

- **Throughput capacity 176 Gbps**
- **Non-blocking switching fabric**
- **4 × 10G ports in base configuration**
- **L3 functions**
- **Stacking up to 8 devices**
- **Hot-swappable redundant power supplies**
- **Dual ventilation system**
- **Front-to-Back cooling**



MES3348



MES3348F

MES3348(F) switches can be used as aggregation or transport switches in service provider networks and as Top-of-Rack switches for data centers. They ensure high performance due to the interfaces operating at speed of 10 or 1 Gbps.

The MES3348(F) 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.

Ethernet Ring Protection Switching (ERPS) protocol provides fast convergence (less than 200 ms) of the network, that guarantees uninterrupted service.

The switches comply with CE requirements.

### Technical features

	MES3348	MES3348F
<b>Interfaces</b>		
10/100/1000BASE-T (RJ-45)	48	—
1000BASE-X/100BASE-FX (SFP)	—	48
10GBASE-R/1000BASE-X (SFP+/SFP)		4
Console port RS-232 (RJ-45)		1
<b>Performance</b>		
Bandwidth		176 Gbps
Throughput for 64 bytes <sup>1</sup>		130.9 MPPS
Buffer memory		3 MB
RAM (DDR3)		512 MB
ROM (RAW NAND)		512 MB
MAC table		16384
ARP table <sup>2</sup>		4023
VLAN table		4094
L2 Multicast groups		4091
Number of SQinQ		3006 (ingress/egress)
Number of ACL rules		3006
L3 IPv4 Unicast routes <sup>3</sup>		12864
L3 IPv6 Unicast routes <sup>3</sup>		3222
L3 IPv4 Multicast routes (IGMP Proxy, PIM) <sup>3</sup>		3876
L3 IPv6 Multicast routes (IGMP Proxy, PIM) <sup>3</sup>		1006
VRRP routers		255
Maximum size of ECMP groups		8
VRF		16 (including default VRF)

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

<sup>2</sup> For each host in the ARP table, an entry is created in the routing table.

<sup>3</sup> IPv4/IPv6 Unicast/Multicast routes share hardware resources.

## Technical features (continued)

	MES3348	MES3348F
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 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)

### 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 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

- 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, IPv6 Unicast)
- BFD (for BGP, OSPF)
- Address Resolution Protocol (ARP)
- Proxy ARP
- Policy-based routing (IPv4)
- VRRP
- PIM SM, PIM DM, IGMP Proxy, MDSP
- IP Unnumbered
- ECMP Load Balancing
- 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

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

## Features and capabilities (continued)

### 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
- 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/CFM

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

### Management functions

- Download and upload of configuration file via TFTP/SCP/SFTP/FTP
- 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) client
- NTP (Network Time Protocol) client, NTP server, NTP peer
- 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)

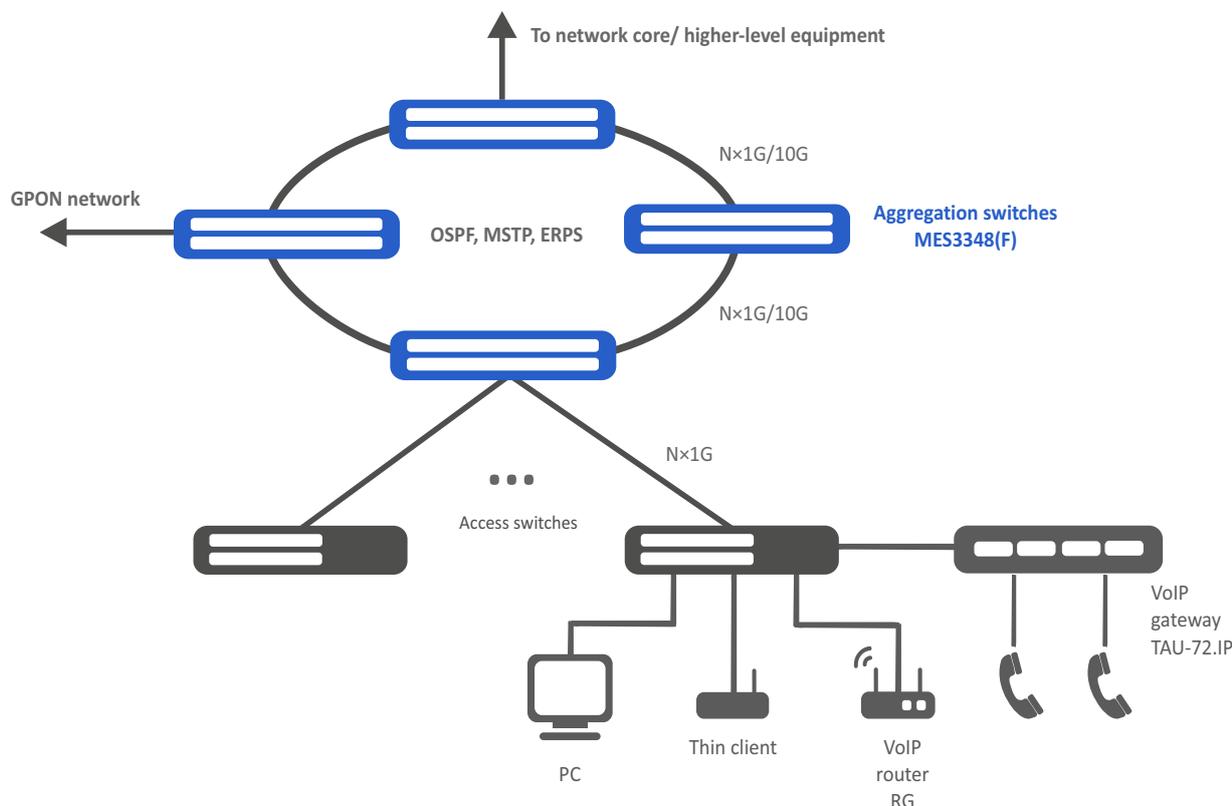
### Monitoring functions

- Statistics on interfaces
- RMON
- IP SLA
- CPU utilization monitoring per task and per traffic type
- Temperature monitoring
- TCAM utilization monitoring
- RAM utilization 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 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, 2572, 2573, 2574 SNMP
- RFC 826 ARP
- RFC 854 Telnet
- IEC 61850

## Use case



## Physical specifications

	MES3348	MES3348F
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	0.45–0.19 A for AC 1.25–0.62 A for DC	0.89–0.37 A for AC 2.47–1.24 A for DC
Maximum power consumption	45 W	89 W
Heat dissipation	43 W	89 W
Hardware support for Dying Gasp	no	no
Operating temperature	from -10 to +45 °C	
Storage temperature	from -50 to +70 °C	
Operating humidity	no more than 80% (without condensation)	
Cooling	Front-to-Back, 2 fans	Front-to-Back, 4 fans
Form factor	19", 1U	
Dimensions (W × H × D)	440 × 44 × 316 mm	440 × 44 × 330 mm
Weight	3.95 kg	4 kg

## Ordering information

Name	Description
MES3348	MES3348 Ethernet switch, 48 × 10/100/1000BASE-T (RJ-45), 4 × 10GBASE-R/1000BASE-X (SFP+/SFP), L3
MES3348F	MES3348F 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
PM65-220/12	PM65-220/12 power module, 100–240 V AC, 65 W (only for MES3348)

### Related software

ECCM-MES3348	ECCM-MES3348 option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3348
ECCM-MES3348F	ECCM-MES3348F option of Eltex ECCM control system to manage and monitor Eltex network elements: 1 network element MES3348F

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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.