

- High performance (up to 3.6 Tbps)
- Non-blocking architecture
- L3 switches
- Stacking up to 8 devices<sup>1</sup>
- 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 <sup>2</sup>
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

<sup>1</sup> Implementation is planned for 1Q24.

<sup>2</sup> 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 <sup>1</sup>	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<sup>1</sup>

### 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
- Loopback Detection (LBD)
- ERPS (G.8032v2)
- PVSTP+
- RPVSTP+

### L3 functions

- Static routing
- Dynamic routing protocols RIP, OSPFv2, OSPFv3, BGP<sup>2</sup>, IS-IS
- Address Resolution Protocol (ARP)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MSDP
- BFD
- IP Unnumbered
- VRF lite

### EVPN/VXLAN<sup>3</sup>

- Support for L2VPN services
- Support for L3VPN services

<sup>1</sup> Implementation is planned for 1Q24.

<sup>2</sup> BGP support is provided under license.

<sup>3</sup> EVPN 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: • 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
<b>MES5410-48</b>	Ethernet switch MES5410-48, 1 × 10/100/1000BASE-T (OOB), 48 × 1000BASE-X (SFP)/10GBASE-R (SFP+)/25GBASE-R (SFP28), 6 × 40GBASE-R (QSFP+)/10GBASE-R (QSFP28), 1 × USB 2.0, L3
Related software	
<b>ECCM-MES5410-48</b>	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



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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.