28 Ports 10G SFP+ and 4 Ports 40G SFP28 Managed Switch, 1+1 Dual Power Supply. Select your new network engine!

BENCHU GROUP's SP7500-28TF4DF-EI Enterprise Core Switch is designed for high-performance networking in enterprise environments. It features 28 x 10Gbps SFP+ ports and 4 x 25Gbps SFP28 uplinks, providing versatile connectivity for data-intensive tasks. With 1+1 dual power supply, the switch ensures high availability and redundancy, making it ideal for mission-critical applications.

This switch supports advanced Layer 3 routing, including IPv4/IPv6, RIP, OSPF, and BGP protocols, ensuring efficient traffic management. It also includes VLAN, QoS, and link aggregation for optimizing network performance. The device is robust, supporting hot-swappable modules and offering enhanced security features like SSH and ACLs.

Its value to users lies in its ability to handle high bandwidth requirements, ensuring stable, reliable, and secure data transmission for large-scale enterprise networks. The dual power design offers reliability, while the extensive SFP+ and SFP28 interfaces support both current and future network expansion needs.

Highlights

The SP7500-28TF4DF-EI Optical Network Aggregation Switch is a high-performance solution designed to enhance data transfer across modern enterprise networks. With 28 x 10G SFP+ ports and 4 x 25G QSFP uplinks, it delivers outstanding scalability, enabling seamless expansion for growing businesses. This switch supports Layer 2 and Layer 3 features, including VLAN, QoS, LACP, and BGP, ensuring efficient traffic management and optimized performance.Engineered for reliability, this switch also includes 1+1 dual power supplies for redundancy, providing continuous network uptime. Advanced security protocols such as SSH, RADIUS, and TACACS+ safeguard network data, while the switch's modular design offers flexibility for various application scenarios. Ideal for high-demand environments, the SP7500-28TF4DF-EI ensures robust, high-speed communication, making it perfect for data centers, enterprise networks, and cloud-based applications.

Key features include:

- 28 Ports 10G SFP+ and 4 Ports 25G SFP28 Uplink

- Dual power supply (1+1) ensures redundancy and reliability

- Layer 3 routing, static routing, RIP v1/V2 ,OSPF V1/V2/V3 ,VRRP, BGP+, ISIS,SM/SSM

- IPv4 / IPv6 Dual stack and switch virtual interfaces (SVIs)

- L2/L3/L4 access control lists (ACLs) for granular network access control including 802.1x port authentication

- Advanced QoS (Quality of Service) for traffic prioritization including port-based, 802.1p and L2/L3/L4 DSCP-based

- IGMP Snooping and Querier for multicast optimization

- Dynamic ARP for increased security targeting a class of Man in the Middle attack

- Rate limiting and priority queuing for better bandwidth allocation

- Port mirroring for network monitoring

- Energy Efficient Ethernet (IEEE 802.3az) for maximum power savings

- SNMP v1, v2c and RMON remote monitoring

Build a future-proof network with BENCHU:

- Solid performance with non-blocking architecture, 32K MAC addresses, 500 shared (ingress) ACLs and 1024 Multicast groups

- Comprehensive IPv6 supporting management, QoS, ACL and routing, ensuring investment protection and a smooth migration to IPv6-based network

- 4 Dedicated SFP28, With 25G capabilities, allows for seamless integration with existing infrastructures while offering a pathway for future upgrades, thereby future-proofing the network and ensuring long-term scalability.

Build a secure network network with BENCHU:

- Security is a critical aspect of any networking solution, and this switch excels in this area. It incorporates advanced security features such as SSH, Access Control Lists (ACLs), 802.1X port-based authentication, and support for RADIUS and TACACS+. These protocols help safeguard the network by ensuring that only authorized devices can connect, thus minimizing the risk of unauthorized access and data breaches. By utilizing these security measures, organizations can maintain a secure environment for sensitive data and applications, enhancing overall network integrity. This focus on security is essential for businesses in regulated industries or those handling confidential information.

Advanced Traffic Management Features

- The S7500-28TF4DF-EI supports advanced Layer 2 and Layer 3 features, including VLANs, Quality of Service (QoS), and Link Aggregation Control Protocol (LACP). These features enable efficient traffic management, allowing for prioritization of critical data streams and optimization of overall network performance. By implementing VLANs, organizations can segment their networks, enhancing security and performance. The QoS capabilities ensure that high-priority applications, such as voice and video, receive the necessary bandwidth, improving user experience. This comprehensive traffic management allows businesses to tailor their network configurations to meet specific operational needs, making the switch an essential tool for optimizing performance.

Easy operation and maintenance management

- The S7500-28TF4DF-EI offers a variety of management interfaces, including web-based management, Command Line Interface (CLI), and Simple Network Management Protocol (SNMP). These options provide network administrators with the flexibility to manage and configure the switch according to their preferences and technical expertise. The user-friendly web interface simplifies monitoring and adjustments, while CLI offers advanced users more detailed control over configurations. SNMP support enables efficient network management and monitoring, allowing for quick response times to issues. This flexibility in management helps organizations maintain operational efficiency and respond to changing network demands swiftly.

Hardware at a Glance

FRONT				REAR	SIDE
Model Name	Form-Factor	10GBASE-X Fiber SFP+ interface	25GBASE-X Fiber SFP28 interface	Power Supply	Fans
S7500-28TF4DF-EI	Rack mount	28	4	2 internal PSU	2 internal fans

Software at a Glance

LAYER 2+ / LAYER 3 LITE FEATURES							
Management	IPv4/IPv6 ACL and QoS	IPv4/IPv6 Multicast Filtering	G.8032 ERPS STP/RSTP/MSTP	VLANs	Convergence	IPv4 & IPv6 Static Routing,RIPv1/v2, OSPFv1/v1/v3	Routing,BGP+, ISIS,SM/SSM
Web Browser-based GUI (HTTP/HTTPS), PC-Based Smart Control Center Utility (SCC) , RMON, SNMP	L2, L3, L4, ingress	IGMP and MLD Snooping	Yes	Static Dynamic, Voice, MAC, Protocol-based	LLDP-MED, RADIUS, 802.1X	Yes	Yes

Performance at a Glance

| Model Name	Packet buffer	CPU	ACLs	MAC Address Table ARP Table VLANs	Fabric	Latency (Max Connection Speed)	Routes (IPv4 & IPv6)	Multicast IGMP Group
S7500-28TF4DF-EI	32MB	Dual-Core 2GHz MIPS InterAptive CPU subsystem 4GB DDR3 RAM	500 shared	32K MAC 4K ARP 4K VLANs QinQ	1.2Tbps 565.44Mpps line-rate	10G Fiber: <2.5μs 25G Fiber: <2.1μs	IPv4: 1024 IPv6: 1024	1024

Features and Benefits

Hardware Features	
10GBASE-X Fiber SFP+ interface	24 Ports 10G SFP+ for connect to the access network switch. Support for Fiber and Copper modules.
25GBASE-X Fiber SFP28 interface	4 dedicated 25G SFP+ ports to the network core. Support for Fiber and Copper modules. Can also build dual redundancy by a trunked uplink with link aggregation.
Dual power supply	1+1 power backup
Software Features	
Comprehensive IPv6 Support for Management, ACL and QoS	Build current network with future in mind. Ensure investment protection and a smooth migration to an IPv6-based network without switch replacement.
IPv4 & IPv6 Static Routing	A simple way to provide segmentation of the network with internal routing through the switch – reserving the router for external traffic routing only, making the entire network more efficient.
Distributed Link Aggregation, also called Port Channeling or Port Trunking,offers powerful network redundancy and load balancing between members	• Servers and other network devices benefit from greater bandwidth capacity with active-active teaming (LACP—link aggregation control protocol)
Robust security features: • 802.1x authentication (EAP) • Port-based security by locked MAC • ACL filtering to permit or deny traffic based on MAC and IP addresses	Build a secured, converged network with all types of traffic by preventing external attacks and blocking malware while allowing secure access for authorized users.
Comprehensive QoS features: • Port-based or 802.1p-based prioritization • Layer 3-based (DSCP) prioritization • Port-based ingress and egress rate limiting	Advanced controls for optimized network performance and better delivery of mission-critical traffic such as voice and video.
IGMP (IPv4) and MLD (IPv6) Snooping and Querier modes with Fast Leave	Facilitate fast receiver joins and leaves for multicast streams. Save cost and improve network efficiency by ensuring multicast traffic only reaches desig-nated receivers without the need of an extra multicast router.
DHCP Snooping and Dynamic ARP Inspection	Ensure IP address allocation integrity by only allowing DHCP messages from trusted DHCP servers and dropping malformed DHCP messages with a port or MAC address mismatch. Use the DHCP snooping bindings database per port and per VLAN to drop incoming packets that do not match any binding and to enforce source IP/MAC addresses for malicious users traffic elimination.
Rapid Spanning Tree (RSTP) and Multiple Spanning Tree (MSTP) allow for rapid transitionning of the ports to the Forwarding state and the suppression	

| Software Features	
VRRP Route/Interface Tracking feature extends the capability of the Virtual ,Router Redundancy Protocol (VRRP)	• Allows tracking of specific route/interface IP states, within the router, that can alter the priority level of a virtual router for a VRRP group • It ensures the best VRRP router is master for the group
Support of Routing Information Protocol (RIPv2) as a distance vector,protocospecified in RFC 2453 for IPv4	• Each route is characterized by the number of gateways, or hops, a packet must traverse to reach its intended destination • Categorized as an interior gateway protocol, RIP operates within the scope of an autonomous system
Route Redistribution feature enables the exchange of routing information among different routing protocols all operating within a router	• Configurable when different routing protocols use different ways of expressing the distance to a destination or different metrics and formats • For instance, when OSPF redistributes a route from RIP, and needs to know how to set each of the route's path attributes
Open Shortest Path First (OSPF) link-state protocol for IPv4 and IPv6	• For IPv4 networks, OSPF version 2 is supported in accordance with RFC 2328, including compatibility mode for the RFC 1583 older specification • For IPv6 networks, OSPF version 3 is fully supported • OSPF can operate within a hierarchy, the largest entity within the hierarchy is the autonomous system (AS) • Two different types of OSPF routing occur as a result of area partitioning: Intra-area and Inter-area • Intra-area routing occurs if a source and destination are in the same area • Inter-area routing occurs when a source and destination are in different areas • An OSPF backbone distributes information between areas
OSPF LSA Pacing feature improves the efficiency of LSA flooding, reducing or eliminating the packet drops caused by bursts in OSPF control packets	• LSA transmit pacing limits the rate of LS Update packets that OSPF can send • With LSA refresh groups, OSPF efficiently bundles LSAs into LS Update packets when periodically refreshing self-originated LSAs
OSPF Transit-Only Network Hiding is supported based on RFC 6860 with transit-only network defined as a network connecting only routers	• Transit-only networks are usually configured with routable IP addresses which are advertised in LSAs • If router-to-router subnets are advertised, remote attacks can be launched against routers by sending packets to these transit-only networks • Hiding transit-only networks speeds up network convergence and reduces vulnerability to remote attacks • 'Hiding' implies that the prefixes are not installed in the routing tables on OSPFv2 and OSPFv3 routers

Target Application

Network Convergence
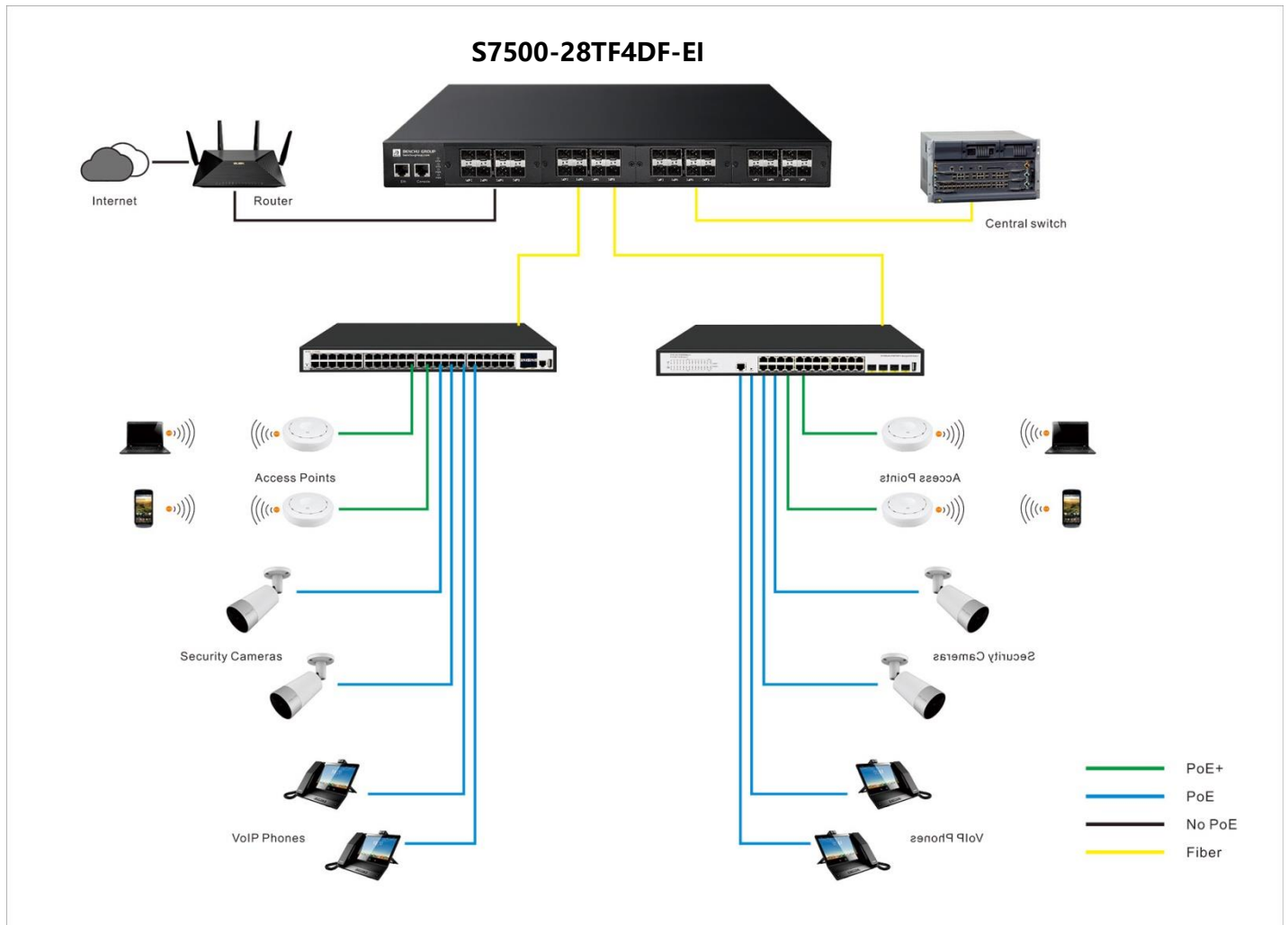
The new 32-port 10G managed fiber switch support dense deployments of these modern network devices. They offer powerful Layer 2 and Layer 3 features for IPv4 and IPv6 with enhanced performance and a focus on usability within SMB environments:

- 28 Ports 10G SFP+ fiber ports for connect to the access network switch
- 4 dedicated 25G SFP28 fiber ports for aggregation to the network core
- Layer 3 static routing (IPv4 and IPv6) for interVLAN local routing
- Layer 3 RIPv1、v2, OSPFv1、v2, VRRP,BGP+, for multiple routing
- IGMP Snooping, IGMP Querier and IGMP Fast Leave for multicast optimization
- ERPS(G.8032) STP/FSTP/MSTP for Ring network and Link protection
- Include VLANs, Private VLAN, ACLs, DiffServ, LACP, MVR and DHCP

Structure Diagrams

S7500-28TF4DF-EI

Structure Diagrams
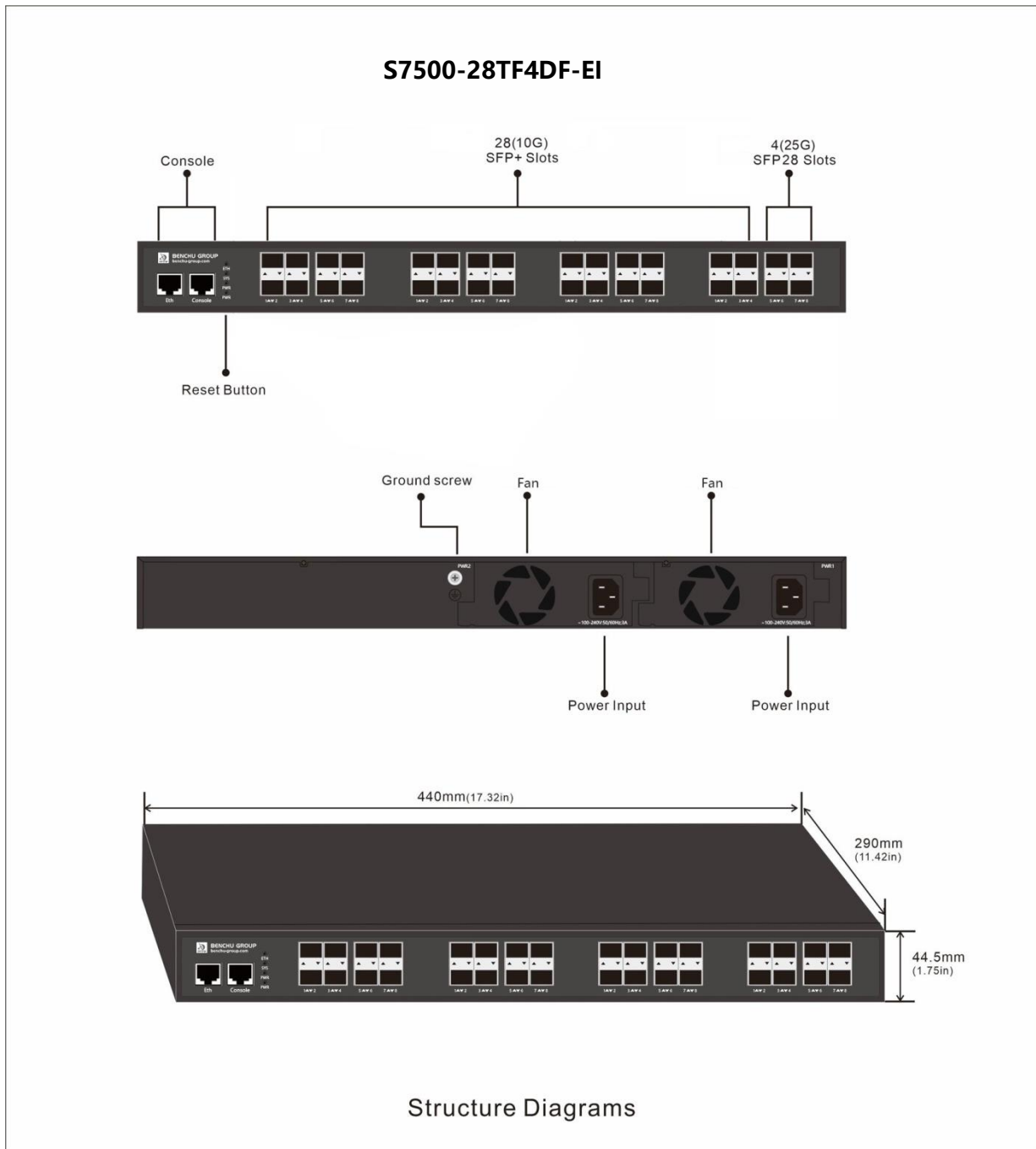
Technical Specifications	S7500-28TF4DF-EI
10G SFP+ Fiber interface	48
25G SFP+ (fiber) ports	6
Console Port (For config)	Yes
OOB Port (Fort management)	Yes
Reset button (For system factory default)	Yes
Power Supply Type	1+1 power backup
Performance Specification	
CPU	Dual-Core 2GHz MIPS InterAptive CPU subsystem
Packet buffer memory (Dynamically shared across only used ports)	32 MB
Forwarding modes	Store-and-forward
Bandwidth	1.2Tbps
Priority queues	8
MAC address database size (48-bit MAC ad-dresses)	32K
Multicast groups	1K
Number of IPv4 static routes	1024
Number of IPv6 static routes	1024
Number of VLANs	4094
Number of VLANs(Open QinQ)	16,760,836(4094*4094)
Number of ARP cache entries	4k ARP
Number of DHCP snooping bindings	1024
Access Control Lists (ACLs)	500 shared for MAC, IP and IPv6 ACLs (ingress)
Packet forwarding rate (64 byte packet size) (Mpps)	565.44Mpps
Jumbo frame support (bytes)	Up to 12K packet size
Mean Time Between Failures (MTBF) @ 25°C	113,456 hours
1G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	2.978μs; 3.108μs; 3.172μs
10G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	2.327μs; 2.563μs; 2.713μs
25G Fiber Latency (64-byte; 1518-byte; 9216-byte frames)	1.925μs; 1.963μs; 2.121μs

L2 Services - VLANs	S7500-28TF4DF-EI
IEEE 802.1Q VLAN tagging	Yes
QinQ VLAN tagging	Yes
IP-based VLANs	Yes
MAC-based VLANs	Yes
Protocol-based VLAN	Yes
Voice VLAN	Yes
VLAN mapping	Yes
L2 Services - Availability	
Broadcast, multicast, unknown unicast storm control	Yes
IEEE 802.3ad - LAGs (LACP)	Yes
IEEE 802.3x (full duplex and flow control)	Yes
IEEE 802.1D Spanning Tree Protocol	Yes
IEEE 802.1w Rapid Spanning Tree Protocol	Yes
IEEE 802.1s Multiple Spanning Tree Protocol	Yes
Layer 2 DHCP Relay	Yes
L2 Services - Multicast Filtering	
IGMP snooping (v1, v2 and v3)	Yes
MLD snooping support (v1 and v2)	Yes
IGMP snooping querier (v2)	Yes
MLD snooping querier (v1)	Yes
Multicast VLAN Registration (MVR)	Yes
L3 Services - DHCP	
DHCP client	Yes
DHCP snooping	Yes
DHCP Server	Yes
L3 Services - Routing	
IPv4/IPV6 static routing	1024
VLAN routing	Yes
RIP V1/V2	Yes
OSPF V2/V3	Yes
VRRP	Yes
BGP+	Yes
PIM(SM/SSM)	Yes
ISIS	Yes

Link Aggregation	S7500-28TF4DF-EI
IEEE 802.3ad - LAGs (LACP)	Yes
Manual LAG	Yes
# of LAGs / # of members in each LAG	Up to 128 LAGs and up to 8 ports per group
Distributed Link Aggregation	LAGs across the stack
Network Monitoring and Discovery Services	
802.1ab LLDP	Yes
SNMP	v1, v2, v3
RMON group 1,2,3,9	Yes
Network Security	
IEEE 802.1x	Yes
RADIUS accounting	Yes
Access Control Lists (ACLs)	Yes
IP-based ACLs (IPv4 and IPv6)	L2 / L3 / L4
MAC-based ACLs	Yes
TCP/UDP-based ACLs	Yes
Control MAC # static entries	48
Port-based security by locked MAC addresses	Yes
Dynamic ARP inspection	Yes
Broadcast, unicast, multicast DoS protection	Yes
DoS attacks prevention	Yes
Network storm protection, DoS	Yes
Broadcast, unicast, multicast DoS protection	Yes
DoS attacks prevention	Yes
Quality of Service (QoS)	
Port-based rate limiting	Yes ingress and egress
Port-based QoS	Yes
Support for IPv6 fields	Yes
DiffServ QoS	Yes ingress
IEEE 802.1p COS	Yes
Destination MAC and IP	Yes
IPv4 and v6 DSCP	Yes
TCP/UDP-based	Yes
Weighted Round Robin (WRR)	Yes
Strict priority queue technology	Yes

IEEE Network Protocols	S7500-28TF4DF-EI

- IEEE 802.3 Ethernet
- IEEE 802.3u 100BASE-T
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X
- IEEE 802.3ae 10G BASE-X
- IEEE 802.3by 25G BASE-X
- IEEE 802.3az Energy Efficient Ethernet (EEE)
- IEEE 802.3x Full-Duplex Flow Control
- IEEE 802.3ad Trunking (LACP)

- IEEE 802.1Q VLAN Tagging
- IEEE 802.1AB LLDP with ANSI/TIA-1057 (LLDP-MED)
- IEEE 802.1p Class of Service
- IEEE 802.1D Spanning Tree (STP)
- IEEE 802.1s Multiple Spanning Tree (MSTP)
- IEEE 802.1w Rapid Spanning Tree (RSTP)
- ITU-TG.8032 (ERPS)
- IEEE 802.1x RADIUS Network Access Control

Management, Monitoring & Troubleshooting	
Password management	Yes
Admin access control via RADIUS and TACACS+	Yes
IPv6 management	Yes
SNMP v1/v2c/v3	Yes
RMON group 1,2,3,9	Yes
Port mirroring	Yes ingress and egress
Many-to-one port mirroring	32
Cable test utility	Yes
TLS/HTTPS Web-based access (version)	Yes (v1.2)
File transfers (uploads, downloads)	TFTP / HTTP
HTTP upload/download (firmware)	Yes
Syslog (RFC 3164)	Yes
SSHv2/v3	Yes
LEDs	Yes
Per port	Speed, Link, Activity;
Per device	Power, system
Physical Specifications	Yes
Dimensions	440 x 290 x 44.5 mm (17.32 x 11.42 x 1.75 in)
Weight	5.2kg (11.46 lb)
Max power (worst case, all ports used , line-rate traffic) (Watts)	68W
Iddle power consumption (all ports link-down standby) (Watts)	26W
Energy Efficient Ethernet (EEE) IEEE 802.3az	Yes (deactivated by default)
Fan	2

Environmental Specifications	S7500-28TF4DF-EI
Operating	
Operating Temperature	0° to 50°C (32° to 122°F)
Humidity	90% maximum relative humidity (RH), non-condensing
Altitude	10,000 ft (3,000 m) maximum
Storage	
Storage Temperature	−20° to 70°C (− 4° to 158°F)
Humidity (relative)	95% maximum relative humidity, non-condensing
Altitude	10,000 ft (3,000 m) maximum
Electromagnetic Emissions and Immunity	
Certifications	CE mark, commercial
	FCC Part 15 Class A, VCCI Class A
	Class A EN 55022 (CISPR 22) Class A
	Class A C-Tick
	EN 55024
	CCC
	47 CFR FCC Part 15, SubpartB, Class A ICES-003: 2016 Issue 6, Class A
	ANSI C63.4:2014
	IEC 60950-1:2005 (ed.2)+A1:2009+A2:2013 AN/NZS CISPR 22:2009+A1:2010 CLASS A
Safety	
Certifications	CB mark, commercial
	CSA certified (CSA 22.2 #950)
	EN 60950-1: 2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 IEC 60950-1:2005
	(ed.2)+A1:2009+A2:2013
	AN/NZS 60950.1:2015
	CCC (China Compulsory Certificate)
Warranty and Support	
Hardware Limited Warranty	Limited Lifetime*
Technical Support via Phone and Email*	Limited Lifetime*
Limited Lifetime* 24x7 Online Chat Technical Support	Limited Lifetime*
Package Contents	
All models	Smart Fiber Switch
	AC Power cord with C13 connector (localized to region of sale)
	Brackets and screws for rack mounting
	Rubber protection caps, which are already installed in the SFP sockets Installation guide

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