ELTEX
Integrated Networking Solutions

- **Reliable and high performance solution**
- **Wide support for MPLS switching mechanisms**
- **Redundant power modules**
- **XFP ports**

ME5100 rev.X routers are multifunctional devices with a high port density intended for use in provider networks as aggregation routers and IP/MPLS network edge routers.

ME5100 rev.X is a cost-effective, reliable and high-performance solution which can be used to organize operator's points of presence when providing data services for large customers with high reliability requirements.

ME5100 rev.X is a part of ME5000-series routers with a unified software and management interfaces. ME5100 rev.X supports all functionality of ME5000-series routers such as IPv4/IPv6 routing, Layer2/Layer3 QoS, IP Multicast, as well as MPLS services of Layer 2 and 3.

ME5100 rev.X has 2U case and a fixed set of 16 universal Ethernet network interfaces (SFP/SFP+ form factor) with support for Gigabit Ethernet (1000BASE-X) and 10 Gigabit Ethernet (10GBASE-R), as well as 4 Ethernet network interfaces (XFP form factor) with support for 10GBASE-R.

The available interfaces of XFP form factor make it possible to use transceivers with an increased coverage range and in some cases reduce extra costs for DWDM systems when organizing communication lines over long sections of FOCL.

Fault tolerance of ME5100 rev.X is ensured by redundant power supply (1+1) and by redundant fan modules. All redundant units are hot-swappable.

Technical features

Interfaces	
Built-in interfaces	– 16 × 10GE SFP+ network interfaces. Support for 1GE (1000BASE-X). Possible use of 1000BASE-T SFP transceivers – 4 × 10GE XFP network interfaces – Out Of Band (OOB) 1GE port (10/100/1000BASE-T) – RS-232 (RJ-45) Console port – 1 × USB 2.0

Performance	
Bandwidth	200 Gbps, 300 Mpps
RAM	8 GB
Buffer memory	6 GB
MAC address table	Up to 262144 The resource is shared with MPLS switching tables and elements of single-hop BFD sessions
Number of bridge domains	Up to 4K
RIB capacity	Up to 1M IPv4 or 512K IPv6, the resource is shared with ARP tables and IPv6 ND cache
L3 interfaces	Up to 4K
MPLS PWs	Up to 12K
ARP table	Up to 20K
VRFs (MPLS L3VPN)	Up to 1000 (or up to 128 while running instances of BGP processes in each of the VRFs)
Number of QoS queues	96K

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Features and capabilities

Interfaces functions
– Link aggregation groups: static LAG and LACP
– Tunnel interfaces with IP-GRE and IP-IP support
– IP unnumbered interfaces, Proxy ARP functionality
– Layer 3 interfaces (Bridge-domain Virtual Interfaces, BVI)
– Equal load balancing in group
– Multi-chassis LAG
– BFDoverLAG support, single connection failure detection (RFC 7130)
– Traffic mirroring — SPAN, RSPAN

L2 functions
– Providing Ethernet switching through bridge domains and cross-connects
– IEEE bridging (IEEE 802.1d)
– VLAN (IEEE 802.1q)
– Q-in-Q (IEEE 802.1ad) with push/pop/swap/replace tag commands
– Spanning Tree protocols (STP, RSTP, MSTP)
– DHCP Snooping for bridge domains
– LLDP protocol

L3 protocols and functions
– IPv4, IPv6 Static Unicast Routing
– IS-IS protocol
– OSPFv2, OSPFv3
– Border Gateway Protocol (BGP)
– BGP Route Reflector, BDP Additional Path
– Route filtering (routemap, prefix-list)
– Policy-based routing, PBR
– IP unnumbered interfaces
– BFD support for routing protocols and static routes
– FastReroute/Loop Free Alternate for OSPF/IS-IS
– VRRP (version 2), DHCP relay agent
– IPv4 ACL (access control lists) for transit traffic
– ECMP load balancing
– VRF
– Inter-VRF routing

Multicast management
– PIM-SM, PIM-SSM, Anycast RP
– IGMP v2/v3, SSM mapping
– MSDP
– MulticastVPN over mLDP
– VRF-lite technology, including for all protocols (PIM/IGMP/MSDP)

MPLS functions
– Label Distribution Protocol (LDP)
– LDP FRR
– MLDP
– LDP authentication (MD5)
– RSVP-TE: automatic tunneling with a given bandwidth requirement, semi-automatic tunneling with indication of intermediate nodes
– RSVP-TE authentication
– RSVP-TE FRR (detour, facility)
– RSVP-TE end-to-end protection
– RSVP-TE auto-bandwidth
– Multiprotocol extensions for BGP-4

– BGP labeled unicast
– MPLS pseudowire with PW backup
– MPLS FAT PW (flow-aware transport)
– MPLS L2VPN
    – VPWS
    – VPLS LDP signalling (”Martini”)
    – VPLS BGP autodiscovery/signalling (”Kompella”)
    – L2VPN Inter-AS option C
– MPLS L3VPN
    – L3VPN for AFI/SAFI vpnv4 unicast and vpnv6 unicast
    – BGP 6VPE
    – L3VPN inter-AS option A, option C
    – Per-vrf label
– LSP ping and LSP traceroute

QoS
– Ingress policing, egress policing/shaping
– Strict priority (SP) and Deficit weighted round-robin (DWRR) queue scheduling algorithms
– Up to 8 queues per logical interface, one SP queue
– QoS queue counters
– Weighted random early detection (WRED)
– Queue limit and burst size setting
– Traffic classification based on the 802.1p, MPLS TC, IP DSCP fields with the ability to remark the corresponding fields
– QoS marking and handling based on access control lists (ACLs)
– Storm Control

Reliability functions
– Management module redundancy feature; module fault detection time is 300 ms max
– Synchronization of FIB/ARP tables between management modules
– Graceful Restart for routing protocols
– Non-stop forwarding
– In-service Software Upgrade
– Storage of two firmware versions on the internal drive
– Ability to restore the previous firmware version during update

Management and monitoring
– Command Line Interface (CLI), SSH, Telnet for remote control
– SNMPv1/v2c/v3 for device status monitoring
– NETCONF protocol
– Static data export (Netflow v9, v5, IPFIX)[1]
– Configuration backup and restore (local, FTP, SFTP, TFTP)
– RADIUS, TACACS+ authentication and authorization; TACACS+ accounting
– Remote firmware change
– System parameters and resources monitoring
– Syslog
– Clock Synchronization, NTP, SNTP protocols
– Control-plane filtering
– Ability to limit the speed of traffic interception on the CPU
– ELTEX IP SLA

[1]ME5000-SM-STAT statistics module is required to be installed in the device.

Physical parameters

Physical specifications and environmental parameters	
Case ventilation	Front-to-back air flow Three hot-swappable redundant fan modules
Power supply sources	Two hot-swappable redundant power modules AC: 150–250 V, 50 Hz DC: 36–72 V
Maximum power consumption	250 W
Operating temperature range	From 0 to 45 ˚C
Dimensions (W × H × D)	440 × 87 × 500 mm

Ordering information

Name	Description
ME5100 rev.X	ME5100 rev.X router, 16×10GE SFP+, 4×10GE XFP, 1×OOB 1GE (10/100/1000BASE-T), RS-232 (RJ-45), 1 × USB 2.0. Equipped with fan modules, without power modules
PM350-48/12 2vX	DC power module
PM350-220/12 rev.B	AC power module
ME5100-FAN/ME5200-FAN	Fan module
ME5000-SM-STAT	Statistics module[1] for ME5100 rev.X

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[1]Statistics module is required for NetFlow/IPFIX protocols operation and extended statistics: Pseudowire counters, QoS counters, etc.