– **Data routing**
– **Hardware acceleration**
– **Multiprotocol Label Switching (MPLS)**
– **Construction of secure network perimeter (NAT, Firewall)**
– **Intrusion prevention and detection (IPS/IDS)**
– **Service Level Agreement (SLA)**
– **Filtering of network data by various criteria
   (including filtering by applications)**
– **Organization of secure network tunnels between different offices of a company**
– **Remote connection of staff members to an office**
– **Internet channel management and bandwidth allocation within an office using QoS**
– **Organization of redundant connection (by means of wires or 3G/LTE modem)**
– **Subscriber termination and bandwidth shaping BRAS (IPoE)**

ESR-10, ESR-12V(F), ESR-14VF, ESR-15, ESR-20, ESR-21, ESR-30, ESR-100 and ESR-200 are service routers designed for connection of small and middle-sized offices in enterprise networks. The functionality of firewall and router allows ensuring security with various Internet connection options. The device supports advanced routing, WAN organization and network security functions.

The key elements of ESR service routers are data processing hardware acceleration means that ensure a high level of performance. Hardware and software processing is distributed among the units of the device.

- ESR-12V and ESR-12VF has FXS ports that allow installing up to three analog handsets and connecting them to a corporate telephone network without VoIP gateways. An FXO port allows reserving a telephone connection via an analog line in case there is no connection to a central PBX.
- ESR-14VF has 4 FXS ports.
- ESR-20 and ESR-21 are universal service routers designed to meet the requirements of the energy and oil and gas industries. ESR-21 has additional RS-232 ports that can be used for remote console access to adjacent equipment (AUX mode), connection of wired and GSM modems.
- ESR-100 and ESR-200 have 4 Combo ports of 10/100/1000BASE-X that enable the use of transceivers for optical connection or RJ-45 for copper connection. ESR-200 has four additional 10/100/1000BASE-T ports.

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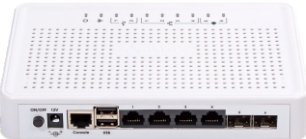
ESR-10

ESR-12V

ESR-12VF

ESR-14VF

ESR-15

ESR-20

ESR-21

ESR-30

ESR-100

ESR-200

Technical features

	ESR-10	ESR-12V	ESR-12VF	ESR-14VF	ESR-15	ESR-20	ESR-21	ESR-30	ESR-100	ESR-200
Interfaces										
Combo 10/100/1000BASE-T/1000BASE-X SFP (LAN/WAN)	—	—	—	—	—	2	—	—	4	4
Ethernet 10/100/1000BASE-T (LAN/WAN)	4	8	8	8	4	2	8	4	—	4
Ethernet 1000BASE-X SFP (LAN/WAN)	2	—	1	1	2	—	4	—	—	—
10GBASE-R/1000BASE-X (SFP+/SFP)	—	—	—	—	—	—	—	—	2	—
Serial RS-232	—	—	—	—	—	—	3	—	—	—
Console RS-232 (RJ-45)	1	1	1	1	1	1	1	1	1	1
FXS	—	3	3	4	—	—	—	—	—	—
FXO	—	1	1	—	—	—	—	—	—	—
USB 2.0	2	2	2	2	2	1	1	1	1	1
USB 3.0	—	—	—	—	—	1	1	1	1	1
SD card slot	—	—	—	—	—	1	1	—	1	1
microSD card slot	—	—	—	—	—	—	—	1	—	—
Performance										
Firewall/NAT/routing (1518B frames)	0.98 Gbps; 81k pps				1.24 Gbps; 102.4k pps	3.7 Gbps; 307k pps	2.5 Gbps; 212k pps	8 Gbps; 666.4k pps	1.28 Gbps; 106k pps	1.89 Gbps; 161k pps
Firewall/NAT/routing (70B frames)	68 Mbps; 115k pps				74 Mbps; 125.1k pps	230 Mbps; 390k pps	190 Mbps; 320k pps	390 Mbps; 665k pps	62 Mbps; 105k pps	92 Mbps; 155k pps
Firewall/NAT/routing (IMIX)	660 Mbps; 119k pps				620 Mbps; 112.8k pps	1.90 Gbps; 345k pps	1.35 Gbps; 246k pps	3.65 Gbps; 663k pps	580 Mbps; 106k pps	890 Mbps; 161k pps
L2 switching (1518B frames)	0.98 Gbps; 81k pps				1.24 Gbps; 102.4k pps	3.7 Gbps; 307k pps	2.5 Gbps; 212k pps	8 Gbps; 666.4k pps	—	—
IPsec VPN (1456B frames)	153 Mbps; 13k pps				260 Mbps; 22.4k pps	0.50 Gbps; 43k pps	0.50 Gbps; 43k pps	838 Mbps; 71.9k pps	0.30 Gbps; 26k pps	0.46 Gbps; 40k pps
IPsec (IMIX)	115 Mbps; 21k pps				136.4 Mbps; 25.6k pps	290 Mbps; 54k pps	290 Mbps; 54k pps	494.7 Mbps; 92.78k pps	175 Mbps; 32k pps	264 Mbps; 49k pps
IPS/IDS 10k rules	51 Mbps; 10,7k pps				36 Mbps; 8.66k pps	146 Mbps; 32.2k pps	146 Mbps; 32.2k pps	288 Mbps; 64.56k pps	56 Mbps; 12.0k pps	85 Mbps; 19.3k pps
MPLS (1518B frames)	0.98 Gbps; 81k pps				*	3.62 Gbps; 299k pps	3.62 Gbps; 299k pps	*	2.9 Gbps; 238k pps	3.9 Gbps; 323k pps

Functionality for firmware version 1.18.1.

* To be measured.

Technical features (continued)

	ESR-10	ESR-12V	ESR-12VF	ESR-14VF	ESR-15	ESR-20	ESR-21	ESR-30	ESR-100	ESR-200
System features										
VPN tunnels	10	10	10	10	10	250	250	250	250	250
Static routes	1k	1k	1k	1k	1k	11k	11k	11k	11k	11k
Concurrent sessions	4k	4k	4k	4k	4k	256k	256k	256k	256k	256k
VLAN support	up to 4k active VLANs in accordance 802.1Q									
BGP routes	1M	1M	1M	1M	1M	2.5M	2.5M	2.5M	2.5M	2.5M
BGP neighbors	100	1k	1k	1k	1k	1k	1k	1k	1k	1k
OSPF routes	30k	30k	30k	30k	30k	300k	300k	300k	300k	300k
RIP routes	1k	1k	1k	1k	1k	10k	10k	10k	10k	10k
ISIS routes	30k	30k	30k	30k	30k	30k	30k	30k	300k	300k
MAC table	2k entries per bridge									
FIB size	800k	800k	800k	800k	800k	1.4M	1.4M	1.4M	1.4M	1.4M
VRF	32									
Physical specifications and environmental parameters										
Maximum power consumption	9 W	22 W	22 W	22 W	18 W	25 W	32 W	26 W	20 W	25 W
Power supply	230 V AC (via 12 V, 1.5 A power adapter)	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz	230 V AC (via 12 V, 2 A power adapter)	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz
Maximum noise level	—	—	—	—	—	—	—	—	57 dB	57 dB
Operating temperature	from 0 to +40 °C	from 0 to +40 °C	from 0 to +40 °C	from 0 to +40 °C	from 0 to +40 °C	from -10 to +45 °C	from -10 to +45 °C	from -10 to +45 °C	from -10 to +45 °C	from -10 to +45 °C
Storage temperature	from -40 to +70 °C									
Operating humidity	no more than 80 %									
Storage humidity	from 10 to 95 %									
Dimensions (W×H×D, mm)	185×32×118	267×43.6×160.5	267×43.6×160.5	267×43.6×160.5	230×32×133	267×44×212	430×44×225	267×44×212	310×44×240	310×44×240
Weight	0.3 kg	1 kg	1 kg	1 kg	0.325 kg	2 kg	3.15 kg	1.8 kg	2.5 kg	2.5 kg
Service life	at least 15 years									

Functionality for firmware version 1.18.1.

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Features and capabilities

Plug-in interfaces
– USB 3G/4G/LTE modem
– E1 TopGate SFP
– **DialUp modem (only ESR-21)**

Remote Access VPN clients
– PPTP/PPPoE/L2TP/OpenVPN/IPsec XAUTH

Remote Access VPN server
– L2TP/PPTP/OpenVPN/IPsec XAUTH

Site-to-site VPN
– IPsec: "policy-based" and "route-based" modes
– DMVPN
– DES, 3DES, AES, Blowfish, Camellia
– IKE MD5, SHA-1, SHA-2 message authentication

Tunneling
– IPoGRE, EoGRE
– IPIP
– L2TPv3
– LT (inter VRF routing)

L2 functions
– Packet switching (bridging)
– LAG/LACP (802.3ad)
– VLAN (802.1Q)
– Logical interfaces
– LLDP, LLDP MED
– MAC-based VLAN

L3 functions (IPv4/IPv6)
– NAT, Static NAT, ALG
– Static routes
– RIPv2, OSPFv2/v3, IS-IS, BGP dynamic protocols

– Route filtering (prefix list)
– VRF
– Policy Based Routing (PBR)
– BFD for BGP, OSPF, static routes

BRAS (IPoE)[1]
– Subscriber termination
– White/black URL lists
– Quotas for traffic volume, session time, network applications
– HTTP/HTTPS Proxy
– HTTP/HTTPS Redirect
– Session accounting via Netflow protocol
– Interaction with AAA, PCRF servers
– Bandwidth management by offices, SSIDs and user sessions
– User authentication by MAC or IP address

Network security functions
– Intrusion Prevention/Detection system (IPS/IDS)[1]
– Interaction with Eltex Distribution Manager for obtaining licensable content — rule sets distributed by Kaspersky SafeStream II[1]
– Web filtering by URL, by content (cookies, ActiveX, JavaScript)
– Zone-based Firewall
– Filtering based on L2/L3/L4 fields and applications
– Support for access control lists (ACL) based on L2/L3/L4 fields
– Protection against DoS/DDoS attacks and notification on them
– Logging of attack and rule triggering events

Quality of Service (QoS)
– Up to 8 priority or weighted queues per port
– L2 и L3 traffic prioritization (802.1p (CoS), DSCP, IP Precedence (ToS))
– RED, GRED congestion avoidance algorithms
– Priority re-marking mechanisms
– Policy-map
– Bandwidth management (shaping)
– Hierarchical QoS
– Session labeling

IP addressing management (IPv4/IPv6)
– Static IP addresses
– DHCP client
– DHCP Relay Option 82
– Embedded DHCP server, 43, 60, 61, 150 options support
– DNS resolver
– IP unnumbered

Network reliability assurance means
– VRRP v2,v3
– Tracking based on VRRP or SLA test
    – VRRP parameters management
    – PBR parameter management
    – Interface administration status management
    – Static route enabling and disabling
    – AS-PATH and preference attribute management in route-map
– WAN interfaces load balancing, data stream redirection, channel switching during QoS control
– Firewall sessions backup

Functionality for firmware version 1.18.1.
[1] Activated by license.

Management and monitoring
– Support for standard and extended SNMP MIB, RMONv1
– Embedded Zabbix agent
– Authentication methods: local, RADIUS, TACACS+, LDAP
– Protection against configuration errors
– Automatic configuration recovery), ability to restore the default factory configuration
– CLI
– Syslog
– System resource usage monitoring
– Ping, traceroute (IPv4/IPv6), packet information in the console output
– Firmware upgrade, configuration upload and download via TFTP, SCP, FTP, SFTP, HTTP(S)
– Support for NTP
– Netflow v5/v9/v10 (exporting of URL statistics for HTTP, host for HTTPS)
– Local control via RS-232 console port (RJ-45)
– Remote control via Telnet, SSH (IPv4/IPv6)
– Displaying information on services/processes
– Local/remote router configuration storage

SLA control functions
– Eltex SLA
  Channel parameters evaluation:
     – Delay (one-way/two-way)
     – Jitter (one-way/two-way)
     – Packet loss (one-way/two-way)
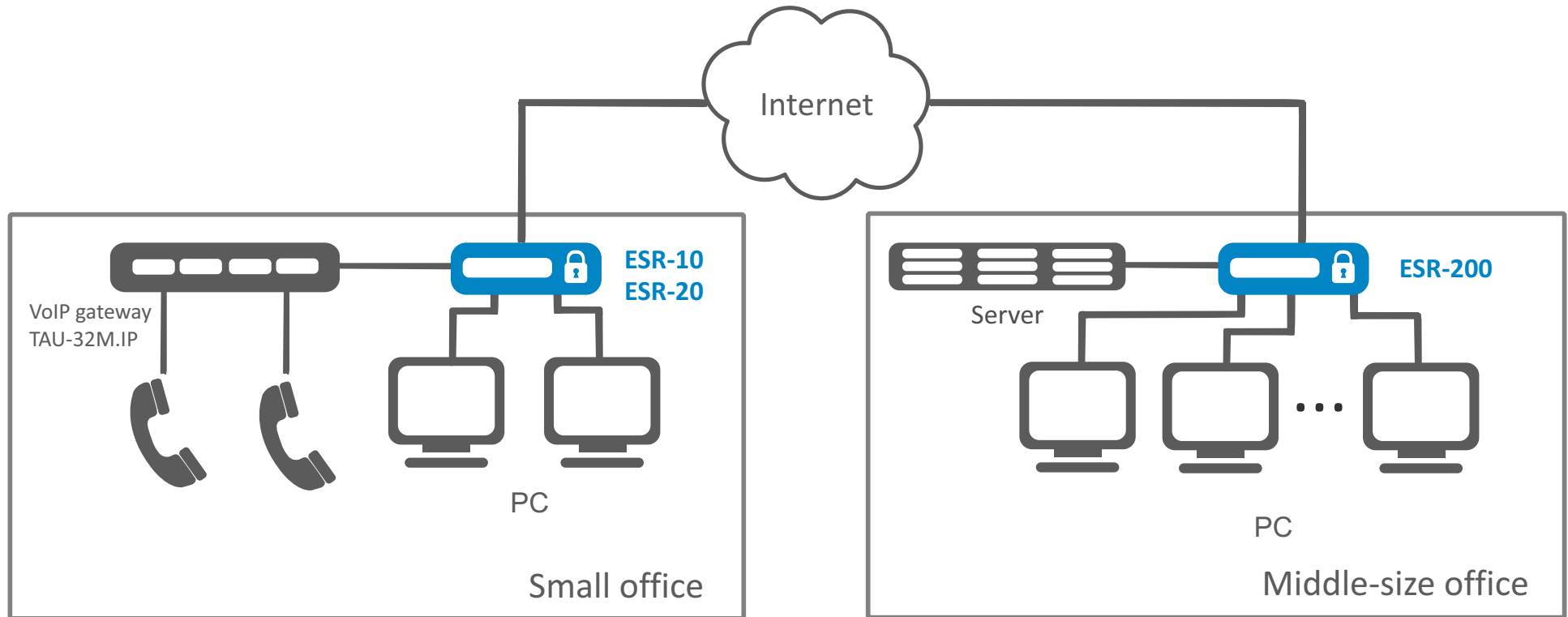   – Packet Error Rate
     – Out-of-order delivery

MPLS
– LDP
– L2VPN VPWS
– L2VPN VPLS Martini Mode
– L2VPN VPLS Kompella Mode
– L3VPN MP-BGP

Functionality for firmware version 1.18.1.
[1] Activated by license.

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Use case

Internet

ESR-10
ESR-20

VoIP gateway
TAU-32M.IP

PC

Small office

ESR-200

Server

PC

Middle-size office

Ordering information

Name	Description
ESR-10	ESR-10 service router, 4×Ethernet 10/100/1000BASE-T, 2×1000BASE-X (SFP), 1×Console RS-232 (RJ-45), 2×USB 2.0, 1 GB RAM, 512 MB NAND-Flash, 12 V DC, 230 V AC (via 12 V, 1.5 A power adapter).
ESR-12V	ESR-12V service router, 8×Ethernet 10/100/1000BASE-T, 1×Console RS-232 (RJ-45), 2×USB 2.0, 3×FXS, 1×FXO, 1 GB RAM, 512 MB NAND-Flash, 100–264 V AC.
ESR-12VF	ESR-12VF service router, 8×Ethernet 10/100/1000BASE-T, 1×1000BASE-X (SFP), 1×Console RS-232 (RJ-45), 2×USB 2.0, 3×FXS, 1×FXO, 1 GB RAM, 512 MB NAND-Flash, 100–264 V AC.
ESR-14VF[1]	ESR-14VF service router, 8×Ethernet 10/100/1000BASE-T, 1×1000BASE-X (SFP), 1×Console RS-232 (RJ-45), 2×USB 2.0, 4×FXS, 1 GB RAM, 512 MB NAND-Flash, 100–264 V AC.
ESR-15	ESR-15 service router, 4×Ethernet 10/100/1000BASE-T, 2×1000BASE-X SFP, 1×Console RS-232 (RJ-45), 2×USB 2.0, 4 GB RAM, 230 V AC (via 12 V, 2 A power adapter).
ESR-20	ESR-20 service router, 2×10/100/1000BASE-T, 2×Combo 10/100/1000BASE-T/1000BASE-X (SFP), 1×Console RS-232 (RJ-45), 1×USB 2.0, 1×USB 3.0, 1 slot for SD cards, 4 GB RAM, 4 GB Flash, 100–264 V AC.
ESR-21	ESR-21 service router, 8×10/100/1000BASE-T, 4×1000BASE-X (SPF), 1×Console RS-232 (RJ-45), 1×USB 2.0, 1×USB 3.0, 1 slot for SD cards, 3×Serial RS-232, 4 GB RAM, 4 GB Flash, 100–264 V AC.
ESR-30	ESR-30 service router, 4×10/100/1000BASE-T, 2×10GBASE-R/1000BASE-X (SFP+/SFP), 1×Console RS-232 (RJ-45), 1×USB 2.0, 1×USB 3.0, 1 slot for microSD cards, 4 GB RAM, 100–264 V AC.
ESR-100	ESR-100 service router, 4×Combo 10/100/1000BASE-T/1000BASE-X (SFP), 1×Console RS-232 (RJ-45), 1×USB 2.0, 1×USB 3.0, 1 slot for SD cards, 4 GB RAM, 1 GB NAND-Flash, 100–264 V AC.
ESR-200	ESR-200 service router, 4×10/100/1000BASE-T, 4×Combo 10/100/1000BASE-T/1000BASE-X SFP, 1×Console RS-232 (RJ-45), 1×USB 2.0, 1×USB 3.0, 1 slot for SD cards, 4 GB RAM, 1 GB NAND-Flash, 100–264 V AC.

[1] Available for order.