Release Note NRSW 4.5.0.100

Project Name: NRSW

Abstract:

This document represents the release note for NetModule Router Software 4.5.0.100. It informs on new functionality, corrections and known issues of this software version of NetModule's router series.

Keywords:

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1 Release Information

NetModule Router Software:

Version:	**4.5.0.100**
Date:	**Dec 15, 2020**

Supported Hardware:

NetModule Router	Hardware Version
NB800	V2.0 - V2.2, V3.2 (Rev. B02)
NG800	V3.0
NB1600	V1.0 - V3.3
NB1601	V1.0 - V1.5
NB1800	V2.4 - V2.6
NB1810	V2.4 - V2.6
NB2700	V1.0 - V2.7
NB2710	V1.0 - V2.7
NB2800	V1.0 - V1.4
NB2810	V1.2
NB3700	V2.0 - V4.4
NB3701	V1.0 - V1.5
NB3710	V2.0 - V4.3
NB3711	V1.0 - V1.5
NB3720	V2.0 - V4.3
NB3800	V1.0 - V1.5

Unsupported Hardware:

NetModule Router
NB1300 Series
NB2200 Series
NB2300 Series
NB2500 Series
NB2600 Series

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2 New Features

Case-#	Description
45175 65975 66204	**WLAN DFS support** WLAN channels which require DFS are now supported. DFS support for NG800, NB800, NB1601, NB1800, NB1810, NB2800, NB2810 and NB3800. Therefore additional WLAN channels are now available for selection.
51435 58974 59941 61384 65374	**SDK improvements** Support for full featured MQTTv5 client. NB800 and NB1601 can now be set to a low power sleep mode from SDK with RTC wakeup. New SDK functions were introduced to scan for probing WLAN clients. The SDK function nb_scan_networks() now contains additional information on the security settings of scanned WLAN networks. nb_transfer functions have a new optional parameter for additional HTTP headers and custom FTP commands.
52178	**Reset of WAN-Link statistics via SNMP** It is now possible to reset the WAN-Link statistics (RX/TX bytes, etc.) via SNMP.
54359 56803 59554 60333 61507 61799 62051 62950 65359 65455 66086	**GUI improvements** It is now possible to configure whether status messages should appear on the login page of the web interface. The system log level settings can now be changed more convenient in the web interface. The credentials of a configured WLAN access point can now be exported and displayed via a QR code for smart phones. It is now possible to import IPsec expert mode files with encrypted keys via the web interface. The DNS status was shown in the DNS configuration interface. To be compliant with our general approach the DNS status information was moved to a dedicated status page. Routers with Toby-L2 LTE modules provide LTE band information on the WWAN status page. Password input was reworked in the web interface. It is now possible to show passwords in clear text for verification. To configure local keys and certificates it is mandatory to define a password for key encryption. If you did not do that an error message appeared that was not very helpful. The error message was improved. It is possible now to run tcpdump on all interfaces at the same time. This is helpful in situations where you try to debug a misconfiguration in your routing setup where you don't know on which interface traffic will be routed. Audio tests can now process generic wav-files which can be uploaded via web interface. A warning will alert the user if a WWAN module is running a firmware version which is known to be outdated and should be replaced with a newer one.
55659	**Assisted GPS** Assisted GPS is now supported with u-blox Neo M8 GNSS modules.
56817	**WLAN short guard interval configuration** The use of short guard interval (SGI) in WLAN access point can be disabled now for NB800 and NB1601.
58987	**WLAN: 8 SSIDs** It is now possible to configure up to 8 SSIDs in AP-Mode for following routers: NB3800, NB3700 series, NB2800 series, NB2700 series, NB1600
59288	**New Services available for ITxPT and FMStoIP Feature** The services ITxPT and FMStoIP are available under two separate service licenses. Please contact sales for any inquiries.
59543	**STP and RSTP for soft-bridges** BR1 and BR2 support STP and RSTP settings.

Case-#	Description
59828	**Prevent down-grade to incompatible version** If you want to downgrade to an older release, you may have to install intermediate releases. Normally that's the latest release of the major version of the desired software. The Update process will detect the release number of the uploaded image and prevent installation of invalid releases.
60213	**Improved user access rights** The access right management for users was improved. It is now possible to grant native shell access to additional admin users or to disable shell access for a user.
60798	**SD-Card slot of NB1800 and NB1810 now available in NRSW** The SD-Card slot can now be used as external storage in NRSW.
60859	**Additional GRE tunnel parameters** It is now possible to configure tunnel keys for GRE to allow a gateway to distinguish between GRE packages from different connected end devices.
60907	**Update of WLAN drivers and Firmware** MAC 802.11 stack was updated to version 5.4.27-1. Firmware for ATH10k chipsets was updated to 10.2.4-1.0-00047. Linux iw command was updated to release 5.4. WPA supplicant was updated to release 2.9.
61210	**Additional settings for BGP** The BGP setup now allows to configure additional parameters for time-out, hold-time and weight.
61261	**ETH2 on NB1810 can now be enabled** NB1810 now allows to disable the SFP port in favor of ETH2 as an additional Ethernet port.
61270	**Increase maximum number of static DHCP hosts** It's now possible to configure up to 70 static DHCP host entries.
61834 61835	**Higher performance for NB1601 (Rev B02) and NB800 (Rev B02)** The maximum CPU clock is increased from 600MHz to 1GHz, improving performance and throughput in several applications. CPU clock is adaptive (lower at high temperature and for low performance applications).
62284	**NB800 USB can be switched off** It is now possible to switch off the USB port of NB800.
62377 62995 66000	**eSIM/eUICC support** We support the remote management of eSIM/eUICC profiles according to SGP.21/.22. The feature requires a software license. Please contact sales for any inquiries.
62466	**SNMP improvements** The SNMP EngineID is now configurable.
63499	**Firmware update for Dual-CAN module** The CAN controllers of Dual-CAN modules can now be updated via web interface.
63606 63652	**Port based DHCP addresses** NB1601 and NB1800 now support port based DHCP address specification.
64971	**DFS enabled for NB800 and NB1601** WLAN channels which require DFS are now usable. The required radar detection will be performed automatically if a DFS channel is selected.
64975	**Certificate revocation list download for IPsec** The IPsec daemon now tries to obtain the CRL file if a CRL location is defined in the installed certificate chain.
65072	**Wireless regulatory database** The wireless regulatory database has been updated to its latest version.
65530	**Updates of 3rd party open source components** LXC was updated to version 3.1

Case-#	Description
66205 66205	**NG800 supported by NRSW** The new Automotive Gateway NG800 is now supported by NRSW. The new Automotive Gateway NG800 is now supported by NRSW.
66206	**Change build system to OpenEmbedded** We changed our build system to OpenEmbedded. Along the way we updated nearly all third party libraries and programs including substantial libraries like libc and OpenSSL.
66229	**More VXLAN tunnels** The maximum number of VXLAN tunnels was increased from 4 to 10.
66329	**WLAN antenna gain** The WLAN antenna gain can now be increased up to an effective EIRP of 0dB (TX_ADV license required).
66380	**NB800 and NB1601 WLAN module firmware updated** TI wl18xx WLAN module firmware was updated to 8.9.0.0.85.
66404	**NTP server answers signed requests with crypto-NAK** Requests with authentication requests are now answered with crypto-NAK messages according to RFC 5905.
67681	**802.1x over Ethernet** The routers can now be used in a network with 802.1x infrastructure.
67698	**Auto-alignment for GNSS-DR**
67884	**Additional status information on Toby-L2 LTE module** The signal to noise ratio of the LTE connection is made available via CLI, SDK and web interface.
69207	**Enhanced GNSS-DR configurations** Devices which feature GNSS dead reckoning can now be configured by automatic installation orientation learning. Additionally, the installation location of device and GNSS antenna in the vehicle (lever arm) can be configured to enhance the precision.

3 Security Fixes

The following security relevant issues have been fixed.

Case-#	Description
61646	**Security fixes in 3rd party and open source packages** CVE-2020-8597: pppd remote code execution in EAP code
62652	**Linux kernel security bug fixes** CVE-2020-8428: A use-after-free in the Linux kernel could allow local users to run a DoS.
63780 **63785** **63786**	**Curl security bug fixes** CVE-2019-5482: A malicious TFTP server could cause a heap corruption in libcurl. CVE-2019-5436: Possible TFTP receive buffer overflow fixed. CVE-2019-5435: libcurl contains two integer overflows that if triggered can lead to a too small buffer allocation and a subsequent heap buffer overflow.
66520	**CVE-2020-12351 BleedingTooth bug in Linux kernel** Potential security vulnerabilities in BlueZ may allow escalation of privilege or information disclosure.
67956 **67957**	**libmodbus security bug fix** CVE-2019-14463: out-of-bounds read fixed CVE-2019-14462: out-of-bounds read fixed
69400	**OpenSSL security bug fix** CVE-2020-1971: Fixed NULL pointer deref in OpenSSL

4 Fixes

The following issues and problems have been fixed.

Case-#	Description
58794	**GUI: WLAN MESH auto channel configuration** It was possible to set the WLAN channel to auto for WLAN MESH mode. That has been fixed.
59801	**NB2800 suddenly reboots** Reset loops could occur while using the new revision of modem modules. That has been fixed.

Case-#	Description
59872 **59927** **60097** **60656** **60887** **61166** **61514** **61541** **61860** **61866** **61874** **61979** **62129** **62432** **62454** **62624** **62638** **62707** **62764** **62811** **62812** **62898** **63301** **63814** **65312** **65397** **65987** **67583** **69152**	**GUI improvements** If an OpenVPN client was deleted via web interface it could happen that the certificate association of other remaining OpenVPN configurations could be mixed up. Fixed typo on the WLAN web interface. It could happen that a software update failed with a generic error message if the download of the software image failed. Newly in such cases the web interface will show a more helpful error message. It was not possible to configure a firewall rule with dedicated incoming and outgoing interface. This was fixed. On NB1601 a bridged WLAN interface was shown as status 'routed'. This was fixed. The web interface returned an error if some special characters like quotes were used inside an email password. This was fixed. Enabling lldpd as solo activated discovery protocol produced an error message in the GUI. This was fixed. Disabled radio buttons where not shown as disabled. Nevertheless it was not possible to change their value. This was fixed. A change of the TX power was not shown on the status page. This was fixed. With some WLAN chipsets the WLAN status page showed wrong transmission bit rate. This was fixed. The GUI was not checking the WLAN interface limitations during configuration to dualmode. This could lead to some WLAN interface misconfiguration. That has been fixed. WLAN MESH AP configuration parameters were disappearing in the GUI after applying a configuration. This has been fixed. Logs from SDK scripts did not wrap with the page width of the WEB interface. This was fixed. WLAN mesh setup showed some inconsistencies in the GUI. This was fixed. The web GUI did not wait long enough when large LXC containers were installed. This resulted in the impression that the Installation was finished while it was still on-going. The web interface did not allow to disable Dead Pear Detection (DPD). This was fixed. Configurations with several IPsec tunnels which were configured with expert-mode could lead to wrong tunnel status shown in the web interface. Due to a flaw in the GUI design it could happen that firewall rules could not be edited or deleted via web interface. This was fixed. GRE tunnel keys were treated like passwords in the web interface and shown as asterisks. This was wrong, because GRE tunnel keys are not a secret, but only an identifier. Changing the shell of a user was not applied unless the user's current password was provided and changed at the same time. This was fixed. Now changing the shell of a user only requires the admin password for confirmation, but no user password or changed user password. The web interface enforced the first WWAN interface to be permanent. This restriction was not needed and therefor removed. The bridging status page was not accessible to non-admin users. The maximum file size for WWAN firmware-update files was increased to 45MB. This should be sufficient to perform most FW updates directly via web interface without the need for an external web or FTP server. USB storage devices were shown as extended storage on NB2800 and NB1800. It was not possible to select UTC timezone with daylight saving was not possible. This was fixed. Setting the MTU of a bridge device BR1 or BR2 failed with an error message. This was fixed. The MTU was not applied correctly to soft bridge devices. In some situations the IPsec status shown in the web interface was wrong after connection loss.
60135 **60435** **61842**	**SDK improvements** A typo in the example script serial-tcp-broadcast.are was fixed. The function nb_syslog() did not clean an internal buffer correctly which could lead to corrupted log messages. This was fixed. Due to an erase condition mails sent from the SDK on a high rate could get lost before they were sent to the MTA. This was fixed.

NET MODULE

Case-#	Description
60430	**Software downgrade via USB stick failed** In factory state the downgrade to Releases prior 4.2.0.x failed. This was fixed.
60653	**Firewall rule blocked IPsec traffic from router** In setups where all traffic but IPsec is blocked it could happen that packets from the router were unintentionally blocked as well even though they were supposed to be sent via IPsec. This was due to a missing firewall rule that was present for forwarded traffic, but was missing in the outgoing chain.
60788 **61584** **61986**	**Bring up several LTE connections with switch-over links** Switch-over links should come up if their permanent master link disconnects. This did not work correctly if there were several permanent WWAN links with switch-over configured. This was fixed.
60870	**Configuration via USB stick could fail** Due to a time-out issue it could happen that consecutive configuration steps via USB stick failed. This would only affect you if you use one USB stick with some base configuration and then apply another configuration again with a USB stick on top without rebooting between these steps. This was fixed and you can apply consecutive configurations via USB stick one after the other.
60993	**IPsec improvements** In some situations it was not possible to reach the configuration web interface of a local router because traffic was erroneously routed via the IPsec tunnel. This was fixed.
61151	**Link supervision timeout prevents switch to better link** If link supervision was enabled the link management did not change to a better link before the supervision timeout was reached. Even if the link was obviously down. This was changed so that a better link will be taken into account directly once we are sure we lost the old one.
61466	**WLAN client ignored channel selection** A WLAN client tried to connect to any AP providing the right SSID. It ignored the optional channel selection settings. This was fixed.
61505	**Password change did not apply on SNMP users** In some situations the SNMP user password was not applied with a change of the users system password. This was fixed.
61645	**Make MAC addresses of Ethernet interfaces configurable** It is now possible to configure individual MAC addresses to the interfaces.
61935	**USB-Ethernet adapter not working on NB1601** Due to an internal misconfiguration USB-Ethernet adapters were not shown in the IP setup of the web interface. That was fixed.
62691	**/bin/login spamming logs** On some devices it could happen that a failing call of /bin/login spammed the logs if no serial interfaces were configured as login console.
62704	**NB1601 services cannot be accessed via IPsec** An issue with packet fragmentation prevented to access services (like web interface or SSH access) via IPsec. Routed data traffic was not affected. This issue was fixed. If you relied on this malicious behavior as a feature, you should get in contact with our support to find a valid firewall configuration.
62912	**STP not enabled on NB1601** On NB1601 STP was not enabled if configured. This was fixed.
63087	**Enable fast NTP synchronization after boot** Due to a misconfiguration the NTP client took up to 10 minutes to synchronize after the boot. This was fixed.
63112	**L2T P tunnels cannot be bridged** It was not possible to bridge L2TP tunnels to soft bridges BR1 and BR2. This was fixed.

Case-#	Description
63203	**IPsec not started after upload of expert file** A new IPsec expert mode configuration was not applied automatically after installation. This was fixed.
63466 63472	**WLAN stability improvements with NB800 and NB1601** Some WLAN clients were sporadically loosing connection to NB800 and NB1601 if more than 5 WLAN clients were connected. This has been fixed. Some WLAN clients were sporadically loosing connection to NB800 and NB1601. This was fixed in a new firmware of the WLAN chip vendor which is shipped with this NRSW software release.
63634	**CLI improvements** The CLI status did not show SWI information for the second PDP context.
64946	**WLAN output power improvements with NB800 and NB1601** The output power did not match regulatory domains limits if used with antennas with a high gain. This has been fixed.
64950	**GUI: WPA-Enterprise Identity** Setting the RADIUS identity had no impact to the configuration. The identity was always set to the hostname of the Router . This has been fixed.
65135	**SGI not enabled on 40 MHz channels** If WLAN was configured to run on 40MHz channels in client mode, the SGI feature was disabled.
65238	**Prevent restart of WWAN module while voice-call is active** If the WWAN module lost it's IP connection it was restarted even if a voice-call was still on-going. This resulted in termination of the voice call. The behavior was changed. The pending restart is skipped until the voice-call ended.
65403	**Certificate chains from SCEP server** Certificate chains installed via SCEP did not work with IPsec.
65698	**Bridging multiple WLAN APs to different VLAN IDs could fail** In configurations with several WLAN APs bridged to different VLAN IDs it could happen that the association was broken.
65783	**Local services not accessible with IPsec** In some scenarios with multiple IPsec connections it could happen that local services like the web interfaces were not available via IPsec. This was fixed.
65880	**Unstable IPsec connection** In some use cases with several parallel connections IPsec was quite flaky due to timing issues on tunnel establishment. This was fixed.
65973	**SMS not working with shared modem configuration** SMS were not sent if the first WWAN interface was down even if the configuration was that the first available module should be used.
66213	**Link management** A bug in the dialin behavior on link-groups that resulted in preventing a switchover from happening was fixed.
66521	**Mail transmission failures fixed** Some MTA servers did not process mails with attachments from our SDK. This was due to a duplicate line in the mail header which is strictly not allowed in SMTP protocol. The duplicate line was removed.
67638	**SIM switchover failures** In some configurations the SIM switch-over with different SIMs on one WWAN module failed.
67977	**Reboot triggered by igmpproxy supervision** The system health supervision failed on some igmpproxy setups resulting in reboot of the device.
67986	**Support for NB1601-La** NB1601-La is now supported by NRSW.

5 Known Issues

Items listed here represent minor problems known at release time. These issues will be resolved in a later version.

Case-#	Description
69195	**USB3 mass storage devices handled as extended storage**
	External USB3 mass storage devices were handled as internal extended storage in NRSW versions prior 4.3.0.108 and 4.4.0.107. Therefore configurations which use such devices for use cases like virtualization need a manual configuration update. Please contact our support if you face any problems.

6 ECC conversion

The flash on NB1600, NB2700, NB2710, NB3700, NB3710 and NB3720 provides an automated error correction using ECC. With release 4.1.0.100 we changed the ECC length from 1-bit ECC to 4-bit ECC which provides better error correction. On first boot after the update was performed the data on the flash is automatically converted to use the new ECC setup. While this conversion is performed the LEDs show a running light for about 30 seconds.
If you switch back to an older software release like 4.0.0 the migration is reverted.
We tested updates and down-grades to and from 4.0.0 and 3.8.0. Updates to or from older versions are not supported. If you run an older release or want to downgrade to an older release or a feature release like 3.8.2 you are advised to migrate via 4.0.0 as an intermediate release.
To revert the migration on downgrade the SPL boot loader release 4.1.0 stays in place. It can be downgraded in a second sofware update process initiated from the target release after the first reboot.
Software updates with recovery images require special attention. You must not use recovery images 4.0.0 and older for systems running 4.1.0 and newer. If you want to use recovery images please contact our support at router@support.netmodule.com

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8 Change History

Version	Date	Name	Reason
1.0	Dec 15, 2020	Moritz Rosenthal	Final release note 4.5.0.100
0.1	Dec 10, 2020	Moritz Rosenthal	First draft

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