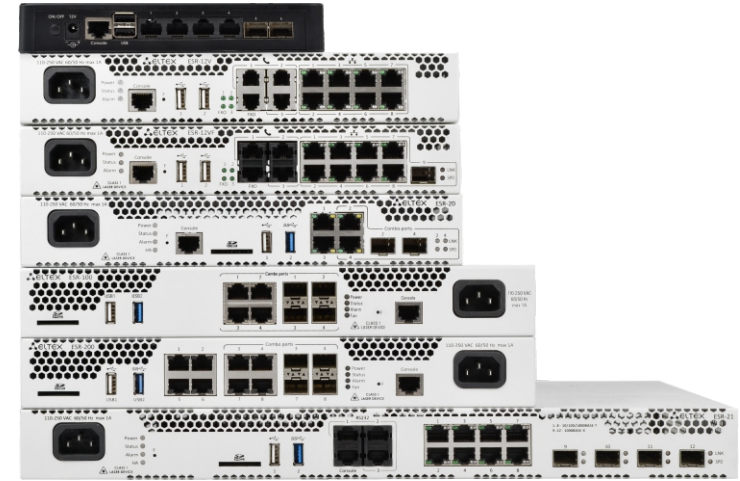


- Data routing
- Hardware acceleration of data processing
- Multiprotocol Label Switching (MPLS)
- Building a secure network (NAT, Firewall)
- Intrusion Detection and Prevention System (IDS/IPS)
- Service Level Agreement (SLA)
- Filtering of network data by various criteria (including filtering by applications)
- Organization of secure network tunnels between company branches
- Remote connection of employees to an office
- Internet channel management and bandwidth allocation within an office using QoS
- Organization of backup connection (wired or via 3G/LTE modem)
- Subscriber termination and bandwidth limitation BRAS (IPoE)



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

The key elements of the series are hardware-accelerated data processing. Optimal distribution of data processing functions among the device parts maximizes performance.

- ESR-12V and ESR-12VF have FXS ports, which allows to install up to three analog telephone sets in the office and connect them to the corporate telephone network without using separate telephone gateways. The FXO port allows to reserve a telephone connection via analog line in case of lack of connection to the central PBX.
- ESR-20 and ESR-21 are versatile service routers designed in accordance with the requirements of the energy and oil and gas industries. A distinctive feature of the ESR-21 model is its additional RS-232 ports, which can be used to realize additional functions - remote console access to nearby equipment (AUX mode), connection of wired and GSM modems to the service router.
- ESR-100 and ESR-200 have 4 Combo ports of 10/100/1000BASE-X with the possibility of using transceivers for optical connection or RJ-45 for electrical. ESR-200 has 4 10/100/1000BASE-T additional ports.

Technical features

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	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	2	8	—	4
Ethernet 1000BASE-X SFP (LAN/WAN)	2	—	1	—	4	—	—
Serial (RS-232)	—	—	—	—	3	—	—
Console RS-232 (RJ-45)	1	1	1	1	1	1	1
FXS	—	3	3	—	—	—	—
FXO	—	1	1	—	—	—	—
USB 2.0	2	2	2	1	1	1	1
USB 3.0	—	—	—	1	1	1	1
SD card slot	—	—	—	1	1	1	1

For firmware version 1.24.

Technical features (continued)

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	ESR-100	ESR-200
Performance							
Firewall routing (1518B frames)	0.99 Gbps; 81.3k pps	0.94 Gbps; 77.8k pps		3.8 Gbps; 308.8k pps	2.5 Gbps; 202.2k pps	1.3 Gbps; 103.1k pps	1.9 Gbps; 154.5k pps
Firewall routing (IMIX) ¹	655.1 Mbps; 118.7k pps	606.3 Mbps; 109.8k pps		1.7 Gbps; 316.9k pps	1.3 Gbps; 234.5k pps	595.7 Mbps; 107.8k pps	897.5 Mbps; 162.3k pps
L2 switching (1518B frames)	0.98 Gbps; 81k pps	0.98 Gbps; 81k pps		6.5 Gbps; 535.7k pps	5.2 Gbps; 427k pps	3.8 Gbps; 310.8k pps	3.8 Gbps; 310.8k pps
IPsec VPN (1456B frames)	179.1 Mbps; 15.3k pps	173.7 Mbps; 15k pps		504.2 Mbps; 43.3k pps	504.6 Mbps; 43.3k pps	305.7 Mbps; 26.1k pps	469 Mbps; 40.2k pps
IPsec (IMIX) ²	119.4 Mbps; 22.4k pps	115.6 Mbps; 21.7k pps		279.4 Mbps; 52.6k pps	279.3 Mbps; 52.2k pps	174.8 Mbps; 32.8k pps	264.9 Mbps; 49.3k pps
1 IPsec tunnel (1456B frames)	95.5 Mbps; 8.2k pps	91.9 Mbps; 7.9k pps		262.5 Mbps; 22.5k pps	267.4 Mbps; 23k pps	200.3 Mbps; 17.2k pps	302.9 Mbps; 26k pps
1 IPsec tunnel (IMIX)	65 Mbps; 12.1k pps	64.6 Mbps; 12.1k pps		148.8 Mbps; 27.8k pps	148.4 Mbps; 27.8k pps	106.9 Mbps; 20k pps	160.4 Mbps; 30k pps
IPS/IDS 10k rules	29 Mbps; 5.4k pps	29 Mbps; 5.4k pps		87.6 Mbps; 16.2k pps	86.6 Mbps; 16.1k pps	28 Mbps; 5.4k pps	43.2 Mbps; 8k pps
MPLS L2VPN switching (IMIX)	0.66 Gbps; 121k pps	0.5 Gbps; 91k pps		2.1 Gbps; 391k pps	1.9 Gbps; 347k pps	0.9 Gbps; 165k pps	1.3 Gbps; 245k pps
MPLS L3VPN switching (IMIX)	0.5 Gbps; 93k pps	0.48 Gbps; 87k pps		1.06 Gbps; 196k pps	1.01 Gbps; 185k pps	0.48 Gbps; 87k pps	0.7 Gbps; 129k pps

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¹ Traffic format (number per second : size of each frame) - 8:74; 5:512; 7:1518.

² Traffic format (number per second : size of each frame) - 8:74; 5:512; 7:1456.

Technical features (continued)

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	ESR-100	ESR-200
Number of CPU by role							
Control CPU				0			
Balancing CPU		–			3		
Service CPU		0–1			1–2		
Switching							
Interfaces		bridge – 50 sub – 64 QinQ – 64			bridge – 250 sub – 1024 QinQ – 1024		
LLDP				interfaces port policies – 8 network policies – 64			
Label switching							
MPLS		LDP neighbors – 128 pseudowires – 128 pseudowire classes – 64 Ethernet over MPLS – 64			LDP neighbors – 1024 pseudowires – 1024 pseudowire classes – 64 Ethernet over MPLS – 256		
System features							
Static routes		1k			11k		
Maximum number of competitive sessions		440k		2.940M	2.940M	1.570M	2.250M
VLAN				up to 4k active VLANs in accordance with 802.1Q			
FIB size		1M			1.4M		
VRF				32			
PBR		instances – 10 rules for all instances – 50			instances – 50 rules for all instances – 512		

For firmware version 1.24.

Technical features (continued)

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	ESR-100	ESR-200
Object-groups							
Object-group network		instances – 50 ip prefixes in group – 1024 ip ranges in group – 1024			instances – 500 ip prefixes in group – 1024 ip ranges in group – 1024		
Object-group address:port		instances – 50 address:port in group – 8			instances – 500 address:port in group – 64		
Object-group service		instances – 50 ports ranges in group – 6			instances – 500 ports ranges in group – 64		
Object-group application		instances – 50 apps in group – 128			instances – 50 apps in group – 128		
Object-group content filter		instances – 50 categories per vendor – 500			instances – 64 categories per vendor – 500		
Object-group URL		instances – 31 plain URL in group – 32 regex URL in group – 32			instances – 31 plain URL in group – 32 regex URL in group – 32		
Object-group MAC		instances – 500 macs in group – 64			instances – 500 macs in group – 64		

For firmware version 1.24.

Technical features (continued)

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	ESR-100	ESR-200
Routing							
BGP		instances – 64 networks in instance – 12 neighbors – 100 RIB – 1M			instances – 64 networks in instance – 128 neighbors – 1000 RIB – 2,5M		
OSPF(v3)		instance, neighbors in interface – 6 summaries in instance – 10 areas – 25 networks in area – 6 virtual links – 128 RIB – 30k			instance, neighbors in interface – 64 summaries in instance – 128 areas – 256 networks in area – 64 virtual links – 1024 RIB – 300k		
IS-IS		instances, circuits – 6 RIB – 30k			instances, circuits – 64 RIB – 300k		
RIP(ng)		neighbors – 16 summaries – 8 networks – 12 RIB – 1k			neighbors – 16 summaries – 8 networks – 128 RIB – 10k		
QoS							
QoS limitations		class-maps – 50 policy-maps – 25 classes in policy-map – 76			class-maps – 256 policy-maps – 256 classes in policy-map – 768		
Tunneling							
VPN tunnels		IPIP – 10 GRE – 10 Ethernet over GRE – 10 GRE SUB – 10 SoftGRE – 500 L2TPv3 – 10 LT – 128 IPsec VTI – 10			IPIP – 250 GRE – 250 Ethernet over GRE – 250 GRE SUB – 250 SoftGRE – 500 L2TPv3 – 250 LT – 128 IPsec VTI – 250		IPIP – 250 GRE – 250 Ethernet over GRE – 250 GRE SUB – 250 SoftGRE – 500 L2TPv3 – 250 LT – 128 IPsec VTI – 500
IPsec VPN tunnels		64			64		256

For firmware version 1.24.

Technical features (continued)

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	ESR-100	ESR-200
Remote access							
Remote Access				L2TP tunnels (client) – 10 PPTP tunnels (client) – 10 OpenVPN tunnels (client) – 10 OpenVPN remote addresses per tunnel – 8			
WireGuard tunnel, RA				instance – 16 peers per instance 16 local addresses – 1 addresses per peer (address-range & obj-group) – 10k			
Services							
Source NAT			ruleset – 20 rules in ruleset – 100 pool – 20			ruleset – 100 rules in ruleset – 100 pool – 100	
Destination NAT			ruleset – 20 rules in ruleset – 20 pool – 20			ruleset – 100 rules in ruleset – 100 pool – 100	
DHCP Server				pools – 20 (ESR-1X), 100 (ESR-2X, ESR-100, ESR-200) pool size – 10k static address in pool – 128			
Security							
ACL			instances – 153 rules – 153			instances – 1533 rules – 1533	
Firewall			zone – 12 zone-pair – 48 rules – 1024			zone – 128 zone-pair – 512 rules – 10k	
IPS				user update servers – 32 ips-categories – 20 rules – 500			

For firmware version 1.24.

Technical features (continued)

IKE (v1/v2), IPsec (esp/eh)	
Authentication	md5, sha1, sha2-256, sha2-384, sha2-512
Encryption	des, blowfish128, aes128, camellia128, aes128ctr (IKEv2 only), blowfish192, aes192, camellia192, 3des, aes192ctr (IKEv2 only), blowfish256, aes256, camellia256, aes256ctr (IKEv2 only)
Diffie Hellman	Regular Groups: 1, 2, 5, 14-18. Modulo Prime Groups with Prime Order Subgroup: 22-24. NIST Elliptic Curve Groups: 19-21, 25-26. Brainpool Elliptic Curve Groups: 27-30. Elliptic Curve 25519: 31

VoIP ¹	
Dial rules	5
Call groups	5
Pickup groups	1
SIP profiles	5
SIP Proxy	5
SIP Proxy registrations	4

For firmware version 1.24.

¹ For ESR-12V/12VF.

Features and capabilities

Switching

- Up to 4094 VLAN (802.1Q)
- Voice-VLAN
- Q-in-Q (802.1ad)
- MAC-based VLAN
- Bridge domain
- LAG/LACP (802.3ad)
- Port-security, protected port
- Jumbo frames

MPLS

- LDP
- L2VPN VPWS
- L2VPN VPLS Martini Mode, Kompella Mode
- L3VPN MP-BGP (Option A, B, C)
- L2VPN/L3VPN over GRE, DMVPN
- Transparent transmission of service protocols

Routing

BGP:

- IPv4, IPv6, VPNv4, L2VPN, IPv4 label-unicast, Flow-spec
- Support for Conditional Advertisement, Route Aggregation and Local-AS mechanisms
- Support for peer-group, dynamic neighbor, as-range and Route-reflector
- Fall over based on BFD protocol and Fast Error Peer Detection
- Graceful restart
- Authentication
- Flexible redistribution from/to BGP process of other protocol routes
- Running up to 64 processes simultaneously
- ECMP
- Support for policy-based routing

OSPF(v3):

- Normal, Stub, Totally stub, NSSA, Totally NSS
- Broadcast, NBMA, Point-to-point, Point-to-multipoint non-broadcast
- Summarizing and filtering of route information
- Authentication
- ECMP
- Passive interface
- Flexible redistribution from/to OSPF process of other protocol routes
- Running up to 64 processes simultaneously
- Support for BFD protocol
- Auto cost calculation
- Support for policy-based routing

IS-IS:

- Broadcast, Point-to-point
- Setting the L1-/L2-levels neighboring
- Metric style: narrow, wide, transition
- Authentication
- Routing information filtering
- Flexible redistribution from/to the IS-IS process of other protocol routes
- Running up to 64 processes simultaneously
- Support for policy-based routing

RIP(ng):

- Broadcast, Multicast, Unicast modes (RIP only)
- Summarizing and filtering of route information
- Route metrics management
- Authentication
- Passive interface
- Flexible redistribution from/to the RIP process of other protocol routes
- Support for policy-based routing

Static:

- Support for BFD protocol
- Recursive search
- Route metrics management
- Selecting the option to notify the sender when traffic is blocked

Quality of Service (QoS)

- Up to 8 priority or weighted queues per port
- L2 and L3 traffic prioritization (802.1p (CoS), DSCP, IP Precedence (ToS))
- Hierarchical QoS
- Management of RED, GRED, SFQ, CBQ, WFQ, WRR queues
- Inlet and outlet labeling
- Policing, shaping

Features and capabilities (continued)

IPsec

- Policy-based and route-based modes
- Tunnel and transport modes
- Pre-shared key, public key, xauth (ikev1 only), eap (ikev2)
- Support for mobike (ikev2 only)
- Support for ike ikering authentication key sets

Remote Access

- Remote access to the corporate network via PPTP, L2TP over IPsec, OpenVPN, WireGuard
- Support for PPPoE-/PPTP-/L2TP client
- User authentication
- Connection encryption

Security

- ACL based on L2-/L3-/ L4 fields
- Zone-based Firewall in stateful and stateless modes. Rule triggering logging, counters
- Filtering by applications
- Protection against DoS/DDoS/Spoof attacks and their logging
- Intrusion detection and prevention system (IDS/IPS) and its logging¹
- Signature analysis via IPS in transit and mirrored traffic analysis modes¹
- Interaction with Eltex Distribution Manager to obtain licensed content - rule sets provided by Kaspersky SafeStream II²

Management and monitoring

- Support for standard and extended SNMP MIB, RMONv1
- Zabbix agent/proxy

- User authentication using local database via RADIUS, TACACS+, LDAP
- Protection against configuration errors, automatic configuration recovery
- CLI
- Syslog
- System resource usage monitoring
- Ping, monitor, traceroute (IPv4/IPv6), output packet information in console
- 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)
- Remote management, Telnet, SSH (IPv4/IPv6)
- LLDP, LLDP MED
- Local and remote saving of router configurations

SLA:

- SLA-responder for Cisco-SLA-agent
- Eltex SLA:
 - Delay (one-way/double-way)
 - Jitter (forward/backward)
 - Packet loss (forward/backward/duplex)
 - Duplicate packet detection
 - Packet delivery sequence violation detection (forward/backward/duplex)

Backup and clustering

- VRRP v2, v3
- Tracking based on VRRP or SLA test
- VRRP v2, v3
- Tracking based on VRRP or SLA test

- VRRP parameter management
- PBR parameter management
- Administrative interface status management
- Static route activation and deactivation
- Managing AS-PATH and preference attribute in route-map
- DHCP failover for IP addresses base backup issued by the DHCP server
- Firewall failover for Firewall and NAT session backup
- MultiWAN
- Dual-Homing

Fault-tolerant cluster:

- Easy administration and integration: synchronization of configurations, time, versions, licenses; Zero Touch Provisioning (ZTP)
- Backup all connections in the cluster
- Router backup ("1+1" backup is supported in the current version)

For firmware version 1.24.

¹ Activated by a license.

² Rule sets are provided by subscription. The minimum subscription period is 1 year.

Features and capabilities (continued)

Services

- DHCP client, service
- DHCP Relay Option 82
- DNS resolver
- NTP
- TFTP server
- E1/multilink, modems

VoIP¹

- Support for SIP protocol
- Internal connection switching
- Operation without SIP server
- Flexible dial plan
- Configuration profiles for ports
- Applying settings without rebooting
- Voice codecs
 - G.711 a-law, μ -law
 - G.723.1
 - G.729 (A/B)
- Fax transmission
 - T.38 UDP Real-Time Fax
 - a-law, μ -law G.711 pass-through
- Voice standards
 - VAD (Voice Activity Detection)
 - CNG (Comfort Noise Generation)
 - AEC (echo cancellation, G.165, G.168 recommendations)
- DTMF
 - DTMF signal detection and generation
 - Transmission via INBAND, RFC 2833, SIP INFO
- Value Added Services
 - Call Hold
 - Call Transfer

- Call Waiting
- Call Forward on Busy (CFB)
- Call Forward on No Reply (CFNR)
- Call Forward Unconditional (CFU)
- Caller ID
- Calling line identification restriction (CLIR)
- Hotline/Warmline
- Call Group
- 3-Way conference

BRAS²

- User termination
- URL whitelists/blacklists
- Quoting by traffic volume, by session time, by network applications
- HTTP/HTTPS Proxy
- HTTP/HTTPS Redirect
- Netflow
- AAA, PCRF
- Bandwidth management by office, SSID and user sessions
- User authentication by MAC or IP address

For firmware version 1.24.

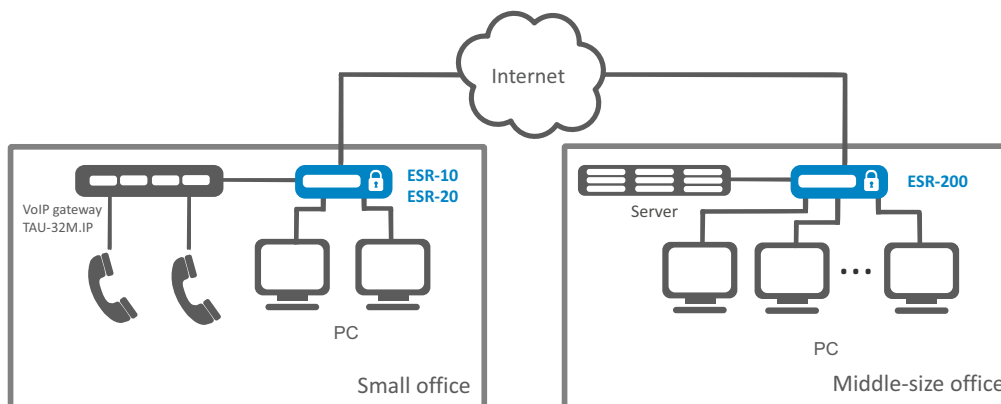
¹ For ESR-12V/12VF.

² Activated by a license.

Physical parameters

	ESR-10	ESR-12V	ESR-12VF	ESR-20	ESR-21	ESR-100	ESR-200
Physical specifications and environmental parameters							
RAM	1 GB DDR3			4 GB DDR4		4 GB DDR3	
Flash	512 MB NAND Flash			8 GB eMMC		1 GB NAND Flash	
Maximum power consumption	9 W	22 W	22 W	25 W	32 W	20 W	25 W
Power supply	230 V AC (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	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz	100–264 V AC, 50–60 Hz
Operating temperature	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
Storage temperature	from -40 to +70 °C						
Operating humidity	no more than 80 %						
Storage humidity	from 10 to 95 %						
Dimensions (W × H × D)	185 × 32 × 118 mm	267 × 43.6 × 160.5 mm	267 × 43.6 × 160.5 mm	267 × 44 × 212 mm	430 × 44 × 225 mm	310 × 44 × 240 mm	310 × 44 × 240 mm
Weight	0.3 kg	1 kg	1 kg	2 kg	3.15 kg	2.5 kg	2.5 kg
Service life	no less than 15 years						

Use case



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 DDR3 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 DDR3 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 DDR3 RAM, 512 MB NAND-Flash, 100–264 V AC.
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 × SD card slot, 4 GB DDR4 RAM, 8 GB eMMC, 100–264 V AC.
ESR-21	ESR-21 service router, 8 × 10/100/1000BASE-T, 4 × 1000BASE-X (SFP), 1 × Console RS-232 (RJ-45), 1 × USB 2.0, 1 × USB 3.0, 1 × SD card slot, 3 × Serial RS-232, 4 GB DDR4 RAM, 8 GB eMMC, 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 × SD card slot, 4 GB DDR3 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 × SD card slot, 4 GB DDR3 RAM, 1 GB NAND-Flash, 100–264 V AC.

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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.