Integrated Networking Solutions

ME5000 is a series of high-performance routers with high port density designed to be used in data centers network core as well as on carriers' networks as edge and aggregation routers. Modular design of devices ensures flexible scaling and customization both in terms of bandwidth and types of network ports. The platform provides the redundancy of nodes that define the whole system reliability and makes it possible to achieve high reliability figures.

Hardware platform

The modular router is a modern hardware platform with high port density. The modules are mounted in a chassis: standard 19" form-factor rack mount, housing size is 15U. The chassis contains two slots for installation of FMC switched fabric management modules and 12 slots for installation of LC line modules.

Technical features

	ME5000
Performance	
FMC16 switched fabric performance	1.4 Tbps
Switched fabric maximum performance	Up to 2.8 Tbps with two FMC16 modules
Maximum bandwidth per slot	Up to 138 Gbps with one FMC16 module Up to 276 Gbps with two FMC16 modules Line modules provide data processing at wire speed with packets size not less than 256 bytes
Routing and management modules	Up to 2 FMC modules per chassis
Line modules	Up to 12 LC modules per chassis
Module position	Vertical
Redundancy and reliability	Routing and management modules redundancy Software redundancy Distributed power supply diagram, two power inputs Fan modules redundancy
Resources	
Queues	Up to 96K/line module (with LC18XGE modules) Up to 128K/line module (with LC20XGE and LC8XLGE modules)
FIB capacity	Up to 4.2M routes IPv4/2.8M IPv6 (with LC20XGE and LC8XLGE modules)
MAC table capacity	Up to 250K/line module (LC18XGE) Up to 750K/line module (LC20XGE, LC8XLGE – resource shared with MPLS tables)
RIB capacity	Defined by free RAM capacity
L3 subinterfaces	Up to 4K/line module (with LC18XGE modules) Up to 8K/line module (with LC20XGE and LC8XLGE modules)
L3 VPN and PW connections	Up to 12K (with LC18XGE modules) Up to 16K (with LC20XGE and LC8XLGE modules)
EBGP sessions	Up to 3000

Features and capabilities

Interfaces functions
– LAG, LACP interface groups
– Equal load balancing in group
– Multi-chassis LAG
– BFD (Bidirectional Forwarding Detection) over LAG (RFC 7130)
– Traffic mirroring

L2 functions
– IEEE bridging
– VLAN
– Q-in-Q
– Spanning Tree protocols (RSTP, MSTP)
– LLDP

L3 protocols and functions
– Static IPv4, IPv6 Unicast Routing
– IS-IS
– OSPFv2, OSPFv3
– Border Gateway Protocol 4 (BGP)
– BGP Route Reflector
– Route-map
– BFD protocol
– ECMP load balancing
– Indirect Next Hop[1]
– BGP Flow Specification (RFC 5575)[1]

Multicast management
– PIM-SM, PIM-SSM
– IGMP v2,v3
– IPv6 MLDv1, v2

MPLS functions
– Multiprotocol extensions for BGP-4
– Label Distribution Protocol (LDP)
– RSVP[1]
– L2VPN
  -VPWS
  -VPLS
  -VPLS LDP signalling (draft-martini)
  -VPLS BGP signalling (draft-kompella)
– L3VPN
  - L3VPN inter-AS option A
– 6PE (RFC 4798)[1]
– BGP Labeled Unicast[1]

MIB
– RFC 4271. A Border Gateway Protocol 4 (BGP-4)
– RFC 4760. Multiprotocol Extensions for BGP-4
– RFC 4364. BGP/MPLS IP Virtual Private Networks (VPNs)
– RFC 5135. Special-Use IPv4 Addresses
– RFC 1195. Use of OSI ISIS for routing in TCP/IP and dual – environments
– RFC 3260. New Terminology and Clarifications for Diffserv
– RFC 3031. MPLS Architecture
– RFC 3032. MPLS Label Stack Encoding
– RFC 3036. LDP Specification
– RFC 4798. Connecting IPv6 Islands over IPv4 MPLS Using IPv6 Provider Edge Routers (6PE)
– RFC 2205. Resource ReSerVation Protocol (RSVP) – Version 1 Functional Specification
– RFC 2365. Administratively Scoped IP Multicast
– RFC 3171. IANA Guidelines for IPv4 Multicast Address Assignments

Quality of Service (QoS)
– Ingress policing, ingress/egress shaping
– SP, WRR, WRED queues service algorithms
– Rate limiting, Storm Control
– Hierarchical QoS[1]
  - up to 1K queues per port
  - minimum 500 sessions with support of HQoS per port

Reliability functions
– Management modules redundancy; module fault detection time is 300 ms max
– Synchronization of FIB/ARP tables between management modules
– Graceful Restart
– Non-stop forwarding
– Hot software update

Management and monitoring
– Command Line Interface (CLI), SSH, Telnet for remote management
– SNMPv1, v2c for management and monitoring
– NETCONF protocol
– Statistic data export (Netflowv9)
– Configuration backup (FTP, TFTP)
– RADIUS, TACACS+ authentication and authorization
– Remote software retrofit
– System parameters and resources monitoring
– RMON/SMON remote monitoring
– Syslog
– Time synchronization, NTP, SNTP

[1]Supported in future firmware versions

Name	Ports	Performance
Routing and management modules		
FMC16	- 2 management ports of 1GbE (RJ-45) - RS-232 console port (RJ-45)	1.4 Tbps
Line modules		
LC18XGE	18x10Gbps (SFP+)	180Gbps 350Mpps
LC20XGE	20x10Gbps (SFP+)	200Gbps 720Mpps
LC8XLGE	LC8XLGE	560Gbps 720Mpps

Energy consumption of sets

Name	Ports	Energy consumption, W
FMC16	Routing and management module	Up to 200
LC18XGE	Line module 18x10Gbps 10GBASE-R/1000BASE-X (SFP+)	Up to 200
LC20XGE	Line module 20x10Gbps 10GBASE-R/1000BASE-X (SFP+)	Up to 250
LC8XLGE	Line module 4x40Gbps (QSFP) + 4x40/100Gbps (QSFP28)	Up to 250
ME5000-FB	Fan module	Up to 400

Ordering information

Name	Description
Frame	
ME5000 frame	ME5000 universal edge router chassis
Line modules	
LC18XGE	Line module 18x10Gbps 10GBASE-R/1000BASE-X (SFP+)
LC20XGE	Line module 20x10Gbps 10GBASE-R/1000BASE-X (SFP+)
LC8XLGE	Line module 4x40Gbps (QSFP) + 4x40/100Gbps (QSFP28)
Routing and management modules	
FMC16	Routing and management module
Other modules	
ME5000-FB	Fan module (mounting of two modules in the chassis is required)
ME5000-FP	Slot blank

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About Eltex

Eltex company is a leading Russian developer and manufacturer of telecommunication equipment with 25 years of history. Integrity of solutions and seamless integration capability into Customer infrastructure is a priority area of company development.