– **High performance (up to 3.6 Tbps)**
– **Non-blocking architecture**
– **L3 switches**
– **Stacking up to 8 devices**
– **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). In the HG interface splitting mode, operation at speeds of 1 Gbit/s, 10 Gbit/s, 25 Gbit/s is supported. The splitting mode allows splitting up to 6 HG interfaces, which in total gives 24 TWE interfaces.

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-R4 (QSFP+)/100GBASE-R4 (QSFP28)	6
USB 2.0	1
Console port RS-232 (RJ-45)	1
Performance	
Bandwidth	3.6 Tbps
Throughput for 64 bytes[1]	2467 MPPS
Buffer memory	24 MB
RAM (DDR4)	8 GB
ROM (embedded uSSD)	8 GB
MAC table	131072[2]/262144[3]
ARP entries[4]	65527[2]/98304[3]
VLAN table	4094
L2 Multicast groups	4088
SQinQ rules	1320 (ingress), 1320 (egress)

[1] Values are given for one-way transmission.
[2] Maximum value for mid-l3-mid-l2 system resource allocation mode.
[3] Maximum value for min-l3-max-l2 system resource allocation mode.
[4] For 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 is 63479 for mid-l3-mid-l2 mode and 96247 for min-l3-max-l2 mode.

Technical features (continued)

Performance	
MAC ACL rules	4577
IPv4/IPv6 ACL rules	4577/2288
L3 IPv4 Unicast routes[1]	292000[2]/16000[3]
L3 IPv6 Unicast routes[1]	73000[2]/4000[3]
L3 IPv4 Multicast routes[1]	146000[2]/8000[3]
L3 IPv6 Multicast routes[1]	36500[2]/2000[3]
VRRP routers	127
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 per 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 per VLAN
– MAC Multicast Support
– Configurable aging time of MAC addresses
– 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)
– Flex-link
– PVSTP+
– RPVSTP+

L3 functions
– Static routing
– Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS, BGP[4] (IPv4 Unicast, IPv4 Multicast)

[1] IPv4/IPv6 Unicast/Multicast routes share hardware resources.
[2] Maximum value for mid-l3-mid-l2 system resource allocation mode.
[3] Maximum value for min-l3-max-l2 system resource allocation mode.
[4] BGP protocol support is provided under the license.

Features and capabilities (continued)

– Address Resolution Protocol (ARP)
– VRRP
– Multicast dynamic routing protocols PIM SM, PIM DM, IGMP Proxy, MSDP
– BFD
– IP Unnumbered
– VRF lite

EVPN/VXLAN[1]

– Support for L2VPN services
– Support for L3VPN services

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 (Access Control List)
– 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 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 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 autoprovision
– DHCP Relay (Option 82)
– DHCP Option 12
– DHCP server
– Debugging commands
– Rate limit of traffic to CPU
– 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

[1] EVPN technology support is provided under the license.

Features and capabilities (continued)

– 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

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
– IEC 61850

Physical parameters

Physical features and ambient parameters	
Power supply	AC: 100–240 V, 50–60 Hz DC: 36–72 V Power supply options: • one AC/DC power supply • two AC/DC hot-swappable power supplies
Input current	3–1.25 A for AC 8.33–4.17 A for DC
Maximum power consumption	360 W
Heat dissipation	no more than 360 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 × 10GBASE-R (SFP+)/25GBASE-R (SFP28), 6 × 40GBASE-R4 (QSFP+)/100GBASE-R4 (QSFP28), 1 × USB 2.0, L3
Related products	
PM600-220/12	PM600-220/12 power module, 220 V AC, 600 W
PM600-48/12	PM600-48/12 power module, 36–72 V DC, 600 W
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.