

- 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 devices' 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 
<b>Interfaces</b>				
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		
<b>Performance</b>				
Bandwidth	240 Gbps	320 Gbps	480 Gbps	640 Gbps
Throughput for 64 bytes <sup>1</sup>	178 MPPS	238 MPPS	238 MPPS	238 MPPS
Buffer memory	2 MB	3 MB	3 MB	3 MB
RAM (DDR3)		1 Gb <sup>2</sup>		
ROM (NAND Flash)		1 GB		
MAC table		32768		

<sup>1</sup> Values are given for one way transmission.

<sup>2</sup> 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 <sup>1</sup>	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 <sup>2</sup>	16286			
L3 IPv6 Unicast routes <sup>2</sup>	4070			
L3 IPv4 Multicast (IGMP Proxy, PIM) routes <sup>2</sup>	8143			
L3 IPv6 Multicast (IGMP Proxy, PIM) routes <sup>2</sup>	2033			
VRRP routers	127			
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

<sup>1</sup>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 for MES5312, MES5316A, MES5324A, MES5332A is 6135.

<sup>2</sup>IPv4/IPv6 Unicast/Multicast routes share hardware resources.

## Features and capabilities (continued)

- Loopback Detection (LBD)
- 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), BGP<sup>1</sup> (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/VXLAN<sup>2</sup>

- 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

<sup>1</sup> BGP protocol support is provided under license.

<sup>2</sup> 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
- IEC 61850

### Physical parameters

	MES5312	MES5316A	MES5324A	MES5332A
<b>Physical parameters and environmental features</b>				
Power supply	AC: 100–240 V, 50–60 Hz; DC: 36–72 V Power supply options: • 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
<b>MES5312</b>	MES5312 Ethernet switch, 1×10/100/1000BASE-T (OOB), 12×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
<b>MES5316A</b>	MES5316A Ethernet switch, 1×10/100/1000BASE-T (OOB), 16×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
<b>MES5324A</b>	MES5324A Ethernet switch, 1×10/100/1000BASE-T (OOB), 24×10GBASE-R (SFP+)/1000BASE-X (SFP), L3
<b>MES5332A</b>	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



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