 82
	IEEE 802.1x certification
	Radius and TRTacacs+ Authentication
	uRPF
	Command line authority control based on user levels
Reliability	Dual Master Control Redundancy (except TR-S8503)
	Power 1+1 redundancy
	Master control, service card hot swap and service automatic recovery
	Static LACP link aggregation and cross service card link aggregation
	Ring network protection including EAPS
	VRRP
	Ethernet OAM 802.3ah/802.1ag/ITU-Y.1731
	GR for OSPF and BGP
	BFD for OSPF and BGP
	ISSU
Management and Maintenance	Console, Telnet and SSH
	SNMP v1/v2/v3
	Upload and download of TFTP files
	Remote Network Monitoring (RMON)

Your Route to The Destination

	Statistics analysis of Netflow
Value-added services	Virtual Stack (TRVSS)
Energy saving	IEEE 802.3az green Efficient Ethernet
Environment	Operating temperature/humidity:0℃-50℃, 10%-90% non-condensing
	Storage temperature/ humidity: -20℃-70℃; 5%-95% non-condensing
Power supply	AC:100V-240V, 50Hz±10%
	DC: -48V
Dimensions mm (W×D×H)	482×548×266	482×548×399	482×548x533
	6U	9U	12U

Ordering Information

Item	Description
Chassis of TR-S8500 Series	
TR-S8503 Chassis	Integrated Chassis of TR-S8503 switch (1 fan tray, 2 power slots, no standard power supply, 1 SFU slot, 2 service slots)
TR-S8506 Chassis	Integrated Chassis of TR-S8506 switch (1 fan tray, 2 power slots, no standard power supply, 2 SFU slot, 4 service slots)
TR-S8510 Chassis	Integrated Chassis of TR-S8510 switch (1 fan tray, 2 power slots, no standard power supply, 2 SFU slot, 8 service slots)
Power Supply of TR-S8500 Series	
LS85-PWR-AC-600	TR-S8500 Series 600W AC power module (only applicable to TR-S8503 and TR-S8506)
LS85-PWR-AC-1000	S8500 Series 1000W AC power module
LS85-PWR-DC-1000	S8500 Series 1000W DC power module
Console Board of TR-S8500 Series	
LS85-MSU-III-B	Console Board III of TR-S8500 Series
LS85-MSU-VI	Console Board VI of TR-S8500 Series
Service Board of TR-S8500 Series	
Gigabit Service Boards	
LS85-12GE-TX/SFP-V3	Service board with 12 GE combo SFP/RJ45 ports
LS85-12GE-TX/SFPE-V3	Service board with 12 GE combo SFP/RJ45 ports
LS85-24GE-TX-V3	Service board with 24 gigabit RJ45 ports and 4 combo gigabit SFP ports
LS85-24GE-TXE-V3	Service board with 24 gigabit RJ45 ports and 4 combo gigabit SFP ports
LS85-24GE-SFP-V3	Service board with 24 gigabit SFP ports and 4 combo gigabit SFP/RJ45 ports
LS85-24GE-SFPE-V3	Service board with 24 gigabit SFP ports and 4 combo gigabit SFP/RJ45 ports
LS85-48GE-TX-MPLS-L-V3	Service board with 48 gigabit RJ45 ports

Your Route to The Destination

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LS85-48GE-TX-MPLS-E-V3	Service board with 48 gigabit RJ45 ports
LS85-48GE-SFP-MPLS-L-V3	Service board with 48 gigabit SFP ports
LS85-48GE-SFP-MPLS-E-V3	Service board with 48 gigabit SFP ports
10G Service Cards	
LS85-2TE-SFP+-V3	Service board with 2 10GE SFP+ ports
LS85-2TE-SFP+-E-V3	Service board with 2 10GE SFP+ ports
LS85-4TE-SFP+-MPLS-L-V3	Service board with 4 10GE SFP+ ports
LS85-4TE-SFP+-MPLS-E-V3	Service board with 4 10GE SFP+ ports
LS85-12TE-SFP+-MPLS	Service board with 12 10GE SFP+ ports
LS85-12TE-SFP+-MPLS-E	Service board with 12 10GE SFP+ ports
Optical Modules	
Gigabit Optical Modules	
GSFP-TX-B	Gigabit SFP to RJ45 module
GSFP-SX-D	Gigabit SFP multi-mode (500m, 850nm, LC, DDM)
GSFP-LX-10-D	Gigabit SFP single mode (10Km, 1310nm, LC, DDM)
GSFP-LX-20-D	Gigabit SFP single mode (20Km, 1310nm, LC, DDM)
GSFP-LX-40-D	Gigabit SFP single mode (40Km, 1310nm, LC, DDM)
GSFP-ZX-80-D	Gigabit SFP single mode (80Km, 1550nm, LC, DDM)
GSFP-ZX-120-D	Gigabit SFP single mode (120Km, 1550nm, LC, DDM)
GSFP-LX-SM1310-10-BIDI GSFP-LX-SM1550-10-BIDI	Gigabit SFP single mode, single-core bidirectional (10Km, TX1310/RX1550, LC, DDM) Gigabit SFP single mode, single-core bidirectional (10Km, TX1550/RX1310, LC, DDM)
GSFP-LX-SM1310-20-BIDI GSFP-LX-SM1550-20-BIDI	Gigabit SFP single mode, single-core bidirectional (20Km, TX1310/RX1550, LC, DDM) Gigabit SFP single mode, single-core bidirectional (20Km, TX1550/RX1310, LC, DDM)
GSFP-LX-SM1310-40-BIDI GSFP-LX-SM1550-40-BIDI-1310	Gigabit SFP single mode, single-core bidirectional (40Km, TX1310/RX1550, LC, DDM) Gigabit SFP single mode, single-core bidirectional (40Km, TX1550/RX1310, LC, DDM)

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GSFP-LX-SM1490-80-BIDI GSFP-LX-SM1550-80-BIDI	Gigabit SFP single mode, single-core bidirectional (80Km, TX1490/RX1550, LC, DDM) Gigabit SFP single mode, single-core bidirectional (80Km, TX1550/RX1490, LC, DDM)
GSFP-LX-SM1490-120 GSFP-LX-SM1550-120	Gigabit SFP single mode, single-core bidirectional (120Km, TX1490/RX1550, LC, DDM) Gigabit SFP single mode, single-core bidirectional (120Km, TX1550/RX1490, LC, DDM)
10G Optical Modules	
SFP+SX	10G SFP+ multi-mode (300m, 850nm, LC)
SFP+LX-10	10G SFP+ single mode (10Km, 1310nm, LC, DDM)
SFP+LX-20	10G SFP+ single mode (20Km, 1310nm, LC, DDM)
SFP+LX-40	10G SFP+ single mode (40Km, 1550nm, LC, DDM)
SFP+LX-80	10G SFP+ single mode (80Km, 1550nm, LC, DDM)
SFP+LX-SM-1270-10 SFP+LX-SM-1330-10	10GE SFP+ single mode, single-core bidirectional (10Km, TX1270/RX1330, LC, DDM) 10GE SFP+ single mode, single-core bidirectional (10Km, TX1330/RX1270, LC, DDM)
SFP+LX-SM-1270-20 SFP+LX-SM-1330-20	10GE SFP+ single mode, single-core bidirectional (20Km, TX1270/RX1330, LC, DDM) 10GE SFP+ single mode, single-core bidirectional (20Km, TX1330/RX1270, LC, DDM)
SFP+LX-SM-1270-40 SFP+LX-SM-1330-40	10GE SFP+ single mode, single-core bidirectional (40Km, TX1270/RX1330, LC, DDM) 10GE SFP+ single mode, single-core bidirectional (40Km, TX1330/RX1270, LC, DDM)

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