ESR series service routers

ESR-10, ESR-12V, ESR-12VF, ESR-14VF, ESR-20, ESR-21, ESR-100, ESR-200, ESR-1000, ESR-1200, ESR-1500, ESR-1700

Release notes (29.10.2020)
Firmware version 1.12.0

Version 1.12.0

Revisions:

- IDS/IPS:
  - Supported interaction with Eltex Distribution Manager for licensed content — a set of rules provided by Kaspersky SafeStream II
- IPSEC:
  - Added possibility to view debug information for IPsec
- MPLS:
  - Added support for VPLS Kompella Mode
  - Added commands to output operational information for L2VPN
- USB-Modem:
  - Support for modems with HILINK firmware
- Routing
  - IS-IS:
    - Added possibility of 3way handshake neighborhood establishment
- Monitoring and management:
  - CLI:
    - Removed the possibility to authenticate as root
- Tunneling:

- Added possibility to set AAA authentication lists for OpenVPN clients

- Filtering:
  - HTTP proxy
    - Added possibility to log filtering events

Version 1.11.2

Revisions:

- BRAS:
  - Supported BRAS operation in VRF for L3 switching scheme
  - Supported adding Option 82 from client DHCP packets in accounting
  - Supported getting the number of services and BRAS sessions via SNMP
- SNMP:
  - Supported breaking softgre tunnels
- Monitoring and management:
  - CLI:
    - Added the **merge** command, which merges the downloaded configuration with candidate-config
    - Added possibility to view information about the configuration of a particular Bridge
    - Added possibility to view the configuration of a certain object-groups by specifying the type
    - Added possibility to view the configuration of a certain tunnel
    - Added possibility to view the configuration of a specific route-maps
    - Added saving user login to configuration name when reserving configuration locally
    - Added possibility to view the difference between the archived configurations
    - Added the **clear vrrp-state** command, which stops VRRP execution for 3* Advertisement_Interval+1 time. This enables the router in the backup state to perform a master hijacking
  - SLA:
    - SupportedIP SLA in ICMP-ECHO mode
- Tunneling:
  - Supported synchronization of wireless-controller tunnels between routers with different firmware versions

Version 1.11.1

Revisions:

- IPSEC:
    - Implemented possibility to disable Mobility and Multihoming Protocol (MOBIKE) for IKEv2
    - Support for certificate IPsec authentication
    - Support for CRL and filtering by attribute field Subject-name

Version 1.11.1

Version 1.11.0

Revisions:

- CLI:
    - Implemented TCP/UDP port filtering when displaying and cleaning firewall/NAT sessions
    - Implemented possibility to view mDNS configuration
- IPSEC:
    - Implemented modes of reconnecting XAUTH clients with one login/password
    - Implemented possibility to disable Subject attribute field validation of local and remote XAUTH certificate
- Routing:
    - Implemented possibility to use Multiwan on pppoe, l2tp, openvpn, pptp and vti-tunnels
- Tunneling
    - GRE
        - Implemented possibility to use as local interface for GRE tunnels: USB-modem, pptp, l2tp, pppoe-tunnel and e1, multilink-interfaces
        - Implemented possibility to build GRE tunnels from IP-interfaces of a great VRF
        - Implemented possibility to provide L2 connectivity between clients from different tunnels within one location in the scheme with wireless-controller
    - PPPoE
        - Added possibility to use ",", "/" and "\" symbols in username
- Limited file system support for USB sticks and SD/MMC cards. Only FAT is supported

Version 1.10.0

Revisions:
- Routing:
  - Added support for IS-IS routing protocol
  - Added support for RIP NG routing protocol
  - Reworked BGP configuration
  - BGP:
    - Added support for BGP Graceful restart
    - Added support for BGP Weight attribute
  - OSPF:
    - Added support for OSPF Graceful restart
- Monitoring and management:

- Added possibility to enable monopoly access to the configuration
- Added possibility to reset CLI sessions
- Added possibility to clear the alarm list

- Tunneling:
  - Added user authentication method selection for L2TP and PPTP servers
  - Added possibility to use private key and certificate for OpenVPN client
- MPLS:
  - Added support for LDP
  - Added support for L2VPN VPWS
  - Added support for L2VPN VPLS Martini mode
  - Added support for L3VPN MP-BGP

Version 1.8.7

Revisions:

- USB-Modem:
    - Added the «no compression» command to disable TCP/IP header compression method Van Jacobson
- Monitoring and management:
    - Added possibility to execute SSH commands in non-interactive command line sessions (CLI)

Version 1.8.5

Revisions:

- Security:
  - Added possibility to use demo licenses for IDS/IPS
- SLA:
  - Updated Wellink SLA agent on ESR-10/12V/12VF
- USB-Modem:
  - Added possibility to use '_', '@', '.', '-' characters for user field in cellular profile configuration mode
- Monitoring:
  - Added Zabbix-proxy functionality

Version 1.8.3

Revisions:

- IPSEC:
    - Fixed problem of unstable IPsec operation with DMVPN and L2TPv3
- Multilink:
    - Fixed problem of routing traffic from multilink
    - Fixed problem with adding the second and subsequent interfaces in multilink
- OSPF:
    - Fixed problem with route information update

Version 1.8.2

Revisions:

- Support for ESR-20/21/1500/1510 routers
- OpenVPN server:
    - Increased the number of users to 64
- ACL:
    - ESR-1X: increased the number of rules to 255

Version 1.8.1

Revisions:

- OpenVPN server:
    - Added possibility to assign a static IP address to an OpenVPN user
    - Added possibility to authorize multiple OpenVPN users with one certificate

Version 1.8.0

Revisions:

- Tunneling:
    - Support for DMVPN
- BGP:
    - Increased BGP RIB ESR-20/21/100/200 to 2M routes
    - Increased BGP RIB ESR-1000/1200/1500/1510 to 3M routes
- SNMP:
    - Support for LLDP-MIB

Version 1.7.0

Revisions:

- Filtering:
  - Support for IDS/IPS
  - HTTP proxy: added redirect port configuration
- CLI:
  - ESR-1700: Increased the maximum number of object-group networks to 1024
  - Added possibility to specify prefix 0.0.0.0/0 in Prefix List, route-map
  - Added possibility to specify links in object-group url as regular expressions
  - Added possibility to change MAC-address of physical and aggregated interfaces
  - Transfer port commands **ip http proxy redirect-port**, **ip http proxy redirect-port** from BRAS to HTTP(S) Proxy
- NAT:
  - ESR-1700: Increased the maximum number of NAT pool to 1024

Version 1.6.6

Revisions:

- Tunneling:
  - Support for the new keepalive mechanism for softgre tunnels. The tunnels are checked by ping-probe from the client devices. The new operating mode is enabled by the keepalive mode reactive command in the wireless-controller configuration

Version 1.6.5

Revisions:

- CLI:
    - Added possibility to enable single-user configuration mode
    - Added command to terminate CLI sessions
    - Added notification of unapplied configuration changes when entering/exiting configuration mode and CLI
- Tunneling::
    - Added option to enable softgre sub-tunnel in Bridge, which is in VRF

Version 1.6.5

Version 1.6.4

Revisions:

- BRAS:
  - Added **show subscriber-control sessions count** command to count the number of BRAS sessions
  - Added **show subscriber-control services count** command to count the number of BRAS services
- mDNS
  - Added mDNS-reflector functionality
  - Added mDNS service filtering functionality
  - Added **show ip mdns-reflector** command to view found mDNS services
  - Added **clear ip mdns-reflector** command to update the list of services
- Monitoring and management:
  - CLI
    - Added dynamic/static and tunnel softgre filters for **show/clear mac address-table** commands
  - Tunneling:
    - Added **clear tunnels softgre remote-address <ip>** command to remove softgre tunnel for a specific point
    - Added **clear tunnels softgre** command to remove all softgre tunnels

Version 1.6.2

Revisions:

- BRAS:
    - Supported on ESR-1X/2X
    - Added possibility to set the interface with dynamic IP addresses as nas-ip
- DHCP:
    - Added possibility to clear DHCP server lease records
    - Increased the number of static DHCP entries in the pool to 128
- QOS:
    - Added classification on the outbound interface, which allows not to use ingress policies
    - Added possibility to set multiple ACLs in a class
    - Added the possibility to set a DSCP classification in a class
- VoIP:
    - Added possibility to configure PBX
- Interfaces:
    - Supported routerport/switchport/hybrid interface operation mode
    - Supported E1 HDLC
    - Supported Serial (RS-232):
    - Organization of connections using analog modems in Dial up, leased line mode
    - Controlling neighboring devices via console
- Routing
    - BGP:
        - Supported Flow Specification Rules
        - Supported weight attribute
        - Added possibility to set route-map default route, le/ge/eq
        - Added all, nearest, replace options for remove-private-as option
    - IP:
        - Supported IP Unnumbered
        - Added possibility to disable ICMP unreachable/redirect responses
        - Supported IPv6 Router Advertisement
    - Multiwan:
        - Supported mechanism to clear NAT sessions after an unreachable target is detected
- Monitoring and management:

- AAA:
    - Added possibility to set source IP address for TACACS/LDAP servers
    - Added possibility to set interface as a source for RADIUS server
    - Extended TACACS server key size to 60 characters
    - Added possibility to disable console port authentication
- CLI:
    - Added possibility to set command aliases
    - Added possibility to view interface usage statistics
    - Added possibility to view CPU usage statistics
    - Added possibility to set a name for a static route
    - Added possibility to calculate hash sums of files
    - Added possibility to view the list of current crashes
    - Added possibility to disable debugging with one command
    - Added possibility to display messages when viewing logs for a certain period of time
    - Added possibility to download bootloaders
    - Added possibility to view rule description in output of **show ip firewall counters** command
    - Added possibility to copy files via HTTP(S) protocol
    - Added possibility to view the difference between configurations (running, candidate, factory)

- Added possibility to view the configuration with metadata
- Removed commit update command
- SNMP:
    - Added possibility to set community for trap messages
    - Added possibility to set source IP address for trap messages
    - Added possibility to choose content of linkDown/linkUp traps between standard and cisco-like
- SSH:
    - Added possibility to set source IP address for SSH client
- Supported Cisco SLA responder
- Supported Eltex SLA
- Supported SFTP server

- Filtering and translation
    - Firewall:
        - Added filtering by ICMP message type name
    - HTTP (S) Proxy:
        - Added filtering by content type: ActiveX, JS, Cookies
        - Added possibility to filter/redirect by local/remote lists
        - Added possibility to update remote URL lists via RADIUS CoA
    - NAT:
        - Added possibility to broadcast addresses from PPTP/PPPoE tunnel
- Tunneling:
    - IPSEC:
        - Added possibility to use an IP address obtained by DHCP as a local gateway
        - Added possibility to view extended information about tunnel authentication
        - Supported XAuth client
        - Support for PFS (perfect forward secrecy) using the DH group

Version 1.4.4

Revisions:

- PPPoE client:
  - Added PAP, MS-CHAP, MS-CHAPv2, EAP authentication methods

Version 1.4.2

Revisions:

- Attack protection:
  - Added the **show ip firewall screens counters** command, which allows you to view statistics on detected network attacks
  - Implemented protection against XMAS and TCP all flags
- SNMP:
  - Added possibility to set **snmp-server contact** and **snmp-server location** Added OIDs for these parameters
  - Implemented SNMP View: allow or deny access to community and user by OID
- NTP:
  - Expanded **show ntp peers** output: added stratum and synchronization status
- Firewall:
  - Added **ip firewall sessions tracking sip port** command, allowing you to select TCP/UDP port for SIP session tracking
- Firewall:
  - Added **ip firewall sessions tracking sip port** command, allowing you to select TCP/UDP port for SIP session tracking
- Tunneling:
  - Implemented L2TP client with IPSec support
- IP SLA agent (Wellink):
  - Added possibility to manage tests without portal participation
  - Redesigned control and monitoring commands
  - Added threshold management commands: setting thresholds for exceeding and normalizing test parameters, alerting in CLI, SYSLOG and SNMP about threshold crossing

Version 1.4.1

Revisions:

- Tunneling:
    - GRE enhancement:
        - Implemented keepalive mechanism for Ethernet over GRE tunnels
        - Increased maximum number of SoftGRE tunnels to 8K (ESR-1200/ESR-1700)
        - Added possibility to configure MTU on SUB-GRE tunnels
    - IPsec enhancement:
        - Added **encryption algorithm null** command in **config-ipsec-proposal** mode to disable encryption of ESP traffic
        - Support for policy-based IPsec operation in VRF
- BRAS:

- Supports speed limit per subscriber session
- Added **session ip-authentication** command in **config-subscriber-control** configuration mode. When this option is enabled, user authentication is by IP address
- Added **show subscriber-control radius-servers** command to view information about RADIUS servers used

- SNMP:
    - Added possibility to apply the configuration and reboot the device with **commitConfirmAndReload** SetRequest
    - Support for the RMON agent, which allows to collect statistics about the nature of traffic on network interfaces
    - Implemented management of VoIP services via SNMP
    - Support for sending notifications when DoS attacks are detected
    - Implemented sending SNMP traps when thresholds are reached:
        - Network interfaces load
        - GRE/SUB-GRE tunnel
        - Number of tunnels included in the bridge-group
        - BRAS sessions
- AAA:

- Added possibility to specify the **source-address** for requests to the authentication and authorization server in **config-tacacs-server** and **config-ldap-server** configuration modes

- Multiwan:
    - Added **wan load-balance** commands in **config-cellular-modem** configuration mode to configure Multiwan using a USB modem
- L3 routing:
    - Supported BFD technology for static routing
    - BGP enhancement:
        - Added commands: **default-information originate** in **config-bgp-af** configuration mode, **default-originate** in **config-bgp-neighbor** configuration mode to allow default route advertisement
- CLI:

- Added support for the Ctrl-P and Ctrl-N hotkeys to view the history of entered commands
- Added the ability to view the current state of tracking objects using the **show tracking objects** command

- LLDP:
    - Added support for MED extension with support for announcing DSCP, VLAN, PRIORITY parameters for different device types. Through this extension the Voice VLAN transmission is realized
- Firewall:
    - Implemented application traffic classification technology

- Added **ip firewall logging screen** command in **config** mode to log detected DoS attacks
- QOS:
  - Implemented GRED (Generic RED) mechanism to manage queue overflow based on IP DSCP or IP Precedence
- VRRP:
  - Supported operation in VRF
  - Added VRRP track-ip
- Zabbix:
  - Implemented Zabbix agent
- Configuration:
  - Implemented automatic reading of the configuration from removable media when booting the device without configuration

Version 1.4.0

Revisions:

- Tunneling:
    - Added PPTP client
    - Added PPPoE client
    - Support for Ethernet over GRE tunnel
    - Support for creating subinterfaces for Ethernet over GRE tunnels
    - Added possibility to increase MTU for tunnels up to 10000
    - IPsec enhancement:
        - Supported XAuth for dynamic IPsec tunnels
    - OpenVPN enhancement:
        - Extension of the list of encryption and authentication algorithms
- BRAS:
- Added possibility to broadcast the table USER IP - PROXY IP by NetFlow for proxied connections
- L2 switching:
    - Added **force-up** command to **config-vlan** In this mode, the VLAN is always in the «Up» state
- L3 routing:
    - Added possibility to optionally enable IPv6 stack on interfaces
    - BGP enhancement:
        - Increased the range of values for the local preference parameter
        - Extended output of the **show ip bgp neighbors** command
        - Implemented VRRP tracking: change MED and AS-path attributes based on VRRP state
- CLI:
    - Added possibility to scale the size of the terminal to the size of the window on the PC when using the console connection. **terminal resize** command
    - Extended the set of allowed characters in APN in **config-cellular-profile** Added characters: "@", ".", "-"
    - Monitoring:
        - Added possibility to filter traffic by source/destination MAC address
        - Added possibility to view Firewall sessions
        - Output interface status information when calling show ip interfaces
- DHCP:
- Added possibility to exclude IP address from DHCP server address pool
- Added possibility to set arbitrary option in IP-address, string, HEX-string format
- NAT:
    - Support for Static NAT
- NTP:
    - The **ntp enable vrf <NAME>** command outdated. Protocol time synchronization is enabled by the **ntp enable** command and will be allowed for all servers and peers in the configuration
    - Added **ntp logging** command to log NTP events
    - Added **ntp source address <IP>** command to set IP address for all NTP peers
- SNMP:
    - The **snmp-server vrf <NAME>** command outdated. Protocol access is enabled with the **snmp-server** command and will be allowed for all communities and SNMPv3 users in the configuration
    - Management:
        - Support for copying firmware, configuration, certificates
        - Support for configuration operations (commit, confirm, restore, rollback, etc.)
        - Added possibility to create interfaces
        - Added possibility to change the image of the active software

- Added possibility to reboot the device (only when **snmp-server system-shutdown** is enabled on esr)
- Added possibility to configure VRRP
- Monitoring:
  - Added possibility to view the number of existing interfaces and tunnels of all types
  - Added possibility to view the size of the ARP table
- SYSLOG:

- Added logging of stops/starts of system processes

- VRRP:
  - Added the **vrrp force-up** In this VRRP mode, IP interface is always in the «Up» state

Version 1.3.0

Revisions:

- Attack protection:
    - DoS attack protection:
        - ICMP flood
        - Land
        - Limit-session-destination
        - Limit-session-source
        - Syn flood
        - UDP flood
        - Winnuke
    - Blocking spy activity:
        - Fin-no-ack
        - ICMP type
        - IP sweep
        - Port scan
        - Spoofing
        - Syn-fin
        - TCP-no-flag
    - Blocking non-standard packets
        - ICMP fragment
        - IP fragment
        - Large ICMP
        - Syn fragment
        - UDP fragment
        - Unknown protocols
- Support for DNS name resolution. Caching DNS server
- Support for LLDP
- Support for 3G/4G USB modems
- AAA:
    - Added possibility to adjust the number of failed authentication attempts
    - Added possibility to set the password lifetime
    - Added possibility to set the maximum number of passwords stored in the history for each local user
    - Added reminder function of the initial password change
    - Added possibility to set a timeout for the login session
    - Added setting to allow/deny login as root when connecting via RS-232 (console)
    - Requirement to change the password after it expires
    - Added possibility to control password complexity
- BGP:
    - Combining peers into groups with a set of attributes
- BRAS:
    - Added Framed-IP-Address attribute containing subscriber IP address to Access-Request packets of RADIUS protocol
    - Optimized performance of the Proxy server
- CLI:
    - Supported SFTP for uploading/downloading firmware files, configurations and certificates
    - Support for USB memory sticks, SD/MMC cards in firmware, configuration and certificate file copying operations
    - Added possibility to view table sizes and routing protocol priorities
    - Added possibility to view all routes belonging to a specified subnet
- DHCP:

- DHCP client. Manual IP address re-request
- Support for DHCP server in VRF
- Support for options 150 (tftp-server ip) and 61 (client-identifier HH:<MAC>) for DHCP server
- Firewall:
    - Added possibility to control ALG modules
    - Added possibility to disable drop packets related to the session with an invalid status (e.g., in asymmetric routing)
- IPSEC:
    - Added possibility to set the local address to any when configuring the IKE gateway
    - Support for certificates
- L2 switching:
    - Added possibility to pass BPDU through the bridge on ESR-100/200
    - Added possibility to include the physical port in the bridge on the ESR-100/200
- Multiwan:
    - Implemented automatic switching to a backup channel if parameters of the current channel deteriorate (LOSS, jitter, RTT)
    - Support for VRF operation
    - Support for LT tunnels
- NTP:
    - Authentication support
    - Support for filtering by message type
- SNMP:
    - Added possibility to disable SNMPv1
    - Implemented access control lists
    - Added possibility to control password complexity for snmp-server community
- SSH
    - Added possibility to configure the maximum number of authentication attempts to connect via SSH
    - Added possibility to set the waiting interval for SSH connection authentication
    - Added possibility to set the key pair update interval for SSH
    - Selectable SSH version
    - Implemented authentication algorithms, encryption, key exchange configuration
    - Variable length RSA key generation
- VLAN
    - Operational VLAN status management (ESR-1000/ESR-1200)
    - Support for MAC based VLAN
    - Added possibility to automatically add ports to existing VLANs
- VRRP
    - Added possibility to use VRRP IP as source IP address for GRE, IP4IP4, L2TPv3 tunnels and RADIUS client
    - Listening to VRRP by L2TP/PPTP IP servers
    - Support for VRRPv3
    - Fixed incorrect order of virtual IP addresses in a packet

Version 1.2.0

Revisions:
- Tunneling:
  - GRE Keepalive support
- L3 routing:
  - BGP:
    - Adding of neighbor description
    - Possibility to enable/disable neighbors
    - Increased total number of BGP peers to 1000
    - View the total information on peers
  - Multiwan:
    - View operational information
  - VRRP:
    - Set a subnet mask for VRRP IP
  - Port-Channel Operational Status Management (ESR-100/200)
- IPSEC:
  - Support for Policy-based IPsec mode
  - Flexible tunnel key renegotiation (margin seconds/packets/bytes, randomization)
  - Closing the IPsec tunnel after a specified number of packets/bytes have been transmitted
  - Specification of the time interval after which the connection is closed if no packets are received or transmitted through the SA
- SNMP:
  - Display the current speed of the interfaces in the ifSpeed parameter of the IF-MIB
  - SNMP Trap:
    - Trap on exceeding the thresholds of CPU load and temperature, fan speed, free RAM and FLASH space
- CLI:
  - Routing information filtering by protocol
  - Filtering by interface, IP address and MAC address in ARP/ND table clear commands
  - Storing log files in the non-volatile memory of the device
  - Uploading log files from the device using the **copy** command
  - View the contents of critlog with the **show syslog** command
  - View the contents of the log files from the end. Added **show syslog from-end** command
  - Configuration confirmation timer setting. Added **system config-confirm timeout** command
  - Changes in the command interface:
    - Cisco-like paths for files:

v1.2.0: system:..
esr# copy system:running-config
v1.1.0: fs://.../
esr# copy fs://running-config

- AAA:
  - Added a mode in which the following methods will be used for authentication if the priority one is not available
- NTP:
  - Authentication support
- Firewall:
  - Increased the number of security zone pairs to 512
  - Added possibility to pass packets that could not be identified as belonging to any known connection and that are not the start of a new connection. Added **ip firewall sessions allow-unknown** command
- QOS:

- Configuring the length of edge queues in Basic QoS
- BRAS:
    - Shaping by SSID and offices
    - Subscriber authentication by MAC-address
    - Configuring active/reserve redundancy based on VRRP status

Version 1.1.0

Revisions:

- BRAS:
    - User termination
    - RADIUS CoA processing, interaction with AAA
    - URL whitelists/blacklists
    - Quoting by traffic volume and session time, or quoting by both
    - HTTP proxy
    - HTTP Redirect
    - HTTPS Proxy
    - HTTPS Redirect
    - Getting URL lists from PCRF
    - Session accounting via Netflow protocol
    - Optional additional verification of authorized users by MAC-address
- Netflow:
    - Netflow v10. Exporting statistics by URL
    - VRF support
    - Support for Domain Observation ID
    - Information on NAT sessions
    - HTTPS Host export
    - Exporting information on L2/L3 location
    - Active-timeout configuration
    - Setting the source IP address for packets sent to the Netflow collector
    - Configuring exports on an interface with the Firewall enabled
- VRRP:
    - Tracking routes based on the state of the VRRP process
- CLI:
    - Autocomplete and display the names of created objects in tooltips
    - Display summary information by Firewall and NAT sessions
    - View real-time information on running services/processes
    - Informative tooltip in case of incorrect parameter entry
- SYSLOG:
    - Added possibility to set source IP-address for interaction with SYSLOG servers
- L2 switching:
    - Q-in-Q subinterfaces
- L3 routing:
    - VRF enhancement:
        - Virtual Ethernet Tunnel (tunnel linking VRF)
    - BGP enhancement:
        - Configuring the source IP address for routing information exchange (update-source)
        - Support for BFD
- DHCP Relay:

- Support for Option 82
- VRF support
- Support for point-to-point interfaces (GRE, IP-IP, etc.)

- Management interfaces:
    - SNMP:
        - Support for MAU-MIB
- QOS:

- Increasing the number of QoS policy-map to 1024 and class-map to 1024

- Wi-Fi Controller:
  - Retrieve settings (tunnel-served SSID and shaping parameters) of DATA tunnels from RADIUS server

Version 1.0.8

Revisions:

- Improved health monitoring of network services
- AAA:
    - Setting a source IP to communicate with RADIUS servers
    - Deleting SSH host keys
    - Support for legacy encryption protocols for SSH connections from third-party devices
- L3 routing:
    - MultiWAN: per-flow routing
    - Recursive static routing
    - BGP support for setting blackhole/unreachable/prohibit as Nexthop
    - VRF-lite enhancement:
        - support for NTP
        - Support for GRE tunnels
- CLI enhancement:

- Support for correct addition of partially entered parameters
- Display the network interfaces uptime in the **show interfaces status** command
- Replacing private data when logging entered commands with ***
- Added **no nat { source | destination }** commands to quickly remove the entire NAT configuration

- VRRP:
    - Support for version 3
    - Support for configuring GARP Master parameters
    - Simultaneous configuration of up to 8 Virtual IPs per process
- Reservation of Firewall sessions is now configured independently of the Wi-Fi Controller
- Multiwan:
    - Output messages about changes in route states
- ESR-100/ESR-200:
    - Support for 100BASE-X transceivers on combo ports
- ESR-1000:
    - Bridge: Prohibit switching of unknown-unicast traffic
- Management interfaces:
    - SNMP:
        - SNMP Trap:
            - Trap on high CPU load
        - SNMP MIB:
            - IP-MIB
            - TUNNEL-MIB
            - ELTEX-TUNNEL-MIB
            - RL-PHYS-DESCRIPTION-MIB
            - CISCO-MEMORY-POOL-MIB
            - CISCO-PROCESS-MIB

Version 1.0.7

Revisions:

- Device control: configuring the operation mode of the fans
- L3 routing:
    - Automatically allocated VLAN (Internal Usage VLAN) do not change when the configuration is applied
    - MultiWAN: unconditional target check
    - Removed mutual crossing check for DirectConnect networks and static routes
    - Changes in TCP MSS
    - Changed restrictions on the maximum number of active routes (FIB)
    - Limited maximum number of routes for each dynamic routing protocol (RIB)
    - Added possibility to filter the default route in the Prefix List
    - BGP support
    - BGP ECMP
    - Keepalive timer autocalculation
    - Support for Policy-based routing (IPv4 only)
    - Logging changes in the state of connections with peers in the OSPF and BGP
    - Added possibility to use route-map for OSPF, RIP
    - VRF-lite enhancement:
        - BGP support
        - Support for OSPF
        - Поддержка QoS
        - Router management (AAA, Telnet, SSH, SNMP, Syslog, **copy** command)
    - IPv6 enhancement:
        - BGP support
        - Support for setting Nexthop in route-map
        - Support for RADIUS/TACACS/LDAP
        - Support for MultiWAN
- Tunneling:
    - Authentication via RADIUS server for PPTP/L2TP servers
    - OpenVPN
    - Expiration of automatically raised Ethernet-over-GRE tunnels (Wi-Fi controller)
    - IPsec enhancement:
        - Support for DES protocol
        - Obtain operational information
- ARP/ND:

- Configuring the lifetime of entries

- DHCP Server:
    - Configuring the netbios-name-server option in the DHCP address pool
- CLI enhancement:
    - Viewing load on network interfaces
    - Extended list of protocols in ACL
    - The untagged/tagged parameter is made optional when removing a VLAN with the **switchport general allowed vlan remove** command
    - Viewing traffic on network interfaces
- VRRP:
    - Preempt delay configuration
    - Simultaneous configuration of multiple Virtual IP
- Multiwan:
    - Verification of all targets on the target list
- ESR-100/ESR-200:

- Policy-based QoS
- ACL
- ESR-1000:
    - Automatic SFP transceiver detection for 10G ports
    - Bridge: Isolation of tunnels or sub-interfaces in the bridge
    - Integration of third-party software:
        - IP SLA agent (Wellink)
- SYSLOG: Added timezone setting before displaying messages
- Management interfaces:
    - SNMP:
        - SNMP Trap
        - SNMP MIB:
            - ENTITY-MIB
            - IANA-ENTITY-MIB

Version 1.0.6

Revisions:

- Management and monitoirng:
    - Automatic configuration redundancy
    - Statistics collection:
        - Netflow v5/v9/v10(IPFIX)
        - sFlow
- MAC table:

- Added possibility to limit the MAC-addresses being learnt
- Added possibility to adjust the storage time of MAC-addresses

- Syslog enhancement:
    - Logging critical commands
    - Logging routing protocols operation
- CLI enhancement:
- Command trace filtering by | include/exclude/begin/count
- Improvement of the page view mode of commands
- Switching syslog file browsing to page mode
- Support for entering the port on which the TFTP/SSH/FTP service on the remote server works in the **copy** command
- Added age display of ARP/IPv6 entries and self entries in **show arp** and **show ipv6 neighbors** commands
    - Changes in the command interface:
        - Added **ip path-mtu-discovery** command
        - DHCP: The **ip address dhcp enable** command changed to **ip address dhcp**

v.1.0.6:(config)# interface gigabitethernet 1/0/1
(config-if-gi)# ip address dhcp
v.1.0.5:(config)# interface gi 1/0/15
(config-if)# ip address dhcp enable

- DHCP: The **ip address dhcp server <IP>** command changed to **ip dhcp server address <IP>**

v.1.0.6: (config)# interface gigabitethernet 1/0/1
(config-if)# ip dhcp server address 10.10.0.1
v.1.0.5: (config)# interface gigabitethernet 1/0/1
(config-if)# ip address dhcp server 10.10.0.1

- DHCP: The **ip address dhcp {<Ignore, lease-time, reboot, set reboot time, retry, select-timeout, timeout, vendor-class-id>}** command changed to **ip dhcp client {<Ignore, lease-time, reboot, set reboot time, retry, select-timeout, timeout, vendor-class-id>}**

v.1.0.6: (config)# interface gigabitethernet 1/0/1
(config-if)# ip dhcp client timeout 60
v.1.0.5: (config)# interface gigabitethernet 1/0/1
(config-if)# ip address dhcp timeout 60

- Firewall: The **show security zone-pair counters** command changed to **show ip firewall counters**

v.1.0.6: # show ip firewall counters
v.1.0.5: # show security zone-pair counters

- Firewall: The **clear security zone-pair** command changed to **clear ip firewall counters**

v.1.0.6: # clear ip firewall counters
v.1.0.5: # clear security zone-pair

- sNAT: The **service nat source** command changed to **nat source**

v.1.0.6: (config)# nat source
v.1.0.5: (config)# service nat source

- dNAT: The **service nat destination** command changed to **nat destination**

v.1.0.6: (config)# nat destination
v.1.0.5: (config)# service nat destination

- NTP: The **service ntp {< broadcast-client, dscp, enable, peer, server>}** command changed to **ntp {< broadcast-client, dscp, enable, peer, server>}**

v.1.0.6: (config)# ntp peer 10.10.10.10
v.1.0.5: (config)# service ntp peer 10.10.10.10

- MULTIWAN: The **target <IP>** command changed to **ip address <IP>**

v.1.0.6: (config)# wan load-balance target-list eltex
(config-wan-target-list)# target 3
(config-wan-target)# ip address 10.10.0.1
v.1.0.5: (config)# wan load-balance target-list eltex
(config-wan-target-list)# target 3
(config-wan-target)# target 10.10.0.1

- IPsec: The **ipsec authentication method psk** command changed to **ipsec authentication method pre-shared-key**

v.1.0.6: (config)# remote-access l2tp elt
(config)# ipsec authentication method pre-shared-key
v.1.0.5: (config)# remote-access l2tp elt
(config)# ipsec authentication method psk

- QoS enhancement:
- Prioritizing control traffic
- Firewall enhancement:
- Managing timers and number of sessions
- SSH enhancement:
- RSA, DSA, ECDSA, Ed25519 key generation
- NAT enhancement:
- Added possibility to run NAT when Firewall is disabled
- Using bridge in the command to limit the scope of a rule group
- MultiWAN enhancement:
- Specifying SUB-interfaces as a gateway
- SNMP enhancement:
- Support for ifXTable
- SNMP IPv6
- Enable/disable user for low-level technical support access
- Arbitrary MAC address settings on the network bridge
- L3 routing:
- BGP enhancement:
    - ExtCommunity
    - Private AS deletion mode
    - Mode of default-route announcement along with other routes
- Filtering and assigning parameters to routes in redistribution

Version 1.0.5

Revisions:

- CLI enhancement:
- Deleting entities of the same type with one command via the 'all' option
- Interfaces:
- Support for Jumbo Frame (MTU up to 10000 bytes)
- Assigning /32 prefixes to Loopback interfaces
- Firewall:
- Added possibility to interrupt/clean up established sessions
- Disabling Firewall function
- QOS:
- Marking/remarking traffic
- DSCP code mutation
- Hierarchic QoS (HQoS)
- Bandwidth management (shaping), 1 kbit/s step
- Bandwidth reservation by traffic class (shaping per queue)
- RED, GRED queue overload management
- SFQ queue management
- Policy-based QoS
- Network services:
- Access control list (ACL)
- Support for issuing IP addresses by DHCP-server according to client's MAC-address
- Support for filtering by MAC-addresses in Firewall
- Support for simultaneous operation of DHCP server and Relay agent
- Telnet, SSH clients
- Support for E1 interfaces:
- CHAP
- PPP
- MLPPP (Multilink PPP)
- AAA:
- Authentication and authorization by local user base, RADIUS, TACACS+, LDAP
- Command accounting via the TACACS+ protocol
- Session accounting: SYSLOG, RADIUS, TACACS+
- Managing command privilege levels
- L3 routing:
- BGP enhancement:
    - Attribute filtering and attribute modification (local preference, AS-path, community, nexthop, origin, metric, subnet)
    - Support for Route-Reflector feature
    - Configuration of authentication options for a specific neighbor
    - Support for 32-bit numbers of autonomous systems
    - Added possibility to view prefixes received from neighbor and announced to neighbor
    - Added possibility to view information by specific prefix
- RIP enhancement:
    - Summation of advertised subnets
    - Static neighborhood
- OSPF enhancement:
    - Summation of advertised subnets
    - Support for the eligible parameter for NBMA interfaces
- Route propagation management (prefix lists with the ability to specify valid prefixes using eq, le, ge rules)
- Static routes with blackhole/prohibit/unreachable destination

- VRF Lite:
  - Operation of network functions in the context of VRF:
    - IPv4/IPv6 addressing
    - Static routing
    - NAT
    - Firewall
- System resource monitoring:

- Connection/flow monitoring
- Routing table monitoring

- Improvements in Syslog operation
- Router redundancy:
  - Firewall session redundancy
  - DHCP server lease redundancy
  - SoftGRE tunnel redundancy for Wi-Fi access points
- Support for IPv6 addressing in the following network services:
  - Addressing
  - Static routing
  - Firewall
  - OSPFv3
  - Prefix-List
  - NTP
  - Syslog
  - Ping, traceroute utilities
  - Telnet client/server
  - SSH client/server
  - DHCP Server/Relay/Client
- SNMP:
  - Added support for SNMPv3
  - Added SNMP MIB (monitoring) for QoS

Version 1.0.4

Revisions:

- CLI:
    - Added possibility to import and export files using FTP, SCP
    - Viewing configurations by section
    - Added possibility to update u-boot from the system command interface
    - Changes in the command interface:
        - NAT: The **proxy-arp interface** command changed to **ip nat proxy-arp**

v.1.0.4: (config)# service nat source
(config-snat)# proxy-arp interface gigabitethernet 1/0/15 SPOOL
v.1.0.3: (config)# interface gigabitethernet 1/0/15
(config-if)# **ip nat proxy-**arp SPOOL

- IKE: The **policy** command changed to **ike-policy**

v.1.0.4: (config)# security ike gateway gw1
(config-ike-gw)# policy ik_pol1
v.1.0.3: (config)# security ike gateway gw1
(config-ike-gw)# **ike-policy** ik_pol1

- IPSec: The **vpn-enable** command changed to **enable**

v.1.0.4: (config)# security ipsec vpn vpn1
(config-ipsec-vpn)# vpn-enable
v.1.0.3: (config)# security ipsec vpn vpn1
(config-ipsec-vpn)# enable

- VTI: The **interface vti** command changed to **tunnel vti**

v.1.0.4: (config)# tunnel vti 1
v.1.0.3: (config)# interface vti 1

- DHCP: The **service dhcp-server** command changed to **ip dhcp-server**

v.1.0.4: (config)# ip dhcp-server
v.1.0.3: (config)# **service** dhcp-server

- SNMP:
    - Added support for SNMP monitoring
    - Supported standard SNMP MIB (monitoring)
- Routing features:
    - Authentication key-chain
    - OSPF:
        - NSSA
        - Stub Area
        - MD5 Authentication
        - MTU Ignore mode
    - RIP:
        - MD5 Authentication
    - BGP:
        - Support for EBGP Multihop
        - Support for next-hop-self attribute
    - Static routing:
        - Support for configuring multiple default routes
    - Configurable preference for routing protocols
- Redundancy features:

- Support for VRRP
- Support for DualHoming redundancy
- Control and redundancy of WAN (Wide Area Network) connections
- Load balancing on WAN interfaces
- DHCP:
    - Support for DHCP relay
- QOS:
    - Traffic prioritization
    - L3 priority processing (DSCP)
    - Support for 8 priority queues
    - SP, WRR queue processing algorithms
    - Setting interface bandwidth limits for incoming and outgoing traffic
- Interfaces:
    - Support for loopback interfaces
- NAT/Firewall:
    - Support for renumbering rules
    - Viewing information about established sessions
    - Improved session monitoring for a number of protocols (H.323, GRE, FTP, SIP, SNMP)
    - Activating and deactivating session traffic counters
    - Change in the command interface: improved commands autocompletion
- Mirroring:
    - Support for traffic mirroring

Version 1.0.3

Revisions:

- Switching:
    - VLAN configuration
    - LAG (static and LACP)
    - STP/RSTP/MSTP
    - Port isolation
    - Bridge groups
- Routing:
    - OSFP
    - BGP
    - RIP
- NAT:
    - Proxy ARP for Source NAT
- Remote access:
    - L2TPv3
    - IPv4-over-IPv4
    - GRE
- Syslog:
    - Added possibility to configure logging in remote sessions (SSH and Telnet)
    - The message format is in accordance with RFC5424
    - Entered commands logging
- CLI:
    - Added possibility to update the software via the CLI
    - Added possibility to view the operational status of interfaces
    - Support for port utilization
    - Support for viewing the ARP table
    - Command to view the serial number
    - View hardware version command
    - Support for ARP table cleaning
- System:
    - Support for licensing
    - Support for Flash button
    - Implemented automatic load balancing between router cores
- Security:
    - Support for group SHA-2 authentication methods in IKE IPsec

Version 1.0.2

Revisions:

- Configuration:
    - Added possibility to copy configuration to (c) TFTP server(s)
    - Hostname
    - System time (manual)
    - Interface description
    - Added possibility for the firewall to filter the traffic broadcast or non-broadcast DNAT service
    - Added possibility to ignore certain options in the DHCP client
    - Changes in IPSec commands related to authentication and encryption
    - Checking for duplicate information in object-group service/network
    - Added possibility to reset to factory configuration
    - Added possibility to set time zones
- Operative information:
    - System environment parameters
    - Active user sessions
    - Load on physical interfaces
    - Status of logical interfaces
    - Counters of logical interfaces
- Remote access:
    - PPTP
    - L2TP/IPSec
- NTP:
    - Server, peer, client modes
- 10G port indication
- Utilities:
    - Ping

Version 1.0.1

Revisions:

- Address translation:
    - Source NAT
    - Destination NAT
    - Static NAT
- Virtualization, VPN:
    - IKE
    - Tunnelling (IPsec)
    - Connection encryption (3DES, AES)
    - Message authentication by MD5, SHA1, SHA256, SHA384, SHA512
- Network services:
    - DHCP Server
    - DHCP Client
    - DNS
- L3 routing:
    - Static routes
- Network security:
    - Firewall
- Management:
    - Management interfaces:
        - CLI
        - Telnet, SSH
    - Access control (local user base)
    - Configuration management
    - Automatic configuration restore
    - Updating the firmware (u-boot)
- Monitoring:
    - Syslog

Performance:

Firewall performance (large packets)	_5.9 Gbps_
NAT performance (large packets)	_5.9 Gbps_
IPsec VPN performance (large packets)	_3.7 Gbps (AES128bit / SHA1)_
Number of VPN tunnels	_100_
Quantity of static routes	_100_
Number of competitive sessions	_512,000_

Version restrictions:

- Bandwidth is limited (500Mbit/s per IPsec tunnel)
- CPU load balancing is supported with limitations
- Policy-based VPN is not supported
- Updating firmware only by means of u-boot

- Static switch control
- No hardware bridging acceleration
- No VLAN configuration (bridging)
- No support for SNMP, Webs
- No timezone configuration
- No NTP