RUT955 Firmware Downloads

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This page contains firmware files for RUT955 devices. Look to the table below or the [changelog](#) to find download links.

To upgrade firmware using WebUI, follow the instructions in [RUT955 Firmware](#).

RUT955					
File	**Type**	**Release date**	**Size**	**MD5**	**Changelog**
[RUT9_R_00.07.06.13_WEBUI.bin](#)	Latest FW	2024.07.08	12.06 MB	fc11879ef0fdd1796844fde82c6c8370	[Link](#)
[RUT9_R_00.07.06.13_WEBUI.bin](#)	Mass production FW	2024.07.08	12.06 MB	fc11879ef0fdd1796844fde82c6c8370	[Link](#)
[RUT9XX_R_00.06.09.5_WEBUI.bin](#)	Latest FW ([legacy](#))*	2023.05.19	12.9 MB	466ebf15d87b57f8f0a2f4291906b193	[Link](#)
[RUT9_R_GPL_00.07.06.13.tar.gz](#)	SDK	2024.07.08	21.26 MB	b6f1f8fff04bbd6faea4ecd43c1d9d1ec	
[RUT9XX_R_GPL_00.06.09.5.tar.gz](#)	SDK (Legacy)	2023.05.19	494.2 MB	f483a609785520e161273337bd540581	

Note: packages for [Package Manager](#) are independent from firmware and can be downloaded in the [Package Downloads](#) page.
* **Legacy FW** - firmware using the legacy RutOS design. You can find all legacy firmwares in [RUT955 Firmware Downloads (legacy WebUI)](#) page.

FW checksums

Checksums for firmware files can be found **[here](#)**.

Notes

- FW version RUT9_R_00.07.0X contains many major updates, some of which made certain functionalities of RUT955 no longer available to utilize. The full list of features that were removed since FW version *RUT9XX_R_00.06.09.5* can be found **[here](#)**.
- FW version RUT9_R_00.07.00 and above will not be supported on legacy-design ([RUT955 *7V***)](#) devices.

Changelog

RUT9_R_00.07.06.13 | 2024.07.08

- **New**
  - **Network**
    - Multiwan: added additional connection flush options
  - **Services**

- RMS API/WebUI: added 'auth_code' option
- **Improvements**
  - **Network**
    - Mobile: added corrupted mobile statistics database restoration functionality
    - Mobile: optimized mobile data gathering on new modem event
  - **Services**
    - OpenVPN: added fixes for the insecure tls-cert-profile option usage
    - IPsec: fixed the instance status when the local firewall option is disabled

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[RUT9_R_00.07.06.12](#) | 2024.06.20

- **Improvements**
  - **Network**
    - Mobile: updated bridge/passthrough mode logic to flush ARP and add static ARP entry if MAC is specified
    - Mobile: added metric to default gateway when using passthrough mode
  - **Services**
    - OpenVPN: improved instance status state
- **Fix**
  - **Network**
    - FRR: patched CVE-2023-46752 and CVE-2023-46753 vulnerabilities
  - **Services**
    - OpenVPN: fixed the private key decryption for cases when a password is used
  - **System**
    - Dropbear: added CVE-2023-48795 patch

[RUT9_R_00.07.06.11](#) | 2024.05.07

- **New**
  - **Network**
    - WebUI: Added 'starting' status when interface is just enabled
- **Improvements**
  - **Network**
    - Dnsmasq: updated to version 2.89
  - **System**
    - Certificates: updated Root CA certificates
- **Fix**
  - **Network**
    - WebUI: fixed 'unknown' status being displayed for disabled interfaces initially
    - Firewall: fixed higher amounts of custom firewall rules not saving
    - WebUI: fixed network and failover interface metric sorting synchronization issue
    - WebUI: fixed mobile connection reload when changing DHCP server settings
  - **System**
    - Events Log: fixed log.db hangs on rare occasions

[RUT9_R_00.07.06.10](#) | 2024.04.04

- **Fix**
  - **System**
    - Ledman: fixed memory leak

RUT9_R_00.07.06.8 | 2024.03.25

Firmware **R_00.07.06.8** was removed due to an issue with inefficient memory allocation for LED control.

- **New**
  - **WebUI**
    - Added eSIM support
- **Improvements**
  - **Services**
    - IPSec: disabled libgmp in favor of openssl
    - IPSec: updated Strongswan to 5.9.6
- **Fix**
  - **Network**
    - Mobile: fixed an issue where RMS was reporting incorrect signal values with SLM750 modems
  - **Services**
    - IPSec: increased charon load timeout
    - IPSec: fixed loading of large private keys
  - **System**
    - Ledman: fixed signal strength LEDs indication

[RUT9_R_00.07.06.6](#) | 2024.03.04

- **New**
  - **Services**
    - Added domain and subdomain options for external landing page in Hotspot
- **Improvements**
  - **System**
    - Minified *.svg WebUI files to save space on the device
    - Removed unused easy-rsa package to increase free space
- **Fix**
  - **Network**
    - Fixed mobile daily data usage representation
    - Fixed the issue with Wireless bgscan functionality not operating correctly
  - **Services**
    - Fixed OverIP serial utility issue where after some time server mode can't accept incoming connections anymore

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[RUT9_R_00.07.06.5](#) | 2024.02.21

- **New**
  - **Network**
    - Added support for multi line USSD
- **Improvements**
  - **Network**
    - Improved DMZ to use its source zone on port forwards creation
  - **System**
    - Updated netifd version to 2024-01-04
    - Updated PPP package version to 2.4.9
    - Updated E2fsprogs package version to 1.47.0
    - Updated Musl package version to 1.2.4
- **Fix**
  - **Network**
    - Fixed an issue where SLM750 modems would display incorrect signal values
    - Fixed an issue where DNS resolution failed for wireless clients connected to an access point configured on a specific VLAN
  - **Services**
    - Fixed Modbus TCP Over Serial Gateway crash occurring at start up in some edge cases
    - Fixed custom GPS NMEA prefix
  - **WebUI**
    - Fixed action descriptions in the traffic rules table
    - fixed BACnet allow remote access functionality
  - **System**
    - Fixed WiFi LED indication when access point is turned off
    - Fixed year 2038 problem with time counter overflow

[RUT9_R_00.07.06.3](#) | 2024.01.17

- **Improvements**
  - **Services**
    - Added multiple hosts support for GPS HTTPS, NMEA and AVL services
    - Increased DLMS Client connection timeout for TCP sockets
- **Fix**
  - **Services**
    - Fixed DLMS Client memory leak with profile generic COSEM class
    - Fixed function 5 not working with high register numbers in MQTT Modbus Gateway service
  - **WebUI**
    - Fixed Events Log sorting and search features
  - **System**
    - Patched CVE-2024-0193 vulnerability
    - Patched CVE-2023-51779 vulnerability
    - Updated OpenSSH to 9.6p1 version, fixed CVE-2023-51385 and CVE-2023-51384
    - Fixed profile migrations, added error handling when trying to change profile while it is still applying

[RUT9_R_00.07.06.1](#) | 2024.01.04

- **Fix**
  - **Services**
    - Fixed issue with NTPclient zombie processes

[RUT9_R_00.07.06](#) | 2023.12.20

- **New**
  - **Network**
    - Enabled IPv6 by default for mobile interfaces
    - Added operator blacklisting and whitelisting based on mobile country code
    - Added SIM card not inserted event in Events Log
    - Added 802.11v BSS Transition Management and 802.11k Radio Resource Measurement
  - **Services**
    - Added OPC UA Server
    - Added the ability to set port for TACACS+ in PAM service
    - Added switch to enable using root certificate authority for MQTT alarms in Modbus Client services
    - Added new alarm action "Ubus event" in Modbus Client services
    - Added new input "Modbus alarms" in Data to Server service
    - Added wget ping subtype support in Events Reporting service
    - Added new I/O SNMP OID that returns numeric I/O state
    - Added new Post/Get service action "mobile_sim_pin" for changing used SIM PIN code on the device
    - Added TLS support for OverIP serial functionality
    - Added CSD calls control in Modem Control functionality
  - **WebUI**
    - Added Tailscale VPN support
    - Renewed user interface design
    - Added network interface name change functionality
    - Added last resort configuration option for multiwan policy rules
    - Added indication when new modem firmware is available
    - Added mobile connection establishment display in mobile status page
    - Added default value for "Reset threshold" field in Low Signal Reconnect feature
  - **System**
    - Added ability to enable/disable SSH access for specific users in System Users
    - API support

- **Improvements**
  - **Network**
    - Disabled operator scan when SIM card is not inserted
  - **Services**
    - Expanded GRE VPN keep alive functionality to disable routes from unreachable tunnel
    - Added PKCS#12 certificate container authentication method in IPsec VPN
    - Added TLV message_payload support for SNMP service
    - Added Purple.ai configuration profile
    - Replaced option "No leading zeros" with "Remove all zeros" in Over IP serial

functionality
- Added possibility to assign mobile interface in SQM service
- Added reboot on storage device disappearance and re-appearance
- Added additional anonymous phone number validation in Mobile Utilities service
- Added "N/A" signal strength response in DNP3 service if SIM card is not inserted

- **WebUI**
  - Improved Events Log page loading by adding asynchronous pagination (pasikeitė puslapiavimo logika nei prieš tai buvusi)
  - Removed requirement for Diffie-Hellman parameters in OpenVPN service
  - Added improvements for creating OpenVPN IPv6 configurations
  - Added auto redirect after changing router's IP address or port
  - Added "Interface" dropdown for interfaces selection in Wake on LAN service
  - Increased Data to Server service MQTT topic length limit to 65535 characters
  - Added OSPF external routes section to Status page
  - Moved device menu entry "Reboot" to header menu
  - Added indication in Overview, Status -> Mobile and WAN pages when mobile data limit is reached
  - Updated Operator state field to show if modem is in limited service
  - Combined Mobile Usage day, week, month and total pages into one
  - Updated Realtime data -> Mobile signal page design to show all available modems and their bands data in one graph
  - Added message when SIM card requires PIN/PUK code in Status -> Mobile page
  - Moved WiFi scanner page to Services section

- **System**
  - Added Mosquitto CVE patch 2023-28366
  - Added Mosquitto CVE patch 2023-3592
  - Updated hostapd version to 2023-09-08
  - Updated cURL version to 8.4.0
  - Updated kernel version to 5.4.259
  - Added RMS data display to generated troubleshoot
  - Added downloaded Package Manager packages list to generated troubleshoot
  - Added process activity load list to generated troubleshoot
  - Changed default OPKG feed to use Teltonika's URL

- **Fix**
  - **Network**
    - Fixed DMVPN firewall rule creation issues
    - Fixed Failover missing active rules when using multiple source and destination IP addresses
    - Fixed mobile service crash due to buffer overflow while reading partially overwritten SMS
    - Fixed an issue with Manual APN connection making attempts too rapidly
    - Fixed deny data roaming functionality when transitioning between roaming and home operator network
    - Fixed network disconnection on mobile network detach and DHCP lease loss situations
    - Fixed VoLTE configuration after modem reboot
    - Fixed Mobile interface bridge and passthrough mode connectivity loss
    - Fixed an issue where rarely PIN code would get removed after SIM switch
    - Fixed mobile operator list being not updated after changes in WebUI
    - Fixed issue where mobile interface was unreachable after device reboot or

interface restart while using Failover service

- **Services**
    - Fixed SSH module enable in PAM service
    - Added minimum free space check when saving logs to flash in Logging service
    - Fixed "Set multiple coils" function sending too many bytes in Modbus Client services
    - Fixed multiple Events Reporting messages being sent when Firewall configuration is changed
    - Fixed VRRP instances advertising wrong virtual IPs
    - Added Hotspot information in SNMP MIB file
    - Fixed registered Hotspot Local Users showing random username
    - Fixed selection of MAC Auth for LAN interfaces in Hotspot service
    - Fixed inconsistent Hotspot login behaviour when using MAC Auth with Password
    - Fixed instance shutdown after last local user deletion
    - Fixed an issue when Call Utilities rules would be active on data only modems
    - Fixed Cumulocity app not sending any telemetry data
    - Fixed Call Utilities failure when caller id is hidden during a call
    - Fixed AVL with poor mobile connections
    - Fixed default profile SMS Utilities I/O status rule configuration in Profiles functionality
    - Fixed serial timeout not working in Over IP serial functionality
    - Removed "Echo" option in Modbus TCP over Serial functionality
    - Fixed CRC verification failing when CRC is correct in Modbus TCP over Serial functionality
    - Fixed crash when getting unexpected messages from RTU in Modbus TCP over Serial functionality
    - Fixed RMS I/O data display to return values calculated by formula
- **WebUI**
    - Fixed side menu style issues when Japanese language is used
    - Fixed displaying of vendor names in Topology page
    - Fixed language packs being selectable when still in Package Manager queue
    - Added ability to configure IPv6 BGP peer
    - Fixed RelayD configuration issues after keep settings
    - Fixed realtime graphs responsive design issues
    - Fixed Network Shares users deletion
    - Fixed not all LAN interfaces shown in dropdown in Hotspot service page
    - Fixed modem updater legacy firmware flashing
    - Fixed wireless realtime data to show signal as unavailable with no connected clients
    - Fixed WiFi scanner disconnecting AP users
    - Fixed setup wizard errors in Wireless configuration page
- **System**
    - Patched FRR CVE-2023-38406
    - Patched FRR CVE-2023-38407
    - Patched FRR CVE-2023-41358
    - Patched FRR CVE-2023-41360
    - Patched FRR CVE-2023-41909
    - Patched FRR CVE-2023-47234
    - Patched FRR CVE-2023-47235
    - Patched OpenSSL CVE-2023-3446
    - Patched OpenSSL CVE-2023-3817

- Patched LibXML2 CVE-2023-39615
- Patched LibXML2 CVE-2023-45322
- Patched FFMPEG CVE-2021-28429
- Patched FFMPEG CVE-2022-48434
- Patched dnsmasq CVE-2023-28450
- Fixed running out of space when SSHFS is mounted in /tmp while generating troubleshoot
- Fixed connection status LED indication when SIM card is removed

RUT9_R_00.07.05.4 | 2023.11.09

- **Improvements**
  - **WebUI**
    - Improved asynchronous pagination in events log pages
    - Optimized Overview page load
    - Added resource loading cancellation after switching to different page

RUT9_R_00.07.05 | 2023.10.09

- **New**
  - **Network**
    - Added "shared.m2m.ch" APN for Swisscom IoT operator to APN database
    - Added "gamma" APN to auto-APN database
    - Added "soracom.io" APN for Soracom operator to APN database
    - Added "simbase" APN to auto-APN database
    - Added "pnd" APN for Pond IoT to auto-APN database
    - Added "spitfire1" APN for Spitfire operator to APN database
    - Software Offloading enabled on default configuration
    - New argument in "gsmctl" CLI command for Carrier aggregation
    - Numeric mode support for modem AT commands
    - Enabled dynamic MTU configuration on mobile interfaces by default
    - WDS support for wireless bridging
  - **Services**
    - DLMS Client package
    - 7zip package
    - TincVPN package
    - Added router uptime and mobile connection uptime data parameters to SNMP
    - Custom MQTT publisher/subscriber topics definition support
    - Alternative configuration file upload support for MQTT Broker service
    - Device Provisioning Service support for Azure IoT Hub service
    - Added more mobile usage parameters to SNMP
    - SIM Idle Protection package
    - AVL collection based on minimum accuracy for GPS service
    - Moved SOcat to Package Manager
  - **WebUI**
    - Firewall status page
    - Page search feature
    - Network Topology page
    - "Allow insecure connection" option for MQTT TLS protocol in Data to Server service
    - Package Restore feature Enable/Disable option
    - Hotspot client connection/disconnection trap option for SNMP service

- Added Events log trap option for SNMP service
- Confirm dialog when cancelling a verified package in Package Manager
- "Bridge ALPN" option for Bridge configuration in MQTT Broker service
- New subtypes of events that specify a specific port on "Events Reporting" and "SNMP Trap rules" pages
- Specific firmware packages repository link in Package Manager page
- Ability to enter decryption passphrase for encrypted private keys
- "Reconnect" button in RMS page
- New event "Device startup completed" in Events Reporting service
- Wireless interface QR code generator
- Channel analysis page Status -> Wireless -> Channel Analysis
- Disabled direct network interface deletion when it is associated with a wireless interface
- Limited to a single section configuration and added IP address field for Relayd service
- "Fast roaming" configuration for Wireless service in Client mode
- Updated Status->Network->Wireless page to display interfaces as cards and added ability to filter connected clients by selected interface
- "Write to config" option for SIM Switch action in I/O Juggler service
- Added formula for analog signal value conversion to other unit value
- Configurable GPS NMEA prefix
- Support for using hostnames in "Server address" field for NTRIP service
- "Start up message" field for Modem control serial utility
- Modem Debug page
- APN database management page added to package manager
- Added "Message forwarding" option in SMS Rules page when rule type is "Execute custom script"
- Ability to unblock SIM card and insert SIM PIN in Overview page
- New SMS rules "Reset mobile connection" and "Reload config"
- "SMS limit clear due" display in Overview page
- Added modem temperature to System -> Status page
- New "Server+Client" work mode for OverIP Serial Utility
- New "Connect on data" action for OverIP Serial Utility
- Multiple Client instance support for OverIP Serial Utility
- IP6 table configuration option for DHCPv6 protocol in Network -> WAN page
- **System**
  - Mechanism to rebrand WebUI using GPL
  - Possiblity to create web applications with closed-source GPL

- **Improvements**
  - **Network**
    - Moved FRR VTYSH package to package manager
    - Made newly created Firewall Traffic, NAT rules and Port Forwards disabled by default
    - Improved Interfaces to enable IPv6 DHCP server when mobile v6 or v4v6 PDP type is set
    - Improved auto APN selection
    - SMS sending event is now logged into events log
    - Improved roaming control
    - Removed unused APN usernames and passwords from auto-APN database
    - Added connection to the operator when no mobile interfaces are active

- Improved VoLTE management functions
- Improved cases where Low Signal Reconnect sometimes executed prematurely
- Improved wrong SIM PIN remove logic
- Added automatic reconfiguration when switching between wireless interface modes
- Added automatically generated name option for new network
- Improved operator information parsing logic on MeiG modem
- **Services**
  - New reworked Data to Server
  - UPNP moved to package manager
  - Added IPv6 support for Modbus TCP Server/Client services
  - Refactored Azure IoT Hub service
  - Improved resiliency to timeouts in Modbus Client service
  - Added PDU data type to Modbus read requests
  - Added new formatters for MQTT alarms in Modbus Client service
  - Added main section to make test functions independent in Modbus Client service
  - Improved WAN IP register reading time in Modbus service
  - Sped up default profile and profile template generation for Profiles functionality
  - Optimized profile change time for Profiles functionality
  - Added IPv6 support for Stunnel VPN
  - Added MAC blocking for client connections after set amount of failed login attempts in Hotspot service
  - Improved TCPdump by allowing to capture packets from any interface
  - Added OSPF support for DMVPN
  - Updated Hotspot password hashing to sha512
  - Added ACL I/O to HTTPS TAVL rules, AVL TAVL rules and AVL I/O
  - A single SMS message with multiple PDUs is sent instead of multiple SMS messages in Email to SMS service
  - Allowed connection to SMPP server using IPv6 address
  - Extended IP unblock action functionality in SMS Utilities
  - Increased allowed Email to SMS service message size to 61440 bytes
  - Added parameter "%gs" that sends GPS data in formatted info message
  - Updated AVL to prefer checking network status through Failover if configured
  - Added I/O pin name to trap notification message
- **WebUI**
  - Reorganized menu
  - Updated header design
  - Split Interfaces configuration in Advanced mode into two pages: WAN and LAN, identically as in Basic WebUI mode
  - Moved Interfaces IPv6 configuration into seperate tab
  - Added client/server status information in OpenVPN instance overview page
  - Added more IPv6 information to interface status in Interfaces page
  - Removed "Custom delegated IPv6-prefix" field from DHCPv6 configuration in Interfaces page
  - Disabled DHCPv6 interface editing while in basic mode
  - Refactored custom DHCP options into seperate modal
  - Added automatic start and end IP allocation for DHCP server configuration in Interfaces
  - Added client/server status information in L2TP VPN page
  - Added "MTU" field to L2TP client configuration page
  - Added CHAP, PAP and MSCHAP-v2 authentication fields to L2TP instance

configuration
- Added more detailed IPsec VPN status information
- Encryption AES-256-CBC added as default in OpenVPN
- Added "Authentication algorithm" support to OpenVPN configuration with static key mode
- Added GRE (DMVPN) VPN tunnel source support to any instead of specific interface
- Improved Hotspot landing page theme package removal
- Added upload and download theme functionality to Hotspot Landing page
- Improved ZeroTier VPN bridge configuration
- Added ability to adjust order of rules in Firewall page
- Added IPv6 RAW table to be displayed in Status -> Firewall
- Improved file upload component's visual appearance
- Change "Allow anonymous" option default value to 0 in MQTT Broker
- Added option to specify "Client ID" in MQTT Publisher
- Added functionality to select specific interface in Web Filter service
- Allowed to select FTP server subfolder in Traffic Logging service
- Renamed various service master/slave naming convention in config files, package names and webUI to client/server
- Added "Create static" button in Status -> Network -> LAN which bind DHCP lease for device
- Updated Status -> Network -> Mobile page layout
- Added bandwidth, provider in Status -> Network -> Mobile page
- Added colors for signal strength values in Status -> Network -> Mobile page
- Added frequency, pcid, mcc, mnc and LAC values in Status->Network->Mobile page
- Refactored network type selection in Network -> Mobile -> General page
- Serving cell information is not returned anymore when SIM card is not inserted
- Changed default "Check interval" option value in Network -> Mobile -> SIM Switch page
- Added button in a Scanned operators table which allows to add an operator to the operator list
- Added search bar in Mobile Utilities -> SMS Utilities page
- Added SMS sent and limit count to Network -> Mobile -> General page
- Added GPS longitude and latitude data in TR069
- Updated Mobile Signal graphs to show EC/IO and RSCP values when network type is 3G
- Added DFS channel marking in Network -> Wireless
- Show wireless MAC address even when interface is inactive in Status -> System page
- Merged Multi AP configuration to wireless interface edit modal
- Added automatic network switch to bridge if selected in Wireless configuration
- Added default encryption for newly created wireless interfaces
- Simplified "802.11r Fast Transition" configuration options in Wireless interface configuration
- Added IPv6 support in OverIP serial utility
- Updated "Change SIM" action type to display configured SIM target in I/O Juggler -> Actions overview page
  - **System**
    - Updated kernel version to 5.4.251
    - Updated UCI version to 2021-10-22

- Updated SSHFS version to 3.7.1
- Updated FRR suite to 8.4.2
- Updated cURL version to 8.2.0
- Updated TCPdump version to 4.99.4
- Updated C-ares version to 1.19.1
- Updated iproute2 version to 5.19.0
- Updated libubox package version to 2021-08-19
- Added CVE patch CVE-2023-2650
- Added additional firmware information in CLI prompt banner
- Connection mode LED now blinks on data transfer
- Changed "routername" to "devicename" in system config file
- Made all clients get disconnected out once dropbear service is disabled
- Improved firmware downgrade restrictions for certain regions
- Device name is now displayed in browser tab when in WebUI login page
- Added NF conntrack information in generated troubleshoot archive

- **Fix**
  - **Network**
    - Fixed UDP Broadcast Relay service crashing on start without physical network device
    - Fixed SMS limit period migration
    - Fixed SMS limit size breaking various functionality
    - Fixed custom IPv6 DNS option not overriding default DNS from operator
    - Fixed an issue with blacklist and whitelist connection
    - Fixed multipart SMS handling
    - Changed modem init behavior if Modem Control serial utility feature is enabled
    - Fixed wrong SIM state display when SIM is fully blocked
    - Fixed incorrect virginmobile APN MNC
    - Fixed mobile operator scanning fault when no mobile interfaces are active
    - Fixed mobile interfaces generating multiple events on mobile connection
    - Fixed PDU SMS parsing when operator provides user data header in single part SMS
    - Added scheduled data limit clear for inactive mobile interfaces
    - Fixed wrong or empty WAN state info
    - Fixed Wireless scanning issue with certain configuration
    - Fixed Wireless transmit power changing without user input after saving different country code
    - Fixed clients isolation functionality in Wireless
    - Fixed Wireless STA authentification failure in case of channel change
    - Fixed Multi AP startup when changing Multi AP configuration in Wireless
    - Fixed client connection to EAP Wireless network
    - Fixed LTE band 14 management with Quectel modems
    - Fixed connection tracking for main interface in Failover
  - **Services**
    - Fixed reconnecting to inactive connections for Modbus Server service
    - Fixed Modbus Client response after reboot write request
    - Fixed Modbus Server to show error when trying to get operator name without SIM
    - Updated Modbus Client to handle large numbers of schedule rules, when frequency is set to schedule (Daini
    - Fixed "Input" rule displaying incorrect and missing ports in Network -> Firewall -> Traffic Rules

- Fixed WireGuard VPN endpoint resolving problem
- Peer cache is no longer deleted when ZeroTier service is restarted
- Fixed RMS data collection about the list of devices connected to WiFi
- Fixed showing incorrect Internet state in RMS
- Fixed WiFi client info display in RMS
- Implemented error handling when device is blocked or unrecognized by RMS
- Fixed L2TP client sometimes not adding routes on successful connection
- Fixed NTP time sync with browser functionality in some edge cases
- Fixed reinstalled packages" verification when device name is changed
- Fixed an issue where signal query would return invalid value instead of error in case of no signal in MQTT Publisher service
- Fixed OpenVPN firewall rule creation for both IPv4 and IPv6
- Fixed OpenVPN server crash loop after changing authentification from TLS to Static Key
- Fixed IPsec VPN connection problem with small lifetime values
- Fixed IPsec "Default Route" not working when Flow Offloading is enabled
- Fixed an issue where system directory could be used as a mount point in SSHFS service
- Fixed IP block feature to unblock an OpenVPN IP address on successful authentification
- Fixed package installation process bug when packages have different architecture names
- Added "bearer token" authentication functionality in Dynamic DNS
- Fixed MQTT Broker "local_port" option keep settings migration
- Remove public keys when key-based authentication is disabled in Access Control
- Fixed "Parity" field "Mark" and "Space" options being ignored in DNP3 Serial services
- Corrected SNMP MIB file syntax according to standards
- Fixed returned port count in SNMP
- Fixed disabled CLI remote access taking up a session slot
- Fixed received SMS messages parsing with trailing whitespaces
- Fixed VPN status rule message text in SMS Utilities
- Fixed data being lost when sending large packets to serial devices using OverIP serial utility
- Fixed OverIP possible serial device overflow and minor bugs
- More robust error recovery for RTU communication in Modbus Client service
- Fixed UDP payload size in GPS AVL
- Fixed user deletion in Network Shares service
- Fixed router reboot inconsistencies after Storage Memory Expansion
- Fixed Storage Memory Expansion breaking SD card after firmware upgrade with keep settings
- **WebUI**
  - Fixed empty events cards in Overview page when no content is available
  - Fixed modal form inputs not clearing upon closing after nested modal is saved
  - Fixed select menu closing when selecting custom option
  - Fixed multi select expanding table row when adding new values
  - Fixed global section caching after deleting a section in a table
  - Fixed unpredictable search logic in tables
  - Fixed interfaces reordering by metrics in Failover page
  - Removed ability to select ports on ICMP and ESP protocol in Failover page
  - Fixed wrong status when interface is disabled in Failover page

- Fixed firewall zone and rule creation/deletion on VPN configuration creation/deletion
- Fixed STP enabling issue in Interfaces
- Fixed EIGRP status info in Dynamic Routes
- Fixed issue with custom DHCP options where you could not have multiple values per rule
- Fixed Routing/NAT Offloading section display in Network -> Firewall -> General Settings when device is not supported
- Fixed SSH/HTTP/HTTPS/ICMP setting in Network -> Firewall -> Attack Prevention page
- Fixed failing Firewall rules with united protocol formats
- Fixed zone select component not closing options menu when selecting an option in Firewall pages
- Fixed memory leak when cancelling file uploads on Chromium-based browser
- Fixed group settings saving by removing deprecated ":section" routes in Administration -> User Settings -> System Users
- Fixed allowing IDs above 247 in Modbus Client service
- Fixed selecting SIM in Modbus Client service Alarms
- Fixed Modbus Alarm telephone number limit
- Fixed to show available options for test requests on error in Modbus Client service
- Fixed Modbus Alarm I/O pin display values
- Fixed issue when creating instance named "gre" does not show in GRE VPN
- Remote endpoint field now allows underscore character in IPsec VPN
- Fixed ZeroTier wrong service status display in Status -> Services
- Fixed problems with L2TP/PPTP VPN firewall rules automatic creation
- Fixed problem related to the enable/disable toggle in OpenVPN instance overview page
- Added fixes for key-direction missing problem when uploading OpenVPN config file
- Fixed login page read-only inputs after custom user logout
- Fixed issue when double clicking firmware upgrade cancel button returned error
- Fixed Package Manager prompt message to appear when package requires network restart
- Fixed showing in queue packages when they contained special symbols in the Package Manager page
- Fixed various visual Side Widget bugs
- Fixed Data to Server DNP3 filter from flash display
- Fixed incorrect source data displayed in Realtime Data -> Connections table
- Fixed memory expansion confirmation prompt title
- Fixed incorrect configuration saving in Hotspot 2.0 service
- Disabled password hashing for new user creation in Hotspot service
- Fixed Hotspot landing page themes saving bug
- Fixed test email sending to more than one recipient in Events Reporting page
- Fixed VLAN OID values in SNMP service
- Output proper error message in case of hardware not being supported in Firmware Upgrade
- Fixed being able to open side widget when user does not have read access
- Fixed profile creation when current configuration is not present
- Fixed wrong protocol data display in "Access control" page
- Fixed LAN interfaces not showing up before WAN interfaces in Status -> Realtime Data -> Traffic

- Fixed carrier aggregation information when no connection is made or SIM card is not inserted
- Changed representation of mobile cell ID from hexadecimal to integer type
- Fixed Mobile Utilities "SMS forwarding to HTTP" URL generation
- Fixed an issue where sometimes bands were not represented correctly on certain modems
- Fixed provider information and IMSI value representation when SIM and modem cannot provide this information
- Fixed mobile pages throwing 404 error when modem disconnects
- Fixed WebUI showing mobile connection when no SIM card is inserted
- Updated Network -> Wireless interface add and delete button visibility in basic mode
- Fixed Wireless Multi AP incorrect SSID list after removal of an instance
- Fixed MAC address filtering in Network -> Wireless page to list only connected WiFi devices
- Fixed "Clear Collect Data" button logic to not clear overall mobile usage info
- Fixed "Used data" showing large negative numbers for disabled mobile interfaces with Data Limit enabled
- Fixed GPS AVL I/O trigger option filtering
- Fixed disabling DLNA service when USB drive is removed
- Fixed error when user has no write permissions in Speed Test page
- **System**
  - Patched CVE-2023-0386 vulnerability
  - Patched CVE-2023-0464 vulnerability
  - Patched CVE-2023-0465 vulnerability
  - Patched CVE-2023-2602 vulnerability
  - Patched CVE-2023-3772 vulnerability
  - Patched CVE-2023-4128 vulnerability
  - Patched CVE-2023-33476 vulnerability
  - Patched CVE-2023-28484 vulnerability
  - Patched CVE-2023-29469 vulnerability
  - Patched CVE-2023-31490 vulnerability
  - Patched CVE-2021-36369 vulnerability
  - Patched CVE-2023-48174 vulnerability
  - Delayed Custom Scripts execution on boot, after storage devices are mounted
  - Fixed Custom Scripts permissions after save
  - Changed certificate expiry calculation mechanism to fix Y2K38 bug
  - Fixed downloading of certificates that have a space in their name in Administration -> Certificates -> Certificates Manager
  - Fixed Events Log database rotation to prevent log partition space exhaustion
  - Fixed duplication and sorting of all events IDs in Events Log
  - Fixed FOTA crash when current hours is with leading 0
  - Fixed crontab job removal after disabling FOTA
  - Changed Mosquitto build options to not include cJSON library
  - Fixed device name resetting to default upon refresh in Administration
  - Fixed backup upload validation with memory expansion

RUT9_R_00.07.04.5 | 2023.07.24

- **Improvements**
  - **Network**

- Improved MBN reselection algorithm when switching SIM
- Improved SIM card change detection algorithm
- Improved connection establishment speeds after sim switch
- Added metric field support in BGP Route-maps page
  - **WebUI**
    - Updated SIM slot labeling in modem card Overview page

- **Fix**
  - **Network**
    - Fixed an issue with MBN selection when device is started for the first time
    - Fixed an issue where MBN activation would not be successful
    - Fixed service provider parsing when operator does not provide all fields for Quectel modems
    - Fixed a condition where mobile connection would not get established after a SIM switch
    - Fixed an issue with SIM switch causing connection problems
    - Fixed OpenVPN firewall zone migration when upgrading from legacy firmwares

RUT9_R_00.07.04.4 | 2023.06.26

Note: Firmware version *RUT9_R_00.07.04.4* released on 2023.06.26 was removed due to an issue on certain modems with failing initial mobile connection after upgrading from *RUT9_R_00.07.02.5* or lower.

- **New**
  - **Network**
    - Travelmate package for captive portal redirection

- **Improvements**
  - **Network**
    - Improved mobile operator query methods and operator name parsing in various services
  - **Services**
    - Improved UPNP lease file validation
    - Improved DLNA 'Database directory' field validation to not allow ', ` and spaces
  - **System**
    - Device name is now displayed in browser tab when in login page

- **Fix**
  - **Network**
    - Fixed a connection issue with bridge/passthrough mode when reconnecting ethernet cable
    - Fixed long mobile operator list parsing for whitelist/blacklist functionality
    - Patched CVE-2023-32233 vulnerability
    - Fixed an issue with Multi AP service remaining enabled when disabling
    - Fixed default networks in WAN firewall zone and possibility to add a network that is not yet created

  - **Services**
    - Fixed connection establishment for RMS MQTT service
    - Implemented partial restart when connection with RMS server fails

- Fixed device name resetting to default upon WebUI page refresh
- Fixed being able to set device name without passing validations
- Fixed WireGuard port change in firewall traffic rule when modifying instance port

[RUT9_R_00.07.04.3](#) | 2023.05.11

- **Improvement**
  - **System**
    - Removed SSH RSA key generation
    - Added SSH ECDSA and ED25519 key generation

- **Fix**
  - **Network**
    - Fixed an issue with mobile when Call Utilities configuration is invalid
    - Fixed clients being unable to connect to wireless AP when multi AP configuration is empty
    - Fixed an issue where sometimes PIN/PUK code was deleted when performing a SIM switch
  - **Services**
    - Fixed incorrect mobile data usage provided to RMS service
  - **System**
    - Fixed an issue on bootloader web recovery hanging with certain firmware sizes

[RUT9_R_00.07.04.2](#) | 2023.04.04

- **New**
  - nftables support

- **Improvement**
  - **Network**
    - Added PDP profile registry and LTE SMS format functions & management for the Verizon network
    - Improved SIM detection algorithm
    - Improved Multi-APN connection establishment time
  - **WebUI**
    - Improved Overview page performance
  - **System**
    - Changed hostname to router name
    - Updated OpenSSL to version 1.1.1t
    - Updated CA certificates to version 20211016
    - Updated libiwinfo to version 2022-08-19

- **Fix**
  - **Network**
    - Fixed IPv4, IPv6 mobile connection restarts
    - Fixed operator scanning when mobile interface is disabled
    - Fixed data limit and tracking when software flow offloading is enabled
    - Added network reload call before bringing the mobile interface up
    - Fixed a segmentation fault issue which would occur occasionally when switching between SIM cards
    - Fixed Port-based VLAN ID calculation issue
    - Fixed PDP context authentication when using special characters
  - **Services**

- Fixed event text for configurable inputs/outputs on I/O Juggler
- Fixed I/O PIN3 value not changing via MODBUS TCP
- Added I/O status request error handling in various WebUI pages when the I/O service is booting up
- Fixed wrong timezone returned issue in Operator Station Synchronization & Timezone Synchronization
- Fixed MODBUS TCP Slave memory leak issue when requesting mobile parameters
- Fixed OpenVPN enabling/disabling when using Password or TLS/Password authentication modes
- Fixed OpenVPN keep alive setting migration issue
- Fixed PPTP server name setting migration issue
- Fixed RS485 2nd stop bit support
- Fixed missing WebUI issue caused by Email Relay installation
- Fixed NTP's Operator Station Synchronization memory leak issue
- Fixed test email validation
  - **System**
    - Fixed libcares vulnerability CVE-2022-4904
    - Fixed an issue with mobile metric setting migration from legacy FWs to RUTOS
    - Fixed frr vulnerability CVE-2022-37035
    - Removed ability for non root users to edit scripts that get executed as root

[RUT9_R_00.07.04.1](#) | 2023.03.24

- **Fix**
  - **Network**
    - Fixed Data Limit issue

[RUT9_R_00.07.04](#) | 2023.03.07

- **Improvements**
  - **WebUI**
    - Improved data persistence between page refreshes
    - Improved page navigation behavior
    - Improved redirect logic to open configuration edit modals
    - Updated the 'Status -> Mobile' page
    - Updated interface card in the Overview page
    - Separated Sent and Received data bars on the chart in the Mobile Usage page
  - **Network**
    - Added an info message displayed when a faulty SIM card is inserted
    - Added ResIOT operator's APNs to the APN database
    - Improved mobile connection re-establishment after reboot
    - Improved mobile connection recovery in cases where it was lost unexpectedly
    - Improved 'Deny data roaming' operation when switching between operators
    - Changed default WiFi AP cipher to CCMP (AES)
    - Added the logging of MAC addresses rejected by a WiFi AP
  - **Services**
    - Added MQTT support to I/O Juggler
    - Added support for new NMEA sentences: GARMC, GAGGA, GAGSA, GAVTG, GBGSV, GBGSA, GQGSV, GQGSA
    - Added an error message when trying to send an SMS from the 'Send Messages' page with no SIM card inserted
    - Changed the behavior of setting the 'Write to config' flag in the 'mobileoff' SMS

rule
- Added argument support for the 'Execute custom script' SMS rule
- Added a frequency option 'schedule' Modbus Master
- Added pagination to Events Reporting overview
- Added limit to Events Reporting rule list
- Added email logging for Events reporting
- 'Sync with browser' button in the NTP page now also synchronizes the time zone
- Added a limit of 30 for NTP instances
- Made Networks selections in the 'Traffic Logging' page to display interface choices dynamically
- Added "make before break" option to IPsec configuration
- Added MODBUS TCP connection handling layer to MQTT-MODBUS Gateway
- Improved MODBUS Master connection handling to reduce connection count
- Updated modbus request error messages
- Added OpenVPN server ip block support
- Added MQTT support for MODBUS Master alarms
- Added the possibility to get the device's Ethernet port data via SNMP
- Improved error messages in the Serial Utilities page
- **System**
  - Updated bash to version 5.1.16
  - Added detailed FW update failure error message to Events Log
  - Improved firmware upload/validation error messages
  - Updated Turkish language support
  - Added protocol column to IP block page
  - Added "vpns.log" file to the Troubleshoot package
  - Added Wireguard tunnel information to the Troubleshoot package
  - Updated default admin group access rights
  - Updated DFOTA notification to show "More info" only when the update is forced

- **Fix**
  - **WebUI**
    - Fixed MAC address showing on mobile interfaces
    - Fixed mobile cell ID displaying in hexadecimal
    - Fixed mobile data limit card creation in the Overview page
    - Fixed modem widget disappearing from the Overview page
    - Fixed Services page not displaying data after Thingworx package is installed
    - Added DNP3 to the 'Status > Services' page
  - **Network**
    - Fixed interface priority change issue
    - Fixed a Custom Firewall Rule editing issue
    - Fixed DMZ configuration saving while it is disabled
    - Fixed Port Scan script execution failure
    - Fixed Firewall zone duplication issue
    - Fixed call function when VoLTE is disabled
    - Fixed VoLTE control when IMS is not enabled
    - Fixed mobile IPv6 IP checking when the device didn't get a correct IP address
    - Fixed APN authentication when using empty credentials
    - Fixed manual APN selection from list
    - Fixed disabled WiFi interface after factory reset
    - Fixed WiFi interface creation with SAE mixed encryption
  - **Services**

- Fixed disappearing GPS NMEA and HTTPS fields
- Fixed unused NTRIP option deletion on NMEA source change
- Fixed I/O Scheduler overlapping instances issue
- Fixed Input/Output image pin colors
- Fixed issue that causes ADC subscribers to receive notifications for when ACL is active
- Fixed DNP3 serial master not working when Stop bits are set to 2
- Fixed DNP3 requests not deleting along with instance
- Fixed DNP3 memory leak occurring after spamming the test request button
- Fixed Serial Over IP related Firewall rule setting
- Fixed WiFi Hotspot landing page uploaded theme image display
- Fixed WiFi Hotspot trial user deletion issue
- Fixed WiFi Hotspot service crash when associated WiFi interface is not up
- Fixed WiFi Hotspot password request by SMS
- Fixed WiFi Scanner starting process when the WiFi interface is disabled
- Added limitations on message size and quantity of email messages in Email to SMS
- Fixed SMTP HELLO value parsing issue
- Fixed SMS message window reset button
- Fixed not being able to save empty 'Message text' field in Auto Reply
- Fixed multi-part SMS concatenation
- Fixed multi-part SMS processing
- Fixed SMS error message on 'Mobile Data Reset' action
- Fixed Data To Server JSON format %n, %N and %s flag issues
- Fixed Events Reporting email data clean
- Fixed Events Reporting missing config selections
- Fixed GRE Tunnel's 'Tunnel source' field validation when the source is custom
- Fixed IPsec instance deletion after removing DMVPN package
- Fixed IPSec migration via Backup file when DMVPN is configured
- Fixed IPsec naming issue when the includes an equals sign
- Fixed L2TP client to use correct interface on failover events
- Fixed L2TP over IPsec connection dropping issue when connecting from a Windows client
- Fixed MODBUS database size limiting issue
- Fixed MODBUS MQTT Gateway client ID input
- Fixed MODBUS TCP Slave RSSI value
- Fixed MODBUS test button returning errors when several non-connected devices are configured
- Fixed NTP Etc/GMT+1 and Etc/GMT-1 time zones
- Fixed OpenVPN password validation when no CA certificate is uploaded or 'custom' template is selected
- Fixed OpenVPN Static Key configuration saving by making Static key upload required
- Fixed OpenVPN TLS client creation issue while LAN is down
- Fixed Package Manager displaying non-existent packages
- Fixed Package Manager errors showing up after successful installations
- Fixed Periodic Reboot entry duplication after a power cycle
- Fixed PPTP 'Client to client' option not being applied after save
- Fixed receiving excessive device state emails after a reboot is initialized over RMS
- Fixed WebUI unavailability after unsuccessful package install
- **System**
  - Fixed vulnerabilities CVE-2022-3524, CVE-2022-3566, CVE-2022-3567,

CVE-2022-39188, CVE-2022-45934, CVE-2022-47929
- Fixed bash vulnerability CVE-2022-3715
- Fixed CGI-IO file download vulnerability CVE-2022-38333
- Fixed libxml2 vulnerability CVE-2022-40304
- Fixed libcurl vulnerabilities CVE-2022-43551 and CVE-2022-43552
- Fixed OpenVPN migration from legacy firmwares
- Fixed an issue with OpenVPN TAP configuration migration from legacy FWs
- Improved file upload logic
- Fixed GPL firmware compilation with selected Tinc package
- Fixed OpenVPN Static Key migration via keep settings issue
- Fixed NTP time zone name setting migration when the name contains whitespaces
- Fixed language setting issue
- Fixed integer validation on industrial services
- Fixed LED indications when PDP type is IPv6
- Fixed issues with PDP type and SMS limit period migration via keep settings

[RUT9_R_00.07.03.4](#) | 2023.02.09

- **Fix**
  - **Network**
    - Changed generic modem restart method
    - Fixed mobile page VoLTE switching issues
    - Fixed CVE-2023-32349 vulnerability
  - **Services**
    - Sanitized tcpdump storage location
    - Fixed RS485 issue on devices from batch > 110
    - Removed OPOST stty output setting with legacy Over IP mode
  - **System**
    - Fixed legacy backup upload
    - Fixed upgrade from legacy FW issue with keep settings

[RUT9_R_00.07.03.3](#) | 2023.01.25

- **Fix**
  - **Network**
    - Fixed disabled WiFi interface after factory reset

[RUT9_R_00.07.03.2](#) | 2023.01.13

- **New**
  - **System**
    - Japanese language

- **Improvements**
  - **Network**
    - Optimized mobile netifd script installation

- **Fix**
  - **Network**
    - Shortened modem hang monitor timeout
    - Fixed VLAN option setting when changing VLAN ID
  - **Services**
    - Fixed RS485 not receiving data without transmiting prior

[RUT9_R_00.07.03.1](#) | 2023.01.03

- **Improvements**
  - **System**
    - Remove front-end certificate validation
  - **Network**
    - Optimized mobile netifd script installation

- **Fix**
  - **Network**
    - Fixed modem communication validation
    - Fixed connection establishment in IPv6 only mode
  - **Services**
    - Fixed libxml2 vulnerability CVE-2022-40303
    - Fixed an IPsec Phase one & two setting migration issue
    - Fixed operator index in DNP3 outstation
    - Fixed OpenVPN migration from legacy firmwares
    - Fixed not being able to create or edit PPTP instances after upgrading from legacy firmware
  - **System**
    - Fixed JSON key parsing; keys can now be any printable character sequence
    - Fixed memory leak in 'session' module
  - **WebUI**
    - Fixed file pretty name parsing

[RUT9_R_00.07.03](#) | 2022.12.16

- **New**
  - **Network**
    - Firewall DMZ page
  - **Services**
    - Java package
    - SFTP server support
    - OPC UA client
    - NTRIP
    - Hotspot registered users management page
    - BACnet
    - Modbus Serial Slave
  - **System**
    - Portuguese language
    - Spanish language
    - Turkish language
    - Email Relay package
  - **WebUI**
    - New Web menu design

- **Improvements**
  - **Network**
    - Updated modem handling, attachment, tracking and connection establishment processes
    - Added the possibility to select multiple ports in all firewall port fields
    - Added 'Match' traffic by type option to firewall traffic rules

- Added DNS servers and routing table fields to the Wireguard page
- Improved generating network topology
- Moved Relayd, UDP Relay & Static Leases to the Interfaces menu section
- Update Firewall Traffic Rules page with DSCP and MARK options
- Added keepalive, holdtime and connect timers to BGP configuration
- Added 'Use gateway metric' to network protocols web interface
- Added more DHCPv6 client events to system log
- Moved IP Filter rules from Modbus TCP Gateway and Over IP services to Firewall page
- Added option to select subnet parameters in mobile Passthrough/Bridge modes
- Added WhereverSIM operator APN and fr.lebara.mobi APN to APN database
- Added mobile connection state for IPv6
- Added individual WiFi toggle support
- Added error message when DFS channel is selected during scanning
- Added switch back to default SIM after SIM Switch service disable
- Added wget tracking method to WAN Failover
- Added interface checks to remove inaccurate Failover events from the Event Log

- **Services**
  - Added format button for each USB device in USB Tools General page
  - Reduced waiting time during storage device setup for Memory Expansion
  - Optimized Storage Memory Expansion package size
  - Replaced ntfs-3g with kernel-mode driver
  - Added USB to Serial support for Modbus, MQTT Modbus Gateway, NTRIP, DNP3
  - Added CSP headers to Hotspot Landing Page
  - Added hotspot user script validation
  - Improved logging of disconnecting client devices
  - Added the possibility to switch profiles on GPS geofencing events
  - Added satellite count and accuracy columns to GPS Map page
  - Implemented Hotspot 'forget' method, which removes user from DB by MAC
  - Added execute custom script SMS Utilities rule
  - Added receiver and transceiver mode support to SMPP
  - Added timezone synchronization with GSM operator option to NTP Client
  - Updated Zerotier web interface
  - Added IPsec Flush connection option on tunnel initialization
  - Added MODBUS slave regfile validation
  - Added delay, number of timeouts, always reconnect options to MODBUS Master service
  - Added DMVPN Phase 2 and Phase 3 support
  - Added synchronization counting to NTP client
  - Expanded the data that is sent to the Cumulocity cloud with device log, mobile data usage nd GPS data
  - Added 'Unregister' button to RMS page
  - Added new data monitoring options to SNMP: configuration state of wireless, smart queues & VLANs
  - Updated Zerotier package to version 1.10.1
  - Added automatic package removal upon failed installation in Package Manager
  - Added option to describe custom routing table and MTU auto counting to Wireguard VPN
  - Added IP blocking to MQTT Bridge for failed login attempts to prevent bruteforce attacks
  - Updated sqm-scripts to version 1.5.1

- Improved MODBUS Master service: added multiple datatypes, added multiple register reading for alarms
- Added monthly reboot option to periodic reboot function
- Added support for multiple custom option selection to SSTP configuration
- Added PKCS12 certificate chain support to OpenVPN
- Improved MQTT to support multiple port listening, multiple bridge connections, notification settings and added support for custom configuration file
- Added QoS selection to MQTT Modbus Gateway
- Improved RAM usage during upload and installation of packages via Package Manager
- Updated curl to version 7.86.0
- Added brute-force prevention measures to Post/Get
- Added automatic private and public key generation to Wireguard VPN
- Added multiple Remote source IP support to IPsec
- Added the possibility to configure multiple IPsec phase 1 and phase 2 proposals
- Added functionality to rotate log file when log is saved to Flash memory
- Improved performance while fetching packages on repeat visits to the Package Manager page
- Added custom value calculation to ADC and ACL pins
- Added MODBUS TCP Slave registers to store Analog Current Loop value
  - **System**
    - Added a 'test mail' button to the Administration -> Recipients page
    - Added option to clear blocked IPs in the Access Control page after reboot
    - Updated Web Request-Response core logic
    - Added certificate validation to all services that support certificate upload
    - Updated URL protocol validations
    - Removed profile update requests during Save & apply
    - Optimized profile switching logic
  - **WebUI**
    - Added an indication to the Interfaces page that displays when data limit is enabled
    - Added bootloader version to the Device section in the System page
    - Added configuration page shortcuts to Overview page widgets
    - Added tooltip in Overview that show free, used and total RAM/Flash values on mouse cursor hover
    - Updated network interfaces protocols web interface
    - Updated 404 page to include navigation menu

- **Fix**
  - **Network**
    - Fixed CVE-2023-32350 vulnerability
    - Fixed jumbo frames MTU issue
    - Added the 'Any' choice to source & destination IP address field in NAT rule edit
    - Fixed NHRP web interface issues
    - Fixed WAN interface configuration interfering with LAN
    - Fixed mdcollect memory leak issue
    - Fixed data limit not resetting properly
    - Fixed incorrect mobile data usage calculations for multiple day periods
    - Fixed an Auto APN 'Keep settings' issue
    - Fixed data counting after mobile data limit has been reached
    - Fixed mobile band not setting correctly on first try
    - Fixed incorrect data limit conditions causing unwanted SIM switches

- Fixed Passthrough DHCP lease time setting
- Fixed mobile bridge mode issue when no DNS servers are supplied
- Added new Operator Lists instance name validations
- Fixed mac80211 vulnerabilities CVE-2022-41674, CVE-2022-42719, CVE-2022-42720, CVE-2022-42721, CVE-2022-42722
- Fixed wireless interfaces connections not reestablishing after disabling & enabling again
- Fixed SIM Switch issue on newly created mobile interfaces
- Fixed switch back to primary SIM rule disable when the default SIM is changed
- Fixed incorrect SIM Switch behavior on low signal value
- Fixed Wired WAN connectivity issue when Failover interfaces are disabled
- Fixed Failover fallback issue
- **Services**
  - Fixed Hotspot landing page opening issue
  - Fixed Printer service starting issue
  - Fixed Printer service boot issues
  - Fixed DLNA service reload issues on USB drive insert/remove
  - Corrected serial connection baud rates
  - Fixed hostname resolution in 'Over IP' serial type
  - Fixed RS232/RS485 starting issues
  - Fixed relay state switching
  - Fixed Save & Apply issue with ADC/ACL type condition on I/O Juggler
  - Added I/O restart on configuration profile change
  - Fixed I/O voltage range display for power socket pins
  - Fixed SMNP OID for I/O state
  - Fixed I/O Juggler SMS text message Save & Apply issue
  - Fixed Hotspot connected user list maximum upload/download value limits
  - Fixed incorrect connected Hotspot user information in RMS JSON
  - Fixed Delay field in GPS HTTPS/HTTP Server Settings section
  - Fixed AVL packet timestamp display
  - Fixed issue that prevented GPS map display after clearing cache
  - Removed unnecessary field from the Port Mirroring page
  - Fixed Events Reporting 'Changing to SIM1/SIM2' options
  - Fixed I/O analog voltage type display issue
  - Fixed Hotspot issues related to specific connected phones
  - Fixed Wireless AP enabled by MODBUS TCP Master not showing in Wireless clients
  - Fixed WiFi Scanner hostname validation issues
  - Fixed UCI SMS Rule return message to display new changes
  - Fixed DNP3 issues when asking for modem temperature
  - Fixed base64 encoding of SMS messages when forwarding to HTTP
  - Fixed SMS sending issues when using multiple APN
  - Added Gateway modem option to IP Block and WoL in SMS Rule edit
  - Fixed unblocking IP addresses with an SMS message
  - Fixed Mobile Utilities page not load properly on some occasions
  - Fixed dbus vulnerability CVE-2020-35512
  - Fixed dnsmasq vulnerability CVE-2022-0934
  - Fixed ext4 vulnerability CVE-2021-3428
  - Fixed kernel vulnerabilities CVE-2021-3669, CVE-2021-4203, CVE-2022-1353, CVE-2022-3435, CVE-2022-20008, CVE-2022-30594
  - Fixed libxm12 vulnerability CVE-2022-29824

- Fixed Linux vulnerabilities CVE-2021-4148, CVE-2022-0480, CVE-2022-1055, CVE-2022-0886, CVE-2022-2663, CVE-2022-36879 for v5.4
- Fixed MQTT DoS vulnerability CVE-2021-41039
- Fixed privoxy vulnerability CVE-2021-44542
- Fixed python3 vulnerability CVE-2022-42919
- Fixed strongswan vulnerabilities CVE-2021-41991, CVE-2021-45079
- Fixed uboot vulnerabilities CVE-2022-30552, CVE-2022-30790
- Fixed switching between RMS connection types while the device is unregistered
- Fixed reload issues in website blocking feature
- Fixed IPsec PSK secret required field validation
- Fixed bandwidth limiting after QoS is enabled for the first time
- Fixed Dropbear issues when logging in over IPv6
- Fixed Modbus status in Status -> Services page
- Fixed Azure IoT Hub application issues when sending large volumes of data
- Fixed Azure IoT Hub MQTT password validation
- Fixed DMVPN configuration migration issue
- Fixed DMVPN duplicate select options, added suffix to mobile interfaces to use IPv4
- Fixed DMVPN IPsec connection issue
- Fixed DMVPN mobile interface 'Keep settings' migration issue
- Fixed Dynamic DNS long hostname text display issue
- Fixed Events Reporting memory leak issue
- Fixed Events Reporting not triggering after flipping an I/O slider
- Fixed FOTA cron job not starting after factory reset
- Fixed IPsec local firewall option parsing
- Fixed IPsec tunnel creation issue when compatibility mode is used and the tunnel name contains an underscore
- Fixed L2TP, PPTP, SSTP state display in the Status -> Services page
- Fixed NTP pool hostname validation
- Fixed OpenVPN certificate remove with Static key and TLS authentication methods
- Fixed OpenVPN configuration saving issue when using HMAC key authentication
- Fixed OpenVPN custom dev name transformation to correct format
- Fixed OpenVPN device name setting logic when uploading config from file
- Fixed OpenVPN instance status display
- Fixed OpenVPN TAP (bridged) configuration detection
- Fixed Qos configuration saving issue occurring after instance deletion
- Fixed RMS JSON incorrect WAN state and IP information
- Fixed RMS step access issue in the Setup Wizard page
- Fixed SNMP issues after reboot while using a Hotspot
- Fixed SNMP generating MIB files for devices in accordance with to their hardware
- Fixed SNMP traps not working after SNMP is installed from server
- Fixed SSTP client route creation issue
- Fixed UPNP secure mode not turning off issue
- Fixed Wireguard route to endpoint issue
- Fixed manual package installation for queued packages
- Fixed NAT Rules dependency from IPsec web instance
- Returned usleep utility
- Updated Australian and South African NordVPN server IP addresses
- **System**
  - Fixed Load Balancing, GRE, MQTT broker, IP alias, Operator list & SIM operator

connection migration from legacy firmwares
- Fixed 3G LED animation issue
- Fixed certificate signing issues
- Fixed Telnet, CLI access blocking after max invalid tries
- Fixed FW upgrade with 'Keep settings' while low free space is available
- Fixed backup file duplication issue
- Fixed network device handling in system
  - **WebUI**
    - Fixed Hotspot interface display
    - Fixed side widget accessibility during first login
    - Fixed file upload issues
    - Fixed drag and drop issue in the Traffic Rules page
    - Fixed protocol display in the overview of the Interfaces page
    - Fixed blocked IP settings migration during a FW upgrade with the 'Keep settings'
    - Fixed login errors after browser tab restoration
    - Fixed redirect to newly set IP address after Interface configuration
    - Fixed firmware upgrade verify spinner not closing
    - Fixed an issue with file upload via drag and drop

[RUT9_R_00.07.02.7](#) | 2022.09.12

- **Improvements:**
  - Improved manual-auto connection mode

- **Fixes**
  - Fixed AT command for SMS storage usage
  - Fixed CVE-2022-1012 memory leak vulnerability
  - Fixed CVE-2022-37434 kernel vulnerability
  - Fixed GPS constellation settings
  - Fixed interface option reset after VLAN ID change
  - Removed memory leak on port events
  - Fixed WiFi Scanner out of range crash when iterating collected data

[RUT9_R_00.07.02.6](#) | 2022.08.24

- **Improvements:**
  - Added 'home.vodafone.de' APN
  - Improved stability of device information storage

- **Fixes:**
  - Added SMSC type omitting when empty SMSC number parsed in SMS PDU mode
  - Fixed Serial-symlink dmesg messages
  - Fixed VoLTE management
  - Fixed OpenVPN tls-auth and tls-crypt option names

[RUT9_R_00.07.02.5](#) | 2022.08.12

- Improvements:
  - Updated curl to version 7.83.1
  - Updated firmware validation error messages
  - Added multiple source IP address support to the Port Forwards page
  - Increased custom APN Username & Password field maximum length to 64 symbols
  - Added auto switch to modem's SMS storage when SIM card storage doesn't exist

- Improved mobile connection status handling
- Added CSP headers Hotspot WebUI landing page

- Fixes:
    - Fixed CVE-2022-32205, CVE-2022-32206, CVE-2022-32207, CVE-2022-32208 curl vulnerabilities
    - Fixed CVE-2022-30065 busybox vulnerability
    - Fixed file upload path traversal
    - Removed Data to Server limit to proccess less than 10 instances
    - Fixed Data to Server 'out of memory' crashes when database is full or has a large amount of data
    - Fixed OpenVPN dev setting logic
    - Fixed OpenVPN updating from legacy issue that caused IPv6 not to work
    - Fixed MAC and leasetime setting for Bridge & Passthrough modes
    - Fixed modal tabs navigation when editing wireless interface with non-english languages

[RUT9_R_00.07.02.4](#) | 2022.07.20

- Improvements:
    - Added default password change warning message before firmware downgrade
    - Extended time period for device to make connection to operator
    - Reduced the number of modem reboots when changing mobile settings
    - Reduced excessive log output when no SIM card is inserted
    - Added modem restart prevention on modem init
    - Added disable RPLMN option in the SIM section of the SIM card config

- Fixes:
    - Fixed CVE-2022-2068 vulnerability
    - Disabled autoconnect on stop-network call
    - Fixed Hotspot login via landing page issue

[RUT9_R_00.07.02.3](#) | 2022.06.27

- New Features:
    - Port Mirroring

- Improvements:
    - Added ping to DNS IPv6 support
    - Added modem reset to default state after device FW upgrade
    - Modem init now checks NVRAM sensitive commands before setting
    - GSM output was made consistent
    - Updated FSTools package to version 2022-05-03
    - Added security headers to web requests
    - Added default VoLTE value
    - Specified IP address family on operator control's ping to DNS feature

- Fixes:
    - Fixed CVE-2019-12900 libbz2 vulnerability
    - Fixed behavior of some gsmctl commands
    - Fixed CVE-2022-23303 hostapd vulnerability
    - Fixed CVE-2022-29581 Linux kernel vulnerability
    - Fixed CVE-2022-29458 ncurses vulnerability
    - Fixed CVE-2022-1292 c_rehash script command injection vulnerability

- Fixed band locking issue
  - Fixed race condition for wireless configuration initialization

[RUT9_R_00.07.02.1](#) | 2022.06.06

- Improvements:
  - Improved GSM related messages in Troubleshoot logs

- Fixes:
  - Fixed IGMP Proxy menu item not appearing after package installation
  - Fixed default mobile network configuration generation
  - Fixed MODBUS write requests and Mobile Utils option setting

[RUT9_R_00.07.02](#) | 2022.05.23

- **New features**
  - Overview side widget
  - IGMP Proxy
  - Privileged Access Management (PAM)
  - AWS Greengrass support
  - HTTPS certificate and key upload feature
  - SSH public keys edit box
  - License page
  - DNP3 data for Data to Server

- **Improvements**
  - Updated busybox to version: 1.34.1
  - Updated curl to version 7.79.1
  - Added iptables filter package for string filtering
  - Added CHAP authentication for L2TP VPN
  - Added IPv6 support for L2TPv3 VPN
  - Added EAP-MSCHAPV2 authentication method for IPsec VPN
  - Added IPv6 support to Auto Reboot
  - Added 'Save to flash' and 'Test configuration' button to DNP3 configuration page
  - Updated SNMP version 5.9.1
  - Added OpenSSL authentication options to SNMPv3
  - Added support for OSPF redistribution options and OSPF neighbors
  - Added password field to BGP Peers page
  - Extended BGP "AS" field validation to accept integers up to 4294967295
  - Added "DHE+RSA" to OpenVPN cipher selections
  - Increased OpenVPN max password length from 128 bytes to 512 bytes
  - Made HMAC key direction initial value dependent on the role of the instance (client or server)
  - Made HMAC key and HMAC authentication key upload fields required
  - Added DES to IPsec encryption algorithms selections
  - Added special character support for CHAP secrets
  - Added validation requirements for PPTP user list username field
  - Added option to manually enter Public key in Wireguard configuration
  - Made generating Wireguard keys possible only while in auto mode
  - Added Events Log database to troubleshoot archive
  - Added RFC1918 filter field
  - Added the possibility to unblock multiple blocked devices at once

- Added 'Port' column to blocked login attempts table
- Added Speedtest server refresh
- Updated Speedtest server list
- Added asterisk option to Site Blocking
- Added MD5 and SHA256 checksums to package validation page
- Changed certificate requirements to only require client key file if client certificate is used
- Added pagination and data retention between table pages
- Added pagination functionality to tables when there are more than 10 records
- Improved table sorting by saving user provided sort settings in the browser
- Improved drag and drop functionality
- Added the possibility to drag and drop files onto upload components
- Moved 'Root CA' from the 'Access Control' page to the 'Certificates' page
- Added 'Strict-Transport-Security' response header for HTTPS
- Added 'breadcrumbs' to modal windows
- Improved initial WebUI loading after login
- Added mobile bytes sent and bytes received SNMP OIDs
- Added mobile LED turn off feature ('System -> Administration' page)
- Added 'iot.1nce.net', 'internet', 'VZWINTERNET' and Truphone APNs to APN database
- Updated mobile usage data point calculation logic
- Added the possibility to manually enter operator number
- Improved obtain mobile cell ID process
- Added modem restart if SIM card is removed during APN database fetching process
- Added unauthorized call logging
- Added space character support in SMS commands
- Disabled SMS modem storage configuration form when SIM is not inserted
- Changed SMS '%wi' parameter value to return IP address of any currently used WAN interface (not only wired)
- Added external modem SMS limit Overview card and widget
- Made in-use APNs visible next to mobile interface configurations (before clicking the 'Edit' button)
- Added duplicate value check for list configuration options
- Changed mobile card instance design
- Fixed 'Mobile Data usage reset' SMS rule
- Fixed the default state parameter of SMS list POST/GET command
- Added Hotspot configuration profiles
- Added local Hotspot user password hashing
- Added Hotspot password encoding option
- Improved Hotspot related firewall rule setting
- Improved WiFi Scanner enable switch to toggle 2 and 5 GHz instances separately
- Removed CHAP authentication protocol for WiFi Hotspots due to incompatibility with hashed passwords
- Added ubus support to Hotspot
- Changed default port name of WiFi devices for 'Topology state' Events Reporting rule
- Added AVL "Static Navigation" flag
- Added GSV parsing for NMEA collecting
- Added newline and GPS location actions to I/O Juggler
- Added error code 5 for reserved SAMBA user names
- Added Mobile data and SMS limit features for external modem
- Added I/O SNMP trap
- Added ISO 8601 time format to I/O Juggler's '%ts' parameter

- Added device name parameter '%pc' to I/O Juggler
- Added ACL or ADC SNMP trap notification on enter/exit/both
- Added ACL MQTT topic
- Added PPPoE VLAN priority support
- Made VRRP ping section dependent on main instance
- Added 'WAN to LAN' switch
- Added CRC verification support to MODBUS and RS232/RS485

- **Fixes**
  - Fixed CVE-2021-20322, CVE-2021-4197, CVE-2022-1011, CVE-2022-0847 kernel vulnerabilities
  - Fixed CVE-2022-28391 busybox vulnerability
  - Fixed CVE-2018-16789 shellinabox vulnerability
  - Fixed CVE-2021-44543, CVE-2021-44542 privoxy vulnerabilities
  - Fixed CVE-2021-43618 GNU Multiple Precision Arithmetic Library vulnerability
  - Fixed zlib backport security issue
  - Fixed Wireguard firewall zone assignment
  - Fixed queued packages disappearing from list after FW upgrade with keep settings
  - Fixed error message display for multiple input validation rules
  - Fixed incorrect DHCP validation range for start and limit fields
  - Removed 'Bring up on boot' option from network interface configuration pages
  - Fixed coma-separated DHCP options disappearing after save
  - Fixed exclude and listen interfaces
  - Fixed 'Use broadcast flag' option saving
  - Fixed firewall zone assignment when creating new interfaces
  - Fixed OpenVPN 'Netmask' and 'IP address' field validations
  - Fixed OpenVPN TAP configuration saving issue
  - Fixed OpenVPN switching to TUN mode when uploading a configuration from file
  - Fixed dynamic BGP route state display
  - Fixed BGP peer enable in edit page
  - Fixed issue when no L2TP client instance could be bound to IPsec
  - Fixed firewall rule and zone behavior related to config section creation
  - Added default value for L2TPv3 netmask, which is now written to config after save
  - Fixed passthrough option saving to IPsec file
  - Fixed DMVPN issue where instance configuration could not be saved
  - Fixed Wireguard peer could not be saved issue
  - Fixed NTP client time synchronization after factory reset
  - Fixed device time display with selected time zone
  - Fixed MODBUS TCP indexation missing bracket issue
  - Fixed initial MODBUS TCP request count validation
  - Fixed PIN 3/4 direction switching over MODBUS TCP
  - Fixed MODBUS data to MQTT socket closing issue when connection fails
  - Fixed MODBUS alarm configuration deletion
  - Fixed DNP3 master not working after FW upgrade with 'keep settings'
  - Fixed DNP outstation not returning error messages
  - Added missing SNMP objects: mobile IP, data sent/received today
  - Fixed MQTT Publisher 'Remote address' field validation
  - Fixed long interface name support for Azure IoT Hub
  - Increased maximum Azure IoT Hub 'Connection String' length to 4096 characters
  - Fixed missing sent/received data issue
  - Fixed URL input field length validation

- Fixed admin login issue after upload of backup from a device with older firmware versions
- Fixed MAC address formatting in Events reporting messages
- Fixed Events reporting DHCP lease message spam, when no new lease is added
- Fixed logging crashing after downloading Troubleshoot file
- Made Wake on LAN visible only on devices with Ethernet ports
- Fixed Traffic log file transfer to FTP server
- Fixed Web Filter service reloading after a host list file is uploaded
- Fixed access denied messages when sending JSON-RPC requests from root user
- Fixed error message display about duplicated intervals in Profile scheduler
- Fixed FW upgrade with 'keep settings' migration issue for Access Control's 'Fail count' and 'Device port' fields
- Corrected OSPF Routing card values, value positions and names
- Fixed global secret instances not being removed when there are no IPsec instances
- Fixed uploaded file remove icon not staying in position on hover
- Fixed Overview card collapse issue that made it unresponsive after too many clicks
- Removed WAN6 interface from the Overview page
- Fixed mobile IPv6 display in Events Reporting status messages
- Fixed Bridge mode when DNS2 is not available
- Fixed PAP/CHAP username and password fields not saving in interface edit window
- Fixed sending email without secure connection for providers that support such an option
- Fixed 'N/A' parameter showing up in SMS Utilities monitoring status message
- Fixed Call Utilities Events Log message for reboot rule
- Fixed SMS command validation for no-authorization option
- Fixed MODBUS SMS alarms 'Enable' option saving
- Fixed running RMS with no SIM card inserted issue
- Fixed firmware available on server version checking issue
- Fixed CVE-2020-15078 openvpn vulnerability
- Fixed storage calculation for packages
- SMS Utilities: enhanced service security
- Fixed firmware deletion after leaving the page
- Fixed setup wizard redirect after LAN IP change
- Fixed various validation bugs, typos, option hints & alignments
- Fixed multiple IPv6 configuration field validations
- Fixed unnecessary SIM switch issue when Multi-APN is configured
- Fixed MODBUS TCP slave modem not starting after switching SIM cards
- Fixed PDP logging for Verizon operator
- Added multiwan support for Wireguard default route
- Fixed wireless signal strength display when no clients are connected
- Fixed loss of connectivity for clients when router is in STA+AP mode
- Added validation that prevents automatic connection to first unencrypted WiFi AP when using MULTI AP
- Fixed Wifi Scanner data not being stored in certain scenarios
- Fixed WiFi scanner not turning on after FW upgrade with 'keep settings'
- Fixed Hotspot user group limit not resetting on specified time
- Removed an RMS error message when no Hotspot users were created
- Fixed Hotspot landing page image upload issue
- Fixed restoring GPS HTTPS options after FW upgrade with 'keep settings'
- Fixed missing NMEA sentences
- Fixed NMEA cache sentence calculation
- Fixed 'outside/inside range' condition for AVL I/O Analog input trigger

- Fixed I/O Juggler external modem recognition
- Fixed flash driver reformatting after memory shrink
- Fixed DLNA package installation issue
- Changed Media Directories field to be required
- Fixed SAMBA fields value display
- Fixed relay output value display in I/O Juggler condition page
- Fixed I/O Juggler's WiFi rule not enabling or disabling WiFi interfaces
- Fixed I/O Juggler's double delete issue on I/O Juggler action and condition instances
- Fixed I/O Juggler's incorrect I/O status messages
- Fixed APN migration if APN was selected from APN list on legacy firmware
- Fixed RIP configuration migration from legacy firmware versions
- Fixed Wireguard interface status setting migration from legacy firmware versions
- Fixed default config options for SSH and Web access SMS Utilities rules
- Fixed POST/GET SMS listing by state
- Fixed automatic port open after RS232/RS485 Over IP server & bidirect configuration changes
- Fixed 'iostatus' SMS rule

[RUT9_R_00.07.01.4](#) | 2022.02.25

- **Improvements**
  - Increased Port Forwards rule max name length
  - Added a new '%it' parameter for UTC time in ISO 8601 format to I/O Juggler
  - Improved RS232 Port and Timeout validation

- **Fixes**
  - Added missing bracket to the end of MODBUS messages
  - Fixed preserving the contents of /etc/luci-uploads/ after FW upgrade with the 'Keep all settings' option
  - Fixed IPv4-Gateway column showing empty values in the Status -> Routes page
  - Fixed firewall extra option validation
  - Fixed Hotspot enable button validation
  - Removed invalid network interface selections from the "Network" dropdown in the Wireless interface configuration page
  - Fixed 3G led animation issue
  - Fixed Hotspot 2.0 status display in the System -> Status page
  - Changed the logic of uploading files to the modem
  - Fixed usage of custom headers in I/O Juggler HTTP action
  - Fixed 'verify' option parsing for I/O Juggler
  - Fixed OpenVPN server configuration with password authentication
  - Fixed NTP interval length validation
  - Fixed network interface enable after Drag & Drop
  - Updated NTP client interval to 24h
  - Fixed connection to whitelist carriers
  - Fixed Passthrough mode when DHCP is disabled
  - Fixed 'Deny data roaming' feature
  - Fixed mobile blocking dependency on region
  - Disabled Ping To DNS functionality when Bridge/Passthrough mode is enabled

[RUT9_R_00.07.01.2](#) | 2022.01.04

- **New features**

- DFOTA modem upgrade system for Quectel modems

- **Improvements**
    - Removed L2TP section title prefixes
    - Added necessary/forced module firmware updates to handle AT&T network update

- **Fixes**
    - Fixed IPSec crashing issue using mobile
    - Fixed FW flashing when chip is in unknown state
    - Fixed CPU usage percentage display in the Overview page
    - Fixed FOTA timeout issue when server does not respond
    - Fixed installation of backup packages
    - Fixed mobile data limit display after profile change
    - Fixed Bridge mode without multi-APN
    - Fixed multi mobile interface checking
    - Fixed error handling when the modem is not responding
    - Prolonged autoconnect setting timeout

RUT9_R_00.07.01.1 | 2021.11.22

Note: Firmware version RUT9_R_00.07.01.1 released on 2021.11.22 was removed due to an issue with IPsec tunnel while using mobile connection.

- **Fixes**
    - Fixed image signature addition

RUT9_R_00.07.01 | 2021.11.18

Note: Firmware version RUT9_R_00.07.01 released on 2021.11.18 was removed due to an issue with keep settings functionality.

- **New features**
    - Load Balancing Rules
    - 802.11s based wireless mesh network support
    - Multiple Wireless AP feature
    - Tinc VPN
    - German language support
    - Manual-Auto operator select

- **Improvements**
    - Improved WebUI functionality when multiple browser tabs are open
    - Updated base to OpenWrt version 21.02
    - Updated kernel to version 5.4.141
    - Updated mtd-utils to version 2.1.2
    - Updated busybox to version 1.33.1
    - Updated ubus to version 2021-06-3
    - Updated ubox to version 2020-10-25
    - Updated rpcd to version 2021-03-11
    - Updated opkg to version 2021-06-13

- Updated fstools to version 2021-01-04
- Updated wwan to version 2019-04-29
- Updated ethtool to version 5.10
- Updated uhttpd to version 2021-03-21
- Updated ppp to version 2020-10-03
- Updated odhcpd to version 2021-07-18
- Updated hostapd to version 2020-06-08
- Updated dropbear to version 2020.81
- Updated dnsmasq to version 2.85
- Updated netifd to version 2021-07-26
- Updated firewall3 to version 2021-03-23
- Updated libjson-c to version 0.15
- Updated libevent2 to version 2.1.12
- Updated mac80211 to version 5.10.42-1
- Updated wireless-regdb to version 2021.04.21
- Updated binutils to version 2.35.1
- Updated gdb to version 10.1
- Updated strace to version 5.10
- Updated trace-cmd to version 2.9.1
- Updated valgrind to version 3.16.1
- Updated ath10k-ct-firmware to version 2020-11-08
- Updated procd to version 2021-02-23
- Updated iw to version 5.9.8
- Updated iproute2 to version 5.11.0
- Updated iptables to version 1.8.7
- Updated nettle to version 3.6
- Updated libpcap to version 1.9.1 rel3
- Updated elfutils to version 0.180
- Updated cryptodev-linux to version 1.11
- Updated linux-firmware to version 20201118
- Updated util-linux to version 2.36.1
- Updated openwrt-keyring to version 2021-02-20
- Updated mtd to version rel26
- Updated fwtool to version 2019-11-12
- Updated ca-certificates to version 20210119
- Updated wireguard-tools to version 1.0.20210223
- Updated iwinfo to version 2021-04-30
- Updated ipset to version 7.6
- Updated gre to version rel12
- Updated wolfssl to version 4.7.0
- Updated ustream-ssl to version 2020-12-10
- Updated uclient to version 2021-05-14
- Updated readline to version 8.1
- Updated mbedtls to version 2.16.11
- Updated libusb to version 1.0.24
- Updated libunwind to version 1.5.0
- Updated libubox to version 2021-05-16
- Updated libnl-tiny to version 2020-08-05
- Updated libnftnl to version 1.1.8
- Updated libiconf-full to version 1.16
- Updated libbsd to version 0.10.0

- Updated gmp to version 6.2.1
- Updated ulogd to version rel6
- Updated sqm-scripts to version 1.5.0
- Updated ntpclient to version rel14
- Updated nmap to version 7.80
- Updated curl to version 7.77.0
- Updated zerotier to version 1.6.5
- Updated xtables-addons to version 3.13
- Updated xl2tpd to version 1.3.16
- Updated stunnel to version 5.59
- Updated strongswan to version 1.0.13
- Updated sstp-client to version 1.0.13
- Updated pptpd to version rel5
- Updated openvpn to version 2.5.3 rel2
- Updated ntpd to version rel3
- Updated net-snmp to version rel2
- Updated mosquitto to version 2.0.11
- Updated miniupnpd to version 2.2.1 rel 3
- Updated etherwake to version rel5
- Updated libzip to version 1.7.3
- Updated libgpg-error to version 1.39
- Updated glib2 to version 2.66.4
- Updated libnetfilter-conntrack to version 1.0.8
- Updated libnetfilter-log to version rel3
- Updated lzo to version rel4
- Updated nghttp2 to version 1.43.0
- Updated openvpn-easy-rsa to version 3.0.8 rel3
- Updated iperf to version rel2
- Updated iperf3 to version 3.10.1
- Updated e2fsprogs to version 1.45.6
- Updated fuse to version 2.9.9
- Updated udprelay to version 2020-02-26
- Updated qmicli to version 1.28.2
- Updated pcre to version 8.45
- Updated libsmpp34 to version 1.14.1
- Updated libiwinfo to version 2.1
- Added netifd library for additional information related to network interfaces
- Updated openssl to version 1.1.1l
- Updated privoxy to version 3.0.32
- Added ACL reload method for sessions
- Added 'Advertisement interval' field to the VRRP configuration window
- Added a PPTP-to-WAN Zone Forwarding rule when default route is enabled on PPTP client
- Added email user group validation for sendind test emails with Events reporting
- Added an event logging feature for Ping Reboot events
- Improved file/section deletion logic: now files are also deleted after deleting a related config section
- Improved package deletion logic
- Added the possibility to configure multiple reboot times in one Reboot Scheduler configuration instance
- Updated 'External system log server' field validation to accept IPv6 addresses

- Added redirect to Overview page after login
- Added WebUI session timeout after user inactivity
- Added placeholder text to dropdown menus
- Improved multi-select design and functionality
- Added Unix timestamp, local ISO time, UTC time to Modbus
- Added info message when selected file cannot be uploaded
- Improved IPsec throughtput
- Added IPSec "Compatibility mode" configuration support
- Made SNMP 'Community name' option editable
- Added the option to delete configurations to the SMS Utilities 'UCI' rule
- Added 'hour', 'week day', 'month day' slelection options to SMS Limit configuration
- Added Lithuanian and Verizon APNs
- Added modem selection for the 'Send SMS' option in Auto Reboot settings
- Added the possibility to get total data usage value without specifying time interval via ubus
- Added return SIM count command
- Added new configuration options to the Failover feature
- Changed Failover page availability from Advanced only both advanced and basic
- Made Failover Interfaces table rows draggable when in 'Load Balancing' mode
- Changed Failover page 'Ratio' fields to a smaller size
- Added the possibility to allow multiple Hotspot users to log in with the same SMS OTP
- Added 'Duplicate passwords are not allowed' error message to Hotspot landing pages
- Added 'Allow password duplicates' field to the Hotspot configuration page
- Improved wireless frequency option layout
- Added an indication to the GPS map when GPS service is disabled
- Added external modem support for the 'Mobile Usage' graph
- Added check to refuse firmware lower than 7.0 on devices with Micron flash
- Added I/O support to SNMP
- Removed ubus list method due to security reasons
- Added MODBUS "%I, %T, %S, %r, %n" support to MODBUS Data Sender
- Removed search engine site crawling
- Improved IPSec "Local/Remote source" validation
- Added Firewall "all" and "custom" protocol options
- Added Backup file size limit of 2 MB
- Improved basic/advanced mode changing
- Improved Wireguard "IP Addresses" field validation
- Added language download support from language selection section
- Added PPTP "Client to client" configuration support
- Made DDNS "username", "password", "host" fields optional
- Added SSTP "Default route" configuration support
- Added SMS Limit hour, week day and month day support
- Added Passthrough "Leasetime" and "Unit" configuration support
- Added Call Utilities "Active Timeout" configuration support
- Added support for PL2303GC serial to USB chip
- Added bgscan feature to wpa_supplicant
- Optimized Wireless device status information requests in all WebUI pages
- Added "Topology state" support to Events Reporting
- Added GPS AVL "Don't Contain Connection" and "Retry on Fail" configuration support

- **Fixes**
  - Made RMS 'Connect' button disabled when a connection attempt is already in progress

- Added validation for TLS Clients 'Private network' option
- Fixed the validation range for MTU fields
- Fixed removing firmware image file after leaving the fimware upgrade page
- Fixed network selection list for Traffic Logging - added all available LAN networks
- Fixed DHCP Options validation
- Fixed configuration profile date display
- Fixed blank page after invalid URL in login page
- Fixed TR-069 related firewall rule loading
- Fixed remote subnet netmask validation issues for the GRE Tunnel configuration
- Fixed WebUI section toggle
- Fixed package installation modal layout
- Fixed current page values showing up in login page username field
- Fixed the possibility to create section with a name that is already in use in the same config file
- Fixed OpenVPN username and password deletion when deleting configuration instance
- Fixed session closing issue for the user whose password was just changed
- Updated MODBUS credential validation
- Updated MQTT credential validation
- Fixed DNS 'Rebind protection' setting when switch is disabled
- Updated libgcrypt to version 1.9.3 to fix CVE-2021-33560
- Fixed CVE-2021-33624, CVE-2021-29648 vulnerabilities
- Fixed DHCP 'Lease time' and 'Unit' option saving over the Setup Wizard LAN page
- Fixed Reboot Scheduler not removing crontab file after disabling the rule
- Fixed OpenVPN 'Extra options' field validation to allow a space character
- Added table drag and drop functionality to the Firewall's Traffic Rules page
- Fixed DNP3 Outstation crash caused by non-void function returning no value
- Fixed RMS 'Copy' button functionality
- Fixed gsmd deamon crashing after modem restart
- Fixed gsm memory leak
- Fixed WCDMA band names for MEIG modules
- Fixed SMS Gateway loading screen issue when sending an SMS message
- Fixed mobile data database error after upgrading firmware with the 'Keep settings' option
- Fixed rpcd memory leak issue
- Fixed network information gathering
- Fixed 3G LED not being active in 3G mode
- Fixed data limit accuracy issue
- Fixed SIM Switch back to default SIM crash loop when SIM1 is disabled
- Removed unused SIM Switch struct objects
- Fixed incorrect loading after saving Failover configuration
- Fixed escaping '#' symbol from hotspot username and password fields
- Fixed NTP GPS Synchronization swith to enable GPS service
- Fixed MODBUS Serial Master crash when requesting a 4-byte datatype from a 2-byte data payload
- Added a check if DNP3 is installed for 'Serial type' option
- Fixed Storage Memory Expansion issues related to upgrading from version 6.X with the 'Keep settings' option
- Patched CVE-2021-40528 vulnerability
- Patched CVE-2021-40490 vulnerability
- Patched CVE-2020-16120 vulnerability
- Fixed VLAN section creation

- Returned Interfaces "Port priority" option
- Fixed missing Content-Type header to initial WebUI response
- Fixed RIP information parsing in status page
- Fixed OpenVPN IPv6 netmask validation
- Fixed SNMP Trap Settings Host/IP field validation
- Fixed Cumulocity authentication reset
- Fixed Events Reporting rule saving

RUT9_R_00.07.00.2 | 2021.10.19

- **Fixes**
  - Fixed NMEA sentence validation for Meig modems

RUT9_R_00.07.00 | 2021.07.16

- **New features**
  - New, RUTX-like WebUI style
  - New WebUI based on Vue.js 2.6.12
  - RutOS updated to OpenWrt 19.07.7 base
  - DNP3 Master and DNP3 Oustation
  - 'Restore to user's defaults' SMS Utilities rule
  - DHCP Relay AT command

- **Improvements**
  - Updated firewall to release 3
  - Updated kernel to version 4.14.221
  - Updated uhttpd to version 2020-10-01
  - Updated xtables-addons to release 9
  - Updated mwan to version 2.8.14
  - Updated pcre to version 8.44
  - Updated curl to version 7.74
  - Updated sqlite to version 3.33
  - Updated ncurses to version 6.2
  - Updated OpenSSL to version 1.1.1k
  - Added full MODBUS register address expansion specifier for Data to Server
  - Added full MODBUS register address legend
  - Added Client ID option for the MQTT protocol in Data to Server
  - Improved Data to Server sleeping accuracy
  - Improved Data to Server username validation; now space is allowed
  - Added firmware version OID to the SNMP service
  - Added IP address family option field to the SNMP page
  - Added SNMPv6 section to the SNMP Communities page
  - Renamed the 'System -> Users' page to 'System -> System Users'
  - Moved password changing option to the 'System -> System Users' page
  - Switched to ar8216 driver
  - Added IPsec XAUTH support
  - Improved OpenVPN updown, init scripts to write info about instance in JSON
  - Added AES-256-GCM encryption support to OpenVPN
  - Added extra configuration parameters to DMVPN
  - Added PSK conversion to DMVPN and single PSK types
  - Improved Package Manager package installation, deletion and dependencies
  - Improved Package Manager download process over FOTA

- Added new Input/Output values manageable over RMS
- Added IPv6 traffic logging
- Made 'Network -> Failover' and 'Network -> Interfaces' page data draggable on multiple browsers
- Added Input/Output Post/Get URL parameter t_time changing delay and time to seconds or miliseconds
- Added message storage management by config value
- Improved QMI error handling and status tracking
- Turned on modem in preinit for correct power-on sequence
- Added Post/Get feature to turn mobile data on/off
- Added the possibility to use 2gonly/3gonly/4gonly arguments for cellular service command alongside current 2g/3g/lte arguments
- Added "Phone number" and "Message" fields for "Send SMS" option
- Added "Host to ping from SIM1" and "Host to ping from SIM2" fields
- Added support for multiple USB to Serial adapters
- Added option to send SMS warning messages to Hotspot users authenticated with SMS OTP when specified amount of data is used up
- Added "send analog input" option to TAVL settings

- **Fixes**
  - Added glib2 patch to fix CVE-2019-13012 vulnerability
  - Added ntfs-3g patch to fix CVE-2019-9755 vulnerability
  - Added WolfSSL patch to fix CVE-2021-3336 vulnerability
  - Added Busybox patch to fix CVE-2018-1000500 vulnerability
  - Added netifd, odhcp6c IPv6 routing loop on point-to-point links patches to fix CVE-2021-22161 vulnerability
  - Fixed Android clients IPsec MTU/MSS size
  - Fixed wrong IPsec DPD value saving
  - Changed IPsec PSK maximum length to 128 symbols
  - Fixed SSTP remaining up after package removal
  - Fixed DMVPN crypto_proposal write to config
  - Fixed I/O Juggler's SMS sending to correct group
  - Fixed I/O Scheduler's relay state issue
  - Added I/O direction check while changing IOs via I/O Post/Get
  - Fixed float endianness mismatch on some devices MODBUS TCP Master, MODBUS Serial Master
  - Fixed UPnP issue that caused config changes to apply only after service restart
  - Fixed WebUI files caching when upgrading firmware
  - Fixed WebUI date display format
  - Fixed MODBUS returning incomplete MAC address data
  - Fixed GPS time synchronization for DST regions
  - Fixed depleting IPv6 RA timeout when the ISP doesn't send RA updates
  - Added "Transaction timed out" error handling
  - Fixed PPPOE connection loss when wrong session PADT packet arrives
  - Added gcont object tracking and info update if this service is restarted
  - Fixed default SMS storage
  - Fixed SMS warning sending after Mobile Data Limit change
  - Fixed DHCP relaying over mobile networks
  - Changed PIN code maximum length to 8 symbols
  - Fixed 'I/O status' message to include correct Input/Output name based on info in ubus ioman objects

- Fixed 'Over IP' serial type's UDP issue in client mode
- Fixed DLNA connections count total in statistics page
- Fixed WiFi Hotspot's Walled Garden issues
- Fixed WiFi Hotspot data logging issues
- Fixed P2P group information processing vulnerability in wpa_supplicant
- Added validation to Walled Garden Address list field