ELTEX
Integrated Networking Solutions

– **Bandwidth up to 128 Gbps**
– **Non-blocking switching fabric**
– **4 x 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
Common parameters				
Packet processor		Marvell 98DX3336-A1 (PonCat3)		
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	
Throughput for 64 bytes[1]	71 MPPS		95 MPPS	
Buffer memory		1.5 MB		
RAM (DDR3)		512 MB		
ROM (RAW NAND)		512 MB		
MAC table		16K		
VLAN table		4094		
L2 Multicast groups		4K		
ARP table[2]		4 023		
Link Aggregation Groups (LAG)		48, up to 8 ports per LAG		
Maximum size of ECMP groups		8		
Quality of Service (QoS)		8 egress queues per port		
Number of ACL rules		3 006		
L3 IPv4 Unicast[3]		12 866		
L3 IPv6 Unicast[3]		3 222		

[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 (continuation)

	MES3308F	MES3316F	MES3324F	MES3324
L3 IPv4 Multicast (IGMP Proxy, PIM)[1]		4 024		
L3 IPv6 Multicast (IGMP Proxy, PIM)[1]		1 006		
Jumbo frames size		10 240 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
– 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
– Private VLAN Trunk
– Layer 2 Protocol Tunneling (L2PT)

L3 functions
– Static IP routes
– Dynamic routing protocols RIPv2, OSPFv2, OSPFv3, IS-IS, BGP[2]
– BFD
– Address Resolution Protocol (ARP)
– Proxy ARP
– Policy-Based Routing (IPv4)
– VRRP
– PIM SM, PIM DM, IGMP Proxy, MSDP
– ECMP Load Balancing
– IP Unnumbered
– GRE

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

[1] *IPv4/IPv6 Unicast/Multicast routes share hardware resources*
[2] *BGP protocol support is provided under license*

Features and capabilities

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
– Dying Gasp
– 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

Main management functions
– Download and upload of configuration file via TFTP
– 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
– 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)
– PPPoE Circuit-ID tag
– Flash File System
– 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 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 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

Use Case
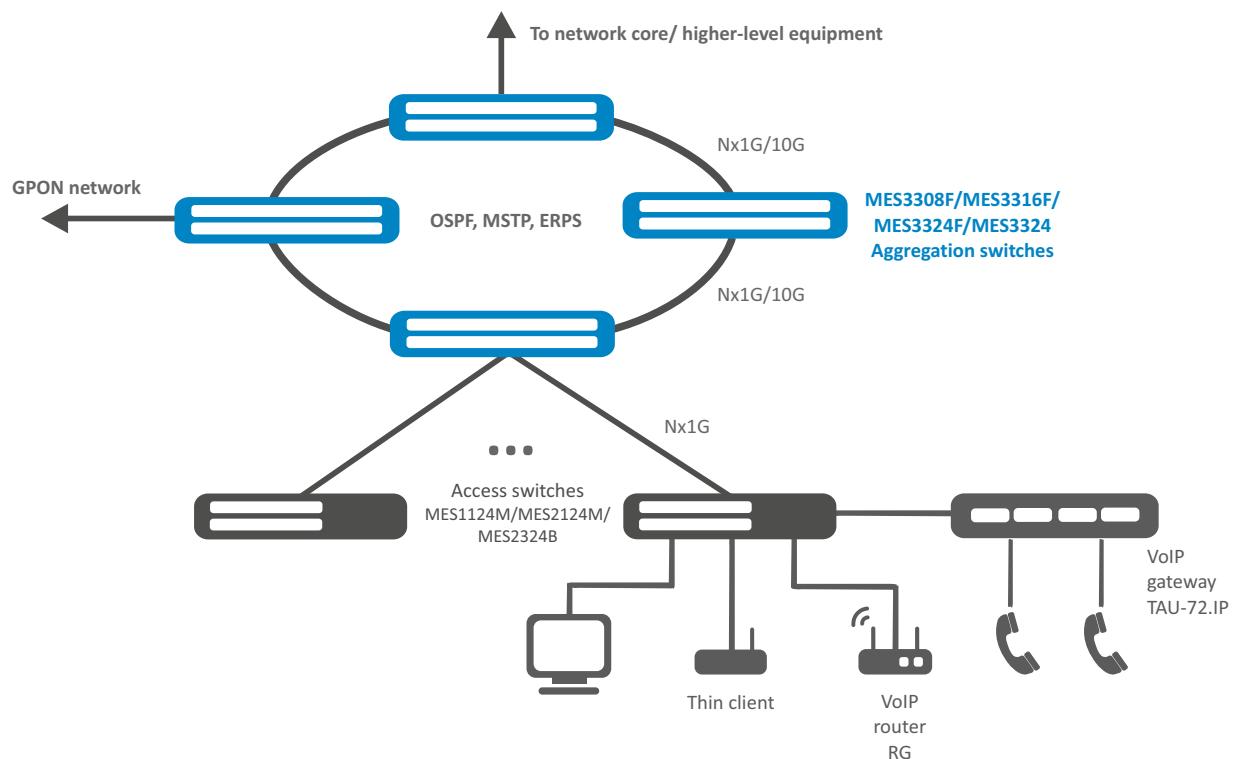
Physical parameters

	MES3308F	MES3316F	MES3324F	MES3324
Maximum power consumption	25 W	35 W	45 W	35 W
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
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 (WxHxD)	430x44x275 mm			
Weight	3.15 kg	3.25 kg	3.50 kg	3.25 kg

Ordering information
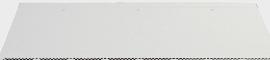
Name	Description	Image
MES3308F	MES3308F Ethernet switch, 1 port of 10/100/1000BASE-T (OOB), 4 ports of 1000BASE-X/100BASE-FX (SFP), 4 Combo ports of 10/100/1000BASE-T/1000BASE-X/100BASE-FX, 4 ports of 10GBASE-R (SFP+)/1000BASE-X (SFP), L3	
MES3316F	MES3316F Ethernet switch, 1 port of 10/100/1000BASE-T (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		
EMS-MES-3300	EMS-MES-3300 option of Eltex.EMS system for ELTEX network elements management and monitoring: 1 network element is an aggregation switch	