4RF

Aprisa SR+

Software Release Notes

Version 1.1.6

January 2014

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1. Introduction

Introduction

The previous Aprisa SR+ software version release relevant to this release is:

Software Version	Release Date
1.1.3	23rd December 2013

This release of Aprisa SR+ software is:

Software Version	Release Date
1.1.6	16th January 2014

This document covers the major changes, product enhancements, new functionality, and bug fixes since Aprisa SR+ software version 1.1.3.

2. Released Files

Release Files

The following is a list of files released for Aprisa SR+ Software Version 1.1.6

File Name	File Type	File Function
asrapp	Upgrade App Code	Used to initiate radio software upgrade
asrboot	Bootloader	Used to initiate radio software startup
asrmain	Application Code	Main radio system software
asrrootfs	Root File System	Catalog of system files
asrver	Version File	Release build version
version.txt	Public Version File	Release information

3. Product Features

The Aprisa SR+ product release version 1.1.6 has the following features. For more information, see the Aprisa SR+ User Manual 1.1.6.

Frequency Bands	Two frequency band products of 320 MHz and 400 MHz software selectable over the entire frequency band: 320 MHz 320-400 MHz 400 MHz 400-470 MHz
Channel Sizes	Software selectable channel sizes of 12.5 kHz and 25 kHz.
Gross Radio Capacity	Maximum gross radio capacity with 12.5 kHz and 25 kHz channel sizes: 12.5 kHz 60 kbit/s 25 kHz 120 kbit/s
Compliance	ETSI compliance for the 320 MHz band ETSI / FCC / IC compliance for the 400 MHz band. Also RoHS, WEEE and HazLoc class 1 div 2.
Operating Mode	Operating modes of base, base-repeater, repeater and remote stations.
RF Operation	One or two frequency half duplex RF operation which eliminates the need for external duplexers. With the dual antenna port option, an external duplexer can be used for filtering.
Channel Access Modes	Channel access modes of Access Request (AR) and Listen Before Send (LBS) / CSMA for radio channel management. AR channel access has a higher channel efficiency than LBS in a spontaneous message scheme (report by exception).
Adaptive Coding Modulation and Forward Error Correction	Adaptive Coding Modulation (ACM) which maximizes the use of the RF path to provide the highest radio capacity available. ACM automatically adjusts the modulation coding and FEC code rate in the remote to base direction of transmission over the defined modulation range based on the signal quality for each individual remote radio. When the RF path is healthy (no fading), modulation coding is increased and the FEC code rate is decreased to maximize the data capacity. If the RF path quality degrades, modulation coding is decreased and the FEC code rate is increased for maximum robustness to maintain path connectivity.

OTA Data Encryption	OTA data encryption using Advanced Encryption Standard (AES) 128, 192 or 256.
OTA Data Authentication and Integrity	OTA data authentication and data integrity using Cipher Block Chaining Message Authentication Code (CBC-MAC) using Advanced Encryption Standard (AES) 128, 192 or 256.
OTA Data Compression	Ethernet and serial payload compression to increase the narrow band radio capacity.
Header Compression	Ethernet header and IP/TCP/UDP ROCH header compression to increase the narrow band radio capacity.
Antenna Port Options	Software selectable dual / single antenna port options (dual antenna port for external duplexers or filters using dual frequency).
Data Interface Port Options	Multiple data interface port options for combinations of Ethernet and RS-232 serial for a total of four interface ports i.e. port options of 2E2S, 3E1S or 4E0S, where E=Ethernet, S=Serial port.
Pseudo Peer to Peer	Pseudo peer to peer communication between remote stations through base-repeater or repeater stations.
Terminal Server	Terminal server operation for transporting RS-232 traffic over IP or Ethernet.
L3 Router Mode	L3 Router mode with standard static IP route for simple routing network integration.
L2 Bridge Mode	L2 Bridge mode with VLAN aware for standard Industrial LAN integration.
VLAN Support	IEEE 802.1Q VLAN support with single and double VLAN tagged and add/remove VLAN manipulation to adapt to the appropriate RTU / PLCs.
QoS Support	QoS support using IEEE 802.1p VLAN priority bits to prioritize and handle the VLAN / traffic types.

L2/3/4 Filtering	L2/3/4 filtering for blocking security attacks and blocking unwanted traffic avoiding narrow band radio network overload.
Hardware Alarm Inputs / Outputs	Two hardware alarm inputs and two hardware alarm outputs mappable to any radio alarm event.
SCADA Protocol Support	Transparent to all common SCADA protocols; e.g. Modbus, IEC 60870-5-101/104, DNP3 or similar.
SuperVisor Web Management	SuperVisor web management support for element and sub-network (base-repeater-remotes) management.
Secure SuperVisor	HTTPS secure SuperVisor web access management using SSL secure protocol.
SNMP and NMS	SNMPv1/2/3 MIB supports for 4RF NMS SNMP manager or third party NMS SNMP agent network management.
SNMP Security	SNMPv1/2/3 encryption and authentication using HMAC-MD5 or HMAC-SHA for secure NMS / SNMP access and management transactions.
SNTP	Simple Network Time Protocol (SNTP) for accurate wide radio network time and date.
Multi Repeater	Multi repeater, where the Network Radius = 1 (i.e. the multi repeater is in the first hop from the base station) in AR and LBS channel access mode.
Daisy Chain	Daisy chain used for daisy chain repeaters when remote stations are very far from base station coverage. Daisy chain repeaters can only be used in LBS channel access mode.
Alarm and Event Parameter Logging	Alarm event parameters can be configured for all alarm events. All active alarms for configured alarm events will be displayed on the SuperVisor Parameters page. The last 1500 events are stored in the radio and the complete event list can be downloaded to flash drive via the radio USB host port.
Software Upgrades	Over-the-air software distribution and upgrades.

4. Software Enhancements

4.1. Major Enhancements

None

4.2. Minor Enhancements

None

5. Hardware Enhancements

None

5.1. Major Enhancements

None

5.2. Minor Enhancements

Startup With Invalid Configurations

Previously, if invalid configurations were entered into the radio and the radio rebooted, the radio would fail to boot up and a factory software upgrade was required to recover.

In software version 1.1.6, if invalid configurations were entered and the radio rebooted, the radio will boot up but with the default configurations to enable the radio to function correctly.

Issue # 3040; version 1.1.3

6. Known Issues

Supervisor Loading Same Page	Issue When using SuperVisor for managing remotes via a repeater, it may load the same page when trying to go back to 'Network Status' page or to a menu item on the same level. This issue is a rare issue that may happen once or not at all. This issue does not impact remote management or the user data traffic. Workaround In SuperVisor, click another tab on menu level 1 and then load the page which was failing to load. This is a known issue and will be fixed in a later software version release. Issue # 2999; version 1.1.1
Base-Repeater Configuration Indication	Issue In SuperVisor, when an Aprisa SR+ is configured with 'Terminal Operating Mode' as a 'Base-repeater' and 'Packet Filtering' is set to 'disabled' in remote station/s, the 'IP Header Compression Ratio' should be set to 'Compression Disabled' in the entire Aprisa SR+ network for correct peer to peer operation. There is no pop-up message indication for this issue. Workaround In SuperVisor, the user should set the 'IP Header Compression Ratio' to 'Compression Disabled' in the entire Aprisa SR+ network, when the 'Terminal Operating Mode' is set to 'Base-repeater' and 'Packet Filtering' is set to 'disabled'. This is a known issue and will be fixed in a later software version release. Issue # 2763; version 1.1.1

7. Software Bug Fixes

7.1. Major Bug Fixes

None

7.2. Minor Bug Fixes

None

8. Radio Software Upgrade

Upgrade Type

A software upgrade can be performed on a single radio or an entire Aprisa SR+ network.

If you have an existing network of Aprisa SR+ radios, follow the procedure ‘Network Software Upgrade’.

If you have a single Aprisa SR+ radio requiring upgrade, follow the procedure ‘Single Radio Upgrade’.

See the Aprisa SR+ User Manual 1.1.6 for more information.

8.1. Network Software Upgrade

File Transfer Method

This process allows customers to upgrade their Aprisa SR+ network from the central base station location without the need for visiting remote sites.

The Software Pack is loaded into the base station with the file transfer process and distributed via the radio link to all remote stations.

When all remote stations receive the Software Pack version, the software can be remotely activated on all remote stations.

Process Steps

1. Unzip the software pack in to the root directory of a USB flash drive.
2. Insert the USB flash drive into the Host Port .
3. Using File Transfer, load the software pack into the base station (see SuperVisor > Software > File Transfer).
4. Remove the USB flash drive from the Host Port .
5. Distribute the software to the entire network of remote radios (see SuperVisor > Software > Remote Distribution).

Note: The distribution of software to remote stations does not stop customer traffic from being transferred. However, due to the volume of traffic, the software distribution process may affect customer traffic.

Software distribution traffic is classified as 'management traffic' but does not use the Ethernet management priority setting. Software distribution traffic priority has a fixed priority setting of 'very low'.

6. Activate the software on the entire network of remote radios (see SuperVisor > Software > Remote Activation).

Note: When the new software activates on the remote radios, all link communication from the base station to the remote will be lost. The base station will attempt to re-establish connectivity to the remote radios for the new version verification but this will fail. However, when the new software activates on the remote radios, the remote radio will reboot automatically and link communication will restore when the base station software is activated.

When the Remote Activation process gets to the 'Remote Radios On New Version' step, don't wait for this to complete but proceed to step 7

7. Activate the software on the base station radio (see SuperVisor > Software > Manager).
8. When the base station restarts with the new software, rediscover the nodes (see SuperVisor > Maintenance > Advanced > Discover Nodes).
9. Check that all remote radios are now running on the new software (see SuperVisor > Network Table).

8.2. Single Radio Upgrade

8.2.1. Single Radio Upgrade File Transfer Method

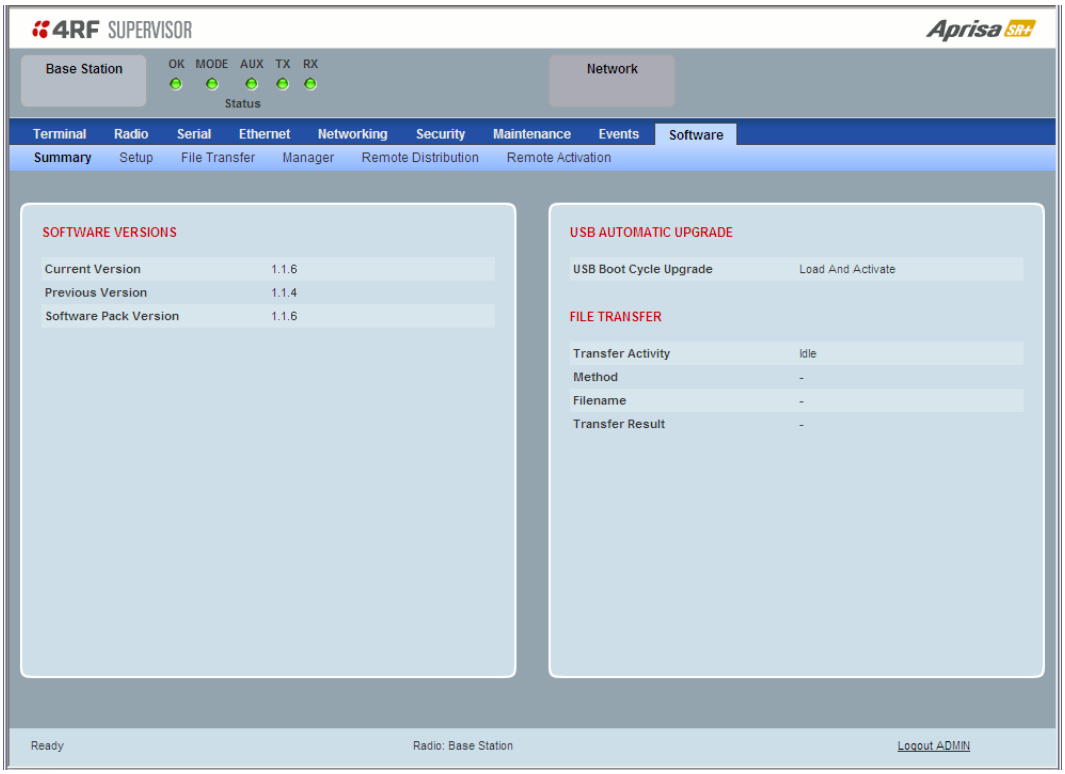
File Transfer Method

This process allows customers to upgrade a single Aprisa SR+ radio.

The Software Pack is loaded into the radio with the file transfer process and activated.

Process Steps

1. Unzip the software pack in to the root directory of a USB flash drive.
2. Insert the USB flash drive into the Host Port.
3. Using File Transfer, load the software pack into the radio (see SuperVisor > Software > File Transfer).
4. Remove the USB flash drive from the Host Port.
5. Activate the software on the radio (see SuperVisor > Software > Manager). This can take up to a few minutes.
6. The new software version can verified with SuperVisor > Software > Summary Current Version.



Upgrade Did Not Start

If the upgrade process did not start, the Aprisa SR+ could already be operating on the version of software on the USB flash drive. This will be indicated by flashing display panel OK LED and then the OK, MODE and AUX will light steady green.

If any display panel LED flashes red or is steady red during the upgrade process, it indicates that the upgrade has failed. This could be caused by incorrect files on the USB flash drive or a radio hardware failure.

8.2.2. Single Radio Upgrade Boot Method

Method

The Aprisa SR+ radio software is upgraded simply by plugging a USB flash drive containing the new software into the USB A host port on the Aprisa SR+ front panel and power cycling the radio.

Procedure

To minimize disruption of link traffic and prevent your radios from being rendered inoperative, please follow the procedures described in this section together with any additional information or instructions supplied with the upgrade package.

The radio software must be identical on all radios in the Aprisa SR+ network.

Process Steps

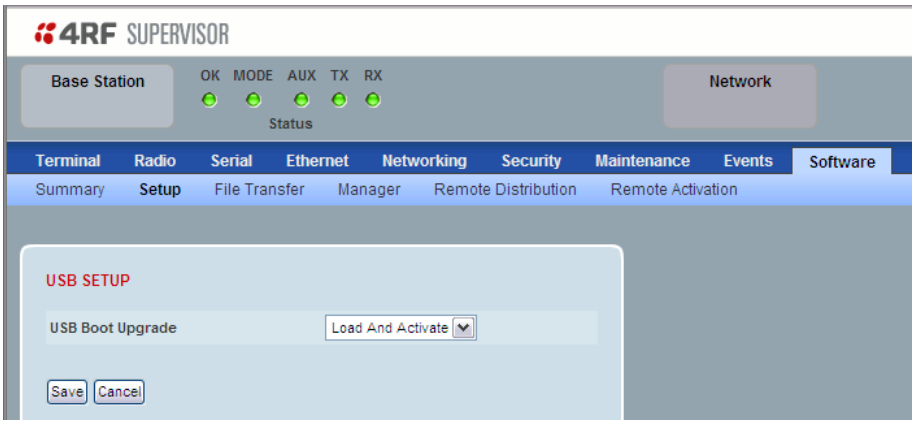
1. Check that the SuperVisor USB Boot Upgrade setting is set to 'Load and Activate' (see SuperVisor > Software > Setup).
2. Unzip the software release files in to the root directory of a USB flash drive.
3. Power off the Aprisa SR+ and insert the USB flash drive into the Host Port .
4. Power on the Aprisa SR+.
5. The software upgrade process is complete when the OK LED lights solid orange. This can take about 2 minutes.
6. Remove the USB flash drive from the Host Port .
7. Power cycle the Aprisa SR+.

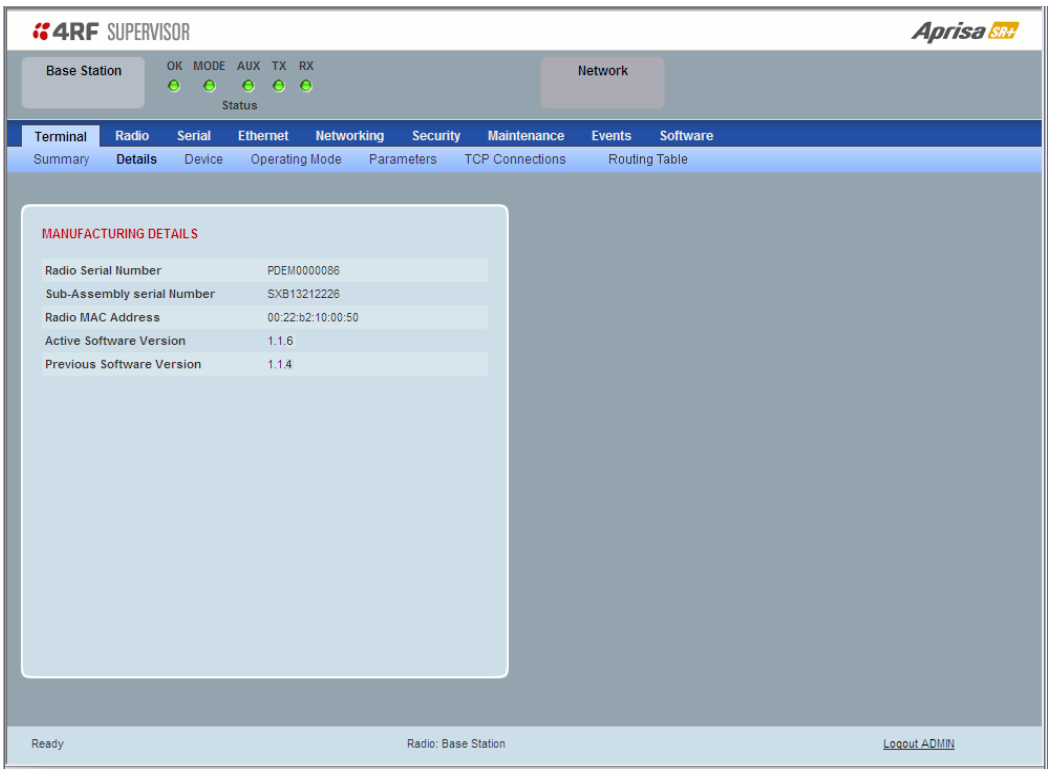
Upgrade Did Not Start

If the USB boot upgrade process did not start, the Aprisa SR+ could already be operating on the version of software on the USB flash drive. This will be indicated by flashing display panel OK LED and then the OK, MODE and AUX will light steady green.

If any display panel LED flashes red or is steady red during the upgrade process, it indicates that the upgrade has failed. This could be caused by incorrect files on the USB flash drive or a radio hardware failure.

Check that the SuperVisor USB Boot Upgrade setting is set to 'Load and Activate'.



Check the Result

Login in to SuperVisor and select Terminal > Details to view the Active and Previous software versions.