Wireless access controllers
WLC-15, WLC-30, WLC-3200, WLC-3250, WLC-3350, vWLC

Release notes
Firmware version 1.42.0

Version 1.42.0

Revisions:

- Monitoring and management:
  - WEB:
    - General changes:
      - Restructed menu
    - Configuration:
      - Configure groups of objects in the tab
      - Configure access lists in the tab
      - Select MAC address among the connected AP when creating individual AP settings
      - Disable AP radio interface on the "Radio Profiles" page
      - Disable AP radio interface in individual settings
    - Monitoring:
      - Added "Dashboard" page
      - Display of the number of clients by ranges
      - View the results of passive scanning in AP monitoring
      - Launch spectrum analyzer and view the results in monitoring
      - Optimized operation of the logs, the total number of records has been calculated in a separate stream
      - Filter by multiple AP statuses on monitoring pages
      - Display the traffic volume on AP interface in MB
  - WLC:
    - General changes:
      - Implemented the ability to switch of the registered AP without loss of registration when changing the address of the WLC
      - Optimized process of establishing a secure connection when connecting AP
      - Implemented the specification of the "Invalid data from AP" error
    - Monitoring:
      - Extended logging of client roaming events
      - Advanced filtering of the customer log by fields: ip, roaming, ssid, username
      - Advanced filtering of AP log by fields: ap-location, ip, state
      - **update** and **show wlc ap spectrum-analyser** commands to start and view the spectrum analyzer
      - Extended logging of the reasons for AP transition to the LOST status
      - Extended client connection error events during 802.1x authentication
    - Configuration:
      - Ability to configure country-code unlimited for WOP-30LS
      - **beacon-hostname-translation** command in ssid-profile to enable AP hostname broadcast in beacon frames for WEP-30L, WEP-30L-Z, WOP-30L, WOP-30LI, WOP-30LS, WEP-3ax
      - Chaged lower limit of **wlc-connections keepalive** in ap-profile for 30 seconds
      - Added **description** command in object-group ap-models
      - Reduced the maximum number of **object-groups ap-models** groups to 64
      - Configure WIDS for WEP-500/550K
      - Passive scanning for WEP-500/550K
      - **802.11r cross-band-roaming** command to enable the roaming of the 802.11r standard between the 2.4 GHz and 5 GHz/6 GHz bands
      - **admin-username** command in ap-profile to change the admin username
      - **sensitivity-threshold** command in individual AP settings to adjust the receiver sensitivity
      - Enhanced validation in the 6 GHz ssid-profile for security mode: the ability to configure unsupported operating modes has been removed
      - Display of traffic volume on AP interface in MB

            - Disabling/enabling the AP radio interface in the radio-profile and individual AP settings
            - Disabled validation between "tx-power" and "tx-power min/max" parameters
            - **ipv4-acl command in** ssid-profile to configure an access control list containing IP addresses available or prohibited to the client after connecting to the SSID
            - Redefine AirTune parameters: **tpc, dca, 802.11v** in individual settings
            - Configure AirTune parameters: **tpc, dca, 802.11v** in ap-profile
        - Syslog:
            - **logging wlc-roaming** command to enable logging of roaming events in syslog
        - SNMP:
            - OID **"ELTEX-WLC-MIB::eltWlcClientInfoByMacApHostname"** to find out the name of AP to which the client is connected
            - **"ELTEX-WLC-MIB::eltWlcApSaByMacTable"** table containing data on unregistered AP indexed by MAC address
            - "**ELTEX-WLC-MIB::eltWlcApRadioByMacTable"** table containing AP radio parameters indexed by MAC address and radio interface number
        - Security:
            - AAA:
                - Creating a login with capital letters and special characters
            - ACL:
                - Assigning a service-acl to a subinterface/GRE tunnel
                - **show** and **clear ip access-list counters** commands to view and clear access-list counters
    - Tunneling:
        - Softgre-controller:
            - Traffic balancing using the internal headers of SoftGRE tunnels when terminating traffic on sub-interfaces for WLC-3200
    - vWLC:
        - Run in a Proxmox virtualization environment with support for the QEMU Guest Agent
    - Redundancy:
        - Cluster:
            - Configure the source-address in the radius-server local in the upstream-server block for each unit

Fixed:

- Removed "GOT UNWAITED EVENT" message when switching to a backup device
- Problem of collecting statistics on SNMP with an operating time of more than 500 days
- Fixed exec-timeout for WEB sessions on vWLC
- Substitution of the source-port for RTP traffic

Version 1.40.4

Revisions:

- Monitoring and management:
  - CLI:
    - Improvements:
      - Filter the IPsec configuration when the "**show running-config**" and "**show candidate-config**" commands output
      - Filter the IPS configuration when the "**show running-config**" and "**show candidate-config**" commands output
      - Filter the license configuration when the "**show running-config**" and "**show candidate-config**" commands output
      - Separate viewing of incoming and outgoing traffic by the "**monitor**" command
      - "**show system power-supply**" command to view detailed information about power supplies
      - Corrected messages to the user in case of a copy error
      - Adjusted hints for "**unmount storage-devices**" command
      - Adjusted hints for "**clear storage-devices**" command
      - Adjusted hints for "**verify storage-devices**" command
      - Improved readability of "**if-mgr-ng**" process logs
    - Operational problems solved:
      - Incorrect display of the PBX partition configuration. After deleting one ruleset, the rules of the existing ruleset were no longer displayed
      - Incorrect display of rules when displaying the "**show ip route-map**" command
        - ge/le/eq were not displayed, if they were specified for "**match ip address object-group <OBJECT-GROUP-NAME>**"
        - Classification parameters set as "**match ip address <PREFIX>**" were displayed "**Actions:**" section, instead of "**Match pattern:**" section
        - When setting "match ip address 0.0.0.0/0" classification, it was not displayed in either "**Match pattern:**" or "**Actions:**"
      - Intersecting ports in the "**object-group service**". Configuration changes were not applied if separate "**port ranges**" containing the same port number were registered in the "object-group service"
      - Intersection of the IP address with the prefix in the "**object-group network**". Configuration changes were not applied if separate "**ip address range**" and/or "**ip prefix**" containing the same IP address were registered in the "**object-group network**"
  - SSH:
    - Operational problems solved:
      - **Inability to connect via SSH from the ESR CLI without specifying the** "source-address"
  - TFTP:
    - Improvements:
      - Configuring "**source-ip**" for copying via TFTP
  - SNMP:
    - Improvements:
      - OID "**ELTEX-GENERIC-MIB::eltexNATSessionTotalCounter**" that allows tracking the number of NAT sessions using SNMP
      - OID "**ELTEX-GENERIC-MIB::eltexEnvMemoryAvailable**" that allows tracking available memory using SNMP
      - OID "**ELTEX-GENERIC-MIB::eltexSystemLastReloadReason**" that allows getting the reason for the device last reboot
      - Support for "**ELTEX-ESR-DHCP-MIB.mib**" that allows tracking DHCP Relay counters using SNMP

- Support for SNMP tables with information about the cluster on the ESR in the MIB "**ELTEX-ESR-CLUSTER-MIB.mib**".
  Implemented tables:
  - "**show cluster status**"
  - "**show cluster sync status**"
  - "**show cluster sync configuration**"
  - "**show cluster-unit-licence**"
- Encryption of the SNMP community when outputting the "**show running-config**" and "**show candidate-config**" commands
- Saving of the "snmpEngineBoots" counter when the device is rebooted. After upgrading from earlier versions to version 1.40 and later, there will be a break in SNMPv3 surveys. To recover, restart the SNMP service on the device

- Operational problems solved:
  - Missing OID values "**IF-MIB::ifType**" for sub-interfaces in the presence of a PPPoE tunnel. After configuring and activating the PPPoE tunnel, the OID values "**IF-MIB::ifType**" for configured sub interfaces were no longer given
  - Incorrect polling of interface counter tables and their IP addresses **("ipIfStatsTable", "ipAddressPrefixTable")** in cases when a PPP server with active client sessions is configured on the surveyed device
  - Missing SNMP Trap when specifying the loopback interface as the **source-address** for the **snmp-server host**
  - Incorrect value of the OID status of the single PM **(.1.3.6.1.4.1.89.53.15.1.2.0)** on ESR-30. The value "**5 – Not Present**" was given

- Syslog:
  - Improvements:
    - Select the type of value in the **HOSTNAME** field in Syslog logs sent to a remote host.
    - Disable sending the "**STRUCTURED-DATA**" field
    - Output of the IP address in the logs when the user connects via telnet or SSH
  - Operational problems solved:
    - Displaying logs when configuring string parameters with the "**syslog cli-commands**" option enabled. When the "**syslog cli-commands**" setting was activated, when entering a command containing a string argument, the string argument was replaced with a 10-digit value in the syslog message
    - Memory leak problem with a configured "**syslog host**"
    - Viewing the log file recorded on removable media (USB/MMC)
- ZTP
  - Improvements:
    - Unconditional application of configuration from external media at device startup
- NTP
  - Improvements:
    - Implemented the ability to configure "**ntp source address**" and "**ntp ipv6 source address**" for VRF

- Маршрутизация:
  - Static
    - Improvements:
      - Configure static routes through the WireGuard tunnel
  - Multiwan:
    - Operational problems solved:
      - Permissibility of using incorrect Multiwan configurations
  - BGP:
    - Improvements:
      - Generate the atomic-aggregate attribute when announcing an aggregated route
    - Operational problems solved:
      - Resetting the Uptime timer for BGP sessions that have been in the Established state for a long time

- OSPF:
  - Improvements:
    - Moving "**network**" from the "**area**" configuration mode to the global OSPF process configuration mode
- MPLS:
  - Improvements:
    - Use BFD functionality for LDP
  - Operational problems solved:
    - L2VPN configuration in VRF
- Security:
  - Public keys
    - Improvements:
      - Redesigned configuration of the PKI server and the PKI client
      - Mechanism of shadow replacement of certificates of the PKI server acting as certifying center
      - Support for working with the list of revoked certificates on the side of the PKI server and the PKI client
      - Certificate revocation command on the side of the PKI server
      - Manual certificate reissue command on the side of the PKI client
    - Operational problems solved:
      - Certificate output when requesting the "**show crypto certificates cert**" command
  - Firewall:
    - Improvements:
      - Apply firewall policies on a schedule
      - Block traffic with a zero TCP/UDP port of source and destination
    - Operational problems solved:
      - Applying rules containing filtering by domain name
  - DPI:
    - Improvements:
      - Expanded the list of supported applications
    - Operational problems solved:
      - Operation of the Application Firewall, which in rare cases led to degradation and complete blocking of transit traffic
  - IPsec:
    - Improvements:
      - Configure "**email address**" as an IKE identity
      - Optimized IPsec performance when processing user traffic
      - Expanded fields in several commands output:
        - "**show security ike proposal**"
        - "**show security ike policy**"
        - "**show security ike gateway**"
        - "**show security ipsec proposal**"
        - "**show security ipsec policy**"
      - Clear all current VPN connections using the "**clear security ipsec vpn**" command
    - Operational problems solved:
      - Absence of VRRP IP in the prompts to the "**local address**" command in the "**ike gateway**" configuration mode
      - Fixed output format of the "**show security ike policy**" command
  - Protection against attacks:
    - Improvements:
      - Reset DDoS protection counters using the "**clear ip firewall screens counters**" and "**clear ipv6 firewall screens counters**" commands
      - View dropped packet counters for the arp inspection mechanism using the "**show ip firewall arp-inspection counters**" command

- Dropped packet counters for the arp inspection mechanism using the **"clear ip firewall arp-inspection counters"** command
- IDS/IPS:
  - Operational problems solved:
    - IPS traffic capture in the presence of VRRP. This problem caused traffic passing through the VRRP interface to not be captured by IPS, which caused erroneous packet blocking
- ACL:
  - Improvements:
    - New ACL type – "mac access-list" to configure filtering rules for L2 traffic
- Резервирование:
  - Cluster:
    - Improvements:
      - Synchronization of configurations when connecting a unit to a cluster
  - SLA:
    - Improvements:
      - Optimized mechanism of polling IP-SLA tables using SNMP
  - VRRP:
    - Improvements:
      - Displaying VRRP-IP in the output of the **"show ip interfaces"** command
      - Displaying VRRP-IP in the output of the **"show arp"** command
      - Configuring the **"description"** field for the VRRP configuration mode
      - Viewing the status of all VRRPS in all VRF using the **"show vrrp all"** command
      - Deleted "track-ip" in VRRP configuration
    - Operational problems solved:
      - Incorrect change of the VRRP state when executing the **"clear vrrp-state"** command on devices with the same priority
      - Incorrect operation of IPv4 VRRP and IPv6 VRRP on the same interface
      - Incorrect display of the output of the **"show run interface"** command
- Remote-access:
  - OpenVPN
    - Improvements:
      - Displaying the status of network interfaces with an active OpenVPN server on the device
      - Incorrect information display in the output of the **"show crypto certificates public-key"** command
  - WireGuard:
    - Improvements:
      - Verification of installable keys for both Remote-access Wireguard and Tunnel Wireguard
      - Implemented the output of a hint with a list of available keys when configuring the **"private-key"** and **"public-key"** commands
      - Changed principle of operation of the "access-addresses" setting for the WireGuard client (tunnel wireguard)
        - Previously, this setting affected both the filtering of traffic sent to the tunnel and the installation of routes
        - Now this setting affects only the filtering of traffic sent to the tunnel (static routes must be configured separately to install routes)
- Interfaces:
  - Physical:
    - Operational problems solved:
      - Inability to configure the sub-interfaces of the OOB interface
      - Adding **"Ethernet trailer"** to ethernet frames on ESR-1200, ESR-1500, ESR-1511
      - Increasing the size of the ARP message when passing through ESR-3100, ESR-3200, ESR-3300

- Tunneling:
  - GRE:
    - Improvements:
      - Реализована возможность указывать loopback в качестве "**local interface**"
    - Operational problems solved:
      - Incorrect checksum calculation for ICMP keepalive packets
      - Displaying IP addresses assigned on GRE tunnels in the output of the "**show ip interfaces**" command
  - VTI:
    - Operational problems solved:
      - Absence of VRRP-IP in the prompts to the "**local address**" command
      - Displaying IP addresses assigned on VTI tunnels in the output of the "**show ip interfaces**" command
  - DMVPN:
    - Improvements:
      - Added DMVPN debugging information when uploading data with the "**show tech-support**" command
    - Operational problems solved:
      - Incorrect Init state of the BFD neighborhood when the mGRE tunnel is turned off/on
- Network services:
  - DNS:
    - Improvements:
      - Configuring the "**source-address**" for accessing the DNS server
  - NAT:
    - Operational problems solved:
      - Inactivity of the "**check output-interface**" command
  - DHCP:
    - Improvements:
      - "**show ip dhcp relay**" command to display the counters of the DHCP Relay operation
    - Operational problems solved:
      - "**internal error**" error output when executing the "**show ip dhcp binding**" command
      - Incorrect opening of the OMAPI port (TCP-7911)
      - Failure of the dhcp server on the VRRP interface after the role change
  - QoS:
    - Improvements:
      - Accounting of service headers at speed limits using the "**shape**" functionality
    - Operational problems solved:
      - High CPU utilization when executing the "**show qos policy statistics**" command
- vESR:
  - Improvements:
    - Changed preferred clocksource (tsc/refined-jiffies/jiffies/hpet)
    - Revoved "**licence-key**" command "**licence-manager**" configutation mode
    - "**set system licence-key**" license key configuration command in global configuration mode
  - Operational problems solved:
    - bootloop vESR on Hyper-V
- Hardware support:
  - Improvements:
    - Support for ESR-3150
  - Operational problems solved:
    - Spontaneous reboot of ESR-15/15R/15VF
    - Possible loss of configuration after power failure of ESR-15/15R/15VF
    - Spontaneous reboot of ESR-1500

Version 1.39.2

Revisions:

- Monitoring and management:
  - WEB:
    - Configuration:
      - Added automatic firmware update management for new APs on the “General settings” page in the “Wireless” section
      - Implemented DHCP Option 82 configuration on APs in the 6 GHz radio profile
    - Monitoring:
      - Implemented the ability to collect traffic dumps from AP interfaces
  - WLC:
    - General changes:
      - Added support for WOP-50L and WEP-500K APs
      - Implemented a portal scheme with HTTP-based control
      - Implemented filename normalization when uploading AP firmware
    - Monitoring:
      - Implemented monitoring of clients connected via MLO
    - Configuration:
      - Implemented the ability to specify the <LOGIN_URL> and <CLIENT_IP> placeholders in redirect-url-custom for external portal authorization
      - Implemented BSS coloring configuration
      - Implemented the ability to specify the number of packets to capture in the **monitor wlc ap** command
      - Implemented MLO configuration (supported for WEP-500K, WEP-550K, and WEP-50L starting from version 3.2.0)
      - Implemented configuration of response timeout parameters (**auth-retry-timeout** / **acct-retry-timeout**) and retry counts (**auth-retry-count** / **acct-retry-count**) for the RADIUS server in radius-profile
      - Implemented the **ip dhcp information option <>** commands for managing DHCP Option 82 settings on APs in the 6 GHz radio-profile
- Tunneling:
  - SoftGRE-Controller:
    - Implemented traffic load balancing based on inner SoftGRE tunnel headers when terminating traffic on Bridge interfaces for WLC-3200
  - vWLC:
    - Added support for operation on the zVirt virtualization platform

Fixed:

- Fixed WIDS logging levels
- Configuration synchronization issue in a cluster environment
- AirTune output freezing when more than 200 APs are located in a single location
- Errors when generating the tech-support archive
- AP updates to firmware versions containing special characters in the filename
- Incorrect L2 interface name in the redirect string in a BRAS scheme for port-channel interfaces

Version 1.39.1

Revisions:

- Optimized information about available RAM
- Monitoring and management:
  - WEB:
    - Implemented file manager functionality
    - Monitoring
      - Implemented the ability to collect traffic dumps from WLC interfaces on the “Diagnostics” page
      - Implemented the ability to collect tech-support debug information on the “Diagnostics” page
      - Implemented the ability to collect debug information from APs on the “Access Points” and “AP Locations” pages
      - Implemented the ability to change the order and set of columns on the “Clients”, “AP Locations”, and “Access Points” pages
      - Added display of the AP reboot reason
      - Added the “Band, GHz” field to the “Radio” tab
      - Added authentication parameters to the extended client information
      - Separated channel rate and modulation parameters in the extended client information
      - Added saving of filter values entered in the log for the duration of the session
    - Configuration
      - Implemented the ability to move APs between locations
      - Added automatic creation and configuration of VLANs for softgre-controller in a tunneling scheme
      - The “AP Settings” page was divided into tabs
      - Implemented the ability to view the SSID password
      - Added the IEEE 802.11 mode without AX on the “Radio” page
      - Added DAS server configuration on the “AP Settings” page
      - Implemented the ability to configure “DHCP Snooping mode” using a template
  - WLC:
    - Updated AirTune to version 1.9.2
    - Optimized NETCONF operation when APs connect
    - Monitoring
      - Added the **auth-step** field to the client log
      - Added information about the **Locked balancer** and **Locked 802.11v** statuses to the **show wlc airtune rrm statistics** and **show wlc airtune <mac>** outputs
    - Configuration
      - Implemented the ability to configure the source address on the RADIUS server
      - Implemented the ability to configure multiple WLC addresses on APs
      - Implemented EIRP configuration in the radio-profile and individual AP settings
      - Expanded client DHCP event statistics
      - Added support for portal authorization configuration on WEP-550K
      - Implemented **work-mode** configuration in the radio-profile without AX mode
      - Implemented the **global-station-isolation** command in the ap-profile to enable isolation between VAPs on the AP
      - Implemented the **show wlc ap ethernet-ports** command to view AP port status
      - Implemented a set of commands for NTP configuration in the ap-profile
      - Implemented the **auto-config** command for automatic NTP configuration on APs
      - Implemented the ability to configure MCS indexes in the radio-profile
      - Implemented the ability to configure DHCP Option 82 through templates in the radio-profile
      - Implemented the ability to obtain debug information from APs through the WLC
      - Implemented the ability to collect AP traffic dumps through the WLC
      - Implemented automatic filename completion when working with AP firmware files

        - Implemented the **mfp-mode** command in the ssid-profile for MFP configuration
        - Implemented the **clear wlc database** command to completely delete WLC logs
- Failover:
    - Cluster
        - Implemented the ability to configure a /32 mask for the cluster interface
- Tunneling:
    - SoftGRE-Controller
        - Implemented traffic load balancing based on inner headers on WLC-15
- vWLC:
    - Implemented the ability to expand the disk

Fixed:

- Track freezing after the remote side disappears several times
- WLC-15 configuration reset after power loss
- New LLDP configuration not applied after being set

Version 1.36.4

Revisions:

- Monitoring and management:
  - WEB:
    - Configuration
      - “Country Code” setting is moved from ”AP” to ”Radio”
      - Ability to configure the “Country Code” (US and CN) for the WEP-30L and WEP-30L-Z
      - ”Save” button now appears in expanded view
  - WLC:
    - Support for WEP-50L
    - Configuration
      - Added **sensitivity-threshold** command to the **radio-profile** to configure AP receiver sensitivity limit
      - **country-code** setting is moved from **ap-profile** to **radio-profile**
      - Ability to configure **country-code** US and CN for WEP-30L, WEP-30L-Z
      - Added **aps auto-upgrade disable** command to disable automatic AP firmware updates upon initial connection to the controller
      - Added **update wlc ap firmware** commands for immediate and scheduled AP and location firmware updates
      - Added **show wlc ap firmware-update status** command to view the status of AP firmware update tasks
      - Added **clear wlc ap firmware-update** commands delete AP firmware update tasks
      - Added ability to schedule SSID operation
      - Added **save-config** command to save the received configuration to the AP non-volatile memory

Fixed:

- When monitoring errors occur, AP remains active, but not monitored
- Removing clients from WLC monitoring when roaming errors occur
- Comparing configurations in the web interface when “system prompt” is enabled
- "internal error" when attempting to view the MAC table
- Accessing resources when traffic passes through WLC-30 (tunneling configuration)

Version 1.36.3

Revisions:

- Monitoring and management:
  - WEB:
    - UI redesign
    - Monitoring
      - Added display of the 6 GHz interface in AirTune data within AP
      - Added power source information to the detailed AP information
      - Added filters by fields: device name, band, RSSI, connection quality and IEEE 802.11 mode on the client monitoring page
    - Configuration
      - Added setting for signal power limits to general radio profiles and individual AP settings (used for automatic optimization by the AirTune service)
      - Added “DHCP to unicast” setting to the 2.4 and 5 GHz radio profiles
      - The page with individual AP settings has been divided into sections
      - Added “Role takeover” column for VRRP to the Bridge advanced settings table
      - Added “Key format” settings for VRRP authentication to the Bridge settings
      - Added VRRP priority setting for each cluster unit in the Bridge settings
      - Added SSID setting on the “Individual AP Settings” page
      - Added warning and automatic navigation to the problem parameter in the configuration application error
      - Added sorting in the “AP Name” column on the “Clients” page
  - WLC:
    - Monitoring
      - Added power source information to the **show wlc ap <mac> detailed** command output
      - Wi-Fi users username is now sent to the **Navigine** service
      - Added encryption type information to the **show wlc clients <mac> detailed** command output
      - Added client authentication algorithm information to the **show wlc clients <mac> detailed** command output
      - Added channel and frequency on which the client is connected to the **show wlc clients <mac> detailed** command output
      - Added ckient VLAN to the **show wlc clients** command output
    - Configuration
      - Added **service-hold** command to configure the behavior of AP and SSID when communication with the controller is lost (available in the ap-profile and ssid-profile)
      - Added the ability to configure DAS parameters on WEP-3ax
      - The **country-code** parameter has been moved from ap-profile to radio-profile
      - Added **check-status-force** command to actively check the upstream RADIUS server in the **radius-server local -> upstream-server <name> block**
      - Added a rate-limiting setting for unknown unicast traffic
  - SNMP:
    - OID **eltWlcClientVlanId** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.53) is added to ELTEX-WLC-MIB for viewing the client’s VLAN
    - OID **eltWlcClientEncryptionCipher** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.54) is added to ELTEX-WLC-MIB for viewing the encryption type used by clients
    - OID **eltWlcClientEncryptionGroupCipher** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.55) is added to ELTEX-WLC-MIB for viewing the client authentication algorithm
    - OID **eltWlcClientFrequency** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.56) is added to ELTEX-WLC-MIB for viewing the frequency on which the client is connected
    - OID **eltWlcClientChannel** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.57) is added to ELTEX-WLC-MIB for viewing the channel on which the client is connected

- Added reauthenticated (5) and expired (6) values to OID **eltWlcClientPortalAuthStatus** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.32) to display the portal authorization status
- OID **eltWlcClientInfoByMacVlanId** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7.1.52) is added to ELTEX-WLC-MIB for viewing clients VLAN
- OID **eltWlcClientInfoByMacEncryptionCipher** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7.1.53) is added to ELTEX-WLC-MIB for viewing the encryption type used by clients
- OID **eltWlcClientInfoByMacEncryptionGroupCipher** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7.1.54) is added to ELTEX-WLC-MIB for viewing the client authentication algorithm
- OID **eltWlcClientInfoByMacFrequency** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7.1.55) is added to ELTEX-WLC-MIB for viewing the frequency on which the client is connected
- OID **eltWlcClientInfoByMacChannel** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7.1.56) is added to ELTEX-WLC-MIB for viewing the channel on which the client is connected
- Added reauthenticated (5) and expired (6) values to OID **eltWlcClientInfoByMacPortalAuthStatus** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7.1.31) to display the portal authorization status

- Failover:
  - Cluster
    - Added the ability to configure the NAS IP in the softgre-conrtoller for each unit
- vWLC:
  - Added the ability to specify a serial number during installation from an image

Fixed:

- Memory leak when redirecting CoA requests to the radius-server local
- Sorting order on the VLAN page in the web interface
- SLA test freezing when the availability status of the remote party changes

Version 1.36.2

Revisions:

- Support for WLC-3250, WLC-3350
- Added VMware Tools for vWLC
- Monitoring and management:
  - WEB:
    - Monitoring
      - Added the remote hosts IP address to the web servers authorization log
      - Added the ability to view a list of changes before applying the configuration
      - Added “In Progress” time display to the detailed information for AP. The counter shows how many AP are in the “In Progress” status
      - Added display of the 6 GHz radio interface (Wlan 2) for the WEP-550K
      - Added a filter in the AP log for the “Lost” status
      - Added a “Device Name” column on the “RRM Reports” tab
      - Standardized the order of information displayed on client monitoring pages
      - Added a notification about a scheduled device reboot
      - Added the ability to reboot AP
    - Configuration
      - Added the “ARP Spoofing Protection” setting to SSID profiles to control ARP Inspection functionality
      - Added the Bridge setting
      - Added the 6 GHz radio profile setting in the “Radioprofiles” section
      - Added the ability to configure passive scanning in the “Access Point Settings” section
      - Added 6 GHz setting in the “AirTune Profiles” section
      - Added a VAP traffic rate limit setting for WEP-2ac/WOP-2ac access points
      - Added a traffic rate limit setting (broadcast, multicast) for WEP-3ax
  - WLC:
    - Monitoring
      - Added display of the reason for the last VAP reboot to the **show wlc ap detailed** command output
      - Added saving of the VAP list upon controller reboot (status “Lost”)
      - Optimized client output; removed duplicate entries during client roaming
      - Added display of hostname in AirTune optimization reports
      - Added Retry Rate display to the **show wlc vap** command output
      - Optimized display of RSSI and SNR. In the tabular output of **show wlc clients** only the worst parameter values are displayed; in the detailed information, values are displayed for each antenna
      - Splitted display of channel transmission/reception speed to transmission/reception speed and transmission/reception modulation
    - Configuration
      - Added the ability to configure DAS settings on the WEP-2L/WOP-20L/200L
      - Added a setting to limit VAP traffic speed for the WEP-2ac/WOP-2ac
      - Added a setting to limit traffic speed (broadcast, multicast) for WEP-3ax
      - Added **ip dhcp replication-mode** command to the radio-profile settings to convert DHCP packets from broadcast to unicast
      - Added **arp-inspection** command to the ssid-profile settings to control ARP inspection functionality
      - Added **renew wlc ap** command to force the access point to reconnect
      - Added a setting to enable active/passive checking of the upstream RADIUS server when operating in request forwarding mode
      - Added the ability to use placeholders when customizing DHCP Option 82, into which the AP inserts the corresponding values
      - Added 6 GHz radio profile setting

        - Added **navigine** command block in the WLC section for integration with the Navigine service
        - Added 6 GHz support in AirTune
    - SNMP:
        - OID **eltWlcApRebootReason** (OID .1.3.6.1.4.1.35265.1.224.1.3.2.3.1.14) is added to ELTEX-WLC-MIB to view the reason for the last WLC reboot
        - **eltWlcClientInfoByMacTable** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.7) table is added to ELTEX-WLC-MIB to view information about clients connected to the WLC, indexed by MAC address
        - OID **eltWlcApVapRetryRate** (OID .1.3.6.1.4.1.35265.1.224.1.3.2.6.1.14) is added to ELTEX-WLC-MIB to view the percentage of retransmitted packets relative to total traffic on the VAP
        - OID **eltWlcClientRssiInt** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.38) is added to ELTEX-WLC-MIB to view minimum RSSI values
        - OID **eltWlcClientSnrInt** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.39) is added to ELTEX-WLC-MIB to view client signal-to-noise ratios
        - OID **eltWlcClientRssiA1** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.40) is added to ELTEX-WLC-MIB to view client RSSI values for 1st antenna
        - OID**eltWlcClientRssiA2** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.41) is added to ELTEX-WLC-MIB to view client RSSI values for 2nd antenna
        - OID**eltWlcClientRssiA3** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.42) is added to ELTEX-WLC-MIB to view client RSSI values for 3rd antenna
        - OID**eltWlcClientRssiA4** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.43) is added to ELTEX-WLC-MIB to view client RSSI values for 4th antenna
        - OID **eltWlcClientSnrA1** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.44) is added to ELTEX-WLC-MIB to view client signal-to-noise ratio values for 1st antenna
        - OID **eltWlcClientSnrA2** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.45) is added to ELTEX-WLC-MIB to view client signal-to-noise ratio values for 2nd antenna
        - OID **eltWlcClientSnrA3** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.46) is added to ELTEX-WLC-MIB to view client signal-to-noise ratio values for 3rd antenna
        - OID **eltWlcClientSnrA4** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.47) is added to ELTEX-WLC-MIB to view client signal-to-noise ratio values for 4th antenna
        - OID **eltWlcClientTxRateNumeric** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.48) is added to ELTEX-WLC-MIB to view transmit channel rates in Mbps
        - OID **eltWlcClientRxRateNumeric** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.49) is added to ELTEX-WLC-MIB to view receive channel rates in Mbps
        - OID **eltWlcClientTxRateModulation** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.50) is added to ELTEX-WLC-MIB to view transmit modulation
        - OID **eltWlcClientRxRateModulation** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.51) is added to ELTEX-WLC-MIB to view receive modulation
        - OID **eltWlcSsidCount6g** (OID .1.3.6.1.4.1.35265.1.224.1.3.1.1.4) is added to ELTEX-WLC-MIB to view the number of SSIDs in the 6 GHz band
        - OID **eltWlcClientsCount6g** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.6) is added to ELTEX-WLC-MIB to view the number of clients in the 6 GHz band
- Failover
    - Cluster:
        - Increased maximum number of units in a cluster to 4
        - Added ability to configure the NAS IP in the local radius-server for each unit
        - Added ability to configure the NAS IP in subscriber-control for each unit

Fixed:

- Spontaneous reboot of the WLC-15
- Auto-negotiation of the 1000BASE-X SFP interface speed on the WLC-15
- WLC-3200 reboots when load is switched to a standby controller with Firewall Failover configured
- Spontaneous change in PSU status on the WLC-3200
- Memory leak in RADIUS when proxying accounting packets
- Configuration application error when attempting to delete a location defined in an ap-entry
- Configuration application error when using a sub-interface for an OOB interface

- SNMP query for the number of WLC clients
- WLC information output when generating a tech-support archive
- MAC address processing in AirTune
- Error wlc_apstm <wlc_apstm(<PID>):alarm_send:270>
- Optimized web server performance when receiving data on AP/clients

Version 1.34.6

- Security:
    - AAA:
        - Updated local user configuration system
        - Removed "techsupport" and "remote" default users
        - Ability to disable "admin" user

Version 1.34.4

- QoS:
  - Ability to classify packets using nhrp
- Monitoring and management:
  - SNMP:
    - Support for **SNMP-OID IP-FORWARD-MIB: inetCidrRouteTable (.1.3.6.1.2.1.4.24.7)** to receive information about current FIB table

Version 1.34.3

- Support for ESR-3250/3350

Version 1.34.2

- Optimized RAM performance for ESR-30/31/3100
- Monitoring and management:
  - Uboot:
    - Ability to reset the date and time by holding down a function key
    - Ability to configure the date and time in the secondary bootloader (U-Boot) CLI
  - SSH:
    - Changed default value of the DSCP field in outgoing SSH packets to 48
  - Telnet:
    - Changed default value of the DSCP field in outgoing Telnet packets to 48
  - SNMP:
    - Removed **nmp-server system-shutdown** command that allowed restarting the ESR using the SNMP
    - ELTEX-ESR-TRACK-MIB.mib allowing the performance of track objects to be monitored using the SNMP
  - Syslog:
    - Added information about the hardware manufacturer and model to syslog messages
    - Changed trap logging setting: **snmp-server enable traps** command no longer enables trap logging
    - **alarm enable journal** command for to enabling error logging
- Routing:
  - Added information about NHRP in **show ip protocols** command output
  - Static:
    - Ability to use track objects for individual gateways in Multipath
  - BGP:
    - Ability to disable a GRE tunnel without disabling the BGP neighbor that uses the GRE tunnel being disabled as its update-source
    - Ability to set a BGP neighbor to passive mode using the **connection-mode passive** command
  - BFD:
    - Support for using the BFD protocol in conjunction with the ISIS protocol
    - Support for using the BFD protocol in conjunction with the BGP protocol running over an interface with a dynamic IP address
- MPLS:
  - Added **description** field to the **show mpls ldp neighbor** command output
  - Optimized MPLS traffic switching performance for the ESR-3100/3200/3300 models
- Security:
  - Firewall:
    - **ip firewall disable** command in global configuration mode to disable the firewall on all IP interfaces
    - Ability to use domain name lists as source/destination addresses
  - IPsec:
    - Support for rekeying for IKE SA for IKEv2 protocol
  - AAA:
    - Ability to configure AAA for console server connections (for ESR-21/31 only)
  - Licensing:
    - Ability to configure licensed features before the ESR license is available
- Failover:
  - Extended DHCP-failover support in Active/Standby modes to 4 devices
  - Extended support for crypto-sync to 4 devices
  - Ability to assign up to 255 VRRP processes to a single IP interface
  - Support for Dual Homing for ESR-1200/1500/1511/1511 rev.B/1700
  - Cluster:
    - Display of CPU core utilization information for both units for **show cpu utilization** command

        - VRRP priority configuration for different unit
    - SLA:
        - Removed IP SLA support of **wisla-local** and **wisla-remote** modes
    - STP:
        - BPDU Guard functionality for ESR-10/12V/12VF/15/20/21/30/31/3100/3200/3200L/3250/3300/3350 and vESR
- Tunnelling:
    - DMVPN:
        - Extended maximum number of static entries for NHRP:
            - ESR-10/12V/12VF/15/15VF/15R/20/21/100/200/1000/1200 — 32
            - ESR-30/31/1500/1511/1511 rev.B/3100/3200/3200L/3300 — 512
            - ESR-1700 — 2000
            - vESR — 512
    - DMVPN:
        - Extended minimal retry timeout for NHRP messagesfrom 2 to 8 seconds
    - WireGuard:
        - Removed ability to configure DNS server for the WireGuard server
- DNS:
    - Extended maximum number of static DNS records in the configuration from 32 to 512
- DHCP:
    - Extended maximum number of **ip helper-address** on GRE tunnels from 4 to 6
    - Extended number of **pool-addresses** for ESR-20/21/30/31/100/200/1000/1200/1500/1511/1511 rev.B/1700/3100/3200/3300 up to 1024
- vESR:
    - Extended license validity period when the ELM server is unavailable
    - Support for the following network adapter models:
        - RTL8111/8168/8411 PCI Express Gigabit Ethernet Controller
        - RTL8169 PCI Gigabit Ethernet Controller
        - RTL-8100/8101L/8139 PCI Fast Ethernet Adapter
- VoIP (for ESR-12V/12VF/15VF only):
    - Ability to assign source address for packets originating from the PBX server

Version 1.30.8

Revisions:

- Monitoring and management:
  - CLI:
    - Added the ability to configure ACLs for outbound traffic
  - WEB:
    - Monitoring
      - Added ability to export AP lists to a .csv file
    - Configuration
      - Added WIDS configuration
      - Added 802.11r roaming configuration between locations on the “General settings” page
      - Added setting to the RADIUS profile to use the client MAC address as the authentication password when working with an external portal
      - Added ability to configure multiple VLAs for a single SSID
      - Added compatibility mode setting for iOS devices (captive-adaptive) to the AP settings profile
      - Added setting to the portal profile to disable HTTP/HTTPS authentication when working with an external portal
  - WLC:
    - Added support for saving the AirTune operational state upon restart
    - Monitoring
      - Added **show wlc ap main-info** command to view inventory information for the AP
      - Added **show wlc ap all** command to view the general list of AP, which includes registered AP and those configured in the settings
      - Added **show radius-servers** to view the status of the upstream server (external RADIUS server) in a configuration that proxies RADIUS requests
      - Added display of devices configured in the settings but not connected to the controller (Pre-configured)
      - Added display of uptime for devices with the Active status to the advanced device monitoring
      - Changed **clear wlc ap** command on **clear wlc ap all**
      - Added information about client's authentication method, including its status to the advanced client monitoring
      - Added **show wlc clients auth-method** command to filter users by authentication methods and statuses
      - Added **show wlc clients auth-count** command to view information about the number of users at different stages of authentication
  - SNMP:
    - Modified behavior of OID **ifLastChange** (OID .1.3.6.1.2.1.2.2.1.9) in FIB-MIB, indicates the time of the last change in the Admin/Link state of the interface
    - **eltWlcApAllInfoByMacTable** (OID .1.3.6.1.4.1.35265.1.224.1.3.2.8) table is added to ELTEX-WLC-MIB to view a list of all AP (registered AP and those configured in the settings) sorted by MAC address
    - OID **eltWlcApActiveUptime** (OID .1.3.6.1.4.1.35265.1.224.1.3.2.3.1.13) is added to ELTEX-WLC-MIB to view the uptime of the AP in the Active state
    - OID **eltWlcApInfoByMacActiveUpTime** (OID .1.3.6.1.4.1.35265.1.224.1.3.2.7.1.12) is added to ELTEX-WLC-MIB to view the uptime of the AP in the Active state
    - **eltWlcRadiusServerTable** (OID .1.3.6.1.4.1.35265.1.224.1.3.1.3) table is added to ELTEX-WLC-MIB to view the status of the upstream server (external RADIUS server) in a configuration with proxy RADIUS requests
    - **eltWlcClientsAuthCountTable** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.5) table is added to ELTEX-WLC-MIB to view the number of users at different stages of authentication

- OID **eltWlcClientSummaryAuthInfo** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.29) is added to ELTEX-WLC-MIB to view the overall authentication status
- OID **eltWlcClientEapMethod** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.30) is added to ELTEX-WLC-MIB to view the EAP method during Enterprise authorization
- OID **eltWlcClientMacAuthStatus** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.31) is added to ELTEX-WLC-MIB to view the status of MAB authentication
- OID **eltWlcClientPortalAuthStatus** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.32) is added to ELTEX-WLC-MIB to view the status of portal authentication
- OID **eltWlcClientWlanAuthMethod** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.33) is added to ELTEX-WLC-MIB to view the authentication method based on the security mode of the SSID
- OID **eltWlcClientWlanAuthStatus** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.34) is added to ELTEX-WLC-MIB to view the authentication status based on the security mode of the SSID
- OID **eltWlcClientMacAuthUptime** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.35) is added to ELTEX-WLC-MIB to view the time from passing MAB authentication
- OID **eltWlcClientWlanAuthUptime** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.36) is added to ELTEX-WLC-MIB to view the time from passing MAB authentication with the security mode of the SSID
- OID **eltWlcClientPortalAuthUptime** (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4.1.37) is added to ELTEX-WLC-MIB to view the time from passing portal authentication
- **eltexElmLicInfoUtilizationTable** (OID .1.3.6.1.4.1.35265.61.1.1.3) table is added to ELTEX-ELM-LIC-MIB containing information of license usage
- OID **eltexElmLicInfoUtilizationParamName** (OID .1.3.6.1.4.1.35265.61.1.1.3.1.2) is added to ELTEX-ELM-LIC-MIB to view the name of the active license
- OID **eltexElmLicInfoUtilizationParamValue** (OID .1.3.6.1.4.1.35265.61.1.1.3.1.3) is added to ELTEX-ELM-LIC-MIB to view the number of active licenses
- **eltEsrFwConnectionStatTable** (OID .1.3.6.1.4.1.35265.1.147.2.5.1.1.1) table is added to ELTEX-ESR-FIREWALL-MIB to view the number of firewall connections by protocol

Fixed:

- Unstable results when measuring channel characteristics using UDP-Jitter tests in IP SLA
- Display of the L2loc parameter in the BRAS forwarding entry for Port-channel interfaces; the parameter was passed in HEX
- Display of the L2loc parameter in the BRAS forwarding entry when a location is specified on a physical interface/subinterface. If the parameter is specified, it is passed in the L2loc parameter
- Database migration during an inconsistent upgrade to the latest firmware version
- Cyclic sending of aggregated routes in BGP
- Removed sending of disabled ipv4-acl rules to AP
- Memory leak when syslog host is configured
- Memory leak when QoS is configured
- Obtaining BRAS VRRP status in a cluster configuration
- Increased size of the rootfs on ESR/WLC-15 to 600 MB

Version 1.30.6

Revisions:

- Monitoring and management:
  - CLI:
    - **snmp-server enable traps wlc-wids** command to enable sending SNMP traps for WIDS events
    - Functionality of converting 43 DHCP options from ASCII to hex has been implemented (format dhcp option-43 in the debug section)
  - WEB:
    - UI interface has been improved
    - Monitoring
      - WIDS log
      - Sorting of configuration files by date has been improved
      - Displaying the hostname on AP monitoring pages
      - Date format in filters in the “Event Log” section has been changed
      - Displaying the utilization and interference parameters in AP radio interfaces monitoring
    - Configuration
      - RADIUS server settings section
      - VLAN settings section
      - The configuration for portal authorization on AP has been implemented
      - ARP suppression configuration in the radio profile (not supported for WEP/WOP-2ac, WEP-3ax, WEP-550K)
  - WLC:
    - Support for WEP-550K, WEP-30L-NB, WOP-3L-EX AP
    - Synchronization of WLC logs during redundancy
    - Support for portal authorization with Eltex-NAICE (for WEP-30L/WEP-30L-NB/30L-Z and WOP-30L/30LI/30LS)
    - Support for redirecting CoA requests to radius-server local for portal authorization
    - Monitoring
      - Displaying the utilization and interference parameters in extended AP monitoring
      - Unified format for displaying AP firmware in the **show wlc ap firmware** command
      - **show wlc journal info** command for viewing summary information about WLC logs
      - Units of measurement for speed in the **show wlc ap interfaces <mac>** output
    - Configuration
      - **disconnect-on-reject** command in portal-profile to disconnect the user upon Reject from RADIUS during MAB authentication (supported for WEP-30L/WEP-30L-NB/30L-Z and WOP-30L/30LI/30LS)
      - **http-auth-disable** command in portal-profile to disable portal interaction with the AP via HTTP/HTTPS during user authorization
      - **neighbor-scan** command in ap-profile to configure passive scanning has been extended for WEP-200L, WOP-20L, and WEP-3ax
      - **captive-adaptive** command in ap-profile to enable portal authorization compatibility mode for iOS devices
      - **redirect-url-format** command in portal-profile to specify the format of the user's MAC address and the format of the NAS ID in the redirect address when configuring portal authorization
      - **description** command for user in radius-server local
      - Configuring **url-acl-profile** and **ipv4-acl** in ap-profile and portal-profile to configure domain and IP address lists on the AP. The lists are used for unauthorized portal users
      - Block of commands in ap-profile for configuring DAS parameters on the AP
      - Block of commands in radius-server local for configuring DAS parameters used when redirecting CoA requests

            - Ability to add a location name (location=<AP_LOCATION>) to redirect-url-custom in portal-profile
            - Ability to redirect AAA RADIUS requests for different SSID to different servers
            - The default value for the load-balance command in airtune-profile has been changed from “enabled” to “disabled”
        - SNMP:
            - OID eltWlcApInfoByMacTable (1.3.6.1.4.1.35265.1.224.1.3.2.7) is added to ELTEX-WLC-MIB which contains information about the AP indexed by MAC address
            - OID eltWlcRadioRxUtilization (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.14) is added to ELTEX-WLC-MIB to view the RX disposal on the AP
            - OID eltWlcRadioTxUtilization (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.15) is added to ELTEX-WLC-MIB to view the disposal TXT on the AP
            - OID eltWlcRadioApInterferenceRatio (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.17) is added to ELTEX-WLC-MIB to view interference between Wi-Fi devices that operate on close but not completely independent channels
            - OID eltWlcRadioCoChannelInterference (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.18) is added to ELTEX-WLC-MIB to view interference between Wi-Fi devices that operate on the same channel
            - OID eltWlcRadioNoiseLevel (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.19) is added to ELTEX-WLC-MIB to view the noise level on the radio channel
            - OID eltWlcRadioPacketErrorRate (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.20) is added to ELTEX-WLC-MIB to view the percentage of packets corrupted due to interference, weak signal, or collisions
            - WIDS ladders are added to ELTEX-WLC-MIB
            - OID eltexEnvMemoryAvailable (OID .1.3.6.1.4.1.35265.38.40.40.11) is added to ELTEX-GENERIC-MIB to view available memory
        - Syslog:
            - **match process-name web** command to filter WEB server events
- Security:
    - Licensing:
        - Increased license lifetime when ELM is unavailable

Fixed:

- Erroneous termination of the lic-mgr service
- Bootloaders are not updated when updating firmware via the WEB
- After deleting radio-5g-profile, APs switch to Cfg failed status
- In ldap-profile, it is not possible to set ldap-server via a domain name
- Not all AirTune sessions are displayed

Version 1.30.4

Revisions:

- Implemented synchronization of AP firmware in the backup scheme
- Monitoring and management:
  - Addedcritlog directory to **show tech-support** command output
  - WEB:
    - Full audit of administrator actions in the WEB interface via TACACS+ / RADIUS
    - Optimized operation of WEB server when operating with clients and AP
    - Improved adaptation of the WEB interface to different screen resolution
    - Monitoring
      - Filtering on the "Access points" and "Clients" pages
      - Pagination when displaying data on the "Access points", "Clients", "Event log" pages
      - CPU load graph
      - Client IP address on client monitoring pages
      - "VLAN number" column in the virtual access points table
      - "Range" column in the clients table
      - Monitoring of the 802.11v parameter on the "Roaming data" page
      - **Client IP address changed** check-box in the client log
      - Unified pop-up windows and snack bars when operating with tables
    - Configuration
      - Portal authorization settings
      - Ability to limit the traffic speed (clients, VAP, broadcast, multicast)
      - Configuring the 82 DHCP option on AP in radio profile
      - Configuring the 802.11v in the AirTune profile
      - Configuring the "Country code" in the AP profile to comply with local restrictions on channels and transmitter power corresponding to the selected country
      - Changed order of settings in the SSID profile
      - Configuring the IEEE 802.11 n/ac, a/n/ac modes for 5 GHz radio interface in the individual AP settings
  - WLC:
    - **wlc-journal storage** command to transfer WLC logs to HDD
    - Optimized AP connection speed
    - Optimized AP connection stability
    - Monitoring
      - Display the "VLAN" in the **show wlc ap vap** command output
      - Display the range in which the client operates in the **show wlc clients command** output
      - Display the ap-location in the AP log(**show wlc journal ap**)
      - Display the band in the AP log (**show wlc journal client**)
    - Configuration
      - **country-code** command in the ap-profile to comply with local restrictions on channels and transmitter power corresponding to the selected country
      - The maximum size of WLC logs is limited to 90 days. When updating to 1.30.4 firmware version, the size of existing logs will be automatically reduced
      - Configuring the MQTT positioning for WEP-1L, WEP-2L, WOP-2L, WEP-3L
      - Configuring the WIDS/WIPS for WEP-200L and WOP-20L
      - **neighbour-scan** command in the ap-profile for configuring passive scanning on WOP/WEP-30L, WEP-30L-Z, WOP-30LS, WOP-30LI
      - **show wlc statistics** command block for displaying statistics on clients and AP events
      - **arp suppression** command for configuring ARP conversion
      - **lldp-server** command block in ap-profile/services for configuring LLDP
      - **lldp command** block in ap-profile/trace for configuring LLDP logging
      - Ability to add **NAS IP** to the redirect address when configuring portal authorization via RADIUS

        - Processing of **deauth-attack** in WIDS
        - **load-balance roaming clients max/min** commands in airtune-profile for configuring the maximum/minimum number of users during balancing
        - **802.11r cross-location-roaming** command in AirTune settings to enable 802.11r roaming between locations
    - Syslog:
        - **syslog web-commands** for logging actions on WEB
        - **logging wlc-events/logging wlc-journal** command for enabling WLC logs to syslog server
    - SNMP:
        - Optimization of WLC tables

Fixed:

- Duplication of wireless client sessions in the WEB
- Incorrect status when ending a session in the WEB
- Error "RRM:rrm request for start optimization, location '<location name>' failed, reason: 'failure from airtune api'" when starting AirTune optimization for location
- Reason for the "RRM:Cannot backup domains info: 'malformed answer from airtune api'" log
- AP status change to the "Cfg failed" after deleting radio-2g-profile/radio-5g-profile
- AP status change to the "Failed" due to: "CoA timeout expired" when switching to the backup controller
- Service wlc_gre error termination
- Problem with obtaining an IP address via DHCP for clients using Broadcast check-box in the tunneling scheme
- Reason for the "IS_NE check failed: stat_map->entry_sz (170 != 8) !!! on WLC-3200" log
- Error when entering the path of external media for storing IPS rules
- Error "PLUGIN_AUTH_USER_PASS_VERIFY failed with status 1" due to the use of uppercase letters in the OpenVPN server configuration
- Traffic classification by match access-group and DSCP
- show mac address-table command output when WLC is operating in a client traffic tunneling scheme
- Allowed to specify the user name as a MAC address in the access profile
- IPsec tunneling with XAuth authorization
- Speed of SoftGRE tunnel establishment with LLDP enabled
- Error in the show wlc ap detailed command output when using 40 MHz radio channel width
- Error ESRinfo_wlc_service_activator_aps_MAX when requesting VAP

Version 1.30.2

Revisions:

- Monitoring and management:
  - CLI:
    - Added **logging radius** command to enable RADIUS server logs
    - Added **alarm enable journal** command block for independent configuration of trap sending and alarm logging
  - WEB:
    - Configuration
      - NAS ID configuration in radius-profile
      - MAC authorization configuration in ssid-profile
  - Syslog:
    - Syslog messages filtering for RADIUS servver (**match process-name radius-server**)
  - SNMP:
    - eltWlcApVapTable (OID .1.3.6.1.4.1.35265.1.224.1.3.2.6) table in ELTEX-WLC-MIB, which contains information about enabled VAPs on AP
    - OID eltWlcRadioUtilization (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4.1.13) is added to ELTEX-WLC-MIB to get the value of the current radio channel utilization

Version 1.30.1

Revisions:

- Active-Standby clustering functionality for WLC
- Integration with ECCM
- Monitoring and management:
  - Syslog:
    - Syslog messages filtering for WLC services (**match process-name wlc**)
  - SNMP:
    - eltWlcApSaTable (OID .1.3.6.1.4.1.35265.1.224.1.3.2.5) table in ELTEX-WLC-MIB, which consists information about unregistered AP
    - eltWlcClientInfoTable (OID .1.3.6.1.4.1.35265.1.224.1.3.3.4) table in ELTEX-WLC-MIB, which contains information about clients connected to the WLC
  - WEB:
    - WEB server transfer to VRF
- Security:
  - Download encrypted keys
- WLC:
  - Monitoring:
    - Displaying the frequency range in the **show wlc clients** command output
  - Configuration:
    - **session password auth-password** command to use RADIUS key as a password for mach-auth for portal authorization
    - **session password mac <MAC FORMAT>** command to use client MAC address in the selected format as a password for mac-auth for portal authorization
    - Time zone setting on AP. Time zone is taken from the device configuration if it is not set in the location
    - **proxy-https** command to enable encrypted exchange between client and AP for portal authorization
    - **crypto cert** and **crypto private-key-password** commands to select a certificate in portal authorization and to specify the certificate password
    - **radar** command block in ap-profile to configure positioning by MQTT protocol

Version 1.30.0

Revisions:

- Monitoring and management:
  - Support for vWLC
  - Support for HDD
  - CLI:
    - **show storage-devices hdd smart** command to view the disk state
    - **unmount storage-device HDD/USB** command to disconnect a disk or USB drive
    - **clear storage-device HDD/USB** command to format a dick or USB drive
    - **show running-config/candidate-config wlc without-ap** command to output wlc section confiuration without ap block
    - **show running-config/candidate-config without-wlc-ap** command to output the device configuration without ap blcok in the wlc section
  - WEB:
    - UI optimization
    - Monitoring
      - VAP output
      - Cleaning the event log of AP and clients
      - Creating individual profile of AP from monitoring
      - Manual firmware update on AP
      - Sorting in tables
      - Clients deauthentication
      - Checking the configuration change
      - Advanced filtering in the event log of AP and clients
    - Configuration
      - Individual AP configuration page
      - Configuring AP updatr scheduler
      - Profile copying
      - Viewing profile bindings
      - Automatic binding of AirTune (default_airtune) when creating a location
    - Administration
      - Downloading licenses to extend functionality
      - Uploading/downloading the device configuration
      - Resetting device configuration to factory settings
      - Downloading the AP firmware
      - Downloading and updating the device firmware
      - Working with archived configurations
      - Comparing the configurations
      - Rebooting and delayed rebooting of the device
  - SNMP:
    - eltWlcApLocationTable (OID .1.3.6.1.4.1.35265.1.224.1.3.1.2) table in ELTEX-WLC-MIB, which consists AP Location configuration
    - eltWlcApRadioTable (OID .1.3.6.1.4.1.35265.1.224.1.3.2.4) table in ELTEX-WLC-MIB, which contains data on radio parameters of the AP
    - OID eltWlcApHostname (OID .1.3.6.1.4.1.35265.1.224.1.3.2.3.1.11) is added to ELTEX-WLC-MIB to get AP hostname
    - OID eltWlcApLocation (OID .1.3.6.1.4.1.35265.1.224.1.3.2.3.1.12) is added to ELTEX-WLC-MIB to get AP Location
- WLC:
  - Support for WOP-30LI access point (AP)
  - Maximum number for WCL-3200 is incresed to 3000
  - Optimization of WLC work, work with AP sessions is spread over several cores
  - Optimization of work of AP update manager, sliding schedule is implemented
  - Ability to increse the number of AP using ELM

- Monitoring
  - **show wlc ap firmware** command to display information about supported AP and firmware for them
  - Extended AP event log, added information about the connection process
  - Client IP address is added to the input of **show wlc clients** command
  - Added 802.11v status outputs to AirTune monitoring commands **show wlc airtune roaming statistics <ap location>** and **show wlc airtune <ap mac>**
  - Display of the average and maximum utilization of the radio channel on which the AP is operating in the **show wlc ap <mac> detailed** command output
  - RADIUS server logging on client connection
- Configuration
  - AP configuration to operate with the portal according to Cisco-like scheme for WEP-3ax
  - Speed limitation setting for clients/SSID/broadcast/multicast traffic
  - IP address ranges configuration for the whitelist in the external portal settings
  - **rates-basic** and **rates-supported** commands to configure Supported/Basic rates in radio-2g/5g-profile and individual AP settings (ap <mac>)
  - 802.11v configuration in AirTune
  - Loosening of validation for individual AP settings (ap <mac>). Model and location are not always to be filled in
  - Increased number of WLC profiles (radio-2g/5g-profile, radio-5g-profile, ssid-profile, ap-location, radius-profile) up to 80 % of the maximum number of AP
  - **ip dhcp information option <>** commands to manage DHCP Option 82 settings on AP
- WIDS/WIPS
  - Ability to configure WIDS/WIPS, the functionality is activated by license
  - WIDS/WIPS event log

- Tunneling:
  - **tunnel-isolation** command to enable isolation in softgre-controller when operating in data-tunnel configuration wlc mode

Version 1.26.1

Revisions:

- Monitoring and management:
  - CLI:
    - Optimized ip failover setting
    - Added **show crypto certificates pfx** command to view detailed information on PKCS#12
    - Added **show crypto certificates crl** command to view detailed information on CRL
    - Added **unmount storage-device** command to correctly eject USB/SD drive
    - Added possibility to specify configuration that the device will apply on the next start
  - WEB:
    - Added configuration mode
    - Added WLC configuration block setting
    - Added access point hostname output on the 'Clients' page
    - Added possibility to download RRM reports
- WLC:
  - Added support for WLC operation on ESR-30 under license
  - Added support for access points: WEP-2ac, WEP-2ac Smart, WOP-2ac, WOP-2ac rev.B, WOP-2ac rev.C, WEP-30L-Z
  - Added Airtune redundancy
  - Added display of roaming events in client log
  - Added notification of WLC and RADIUS services when regenerating keys and certificates by default
  - Added configuration of an external portal on access point using Cisco-like scheme
  - Added possibility to save access point hostname, manually specified on the device
  - Added the description field to access point log
  - Optimized operation of access point update manager. Update is performed in sets of 50 access points, taking into account the location time zone
  - Cancelled automatic access point update after downloading firmware file
  - Added receiving access point hostname for monitoring
  - Added description field for airtune-profile
  - Supported client disconnection reason 'Death due to client DHCP fail'
  - Expanded log filtering capabilities
  - Added possibility to limit log size by days
  - Added possibility to configure a certificate and a key for service-activator
  - Added possibility to configure aliases for WLC commands
  - Added default profiles for radius-profile and airtune-profile
  - Added possibility to enable OWE security mode for SSID
  - Added **set wlc indication** command to enable access point status LED indication
  - Added possibility to configure mac-auth on access point
  - Added possibility to select dynamic parameters (client and access point MAC addresses) in monitoring mode
  - Added check of airtune optimization status at startup
  - RADIUS server:
    - Moved TLS mode enabling from global level to domain
  - AirTune:
    - Added 802.11v roaming setting for WEP-3ax

Version 1.23.6

Revisions:

- Monitoring and management:
  - SLA:
    - Added possibility to manage the DF bit for SLA tests
- Routing:
  - Expanded number of route-maps for ESR-15
  - BGP:
    - Implemented BGP fall-over feature
    - Moved BFD protocol settings to BGP fall-over section
    - Added possibility to bind a route-map to subnet announced via BGP
    - Added possibility to increase/decrease metric by a certain value
- Security:
  - Firewall:
    - Adjusted limits on the number of firewall sessions
- Tunneling:
  - DMVPN:
    - Added support for assigning a dynamic IP address to DMVPN SPOKE
- DHCP:
  - Increased number of ip helper-addresses on interface up to 6

Version 1.23.3

Revisions:

- Support for ESR-31/3200L/3300 routers
- Monitoring and management:
  - CLI:
    - Implemented repeated display of the banner displayed before user authentication on a router when pressing 'ctrl' + 'c' key combination
    - Implemented check of IP addresses specified as remote-address in syslog host for presence on a router
    - Increased number of loopback interfaces up to 32
    - Implemented possibility to record traffic dump to a file
    - Implemented possibility to filter output of **show running-config** and **show candidate-config** commands by 'syslog' key
    - Implemented separation of all configuration blocks
    - Implemented display of QSFP28 information in output of **show interfaces sfp** command
  - sFlow:
    - Implemented possibility to send sFlow statistics to VRF
  - Zabbix:
    - Implemented possibility to launch iperf3 using Zabbix-agent
  - SNMP:
    - Implemented sending SNMPv3-trap
  - SLA:
    - Implemented track triggering when SLA test fails
    - Expanded output of operational information on SLA tests
    - Implemented mechanism for changing SLA configuration without restarting all tests
    - Implemented binding of SLA test execution to interface state
- Routing:
  - Added new NHRP Shortcut route type
  - Implemented possibility to filter routes using regular expressions
  - BGP:
    - Implemented local-as feature with no-prepend and replace-as suboptions
    - Implemented possibility to aggregate route information when announcement via BGP
    - Implemented possibility to filter routes by the BGP Next-Hop attribute
  - OSPF:
    - Implemented possibility to switch an interface to passive mode for OSPF protocol
    - Implemented possibility to configure the reference-bandwidth parameter interface
    - Implemented possibility to enable automatic calculation of OSPF-cost for interfaces
    - Implemented support for point-to-multipoint broadcast mode
    - Implemented support for ECMP feature for OSPF External routes (E1 and E2)
  - Multiwan:
    - Changed mechanism for checking multiwan parameters at the configuration stage
- MPLS:
  - Implemented possibility to configure 'prefix' with the 'eq', 'ge' or 'le' keys in the **advertise-labels** command
  - Expanded information output when viewing VPNv4 and VPLS records in detail
- Security:
  - IPsec:
    - Implemented possibility to use 'local interface' when configuring 'security ike gateway' to build IPsec from interfaces with dynamic addresses
    - Implemented **clear security ipsec vpn <VPN-NAME>** command to reset one of the current VPN connections
    - Implemented possibility to specify different PSKs for different remote-addresses (ike keyring)
    - Added support for up to 31 Diffie-Hellman groups

    - IPS:
        - Expanded output of the **show security ips counters** command
    - Firewall:
        - Implemented possibility to specify a host/subnet in rules without using object-group network
        - Implemented possibility to filter broadcast packets for 'security zone-pair any self'
    - ACL:
        - Implemented possibility to use a range of tcp/udp ports in ACL rules
    - AAA:
        - Implemented possibility to authorize executed commands using a TACACS server
- QoS:
    - Implemented traffic policing feature
    - Implemented possibility to re-mark the CoS and DSCP fields on the output interface
    - Added support for peer-tunnel-QoS policies for DMVPN Spoke-to-Spoke tunnels
- Tunneling:
    - Added support for WireGuard tunneling protocol
    - DMVPN:
        - Improved speed and stability
        - Improved the output of the **show ip nhrp** command
        - Increased limit of GRE tunnels for ESR-1700 up to 3200
        - Increased limit of connected mGRE SPOKE for ESR-1700 up to 2000 for each mGRE HUB
- DHCP:
    - Implemented possibility to configure the next-server parameter for the DHCP-server pool
- NTP:
    - Implemented possibility to configure the NTP-server specifying not only an IP address, but also a domain name

Version 1.20.4

Revisions:

- Monitoring and management:
  - CLI:
    - Implemented possibility to restrict access to a router's ssh server using the **ip ssh access-addresses** command
    - Implemented possibility to restrict access to a router's telnet server using the **ip telnet access-addresses** command

Version 1.20.3

Revisions:

- Routing:
  - BGP:
    - Implemented Dynamic Neighbors feature
    - Implemented **community** and **extcommunity** removal mechanisms in announcements
    - Implemented **community** and **extcommunity** replacement mechanisms in announcements
    - Added possibility to configure **address-family** in **peer-group**
    - Implemented display of **Next Hop**, **Local Preference, MED, Community, EXT Community** parameters in the **show bgp** command output for a specific route
  - OSPF:
    - Added possibility to redistribute routes with External Type-1
    - Added possibility to set a route metric during redistribution
  - MultiWan:
    - Added possibility to mark sessions for MultiWAN for sending response packets to a session via the same interface via which packets for this session are received
- MPLS:
  - Implemented Inter-AS Option C feature
  - Added support for configuring **route-target both** for VPLS
  - Implemented MPLS over DMVPN operation
  - Added possibility to transmit L2 protocol frames via PW using the **l2protocol forward** command in **l2vpn-eompls-view**
- Monitoring and management:
  - CLI:
    - Added possibility to calculate checksums for certificates and licenses
    - Implemented display of detailed information on multilink status
    - Implemented **show tech-support** command to generate an archive of diagnostic information
    - Removed possibility to run **monitor** command for loopback interfaces
    - Implemented possibility to use uppercase characters in user name in ESR ssh/ftp/ssh/sftp clients
    - Changed output of the SSH connection error in host when the ssh key does not match ESR capabilities
    - Changed compatibility checks for commands in the ARCHIVE section
    - Unified hints for mail server configuration commands
    - Disabled starting a backup of the current configuration when starting the device
  - Syslog:
    - Implemented filling the **hostname** and **ip-address** fields in syslog packets
    - Changed the format of **logging service start-stop** messages
    - Changed filling the **APP-NAME** field in syslog messages
    - Changed the format of logs generated on the VoIP chip (only for ESR-12V/12VF)
  - SNMP:
    - Created the eltexUtilizationIfTable table in ELTEX-GENERIC-MIB, containing interface utilization counters
    - Added support for OID cntpPeersVarTable (OID 1.3.6.1.4.1.9.9.168.1.2.1): the cntpPeersVarEntry sequence with all nested attributes from CISCO-NTP-MIB
    - Added support for OID hrSystemDate (OID 1.3.6.1.2.1.25.1.2) from HOST-RESOURCES-MIB
    - Added support for OIDs in ELTEX-ESR-BGP4V2-MIB: eltEsrBgp4V2PeerAdminStatus, eltEsrBgp4V2PeerRemoteAddrStr, eltEsrBgp4V2PeerRemoteaddrStr
    - Added support for OIDs to ELTEX-GENERIC-MIB for limits monitoring and FIB/RIB utilization for ipv4/ipv6: eltexRoutingFIBLimit, eltexRoutingFIBUsage, eltexRoutingFIB6Limit, eltexRoutingFIB6Usage, eltexRoutingRIBUsageBGP, eltexRoutingRIBUsageOSPF, eltexRoutingRIBUsageRIP, eltexRoutingRIBUsageISIS, eltexRoutingRIB6LimitsBGP, eltexRoutingRIB6LimitsOSPF, eltexRoutingRIB6LimitsRIP, eltexRoutingRIB6LimitsISIS,

eltexRoutingRIB6UsageBGP, eltexRoutingRIB6UsageOSPF, eltexRoutingRIB6UsageRIP, eltexRoutingRIB6UsageISIS
    - Netflow:
        - Implemented netflow sending via OOB interface
- Security:
    - Firewall:
        - Implemented possibility to limit the firewall sessions number for specified rules using the **action session-limit** command
    - IDS/IPS:
        - Implemented clearing counters on reboot and by the **clear security ips counters** command
        - Implemented disabling interfaces with enabled IDS/IPS features after reboot before downloading and applying IDS/IPS signatures
        - Implemented possibility to specify number of rules for a category in percent (rules percent), all (rules all) and recommended (rules recommended)
        - Implemented possibility to store downloaded signatures on an external drive (SD/USB)
        - Implemented possibility to view the statuses of responses from the EDM server in debug mode
    - IPsec:
        - Implemented display of **PFS dh-group** in the output of the **show security ipsec proposal** command
        - Implemented the DPD feature for IKEv2
- Tunneling:
    - Implemented possibility to operate with gre-keepalive when building a tunnel from an IP address in another VRF
    - Added a warning when executing the **no ip nhrp ipsec** command in the GRE tunnel settings
    - OpenVPN server client updated to version 2.5.3
- QoS:
    - Implemented the Per-Tunnel QOS feature based on group attributes for DMVPN
- Event tracking mechanism (track):
    - Reworked the mechanism for changing the BGP AS-path prepend parameter depending on the track state
    - Implemented the mechanism for changing the BGP metric parameter depending on the track state
- VoIP (only for ESR-12V/12VF):
    - Increased the maximum length of the **sip-domain address** command parameter from 31 to 235 characters in sip-profile

Version 1.19.2

Revisions:

- Support for WLC-2300
- Tunneling:
  - Added possibility to configure MTU for SoftGRE tunnels
  - Added support for softgre-controller on ESR-15/30/3200
- Monitoring and management:
  - CLI:
    - Added **commit check** command to check configuration without applying
    - Added **crypto generate pfx** command to generate pkcs12 container
- WLC:
  - Support for WOP-30LS access point
  - Transfer to universal radio profiles
  - Transfer to universal ssid-profile
  - Added **show wlc ap vap** command to view enabled VAP list
  - Added possibility to configure hostname of an access point
  - Hostname of an access point added in the main monitoring outputs
  - Added possibility to clear WLC logs
  - Added possibility to increase maximum number of access points via license
  - Added possibility to generate TLS certificates for Wi-Fi clients
  - Added possibility to redefine parameters of access points radio interfaces via individual profiles
  - Extended information on connected clients in **show wlc clients** output
  - Optimized WLC operation in redundancy scheme
  - RADIUS-server:
    - Added possibility to authorize Wi-Fi clients via LDAP server

Version 1.19.1

Revisions:

- Support for WLC-15
- Monitoring and management:
  - Added crypto-sync service for certificate synchronization
  - CLI:
    - Added possibility to generate certificates and private key
    - Added **ip http server** and **ip https server** commands to enable WEB server
    - Added **sync crypto force** command to synchronize certificates manually
  - WEB:
    - Added acccess points monitoring
- Tunneling:
  - Added possibility to allocate softgre-controller management tunnels by source addresses/networks
  - Added possibility to selectively enable VLAN in softgre-controller for WLC mode
- WLC:
  - Support for WOP-30L access point
  - Implemented WLC redundancy via VRRP
  - Added WPA2/WPA3, WPA3 Enterprise security modes
  - Support for EAP-TLS operation in local RADIUS server
  - Added **show wlc clients** command to view connected Wi-Fi clients list
  - Added possibility to configure PMKSA caching
  - Added possibility to configure NAS IP in RADIUS server when proxing
  - Added output of common number of clients on an access point radio interface
  - Added user name, location name, connection status to client log
  - Added possibility to set ssh/telnet/web/snmp services on an access point

Version 1.19.0

Revisions:

- Support for WLC operation on ESR-15 under license
- Monitoring and management:
  - CLI:
    - Renamed wireless-controller into softgre-controller
    - Simplified MAC address entry in object-group mac: no need to set standart netmask manually, default value is 'ff:ff:ff:ff:ff:ff'
    - Added possibility to view configuration more conveniently: by categories
- Tunneling:
  - Changed SoftGRE tunnels operation logic in wlc mode. Supported c-vlan usage in client traffic tunneling scheme. Vlan specified in the SSID settings gets into the WLC without terminating the sub-tunnel in the Bridge. For correct operation, vlan must be created in the WLC settings and must be a member of a bridge or an interface
- WLC:
  - Support for WEP-30L access point
  - Added possibility to view WLC configuration by sections
  - Added possibility to view radius-server configuration by sections
  - Changed monitoring commands
  - Added ap-location name in extended output of information on an access point
  - Added division by locations in Airtune roaming statistics
  - Added **reload wlc ap <mac>** command to reboot an access point
  - Service-activator: added functionality for registering access points using certificates:
    - Added **join wlc ap <mac_ap>** command to authorize all unauthorized access points in manual authorization mode
    - Added **show wlc service-activator aps** command to view unauthorized access points
    - Added **clear wlc ap joined <mac_ap>** command to revoke certificates from access points
    - Added **aps join auto** command to configure automatic authorization mode of access points
  - Ap-location:
    - Added **mode tunnel** command to enable tunneling in location
  - Radius-server local:
    - Added possibility to configure vlan for a user
  - Logging:
    - Added uploading of clients and access points log into syslog server

Version 1.18.1

Revisions:

- Support for ESR-15/30/3200 routers
- Implemented TFTP server functionality
- IPsec:
  - Implemented possibility to configure route-based IPsec (VTI tunnel) in VRF
  - Fixed operation of the DPD mechanism for IKEv2
- IDS/IPS:
  - Implemented possibility to configure packet queues for IPS
- Monitoring and management:
  - CLI:
    - Implemented possibility to set the number of terminal rows and columns using **terminal resize** command
    - Added **format mtdpartition data** command to reformat flash:syslog, flash:data and flash:backup partitions in accordance with firmware versions 1.13.0 and later ones (for ESR-10/12V/12VF/14VF/100/200/1000/1200/1500/1511 routers)
    - Added **clear mtd-partition data** command to delete files from flash:syslog, flash:data and flash:backup partitions (for ESR-10/12V/12VF/14VF/100/200/1000/1200/1500/1511 routers)
    - Added **no interface** command to delete the physical interface configuration
    - Added checks when executing the **copy** command, preventing incorrect combinations of copy source and destination from being specified
    - Added **system cpu load-balance overload-threshold** command to control session balancing between CPU cores
    - Added **show ip firewall session failover** and **show ip nat translations failover** commands to display firewall-failover cache
  - SNMP:
    - Implemented possibility to obtain SFP transceiver information via SNMP
  - SYSLOG:
    - Added possibility to filter syslog messages of individual processes when outputting to snmp/telnet/ssh and console sessions
  - Added 'domain lookup' setting to the factory configuration
  - Implemented possibility to add a name of the user that changed the configuration when automatically archiving the configuration by commit
  - Implemented possibility to assign static IP address to the cellular modem interface
  - Implemented support for four path-mtu-discovery modes:
    - disable
    - default
    - icmp-discard
    - secure
  - Implemented possibility to control fragmentation of GRE packets using **ip dont-fragment-bit ignore** and **ip path-mtu-discovery discovery disable**
- MPLS:
  - Implemented MPLS over GRE functionality
  - Implemented BGP Inter-AS Option B functionality
  - Implemented possibility to select bridge in LDP configuration
- Routing:
  - Implemented possibility to specify an interface as a router-id for RIP, OSPF, ISIS, BGP, LDP
  - Implemented possibility to specify an interface as an update-source for RIP, OSPF, ISIS, BGP, LDP
  - BGP:
    - Changed router-id selection algorithm to the following order:
      1. use static router-id
      2. use the lowest IP address of the loopback interface
      3. use the lowest IP address of the physical interface

    - Implemented possibility of recursive search for BGP routes
- OSPF:
    - Implemented possibility to set cost and metric type for advertised default routes
    - Implemented possibility to use OSPF protocol on VTI tunnels
- NTP:
    - Changed ranges for minpoll parameters: 1–6 and maxpoll: 4–17
- Event tracking mechanism (track):
    - Implemented **show tracks** and **show track** commands to display track status
- AAA:
    - Changed minimum key length for TACACS server to 1
- DHCP:
    - Implemented DHCP failover mode: Active/Standby
    - Implemented **ip helper-address gateway-ip** command to specify giaddr field in DHCP packets
- Remote-access:
    - Implemented possibility to transmit routing information via DHCP for PPTP/L2TP clients
- Corrected restrictions on maximum number of active routes (FIB):
    - ESR-1700: 3000000
    - ESR-1000/1200/1500/1511/3100/3200: 1700000
    - ESR-100/200/20/21/30, WLC-30: 1400000
    - ESR10/12V/12VF/14VF/15: 1000000

Version 1.17.3

Revisions:

- Monitoring and management:
  - SNMP:
    - Implemented possibility to monitor OSPF/BGP state via SNMP
  - FTP-client:
    - Implemented possibility to configure FTP client IP address (ip ftp sourceaddress)
- Tunneling:
  - Implemented possibility to announce group attributes with DMVPN-SPOKE
- IPsec:
  - Renamed rsa-public-key authentication method to public-key
  - Added support for PKCS1 and PKCS12 formats
  - Added support for ECDSA key type

Version 1.17.0

Revisions:

- Monitoring and management:
  - CLI:
    - Implemented possibility to specify a comment when entering the **commit** command
    - Implemented possibility to specify a configuration confirmation timeout when entering the **commit** command
    - Implemented support for the delayed reboot function
    - Increased the number of prefixes and IP address ranges in the object-group network up to 1024
    - Implemented possibility to configure a tunnel group
    - Implemented possibility to calculate a checksum for files in the flash:backup/ partition
    - Added a 'Date of last modification' column to the **dir** command output
  - SSH:
    - Implemented possibility to disable supported HOST algorithms in the SSH server
  - Netflow:
    - Implemented possibility to configure the ifindex value for self\dropped traffic
- Security:
  - IDS/IPS:
    - Support for operating with mirrored traffic
- BRAS:
  - Implemented possibility to set a user password when authorizing by IP and MAC
- DHCP:
  - Server:
    - Implemented possibility to specify a description in the **address** command
- Routing:
  - Implemented possibility to bidirectionally transmit routes between VRFs using the **route-target both** command
  - OSPF:
    - Implemented optional Opaque LSA support
    - Implemented possibility to set the maximum number of Nexthops for ECMP routes
  - BFD:
    - Implemented the output of information on BFD neighbors

Version 1.15.3

Revisions:

- WLC:
  - Support for WEP-200L access point
  - Board-profile:
    - Radio interface settings moved to the board-profile
    - Added possibility to configure only one radio interface
  - SSID:
    - Added parameter settings for 802.11r/kv roaming
  - Airtune:
    - Added Airtune service monitoring and management
  - Increased size of the event log for clients and access points
  - Added serial number, board version, and uptime to extended information on access point
  - Added information on connected clients to WLC status output (**show wlc**)
  - Supported SNMP monitoring of WLC
  - Hidden passwords in tracing
  - Log-filter:
    - Added functionality for filtering logs by MAC addresses of access points
  - Ap-profile:
    - Added possibility to configure logging for all services of access point
  - AP:
    - Added ap-model parameter to determine the type of access point
  - Service-activator:
    - Optimized algorithm for firmware update of access points

Version 1.14.5

Revisions:

- QOS:
  - Added possibility to specify bandwidth limitations in percent for complex-qos
- Routing:
  - Added possibility to set Policy-Based Routing for local traffic
- Monitoring and management:
  - Added possibility to update firmwware automatically with use of DHCP options
- SYSLOG:
  - Added possibility to filter syslog messages of separate processes when recording to local syslog file or remote syslog server
  - Added possibility to log traffic flows processed by IPS/IDS to remote syslog server
- Redundancy:
  - Support for STP/RSTP in bridge for all the models
  - Support for STP/RSTP for physical interfaces in switchport mode for ESR-1x/2x
- Remote-access:
  - Added possibility to limit authentication and encryption methods of IKE and IPsec protocols encryption for L2TP server and L2TP client

Version 1.14.0

Revisions:

- AAA:
  - Added possibility to use TLS/SSL secured connection for LDAP
- DPI:
  - Added detection of the following applications: **bittorrent-networking**, **ms-netlogon**, **ms-rpc**, **ms-sms**, **rtp audio**, **secure-http**, **secure-smtp**, **vmware-vsphere**
- IDS/IPS:
  - Support for specific commands filtering for HTTP and FTP
- IPsec:
  - Support for mode transport
- QoS:
  - Added classification by URL
  - Added classification by applications
- Track:
  - Added possibility to track VRRP or SLA test state
  - Added possibility to manage VRRP, PBR parameters, interface administrative status, static route, AS-PATH attribute and preference in route-map
- Monitoring and management:
  - CLI:
    - Added possibility to display device configuration with default parameters
    - Added possibility to specify in command **ping** IPv4/IPv6/DNS host without ip/ipv6 prefixes
    - Added possibility to set passwords of less than 8 symbols
    - Added possibility to check external storage devices using the **verify storage-device** command
    - Added possibility to format external storage devices using the **clear storage-device** command
  - SSH:
    - Presence of host keys is checked at device start and if they are absent, generation occurs. Each device has unique ssh host keys
    - Removed obsolete **rsa1** key type
    - Removed **crypto key generate** command from **configure** mode, and instead of it, the **update ssh-host-key** command is added to the **root** configuration mode
  - Collecting statistics:
    - Traffic counting in the Ingress and Egress directions for Netflow

Version 1.13.0

Revisions:

- Support for ESR-1511 and ESR-3100 routers
- Support for Content-Filter functionality for HTTP traffic
- Support for Anti-Spam functionality for HTTP traffic
- Routing:
    - BGP:
        - Increased BGP RIB ESR-10/12V/12VF/14VF to 1M routes
        - Increased BGP RIB ESR-20/21/100/200 to 2.5M routes
        - Increased BGP RIB ESR-1000/1200/1500/1510 to 5M routes

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:
    - Supported IP 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 1.11.0

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 Van Jacobson TCP/IP header compression method
- 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 1.6.4

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 possibility 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