

- Advanced L2 functions
- Stacking support
- Multicast support (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Uninterruptible power supply from battery¹
- Surge protection

The switches provide end users connection to the networks of large enterprises, small and medium-sized businesses and service provider networks using Fast and Gigabit Ethernet interfaces.

The access switches support physical stacking, VLANs and multicast groups, as well as advanced security features.

Surge protection

MES switches are equipped with efficient protection technology against voltage surges (up to 6 kV) caused by lightning discharges.

Technical features

	MES1124M	MES1124MB	MES1124M rev.B	MES2124M	MES2124MB	MES2124P	MES2124F		
Common parameters									
10/100BASE-T (RJ-45)	24	24	24	—	—	—	—		
10/100/1000BASE-T (RJ-45)	—	—	—	24	24	—	—		
10/100/1000BASE-T (RJ-45)	—	—	—	—	—	24	—		
PoE/PoE+	—	—	—	—	—	—	—		
100BASE-FX/1000BASE-X (SFP)	—	—	—	—	—	—	24		
10/100/1000BASE-T/1000BASE-X/ 100BASE-FX Combo	4	4	4	4	4	4	4		
Console port	RS-232/RJ-45								
Performance									
Bandwidth	12.8 Gbps	12.8 Gbps	12.8 Gbps	56 Gbps	56 Gbps	56 Gbps	56 Gbps		
Throughput for 64-byte packets	9 MPPS			41 MPPS					
MAC table	16K								
The number of active VLANs	4K								
ACL table	512								
Jumbo frames size	Maximum packets size is 10240 bytes								
Buffer memory	8 Mb								
RAM (DDR2)	128 MB				256 MB	128 MB			
ROM (SPI Flash)	16 MB								
L2 Multicast groups (IGMP Snooping)	1K								
Link Aggregation Groups (LAG)	16, up to 8 ports per LAG								
Quality of Service (QoS)	4 queues per port								
Max. number of units in stack	3	3	3	3	3	8	3		



MES2124F



MES1124M



MES2124MB



MES2124P

Uninterruptible power supply¹

MES1124MB and MES2124MB switches have the ability to connect storage battery in order to provide uninterrupted power in case of 220V supply line failure.

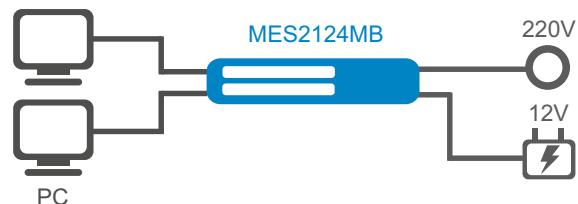
The switches are equipped with the power supply unit that allows charging of storage battery if the 220V supply line is available. The power system provides monitoring of power supply line and notifies on power sources switching.

¹ Only for MB models

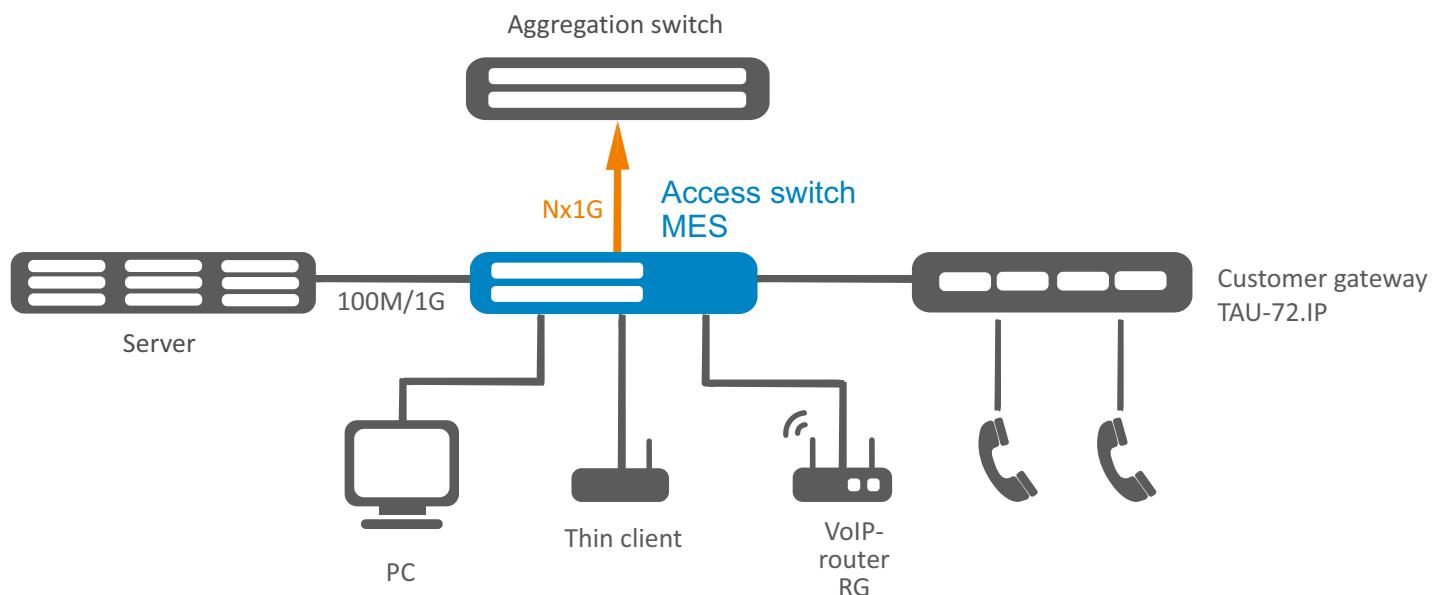
	Technical features						
	MES1124M	MES1124MB	MES1124M rev.B	MES2124M	MES2124MB	MES2124P	MES2124F
Maximum power consumption	25W	25W	25W	30W	30W	400W	40W
Maximum power consumption while battery charging	—	45W	—	—	50W	—	—

Storage battery specification¹

Battery capacity, Ah	Battery life, h	Battery charge time, h
≈12	≈ 4	9
≈17	≈ 6	13
≈20	≈ 7	15



Use case



¹ Only for MB models

Features and capabilities

Interfaces functions

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port mirroring
- VLAN mirroring

MAC table functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses per VLAN
- Static MAC Entries
- MAC change events monitoring per ports
- MAC flapping events monitoring per ports

VLAN functions

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Multiprocess
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Layer 2 Protocol Tunneling
- Private VLAN
- ERPS (G.8032v2)
- EAPS
- Loopback Detection (LBD) per VLAN
- Port Isolation
- Flex Link (Dual homing)
- Storm Control for different traffic types (broadcast, multicast, unknown unicast)

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithms

IPv6 functions

- IPv6 Host
- Dual-stack

Service functions

- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics
- Green Ethernet

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- Protection against non-authorized DHCP servers
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering
- PPPoE Intermediate agent
- SSH server operation algorithm selection

ACL (Access Control Lists)

- L2-L3-L4 ACL
- Time-based ACL
- IPv6 ACL
- ACL-ONLY with increased switch resources
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of Service (QoS) and rate limiting

- Shaping, policing
- IEEE 802.1p Class of Service (CoS)
- Storm Control
- Bandwidth management
- Scheduling algorithms:
 - Strict Priority/Weighted Round Robin (WRR)
- Three marking colors
- ACL-based traffic classification
- ACL-based CoS/DSCP assignment
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

Features and capabilities

OAM

- IEEE 802.3ah Ethernet OAM
- Dying Gasp
- IEEE 802.1ag Connectivity Fault Management (CFM)
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Management functions

- Download and upload of configuration file via TFTP/SCP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Configuration of user privilege level
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- SSH server
- SSL
- Macrocommands
- CLI commands logging via TACACS+
- DHCP autoprovision
- DHCP Relay (IPv4 support)
- DHCP Option 12
- DHCP Relay Option 82
- PPPoE Circuit-ID tag
- Flash File System
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routes for management network
- 2 configuration files

Monitoring functions

- Interface statistics
- RMON/SMON
- CPU utilization monitoring per task and per traffic type
- RAM utilization monitoring
- Temperature monitoring
- TCAM utilization monitoring

PoE¹

- IEEE 802.3af PoE (up to 15.4 W per port) and IEEE 802.3at PoE+ (up to 30 W per port)
- Automatic and configurable accounting and distribution of PoE power per port

Uninterruptible power supply²

- Automatic switching to storage battery (12V) in case of 220V supply line failure and switching back
- Battery charging (12V) during primary network operation (220V)
- Power source type monitoring (including SNMP)
- Notifications on power source switching
- Battery connection indication
- Low battery alarm
- Short circuit failure protection

MIB

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 271,1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674, 4363 IEEE 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3298 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support for Multi-Part messages
- RFC 793 TCP
- RFC 2474, 3260 DS field in the IPv4 and IPv6 header
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP

¹ For MES2124P

² Only for MB models

Physical specifications

	MES1124M	MES1124MB	MES1124M rev.B	MES2124M	MES2124MB	MES2124P	MES2124F
Power supply	220 VAC 50 Hz / 48 VDC						
Maximum power consumption	≤ 25 W	≤ 45 W	≤ 25 W	≤ 30 W	≤ 50 W	≤ 400 W	≤ 40 W
PoE budget	—	—	—	—	—	350 W	—
Dying Gasp hardware support	No	No	Yes	No	No	No	No
Operating temperature	from -15°C to +50°C						
Storage temperature	from -40° to +70°C						
Operating humidity	80% max						
Cooling	Passive				Active, 2 fans		
Dimensions (WxDxH), mm	430x158x44		430x178x44		430x203x44	443x206.5x44	
Weight	2.15 kg		2.60 kg		3.15 kg	2.85 kg	

Ordering information

Name	Description	Image
MES1124M AC	Ethernet switch MES1124M, 24 ports of 10/100BASE-T ports, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 220VAC	
MES1124M DC	Ethernet switch MES1124M, 24 ports of 10/100BASE-T ports, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 48VDC	
MES1124MB AC	Ethernet switch MES1124MB, 24 ports of 10/100BASE-T ports, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 220VAC,12VDC	
MES2124M AC	Ethernet switch MES2124M, 24 ports of 10/100/1000BASE-T ports, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 220VAC	
MES2124M DC	Ethernet switch MES2124M, 24 port of 10/100/1000BASE-T, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 48 VDC	
MES2124MB AC	Ethernet switch MES2124MB, 24 ports of 10/100/1000BASE-T, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 220VAC,12VDC	
MES2124P AC	Ethernet switch MES2124P, 24 ports of 10/100/1000BASE-T PoE/PoE+, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 220VAC	
MES2124F	Ethernet switch MES2124F, 24 ports of 100BASE-FX/1000BASE-X, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, L2, 220 VAC	

Related software

EMS-MES-access	EMS-MES-access option of Eltex.EMS system for Eltex network elements control and monitoring: 1 network element - access switch
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About Eltex

Eltex company is a leading Russian developer and manufacturer of telecommunication equipment with 25 years of history. Integrity of solutions and seamless integration capability into Customer infrastructure is a priority area of company development.

- Throughput capacity 176 Gbps
- Non-blocking switching fabric
- L3 functions
- Stacking of up to 8 devices
- Multicast support (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)

New generation of access switches provides end users connection to large-scale corporate networks, small and medium business networks and to service provider networks using 1G/10G interfaces.

MES2324FB and MES2324F DC switches can be used in service provider networks as aggregation or transport switches. They ensure high performance due to the interfaces operating at speeds of 10 Gbps or 1 Gbps.

The switches support physical stacking, VLANs, multicast groups and advanced security functions.



MES2308



MES2324



MES2348B

Technical features

	MES2308 CE	MES2308R CE	MES2324 CE	MES2324B	MES2324F CE	MES2324FB CE	MES2348B
Interfaces							
10/100/1000BASE-T (RJ-45)	10	8	24	24	—	—	48
1000BASE-X/100BASE-FX (SFP)	—	—	—	—	20	20	—
1000BASE-X (SFP)	2	—	—	—	—	—	—
10/100/1000BASE-T/1000BASE-X/ 100BASE-FX Combo	—	2	—	—	4	4	—
10GBASE-R (SFP+)/1000BASE-X (SFP)	—	—	4	4	4	4	4
Console port RS-232 (RJ-45)				1			
Performance							
Bandwidth	24 Gbps	20 Gbps	128 Gbps	128 Gbps	128 Gbps	128 Gbps	176 Gbps
Throughput for 64 bytes ¹	17.7 MPPS	14.7 MPPS	92.1 MPPS	92.1 MPPS	92.1 MPPS	92.1 MPPS	130.9 MPPS
Buffer memory	1.5 MB	1.5 MB	1.5 MB	1.5 MB	1.5 MB	1.5 MB	3 MB
RAM (DDR3)				512 MB			
ROM (RAW NAND)				512 MB			
MAC table				16384			
ARP table ²				820			
VLAN table				4094			
L2 Multicast groups				2047			

¹ Values are given for 1-way transmission.

² For each host in the ARP table, an entry is created in the routing table.

CE — the device complies with CE requirements.

Technical features (continued)

	MES2308	MES2308R	MES2324	MES2324B	MES2324F	MES2324FB	MES2348B
SQinQ rules				958 (ingress/egress)			
ACL rules				958			
L3 IPv4 Unicast ¹				816			
L3 IPv6 Unicast ¹				210			
L3 IPv4 Multicast (IGMP Proxy, PIM) ¹				412			
L3 IPv6 Multicast (IGMP Proxy, PIM) ¹				103			
VRP switches				255			
Maximum size of ECMP groups				8			
VRF				16 (including default VRF)			
L3 interfaces				130			
Link Aggregation Groups (LAG)				48, up to 8 ports per LAG			
Quality of Service (QoS)				8 egress queues per port			
Jumbo frames				10240 bytes			
Stacking				8 devices			

Features and capabilities

Interface functions

- Head-of-line blocking (HOL) protection
- Back pressure
- Auto MDI/MDIX
- Jumbo frames
- Flow control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)
- Stacking

MAC table functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping logging

VLAN functions

- Voice VLAN
- 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- Pim-Snooping
- IGMP proxy-report
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree, IEEE 802.1s)
- STP Multiprocess
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- STP Loop Guard
- BPDU Filtering
- STP BPDU Guard
- VLAN-based Loopback Detection (LBD)
- ERPS (G.8032v2)
- Flex-link
- Private VLAN, Private VLAN Trunk
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- Static IP routes
- Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP² (IPv4 Unicast, IPv4 Multicast, IPv6 Unicast)
- BFD (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- Policy-Based Routing (IPv4)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- IP Unnumbered
- ECMP Load Balancing
- VRF Lite

¹ IPv4/IPv6 Unicast/Multicast routes share hardware resources.

² BGP protocol support is provided under license.

Features and capabilities (continued)

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 functions

- IPv6 Host
- Dual-stack

Service functions

- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics
- Green Ethernet

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- First Hop Security
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- Protection against non-authorized DHCP servers
- DHCP clients filtering
- BPDU attacks prevention
- NetBIOS/NetBEUI filtering
- PPPoE Intermediate Agent

ACL (Access Control List)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- Bandwidth management
- Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- Three marking colors
- ACL-based CoS/DSCP mark assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS/CoS to DSCP remarking
- ACL-based VLAN assignment
- 802.1p, DSCP mark assignment for IGMP

OAM/CFM

- 802.3ah Ethernet Link OAM
- 802.1ag Connectivity Fault Management (CFM)
- 802.3ah Unidirectional Link Detection (UDLD)

Management functions

- Download and upload of configuration file via TFTP/SCP/SFTP
- Redirecting the output of CLI commands to an arbitrary file on ROM
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- Processing traffic management with two 802.1Q headers
- Authorization of entered commands using TACACS+ server
- Access control – privilege levels
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ (Terminal Access Controller Access Control System) clients
- Change of Authorization (CoA)
- SSH server, Telnet server
- SSH client, Telnet client
- Remote start of commands via SSH
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCP Relay, DHCPv6 LDRA (Option 18, 37)
- DHCP server
- PPPoE Circuit-ID tag
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6 support)
- DNS server (Resolver)

Monitoring functions

- Statistics on interfaces
- RMON/SMON
- IP SLA
- CPU utilization monitoring per task and per traffic type
- RAM utilization monitoring
- Temperature monitoring
- TCAM utilization monitoring

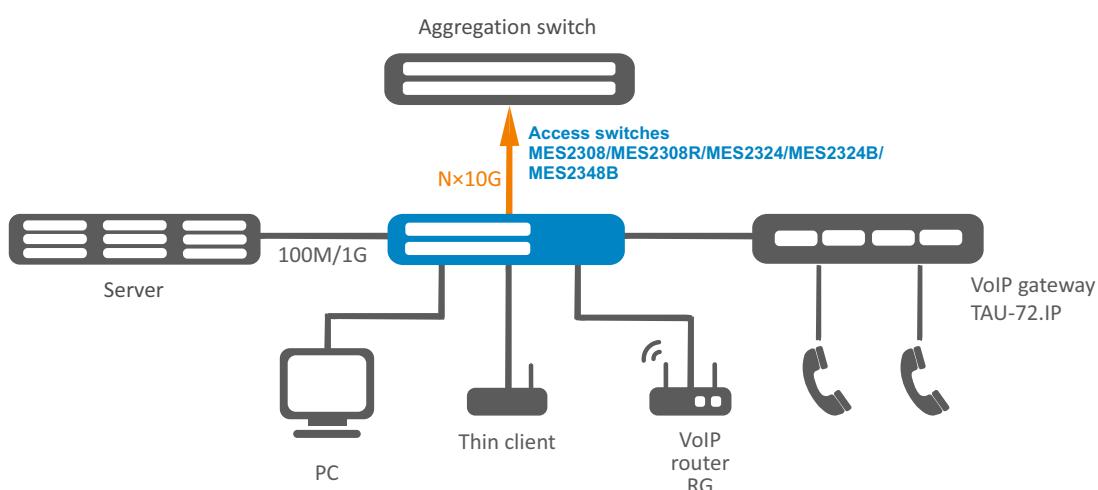
Features and capabilities (continued)

MIB/IETF

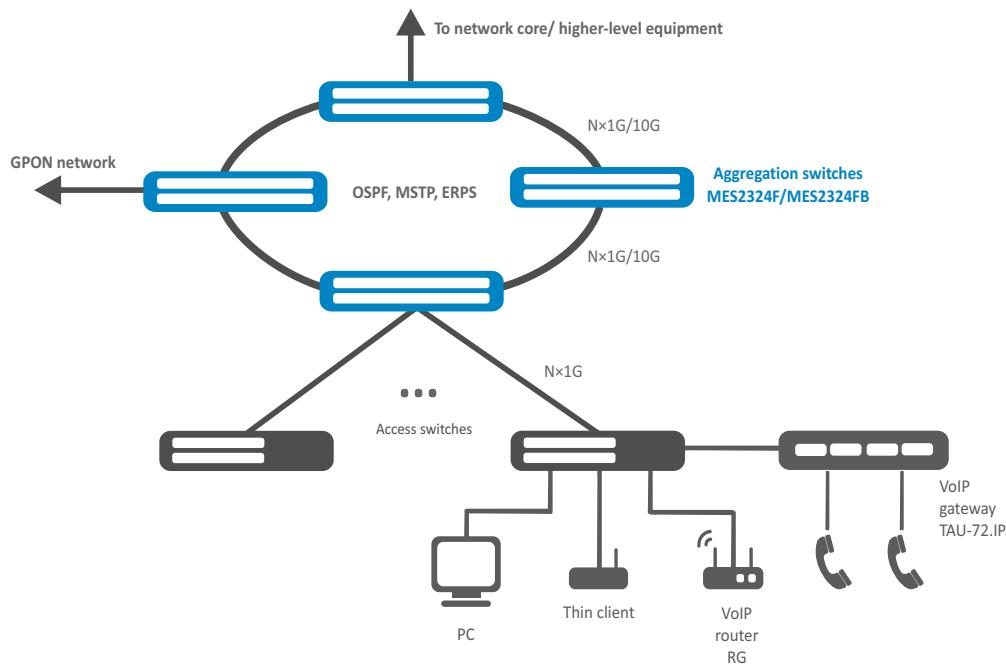
- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271,1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB

- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP for Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 DS field definition in IPv4 and IPv6 headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Use case for access switches



Use case for aggregation switches



Physical parameters

	MES2308	MES2308R	MES2324	MES2324B	MES2324F	MES2324FB	MES2348B
Physical specifications and environmental parameters							
Power supply	110–250 V AC, 50–60 Hz	110–250 V AC, 50–60 Hz	110–250 V AC, 50–60 Hz or 36–72 V DC	110–250 V AC, 50–60 Hz; 12 V DC	36–72 V DC	110–250 V AC, 50–60 Hz; 12 V DC	110–250 V AC, 50–60 Hz; 12 V DC
Maximum power consumption	14 W	14 W	25 W	50 W	39 W	85 W	89 W
Maximum power consumption (excluding battery charge)	—	—	—	26 W	—	45 W	45 W
Heat dissipation	14 W	14 W	25 W	28 W	39 W	50 W	54 W
Hardware support for Dying Gasp	no	yes	no	no	no	no	no
Operating temperature	from -20 to +45 °C	from -20 to +50 °C	from -20 to +50 °C ¹	from -20 to +50 °C ¹	from -20 to +65 °C	from -20 to +65 °C	from -20 to +50 °C
Storage temperature				from -50 to +70 °C			
Operating humidity				no more than 80 %			
Cooling	passive	passive	passive	passive	active (4 fans)	active (4 fans)	active (2 fans)
Form factor				19", 1U			
Dimensions (W × H × D)	310 × 44 × 158 mm	310 × 44 × 158 mm	430 × 44 × 158 mm	430 × 44 × 158 mm	430 × 44 × 243 mm	430 × 44 × 243 mm	440 × 44 × 280 mm
Weight	1.45 kg	1.45 kg	2.25 kg	2.25 kg	3.25 kg	3.55 kg	3.85 kg

Ordering information

Name	Description
MES2308 AC	MES2308 Ethernet switch, 10 ports of 10/100/1000BASE-T, 2 ports of 1000BASE-X, L3, 110–250 V AC
MES2308R AC	MES2308R Ethernet switch, 8 ports of 10/100/1000BASE-T, 2 ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo, L3, 110–250 V AC
MES2324 AC	MES2324 Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 110–250 V AC
MES2324 DC	MES2324 Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 36–72 V DC
MES2324B	MES2324B Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 110–250 V AC, 12 V DC
MES2324F DC	MES2324F Ethernet switch, 20 ports of 1000BASE-X/100BASE-FX (SFP), 4 ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 36–72 V DC
MES2324FB	MES2324FB Ethernet switch, 20 ports of 1000BASE-X/100BASE-FX (SFP), 4 ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 110–250 V AC, 12 V DC
MES2348B	MES2348 Ethernet switch, 48 ports of 10/100/1000BASE-T, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 110–250 V AC, 12 V DC

Related software

ECCM-MES2308_AC	ECCM-MES2308_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2308 AC
ECCM-MES2308R	ECCM-MES2308R option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2308R

¹ When using at 45 °C and above, industrial SFP+ transceivers are required.

Ordering information (continued)

	Related software
ECCM-MES2324_AC	ECCM-MES2324_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324 AC
ECCM-MES2324_DC	ECCM-MES2324_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324 DC
ECCM-MES2324B_AC	ECCM-MES2324B_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324B AC
ECCM-MES2324F_DC	ECCM-MES2324F_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324F DC
ECCM-MES2324FB_AC	ECCM-MES2324FB_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324FB AC
ECCM-MES2348B_AC	ECCM-MES2348B_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2348B AC

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Throughput capacity 176 Gbps
- Non-blocking switching fabric
- L3 functions
- Stacking of up to 8 devices
- Multicast support (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)

The switches are designed to connect end users to large-scale corporate networks, small and medium business networks and to service provider networks using 1G/10G Ethernet interfaces.

The switches support physical stacking, VLANs, multicast groups and advanced security functions.

The switches comply with CE requirements.



MES2308P



MES2324P



MES2348P

Technical features

	MES2308P AC	MES2308P DC	MES2324P AC	MES2324P ACW	MES2324P DC	MES2348P
Interfaces						
10/100/1000BASE-T (RJ-45) PoE/PoE+	8	8	24	24	24	48
10/100/1000BASE-T (RJ-45)	2	2	—	—	—	—
1000BASE-X (SFP)	2	2	—	—	—	—
10GBASE-R (SFP+)/1000BASE-X (SFP)	—	—	4	4	4	4
Console port RS-232 (RJ-45)				1		
Performance						
Bandwidth	24 Gbps	24 Gbps	128 Gbps	128 Gbps	128 Gbps	176 Gbps
Throughput for 64 bytes ¹	17.7 MPPS	17.7 MPPS	93.1 MPPS	93.1 MPPS	93.1 MPPS	130.9 MPPS
Buffer memory	1.5 MB	1.5 MB	1.5 MB	1.5 MB	1.5 MB	3 MB
RAM (DDR3)			512 MB			
ROM (RAW NAND)			512 MB			
MAC table			16384			
ARP table ²			820			
VLAN table			4094			
L2 Multicast groups			2047			
SQinQ rules			958 (ingress/egress)			
ACL rules			958			

¹Values are given for 1-way transmission.

²For each host in the ARP table, an entry is created in the routing table.

Technical features (continued)

	MES2308P AC	MES2308P DC	MES2324P AC	MES2324P ACW	MES2324P DC	MES2348P
L3 IPv4 Unicast routes ¹				816		
L3 IPv6 Unicast routes ¹				210		
L3 IPv4 Multicast routes (IGMP Proxy, PIM) ¹				412		
L3 IPv6 Multicast routes (IGMP Proxy, PIM) ¹				103		
VRRP routers				255		
Maximum size of ECMP groups				8		
VRF				16 (including default VRF)		
L3 interfaces				130		
Link Aggregation Groups (LAG)				48, up to 8 ports per LAG		
Quality of Service (QoS)				8 egress queues per port		
Jumbo frames size				10240 bytes		
Stacking				8 devices		

Features and capabilities

Interfaces functions

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)

- Spanning Tree Fast Link option
- STP Root Guard
- STP Loop Guard
- BPDU Filtering
- STP BPDU Guard
- VLAN-based Loopback Detection (LBD)
- ERPS (G.8032v2)
- Flex-link
- Private VLAN, Private VLAN Trunk
- Layer 2 Protocol Tunneling (L2PT)

MAC table functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping logging

L3 functions

- Static IP routes
- Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS, BGP² (IPv4 Unicast, IPv4 Multicast, IPv6 Unicast)
- BFD (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- Policy-Based Routing (IPv4)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- ECMP Load Balancing
- IP Unnumbered
- VRF Lite

VLAN functions

- Voice VLAN
- 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- Pim-Snooping
- IGMP proxy-report
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

IPv6 functions

- IPv6 Host
- Dual-stack

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Multiprocess
- PVSTP+
- RPVSTP+

Service functions

- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics
- Green Ethernet

¹ IPv4/IPv6 Unicast/Multicast routes share hardware resources.

² BGP protocol support is provided under license.

Features and capabilities (continued)

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- First Hop Security
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- NetBIOS/NetBEUI filtering
- PPPoE Intermediate Agent

ACL (Access Control Lists)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- Bandwidth management
- Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- Three marking colors
- ACL-based CoS/DSCP mark assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS/CoS to DSCP remarking
- ACL-based VLAN assignment
- 802.1p, DSCP mark assignment for IGMP

OAM/CFM

- IEEE 802.3ah Ethernet OAM
- IEEE 802.1ag Connectivity Fault Management (CFM)
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Management functions

- Download and upload of configuration file via TFTP/SCP/SFTP
- Redirecting the output of CLI commands to an arbitrary file on ROM
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- NTP (Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- Access control – privilege levels
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- Charge of Authorization (CoA)
- Telnet server, SSH server
- Telnet client, SSH client
- Remote start of commands via SSH
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCPv6 Relay, DHCPv6 LDRA (Option 18, 37)
- DHCP server
- PPPoE Circuit-ID tag
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6 support)
- DNS server (Resolver)

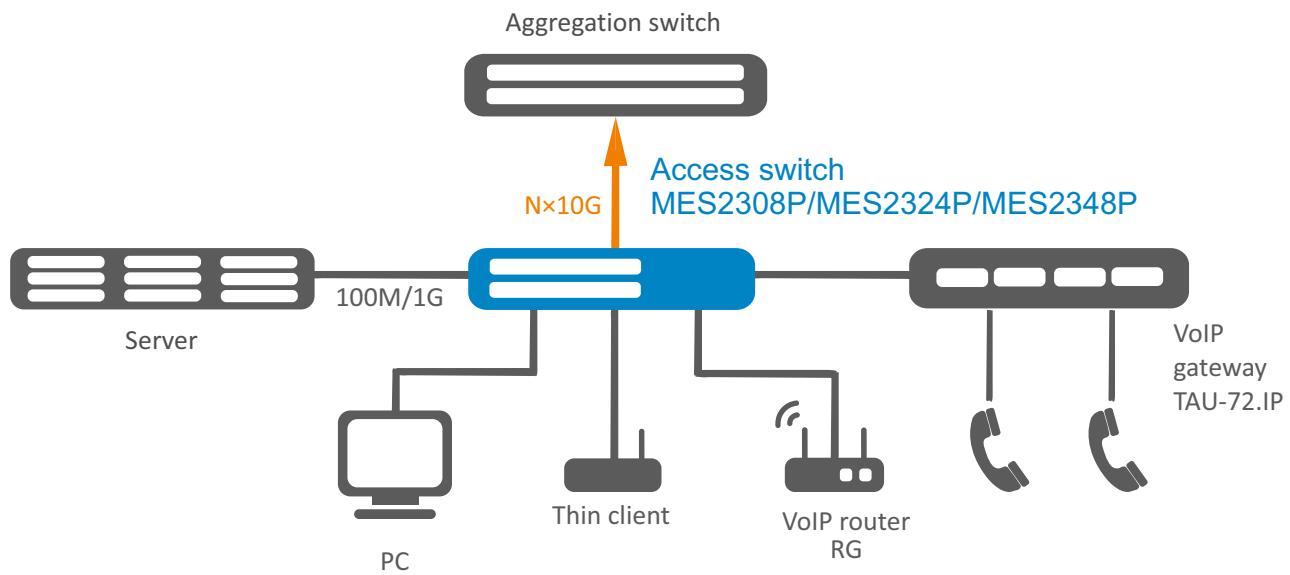
Monitoring functions

- Statistics on interfaces
- RMON/SMON
- IP SLA
- CPU utilization monitoring per task and per traffic type
- RAM utilization monitoring
- Temperature monitoring
- TCAM utilization monitoring

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP or Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 DS field in the IPv4 and IPv6 header
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Use case



Physical parameters

	MES2308P AC	MES2308P DC	MES2324P AC	MES2324P ACW	MES2324P DC	MES2348P
Physical specifications and environmental parameters						
Power supply	170–264 V AC, 50–60 Hz	36–72 V DC	170–264 V AC, 50–60 Hz	100–240 V AC, 50–60 Hz	36–72 V DC	100–240 V AC, 50–60 Hz; 36–72 V DC (up to 2 hot-swappable power supplies)
Input current	1.58–1.02 A	7.5–3.75 A	2.41–1.55 A	4.1–1.7	11.4–5.69 A	16.0–6.67 A
Maximum power consumption (including PoE)	275 W	280 W	445 W	445 W	455 W	1600 W
PoE budget	240 W	240 W	380 W	380 W	380 W	1450 W
Heat dissipation	35 W	40 W	65 W	65 W	75 W	150 W
Hardware support for Dying Gasp	no	no	no	no	no	no
Operating temperature	from -20 to +50 °C	from -20 to +45 °C	from -20 to +50 °C	from -20 to +50 °C	from -20 to +50 °C	from -10 to +50 °C
Storage temperature	from -50 to +70 °C					
Operating humidity	no more than 80 %					
Cooling	passive cooling	passive cooling	2 fans	2 fans	2 fans	4 fans
Form factor	19", 1U					
Dimensions (W × H × D)	430 × 44 × 158 mm	430 × 44 × 158 mm	440 × 44 × 203 mm	430 × 44 × 304 mm	430 × 44 × 304 mm	440 × 44 × 490 mm
Weight	2.55 kg	2.35 kg	3.16 kg	4.52 kg	4.02 kg	9.55 kg

Ordering information

Name	Description
MES2308P AC	MES2308P Ethernet switch, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 1000BASE-X, 2 ports of 10/100/1000BASE-T, L3, 170–264 V AC
MES2308P DC	MES2308P Ethernet switch, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 1000BASE-X, 2 ports of 10/100/1000BASE-T, L3, 36–72 V DC
MES2324P AC	MES2324P Ethernet switch, 24 ports of 10/100/1000BASE-T (RJ-45) with PoE/PoE+ support, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 170–264 V AC
MES2324P ACW	MES2324P ACW Ethernet switch, 24 ports of 10/100/1000BASE-T (RJ-45) with PoE/PoE+ support, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 100–240 V AC
MES2324P DC	MES2324P Ethernet switch, 24 ports of 10/100/1000BASE-T (RJ-45) with PoE/PoE+ support, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 36–72 V DC
MES2348P	MES2348P Ethernet switch, 48 ports of 10/100/1000BASE-T (RJ-45) with PoE/PoE+ support, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3

Related products

PM950-220/56	PM950-220/56 power module, 100–240 V AC, 950 W, for MES2348P
PM950-48/56	PM950-48/56 power module, 36–72 V AC, 950 W, for MES2348P

Related software

ECCM-MES2308P_AC	ECCM-MES2308P_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2308P AC
ECCM-MES2308P_DC	ECCM-MES2308P_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2308P DC
ECCM-MES2324P_AC	ECCM-MES2324P_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324P AC
ECCM-MES2324P_ACW	ECCM-MES2324P_ACW option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324P ACW
ECCM-MES2324P_DC	ECCM-MES2324P_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2324P DC
ECCM-MES2348P	ECCM-MES2348P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2348P

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with more than 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Advanced L2 features
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Uninterruptible power supply from rechargeable battery¹



MES2424



MES2448B

The Ethernet access switches provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via 1G/10G interfaces.

The switches support Virtual Local Area Networks (VLAN), multicast groups and advanced security functions.

Uninterruptible power¹

MES2424B, MES2448B and MES2448E switches can be equipped with a rechargeable battery to ensure power supply in case of the 220 V primary network connection loss. The switch is also equipped with a power supply unit which allows the battery to be charged when 220 V power is available. Power supply redundancy system makes it possible to monitor the state of the primary network and notify of a power type switching.

Technical features

	MES2424 AC 	MES2424 DC 	MES2424B	MES2448 DC 	MES2448B	MES2448E 
Interfaces						
10/100/1000BASE-T (RJ-45)	24	24	24	48	48	48
1000BASE-X (SFP)/ 10GBASE-R (SFP+)	4	4	4	4	4	6
Console port RS-232	1					
Performance						
Bandwidth	128 Gbps	128 Gbps	128 Gbps	176 Gbps	176 Gbps	216 Gbps
Throughput for 64-byte packets ²	95.2 MPPS	95.2 MPPS	95.2 MPPS	130.9 MPPS	130.9 MPPS	160.7 MPPS
Buffer memory	1.5 MB	1.5 MB	1.5 MB	2 MB	2 MB	2 MB
RAM (DDR3)	512 MB					
ROM (SPI Flash)	64 MB					
MAC table	16384	16384	16384	32768	32768	32768
ARP table	1000					
VLAN table	4094					
L2 Multicast groups (IGMP Snooping)	1023	1023	1023	4094	4094	4094
L3 Multicast groups (IGMP Proxy)	512	512	512	2048	2048	2048
SQinQ rules number	384 (ingress)/512 (egress)			768 (ingress)/1024 (egress)		

¹ Only for MES2424B, MES2448B and MES2448E.

² Values are for one-way transmission.

 — device complies with CE requirements.

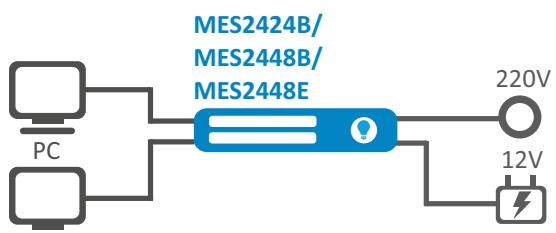
 — device is under development.

Technical features (continued)

	MES2424 AC <small>CE</small>	MES2424 DC <small>CE</small>	MES2424B	MES2448 DC <small>CE</small>	MES2448B	MES2448E <small>?</small>
MAC ACL rules	509	509	509	766	766	766
IPv4/IPv6 ACL rules	384/192	384/192	384/192	640/320	640/320	640/320
L3 interfaces	8 VLANs, up to 5 of IPv4 addresses for each VLAN, up to 300 of IPv6 GUA for all VLANs in summary					
Link Aggregation Groups (LAG)			24 groups, up to 8 ports in one LAG			
Quality of Service (QoS)				8 egress queues per port		
Jumbo frames					maximum packet size is 12288 bytes	

Technical features of redundancy power supply *

	Battery capacity, Ah	Battery life, h	Battery charge time, h
MES2424B	12	≈6	≈9
	17	≈10	≈13
	20	≈13	≈15
MES2448B MES2448E	12	≈2,5	≈13
	17	≈5	≈18
	20	≈6,5	≈22



* Notes

- Parameters are given for environment temperature +25 °C;
- For MES2424B the use of a rechargeable battery with a capacity of at least 12Ah is recommended;
- For MES2448B, MES2448E the use of a rechargeable battery with a capacity at least 9Ah is recommended.

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control IEEE 802.3X
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave

- IGMP Proxy reporting
- IGMP authorization via RADIUS
- MLD Snooping v1,2¹
- MLD Snooping fast-leave¹
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different traffic types (broadcast, multicast, unknown unicast)
- Layer 2 Protocol Tunneling (L2PT)
- ERPS (G.8032v2)

L3 Multicast features

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

¹ Not supported by MES2448B and MES2448E current firmware versions.

💡 — MES2448E is under development.

Features and capabilities (continued)

Link Aggregation functions

- Static LAG
- Dynamic LAG
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6 functions

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP option 82
- MAC-based authentication, Port Security, static MAC addresses
- IEEE 802.1x port-based authentication
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate Agent
- IP Source Guard
- Dynamic ARP Inspection
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

ACL (Access Control List)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of service (QoS) and rate limiting

- Port rate limiting (shaping)
- Rate limiting according to srTCM and trTCM policing algorithms
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- IEEE 802.1p priority tagging for VLAN management
- ACL-based traffic classification
- ACL-based CoS/DSCP marking
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

OAM

- IEEE 802.3ah, Ethernet OAM
- Dying Gasp
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+ protocol
- DHCP auto configuration
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routing
- Support for several versions of configuration file

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

Uninterruptible power supply¹

- Automatic switching to 12 V rechargeable battery when the primary power supply (220V) fails, and vice versa
- 12 V battery charging when operating from 220 V primary power supply
- Power supply type monitoring (SNMP)

¹Only for MES2424B, MES2448B and MES2448E.

Features and capabilities (continued)

<ul style="list-style-type: none"> — Notification of switching from one type of power to another — Battery connection indication — Low battery alarm — Short circuit protection 	<ul style="list-style-type: none"> — RFC 2674, 4363 802.1p MIB — RFC 2233, 2863 IF MIB — RFC 2618 RADIUS Authentication Client MIB — RFC 4022 MIB for TCP — RFC 4113 MIB for UDP — RFC 3289 MIB for Diffserv — RFC 2620 RADIUS Accounting Client MIB — RFC 768 UDP — RFC 791 IP — RFC 792 ICMPv4 — RFC 2463, 4443 ICMPv6 — RFC 793 TCP — RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers — RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP) — RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP — RFC 826 ARP — RFC 854 Telnet
MIB/IETF standards	
<ul style="list-style-type: none"> — RFC 1065, 1066, 1155, 1156, 2578 MIB Structure — RFC 1212 Concise MIB Definitions — RFC 1213 MIB II — RFC 1215 MIB Traps Convention — RFC 1493, 4188 Bridge MIB — RFC 1157, 2571-2576 SNMP MIB — RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB — RFC 2465 IPv6 MIB — RFC 2737 Entity MIB — RFC 4293 IPv6 SNMP Mgmt Interface MIB — Private MIB — RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB — RFC 2668 802.3 MAU MIB 	<ul style="list-style-type: none"> — RFC 2463, 4443 ICMPv6 — RFC 793 TCP — RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers — RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP) — RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP — RFC 826 ARP — RFC 854 Telnet

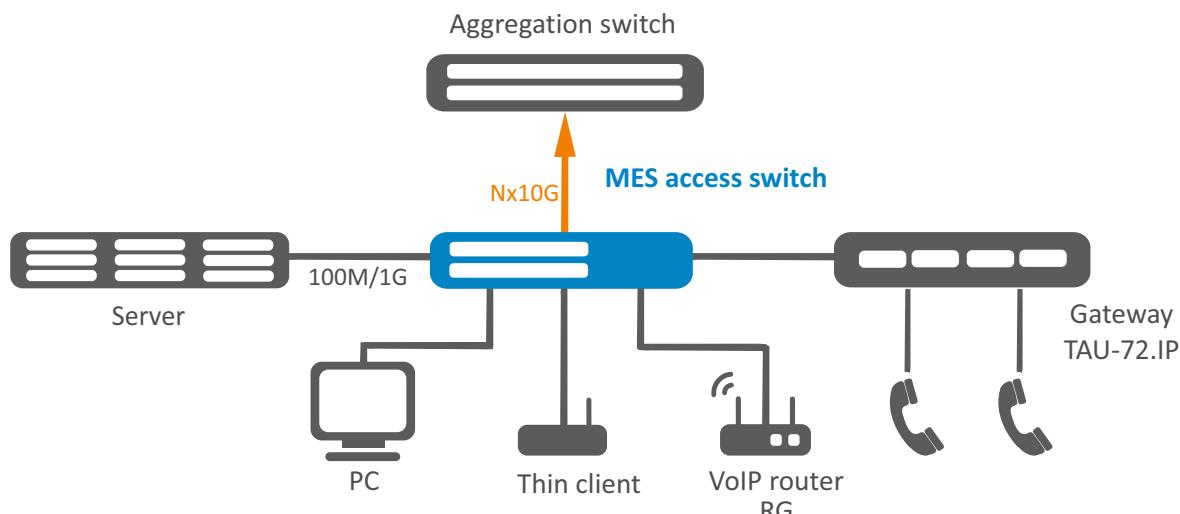
Physical parameters

	MES2424 AC 	MES2424 DC 	MES2424B	MES2448 DC 	MES2448B	MES2448E 			
Physical specifications and environmental parameters									
Power supply	100–240 V AC, 50–60 Hz	18–72 V DC	100–240 V AC, 50–60 Hz; 12 V DC	36–72 V DC	110–250 V AC, 50–60 Hz; 12 V DC	110–250 V AC, 50–60 Hz; 12 V DC			
Input current	0.3–0.2 A	1.5–0.4 A	0.5–0.3 A for AC 4.1 A for DC	1.4–0.7 A	0.6–0.3 A for AC 5.5 A for DC	0.7–0.3 A for AC 5.7 A for DC			
Maximum power consumption	25 W	26 W	49 W	48 W	66 W	68 W			
Maximum power consumption (without battery charge)	—	—	25 W	—	48 W	50 W			
Heat dissipation	25 W	26 W	27 W	48 W	53 W	—			
Hardware support for Dying Gasp	yes	no	no	no	yes	yes			
Operating temperature range ¹	from -20 °C to +50 °C								
Storage temperature range	from -40 °C to +70 °C								
Cooling	passive			active, 2 fans					
Operating humidity	no more than 80 %								
Form factor	19", 1U								
Dimensions (W × H × D)	430 × 44 × 203 mm	430 × 44 × 203 mm	430 × 44 × 203 mm	440 × 44 × 280 mm	440 × 44 × 280 mm	440 × 44 × 280 mm			
Weight	2.44 kg	2.42 kg	2.54 kg	3.98 kg	3.98 kg	4.02 kg			

¹ For MES2424 AC and MES2424B: when using commercial SFP+ transceivers operating temperature must not exceed +45 °C.

 — device is under development.

Use case



Ordering information

Name	Description
MES2424 AC	Ethernet switch MES2424 AC, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L2, 110-250 V AC
MES2424 DC	Ethernet switch MES2424 DC, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L2, 18-72 V DC
MES2424B	Ethernet switch MES2424B, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L2, 110-250 V AC, 12 V DC
MES2448 DC	Ethernet switch MES2448 DC, 48 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L2, 36-72 V DC
MES2448B	Ethernet switch MES2448B, 48 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L2, 110-250 V AC, 12 V DC
MES2448E	Ethernet switch MES2448E, 48 ports of 10/100/1000BASE-T, 6 ports of 1000BASE-X/10GBASE-R, L2, 110-250 V AC, 12 V DC

Related software

ECCM-MES2424_AC	ECCM-MES2424_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2424_AC
ECCM-MES2424_DC	ECCM-MES2424_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2424_DC
ECCM-MES2424B	ECCM-MES2424B option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2424B
ECCM-MES2448_DC	ECCM-MES2448_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2448_DC
ECCM-MES2448B	ECCM-MES2448B option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2448B
ECCM-MES2448E	ECCM-MES2448E option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2448E

 — device is under development.

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into Customer's infrastructure are the priority growth areas of the company.

- Non-blocking architecture
- Advanced L2 features
- L3 switches
- Multicast (IGMP Snooping, MVR)
- Advanced security features (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Uninterruptible power supply from rechargeable battery¹



The Ethernet access switches provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via 1G/10G interfaces.

The switches support Virtual Local Area networks (VLAN), multicast groups and advanced security functions.

Uninterruptible power¹

MES2424B, MES2424FB, MES2448B and MES2448E switches can be equipped with a rechargeable battery to ensure power supply in case of the 220 V primary network connection loss. The switches are also equipped with a power supply unit which allows the battery to be charged when 220 V power source is available. Power supply redundancy system makes it possible to monitor the state of the primary network and notify of a power type switching.

Technical features

	MES2424 AC ^{CE}	MES2424 DC ^{CE}	MES2424B	MES2424FB	MES2448 DC ^{CE}	MES2448B	MES2448E ^O
Interfaces							
10/100/1000BASE-T (RJ-45)	24	24	24	—	48	48	48
100BASE-FX/ 1000BASE-X (SFP)	—	—	—	24	—	—	—
1000BASE-X (SFP)/ 10GBASE-R (SFP+)	4	4	4	4	4	4	6
Console port RS-232 (RJ-45)				1			
Performance							
Bandwidth	128 Gbps	128 Gbps	128 Gbps	128 Gbps	176 Gbps	176 Gbps	216 Gbps
Throughput for 64-byte packets ²	95.2 MPPS	95.2 MPPS	95.2 MPPS	95.2 MPPS	130.95 MPPS	130.95 MPPS	160.7 MPPS
Buffer memory	1.5 MB	1.5 MB	1.5 MB	1.5 MB	2 MB	2 MB	2 MB
RAM (DDR3)				512 MB			
ROM (SPI Flash)				64 MB			
MAC table	16384	16384	16384	16384	32768	32768	32768
ARP table				1000			
VLAN table				4094			
L2 Multicast groups (IGMP Snooping)	1023	1023	1023	1023	4094	4094	4094

¹ Only for MES2424B, MES2424FB, MES2448B and MES2448E.

² Values are for one-way transmission.

 — device complies with CE requirements.

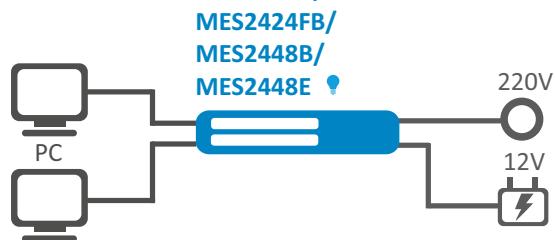
 — device is under development.

Technical features (continued)

	MES2424 AC <small>[CE]</small>	MES2424 DC <small>[CE]</small>	MES2424B	MES2424FB	MES2448 DC <small>[CE]</small>	MES2448B	MES2448E <small>[CE]</small>
L3 Multicast groups (IGMP proxy)	512	512	512	512	2048	2048	2048
SQInQ rules	384 (ingress)/512 (egress)				768 (ingress)/1024 (egress)		
MAC ACL rules	509	509	509	509	766	766	766
IPv4/IPv6 ACL rules	384/192	384/192	640/320	640/320	640/320	640/320	640/320
L3 IPv4 Unicast routes	406	406	406	406	1958	1958	1958
L3 IPv6 Unicast routes	22						
VRP routers	32						
L3 interfaces	8 VLANs, up to 5 IPv4 addresses for each VLAN, up to 22 IPv6 GUA for all VLANs in summary						
Link Aggregation Groups (LAG)	24 groups, up to 8 ports per LAG						
Quality of Service (QoS)	8 egress queues per port						
Jumbo frames	maximum packet size is 12288 bytes						

Technical features of redundancy power supply*

	Battery capacity, Ah	Battery life, h	Battery charge time, h
MES2424B	12	≈6	≈9
	17	≈10	≈13
	20	≈13	≈15
MES2424FB	12	≈5	≈13
	17	≈7	≈18
	20	≈10	≈22
MES2448B MES2448E	12	≈2,5	≈13
	17	≈5	≈18
	20	≈6,5	≈22



* Note:

- Parameters are given for environment temperature +25 °C;
- For MES2424B the use of a rechargeable battery with a capacity of at least 12 Ah;
- For MES2424FB, MES2448B, MES2448E the use of a rechargeable battery with a capacity of at least 9 Ah is recommended.

— MES2448E is under development.

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode on each VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping events logging

VLAN features

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP proxy-report
- IGMP authorization via RADIUS
- MLD Snooping v1,2¹
- MLD Snooping fast-leave¹
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different traffic types (broadcast, multicast, unknown unicast)
- Layer 2 Protocol Tunneling (L2PT)
- ERPS (G.8032v2)

L3 Multicast features

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

L3 features

- Static IPv4, IPv6 routes
- Dynamic routing protocols RIPv1/2, OSPFv2/3
- VRRP

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6 functions

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- MAC-based authentication, Port Security, static MAC addresses
- IEEE 802.1x port-based authentication
- Guest VLAN
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate agent
- IP Source Guard
- Dynamic ARP Inspection
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

ACL (Access Control List)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol
 - TCP/UDP port number
 - User Defined Bytes

Quality of service (QoS) and rate limiting

- Port rate limiting (shaping)
- Rate limiting according to sr-TCM and tr-TCM policing
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- IEEE 802.1p priority tagging for VLAN management
- ACL-based traffic classification
- ACL-based CoS/DSCP marking
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

¹Not supported for MES2448B and MES2448E in current firmware versions.

Features and capabilities (continued)

OAM

- IEEE 802.3ah, Ethernet OAM
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+ protocol
- DHCP auto configuration
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routing
- Support for several versions of configuration file

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

Uninterruptible power supply¹

- Automatic switching to 12 V rechargeable battery when the primary power supply (220V) fails, and vice versa
- 12 V battery charging when operating from 220 V primary power supply
- Power supply type monitoring (SNMP)
- Notification of switching from one type of power to another
- Battery connection indication
- Low battery alarm
- Short circuit protection

MIB/IETF standards

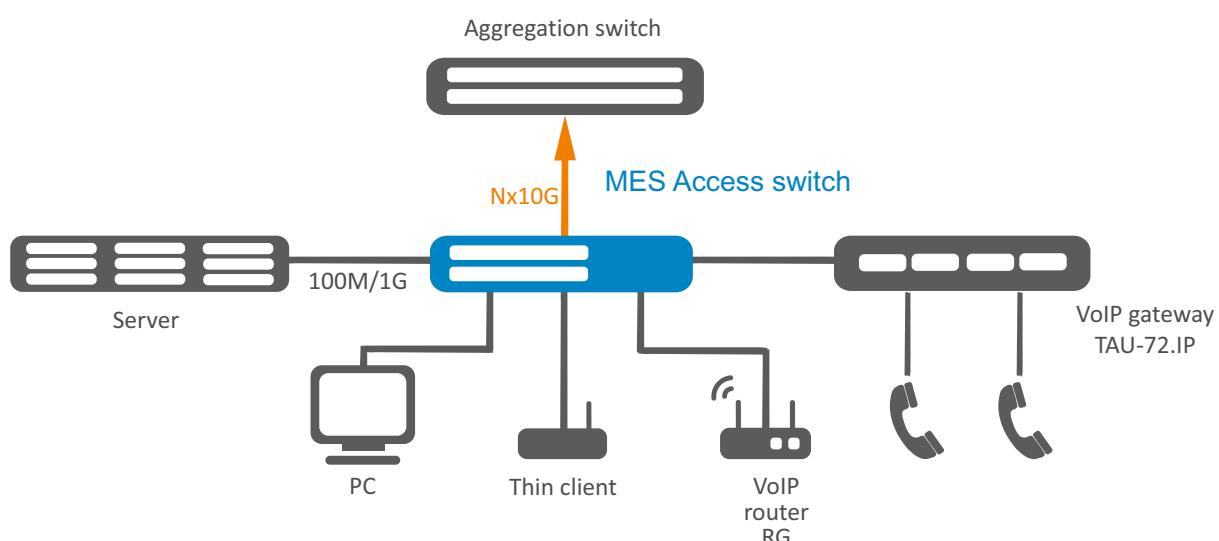
- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

¹ Only for MES2424B, MES2424FB, MES2448B and MES2448E.

Physical parameters

	MES2424 AC ¹	MES2424 DC ¹	MES2424B	MES2424FB	MES2448 DC ¹	MES2448B	MES2448E ²			
Physical specifications and environmental parameters										
Power supply	100–240 V AC, 50–60 Hz	18–72 V DC	100–240 V AC, 50–60 Hz; 12 V DC	100–240 V AC, 50–60 Hz; 12 V DC	36–72 V DC	110–250 V AC, 50–60 Hz; 12 V DC	110–250 V AC, 50–60 Hz; 12 V DC			
Input current	0.3–0.2 A	1.5–0.4 A	0.5–0.3 A for AC 4.1 A for DC	1.0–0.3 A for AC 5.0 A for DC	1.4–0.7 A	0.6–0.3 A for AC 5.5 A for DC	0.7–0.3 A for AC 5.7 A for DC			
Maximum power consumption	25 W	26 W	49 W	75 W	48 W	66 W	68 W			
Maximum power consumption without battery charge	—	—	25 W	60 W	—	48 W	50 W			
Heat dissipation	25 W	26 W	27 W	62 W	48 W	53 W	—			
Hardware support for Dying Gasp	yes	no	no	no	no	yes	yes			
Operating temperature range ²	from -20 °C to +50 °C									
Storage temperature range	from -40 °C to +70 °C									
Cooling	passive			active, Front-to-Back, 4 fans	active, 2 fans					
Operating humidity	no more than 80 %									
Form factor	19", 1U									
Dimensions (W × H × D), mm	430 × 44 × 203	430 × 44 × 203	430 × 44 × 203	430 × 44 × 243	440 × 44 × 280	440 × 44 × 280	440 × 44 × 280			
Weight, kg	2.44	2.42	2.54	2.69	3.98	3.98	4.02			

Use case



¹ For MES2424 AC and MES2424B: when using commercial SFP+ transceivers, operating temperature must not exceed +45 °C.

 — device is under development.

Ordering information

Name	Description
MES2424 AC	MES2424 AC Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L3, 110-250 V AC
MES2424 DC	MES2424 DC Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L3, 18-72 V DC
MES2424B	MES2424B Ethernet switch, 24 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L3, 110-250 V AC, 12 V DC
MES2424FB	MES2424FB Ethernet switch, 24 ports of 1000BASE-FX/1000BASE-X, 4 ports of 1000BASE-X/10GBASE-R, L3, 110-250 V AC, 12 V DC
MES2448 DC	MES2448 DC Ethernet switch, 48 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L3, 36-72 V DC
MES2448B	MES2448B Ethernet switch, 48 ports of 10/100/1000BASE-T, 4 ports of 1000BASE-X/10GBASE-R, L3, 110-250 V AC, 12 V DC
MES2448E	MES2448E Ethernet switch, 48 ports of 10/100/1000BASE-T, 6 ports of 1000BASE-X/10GBASE-R, L3, 110-250 V AC, 12 V DC

Related software

ECCM-MES2424_AC	ECCM-MES2424_AC option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2424 AC
ECCM-MES2424_DC	ECCM-MES2424_DC option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2424 DC
ECCM-MES2424B	ECCM-MES2424B option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2424B
ECCM-MES2424FB	ECCM-MES2424FB option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2424FB
ECCM-MES2448_DC	ECCM-MES2448_DC option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2448 DC
ECCM-MES2448B	ECCM-MES2448B option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2448B
ECCM-MES2448E	ECCM-MES2448E option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES2448E

— device is under development.

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Advanced L2 features
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)

MES24xx series switches with PoE support provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via 1G/10G interfaces.

The switches support Virtual Local Area Networks (VLAN), multicast groups, and have advanced security functions.



MES2408P



MES2428P



MES2408CP

Technical features

	MES2408CP	MES2408P 	MES2408PL	MES2428P 	MES2424P 	MES2448P
Interfaces						
10/100/1000BASE-T PoE/PoE+	8	8	8	24	24	48
100BASE-FX/1000BASE-X (SFP)	—	2	2	—	—	—
1000BASE-X (SFP)/10GBASE-R (SFP+)	—	—	—	—	4	4
Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X	2	—	—	4	—	—
Console port RS-232 (RJ-45)	1					
Performance						
Bandwidth	20 Gbps	20 Gbps	20 Gbps	56 Gbps	128 Gbps	176 Gbps
Throughput for 64-byte packets ¹	14.88 MPPS	14.88 MPPS	14.88 MPPS	41.658 MPPS	95.2 MPPS	130.9 MPPS
Buffer memory	512 KB	512 KB	512 KB	512 KB	1.5 MB	2 MB
RAM (DDR3)	256 MB	256 MB	256 MB	256 MB	512 MB	512 MB
ROM (SPI Flash)	32 MB	32 MB	32 MB	32 MB	64 MB	64 MB
MAC table	8192	8192	8192	8192	16384	32768
ARP table	1000					
VLAN table	4094					
L2 Multicast groups (IGMP Snooping)	509	509	509	509	1023	4094
L3 Multicast groups (IGMP Proxy)	—	—	—	—	512	2048
SQinQ rules	128 (ingress)/256 (egress)	128 (ingress)/256 (egress)	128 (ingress)/256 (egress)	128 (ingress)/256 (egress)	384 (ingress)/512 (egress)	768 (ingress)/1024 (egress)
MAC ACL rules	381	381	381	381	509	766

¹Values are given for one-way transmission.

 — the device complies with CE requirements.

Technical features (continued)

	MES2408CP	MES2408P <small>CE</small>	MES2408PL	MES2428P <small>CE</small>	MES2424P <small>CE</small>	MES2448P
IPv4/IPv6 ACL rules	219/128	219/128	219/128	219/128	384/192	640/320
L3 interfaces	8 VLANs, up to 5 of IPv4 addresses for each VLAN, up to 300 IPv6 GUA for all VLANs in summary					
Link Aggregation Groups (LAG)	8 groups, up to 8 ports in one LAG					
QoS	8 egress queues per port					
Jumbo frames	max. packet size is 10000 bytes					

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode on each VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP Proxy reporting
- IGMP authorization via RADIUS
- MLD Snooping v1,2¹
- MLD Snooping fast-leave¹
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard

— BPDU Filtering

- Spanning Tree Fast Link option
- Layer 2 Protocol Tunneling (L2PT)
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- ERPS (G.8032v2)²

L3 Multicast features¹

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

Link Aggregation functions

- Static LAG
- Dynamic LAG
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection (Protection)
- MAC-based authentication, Port Security, static MAC addresses
- IEEE 802.1x based authentication per ports
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate Agent
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

¹ Not supported by MES2448P current firmware version.

² Only for MES2424P, MES2448P.

Features and capabilities (continued)

Access control lists ACL

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of service (QoS) and rate limiting

- Shaping, policing
- Support for IEEE 802.1p Class of Service
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- ACL-based traffic classification
- ACL-based CoS/DSCP marking
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

OAM

- IEEE 802.3ah, Ethernet OAM
- Dying Gasp
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management – privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands

- Input commands logging via TACACS+ protocol
- DHCP auto configuration
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server¹
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routing
- Support for several versions of configuration file

Monitoring functions

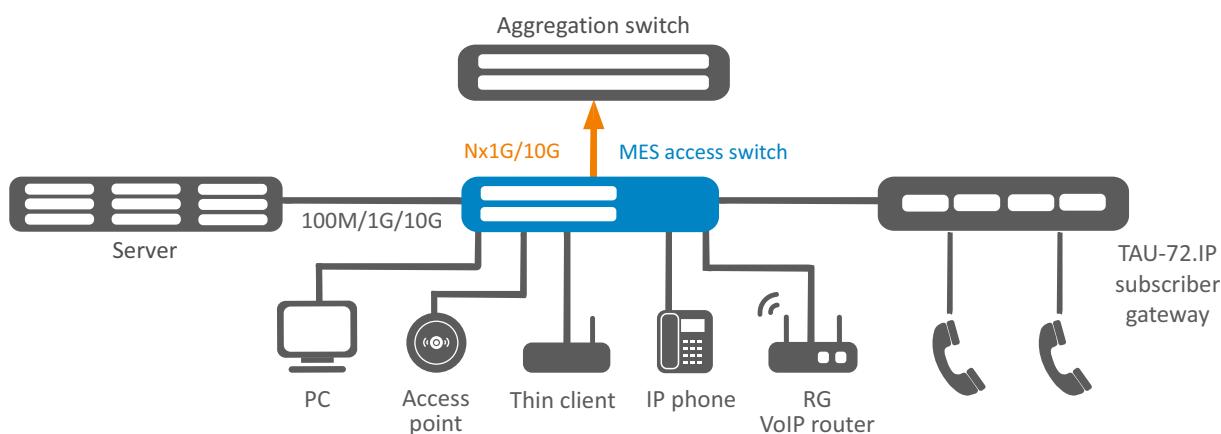
- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

¹Only for MES2424P, MES2448P.

Use case



Physical parameters

	MES2408CP	MES2408P <small>CE</small>	MES2408PL	MES2428P AC <small>CE</small>	MES2428P DC <small>CE</small>	MES2424P <small>CE</small>	MES2448P
Physical specifications and environmental parameters							
Power supply	110–250 V AC, 50–60 Hz	176–250 V AC, 50–60 Hz or 36–72 V DC	110–250 V AC, 50–60 Hz	176–264 V AC, 50–60 Hz	36–72 V DC	176–264 V AC, 50–60 Hz	176–264 V AC, 50–60 Hz
Input current	1.4 A–0.6 A	1.6 A–1.1 A 7.8 A–3.9 A	0.8 A–0.4A	2.4 A–1.6A	12.5 A–6.3 A	2.4 A–1.6 A	4.7 A–3.2 A
Maximum power consumption (including PoE)	150 W	275 W AC 280 W DC	80 W	420 W	450 W	420 W	820 W
PoE budget	120 W	240 W	65 W	370 W	370 W	370 W	720 W
Heat dissipation	30 W	35 W AC 40 W DC	15 W	50 W	80 W	50 W	–
Hardware support for Dying Gasp	yes	no	no	yes	no	yes	no
Operating temperature ¹	-20 to +50 °C	-20 to +50 °C	-20 to +50 °C	-20 to +50 °C	-20 to +50 °C	-20 to +50 °C	-10 to +50 °C
Storage temperature	from -40 to +70 °C						
Cooling	passive	passive	passive	2 fans	2 fans	2 fans	4 fans
Operating humidity	no more than 80%						
Form factor	19", 1U						
Dimensions (W × H × D), mm	310 × 44 × 177	430 × 44 × 178	310 × 44 × 177	430 × 44 × 204	430 × 44 × 305	430 × 44 × 225	440 × 44 × 447
Weight	2.16 kg	2.69 kg	1.9 kg	3.27 kg	3.27 kg	3.36 kg	7.46 kg

¹ For MES2408CP and MES2408P DC: when operating devices at temperatures above 45 °C it is necessary to use industrial SFP transceivers.CE — the device complies with CE requirements.

Ordering information

Name	Description
MES2408CP	Ethernet switch MES2408CP, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 Combo ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES2408P AC	Ethernet switch MES2408P AC, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 100BASE-FX/1000BASE-X, L2, 176–250 V AC
MES2408P DC	Ethernet switch MES2408P DC, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 100BASE-FX/1000BASE-X, L2, 36–72 V DC
MES2408PL	Ethernet switch MES2408PL, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES2428P AC	Ethernet switch MES2428P AC, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 Combo ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 176–264 V AC
MES2428P DC	Ethernet switch MES2428P DC, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 Combo ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 36–72 V DC
MES2424P	Ethernet switch MES2424P, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, L2, 176–264 V AC
MES2448P	Ethernet switch MES2448P, 48 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, L2, 176–264 V AC

Related products

PM380-220/56	Power module PM380-220/56, 176–264 V AC, 380 W
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Related software

ECCM-MES2408CP	ECCM-MES2408CP option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408CP
ECCM-MES2408P	ECCM-MES2408P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408P
ECCM-MES2408P_DC	ECCM-MES2408P_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408P_DC
ECCM-MES2408PL	ECCM-MES2408PL option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408PL
ECCM-MES2428P_AC	ECCM-MES2428P_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2428P_AC
ECCM-MES2428P_DC	ECCM-MES2428P_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2428P_DC
ECCM-MES2424P	ECCM-MES2424P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2424P
ECCM-MES2448P	ECCM-MES2448P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2448P

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into Customer's infrastructure are the priority growth areas of the company.

- Non-blocking switching fabric
- Advanced L2 features
- L3 switches¹
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)

MES24xx series switches with PoE support provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via 1G/10G interfaces.

The switches support Virtual Local Area Networks (VLAN), multicast groups, and have advanced security functions.



MES2408P



MES2428P



MES2408CP

Technical features

	MES2408CP	MES2408P ^{CE}	MES2408PL	MES2428P ^{CE}	MES2424P ^{CE}	MES2448P	MES2420-48P
Interfaces							
10/100/1000BASE-T PoE/PoE+	8	8	8	24	24	48	48
100BASE-FX/1000BASE-X (SFP)	–	2	2	–	–	–	–
1000BASE-X (SFP)/10GBASE-R (SFP+)	–	–	–	–	4	4	4
Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X	2	–	–	4	–	–	–
Console port RS-232 (RJ-45)				1			
Performance							
Bandwidth	20 Gbps	20 Gbps	20 Gbps	56 Gbps	128 Gbps	176 Gbps	176 Gbps
Throughput for 64-byte packets ²	14.88 MPPS	14.88 MPPS	14.88 MPPS	41.658 MPPS	95.2 MPPS	130.95 MPPS	130.95 MPPS
Buffer memory	512 KB	512 KB	512 KB	512 KB	1.5 MB	2 MB	2 MB
RAM (DDR3)	256 MB	256 MB	256 MB	256 MB	512 MB	512 MB	1 GB
ROM (SPI Flash)	32 MB	32 MB	32 MB	32 MB	64 MB	64 MB	64 MB
MAC table	8192	8192	8192	8192	16384	32768	32768
ARP table				1000			
VLAN table				4094			
L2 Multicast groups (IGMP Snooping)	509	509	509	509	1023	4094	4094
L3 Multicast groups (IGMP Proxy)	–	–	–	–	512	2048	2048
SQinQ rules	128 (ingress), 256 (egress)	1024 (ingress ³), 512 (egress)	2048 (ingress ³), 1024 (egress)	2048 (ingress ³), 1024 (egress)			
MAC ACL rules	381	381	381	381	509	766	766
IPv4/IPv6 ACL rules	219/128	219/128	219/128	219/128	384/192	640/320	640/320

¹For MES2424P, MES2448P, MES2420-48P.

²Values are given for one-way transmission.

³Mac-based vlan and SQinQ share common hardware resources.

Technical features (continued)

	MES2408CP	MES2408P	MES2408PL	MES2428P	MES2424P	MES2448P	MES2420-48P		
L3 IPv4 Unicast routes	—	—	—	—	496	2048	2048		
L3 IPv6 Unicast routes	—	—	—	—	124	512	512		
VRRP routers	—	—	—	—	32	32	32		
L3 interfaces	20 VLANs, up to 5 IPv4 addresses in each VLAN, up to 300 IPv6 GUA for all VLANs			20 VLANs, up to 5 IPv4 addresses in each VLAN, up to 124 IPv6 GUA for all VLANs		20 VLANs, up to 5 IPv4 addresses in each VLAN, up to 512 IPv6 GUA for all VLANs			
Link Aggregation Groups (LAG)	8 groups, up to 8 ports in one LAG			24 groups, up to 8 ports in one LAG					
QoS				8 egress queues per port					
Jumbo frames	maximum packet size is 10000 bytes			maximum packet size 12288 bytes					

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode on each VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP Proxy-report
- IGMP authorization via RADIUS
- MLD Snooping v1,2¹
- MLD Snooping fast-leave¹
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- Rapid-PVST+²
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Layer 2 Protocol Tunneling (L2PT)
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- ERPS (G.8032v2)²

L3 Multicast features²

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

L3 features²

- Support for static IPv4 and IPv6 routes
- Support for dynamic routing protocol RIPv1/2, OSPFv2/3
- Support for VRRP

Link Aggregation functions

- LAG
- LACP
- LAG Balancing Algorithm

Service functions

- Virtual cable test (VCT)
- Optical transceiver diagnostics

¹ Not supported by MES2448P, MES2420-48P current firmware version.

² Only for MES2424P, MES2448P, MES2420-48P.

 — the device complies with CE requirements.

Features and capabilities (continued)

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection (Protection)
- MAC-based authentication, Port Security, static MAC addresses
- IEEE 802.1x based authentication per ports
- Guest VLAN
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate Agent
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

Access control lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of Service (QoS) and rate limiting

- Shaping, policing
- Support for IEEE 802.1p Class of Service
- Strict Priority/Weighted Round Robin (WRR)
- ACL-based traffic classification
- ACL-based CoS/DSCP marking
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

OAM

- IEEE 802.3ah, Ethernet OAM
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute

- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management – privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+ protocol
- DHCP auto configuration
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server¹
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routing
- Support for several versions of configuration file

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

MIB/IETF

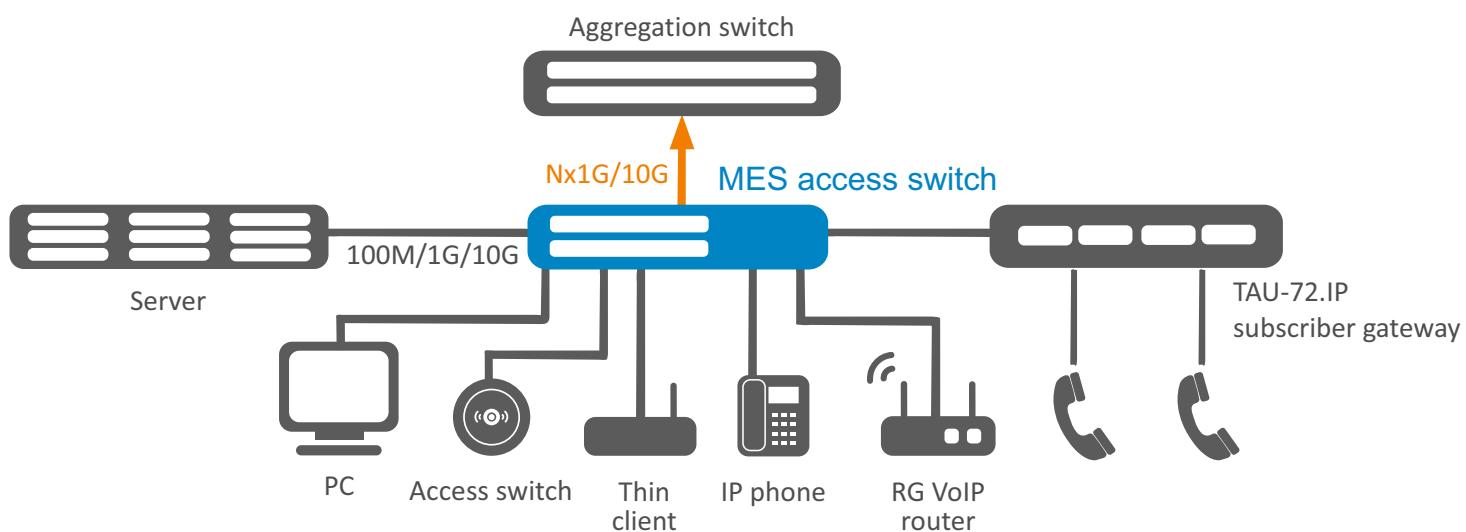
- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP

¹ Only for MES2424P, MES2448P, MES2420-48P.

Features and capabilities (continued)

- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Use case



Physical parameters

	MES2408CP	MES2408P	MES2408PL	MES2428P AC	MES2428P DC	MES2424P	MES2448P	MES2420-48P
Physical specifications and environmental parameters								
Power	110–250 V AC, 50–60 Hz	176–250 V AC, 50–60 Hz or 36–72 V DC	110–250 V AC, 50–60 Hz	176–264 V AC, 50–60 Hz	36–72 V DC	176–264 V AC, 50–60 Hz	176–264 V AC, 50–60 Hz (up to 2 hot-swappable power supplies)	100–240 V AC, 50–60 Hz 36–72 V DC (up to 2 hot-swappable power supplies)
Input current	1.4 A–0.6 A	1.6 A–1.1 A 7.8 A–3.9 A	0.8 A–0.4A	2.4 A–1.6A	12.5 A–6.3 A	2.4 A–1.6 A	4.7 A–3.2 A	10 A–5 A
Maximum power consumption (including PoE)	150 W	275 W AC 280 W DC	80 W	420 W	450 W	420 W	820 W	1600 W
PoE budget	120 W	240 W	65 W	370 W	370 W	370 W	720 W	1450 W
Heat dissipation	30 W	35 W AC 40 W DC	15 W	50 W	80 W	50 W	100 W	160 W
Hardware support for Dying Gasp	yes	no	no	yes	no	yes	no	no
Operating temperature ¹	from -20 °C to +50 °C	from -20 °C to +50 °C	from -20 °C to +50 °C	from -20 °C to +50 °C	from -20 °C to +50 °C	from -20 °C to +50 °C	from -10 °C to +50 °C	from -10 °C to +50 °C
Storage temperature	from -40 °C to +70 °C							
Cooling	passive	passive	passive	2 fans	2 fans	2 fans	4 fans	4 fans
Operating humidity	no more than 80 %							
Form factor	19", 1U							
Dimensions (W × H × D), mm	310 × 44 × 177	430 × 44 × 178	310 × 44 × 177	430 × 44 × 204	430 × 44 × 305	430 × 44 × 225	440 × 44 × 447	440 × 44 × 490
Weight	2.16 kg	2.69 kg	1.9 kg	3.27 kg	3.27 kg	3.36 kg	7.46 kg	9.55 kg

¹ For MES2408CP and MES2408P DC: when operating devices at temperatures above 45 °C it is necessary to use industrial SFP transceivers.

CE — the device complies with CE requirements.

Ordering information

Name	Description
MES2408CP	Ethernet switch MES2408CP, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 Combo ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES2408P AC	Ethernet switch MES2408P AC, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 100BASE-FX/1000BASE-X, L2, 176–250 V AC
MES2408P DC	Ethernet switch MES2408P DC, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 100BASE-FX/1000BASE-X, L2, 36–72 V DC
MES2408PL	Ethernet switch MES2408PL, 8 ports of 10/100/1000BASE-T (PoE/PoE+), 2 ports of 100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES2428P AC	Ethernet switch MES2428P AC, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 Combo ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 176–264 V AC
MES2428P DC	Ethernet switch MES2428P DC, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 Combo ports of 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 36–72 V DC
MES2424P	Ethernet switch MES2424P, 24 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, L3, 176–264 V AC
MES2448P	Ethernet switch MES2448P, 48 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, L3
MES2420-48P	Ethernet switch MES2420-48P, 48 ports of 10/100/1000BASE-T (PoE/PoE+), 4 ports of 1000BASE-X/10GBASE-R, L3

Related products

PM380-220/56	Power module PM380-220/56, 176–264 V AC, 380 W, for MES2448P switches
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Related software

ECCM-MES2408CP	ECCM-MES2408CP option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408CP
ECCM-MES2408P	ECCM-MES2408P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408P
ECCM-MES2408P_DC	ECCM-MES2408P_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408P DC
ECCM-MES2408PL	ECCM-MES2408PL option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2408PL
ECCM-MES2428P_AC	ECCM-MES2428P_AC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2428P AC
ECCM-MES2428P_DC	ECCM-MES2428P_DC option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2428P DC
ECCM-MES2424P	ECCM-MES2424P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2424P
ECCM-MES2448P	ECCM-MES2448P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2448P
ECCM-MES2420-48P	ECCM-MES2420-48P option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES2420-48P

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 128 Gbps
- Non-blocking switching fabric
- 4 × 10G ports in basic configuration
- L3 functions
- Stacking up to 8 devices
- Hot-swappable redundant power supplies
- Dual ventilation system
- Front-to-Back cooling



MES3324F

MES33xx series switches can be used in service provider networks as aggregation or transport switches. They ensure high performance due to the interfaces operating at speeds of 10 Gbps or 1 Gbps.

MES aggregation switches' feature set includes advanced L2 functions, static routing, dynamic routing, 4 SFP+ 10 Gbps interfaces, stacking of up to 8 devices, redundant and hot swappable power supplies.

The switches comply with CE requirements.

Technical features

	MES3308F	MES3316F	MES3324F	MES3324
Interfaces				
1000BASE-X/100BASE-FX (SFP)	4	12	20	—
10/100/1000BASE-T	—	—	—	20
10/100/1000BASE-T/ 1000BASE-X/100BASE-FX Combo			4	
10GBASE-R (SFP+)/1000BASE-X (SFP)			4	
10/100/1000BASE-T (OOB)			1	
Console port RS-232 (RJ-45)			1	
Performance				
Bandwidth	96 Gbps	112 Gbps	128 Gbps	128 Gbps
Throughput for 64 bytes ¹	71 MPPS	83 MPPS	95 MPPS	95 MPPS
Buffer memory			1.5 MB	
RAM (DDR3)			512 MB	
ROM (RAW NAND)			512 MB	
MAC table			16384	
ARP table ²			4023	
VLAN table			4094	
L2 Multicast groups			4091	
SQinQ rules		3006 (ingress/egress)		
ACL rules			3006	
L3 IPv4 Unicast routes ³			12864	
L3 IPv6 Unicast routes ³			3222	
L3 IPv4 Multicast routes (IGMP Proxy, PIM) ³			3876	
L3 IPv6 Multicast routes (IGMP Proxy, PIM) ³			1006	

¹ Values are given for 1-way transmission.

² For each host in the ARP table, an entry is created in the routing table.

³ IPv4/IPv6 Unicast/Multicast routes share hardware resources.

Technical features (continued)

	MES3308F	MES3316F	MES3324F	MES3324
VRRP routers		255		
Maximum size of ECMP groups		8		
VRF		16 (including default VRF)		
L3 interfaces		2048		
Link Aggregation Groups (LAG)		48, up to 8 ports per LAG		
Quality of Service (QoS)		8 egress queues per port		
Jumbo frames		10240 bytes		
Stacking		8 devices		

Features and capabilities

Interfaces functions

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC table functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping logging

VLAN functions

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- Pim-Snooping
- IGMP proxy-report
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Multiprocess
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- STP Loop Guard
- BPDU Filtering
- STP BPDU Guard
- VLAN-based Loopback Detection (LBD)
- ERPS (G.8032v2)
- Flex-link

L3 functions

- Private VLAN Trunk
- Layer 2 Protocol Tunneling (L2PT)
- Static IP routes
- Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP¹ (IPv4 Unicast, IPv4 Multicast)
- BFD (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- Policy-Based Routing (IPv4)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- ECMP Load Balancing
- IP Unnumbered
- GRE
- VRF Lite

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 functions

- IPv6 Host
- Dual stack

Service functions

- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics
- Green Ethernet

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- First Hop Security
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- NetBIOS/NetBEUI filtering
- PPPoE Intermediate Agent

¹BGP protocol support is provided under license.

Features and capabilities (continued)

Quality of Service (QoS)

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- Bandwidth management
- Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- Three marking colors
- ACL-based CoS/DSCP mark assignment
- ACL-based VLAN assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS/CoS to DSCP remarking
- 802.1p, DSCP mark assignment for IGMP

OAM

- IEEE 802.3ah Ethernet OAM
- IEEE 802.1ag Connectivity Fault Management (CFM)
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

ACL (Access Control Lists)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Management functions

- Download and upload of configuration file via TFTP/SCP/SFTP
- Redirecting the output of CLI commands to an arbitrary file on ROM
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- NTP (Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- Processing traffic management with two 802.1Q headers
- Authorization of entered commands using TACACS+ server
- Access control – privilege levels
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ (Terminal Access Controller Access Control System) clients
- Change of Authorization (CoA)
- SSH server, Telnet server
- SSH client, Telnet client
- Remote start of commands via SSH
- SSL
- Macrocommands
- CLI commands logging

- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCPv6 Relay, DHCPv6 LDRA (Option 18, 37)
- DHCP server
- PPPoE Circuit-ID tag
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6 support)
- DNS server (Resolver)

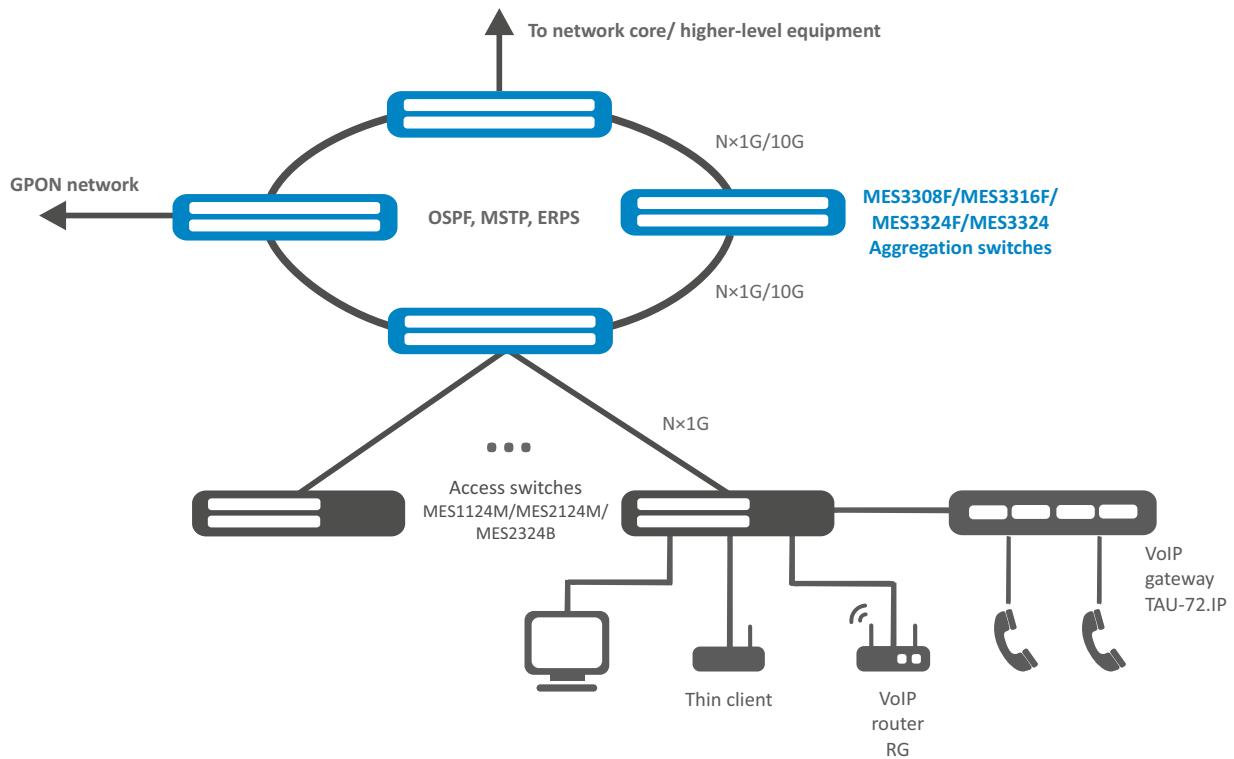
Monitoring functions

- Statistics on interfaces
- RMON/SMON
- IP SLA
- CPU utilization monitoring per task and per traffic type
- RAM utilization monitoring
- Temperature monitoring
- TCAM utilization monitoring

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP for Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 DS field in the IPv4 and IPv6 header
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Use case



Physical parameters

	MES3308F	MES3316F	MES3324F	MES3324
Power supply	100–240 V AC, 50–60 Hz; 36–72 V DC Power options: • one DC or AC power source • two hot-swappable DC or AC power sources			
Input current	0.25–0.1 A for AC 0.69–0.35 A for DC	0.35–0.15 A for AC 0.97–0.49 A for DC	0.45–0.19 A for AC 1.25–0.62 A for DC	0.35–0.15 A for AC 0.97–0.49 A for DC
Maximum power consumption (including PoE)	27 W	35 W	45 W	35 W
Heat dissipation	27 W	35 W	45 W	35 W
Hardware support for Dying Gasp	no	no	no	no
Operating temperature		from -10 to +45 °C		
Storage temperature		from -50 to +70 °C		
Operating humidity		no more than 80 %		
Cooling	Front-to-Back, 2 fans	Front-to-Back, 3 fans	Front-to-Back, 4 fans	Front-to-Back, 4 fans
Form factor		19", 1U		
Dimensions (W × H × D)		430 × 44 × 275 mm		
Weight	3.15 kg	3.25 kg	3.50 kg	3.25 kg

Ordering information

Name	Description
MES3308F	MES3308F Ethernet switch, 1 port of 10/100/1000BASE-T (OOB), 4 ports of 1000BASE-X/100BASE-FX (SFP), 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES3316F	MES3316F Ethernet switch, 1 port of 10/100/1000BASE-T (OOB), 12 ports of 1000BASE-X/100BASE-FX (SFP), 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES3324F	MES3324F Ethernet switch, 1 port of 10/100/1000BASE-T (OOB), 20 ports of 1000BASE-X/100BASE-FX (SFP), 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES3324	MES3324 Ethernet switch, 1 port of 10/100/1000BASE-T (OOB), 20 ports of 10/100/1000BASE-T, 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3

Related products

PM160-220/12	PM160-220/12 power module, 100–240 V AC, 160 W
PM100-48/12	PM100-48/12 power module, 36–72 V DC, 100 W

Related software

ECCM-MES3308F	ECCM-MES3308F option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3308F
ECCM-MES3316F	ECCM-MES3316F option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3316F
ECCM-MES3324F	ECCM-MES3324F option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3324F
ECCM-MES3324	ECCM-MES3324 option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3324

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 640 Gbps
- Non-blocking architecture
- 32 ports of 10G
- L3 switches
- Front-to-Back cooling
- Stacking up to 8 devices
- Redundant power supplies

MES5312, MES5316A, MES5324A, MES5332A switches are high performance devices with 10GBASE-R/1000BASE-X interfaces that can be used as aggregation switches in carrier networks and data centers.

The device's ports support operation at rates of 1 Gbps (SFP) and 10 Gbps (SFP+), that provides usage flexibility and ability of gradual transition to higher data rates. The non-blocking architecture provides correct packet processing under maximum loads, while maintaining minimal and predictable delays for all types of traffic.

The front-to-back ventilation design ensures effective cooling when using the devices in modern data centers.

The redundant and hot-swappable fans and AC/DC power supplies along with advanced hardware monitoring functions provide high reliability and ensure uninterrupted operation of the carrier networks.

The devices comply with CE requirements.



MES5312



MES5316A



MES5324A



MES5332A

Technical features

	MES5312 	MES5316A 	MES5324A 	MES5332A 
Interfaces				
10GBASE-R (SFP+)/1000BASE-X (SFP)	12	16	24	32
10/100/1000BASE-T (OOB)			1	
USB 2.0	—	1	1	1
Console port RS-232 (RJ-45)			1	
Performance				
Bandwidth	240 Gbps	320 Gbps	480 Gbps	640 Gbps
Throughput for 64 bytes ¹	178 MPPS	238 MPPS	238 MPPS	238 MPPS
Buffer memory	2 MB	3 MB	3 MB	3 MB
RAM (DDR3)			1 Gb ²	
ROM (NAND Flash)			1 GB	
MAC table			32768	

¹ Values are given for one way transmission.

² RAM for MES5316A rev.C, MES5324A rev.C, MES5332A rev.C, MES5316A rev.C1, MES5324A rev.C1 models is 2 GB.

Technical features (continued)

	MES5312 	MES5316A 	MES5324A 	MES5332A 
ARP table ¹			8183	
VLAN table			4094	
L2 Multicast group			4092	
SQinQ rules			1320 (ingress), 1320 (egress)	
MAC ACL rules	6072	3000	3000	3000
IPv4/IPv6 ACL rules	6072/3049	2999/1500	2999/1500	2999/1500
L3 IPv4 Unicast routes ²			16286	
L3 IPv6 Unicast routes ²			4070	
L3 IPv4 Multicast (IGMP Proxy, PIM) routes ²			8143	
L3 IPv6 Multicast (IGMP Proxy, PIM) routes ²			2033	
VRRP routers			255	
Maximum size of ECMP groups			64	
VRF number			16 (including default VRF)	
L3 interfaces			2050	
Maximum number of VXLAN			2094	
Link Aggregation Groups (LAG)			128, up to 8 ports in one LAG	
Quality of Services (QoS)			8 egress queues per port	
Jumbo frames			10240 bytes	
Stacking			up to 8 devices	

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back pressure
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC address functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping

VLAN functions

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast groups
- Static Multicast groups
- IGMP Snooping v1,2,3
- Host/port-based IGMP Snooping Fast Leave
- PIM-Snooping
- IGMP proxy-report
- IGMP authorization through RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard

¹For each host in the ARP table, an additional entry is created in the switching table. The number of ARP entries with an installed EVPN license for MES5312, MES5316A, MES5324A, MES5332A is 6135.

²IPv4/IPv6 Unicast/Multicast routes share hardware resources.

Features and capabilities (continued)

- Loopback Detection (LBD)
- ERPS (G.8032v2)
- Private VLAN
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- Static IP routes
- Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP¹ (IPv4 Unicast, IPv4 Multicast)
- BFD protocols (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- VRRP
- Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy, MSDP
- ECMP Load Balancing
- IP Unnumbered
- VRF lite

EVPN/VXLAN²

- L2VPN
- L3VPN

Link Aggregation functions

- LAG groups creation
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 functions

- IPv6 Host
- Dual-stack IPv6, IPv4

Service functions

- Optical transceiver diagnostics
- Green Ethernet

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service
- Storm control for different traffics (broadcast, multicast, unknown unicast)
- Bandwidth management
- Strict Priority and Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based CoS/DSCP assignment
- ACL-based VLAN assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- 802.1p, DSCP mark assignment for IGMP

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

Management functions

- Configuration file download and upload via TFTP/SCP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- LLDP (IEEE 802.1ab)
- Access control – privilege levels for users
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS/TACACS+ client (Terminal Access Controller Access Control System)
- Telnet server, SSH server
- Telnet client, SSH client
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCP server
- Debugging commands
- Traffic to CPU rate limiting
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- RMON/SMON remote monitoring
- IP SLA
- CPU utilization monitoring per task and per traffic type
- Temperature monitoring
- TCAM monitoring

¹ BGP protocol support is provided under license.

² EVPN technology support is provided under license.

Features and capabilities (continued)

MIB

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271,1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674, 4363 IEEE 802.1p MIB
- RFC 2233, 2863 IF MIB

- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP for Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571-2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet

Physical parameters

	MES5312	MES5316A	MES5324A	MES5332A
Physical parameters and environmental features				
Power supply			AC: 100–240 V, 50–60 Hz; DC: 36–72 V Power supply options: <ul style="list-style-type: none"> • 1 AC/DC power supply • 2 hot-swappable AC/DC power supplies 	
Input current	0.2– 0.3 A for AC 0.3–0.6 A for DC	0.3– 0.8 A for AC 0.8–1.8 A for DC	0.3– 0.9 A for AC 1.0– 2.5 A for DC	0.4– 1.0 A for AC 1.1–2.3 A for DC
Maximum power consumption	25 W	58 W	73 W	85 W
Heat dissipation	25 W	58 W	73 W	85 W
Dying Gasp support			no	
Operating temperature			from -10 to +45 °C	
Storage temperature			from -50 to +70 °C	
Operating humidity			no more than 80 %	
Cooling			Front-to-Back, 4 fans	
Form factor			19", 1U	
Dimensions (W × H × D)	430 × 44 × 230 mm	430 × 44 × 275 mm	430 × 44 × 275 mm	430 × 44 × 275 mm
Weight	3.8 kg	3.6 kg	3.7 kg	3.8 kg

Ordering information

Name	Description
MES5312	MES5312 Ethernet switch, 1×10/100/1000BASE-T (OOB), 12×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES5316A	MES5316A Ethernet switch, 1×10/100/1000BASE-T (OOB), 16×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES5324A	MES5324A Ethernet switch, 1×10/100/1000BASE-T (OOB), 24×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES5332A	MES5332A Ethernet switch, 1×10/100/1000BASE-T (OOB), 32×10GBASE-R (SFP+)/1000BASE-X (SFP), L3

Ordering information (continued)**Related products**

PM160-220/12	PM160-220/12 power module, 100–240 V AC, 160 W
PM100-48/12	PM100-48/12 power module, 36–72 V DC, 100 W

Related software

ECCM-MES5312	ECCM-MES5312 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5312
ECCM-MES5316A	ECCM-MES5316A option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5316A
ECCM-MES5324A	ECCM-MES5324A option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5324A
ECCM-MES5332A	ECCM-MES5332A option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5332A

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Advanced L2 features
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Uninterruptible power supply from a rechargeable battery¹



The access switches provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via Fast and Gigabit Ethernet interfaces.

The switches support Virtual Local Area Networks (VLAN), multicast groups and advanced security functions.

Uninterruptible power¹

MES1428B and MES2428B switches can be equipped with a rechargeable battery to ensure power supply in case of the 220 V primary network connection loss. The switches are equipped with a power supply unit which allows the battery to be charged when 220 V power is available. Power supply redundancy system makes it possible to monitor the state of the primary network and notify of a power type switching.

Technical features

	MES1428	MES1428B 	MES2428 	MES2428B	MES2428T
Interfaces					
10/100BASE-TX (RJ-45)	24	24	—	—	—
10/100/1000BASE-T (RJ-45)	—	—	24	24	24
Combo 10/100/1000BASE-T/ 100BASE-FX/1000BASE-X	4	4	4	4	4
Input dry contacts	—	—	—	—	4 pairs
Console port RS-232 (RJ-45)				1	
Performance					
Bandwidth	12.8 Gbps	12.8 Gbps	56 Gbps	56 Gbps	56 Gbps
Throughput for 64-byte packets ²	9 MPPS	9 MPPS	41.658 MPPS	41.658 MPPS	41.658 MPPS
Buffer memory			512 KB		
RAM (DDR3)			256 MB		
ROM (SPI Flash)			32 MB		
MAC table			8192		
ARP table			1000		
VLAN table			4094		
L2 Multicast groups (IGMP Snooping)			509		
SQinQ rules number			128 (ingress)/ 256 (egress)		
MAC ACL rules			381		
IPv4, IPv6 ACL rules			219/128		
L3 interfaces	8 VLANs, up to 5 of IPv4 addresses for each VLAN, up to 300 of IPv6 GUA for all VLANs in summary				
Link Aggregation Groups (LAG)	8 groups, up to 8 ports in one LAG				
Quality of Service (QoS)	8 egress queues per port				
Jumbo frames	maximum packet size is 10000 bytes				

¹Only for MES1428B and MES2428B.

²Values are given for one-way transmission.

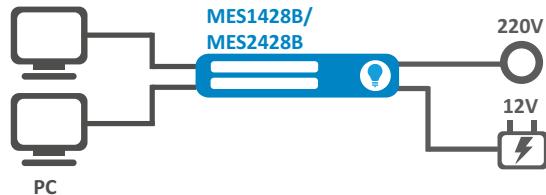
 —device is under development.

 — device complies with CE requirements.

Technical features of redundant power supply*

(for MES1428B and MES2428B)

	Battery capacity, Ah	Battery life, h	Battery charge time, h
MES1428B	12	≈17	≈9
	17	≈20	≈13
	20	≈22	≈15
MES2428B	12	≈9	≈9
	17	≈15	≈13
	20	≈17	≈15



* Note:

- Specifications are given for environment temperature +25 °C;
- It is recommended to use batteries with a capacity of at least 12 Ah for MES1428B and MES2428B.

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control IEEE 802.3X
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Layer 2 Protocol Tunneling (L2PT)
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave

- IGMP Proxy reporting
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- MLD Snooping fast-leave
- IGMP Querier
- MVR

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection (Protection)
- MAC-based authentication, Port Security, static MAC entries
- IEEE 802.1x based interface authentication
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate agent
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

Access control lists (ACL)

- L2-L3-L4 ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority

💡 — MES1428B is under development.

Features and capabilities (continued)

- VLAN ID
- EtherType
- DSCP
- IP protocol type
- TCP/UDP port number
- User Defined Bytes

Quality of service (QoS) and rate limiting

- Port rate limiting (shaping, policing)
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- IEEE 802.1p priority for management VLAN
- ACL-based traffic classification
- ACL-based CoS/DSCP mark assignment
- CoS to DSCP remarking
- DSCP to CoS remarking
- ACL-based VLAN assignment

OAM

- IEEE 802.3ah, Ethernet OAM
- Dying Gasp
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- Simple Network Time Protocol (SNTP)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ clients (Terminal Access Controller Access Control System)
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+
- DHCP auto configuration

- DHCP Relay (support for IPv4)
- DHCP Relay Option 82
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (support for IPv4/IPv6)
- IPv4/IPv6 static routes support
- Support for several versions of configuration files

Uninterruptible power supply¹

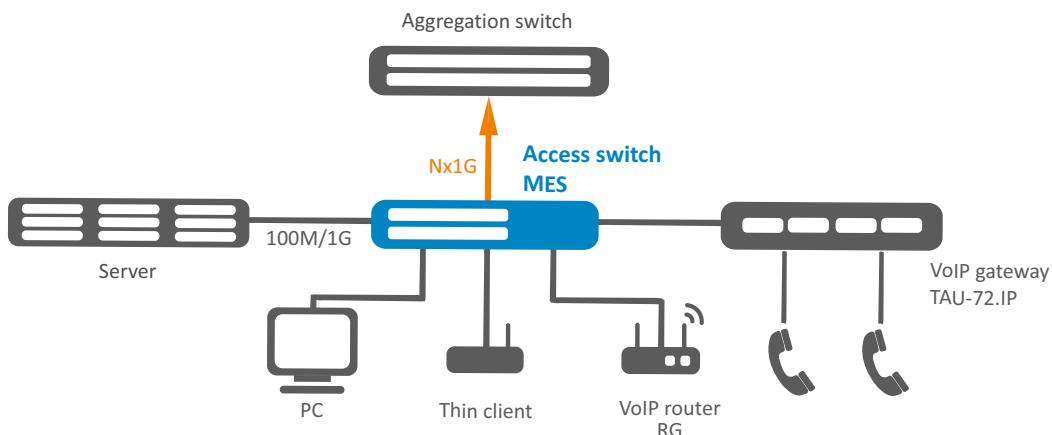
- Automatic switching to 12 V rechargeable battery when the primary power supply (220V) fails, and vice versa
- 12 V battery charging when operating from 220 V primary power supply
- Power supply type monitoring (SNMP)
- Notification of switching from one type of power to another
- Battery connection indication
- Low battery alarm
- Short circuit protection

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS Field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

¹Only for MES1428B and MES2428B.

Use case



Physical parameters

	MES1428 AC	MES1428 DC	MES1428B 💡	MES2428 AC CE	MES2428 DC CE	MES2428B	MES2428T AC	MES2428T DC
Physical specifications and environmental parameters								
Power supply	110–250 V, 50–60 Hz	18–72 V	110–250 V AC, 50–60 Hz; 12 V DC	110–250 V, 50–60 Hz	18–72 V	100–240 V AC, 50–60 Hz; 12 V DC	110–250 V, 50–60 Hz	18–72 V
Input current	0.15–0.1 A	0.6–0.15 A	0.55–0.2 A; 1.2 A	0.3–0.1 A	1.2–0.3 A	0.7–0.2 A; 2.0 A	0.3–0.1 A	1.2–0.3 A
Maximum power consumption	10 W	11 W	37 W	18 W	18 W	45 W	18 W	18 W
Maximum power consumption (without battery charge)	—	—	11 W	—	—	20 W	—	—
Heat dissipation	10 W	11 W	—	18 W	18 W	23 W	18 W	18 W
Hardware support for Dying Gasp	yes	no	no	yes	no	no	yes	no
Operating temperature	from -20 to +50 °C							
Storage temperature	from -40 to +70 °C							
Operating humidity	no more than 80 %							
Cooling	passive							
Form factor	19", 1U							
Dimensions (W × H × D)	430 × 44 × 178 mm							
Weight	2.26 kg	2.26 kg	2.26 kg	2.35 kg	2.35 kg	2.35 kg	2.37 kg	2.37 kg

💡 – device is under development.

CE – device complies with CE requirements.

Ordering information

Name	Description
MES1428 AC	Ethernet switch MES1428, 24 ports of 10/100BASE-TX, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES1428 DC	Ethernet switch MES1428, 24 ports of 10/100BASE-TX, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 18–72 V DC
MES1428B	Ethernet switch MES1428B, 24 ports of 10/100BASE-TX, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 110–250 V AC, 12 V DC
MES2428 AC	Ethernet switch MES2428, 24 ports of 10/100/1000BASE-T, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES2428 DC	Ethernet switch MES2428, 24 ports of 10/100/1000BASE-T, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 18–72 V DC
MES2428B	Ethernet switch MES2428B, 24 ports of 10/100/1000BASE-T, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, L2, 100–240 V AC, 12 V DC
MES2428T AC	Ethernet switch MES2428T, 24 ports of 10/100/1000BASE-T, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, 4 pairs of input dry contacts, L2, 110–250 V AC
MES2428T DC	Ethernet switch MES2428T, 24 ports of 10/100/1000BASE-T, 4 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X, 4 pairs of input dry contacts, L2, 18–72 V DC

Related software

ECCM-MES1428_AC	ECCM-MES1428_AC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES1428_AC
ECCM-MES1428_DC	ECCM-MES1428_DC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES1428_DC
ECCM-MES1428B	ECCM-MES1428B option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES1428B
ECCM-MES2428_AC	ECCM-MES2428_AC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2428_AC
ECCM-MES2428_DC	ECCM-MES2428_DC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2428_DC
ECCM-MES2428B	ECCM-MES2428B option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2428B
ECCM-MES2428T_AC	ECCM-MES2428T_AC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2428T_AC
ECCM-MES2428T_DC	ECCM-MES2428T_DC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2428T_DC

💡 – device is under development.

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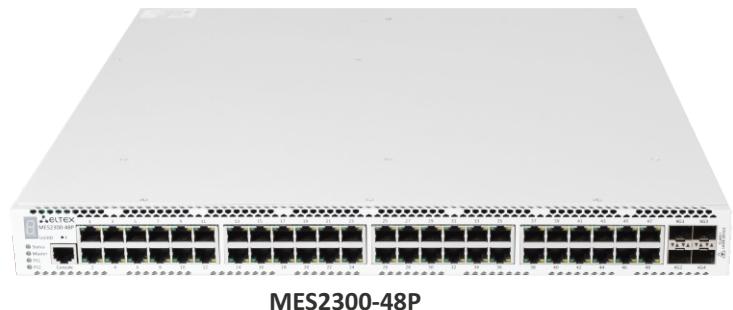


www.eltex-co.com

About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 176 Gbps
- Non-blocking architecture
- L3 switches
- 4 ports of 10G
- Stacking up to 8 devices
- Multicast support (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)



MES2300-24P and MES2300-48P switches with PoE support provide end users connection to networks of large enterprises, small and middle-sized business and service providers via 1G/10G. The switches functionality includes physical stacking, VLAN support, multicast groups, and advanced security features.

Technical features

	MES2300-24P	MES2300-48P
Interfaces		
10/100/1000BASE-T (RJ-45) PoE/PoE+	24	48
10GBASE-R (SFP+)/1000BASE-X (SFP)		4
Console port RS-232 (RJ-45)		1
Performance		
Bandwidth	128 Gbps	176 Gbps
Throughput for 64 bytes ¹	94.49 MPPS	130.95 MPPS
Buffer memory	1.5 MB	3 MB
RAM (DDR4)		2 GB
ROM (RAW NAND)		512 MB
MAC table		16384
ARP table ²		2039
VLAN table		4094
L2 Multicast groups		2048
SQinQ rules	1320 (ingress), 1320 (egress)	
MAC ACL rules		1976
IPv4/IPv6 ACL rules		1975/988
L3 IPv4 Unicast routes ³		4066
L3 IPv6 Unicast routes ³		1015
L3 IPv4 Multicast (IGMP Proxy, PIM) routes ³		2029
L3 IPv6 Multicast (IGMP Proxy, PIM) routes ³		505
VRP routers		255
Maximum size of ECMP groups		8
VRF number	16 (including default VRF)	
L3 interfaces		2032

¹ Values are given for one-way transmission.

² For each host in the ARP table, an additional entry is created in the switching table.

³ IPv4/IPv6 Unicast/Multicast routes use shared hardware resources.

Technical features (continued)

	MES2300-24P	MES2300-48P
Link Aggregation Groups (LAG)		32, up to 8 ports in one LAG
Quality of Service (QoS)		8 egress queues per port
Jumbo frames		10240 bytes
Stacking		8 devices

Features and capabilities**Interface features**

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC address functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping

VLAN support

- Voice VLAN
- 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Host/port-based IGMP Snooping Fast Leave
- IGMP proxy-report
- IGMP authorization through RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE802.1s)
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)
- ERPS (G.8032v2)
- Private VLAN
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- IP routes
- RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP¹ (IPv4 Unicast, IPv4 Multicast)

BFD protocol (for BGP)

- Address Resolution Protocol (ARP)
- Proxy ARP
- VRRP
- Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy
- ECMP Load Balancing
- IP Unnumbered
- VRF lite

Link Aggregation functions

- LAG group creation
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Service functions

- Optical transceiver diagnostics
- Green Ethernet

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Quality of Service (QoS)

- QoS statistics
- Shaping, policing
- IEEE 802.1p Class of Service
- Storm Control for different traffics (broadcast, multicast, unknown unicast)
- Bandwidth management
- Strict priority/Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based traffic classification
- ACL-based CoS/DSCP metric assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- ACL-based VLAN metric assignment
- 802.1p DSCP metric assignment for IGMP

¹ BGP protocol support is provided under license.

Features and capabilities (continued)

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

Access Control Lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Management functions

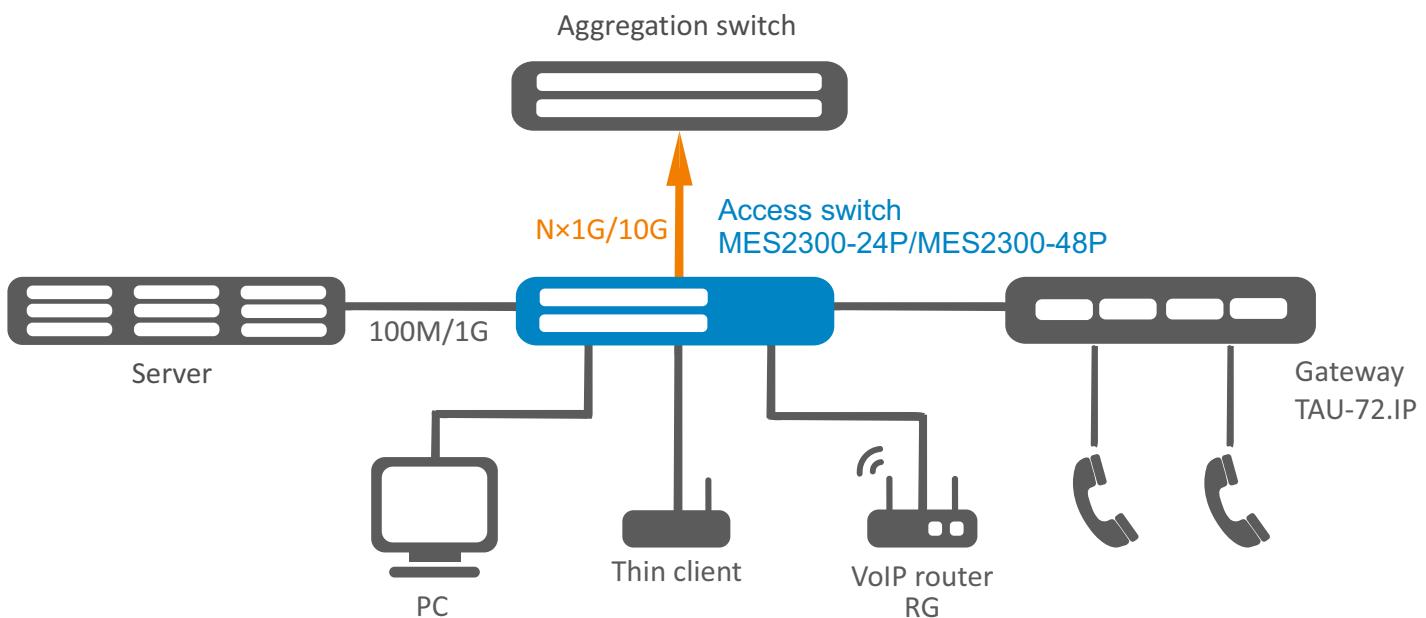
- Upload/download of configuration file and firmware via TFTP
- SNMP (Simple Network Management Protocol)
- CLI (Command Line Interface)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- LLDP (IEEE 802.1ab)
- Switch access control — Privilege levels for users
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ (Terminal Access Controller Access Control System) clients
- SSH, Telnet server
- SSH, Telnet client
- SSL
- Macrocommands support
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- RMON/SMON remote monitoring
- IP SLA
- CPU utilization monitoring per task and traffic type
- Temperature monitoring
- TCAM monitoring

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support Multi-Part Messages
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet

Use case**Physical parameters**

	MES2300-24P	MES2300-48P
Physical parameters and environmental features		
Power supply	200–240 V AC, 50–60 Hz	100–240 V AC, 50–60 Hz; 36–72 V DC (up to 2 hot-swappable power supplies)
Input current	including PoE: 1.5–2.8 A excluding PoE: 0.2–0.3 A	5–10 A for AC
Maximum power consumption (including PoE)	445 W	1600 W
PoE budget	380 W	1450 W
Heat dissipation	65 W	150 W
Dying Gasp support	no	no
Operating temperature	from -20 to +50 °C	from -10 to +50 °C
Storage temperature		from -50 to +70 °C
Operating humidity		no more than 80 %
Cooling	2 fans	4 fans
Form factor		19", 1U
Dimensions (W × H × D)	430 × 44 × 203 mm	440 × 44 × 490 mm
Weight	3.2 kg	9.98 kg

Ordering information

Name	Description
MES2300-24P	MES2300-24P Ethernet switch, 24×10/100/1000BASE-T (RJ-45) PoE/PoE+, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES2300-48P	MES2300-48P Ethernet switch, 48×10/100/1000BASE-T (RJ-45) PoE/PoE+, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3

Related products

PM950-220/56	PM950-220/56 power module, 100–240 V AC, 950 W
PM950-48/56	PM950-48/56 power module, 36–72 V DC, 950 W

Related software

ECCM-MES2300-24P	ECCM-MES2300-24P option of Eltex ECCM management system for Eltex network elements management and monitoring: 1 network element MES2300-24P
ECCM-MES2300-48P	ECCM-MES2300-48P option of Eltex ECCM management system for Eltex network elements management and monitoring: 1 network element MES2300-48P

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 128 Gbps
- Non-blocking architecture
- Up to 4 ports of 10G
- L3 switches
- Stacking up to 8 devices
- Uninterrupted power from battery¹

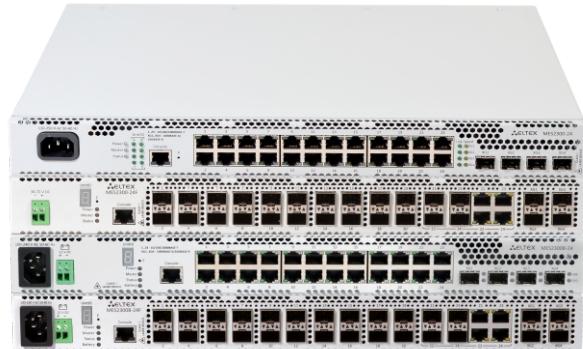
The new generation of MES access switches connects end users to the network of large enterprises, small and medium-sized businesses and service provider networks using 1G/10G interfaces.

MES2300-24F and MES2300B-24F can be also used in service provider networks as the aggregation transport switches.

The device ports support both 1 Gbps and 10 Gbps speeds, providing flexibility in use and the ability to gradually upgrade to higher data rates. The non-blocking architecture allows correct processing of packets under maximum loads, while maintaining minimal and predictable delays on all types of traffic.

Technical features

	MES2300-24	MES2300B-24	MES2300-24F	MES2300B-24F
Interfaces				
10/100/1000BASE-T (RJ-45)	24	24	—	—
1000BASE-X/100BASE-FX (SFP)	—	—	20	20
10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo	—	—	4	4
10GBASE-R (SFP+)/1000BASE-X (SFP)			4	
Console port RS-232 (RJ-45)			1	
Performance				
Bandwidth			128 Gbps	
Throughput for 64 bytes ²			95.2 MPPS	
Buffer memory			1.5 MB	
RAM (DDR4)			2 GB	
ROM (RAW NAND)			512 MB	
MAC table			16384	
ARP table ³			2039	
VLAN table			4094	
L2 Multicast groups			2048	
SQInQ rules			1320 (ingress), 1320 (egress)	
MAC ACL rules			1976	
IPv4/IPv6 ACL rules			1975/988	



The switch functionality provides physical stacking, support for VLANs, multicast groups, and advanced security features.

Uninterrupted power¹

MES2300B-24 and MES2300B-24F switches have the ability to connect a rechargeable battery to ensure guaranteed power supply in case of the 230 V primary network failure. The switch is equipped with a power module that allows charging the battery when 220 V is available. The backup power system makes it possible to monitor the state of the primary network and notify of a power type switching.

¹ Only for MES2300B-24, MES2300B-24F.

² Values are given for one-way transmission.

³ For each host in the ARP table, an additional entry is created in the switching table.

Technical features (continued)

	MES2300-24	MES2300B-24	MES2300-24F	MES2300B-24F
L3 IPv4 Unicast routes ¹			4066	
L3 IPv6 Unicast routes ¹			1015	
L3 IPv4 Multicast (IGMP Proxy, PIM) ¹ routes			2029	
L3 IPv6 Multicast (IGMP Proxy, PIM) ¹ routes			505	
VRRP routers			255	
Maximum size of ECMP groups			8	
VRF number			16 (including default VRF)	
L3 interfaces			2032	
Link Aggregation Groups (LAG)			32, up to 8 ports per LAG	
Quality of Service (QoS)			8 egress queues per port	
Jumbo frames			10240 bytes	
Stacking			8 devices	

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back pressure
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC address functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping

VLAN functions

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast groups
- Static Multicast groups
- IGMP Snooping v1,2,3
- Host/port-based IGMP Snooping Fast Leave
- IGMP proxy-report
- IGMP authorization through RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- PVSTP+
- RPVSTP+

- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)
- ERPS (G.8032v2)
- Private VLAN
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- Static IP routes
- Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP² (IPv4 Unicast, IPv4 Multicast)
- BFD protocols (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- VRRP
- Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy, MSDP
- ECMP Load Balancing
- IP Unnumbered
- VRF lite

Link Aggregation functions

- LAG groups creation
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 functions

- IPv6 Host
- Dual-stack IPv6, IPv4

Service functions

- Virtual Cable Tester (VCT)
- Optical transceiver diagnostics
- Green Ethernet

¹ IPv4/IPv6 Unicast/Multicast routes share hardware resources.

² BGP protocol support is provided under the license.

Features and capabilities (continued)

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service
- Storm control for different traffics (broadcast, multicast, unknown unicast)
- Bandwidth management
- Strict Priority and Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based traffic classification
- ACL-based CoS/DSCP assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- ACL-based VLAN assignment
- 802.1p, DSCP mark assignment for IGMP

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

Management functions

- Configuration file download and upload via TFTP/SCP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- LLDP (IEEE 802.1ab)
- Access control – privilege levels for users
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP

- RADIUS/TACACS+ client (Terminal Access Controller Access Control System)
- Telnet server, SSH server
- Telnet client, SSH client
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- Debugging commands
- Traffic to CPU rate limiting
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

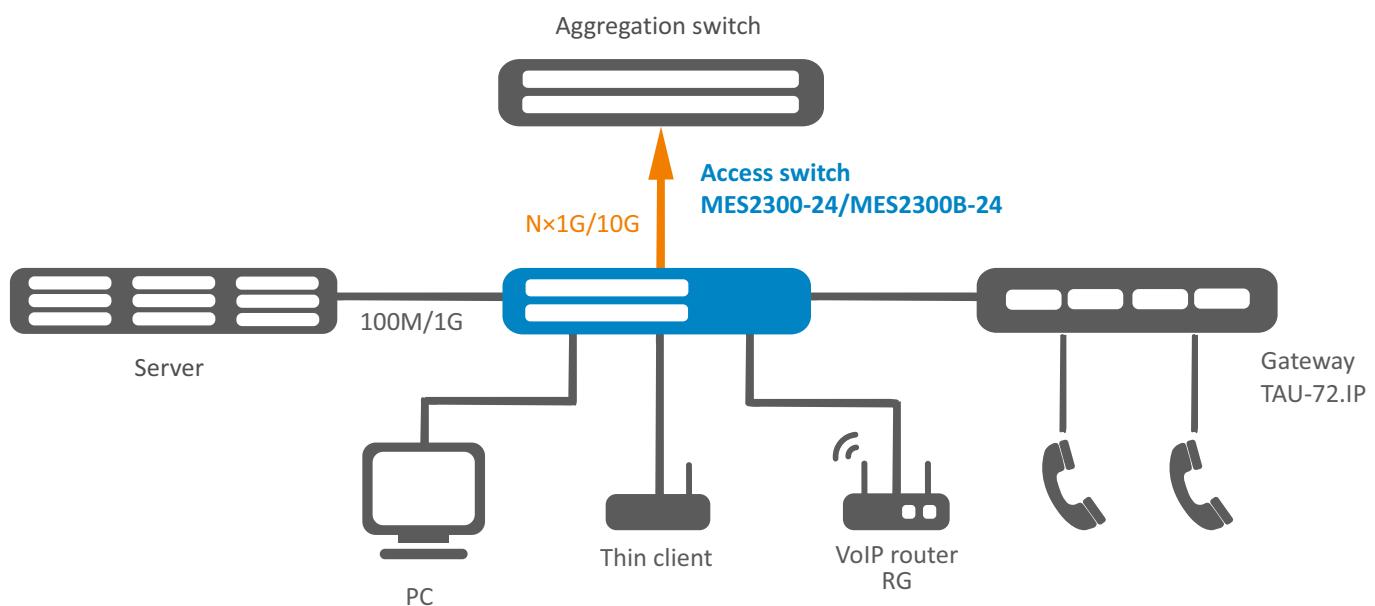
Monitoring functions

- Interface statistics
- RMON/SMON remote monitoring
- IP SLA
- CPU utilization monitoring per task and per traffic type
- RAM monitoring
- Temperature monitoring
- TCAM monitoring

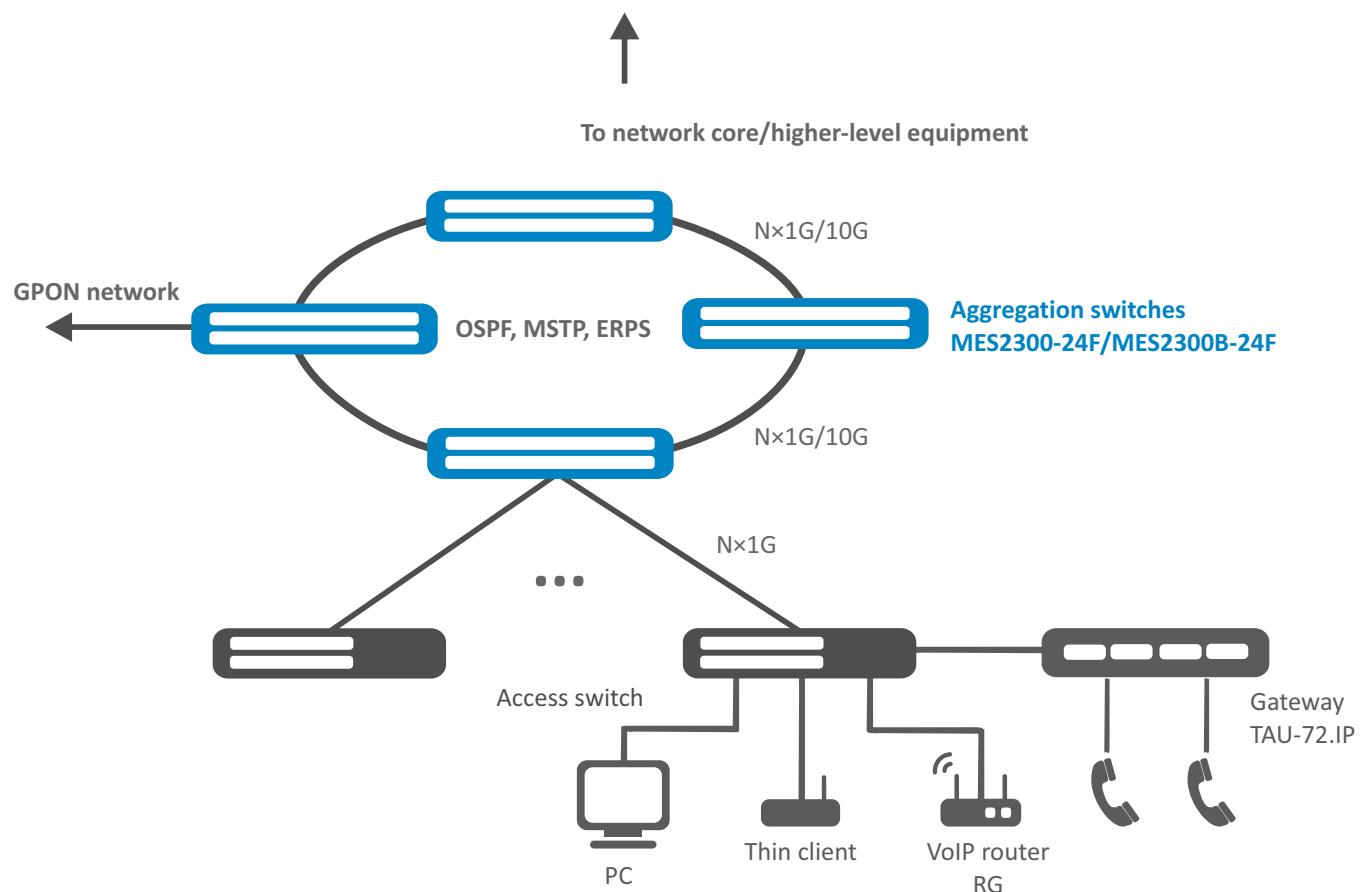
MIB

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674, 4363 IEEE 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
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- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP for Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and Ipv6 headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571-2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet

Use case



Use case for aggregation switches



Physical parameters

	MES2300-24	MES2300B-24	MES2300-24F	MES2300B-24F
Physical parameters and environmental features				
Power supply	100–240 V AC, 50–60 Hz	100–240 V AC, 50–60 Hz; 12 V DC	36–72 V DC	100–240 V AC, 50–60 Hz; 12 V DC
Input current	0.15–0.3 A	including battery: 0.2–0.7 A excluding battery: 0.15–0.4 A	0.4–1 A	including battery: 0.3–0.8 A excluding battery: 0.2–0.6 A
Maximum power consumption	20 W	50 W	35 W	55 W
Maximum power consumption excluding battery charge	—	24 W	—	40 W
Heat dissipation	20 W	27 W	35 W	43 W
Dying Gasp support	yes	no	no	yes
Operating temperature	from -20 to +50 °C	from -20 to +50 °C	from -20 to +65 °C	from -20 to +65 °C
Storage temperature			from -50 to +70 °C	
Operating humidity			no more than 80 %	
Cooling	passive	passive	Front-to-Back, 4 fans	Front-to-Back, 4 fans
Form factor			19", 1U	
Dimensions (W × H × D)	430 × 44 × 204 mm	430 × 44 × 204 mm	430 × 44 × 305 mm	430 × 44 × 305 mm
Weight	2.94 kg	2.79 kg	4.03 kg	4.08 kg

Ordering information

Name	Description
MES2300-24 AC	MES2300-24 AC Ethernet switch, 24×10/100/1000BASE-T, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 100–240 V AC
MES2300B-24 AC	MES2300B-24 AC Ethernet switch, 24×10/100/1000BASE-T, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 100–240 V AC, 12 V DC
MES2300-24F DC	MES2300-24F DC Ethernet switch, 20×1000BASE-X/100BASE-FX (SFP), 4×10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 36–72 V DC
MES2300B-24F AC	MES2300B-24F AC Ethernet switch, 20×1000BASE-X/100BASE-FX (SFP), 4×10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 100–240 V AC, 12 V DC

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 176 Gbps
- Non-blocking architecture
- L3 switches
- 4 ports of 10G
- Stacking up to 8 devices
- Multicast support (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Uninterrupted power from battery



The new generation of access switches MES2300B-48 connects end users to the network of large enterprises, small and medium businesses and telecommunications operator networks using 1G/10G.

The switch functionality provides physical stacking, support for VLANs, multicast groups and advanced security features.

The MES2300B-48 switch has the ability to connect a rechargeable battery supply to ensure guaranteed power supply in case of 230 V primary power network failure. The switch is equipped with a power module that allows charging the battery when 230 V is available. The backup power system makes it possible to monitor the state of the primary network and notify of a power type switching.

Technical features

Interfaces	
10/100/1000BASE-T (RJ-45)	48
10GBASE-R (SFP+)/1000BASE-X (SFP)	4
Console port RS-232 (RJ-45)	1
Bandwidth	
Bandwidth	176 Gbps
Throughput for 64 bytes ¹	130.95 MPPS
Buffer memory	3 MB
RAM (DDR4)	2 GB
ROM (RAW NAND)	512 MB
MAC table	16384
ARP table ²	2039
VLAN table	4094
L2 Multicast groups	2048
SQinQ rules	1320 (ingress), 1320 (egress)
MAC ACL rules	1976
IPv4/IPv6 ACL rules	1975/988
L3 IPv4 Unicast routes ³	4066
L3 IPv6 Unicast routes ³	1015
L3 IPv4 Multicast (IGMP Proxy, PIM) routes ³	2029
L3 IPv6 Multicast (IGMP Proxy, PIM) routes ³	505
VRP routers	255
Maximum size of ECMP groups	8

¹ Values are given for one-way transmission.

² For each host in the ARP table, an additional entry is created in the switching table.

³ IPv4/IPv6 Unicast/Multicast routes use shared hardware resources.

Technical features (continued)

Performance	
VRF number	16 (including default VRF)
L3 interfaces	2032
Link Aggregation Groups (LAG)	32, up to 8 ports in one LAG
Quality of Service (QoS)	8 egress queues per port
Jumbo frames	10240 bytes
Stacking	8 devices

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC address functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping

VLAN support

- Voice VLAN
- 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Host/port-based IGMP Snooping Fast Leave
- IGMP proxy-report
- IGMP authorization through RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE802.1s)
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)
- ERPS (G.8032v2)
- Private VLAN
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- IP routes
- RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP¹ (IPv4 Unicast, IPv4 Multicast)
- BFD protocol (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- VRRP
- Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy
- ECMP Load Balancing
- IP Unnumbered
- VRF lite

Link Aggregation functions

- LAG group creation
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Service functions

- Optical transceiver diagnostics
- Green Ethernet

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Quality of Service (QoS) and traffic limit

- QoS statistics
- Shaping, policing
- IEEE 802.1p Class of Service
- Storm Control for different traffics (broadcast, multicast, unknown unicast)

¹ BGP protocol support is provided under license.

Features and capabilities (continued)

- Bandwidth management
- Strict priority/Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based traffic classification
- ACL-based CoS/DSCP metric assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- ACL-based VLAN assignment
- 802.1p DSCP metric assignment for IGMP

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

Access Control Lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Management functions

- Upload/download of configuration file and firmware via TFTP
- SNMP (Simple Network Management Protocol)
- CLI (Command Line Interface)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- LLDP (IEEE 802.1ab)
- Switch access control — Privilege levels for users
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ (Terminal Access Controller Access Control System) clients
- SSH, Telnet server
- SSH, Telnet client
- SSL
- Macrocommands support
- CLI commands logging
- System log
- DHCP autopropision
- DHCP Relay (Option 82)
- DHCP Option 12
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- RMON/SMON remote monitoring
- IP SLA
- CPU utilization monitoring per task and traffic type
- Temperature monitoring
- TCAM monitoring

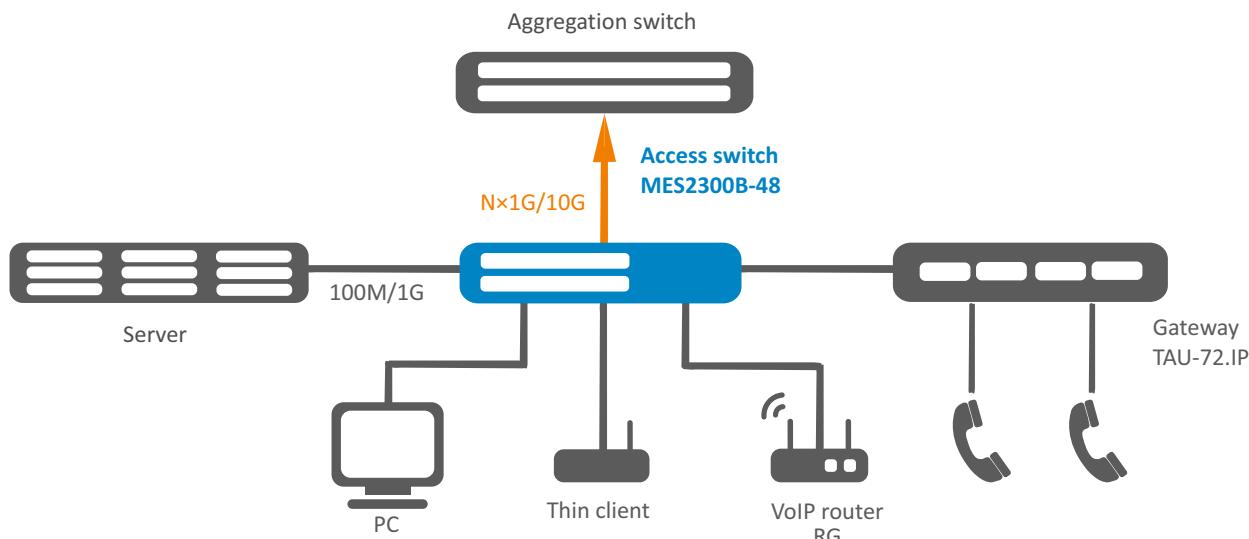
Uninterrupted power supply

- Automatic switch to the battery (12 V) when the primary network (230 V) is disconnected
- Charging the battery (12 V) from the primary network (230 V) during operation
- Power type monitoring (SNMP)
- Notification when switching the power type
- Indication of battery connection
- Low battery charge level signaling
- Short circuit protection

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
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- RFC 1271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
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- RFC 2620 RADIUS Accounting Client MIB
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- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support Multi-Part Messages
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet

Use case



Physical parameters

Physical parameters and environmental features	
Power supply	100–240 V AC, 50–60 Hz; 12 V DC
Input current	including battery: 0.3–0.9 A excluding battery: 0.2–0.6 A
Maximum power consumption	55 W
Maximum power consumption excluding battery charge	40 W
Heat dissipation	43 W
Dying Gasp support	yes
Operating temperature	from -20 to +50 °C
Storage temperature	from -50 to +70 °C
Operating humidity	no more than 80 %
Cooling	2 fans
Form factor	19", 1U
Dimensions (W × H × D)	440 × 44 × 280 mm
Weight	4.1 kg

Ordering information

Name	Description
MES2300B-48 AC	MES2300B-48 Ethernet switch, 48 × 10/100/1000BASE-T, 4 × 10GBASE-R (SFP+)/1000BASE-X (SFP), L3, 100–240 V AC, 12 V DC
Related software	
ECCM-MES2300B-48 AC	ECCM-MES2300B-48 option of Eltex ECCM management system for Eltex network elements management and monitoring: 1 network element MES2300B-48 AC

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Advanced L2 features
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Uninterruptible power supply from rechargeable battery¹



MES2408x series switches provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via Gigabit Ethernet interfaces.

The switches support Virtual Local Area Networks (VLAN), multicast groups and advanced security functions.

Uninterruptible power¹

MES2408B switches can be equipped with a rechargeable battery to ensure power supply in case of the 220 V primary network connection loss. The switch is also equipped with a power supply unit which allows the battery to be charged when 220 V power is available. Power supply redundancy system makes it possible to monitor the state of the primary network and notify of a power type switching.

Technical features

	MES2408		MES2408B		MES2408C	
Interfaces						
10/100/1000BASE-T (RJ-45)	8		8		8	
Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X	—		—		2	
100BASE-FX/1000BASE-X (SFP)	2		2		—	
Console port RS-232 (RJ-45)			1			
Performance						
Bandwidth			20 Gbps			
Throughput for 64-byte packets ²			14.88 MPPS			
Buffer memory			512 KB			
RAM (DDR3)			256 MB			
ROM (SPI Flash)			32 MB			
MAC table			8192			
ARP table			1000			
VLAN table			4094			
L2 Multicast groups (IGMP Snooping)			509			
SQInQ rules number			128 (ingress)/256 (egress)			
MAC ACL rules			381			
IPv4/IPv6 ACL rules			219/128			
L3 interfaces			8 VLANs, up to 5 of IPv4 addresses for each VLAN, up to 300 of IPv6 GUA for all VLANs in summary			
Link Aggregation Groups (LAG)			8 groups, up to 8 ports in one LAG			
Quality of Service (QoS)			8 egress queues per port			
Jumbo frames			maximum packet size is 10000 bytes			

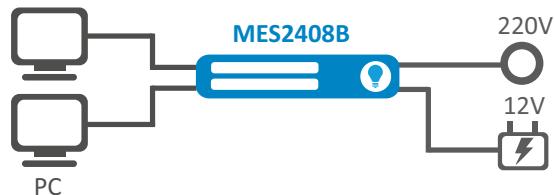
¹Only for MES2408B.

²Values are given for one-way transmission.

— device complies with CE requirements.

Technical features of redundancy power supply^{*} (for MES2408B)

	Battery capacity, Ah	Battery life, h	Battery charge time, h
MES2408B	12	≈20	≈9
	17	≈24	≈13
	20	≈28	≈15



* Notes

- Parameters are given for environment temperature +25 °C;
- For MES2408B the use of a rechargeable battery with a capacity of at least 12Ah is recommended.

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control IEEE 802.3X
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP Proxy reporting
- IGMP authorization via RADIUS
- MLD Snooping v1, 2
- MLD Snooping fast-leave
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Layer 2 Protocol Tunneling (L2PT)
- Loopback Detection (LBD)

- Port isolation

- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection (Protection)
- MAC-based authentication, Port Security, static MAC entries
- IEEE 802.1x based interface authentication
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate agent
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

Quality of service (QoS) and rate limiting

- Port rate limiting (shaping, policing)
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- IEEE 802.1p priority tagging for management VLAN
- ACL-based traffic classification
- ACL-based CoS/DSCP mark assignment
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

Features and capabilities (continued)

Access control lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

OAM

- IEEE 802.3ah, Ethernet OAM
- Dying Gasp
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- Simple Network Time Protocol (SNTP)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ clients (Terminal Access Controller Access Control System)
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+
- DHCP auto configuration
- DHCP Relay (support for IPv4)
- DHCP Relay Option 82
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (support for IPv4/IPv6)
- IPv4/IPv6 static routes support
- Support for several versions of configuration file

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

Uninterruptible power supply¹

- Automatic switching to 12 V rechargeable battery when the primary power supply (220V) fails, and vice versa
- 12 V battery charging when operating from 220 V primary power supply
- Power supply type monitoring (SNMP)
- Notification of switching from one type of power to another
- Battery connection indication
- Low battery alarm
- Short circuit protection

MIB/IETF

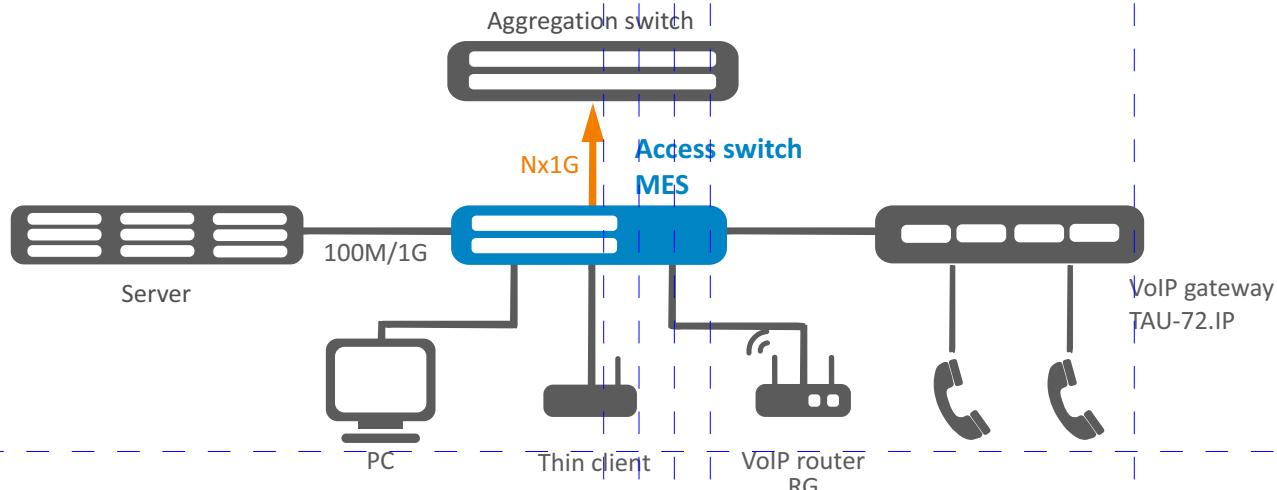
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- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
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- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
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- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
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- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
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- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

¹Only for MES2408B.

Physical parameters

	MES2408 AC 	MES2408 DC 	MES2408B	MES2408C 
Physical specifications and environmental parameters				
Power supply	110–250 V AC, 50–60 Hz	18–72 V DC	110–250 V AC, 50–60 Hz; 12 V DC	110–250 V AC, 50–60 Hz
Maximum power consumption	7 W	8.6 W	33 W	10 W
Maximum power consumption (without battery charge)	—	—	7 W	—
Heat dissipation	7 W	8.6 W	11 W	10 W
Input current	0.1–0.05 A	0.5–0.1 A	0.5–0.2 A for AC; 1.0 A for DC	0.15–0.1 A
Hardware support for Dying Gasp	no	no	no	yes
Operating temperature	from -20 to +60 °C	from -20 to +50 °C	from -20 to +50 °C	from -20 to +50 °C
Storage temperature			from -40 to +70 °C	
Operating humidity			no more than 80 %	
Cooling			passive	
Form factor			19", 1U	
Dimensions (W × H × D)			310 × 44 × 177 mm	
Weight	1.72 kg	1.72 kg	1.78 kg	1.77 kg

Use case



—device complies with CE requirements.

Ordering information

Name	Description
MES2408 AC	Ethernet switch MES2408, 8 ports of 10/100/1000BASE-T, 2 ports of 100BASE-FX/1000BASE-X, L2, 110–250 V AC
MES2408 DC	Ethernet switch MES2408, 8 ports of 10/100/1000BASE-T, 2 ports of 100BASE-FX/1000BASE-X, L2, 18–72 V DC
MES2408B	Ethernet switch MES2408B, 8 ports of 10/100/1000BASE-T, 2 ports of 100BASE-FX/1000BASE-X, L2, 110–250 V AC, 12 V DC
MES2408C	Ethernet switch MES2408C, 8 ports of 10/100/1000BASE-T, 2 ports of Combo 10/100/1000BASE-T/100BASE-FX/1000BASE-X , L2, 110–250 V AC

Related software

ECCM-MES2408_AC	ECCM-MES2408_AC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2408_AC
ECCM-MES2408_DC	ECCM-MES2408_DC option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2408_DC
ECCM-MES2408B	ECCM-MES2408B option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2408B
ECCM-MES2408C	ECCM-MES2408C option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2408C

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 200 Gbps
- Up to 24 ports of 2.5GBASE-T
- Advanced L2 features
- L3 switches
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection and etc.)



MES2410-08DP



MES2420B-24D

MES2410, MES2420 series switches provide end users connection to networks of large enterprises, small and mid-sized businesses and service providers via 2.5G/10G interfaces. MES2410-08DP and MES2420-24DP devices support PoE according to the IEEE 802.3bt/PoE+ standard (up to 30 W per port). MES2420-08DU supports PoE according to the IEEE 802.3bt/PoE++ standard, which provides PoE power up to 90 W per port. The switches support VLANs, multicast groups, and have an advanced set of security features.

Uninterruptible power¹

MES2420B-24D switches can be equipped with a rechargeable battery to ensure power supply in case of the 230 V primary power supply loss. The switches are equipped with a power supply unit which allows the battery to be charged when 230 V power is available. Power supply redundancy system makes it possible to monitor the state of the primary network and notify of a power type switching.

Technical features

	MES2410-08DP	MES2410-08DU	MES2420B-24D	MES2420-24DP
Interfaces				
10/100/1000/2500BASE-T (RJ-45)	—	—	24	—
10/100/1000/2500BASE-T PoE/PoE+	8	—	—	24
10/100/1000/2500BASE-T PoE++	—	8	—	—
1000BASE-X (SFP)/10GBASE-R (SFP+)	2	2	4	4
Console port RS-232 (RJ-45)			1	
Performance				
Bandwidth	80 Gbps	80 Gbps	200 Gbps	200 Gbps
Throughput for 64-byte packets	59.52 MPPS	59.52 MPPS	148.8 MPPS	148.8 MPPS
Buffer memory	1.5 MB	1.5 MB	2 MB	2 MB
RAM (DDR3)			1 GB	
ROM (SPI Flash)			64 MB	
MAC table	16384	16384	32768	32768
ARP table			1000	
VLAN table			4094	
L2 Multicast groups (IGMP Snooping)	1023	1023	4093	4093
L3 Multicast groups (IGMP proxy)	512	512	2048	2048
SQinQ rules	384(ingress)/ 512(egress)	384 (ingress)/ 512 (egress)	768 (ingress)/ 1024(egress)	768 (ingress)/ 1024 (egress)
MAC ACL rules	509	509	766	766
IPv4/IPv6 ACL rules	384/192	384/192	640/320	640/320

¹ For MES2420B-24D switches only.

Technical features (continued)

	MES2410-08DP	MES2410-08DU	MES2420B-24D	MES2420-24DP
L3 IPv4 Unicast routes	406	406	1957	1957
L3 IPv6 Unicast routes			21	
VRP routers			32	
L3 interfaces		8 VLANs, up to 5 IPv4 addresses per VLAN, up to 22 IPv6 GUAs for all VLANs in summary		
Link Aggregation Groups (LAG)			24 groups, up to 8 ports in one LAG	
Quality of Service (QoS)			8 egress queues per port	
Jumbo frames			maximum packet size is 12288 bytes	

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)

MAC table

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP proxy-report
- IGMP authorization via RADIUS
- MLD Snooping v1,2¹
- MLD Snooping fast-leave¹
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option

Layer 2 Protocol Tunneling (L2PT)

- Loopback Detection (LBD)
- Port isolation
- Storm Control for different traffic types (broadcast, multicast, unknown unicast)
- ERPS (G.8032v2)

L3 Multicast features

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

L3 features

- Static IPv4, IPv6 routes
- Dynamic routing protocols RIPv1/2, OSPFv2/3
- VRRP protocol

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Testing (VCT)
- Optical Transceiver Diagnostics

IPv6

- IPv6 Host
- IPv4, IPv6 dual stack

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection (Protection)
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate agent
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

¹ Not supported for MES2420B-24D and MES2420-24DP in the current firmware version.

Features and capabilities (continued)

ACL (Access Control Lists)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of Service (QoS) and rate limiting

- Port rate limiting (shaping, policing)
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- ACL-based traffic classification
- ACL-based CoS/DSCP mark assignment
- CoS to DSCP remarking
- DSCP to CoS remarking
- ACL-based VLAN assignment

OAM

- IEEE 802.3ah, Ethernet OAM
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Processing of management traffic with two IEEE 802.1Q headers
- Authorization of entered commands using TACACS+ server
- IPv4/IPv6 ACL support for device management
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ (Terminal Access Controller Access Control System) clients
- SSH, Telnet client
- Telnet, SSH server
- Macrocommands
- Input commands logging via TACACS+
- DHCP autoprovision
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server
- PPPoE Circuit-ID tag
- Flash File System
- Debug commands
- CPU traffic limiting

- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routes support
- Support for multiple versions of configuration file

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

Uninterruptible power supply¹

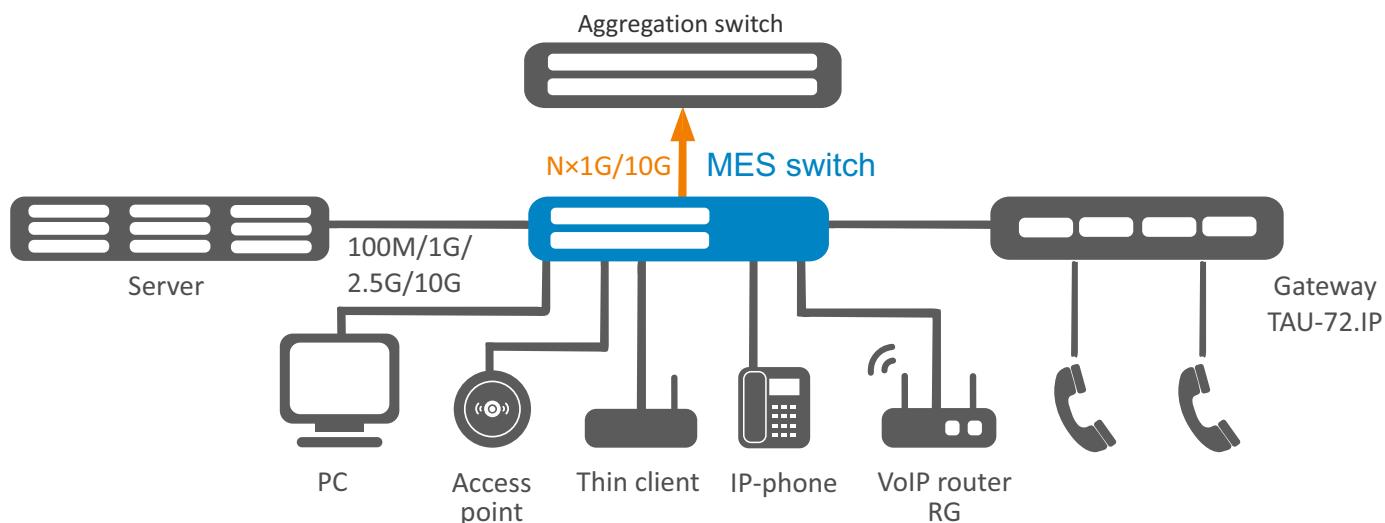
- Automatic switching to 12 V rechargeable battery when the primary power supply (230 V) fails, and vice versa
- 12 V battery charging when operating from 230 V primary power supply
- Power supply type monitoring (SNMP)
- Notification of switching from one type of power to another
- Battery connection indication
- Low battery alarm
- Short circuit protection

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB для TCP
- RFC 4113 MIB для UDP
- RFC 3289 MIB для Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

¹For MES2420B-24D switches only.

Use case



Physical parameters

	MES2410-08DP	MES2410-08DU	MES2420B-24D	MES2420-24DP
Physical specifications and environmental parameters				
Power supply	100–240 V AC, 50–60 Hz	200–240 V AC, 50–60 Hz	100–240 V AC, 50–60 Hz; 12 V DC	200–240 V AC, 50–60 Hz
Maximum power consumption (for switches without PoE support)	–	–	60 W	–
Maximum power consumption (including PoE load)	275 W	810 W	–	420 W
PoE budget	240 W	720 W	–	370 W
Maximum power consumption (without battery charge)	–	–	45 W	–
Heat dissipation	35 W	90 W	48 W	50 W
Hardware support for Dying Gasp	yes	no	yes	no
Operating temperature	from -15 to +50 °C			
Storage temperature	from -40 to +70 °C			
Cooling	4 fans	4 fans	2 fans	4 fans
Operating humidity	no more than 80 %			
Form factor	19", 1U			
Dimensions (W × H × D)	430 × 44 × 243 mm	430 × 44 × 243 mm	430 × 44 × 225 mm	440 × 44 × 243 mm
Weight	3.48 kg	3.74 kg	3.16 kg	3.8 kg

Ordering information

Name	Description
MES2410-08DP	Ethernet switch MES2410-08DP, 8 × 10/100/1000/2500BASE-T (PoE/PoE+), 2 × 1000BASE-X/10GBASE-R, L3, 100–240 V AC
MES2410-08DU	Ethernet switch MES2410-08DU, 8 × 10/100/1000/2500BASE-T (PoE++), 2 × 1000BASE-X/ 10GBASE-R, L3, 200–240 V AC
MES2420B-24D	Ethernet switch MES2420B-24D, 24 × 10/100/1000/2500BASE-T, 4 × 1000BASE-X/10GBASE-R, L3, 100–240 V AC, 12 V DC
MES2420-24DP	Ethernet switch MES2420-24DP, 24 × 10/100/1000/2500BASE-T (PoE/PoE+), 4 × 1000BASE-X/10GBASE-R, L3, 200–240 V AC

Related software

ECCM-MES2410-08DP	ECCM-MES2410-08DP option of Eltex.ECCM system to manage and monitor ELTEX network elements: 1 network element MES2410-08DP
ECCM-MES2410-08DU	ECCM-MES2410-08DU option of Eltex.ECCM system to manage and monitor ELTEX network elements: 1 network element MES2410-08DU
ECCM-MES2420B-24D	ECCM-MES2420B-24D option of Eltex.ECCM system to manage and monitor ELTEX network elements: 1 network element MES2420B-24D
ECCM-MES2420-24DP	ECCM-MES2420-24DP option of Eltex.ECCM system to manage and monitor ELTEX network elements: 1 network element MES2420-24DP

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 236 Gbps
- Advanced L2 features
- Support for Multicast (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Front-to-back cooling



The Ethernet access switches provides end users connection to networks of large enterprises, small and mid-sized businesses and service providers via 1G/10G interfaces.

The switches support Virtual Local Area Networks (VLAN), multicast groups and advanced security functions.

Technical features

Interfaces	
10/100/1000BASE-T (RJ-45)	8
1000BASE-X (SFP)/10GBASE-R (SFP+)	11
Console port RS-232 (RJ-45)	1
Performance	
Bandwidth	236 Gbps
Throughput for 64-byte packets ¹	175.5 MPPS
Buffer memory	2 MB
RAM (DDR3)	512 MB
ROM (SPI Flash)	64 MB
MAC table	32768
ARP entries	1000
VLAN table	4094
L2 Multicast groups (IGMP Snooping)	4094
L3 Multicast groups (IGMP Proxy)	2048
SQinQ rules	768 (ingress)/1024 (egress)
MAC ACL rules	766
IPv4/IPv6 ACL rules	640/320
L3 interfaces	8 VLANs, up to 5 of IPv4 addresses for each VLAN, up to 300 of IPv6 GUA for all VLANs in summary
Link Aggregation Groups (LAG)	24 groups, up to 8 ports in one LAG
Quality of Service (QoS)	8 egress queues per port
Jumbo frames	maximum packet size is 12288 bytes

¹Value is given for one-way transmission.

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow Control IEEE 802.3X
- Port mirroring (SPAN/RSPAN)

MAC table

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN features

- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast features

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP Proxy reporting
- IGMP authorization via RADIUS
- MLD Snooping v1,2¹
- MLD Snooping fast-leave¹
- IGMP Querier
- MVR

L2 features

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- Layer 2 Protocol Tunneling (L2PT)
- ERPS (G.8032v2)

L3 Multicast

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- MAC-based authentication, Port Security, static MAC entries
- IEEE 802.1x based interface authentication
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate agent
- IP Source Guard
- Dynamic ARP Inspection
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection support
- IPv6 RA Guard support

Access control lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

¹Not supported in current firmware version.

Features and capabilities (continued)

Quality of service (QoS) and rate limiting

- Port rate limiting (shaping)
- Rate limiting (policing) in accordance with sr-TCM and tr-TCM
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- IEEE 802.1p priority for management VLAN
- ACL-based traffic classification
- ACL-based CoS/DSCP mark assignment
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

OAM

- IEEE 802.3ah, Ethernet OAM
- Dying Gasp
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- Simple Network Time Protocol (SNTP)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS and TACACS+ clients (Terminal Access Controller Access Control System)
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+ protocol
- DHCP auto configuration
- DHCP Relay (support for IPv4)
- DHCP Relay Option 82
- DHCP Server
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (support for IPv4/IPv6)
- IPv4/IPv6 static routes support
- Support for several versions of configuration file

Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

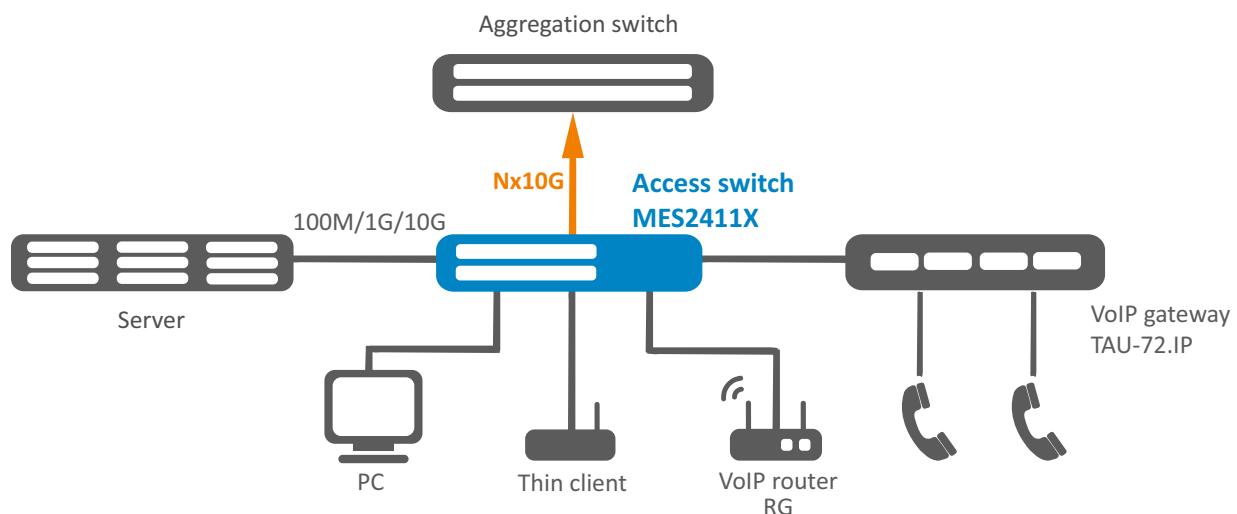
MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for DiffServ
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Physical specifications

Physical specifications and environmental parameters	
Power supply	100–240 V AC, 50–60 Hz
Maximum power consumption	35 W
Heat dissipation	35 W
Input current	0.45–0.15 A
Operating temperature	from -20 to +50 °C
Storage temperature	from -40 to +70 °C
Operating humidity	no more than 80 %
Cooling	active, 2 fans
Form factor	19", 1U
Dimensions (W × H × D)	430 × 44 × 203 mm
Weight	2.57 kg

Use case



Ordering information

Name	Description
MES2411X	Ethernet switch MES2411X, 8 ports of 10/100/1000BASE-T, 11 ports of 1000BASE-X/10GBASE-R, L2, 100–240 V AC

Related software

ECCM-MES2411X	ECCM-MES2411X option of Eltex ECCM system to manage and monitor Eltex network elements: 1 network element MES2411X
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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 128 Gbps
- Non-blocking architecture
- 4 × 10G ports in basic configuration
- L3 switches
- Stacking up to 8 devices
- Hot-swappable redundant power supplies
- Dual ventilation system
- Front-to-back cooling



The new generation switches can be used in service provider networks as aggregation or transport switches. They ensure high performance due to the interfaces operating at speeds of 10 Gbps or 1 Gbps. MES aggregation switches feature set includes L2 functions, static routing, dynamic routing, stacking of up to 8 devices, redundant and hot-swappable power supplies.

Technical features

	MES3300-24	MES3300-24F
Interfaces		
1000BASE-X/100BASE-FX (SFP)	—	20
10/100/1000BASE-T	24	—
10/100/1000BASE-T/1000BASE-X/100BASE-FX Combo	—	4
10GBASE-R (SFP+)/1000BASE-X (SFP)	4	—
10/100/1000BASE-T (OOB)	1	—
Console port RS-232 (RJ-45)	1	—
Performance		
Bandwidth	128 Gbps	
Throughput for 64 bytes ¹	95.2 MPPS	
Buffer memory	1.5 MB	
RAM (DDR4)	2 GB	
ROM (RAW NAND)	512 MB	
MAC table	16384	
ARP table ²	4087	
VLAN table	4094	
L2 Multicast groups	4092	
SQinQ rules	1320 (ingress), 1320 (egress)	
MAC ACL rules	3000	
IPv4/IPv6 ACL rules	2999/1500	
L3 IPv4 Unicast routes ³	13278	
L3 IPv6 Unicast routes ³	3316	
L3 IPv4 Multicast (IGMP Proxy, PIM) routes ³	4087	
L3 IPv6 Multicast (IGMP Proxy, PIM) routes ³	1642	
VRP routers	255	
Maximum size of ECMP groups	5	
VRF number	16 (including default VRF)	

¹Values are given for one-way transmission.

²For each host in the ARP table, an additional entry is created in the switching table.

³IPv4/IPv6 Unicast/Multicast routes share hardware resources.

Technical features (continued)

	MES3300-24	MES3300-24F
L3 interfaces		2050
Link Aggregation Groups (LAG)		32, up to 8 ports per LAG
Quality of Service (QoS)		8 egress queues per port
Jumbo frames size		10240 bytes
Stacking		8 devices

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back pressure
- Auto MDI/MDIX
- Jumbo frames
- Flow Control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC address functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping

VLAN functions

- Voice VLAN
- 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast groups
- Static Multicast groups
- IGMP Snooping v1,2,3
- Host/port-based IGMP Snooping Fast Leave
- PIM-Snooping
- IGMP proxy-report
- IGMP authorization through RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE802.1s)
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection
- ERPS (G.8032v2)
- Flex-link
- Private VLAN
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- Static IP routes
- Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP¹ (IPv4 Unicast, IPv4 Multicast)
- BFD protocols (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- VRRP
- Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy, MSDP
- ECMP Load Balancing
- IP Unnumbered
- VRF lite

Link Aggregation functions

- LAG groups creation
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 functions

- IPv6 Host
- Dual-stack IPv4, IPv6

Service functions

- Virtual Cable Tester (VCT)
- Optical transceiver diagnostics
- Green Ethernet

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP option 82
- IP Source Guard
- Dynamic ARP Inspection
- First Hop Security
- sFlow
- MAC-based authentication, Port Security, static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

¹ BGP protocol support is provided under license.

Features and capabilities (continued)

Quality of Service (QoS)

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service
- Storm control for different traffics (broadcast, multicast, unknown unicast)
- Bandwidth management
- Strict Priority and Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based CoS/DSCP assignment
- ACL-based VLAN assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- 802.1p, DSCP mark assignment for IGMP

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

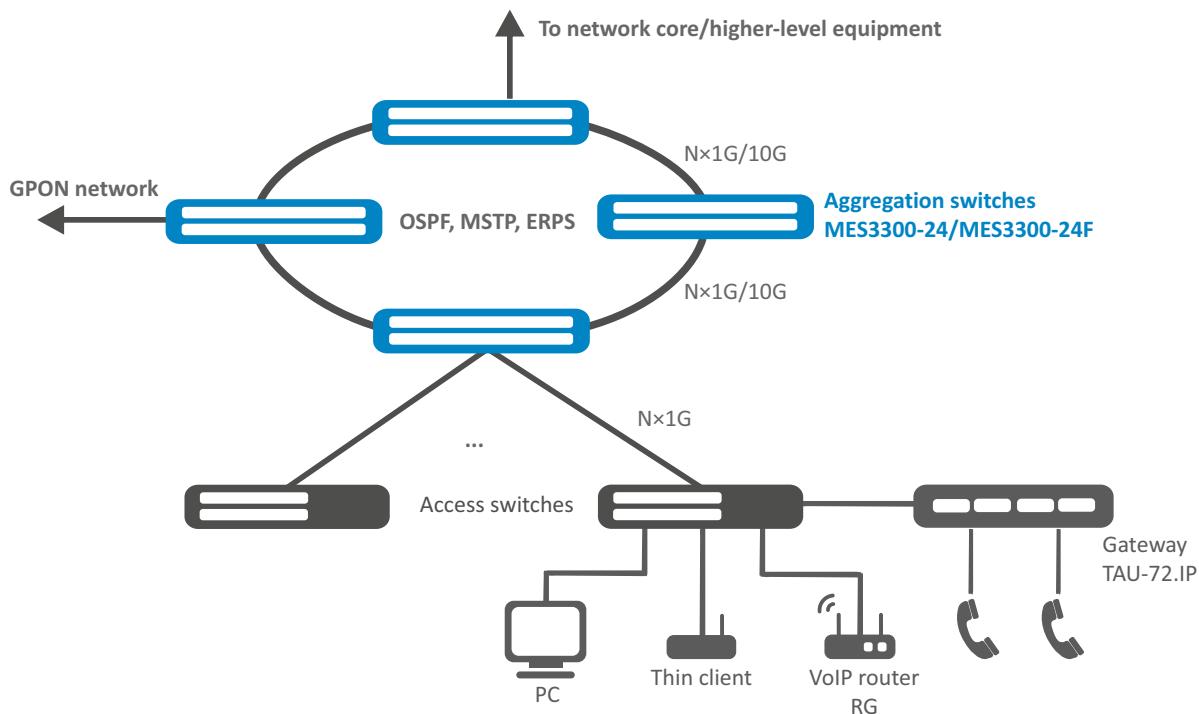
Access Control Lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

Management functions

- Configuration file download and upload via TFTP/SCP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- Access control — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS/TACACS+ (Terminal Access Controller Access Control System) clients
- SSH server, Telnet server
- SSH client, Telnet client
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- Debugging commands
- Traffic to CPU rate limiting
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)
- Interface statistics
- RMON/SMON remote monitoring
- IP SLA
- CPU utilization monitoring per task and per traffic type
- RAM monitoring
- Temperature monitoring
- TCAM monitoring
- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 1271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP for Multi-Part messages support
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet

Use case



Physical parameters

MES3300-24

MES3300-24F

Power supply	100–240 V AC, 50–60 Hz; 36–72 V DC Power supply options: <ul style="list-style-type: none">• 1 AC/DC power supply• 2 hot-swappable AC/DC power supplies
Input current	0.2–0.35 A for AC 0.4–0.8 A for DC
Maximum power consumption	33 W
Heat dissipation	33 W
Dying Gasp support	no
Operating temperature	from -10 to +45 °C
Storage temperature	from -50 to +70 °C
Operating humidity	no more than 80 %
Cooling	Front-to-Back, 4 fans
Form factor	19", 1U
Dimensions (W × H × D)	430 × 44 × 330 mm
Weight	5.13 kg
	430 × 44 × 305 mm
	5.04 kg

Ordering information

Name	Description
MES3300-24	MES3300-24 Ethernet switch, 1×10/100/1000BASE-T (OOB), 24×10/100/1000BASE-T, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES3300-24F	MES3300-24F Ethernet switch, 1×10/100/1000BASE-T (OOB), 20×1000BASE-X/100BASE-FX (SFP), 4×10/100/1000BASE-T/1000BASE-X/100BASE-FX, 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
Related products	
PM160-220/12	PM160-220/12 power module, 100–240 V AC, 160 W
PM100-48/12	PM100-48/12 power module, 36–72 V DC, 100 W
Related software	
ECCM-MES3300-24	ECCM-MES3300-24 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES3300-24
ECCM-MES3300-24F	ECCM-MES3300-24F option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES3300-24F

Contact us

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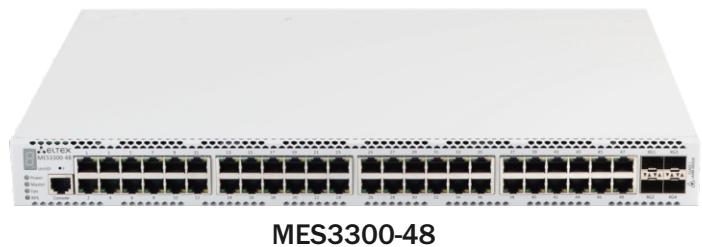
 eltex@eltex-co.ru

 www.eltex-co.com

About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 176 Gbps
- Non-blocking architecture
- 4 ports of 10G
- L3 switches
- Stacking up to 8 devices
- Hot-swappable redundant power supplies
- Dual ventilation system
- Front-to-Back cooling



The new generation switches can be used in service provider networks as aggregation or transport switches and in data centers as a Top-of-Rack switches.

They ensure high performance due to the interfaces operating at speeds of 10 Gbps or 1 Gbps. MES aggregation switches feature set includes L2 functions, static routing, dynamic routing, stacking of up to 8 devices, redundant and hot-swappable power supplies.

Support for the ERPS ring protection protocol enables convergence time of less than 200 ms, ensuring uninterrupted service.

Technical features

	MES3300-48	MES3300-48F
Interfaces		
10/100/1000BASE-T (RJ-45)	48	—
1000BASE-X/100BASE-FX (SFP)	—	48
10GBASE-R/1000BASE-X (SFP+/SFP)	4	—
10/100/1000BASE-T (OOB)	1	—
Console port RS-232 (RJ-45)	1	—
Performance		
Bandwidth	176 Gbps	—
Throughput for 64 bytes ¹	130.95 MPPS	—
Buffer memory	3 MB	—
RAM (DDR4)	2 GB	—
ROM (RAW NAND)	512 MB	—
MAC table	16384	—
ARP table ²	4087	—
VLAN table	4094	—
L2 Multicast groups	4092	—
SQinQ rules	1320 (ingress), 1320 (egress)	—
MAC ACL rules	3000	—
IPv4/IPv6 ACL rules	2999/1500	—
L3 IPv4 Unicast routes ³	13278	—
L3 IPv6 Unicast routes ³	3316	—

¹ Values are given for one-way transmission.

² For each host in the ARP table, an additional entry is created in the switching table.

³ IPv4/IPv6 Unicast/Multicast routes share hardware resources.

Technical features (continued)

	MES3300-48	MES3300-48F
L3 IPv4 Multicast (IGMP Proxy, PIM) routes ¹	4087	
L3 IPv6 Multicast (IGMP Proxy, PIM) routes ¹	1642	
VRRP routers	255	
Maximum size of ECMP groups	5	
VRF number	16 (including default VRF)	
L3 interfaces	2050	
Link Aggregation Groups (LAG)	32, up to 8 ports per LAG	
Quality of Service (QoS)	8 egress queues per port	
Jumbo frame size	10240 bytes	
Stacking	8 devices	

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)
- Stacking

MAC address functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC Flapping

VLAN support

- Voice VLAN
- 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Host/port-based IGMP Snooping Fast Leave
- IGMP proxy-report
- IGMP authorization through RADIUS
- MLD Snooping v1,2
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE802.1s)
- PVSTP+
- RPVSTP+
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)
- ERPS (G.8032v2)
- Flex-link
- Private VLAN
- Layer 2 Protocol Tunneling (L2PT)

L3 functions

- Static IP routes
- RIPv2, OSPFv2, OSPFv3, IS-IS (IPv4 Unicast), BGP² (IPv4 Unicast, IPv4 Multicast, IPv6 Multicast)
- BFD protocol (for BGP)
- Address Resolution Protocol (ARP)
- Proxy ARP
- VRRP
- Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy, MSDP
- ECMP Load Balancing
- IP Unnumbered
- VRF lite

Link Aggregation functions

- LAG group creation
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 support

- IPv6 Host
- Dual-stack IPv4, IPv6

Service functions

- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics
- Green Ethernet

Security functions

- Protection against unauthorized DHCP servers (DHCP Snooping)
- DHCP option 82
- IP Source Guard
- Dynamic ARP Inspection
- First Hop Security
- sFlow
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

¹ IPv4/IPv6 Unicast/Multicast routes share hardware resources.

² BGP protocol support is provided under license.

Features and capabilities (continued)

Quality of Service (QoS)

- QoS statistics
- Shaping, policing
- IEEE 802.1p Class of Service
- Storm Control for different traffics (broadcast, multicast, unknown unicast)
- Bandwidth management
- Strict priority/Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based CoS/DSCP metric assignment
- VLAN metric assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remapping
- 802.1p DSCP metric assignment for IGMP

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

Access Control Lists (ACL)

- L2-L3-L4 ACL (Access Control List)
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Switch port
 - 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

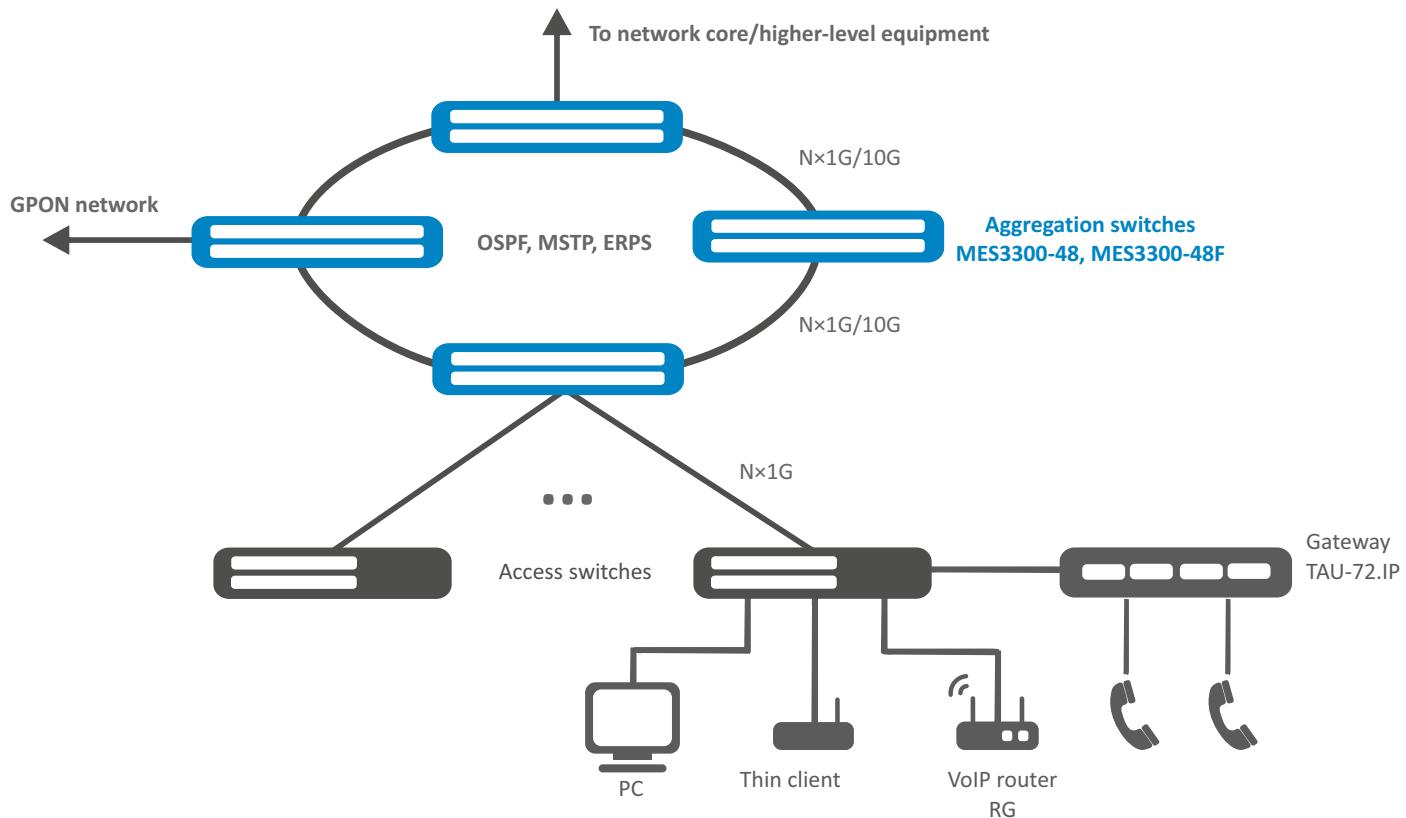
Management functions

- Upload/download of configuration file and firmware via TFTP
- SNMP (Simple Network Management Protocol)
- CLI (Command Line Interface)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (802.1ab) + LLDP MED
- Input commands authorisation support via TACACS+ server
- Switch access control — Privilege levels for users
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ (Terminal Access Controller Access Control System) clients
- SSH, Telnet server
- SSH, Telnet client
- SSL
- Macrocommands support
- CLI commands logging
- System log
- DHCP autoprovision
- DHCP Relay (Option 82)
- DHCP Option 12
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- RMON/SMON remote monitoring
- IP SLA
- CPU utilization monitoring per task and traffic type
- RAM monitoring
- Temperature monitoring
- TCAM monitoring
- MIB/IETF**
- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
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- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support Multi-Part Messages
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC2572, RFC2573, RFC2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet

Use case



Physical parameters

	MES3300-48	MES3300-48F
Power supply	100–240 V AC, 50–60 Hz 36–72 V DC Power supply options: <ul style="list-style-type: none"> • 1 AC/DC power supply • 2 hot-swappable AC/DC power supplies 	
Input current	0.3–0.5 A for AC 0.5–1.0 A for DC	0.3–1.0 A for AC 1.0–2.2 A for DC
Maximum power consumption	45 W	89 W
Heat dissipation	45 W	89 W
Dying Gasp support		no
Operating temperature		from -10 to +45 °C
Storage temperature		from -50 to +70 °C
Operating humidity		no more than 80 %
Cooling		Front-to-Back, 4 fans
Form factor		19", 1U
Dimensions (W × H × D)	440 × 44 × 330 mm	440 × 44 × 330 mm
Weight	5.67 kg	5.68 kg

Ordering information

Name	Description
MES3300-48	MES3300-48 Ethernet switch, 1×10/100/1000BASE-T (OOB), 48×10/100/1000BASE-T (RJ-45), 4×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
MES3300-48F	MES3300-48F Ethernet switch, 48×1000BASE-X/100BASE-FX (SFP), 4×10GBASE-R/1000BASE-X (SFP+/SFP), L3

Related products

PM160-220/12	PM160-220/12 power module, 100–240 V AC, 160 W
PM100-48/12	PM100-48/12 power module, 36–72 V DC, 100 W

Related software

ECCM-MES3300-48	ECCM-MES3300-48 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES3300-48
ECCM-MES3300-48F	ECCM-MES3300-48F option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES3300-48F

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 128 Gbps
- Non-blocking switching fabric
- Advanced L2 functions
- 4 × 10G ports in basic configuration
- Multicast (IGMP Snooping, MVR)
- Basic L3 functions
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Hot-swappable redundant power modules
- Dual ventilation system
- Front-to-back cooling



MES3400 new generation switches can be used in service provider networks as aggregation or transport switches. They ensure high performance due to the universal interfaces operating at speeds of 10 Gbps or 1 Gbps. The benefits of MES aggregation switches include advanced L2 functions, support for static and dynamic routing, hot-swappable redundant power modules.

Technical features

	MES3400-24	MES3400-24F
Interfaces		
1000BASE-X/100BASE-FX (SFP)	—	24
10/100/1000BASE-T (RJ-45)	24	—
1000BASE-X (SFP)/10GBASE-R (SFP+)	4	4
Console port RS-232 (RJ-45)		1
Performance		
Bandwidth		128 Gbps
Throughput on 64-byte packets ¹		95.2 MPPS
Buffer memory		2 MB
RAM (DDR3)		1 GB
ROM (SPI Flash)		64 MB
MAC table		32768
ARP table		1000
VLAN table		4094
L2 Multicast groups (IGMP Snooping)		4094
L3 Multicast groups (IGMP Proxy)		2048
SQinQ rules		768 (ingress)/1024 (egress)
MAC ACL rules		766
IPv4/IPv6 ACL rules		640/320
L3 IPv4 Unicast routes		1958
VRRP routers		32
L3 interfaces	8 VLANs, up to 5 IPv4 addresses on a single VLAN, up to 22 IPv6 GUA for all VLANs in summary	
Link Aggregation Groups (LAG)	24 groups, up to 8 ports per LAG	
Quality of Service (QoS)	8 egress queues per port	
Jumbo frames	maximum packet size is 12288 bytes	

¹ Values are given for one-way transmission.

Features and capabilities

Interface functions

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow control (IEEE 802.3X)
- Port mirroring (SPAN, RSPAN)

MAC table functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change events monitoring per ports
- MAC Flapping

VLAN support

- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP proxy-report
- IGMP authorization via RADIUS
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different traffic types (broadcast, multicast, unknown unicast)
- Layer 2 Protocol Tunneling (L2PT)
- ERPS (G.8032v2)

L3 Multicast functions

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

L3 functions

- Static IPv4, IPv6 routes
- Dynamic routing protocols RIPv1/2, OSPFv2, OSPFv3
- VRRP

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Test (VCT)
- Optical transceiver diagnostics

IPv6 functions

- IPv6 Host
- Dual-stack IPv4, IPv6

Security functions

- DHCP Snooping
- DHCP Option 82
- MAC-based authentication, Port Security, static MAC addresses
- IEEE 802.1x port-based authentication
- DoS attacks prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate Agent
- IP Source Guard
- Dynamic ARP Inspection
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

ACL (Access Control List)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p priority
 - VLAN ID
 - EtherType
 - DSCP
 - IP protocol type
 - TCP/UDP port number
 - User Defined Bytes

Quality of service (QoS) and rate limiting

- Port rate limiting (shaping)
- Rate limiting according to sr-TCM and tr-TCM policing algorithms
- IEEE 802.1p Class of Service (CoS)
- Queue scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- IEEE 802.1p priority tagging for VLAN management
- ACL-based traffic classification
- ACL-based CoS/DSCP marking
- DSCP to CoS remarking
- CoS to DSCP remarking
- ACL-based VLAN assignment

Features and capabilities (continued)

OAM

- IEEE 802.3ah, Ethernet OAM
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Main management functions

- Download and upload of configuration file via TFTP/SFTP
- Automated backup of configuration file via TFTP/SFTP
- Simple Network Management Protocol (SNMP)
- Command Line Interface (CLI)
- Web interface
- Syslog
- Simple Network Time Protocol (SNTP)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Two 802.1Q headers traffic control
- Commands Authorization using TACACS+ server
- IPv4/IPv6 ACL support for device control
- Switch access management — privilege levels for users
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ (Terminal Access Controller Access Control System) clients
- Telnet client, SSH client
- Telnet server, SSH server
- Macro commands
- Input commands logging via TACACS+ protocol
- DHCP auto configuration
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server
- PPPoE Circuit-ID tag adding
- Flash File System
- Debug commands
- CPU traffic limiting
- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routing
- Support for several versions of configuration file

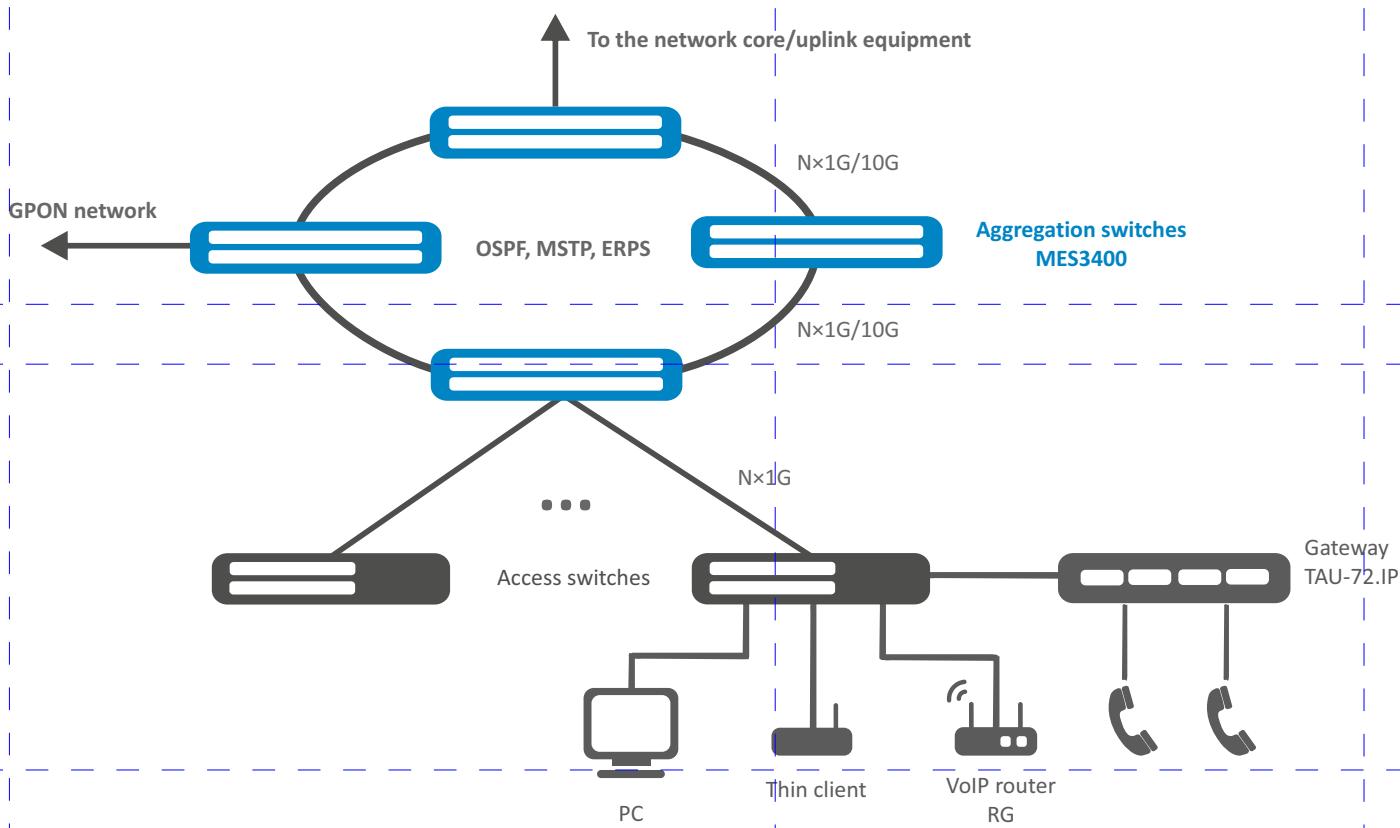
Monitoring functions

- Interface statistics
- CPU utilization monitoring per task and per queue
- RAM usage monitoring
- Temperature monitoring
- TCAM monitoring

MIB/IETF standards

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3289 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 Definition of the DS field in the IPv4 and IPv6 Headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Use case



Physical parameters

	MES3400-24	MES3400-24F
Power supply	100–240 V AC, 50–60 Hz; 36–72 V DC	
Maximum power consumption	37 W	55 W
Heat dissipation	37 W	55 W
Operating temperature range	from -10 to +45 °C	
Storage temperature range	from -40 to +70 °C	
Cooling	active, front-to-back, 4 fans	
Operating humidity	no more than 80 %	
Form factor	19", 1U	
Dimensions (W × H × D)	430 × 44 × 275 mm	430 × 44 × 275 mm
Weight	4.63 kg	4.69 kg

Ordering information

Name	Description
MES3400-24	MES3400-24 Ethernet aggregation switch, 24 ports of 10/100/1000BASE-T (RJ-45), 4 ports of 1000BASE-X (SFP)/10GBASE-R (SFP+), L3
MES3400-24F	MES3400-24F Ethernet aggregation switch, 24 ports of 100BASE-FX/1000BASE-X (SFP), 4 ports of 1000BASE-X (SFP)/10GBASE-R (SFP+), L3

Related products

PM160-220/12	PM160-220/12 power module , 100–240 VAC, 160 W
PM100-48/12	PM100-48/12 power module , 36–72 V DC, 100 W

Related software

ECCM-MES3400-24	ECCM-MES3400-24 option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES3400-24
ECCM-MES3400-24F	ECCM-MES3400-24F option of Eltex ECCM management system to control and monitor Eltex network elements: 1 network element MES3400-24F

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communications equipment with 30 years of history. Complete solutions and their seamless integrability into Customer's infrastructure are the priority growth areas of the company.

- Bandwidth up to 178 Gbps
- Non-blocking architecture
- Advanced L2 functions
- 4 ports of 10G in basic configuration
- L3 switch
- Multicast support (IGMP Snooping, MVR)
- Advanced security functions (L2-L4 ACL, IP Source Guard, Dynamic ARP Inspection, etc.)
- Hot-swappable redundant power supplies
- Dual ventilation system
- Front-to-back cooling



The new generation switches can be used in service provider networks as aggregation or transport switches. They ensure high performance due to the interfaces operating at speeds of 10 Gbps or 1 Gbps. MES aggregation switches' feature set includes advanced L2 functions, static routing, dynamic routing, redundant and hot swappable power supplies.

Technical features

Interfaces	
10/100/1000BASE-T (RJ-45)	48
1000BASE-X (SFP)/10GBASE-R (SFP+)	4
Console port RS-232 (RJ-45)	1
Performance	
Bandwidth	176 Gbps
Throughput for 64 bytes ¹	130.95 MPPS
Buffer memory	2 MB
RAM (DDR3)	1 GB
ROM (SPI Flash)	64 MB
MAC table	32768
ARP table	1000
VLAN table	4094
L2 Multicast groups (IGMP Snooping)	4094
L3 Multicast groups (IGMP proxy)	2048
SQinQ rules	2048 (ingress ²), 1024 (egress)
MAC ACL rules	766
IPv4/IPv6 ACL rules	640/320
L3 IPv4 Unicast routes	2048
L3 IPv6 Unicast routes	512
VRP routes	32
L3 interfaces	20 VLAN, up to 5 IPv4 addresses in each VLAN, up to 512 IPv6 GUA in total for all VLANs
Link Aggregation Groups (LAG)	24 groups, up to 8 ports in one LAG
QoS	8 egress queues per port
Jumbo frames	12288 bytes

¹ Values are given for 1-way transmission.

² Mac-based VLAN and SQinQ share hardware resources.

Features and capabilities

Interface functions

- Head-of-line blocking (HOL) protection
- Auto MDI/MDIX
- Jumbo frames
- Flow control (IEEE 802.3X)
- Port Mirroring (SPAN, RSPAN)

MAC table functions

- Independent learning mode per VLAN
- MAC Multicast Support
- Configurable aging time of MAC addresses
- Static MAC Entries
- MAC change on ports
- MAC Flapping logging

VLAN functions

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP
- MAC-based VLAN
- Protocol-based VLAN

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- IGMP Snooping fast-leave
- IGMP proxy-report
- IGMP authorization via RADIUS
- IGMP Querier
- MVR

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- STP Root Guard
- STP Loop Guard
- STP BPDU Guard
- BPDU Filtering
- Spanning Tree Fast Link option
- Loopback Detection (LBD)
- Port isolation
- Storm Control for different types of traffic (broadcast, multicast, unknown unicast)
- Layer 2 Protocol Tunneling (L2PT)
- ERPS (G.8032v2)

L3 Multicast functions

- IGMP proxy (RFC 4605)
- IGMP proxy fast-leave

L3 functions

- Static IPv4, IPv6 routes
- Dynamic routing protocols RIPv1/2, OSPFv2/3
- VRRP

Link Aggregation functions

- Static LAG
- Dynamic LAG (LACP)
- LAG Balancing Algorithm

Service functions

- Virtual Cable Testing (VCT)
- Optical Transceiver Diagnostics

IPv6 support

- IPv6 Host
- Dual stack

Security functions

- DHCP Snooping
- DHCP Option 82
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attacks prevention
- PPPoE Intermediate agent
- IP Source Guard
- Dynamic ARP Inspection
- DHCPv6 Snooping
- IPv6 Source Guard
- IPv6 ND Inspection
- IPv6 RA Guard

ACL (Access Control Lists)

- L2-L3-L4 ACL (Access Control List)
- IPv6 ACL
- ACL based on:
 - Switch port
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number
 - User Defined Bytes

QoS (Quality of Service)

- Shaping
- Policing according to sr-TCM and tr-TCM
- IEEE 802.1p Class of Service
- Scheduling algorithms: Strict Priority/Weighted Round Robin (WRR)
- Setting the IEEE 802.1p priority for VLAN management
- ACL-based traffic classification
- ACL-based CoS/DSCP assignment
- DSCP to CoS/CoS to DSCP remarking
- ACL-based VLAN assignment

Features and capabilities (continued)

OAM

- IEEE 802.3ah, Ethernet OAM
- IEEE 802.3ah Unidirectional Link Detection (UDLD)

Management functions

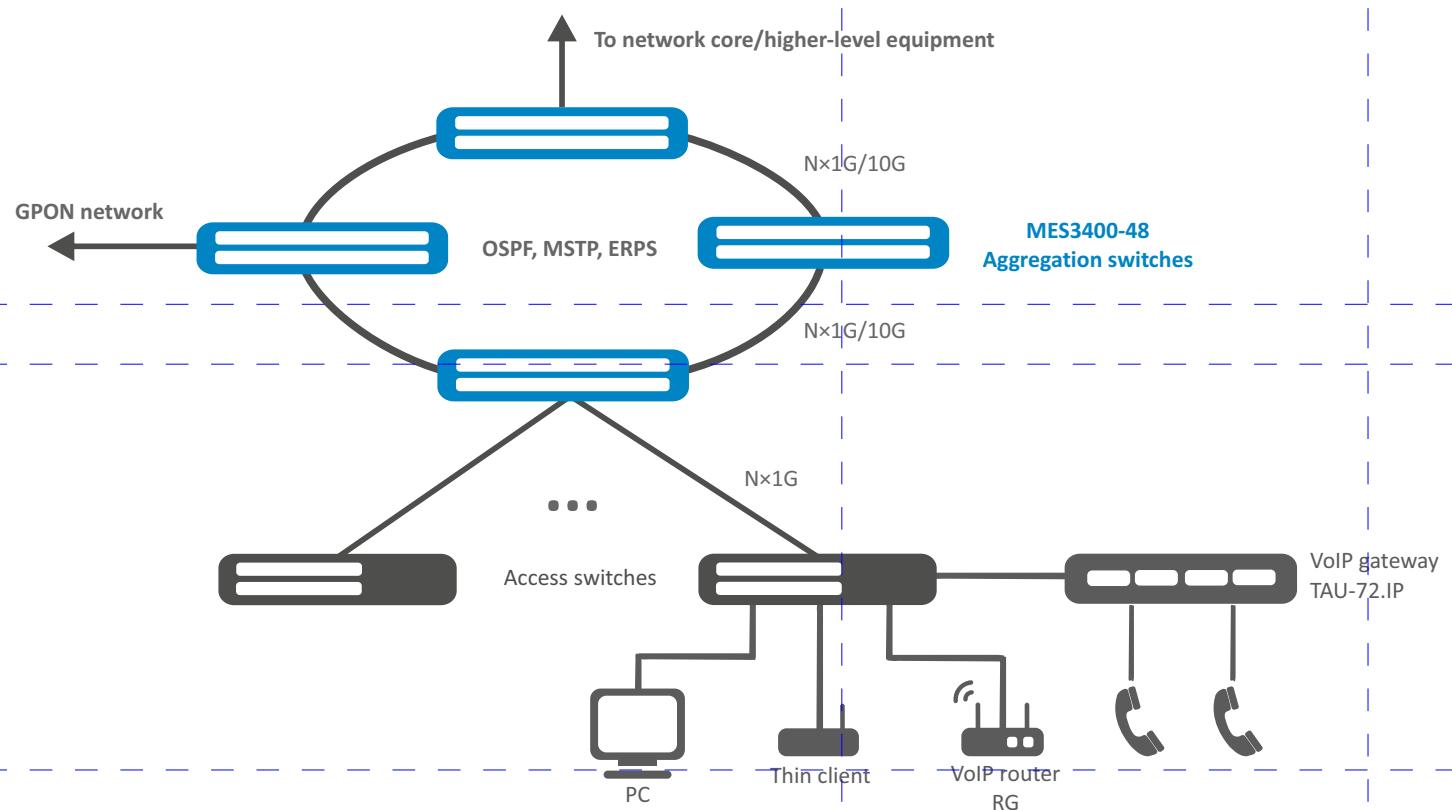
- Download and upload of configuration file via TFTP/SFTP
- Automatic backup of configuration file via TFTP/SFTP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab) + LLDP MED
- Processing traffic management with two IEEE 802.1Q headers
- Authorization of entered commands using TACACS+ server
- IPv4/IPv6 ACL support for device management
- Access control — privilege levels
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS, TACACS+ clients (Terminal Access Controller Access Control System)
- Telnet, SSH client
- Telnet, SSH server
- Macrocommands
- Logging of input commands via TACACS+
- DHCP autoconfiguration
- DHCP Relay (IPv4 support)
- DHCP Relay Option 82
- DHCP server
- Adding PPPoE Circuit-ID tag
- Flash File System
- Debugging commands
- Rate limit of traffic to CPU
- Password encryption
- Ping (IPv4/IPv6 support)
- IPv4/IPv6 static routes
- Support for multiple versions of configuration file

Monitoring functions

- Statistics of interfaces
- CPU utilization monitoring per task and per traffic type
- RAM utilization monitoring
- Temperature monitoring
- TCAM monitoring

MIB/IETF

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 2465 IPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674, 4363 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB для TCP
- RFC 4113 MIB для UDP
- RFC 3289 MIB для Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 793 TCP
- RFC 2474, 3260 DS field in theIPv4 and IPv6 header
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571, RFC 2572, RFC 2573, RFC 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

Use Case**Physical parameters**

Physical parameters and environmental features	
Power supply	100–240 V AC, 50–60 Hz; 36–72 V DC
Maximum power consumptions	52 W
Heat dissipation	52 W
Hardware support for Dying Gasp	no
Operating temperature	from -10 to +45 °C
Storage temperature	from -40 to +70 °C
Cooling	active, Front-to-Back, 4 fans
Operating humidity	no more than 80 %
Form factor	19", 1U
Dimensions (W × H × D)	440 × 44 × 330 mm
Weight	5.6 kg

Ordering information

Name	Description
MES3400-48	MES3400-48 Ethernet aggregation switch, 48 ports of 10/100/1000BASE-T (RJ-45), 4 ports of 1000BASE-X (SFP)/10GBASE-R (SFP+), L3
Related products	
PM160-220/12	PM160-220/12 power module, 100–240 V AC, 160 W
PM100-48/12	PM100-48/12 power module, 36–72 V DC, 100 W
Related software	
ECCM-MES3400-48	ECCM-MES3400-48 option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3400-48

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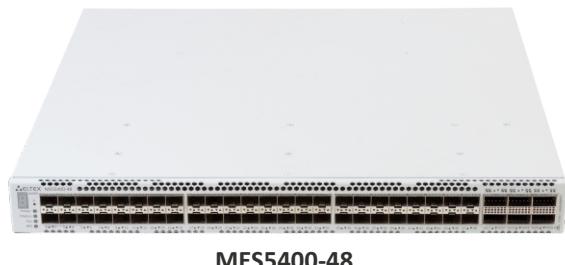


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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- High performance (up to 2.16 Tbps)
- Non-blocking architecture
- L3 switches
- Stacking up to 8 devices
- Power supply redundancy
- Front-to-Back cooling
- Dual ventilation system



MES5400-24 and **MES5400-48** switches are high performance devices with 40GBASE-R and 100GBASE-R interfaces that can be used as aggregation switches in carrier networks and as Top-of-Rack or End-of-Row switches for data centers. The devices ports support operation at rates of 1 Gbps (SFP), 10 Gbps (SFP+), 25 Gbps (SFP28), 40 Gbps (QSFP+) and 100 Gbps (QSFP28).

The non-blocking architecture guarantees lossless packet forwarding at wire speed with minimum and predictable delays for all types of traffic.

The front-to-back cooling provides effective cooldown in modern data centers.

The redundant and hot-swappable fans and AC/DC power supplies along with advanced hardware monitoring functions provide high reliability and uninterrupted services.

The devices support EVPN/VXLAN technology to create networks with simple, high-performance and scalable data center architecture.

Technical features

	MES5400-24	MES5400-48
Interfaces		
10/100/1000BASE-T (OOB)	1	
1000BASE-X (SFP)/10GBASE-R (SFP+)	24	48
40GBASE-R (QSFP+)/100GBASE-R (QSFP28)	6	6
USB 2.0		1
Console port RS-232 (RJ-45)	1	
Performance		
Bandwidth	1.68 Tbps	2.16 Tbps
Throughput for 64 bytes ¹	878.3 MPPS	1041.5 MPPS
Buffer memory		12 MB
RAM (DDR4)		8 GB
ROM (embedded uSSD)		8 GB
MAC table	65536	262144
ARP table ²	32759	131063
VLAN table		4094
L2 Multicast groups		4092
SQInQ rules	1320 (ingress), 1320 (egress)	

¹ Values are given for one-way transmission.

² For each host in the ARP table, an additional entry is created in switching table. The number of ARP with EVPN license installed for MES5400-24 is 30711 and for MES5400-48 is 129015.

Technical features (continued)

	MES5400-24	MES5400-48
Performance		
MAC ACL rules	6144	10737
IPv4/IPv6 ACL rules	6144/3036	10737/5367
L3 IPv4 Unicast routes ¹	32669	
L3 IPv6 Unicast routes ¹	8165	
L3 IPv4 Multicast routes ¹	16324	
L3 IPv6 Multicast routes ¹	4079	
VRRP routers	255	
Maximum size of ECMP groups	64	
VRF number	251 (including default VRF)	
L3 interfaces	2050	
Maximum number of VXLAN	4093	
Link Aggregation Groups (LAG)	128, up to 8 ports in one LAG	
Quality of Service (QoS)	8 egress queues per port	
Jumbo frames	10240 bytes	
Stacking	up to 8 devices	

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Port Mirroring
- Stacking

MAC table features

- Independent learning in each VLAN
- MAC Multicast Support
- Configurable MAC address aging time
- Static MAC Entries
- MAC Flapping logging

VLAN features

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)
- ERPS (G.8032v2)
- PVSTP+
- RPVSTP+

L3 functions

- Static routing
- Dynamic routing protocols RIP, OSPFv2, OSPFv3, BGP², IS-IS
- Address Resolution Protocol (ARP)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- BFD
- IP Unnumbered
- VRF lite

EVPN/VXLAN

- Support for L2VPN services¹
- Support for L3VPN services²

¹ IPv4/IPv6 Unicast/Multicast routes share hardware resources.² BGP protocol support is provided under the license.

Features and capabilities (continued)

Link Aggregation functions

- Link Aggregation Groups (LAG)
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 support

- IPv6 Host
- Dual stack IPv6/IPv4

Service functions

- Optical transceiver diagnostics
- Green Ethernet

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, MAC address limitation, static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number

Management functions

- Configuration and firmware download and upload via TFTP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab)
- Access control – privilege levels
- Management ACL
- Management interface blocking

– Local authentication

- IP addresses filtering for SNMP
- RADIUS/TACACS+ (Terminal Access Controller Access Control System) client
- SSH server
- Telnet server
- SSL
- Macrocommands
- CLI command logging
- System log
- DHCP auto provisioning
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCP server
- Debugging commands
- CPU traffic limiting mechanisms
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- Remote monitoring RMON/SMON
- Task- and traffic type-based CPU utilization monitoring
- Temperature monitoring
- TCAM monitoring
- IPFIX

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Broadcast Storm Control
- Bandwidth management
- Strict Priority/Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based CoS/DSCP metric assignment
- ACL-based VLAN metric assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- ACL-based traffic classification

MIB

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB

¹ EVPN support is provided under the license.

Features and capabilities (continued)

- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674, 4363 IEEE 802.1p MIB
- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3298 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support Multi-Part messages
- RFC 793 TCP
- RFC 2474, 3260 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571-2574 SNMP
- RFC 826 ARP

Physical parameters

	MES5400-24	MES5400-48
Power supply	AC: 100–240 V, 50–60 Hz DC: 36–72 V Power supply options: <ul style="list-style-type: none"> • one AC/DC power source • two AC/DC hot-swappable power sources 	AC: 170–264 V, 50–60 Hz DC: 36–72 V Power supply options: <ul style="list-style-type: none"> • one AC/DC power source • two AC/DC hot-swappable power sources
Input current	0.5–1.7 A for AC 2–4 A for DC	0.5–1.0 A for AC 2–4.5 A for DC
Maximum power consumption	150 W	180 W
Heat dissipation	150 W	180 W
Dying Gasp support	no	
Operating temperature	from 0 to +45 °C	
Storage temperature	from -50 to +70 °C	
Operating humidity	no more than 80 %	
Cooling	Front-to-Back, 4 fans	
Dimensions (W × H × D)	440 × 44 × 321 mm	
Weight	6.36 kg	8.84 kg

Ordering information

Name	Description
MES5400-24	Ethernet switch MES5400-24, 1×10/100/1000BASE-T (OOB), 24×1000BASE-X (SFP)/10GBASE-R (SFP+), 6×40GBASE-R (QSFP+)/100GBASE-R (QSFP28), 1×USB 2.0, L3

MES5400-48	Ethernet switch MES5400-48, 1×10/100/1000BASE-T (OOB), 48×1000BASE-X (SFP)/10GBASE-R (SFP+), 6×40GBASE-R (QSFP+)/100GBASE-R (QSFP28), 1×USB 2.0, L3
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Related products

PM160-220/12	Power module PM160-220/12, 220 V AC, 160 W
PM160-48/12	Power module PM160-48/12, 48 V DC, 160 W
PM350-220/12	Power module PM350-220/12, 220 V AC, 350 W
PM350-48/12	Power module PM350-48/12, 48 V DC, 350 W

Related software

ECCM-MES5400-24	ECCM-MES5400-24 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5400-24
ECCM-MES5400-48	ECCM-MES5400-48 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5400-48

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About ELTEX

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- High performance (up to 3.6 Tbps)
- Non-blocking architecture
- L3 switches
- Stacking up to 8 devices¹
- Power supply redundancy
- Front-to-Back cooling
- Dual ventilation system



MES5410-48 switches are high performance devices with 25GBASE-R and 100GBASE-R interfaces that can be used as aggregation switches in carrier networks and as Top-of-Rack or End-of-Row switches for data centers.

The devices ports support operation at rates of 1 Gbps (SFP), 10 Gbps (SFP+), 25 Gbps (SFP28), 40 Gbps (QSFP+) and 100 Gbps (QSFP28).

The non-blocking architecture guarantees lossless packet forwarding at wire speed with minimum and predictable delays for all types of traffic.

The front-to-back cooling provides effective cooldown in modern data centers.

The redundant and hot-swappable fans and AC/DC power supplies along with advanced hardware monitoring functions provide high reliability and uninterrupted services.

The devices support EVPN/VXLAN technology to create networks with simple, high-performance and scalable data center architecture.

Technical features

Interfaces	
10/100/1000BASE-T (OOB)	1
1000BASE-X (SFP)/10GBASE-R (SFP+)/25GBASE-R (SFP28)	48
40GBASE-R (QSFP+)/100GBASE-R (QSFP28)	6
USB 2.0	1
Console port RS-232 (RJ-45)	1
Performance	
Bandwidth	3.6 Tbps
Buffer memory	24 MB
RAM (DDR4)	8 GB
ROM (embedded uSSD)	8 GB
MAC table	131072
ARP entries	up to 65527 ²
VLAN table	4094
L2 Multicast groups	4088
SQInQ rules	1320 (ingress), 1320 (egress)
MAC ACL rules	4081
IPv4/IPv6 ACL rules	4081/2040
L3 IPv4 Unicast routes	126000

¹ Implementation is planned for 1Q24.

² For each host in the ARP table, an additional entry is created in switching table. The number of ARP with EVPN license installed is 63479.

Technical features (continued)

Performance	
L3 IPv6 Unicast routes	73000
L3 IPv4 Multicast routes	146000
L3 IPv6 Multicast routes	36500
VRRP routers	255
Maximum size of ECMP groups	64
VRF number	251 (including default VRF)
L3 interfaces	2050
Maximum number of VXLAN	4083
Link Aggregation Groups (LAG)	128, up to 8 ports in one LAG
Quality of Service (QoS)	8 egress queues per port
Jumbo frames	10240 bytes
Stacking ¹	up to 8 devices

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Port Mirroring
- Stacking¹

MAC table features

- Independent learning in each VLAN
- MAC Multicast Support
- Configurable MAC address aging time
- Static MAC Entries
- MAC Flapping logging

VLAN features

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- PIM Snooping
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Looback Detection (LBD)
- ERPS (G.8032v2)
- PVSTP+
- RPVSTP+

L3 functions

- Static routing
- Dynamic routing protocols RIP, OSPFv2, OSPFv3, BGP², IS-IS
- Address Resolution Protocol (ARP)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- BFD
- IP Unnumbered
- VRF lite

EVPN/VXLAN³

- Support for L2VPN services
- Support for L3VPN services

¹Implementation is planned for 1Q24.²BGP support is provided under license.³EVPN support is provided under license.

Features and capabilities (continued)

Link Aggregation functions

- Link Aggregation Groups (LAG)
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 support

- IPv6 Host
- Dual-stack IPv6/IPv4

Service functions

- Optical transceiver diagnostics

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, MAC address limitation, static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number

Management functions

- Configuration and firmware download and upload via TFTP/SCP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab)

- Access control – privilege levels
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS/TACACS+ (Terminal Access Controller Access Control System) client
- SSH server
- Telnet server
- SSL
- Macrocommands
- CLI command logging
- System log
- DHCP auto provisioning
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCP server
- Debugging commands
- CPU traffic limiting mechanisms
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- Remote monitoring RMON/SMON
- Task- and traffic type-based CPU utilization monitoring
- Temperature monitoring
- TCAM monitoring
- IPFIX

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Broadcast Storm Control
- Bandwidth management
- Strict Priority/Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based CoS/DSCP assignment
- ACL-based VLAN assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- 802.1p DSCP mark assignment for IGMP

Features and capabilities (continued)

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

MIB

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674, 4363 IEEE 802.1p MIB

- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3298 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support Multi-Part messages
- RFC 793 TCP
- RFC 2474, 3260 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571-2574 SNMP
- RFC 826 ARP

Physical parameters

Physical parameters and environmental features	
Power supply	AC: 100–240 V, 50–60 Hz DC: 36–72 V Power supply options: <ul style="list-style-type: none"> • one AC/DC power source; • two AC/DC hot-swappable power sources
Input current	3–1.25 A for AC 8.33–4.17 A for DC
Maximum power consumption	no more than 300 W
Heat dissipation	no more than 300 W
Dying Gasp support	no
Operating temperature	from 0 to +45 °C
Storage temperature	from -50 to +70 °C
Operating humidity	no more than 80 %
Cooling	Front-to-Back, 5 dual fans
Dimensions (W × H × D)	440 × 44 × 536 mm
Weight	12.1 kg

Ordering information

Name	Description
MES5410-48	Ethernet switch MES5410-48, 1 × 10/100/1000BASE-T (OOB), 48 × 1000BASE-X (SFP)/10GBASE-R (SFP+)/25GBASE-R (SFP28), 6×40GBASE-R (QSFP+)/100GBASE-R (QSFP28), 1×USB 2.0, L3
Related software	
ECCM-MES5410-48	ECCM-MES5410-48 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5410-48

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth – 1.28 Tbps
- Non-blocking architecture
- L3 switch
- Stacking up to 8 devices
- 48 ports of 10G, 4 ports of 40G
- MAC table capacity – 131K
- Hot-swappable redundant power supplies
- Hot-swappable fans
- Front-to-Back cooling



MES5448 switches are high performance devices with 10GBASE-R and 100GBASE-SR4/LR4 interfaces that can be used as aggregation or transport switches in carrier networks and as Top-of-Rack or End-of-Row switches for data centers.

The device's ports support operation at rates of 1 Gbps (SFP), 10 Gbps (SFP+) and 100 Gbps (QSFP28), that provides usage flexibility and ability of gradual transition to higher data rates.

The non-blocking architecture guarantees lossless packet forwarding at wire speed with minimum and predictable delays for all types of traffic. The front-to-back cooling provides effective cooldown in modern data centers.

The redundant and hot-swappable fans and AC/DC power supplies along with advanced hardware monitoring functions provide high reliability and uninterrupted services.

Technical features

Interfaces	
10GBASE-R (SFP+)/1000BASE-X (SFP)	48
40GBASE-SR4/LR4 (QSFP+)	4
10/100/1000BASE-T (OOB)	1
USB	1
Console port	RS-232 (RJ-45)
Performance	
Bandwidth	1.28 Tbps
Throughput for 64 bytes ¹	943.5 MPPS
Buffer memory	9 MB
RAM (DDR3)	4 GB
ROM (SATA SSD)	8 GB
MAC table	131072
ARP table	6144
VLAN table	4094
L2 Multicast groups	2048
802.1ad rules (QinQ)	4090

¹The value is given for one-way transmission

Technical features (continuation)

ACL rules	1023 ingress, 1023 egress
IPv4 routes ¹	16381
IPv6 routes ¹	8192
VRRP routers	20
ECMP groups	1023
L3 interfaces	256
Link Aggregation Groups (LAG)	64, 32 ports per LAG
Loopback interfaces	64
Quality of Service (QoS)	7 egress queues per port
Jumbo frames size	12270 bytes
Stacking	up to 8 devices

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow control (IEEE 802.3X)
- Protected ports
- Link aggregation groups (LAG)
- LACP
- Different LAG balancing algorithms

MAC table features

- MAC Multicast Support
- Static MAC filtering
- Port/VLAN MAC locking

VLAN features

- IEEE 802.1Q
- GVRP
- MAC/IP-based VLAN
- Different VLAN port operating modes
- Voice VLAN
- Independent VLAN learning
- Private VLAN
- Layer 2 Protocol Tunneling

L2 Multicast features

- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- MLD Snooping v1,2
- MGMD Snooping SSM
- IGMP and MLD Snooping Querier
- MVR
- GMRP

L3 functions

- Static routing
- Inter VLAN routing
- Dynamic routing protocols RIP, OSPFv2, OSPFv3, BGP
- Address Resolution Protocol (ARP)
- Proxy ARP
- Policy-Based Routing (IPv4 and IPv6)
- VRF
- BFD
- Algorithmic longest prefix match (ALPM)
- VRRP
- ECMP Load Balancing
- UDP Relay/IP Helper
- ICMP Throttling
- Loopback interfaces
- IPv6 Host
- IPv6 DHCP Client (Stateful/Stateless)
- DHCPv6 Server
- IPv4 and IPv6 Dual Stack
- ICMPv6 Throttling

Ring topology security functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE802.1s)
- PVSTP+ (Per VLAN Spanning Tree Protocol Plus)
- RPVSTP+ (Rapid Per VLAN Spanning Tree Protocol Plus)
- Spanning Tree Fast Link option
- STP Root Guard
- STP Loop Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)

¹IPv4/IPv6 routes share hardware resources

Features and capabilities (continuation)

Security functions

- DHCP Snooping (IPv4 and IPv6)
- IP Source Guard (IPv4 and IPv6)
- Dynamic ARP Inspection
- IPv6 RA Guard (Stateless)
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE802.1x
- Guest VLAN IEEE 802.1x
- MAC-based port authentication (dot1x)
- DoS attack prevention
- Traffic segmentation
- Protection against non-authorized DHCP servers
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Source/destination MAC/IP/IPv6 address
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - Ethertype
 - TOS/DSCP/Preference
 - Protocol type
 - TCP/UDP source/destination port
- ACL actions:
 - Egress queueing
 - Flow-based redirecting and mirroring
 - ACL-based fixed rate limiting
 - Generation of trap log entries containing rule hit count

Quality of Service (QoS)

- QoS statistics for all ports
- Shaping, policing
- IEEE 802.1p Class of Service (CoS)
- Interface trust mode: IEEE 802.1p, IP DSCP
- IEEE 802.1p and IP DSCP-based traffic classification and mapping
- Storm control for various types of traffic (broadcast, multicast, unknown unicast)
- Interface bandwidth management
- Bandwidth management per queue
- Strict priority and weighted (WRR/WFQ) scheduling algorithms
- Tail Drop/Weighted Random Early Detection (WRED) queue depth management
- Class-based CoS/DSCP mark assignment
- Automatic VoIP Class of Service (CoS) settings

Management functions

- Configuration file download and upload via TFTP/SCP/FTP/SFTP and USB
- Firmware file download and upload via TFTP/SCP/FTP/SFTP and USB
- SNMPv1/2/3
- Command Line Interface (CLI)
- SSH server
- Web interface
- NETCONF

- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute/Ping
- Authentication, Authorization and Accounting (AAA)
- Local authentication
- Command authorization
- RADIUS, TACACS+
- Management interface blocking
- SSL
- Macrocommands
- CLI commands logging
- System log
- DHCP auto-provisioning
- Debugging commands
- CPU traffic limiting mechanism
- Command completion
- Context-sensitive help
- Password encryption
- Management access control lists

Monitoring functions

- Interface statistics
- Port mirroring (SPAN)
- Remote port mirroring (RSPAN)
- Remote monitoring (RMON/SMON)
- sFlow
- IP SLA, Track for IP SLA
- Task- and traffic type-based CPU utilization monitoring
- RAM utilization monitoring
- Temperature monitoring
- LLDP (802.1ab) + LLDP MED
- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics

METRO

- Ethernet OAM
- Connectivity Fault Management (CFM)
- Unidirectional Link Detection (UDLD)
- Layer-2 Protocol Tunneling (L2PT)
- 802.1ad Double VLAN tagging (in compliance with TR-101)

Data Center Bridging (DCB)

- Quantized Congestion Notification (QCN)
- Enhanced Transmission Selection (ETS)
- Priority-Based Flow Control (PFC)
- Data Center Bridging Exchange Protocol (DCBX)
- MLAG(Virtual Port Channel)
- FIP Snooping
- Openflow v1.0/v1.3.4
- Cut-through switching

Stacking

- Redundant Management Unit support
- Single IP address management
- Automatic election of management control unit
- Automatic firmware and configuration update throughout stack
- Hot-swap of stack units
- Offline configuration of stack units
- Stacking (up to 8 switches in a stack)

Features and capabilities (continuation)

MIB/IETF

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-T
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3ac VLAN tagging
- IEEE 802.3ad Link aggregation
- IEEE 802.3ae 10GbE
- IEEE 802.1ak Multiple Registration Protocol (MRP)
- IEEE 802.1as Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks
- IEEE 802.1s Multiple Spanning Tree compatibility
- IEEE 802.1w Rapid Spanning Tree compatibility
- IEEE 802.1D Spanning Tree Compatibility
- IEEE 802.1Q Virtual LANs with Port-based VLANs
- IEEE 802.1ad Double VLAN tagging (в соответствии с TR-101)
- IEEE 802.1ag Connectivity Fault Management (CFM)
- IEEE 802.3ah Operations, Administration and Maintenance (OAM)
- IEEE 802.1Qat Multiple Stream Reservation Protocol (MSRP)
- IEEE 802.1Qav Forwarding and Queuing Enhancements for Time-Sensitive Streams
- IEEE 802.1Qbb Priority-based Flow Control
- IEEE 802.1Qau Virtual bridged local area networks amendment 13: congestion notification (Draft 2.4)
- IEEE 802.1Qaz Enhanced transmission election for bandwidth sharing between traffic classes (Draft 2.4)
- IEEE 802.1v Protocol-based VLANs
- IEEE 802.1p Ethernet priority with user provisioning and mapping
- IEEE 802.1X Port-based authentication and supplicant support
- IEEE 802.3x Flow control
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- ANSI/TIA-1057 LLDP-Media Endpoint Discovery (MED)
- RFC 768 UDP
- RFC 783 TFTP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 Ethernet ARP
- RFC 894 Transmissions of IP datagrams over Ethernet networks
- RFC 896 Congestion control in IP/TCP networks
- RFC 951 BootP
- RFC 1034 Domain names - concepts and facilities
- RFC 1035 Domain names - implementation and specification
- RFC 1321 Message digest algorithm
- RFC 1534 Interoperation between BootP and DHCP
- RFC 2021 Remote Network Monitoring Management Information base v2
- RFC 2030 Simple Network Time Protocol (SNTP) v4 for IPv4, IPv6, and OSI
- RFC 2131 DHCP Client/Server
- RFC 2132 DHCP options and BootP vendor extension
- RFC 2347 TFTP option extension
- RFC 2348 TFTP block size option
- RFC 2819 Remote Network Monitoring Management Information Base
- RFC 2865 RADIUS client
- RFC 2866 RADIUS accounting

- RFC 2868 RADIUS attributes for tunnel protocol support
- RFC 2869 RADIUS Extensions
- RFC 3162 RADIUS and IPv6
- RFC 3164 The BSD syslog protocol
- RFC 3580 IEEE 802.1X RADIUS usage guidelines
- RFC 4541 IGMP Snooping and MLD Snooping
- RFC 5171 Unidirectional Link Detection (UDLD) Protocol
- RFC 5176 Dynamic Authorization Server
- RFC 5424 The Syslog Protocol
- RFC 1027 Using ARP to implement transparent subnet gateways (Proxy ARP)
- RFC 1256 ICMP router discovery messages
- RFC 1765 OSPF database overflow
- RFC 1812 Requirements for IP version 4 routers
- RFC 1997 BGP Communities Attribute
- RFC 2082 RIP-2 MD5 authentication
- RFC 2131 DHCP relay
- RFC 2328 OSPFv2
- RFC 2370 OSPF Opaque LSA Option
- RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2453 RIP v2
- RFC 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC 2918 Route refresh capability for BGP-4
- RFC 3021 Using 31-Bit Prefixes on IPv4 Point-to-Point Links
- RFC 3046 DHCP/BootP relay
- RFC 3101 The OSPF “not so stubby area” (NSSA) option
- RFC 3137 OSPF stub router advertisement
- RFC 3623 Graceful OSPF restart
- RFC 3704 Unicast Reverse Path Forwarding (uRPF)
- RFC 3768 Virtual Router Redundancy Protocol (VRRP) version 2
- RFC 5187 OSPFv3 Graceful Restart
- RFC 5340 OSPF for IPv6
- RFC 5549 Advertising IPv4 Network Layer Reachability Information with an IPv6 Next Hop
- RFC 5798 Virtual Router Redundancy Protocol (VRRP) version 3
- RFC 5880 Bidirectional Forwarding Detection
- RFC 5881 BFD for IPv4 and IPv6 (Single Hop)
- RFC 6860 Hiding Transit-Only Networks in OSPF
- RFC 1981 Path MTU for IPv6
- RFC 2460 IPv6 Protocol Specification
- RFC 2464 IPv6 over Ethernet
- RFC 2711 IPv6 Router Alert
- RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
- RFC 3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3484 Default Address Selection for IPv6
- RFC 3493 Basic Socket Interface for IPv6
- RFC 3513 Addressing Architecture for IPv6
- RFC 3542 Advanced Sockets API for IPv6
- RFC 3587 IPv6 Global Unicast Address Format
- RFC 3633 IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6
- RFC 3736 Stateless DHCPv6
- RFC 4213 Basic Transition Mechanisms for IPv6
- RFC 4291 Addressing Architecture for IPv6
- RFC 4443 ICMPv6

Features and capabilities (continuation)

- RFC 4861 Neighbor Discovery
- RFC 4862 Stateless Autoconfiguration
- RFC 6164 Using 127-bit IPv6 Prefixes on Inter-router Links
- RFC 6583 Operational Neighbor Discovery Problems
- RFC 854 Telnet
- RFC 855 Telnet Option Specifications
- RFC 1155 SMI v1
- RFC 1157 SNMP
- RFC 1212 Concise MIB definitions
- RFC 1867 HTML/2.0 forms with file upload extensions
- RFC 1901 Community-based SNMP v2
- RFC 1908 Coexistence between SNMP v1 and SNMP v2
- RFC 2068 HTTP/1.1 protocol as updated by draft-ietf-http-v11-spec-rev-03
- RFC 2271 SNMP Framework MIB
- RFC 2295 Transparent Content Negotiation
- RFC 2296 Remote Variant Selection; RSVA/1.0 State Management “Cookies” – draft-ietf-http-state-mgmt-05
- RFC 2576 Coexistence between SNMP v1, v2, and v3
- RFC 2578 SMI v2
- RFC 2579 Textual Conventions for SMI v2
- RFC 2580 Conformance statements for SMI v2
- RFC 2616 HTTP/1.1
- RFC 3410 Introduction and Applicability Statements for Internet Standard Management Framework
- RFC 3411 An Architecture for Describing SNMP Management Frameworks
- RFC 3412 Message Processing and Dispatching for SNMP
- RFC 3413 SNMP v3 Applications
- RFC 3414 User-Based Security Model for SNMP v3
- RFC 3415 View-Based Access Control Model for SNMP
- RFC 3416 Version 2 of the Protocol Operations for SNMP
- RFC 3417 Transport Mappings for SNMP
- RFC 3418 Management Information Base for SNMP
- RFC 6020 A Data Modeling Language for NETCONF
- RFC 6022 YANG Module for NETCONF Monitoring
- RFC 6242 Using the NETCONF Protocol over Secure Shell (SSH)
- RFC 6415 Web Host Metadata
- RFC 6536 NETCONF Access Control Model
- RFC 7223 YANG Data Model for Interface Management
- RFC 7277 YANG Data Model for IP Management
- RFC 7317 YANG Data Model for System Management
- RFC 2246: The TLS Protocol, version 1.0
- RFC 2818: HTTP over TLS
- RFC 3268: AES Cipher Suites for Transport Layer Security SSH 1.5 and 2.0
- RFC 4251: SSH Protocol Architecture
- RFC 4252: SSH Authentication Protocol
- RFC 4253: SSH Transport Layer Protocol
- RFC 4254: SSH Connection Protocol
- RFC 4716: SECSH Public Key File Format
- RFC 4419: Diffie-Hellman Group Exchange For The SSH Transport Layer Protocol
- RFC 1858 Security Considerations for IP Fragment Filtering
- RFC 2474 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 headers
- RFC 2475 An architecture for differentiated services
- RFC 2597 Assured forwarding Per Hop Behavior (PHB) group
- RFC 2697 Single-Rate Policing
- RFC 3246 An expedited forwarding PHB
- RFC 3260 New terminology and clarifications for DiffServ
- RFC 1997 BGP Communities Attribute
- RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2545 BGP-4 multiprotocol extensions for IPv6 inter-domain routing
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 4271 A Border Gateway Protocol 4 (BGP-4)
- RFC 4360 BGP Extended Communities Attribute
- RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
- RFC 4486 Subcodes for BGP Cease Notification Message
- RFC 4724 Graceful Restart
- RFC 4760 Multiprotocol Extensions for BGP-4
- RFC 5492 Capabilities Advertisement with BGP-4
- RFC 6793 BGP Support for Four-Octet Autonomous System (AS) Number Space
- RFC 7047 Open vSwitch Database Management Protocol
- ANSI/INCITS Fibre Channel backbone-5 (FC-BB-5) Rev 2.0.0 - FIP Snooping bridge
- OpenFlow Switch Specification, Version 1.0.0 (Wire Protocol 0x01) и Version 1.3.4

Physical specifications

Physical and environmental parameters	
Max. power consumption	150 W
Power	176-264 V AC, 50 Hz 36-72 V DC Power supply options: <ul style="list-style-type: none"> • 1 AC/DC power supply • 2 hot-swappable AC/DC power supplies
Operating temperature	from 0 to +45 °C
Storage temperature	from -40 to +70 °C
Operating humidity	80%
Cooling	Front-to-Back, 4 fans
Implementation	19", 1U
Dimensions (WxHxD)	440x44x425 mm
Weight	6.2 kg

Ordering information

Name	Description
------	-------------

MES5448	MES5448 Ethernet switch, 1 port of 10/100/1000BASE-T (OOB), 48 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), 4 ports of 40GBASE-SR4/LR4, 1 USB port, L3
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Related products

PM350-220/12	Power module PM350-220/12, 176-264 V AC, 350 W
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PM350-48/12	Power module PM350-48/12, 36-72 V DC, 350 W
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Related software

EMS-MES5448	EMS-MES5448 option for the Eltex.EMS system of monitoring and management of the Eltex network elements: 1 network element — MES5448 aggregation switch
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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- High performance (up to 6.4 Tbps)
- Non-blocking architecture
- L3 switches
- Stacking up to 3 devices
- Power supply redundancy
- Front-to-Back cooling
- Dual ventilation system



MES5500-32 switches are high performance devices with 40GBASE-R and 100GBASE-R interfaces that can be used as aggregation switches in carrier networks and as Top-of-Rack or End-of-Row switches for data centers.

The devices ports support operation at rates of 10 Gbps (SFP+), 40 Gbps (QSFP+) and 100 Gbps (QSFP28).

The non-blocking architecture guarantees lossless packet forwarding at wire speed with minimum and predictable delays for all types of traffic.

The front-to-back cooling provides effective cooldown in modern data centers.

The redundant and hot-swappable fans and AC/DC power supplies along with advanced hardware monitoring functions provide high reliability and uninterrupted services.

The devices support EVPN/VXLAN technology to create networks with simple, high-performance and scalable data center architecture.

Technical features

Interfaces	
10/100/1000BASE-T (OOB)	1
10GBASE-R (SFP+)	2
40GBASE-R (QSFP+)/100GBASE-R (QSFP28)	32
USB 2.0	1
Console port RS-232 (RJ-45)	1
Performance	
Bandwidth	6.4 Tbps
Throughput for 64 bytes ¹	1995 MPPS
Buffer memory	24 MB
RAM (DDR4)	8 GB
ROM (embedded uSSD)	8 GB
MAC table	131072
ARP table	65527 ²
VLAN table	4094
L2 Multicast group	4090
SQInQ rules	1320 (ingress), 1320 (egress)
MAC ACL	4081

¹Values are given for one-way transmission.

²For each host in the ARP table, an entry is created in the switching table. The number of the ARP entries with installed EVPN license is 63479.

Technical features (continued)

Performance	
IPv4/IPv6 ACL routes	4081/2040
L3 IPv4 Unicast routes	292000
L3 IPv6 Unicast routes	73000
L3 IPv4 Multicast routes	146000
L3 IPv6 Multicast routes	36500
VRRP routers	255
Maximum size of ECMP groups	64
VRF	251 (including default VRF)
L3 interfaces	2050
Maximum number of VXLAN	4093
Link Aggregation Groups (LAG)	128, up to 8 ports per LAG
Quality of Service (QoS)	8 egress queues per port
Jumbo frames size	10240 bytes
Stacking	up to 3 devices

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Port Mirroring
- Stacking

MAC table features

- Independent learning mode in each VLAN
- MAC Multicast Support
- Configurable MAC address aging time
- Static MAC Entries
- MAC Flapping logging

VLAN features

- Voice VLAN
- IEEE 802.1Q
- Q-in-Q
- Selective Q-in-Q
- GVRP

L2 Multicast functions

- Multicast profiles
- Static Multicast groups
- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- PIM Snooping
- IGMP authorization via RADIUS
- MLD Snooping v1,2
- IGMP Querier

L2 functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE 802.1s)
- Spanning Tree Fast Link option
- STP Root Guard
- BPDU Filtering
- STP BPDU Guard
- Looback Detection (LBD)
- ERPS (G.8032v2)
- PVSTP+
- RPVSTP+

L3 functions

- Static routing
 - Dynamic routing protocols RIP, OSPFv2, OSPFv3, BGP¹, IS-IS
 - Address Resolution Protocol (ARP)
 - VRRP
 - PIM SM, PIM DM, IGMP Proxy, MSDP
 - BFD
 - IP Unnumbered
 - VRF lite
- EVPN/VXLAN³**
- Support for L2VPN services
 - Support for L3VPN services

¹BGP support is provided under license.

Features and capabilities (continued)

Link Aggregation functions

- Link Aggregation Groups (LAG)
- LACP
- LAG Balancing Algorithm
- Multi-Switch Link Aggregation Group (MLAG)

IPv6 support

- IPv6 Host
- Dual-stack IPv6/IPv4

Service functions

- Optical transceiver diagnostics

Security functions

- DHCP Snooping
- DHCP Option 82
- IP Source Guard
- Dynamic ARP Inspection
- sFlow
- MAC-based authentication, MAC address limitation, static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN
- DoS attack prevention
- Traffic segmentation
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - DSCP
 - Protocol type
 - TCP/UDP port number

Management functions

- Configuration and firmware download and upload via TFTP/SCP
- SNMP
- Command Line Interface (CLI)
- Web interface
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute
- LLDP (IEEE 802.1ab)

- Access control – privilege levels
- Management ACL
- Management interface blocking
- Local authentication
- IP addresses filtering for SNMP
- RADIUS/TACACS+ (Terminal Access Controller Access Control System) client
- SSH server
- Telnet server
- SSL
- Macrocommands
- CLI command logging
- System log
- DHCP auto provisioning
- DHCP Relay (Option 82)
- DHCP Option 12
- DHCP server
- Debugging commands
- CPU traffic limiting mechanisms
- Password encryption
- Password recovery
- Ping (IPv4/IPv6)

Monitoring functions

- Interface statistics
- Remote monitoring RMON/SMON
- Task- and traffic type-based CPU utilization monitoring
- Temperature monitoring
- TCAM monitoring
- IPFIX

Quality of Service (QoS) and rate limiting

- QoS statistics
- Shaping, Policing
- IEEE 802.1p Class of Service (CoS)
- Broadcast Storm Control
- Bandwidth management
- Strict Priority/Weighted Round Robin (WRR) scheduling algorithms
- Three marking colors
- ACL-based CoS/DSCP assignment
- ACL-based VLAN assignment
- Setting the IEEE 802.1p priority for management VLAN
- DSCP to CoS, CoS to DSCP remarking
- 802.1p DSCP mark assignment for IGMP

¹ EVPN technology is provided under license.

Features and capabilities (continued)

OAM

- 802.3ah Ethernet Link OAM
- 802.3ah Unidirectional Link Detection

MIB

- RFC 1065, 1066, 1155, 1156, 2578 MIB Structure
- RFC 1212 Concise MIB Definitions
- RFC 1213 MIB II
- RFC 1215 MIB Traps Convention
- RFC 1493, 4188 Bridge MIB
- RFC 1157, 2571-2576 SNMP MIB
- RFC 1901-1908, 3418, 3636, 1442, 2578 SNMPv2 MIB
- RFC 271, 1757, 2819 RMON MIB
- RFC 2465 IPv6 MIB
- RFC 2466 ICMPv6 MIB
- RFC 2737 Entity MIB
- RFC 4293 IPv6 SNMP Mgmt Interface MIB
- Private MIB
- RFC 3289 DIFFSERV MIB
- RFC 2021 RMONv2 MIB
- RFC 1398, 1643, 1650, 2358, 2665, 3635 Ether-like MIB
- RFC 2668 IEEE 802.3 MAU MIB
- RFC 2674, 4363 IEEE 802.1p MIB

- RFC 2233, 2863 IF MIB
- RFC 2618 RADIUS Authentication Client MIB
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP
- RFC 3298 MIB for Diffserv
- RFC 2620 RADIUS Accounting Client MIB
- RFC 2925 Ping & Traceroute MIB
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMPv4
- RFC 2463, 4443 ICMPv6
- RFC 4884 Extended ICMP to support Multi-Part messages
- RFC 793 TCP
- RFC 2474, 3260 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 headers
- RFC 1321, 2284, 2865, 3580, 3748 Extensible Authentication Protocol (EAP)
- RFC 2571-2574 SNMP
- RFC 826 ARP

Physical parameters

Physical specifications and environmental parameters	
Power supply	100–240 V AC, 50–60 Hz Power supply options: <ul style="list-style-type: none">• one AC power source;• two AC hot-swappable power sources
Input current	4–1.67 A for AC 8–6.67 A for DC
Maximum power consumption	400 W
Heat dissipation	400 W
Dying Gasp support	no
Operating temperature	from 0 to +45 °C
Storage temperature	from -50 to +70 °C
Operating humidity	no more than 80 %
Cooling	Front-to-Back, 5 dual fans
Dimensions (W × H × D)	440 × 44 × 534 mm
Weight	11.8 kg

Ordering information

Name	Description
MES5500-32	Ethernet switch MES5500-32, 1 × 10/100/1000BASE-T (OOB), 32 × 40GBASE-R (QSFP+)/100GBASE-R (QSFP28), 2 × 10GBASE-R (SFP+), 1 × USB, L3
Related products	
PM600-220/12	PM600-220/12 power module, 220 V AC, 600 W
Related software	
ECCM-MES5500-32	ECCM-MES5500-32 option of Eltex ECCM management system for ELTEX network elements management and monitoring: 1 network element MES5500-32

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.

- Bandwidth – 2.15 Tbps
- Non-blocking architecture
- L3 switch
- Stacking up to 8 devices
- 48 ports of 10G + ports of 100G
- MAC table capacity – 294K
- Hot-swappable redundant power supplies
- Hot-swappable fans
- Front-to-Back cooling
- CE conformity



MES7048 switches are high performance devices with 10GBASE-R and 100GBASE-SR4/LR4 interfaces that can be used as aggregation or transport switches in carrier networks and as Top-of-Rack or End-of-Row switches for data centers.

The device's ports support operation at rates of 1 Gbps (SFP), 10 Gbps (SFP+) and 100 Gbps (QSFP28), that provides usage flexibility and ability of gradual transition to higher data rates.

The non-blocking architecture guarantees lossless packet forwarding at wire speed with minimum and predictable delays for all types of traffic. The front-to-back cooling provides effective cooldown in modern data centers.

The redundant and hot-swappable fans and AC/DC power supplies along with advanced hardware monitoring functions provide high reliability and uninterrupted services.

Technical features

Interfaces	
10GBASE-R (SFP+)/1000BASE-X (SFP)	48
100GBASE-SR4/LR4(QSFP28)	6
10/100/1000BASE-T (OOB)	1
USB	1
Console port	RS-232 (RJ-45)
Performance	
Bandwidth	2.15 Tbps
Throughput for 64 bytes ¹	1449 MPPS
Buffer memory	16 MB
RAM (DDR3)	4 GB
ROM (NAND)	8 GB
MAC table	294912
ARP table	6144
VLAN table	4094
L2 Multicast groups	2048
802.1ad rules (QinQ)	4090

¹The value is given for one-way transmission

Technical features (continuation)

ACL rules	12276 ingress, 1023 egress
IPv4 routes ¹	16381 ²
IPv6 routes ¹	8192 ²
VRPP routers	20
ECMP-groups	512
L3 interfaces	256
Link Aggregation Groups (LAG)	64, 32 ports per LAG
Loopback interfaces	64
Quality of Service (QoS)	7 egress queues per port
Jumbo frames size	9394 bytes
Stacking	up to 8 devices

Features and capabilities

Interface features

- Head-of-line blocking (HOL) protection
- Back Pressure
- Auto MDI/MDIX
- Jumbo Frames
- Flow Control (IEEE 802.3X)
- Protected ports
- Link Aggregation Groups (LAG)
- LACP
- Different LAG balancing algorithms

MAC table features

- MAC Multicast Support
- Static MAC filtering
- Port/VLAN MAC locking

VLAN features

- IEEE 802.1Q
- GVRP
- MAC/IP-based VLAN
- Different VLAN port operating modes
- Voice VLAN
- Independent VLAN learning
- Private VLAN
- Layer 2 Protocol Tunneling

L2 Multicast features

- IGMP Snooping v1,2,3
- Port/host-based IGMP Snooping Fast Leave
- MLD Snooping v1,2
- MGMD Snooping SSM
- IGMP and MLD Snooping Querier
- MVR
- GMRP

L3 functions

- Static routing
- Inter VLAN routing
- Dynamic routing protocols RIP, OSPFv2, OSPFv3, BGP
- Address Resolution Protocol (ARP)
- Proxy ARP
- VRF
- Policy-Based Routing
- BFD
- VRRP
- ECMP Load Balancing
- UDP Relay/IP Helper
- ICMP Throttling
- Loopback interfaces
- IPv6 Host
- IPv6 DHCP Client (Stateful/Stateless)
- DHCPv6 Server
- IPv4 and IPv6 Dual Stack
- ICMPv6 Throttling

Ring topology security functions

- STP (Spanning Tree Protocol, IEEE 802.1d)
- RSTP (Rapid Spanning Tree Protocol, IEEE 802.1w)
- MSTP (Multiple Spanning Tree Protocol, IEEE802.1s)
- PVSTP+ (Per VLAN Spanning Tree Protocol Plus)
- RPVSTP+ (Rapid Per VLAN Spanning Tree Protocol Plus)
- Spanning Tree Fast Link option
- STP Root Guard
- STP Loop Guard
- BPDU Filtering
- STP BPDU Guard
- Loopback Detection (LBD)

¹IPv4/IPv6 routes share hardware resources

²The number of routes can be increased up to 256K for IPv4 and up to 128K for IPv6

Features and capabilities (continuation)

Security functions

- DHCP snooping (IPv4 and IPv6)
- IP source guard (IPv4 and IPv6)
- Dynamic ARP Inspection
- IPv6 RA Guard (Stateless)
- MAC-based authentication, Port Security, Static MAC entries
- Port-based authentication IEEE 802.1x
- Guest VLAN IEEE 802.1x
- DoS attack prevention
- Traffic segmentation
- Protection against non-authorized DHCP servers
- DHCP clients filtering
- BPDU attack prevention
- NetBIOS/NetBEUI filtering

Access Control Lists (ACL)

- L2-L3-L4 ACL
- Time-Based ACL
- IPv6 ACL
- ACL based on:
 - Source/destination MAC/IP/IPv6 address
 - Physical port number
 - IEEE 802.1p
 - VLAN ID
 - EtherType
 - TOS/DSCP/Preference
 - Protocol type
 - TCP/UDP source/destination port
- ACL actions:
 - Egress queueing
 - Flow-based redirecting and mirroring
 - ACL-based fixed rate limiting
 - Generation of trap log entries containing rule hit count

Quality of service (QoS)

- QoS statistics
- Shaping, policing
- IEEE 802.1p Class of Service (CoS)
- Interface trust mode: IEEE 802.1p, IP DSCP
- IEEE 802.1p and IP DSCP-based traffic classification and mapping
- Storm control for various types of traffic (broadcast, multicast, unknown unicast)
- Interface bandwidth management
- Bandwidth management per queue
- Strict priority and weighted (WRR/WFQ) scheduling algorithms
- Tail Drop/Weighted Random Early Detection (WRED) queue depth management
- Class-based CoS/DHCP mark assignment
- Automatic VoIP Class of Service (CoS) settings

Management functions

- Configuration file download and upload via TFTP/SCP/FTP/SFTP and USB
- Firmware file download and upload via TFTP/SCP/FTP/SFTP and USB
- SNMP v1, v2, and v3
- Command Line Interface (CLI)
- SSH server
- Web interface

- NETCONF
- Syslog
- SNTP (Simple Network Time Protocol)
- Traceroute/Ping
- Authentication, Authorization and Accounting (AAA)
- Local authentication
- Command authorization
- RADIUS, TACACS+
- Management interface blocking
- SSL
- Macrocommands
- CLI command logging
- System log
- DHCP auto-provisioning
- Debugging commands
- CPU traffic limiting mechanism
- Command completion
- Context-sensitive help
- Password encryption
- Management access control lists

Monitoring functions

- Interface statistics
- Port mirroring (SPAN)
- Remote port mirroring (RSPAN)
- Remote monitoring (RMON/SMON)
- sFlow
- Task- and traffic type-based CPU utilization monitoring
- RAM utilization monitoring
- Temperature monitoring
- LLDP (802.1ab) + LLDP MED
- Virtual Cable Testing (VCT)
- Optical transceiver diagnostics

METRO

- Ethernet OAM
- IEEE 802.1ag Connectivity Fault Management (CFM)
- Unidirectional Link Detection (UDLD)
- Layer-2 Protocol Tunneling (L2PT)
- IEEE 802.1ad Double VLAN tagging (in compliance with TR-101)

Data Center Bridging (DCB)

- Quantized Congestion Notification (QCN)
- Enhanced Transmission Selection (ETS)
- Priority-Based Flow Control (PFC)
- Data Center Bridging Exchange Protocol (DCBX) – MLAG (Virtual Port Channel)
- FIP Snooping
- OpenFlow v1.0/v1.3.4
- Cut-through switching

Stacking

- Redundant Management Unit support
- Single IP address management
- Automatic election of management control unit
- Automatic software and configuration update throughout stack
- Hot-swap of stack units
- Offline configuration of stack units
- Stacking (up to 8 switches in a stack)

Features and capabilities (continuation)

MIB/IETF

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-T
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3ac VLAN tagging
- IEEE 802.3ad Link aggregation
- IEEE 802.3ae 10GbE
- IEEE 802.3 Forward Error Correction (FEC) CL91
- IEEE 802.1ak Multiple Registration Protocol (MRP)
- IEEE 802.1as Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks
- IEEE 802.1s Multiple Spanning Tree compatibility
- IEEE 802.1w Rapid Spanning Tree compatibility
- IEEE 802.1D Spanning Tree Compatibility
- IEEE 802.1Q Virtual LANs with Port-based VLANs
- IEEE 802.1ad Double VLAN tagging (TR-101)
- IEEE 802.1ag Connectivity Fault Management (CFM)
- IEEE 802.3ah Operations, Administration and Maintenance (OAM)
- IEEE 802.1Qat Multiple Stream Reservation Protocol (MSRP)
- IEEE 802.1Qav Forwarding and Queuing Enhancements for Time-Sensitive Streams
- IEEE 801.1Qbb Priority-based Flow Control
- IEEE 802.1Qau Virtual bridged local area networks amendment 13: congestion notification (Draft 2.4)
- IEEE 802.1Qaz Enhanced transmission election for bandwidth sharing between traffic classes (Draft 2.4)
- IEEE 802.1v Protocol-based VLANs
- IEEE 802.1p Ethernet priority with user provisioning and mapping
- IEEE 802.1X Port-based authentication and supplicant support
- IEEE 802.3x Flow control
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- ANSI/TIA-1057 LLDP-Media Endpoint Discovery (MED)
- RFC 768 UDP
- RFC 783 TFTP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 Ethernet ARP
- RFC 894 Transmissions of IP datagrams over Ethernet networks
- RFC 896 Congestion control in IP/TCP networks
- RFC 951 BootP
- RFC 1034 Domain names - concepts and facilities
- RFC 1035 Domain names - implementation and specification
- RFC 1321 Message digest algorithm
- RFC 1534 Interoperation between BootP and DHCP
- RFC 2021 Remote Network Monitoring Management Information base v2
- RFC 2030 Simple Network Time Protocol (SNTP) v4 for IPv4, IPv6, and OSI
- RFC 2131 DHCP Client/Server
- RFC 2132 DHCP options and BootP vendor extension
- RFC 2347 TFTP option extension
- RFC 2348 TFTP block size option
- RFC 2819 Remote Network Monitoring Management Information Base
- RFC 2865 RADIUS client
- RFC 2866 RADIUS accounting
- RFC 2868 RADIUS attributes for tunnel protocol support

- RFC 2869 RADIUS Extensions
- RFC 3162 RADIUS and IPv6
- RFC 3164 The BSD syslog protocol
- RFC 3580 IEEE 802.1X RADIUS usage guidelines
- RFC 4541 IGMP Snooping and MLD Snooping
- RFC 5171 Unidirectional Link Detection (UDLD) Protocol
- RFC 5176 Dynamic Authorization Server
- RFC 5424 The Syslog Protocol
- RFC 1027 Using ARP to implement transparent subnet gateways (Proxy ARP)
- RFC 1256 ICMP router discovery messages
- RFC 1765 OSPF database overflow
- RFC 1812 Requirements for IP version 4 routers
- RFC 1997 BGP Communities Attribute
- RFC 2082 RIP-2 MD5 authentication
- RFC 2131 DHCP relay
- RFC 2328 OSPFv2
- RFC 2370 OSPF Opaque LSA Option
- RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2453 RIP v2
- RFC 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC 2918 Route refresh capability for BGP-4
- RFC 3021 Using 31-Bit Prefixes on IPv4 Point-to-Point Links
- RFC 3046 DHCP/BootP relay
- RFC 3101 The OSPF “not so stubby area” (NSSA) option
- RFC 3137 OSPF stub router advertisement
- RFC 3623 Graceful OSPF restart
- RFC 3704 Unicast Reverse Path Forwarding (uRPF)
- RFC 3768 Virtual Router Redundancy Protocol (VRRP) version 2
- RFC 5187 OSPFv3 Graceful Restart
- RFC 5340 OSPF for IPv6
- RFC 5549 Advertising IPv4 Network Layer Reachability Information with an IPv6 Next Hop
- RFC 5798 Virtual Router Redundancy Protocol (VRRP) version 3
- RFC 5880 Bidirectional Forwarding Detection
- RFC 5881 BFD for IPv4 and IPv6 (Single Hop)
- RFC 6860 Hiding Transit-Only Networks in OSPF
- RFC 1981 Path MTU for IPv6
- RFC 2460 IPv6 Protocol Specification
- RFC 2464 IPv6 over Ethernet
- RFC 2711 IPv6 Router Alert
- RFC 3056 Connection of IPv6 Domains via IPv4 Clouds
- RFC 3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6)
- RFC 3484 Default Address Selection for IPv6
- RFC 3493 Basic Socket Interface for IPv6
- RFC 3513 Addressing Architecture for IPv6
- RFC 3542 Advanced Sockets API for IPv6
- RFC 3587 IPv6 Global Unicast Address Format
- RFC 3633 IPv6 Prefix Options for Dynamic Host Configuration Protocol (DHCP) version 6
- RFC 3736 Stateless DHCPv6
- RFC 4213 Basic Transition Mechanisms for IPv6
- RFC 4291 Addressing Architecture for IPv6
- RFC 4443 ICMPv6
- RFC 4861 Neighbor Discovery
- RFC 4862 Stateless Autoconfiguration
- RFC 6164 Using 127-bit IPv6 Prefixes on Inter-router Links
- RFC 6583 Operational Neighbor Discovery Problems

Features and capabilities (continuation)

- RFC 854 Telnet
- RFC 855 Telnet Option Specifications
- RFC 1155 SMI v1
- RFC 1157 SNMP
- RFC 1212 Concise MIB definitions
- RFC 1867 HTML/2.0 forms with file upload extensions
- RFC 1901 Community-based SNMP v2
- RFC 1908 Coexistence between SNMP v1 and SNMP v2
- RFC 2068 HTTP/1.1 protocol as updated by draft-ietf-http-v11-spec-rev-03
- RFC 2271 SNMP Framework MIB
- RFC 2295 Transparent Content Negotiation
- RFC 2296 Remote Variant Selection; RSVA/1.0 State Management “Cookies” – draft-ietf-http-state-mgmt-05
- RFC 2576 Coexistence between SNMP v1, v2, and v3
- RFC 2578 SMI v2
- RFC 2579 Textual Conventions for SMI v2
- RFC 2580 Conformance statements for SMI v2
- RFC 2616 HTTP/1.1
- RFC 3410 Introduction and Applicability Statements for Internet Standard Management Framework
- RFC 3411 An Architecture for Describing SNMP Management Frameworks
- RFC 3412 Message Processing and Dispatching for SNMP
- RFC 3413 SNMP v3 Applications
- RFC 3414 User-Based Security Model for SNMP v3
- RFC 3415 View-Based Access Control Model for SNMP
- RFC 3416 Version 2 of the Protocol Operations for SNMP
- RFC 3417 Transport Mappings for SNMP
- RFC 3418 Management Information Base for SNMP
- RFC 6020 A Data Modeling Language for NETCONF
- RFC 6022 YANG Module for NETCONF Monitoring
- RFC 6242 Using the NETCONF Protocol over Secure Shell (SSH)
- RFC 6415 Web Host Metadata
- RFC 6536 NETCONF Access Control Model
- RFC 7223 YANG Data Model for Interface Management
- RFC 7277 YANG Data Model for IP Management
- RFC 7317 YANG Data Model for System Management
- RFC 2246: The TLS Protocol, version 1.0
- RFC 2818: HTTP over TLS
- RFC 3268: AES Cipher Suites for Transport Layer Security SSH 1.5 and 2.0
- RFC 4251: SSH Protocol Architecture
- RFC 4252: SSH Authentication Protocol
- RFC 4253: SSH Transport Layer Protocol
- RFC 4254: SSH Connection Protocol
- RFC 4716: SECSH Public Key File Format
- RFC 4419: Diffie-Hellman Group Exchange For The SSH Transport Layer Protocol
- RFC 1858 Security Considerations for IP Fragment Filtering
- RFC 2474 Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 headers
- RFC 2475 An architecture for differentiated services
- RFC 2597 Assured forwarding Per Hop Behavior (PHB) group
- RFC 2697 Single-Rate Policing
- RFC 3246 An expedited forwarding PHB
- RFC 3260 New terminology and clarifications for DiffServ
- RFC 1997 BGP Communities Attribute
- RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2545 BGP-4 multiprotocol extensions for IPv6 inter-domain routing
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 4271 A Border Gateway Protocol 4 (BGP-4)
- RFC 4360 BGP Extended Communities Attribute
- RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
- RFC 4486 Subcodes for BGP Cease Notification Message
- RFC 4724 Graceful Restart
- RFC 4760 Multiprotocol Extensions for BGP-4
- RFC 5492 Capabilities Advertisement with BGP-4
- RFC 6793 BGP Support for Four-Octet Autonomous System (AS) Number Space
- RFC 7047 Open vSwitch Database Management Protocol
- ANSI/INCITS Fibre Channel backbone-5 (FC-BB-5) Rev 2.0.0 - FIP Snooping bridge
- OpenFlow Switch Specification, Version 1.0.0 (Wire Protocol 0x01) и Version 1.3.4

Physical specifications

Physical and environmental parameters

Max. power consumption	180 W
Power supply	176-264 V AC, 50 Hz 36-72 V DC Power supply options: • 1 AC/DC power supply • 2 hot-swappable AC/DC power supplies
Input current	1.1-0.8 A
Operating temperature	from 0 to +45 °C
Storage temperature	from -40 to +70 °C
Operating humidity	80%
Cooling	Front-to-Back, 4 fans
Implementation	19", 1U
Dimensions (WxHxD)	440x44x447 mm
Weight	6.35 kg

Ordering information

Name	Description
MES7048	MES7048 Ethernet-switch, 1 port of 10/100/1000BASE-T (OOB), 48 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), 6 ports of 100GBASE-SR4/LR4 (QSFP28), 1 USB port, L3

Related products

PM350-220/12	Power module PM350-220/12, 176-264 V AC, 350 W
PM350-48/12	Power module PM350-48/12, 36-72 V DC, 350 W

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About ELTEX

ELTEX Enterprise is a leading Russian developer and manufacturer of communication equipment with 30 years of history. Complete solutions and their seamless integrability into the Customer's infrastructure are the priority growth areas of the company.