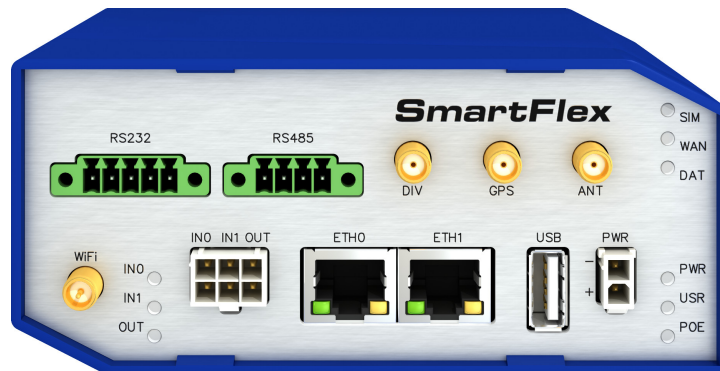


Firmware 6.1.1

RELEASE NOTES



B+B SMARTWORX

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Abstract

This document describes:

- Firmware upgrade instructions.
- Description of all new features, fixes and other changes implemented in firmware 6.1.1.
- Known issues.

For detailed information about firmware 6.1.1, see the Configuration Manual for your router.

Firmware Details

- **Version:** 6.1.1
- **Release date:** March 9, 2017
- **Hardware compatibility:** This firmware is applicable to any router made by Advantech B+B SmartWorx s.r.o.



Please note that not all new Advantech routers are produced and shipped with the latest release of the firmware. The reason usually is an existing certification made for a specific carrier or a region. For more information see document **Firmware Distribution Overview**.

Part I

Firmware Upgrade Instructions

General Upgrade Instructions and Notices

HTTPS certificates: The HTTPS certificate creation in the router was updated in FW 5.3.5 in order to improve security. Existing HTTPS certificates on previously manufactured routers will not automatically be upgraded with the firmware upgrade! It is possible to upgrade HTTPS certificates by deleting the files within /etc/certs/https* in the router (e.g. via SSH). The certificates will be re-created automatically during the router's next start.



Python user module is not uploaded by default to the produced routers with firmware of version 6.0.2 and later. To get the Python user module, please contact your local Sales Representative.



The **SPECTRE v3 LTE** and **SPECTRE v3 ERT** routers were renamed to **SmartFlex**. You will find them under this name in the Changelog below.

Specific Upgrade Instructions - new filename

If the filename of a firmware for your router was changed recently, then you can have an issue during manual firmware updating or with automatic firmware update feature. Following warning message will appear during the firmware updating process: *"You are trying to upload file "xx.bin" but "yy.bin" is expected. Are you sure to continue?"*

To proceed with the firmware updating please follow these steps: Check the table below with details of recent firmware filename changes for routers and make sure you have the correct firmware file for your router. Go ahead with manual firmware updating and confirm displayed warning message.

To proceed with automatic firmware updating, rename new firmware files (*.bin and *.ver) to filenames valid before the filename change. This should allow the router to pass through the process of automatic firmware updating. Next time, the automatic firmware update feature will work as expected and no other file renaming will be required.

Router model	FW ver.	New filename	Original filename
SmartMotion ST352 SmartMotion ST355	6.0.2	SPECTRE-v3T-LTE.bin	BIVIAS-v3LL.bin
SmartStart SL302	6.0.3	SPECTRE-v3L-LTE-US.bin	SPECTRE-v3L-LTE-AT.bin

Table 1: Recent firmware filename changes

Specific Instructions for Upgrading from Firmware Older than 5.3.0



It is necessary to follow specific upgrade instructions below only if you are upgrading from firmware older than 5.3.0.

Due to a (now fixed) bug in the firewall when a WAN device is part of a bridged interface, caution should be taken when upgrading in following case:

Condition: When a WAN device is part of a bridged interface, access to that WAN device (HTTPS, SSH) is always granted regardless of configuration.

Problem: If this is your configuration, it is highly likely that you are not aware of this, so the undesired effect of the bridge firewall fix may render the router inaccessible.

Recommended Action: Enable access to both the web and ssh services before upgrading if you want to retain the current behavior (access to the WAN interface). This can be done on the *NAT* page in the *Configuration* section of the router's Web interface.

Changing the password

It is necessary to change the password for user "root" (or enter it again) when upgrading to firmware version 5.3.0. or newer. The reason for this is an upgrade of the authentication system (encryption algorithm *crypt* was changed to *MD5*; passwords are now stored in the */etc/shadow* file instead of */etc/passwd*). Changing of the password is required before it is possible to set up remote access on the *NAT Configuration* page.

Please note that when downgrade from 5.3.0+ to previous firmware versions, the password for user *root* is reset to default ("root").

Part II

Changelog



Legend: Affected routers are marked as shown below for every changelog item:

Affected router version Router version not affected

Support for u-blox cellular modules

ER75i UR5 UR5i XR5i SPECTRE 3G SPECTRE RT SPECTRE LTE-AT SPECTRE LTE-VZ
 ER75i v2 UR5 v2 UR5i v2 XR5i v2 LR77 v2 CR10 v2 UR5i v2L RR75i v2 LR77 v2L XR5i v2E
 Bivias v2HC Bivias v2LC Bivias v2LL Bivias v2LH Bivias v2HH
 SmartFlex SR300 **SmartFlex SR303** SmartFlex SR305 **SmartFlex SR306** **SmartFlex SR307**
 SmartStart SL302 SmartStart SL304 **SmartMotion ST352** **SmartMotion ST355**

Added support for *TOBY-L210* and *TOBY-L280* cellular modules made by *u-blox*. *TOBY-L210* LTE Cat. 4 module for Europe/Asia supporting 1, 3, 5, 7, 8 and 20 LTE bands. *TOBY-L280* LTE Cat. 4 module for America/APAC supporting 1, 3, 5, 7, 8 and 28 LTE bands.

Support for Quectel cellular modules

ER75i UR5 UR5i XR5i SPECTRE 3G SPECTRE RT SPECTRE LTE-AT SPECTRE LTE-VZ
 ER75i v2 UR5 v2 UR5i v2 XR5i v2 LR77 v2 CR10 v2 UR5i v2L RR75i v2 LR77 v2L XR5i v2E
 Bivias v2HC Bivias v2LC Bivias v2LL Bivias v2LH Bivias v2HH
 SmartFlex SR300 **SmartFlex SR303** SmartFlex SR305 **SmartFlex SR306** **SmartFlex SR307**
 SmartStart SL302 SmartStart SL304 **SmartMotion ST352** **SmartMotion ST355**

Added support for *EC25-AU* and *EC25-E* cellular modules made by *Quectel*. *EC25-AU* LTE Cat. 4 module supporting 1, 2, 3, 4, 5, 7, 8, 28 and 40 LTE bands. *EC25-E* LTE Cat. 4 module supporting 1, 3, 5, 7, 8, 20, 38, 40 and 41 LTE bands.

Support of Rogers Wireless carrier

ER75i UR5 UR5i XR5i **SPECTRE 3G** SPECTRE RT **SPECTRE LTE-AT** SPECTRE LTE-VZ
 ER75i v2 UR5 v2 UR5i v2 XR5i v2 LR77 v2 CR10 v2 UR5i v2L RR75i v2 LR77 v2L XR5i v2E
 Bivias v2HC Bivias v2LC Bivias v2LL Bivias v2LH Bivias v2HH
 SmartFlex SR300 SmartFlex SR303 **SmartFlex SR305** SmartFlex SR306 SmartFlex SR307
SmartStart SL302 SmartStart SL304 SmartMotion ST352 SmartMotion ST355

Added support of *Rogers Wireless* carrier for routers designed for NAM region.

Support of static routes

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Added support for static routes configuration. There is new configuration page *Static Routes* in router's web configuration GUI. If IPv6 is supported by the router, two separate configuration pages for IPv4 and IPv6 are available. For more information see *Configuration manual* of the router.

Support for user accounts backup

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Added support for user accounts backup and restoration. This functionality is available in router's web configuration GUI under *Backup Configuration* and *Restore Configuration* menu items. Backed up are all user accounts created in the router including the passwords (hashed). For more information see *Configuration manual* of the router.



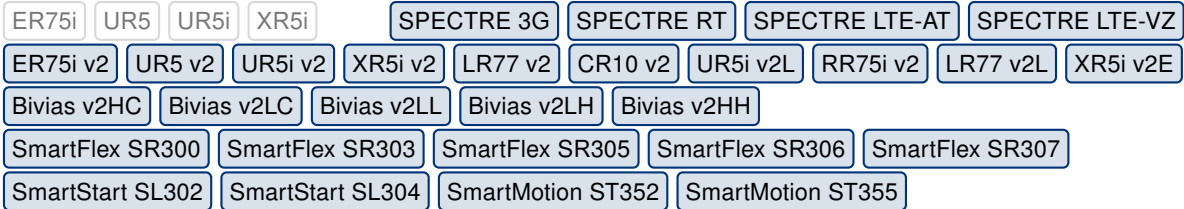
Due to the different format it is not possible to import user accounts backed up on a router of v1 product line (and older) to a router of v2 product line (and newer). The same limitation is for opposite direction.

Support of L2TP

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

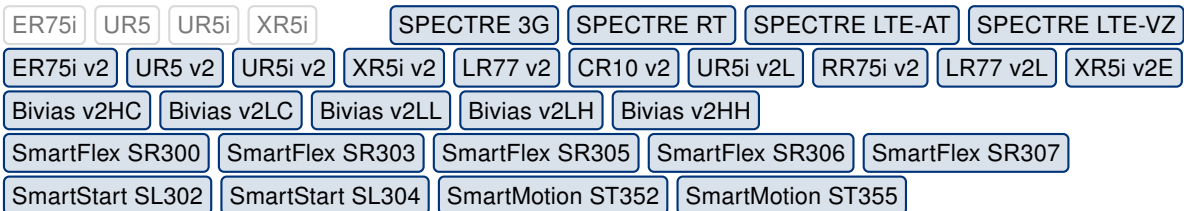
Added support of Layer 2 Tunneling Protocol (L2TP) in Linux kernel.

Added string match extension to iptables



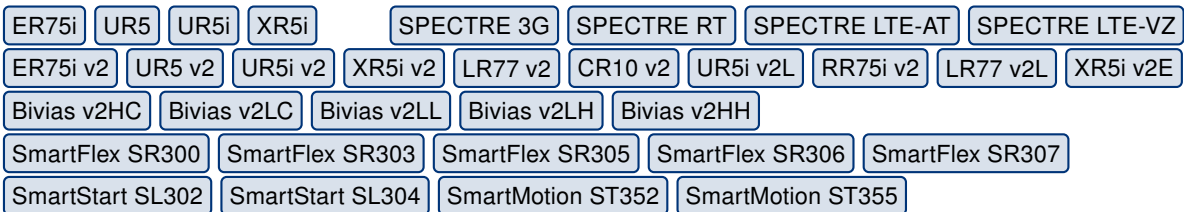
Added string match extension to *iptables*. This extension allows to match a string anywhere in a packet's data payload.

Improved cookies security



The secure flag is now set when sending a new cookie to the web browser within an HTTPS response. This cookie can not be later used for an HTTP communication due to the security reason.

Improved text fields processing



All leading white space characters are removed from input text fields when processing the entered data. Implemented on *LAN*, *WiFi*, *IPsec*, *OpenVPN* and *Scripts* configuration pages.

Changed operator entry processing

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

If an operator was entered into *Operator field* on *Mobile WAN* configuration page, the router will not establish connection to another operator any more.

Fixed incoming packets from cellular module

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed bug in *Telit LE910 V2* cellular module causing wrong MAC addresses representation in packets received from the mobile network. As a result these packets were not processed by the router.

Fixed communication issues with cellular module

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed communication issues with *MC7304* and *MPL200* cellular modules. In some cases the communication did not work properly and the router had to perform a reboot to recover from this situation.

Fixed calculation of transmitted data

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed calculation of statistic data transmitted through the cellular module. Total size for reported amount of data did not match the real amount. Affected modules were *MC7304*, *MC7700*, *MC7750* and *Gobi 3000*.

Fixed reading out of information from TRM3 module

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

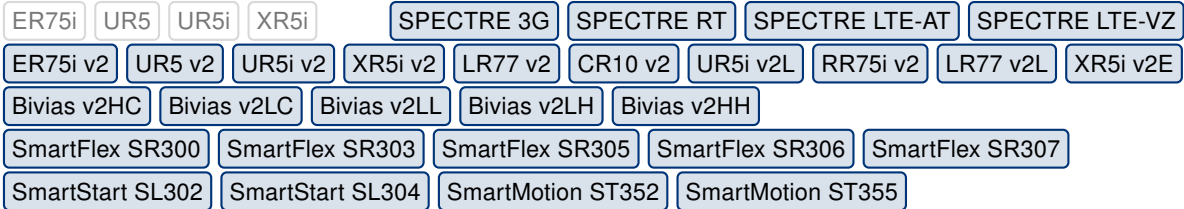
Fixed reading out of cellular network information from *TRM3* module. Reported mobile status was not working property since firmware of version 6.0.0.

Fixed automatic update feature

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

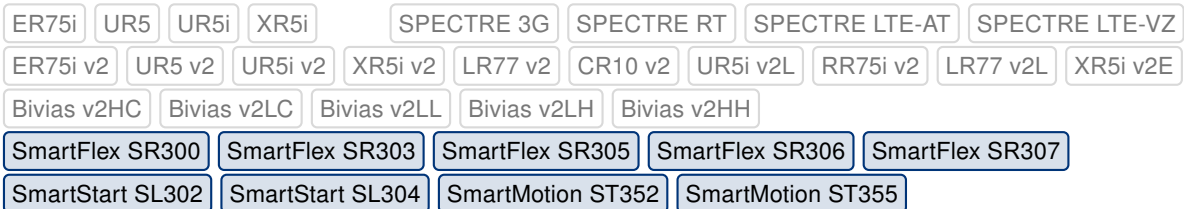
Fixed automatic firmware update feature. Automatic update may be not working correctly when updating from firmware of version 6.0.2 and later.

Fixed IPsec distinguished names usage



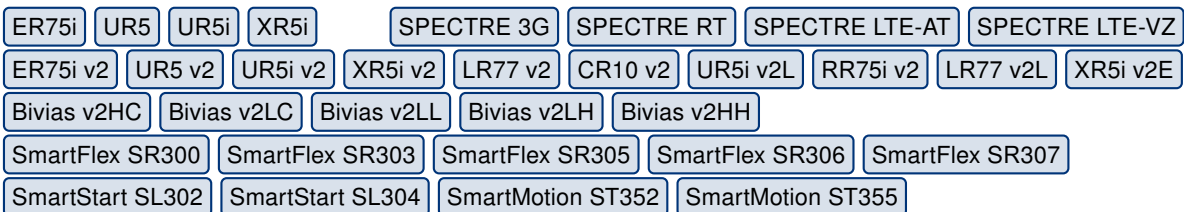
Fixed issue when using of ID distinguished names which can be set in *Remote ID* and *Local ID* fields on *IPsec* configuration page. This feature was not working correctly in firmware of version 6.1.0.

Fixed IPv6 source address in DNS reply



IPv6 DNS queries sent to VRRP virtual interface was not handled correctly. The reply was sent from physical interface instead of the VRRP virtual interface.

Fixed redirection of service communication



Fixed transmitted data redirection of services if configured to a non-standard port. This issue caused the communication was redirected to the default gateway (if set up). Affected services were HTTP, HTTPS, FTP, SSH and Telnet.

Fixed stack overloading of status program

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed stack overflow in status program running in the router. This bug was observed for specific LAN configuration only. As a result it could cause unprompted rebooting of the router.

Fixed ndppd daemon termination

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed termination of *ndppd* daemon running in the router. When the *Prefix Delegation* for IPv6 was switched on or off (on *LAN configuration* page), running session of *ndppd* daemon was not killed. This caused the number of *ndppd* sessions running in the router was increasing.

Fixed CVE-2017-5970

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed CVE-2017-5970 in Linux kernel. This issue could cause system to denial of service by reducing its performance or interruptions in resource availability. For details see: [CVE-2017-5970](#).

Fixed CVE-2017-6214

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Fixed CVE-2017-6214 in Linux kernel. This issue could cause system to denial of service by reducing its performance or interruptions in resource availability.
 For details see: [CVE-2017-6214](#).

Upgraded tcpdump tool

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Upgraded *tcpdump* tool to version 4.9.0.

Upgraded OpenSSH tool

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Upgraded *OpenSSH* tool to version 7.4p1.

Upgraded OpenSSL library

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Upgraded *OpenSSL* library to version 1.0.2k.

Upgraded glibc library

ER75i	UR5	UR5i	XR5i	SPECTRE 3G	SPECTRE RT	SPECTRE LTE-AT	SPECTRE LTE-VZ		
ER75i v2	UR5 v2	UR5i v2	XR5i v2	LR77 v2	CR10 v2	UR5i v2L	RR75i v2	LR77 v2L	XR5i v2E
Bivias v2HC	Bivias v2LC	Bivias v2LL	Bivias v2LH	Bivias v2HH					
SmartFlex SR300	SmartFlex SR303	SmartFlex SR305	SmartFlex SR306	SmartFlex SR307					
SmartStart SL302	SmartStart SL304	SmartMotion ST352	SmartMotion ST355						

Upgraded *glibc* library to version 2.25.

Part III

Known Issues

5 GHz band for WiFi

The first one hundred v3 routers produced (with serial number from 6200000 to 6200099) contain a WiFi chip which does not support the 5 GHz band. There is no way of detecting this, the 5 GHz ranges on these devices will simply not work and the router will not be able to detect this.

Python user module

Python user module versions earlier than 2014-11-25 have lacked SSL functionality since firmware version 5.3.4. **The Python user module needs to be upgraded** to version from 2016-05-03 or later. This user module upgrade can be done safely either before or after upgrading the firmware. The Python interpreter version 2.7.12 is included in the latest version of the user module (2016-09-30).

Warning during WiFi configuration update

During a WiFi configuration update a warning may appear in syslog. This has no other known effects other than the appearance of the warning message.

Firmware Update - unexpected filename

If the filename of a firmware for your router was changed recently, you can have an issue during manual firmware updating or with Automatic Update feature. Following warning message will appear: *"You are trying to upload file "xx.bin" but "yy.bin" is expected. Are you sure to continue?"* To fix this issue follow instructions in Part I (Firmware Upgrade Instructions) in this document.

SmartStart SL302 cellular network authentication with username and password

It is not possible to use username and password when connecting to Mobile WAN network (on *Mobile WAN Configuration* page) if your SmartStart SL302 router has the 20.00.522 firmware version inside the Telit LE910-NA1 cellular module. The version of cellular module firmware can be found at *Mobile WAN Status* page in *Mobile Network Information* section.

SmartStart SL302 – SMS in Verizon network

SmartStart SL302 router (equipped with the Telit modules LE910-SV1 or LE910-NA1) does not support sending or receiving of SMS in Verizon cellular network.