SIERRA WIRELESS IS NOW SEMTECH®

Upgrading AirLink OS

APPLICATION NOTE

This Application Note provides procedures for upgrading AirLink OS on the following AirLink routers using a local connection:

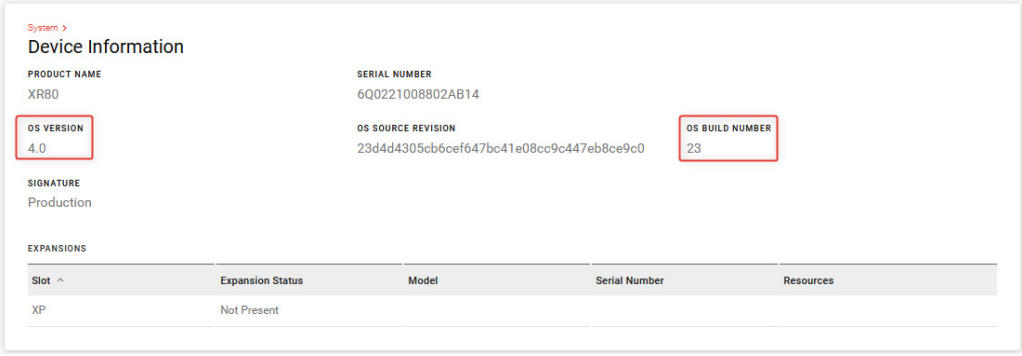
- XR90
- XR80
- XR60
- RX55

Important: *This document is intended for both end customers and resellers and distributors who are upgrading AirLink OS using a local connection to their routers. For customers using AirLink Management Service (ALMS), please see this page. No matter how you upgrade your routers, Semtech recommends reading this document so that you are aware of device behavior during a software upgrade and can confirm that the upgrade is complete and successful.*

Before You Begin

Confirm your current AirLink OS version and radio module firmware version:

1. Connect the AirLink router you want to upgrade to your laptop, and log in to AirLink OS. AirLink OS will display the Status/Monitoring page.
2. Scroll down to **System > Device Information** and note the OS Version and OS Build Number.



3. Scroll down further to **System > Radio Module** and note the radio module Model ID, Firmware Name, and Firmware Version.

Note: Confirming the pre-upgrade radio module information is not essential to the upgrade process. However, in the event that a radio module firmware upgrade is interrupted or otherwise not completed, you may find it useful to compare the radio module firmware versions before and after upgrade.

4. Download the required .ufw file(s) provided by Semtech on the Source. The files you require depend on your starting AirLink OS version. See the Validated Upgrade Paths table for more information.
   - XR90
   - XR80
   - XR60
   - RX55

Validated Upgrade Paths

After you confirm your router's current AirLink OS version (see Before You Begin on page 1), ensure that you follow the upgrade paths shown in the table below.

Note: This table covers existing AirLink OS releases at the time of publication. To get upgrade information for current AirLink OS releases, please consult the release notes.

Starting AirLink OS Version	Upgrade to...
2.0.49 2.0.52	3.0.35 ➔ 3.1.26 ➔ 4.0.23 ➔ 4.1.33 or 5.0.65
2.1.30	3.1.26 ➔ 4.0.23 ➔ 4.1.33 or 5.0.65
3.0.35 3.1.24 3.1.26	4.0.23 ➔ 4.1.33 or 5.0.65
4.0.23	4.1.33 or 5.0.65
4.1.x	5.0.65
5.0.46 (XR60 only)	5.0.71[a]
5.0.65	No upgrade required

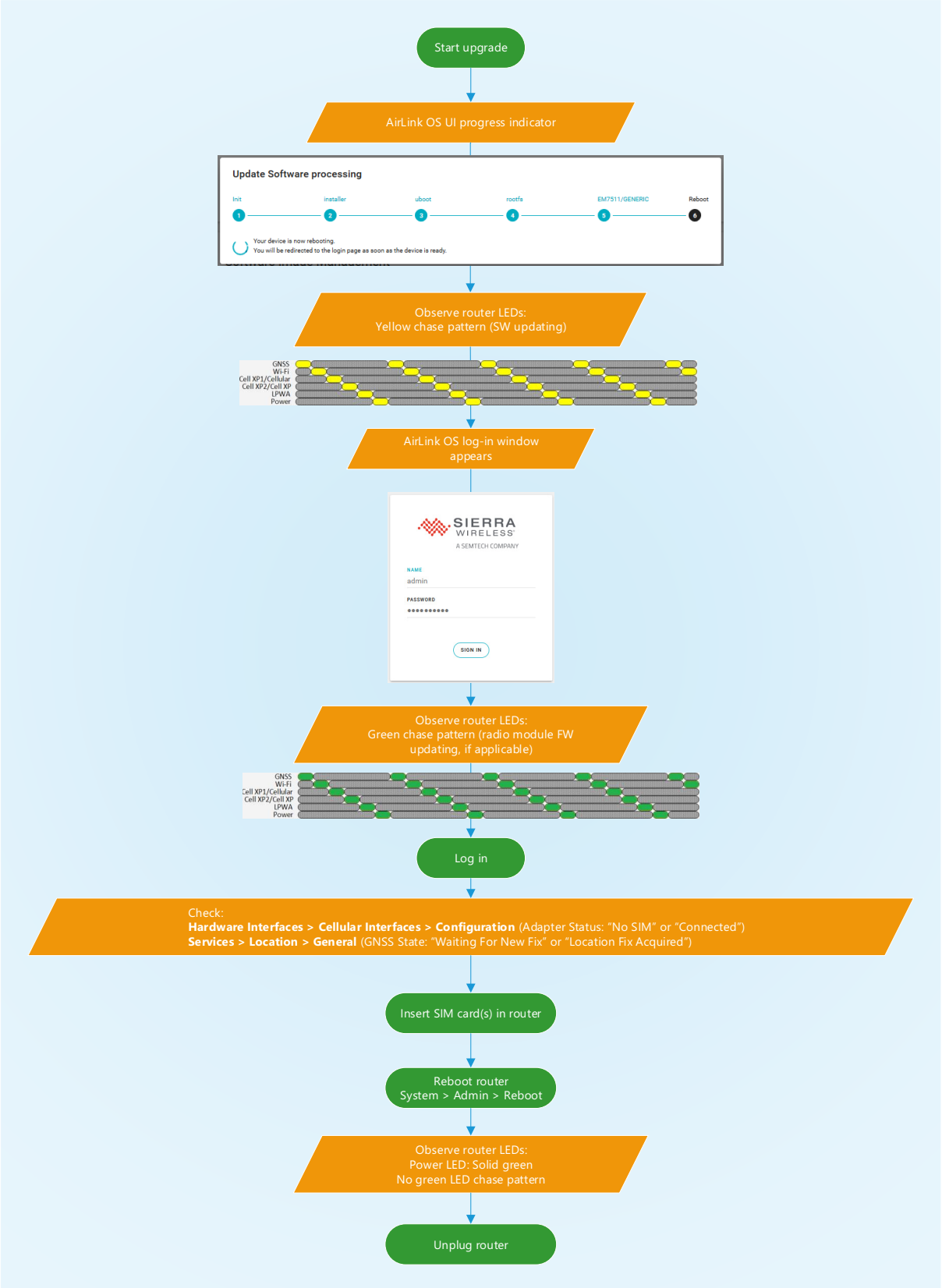
a. The first release of the XR60 router comes from the factory loaded with AirLink OS 5.0.46. This release requires you to update the router to AirLink OS 5.0.71 or later prior to deployment. For more information, see the AirLink OS 5.0.71 Release Notes on The Source.

How to Upgrade

You can use the local UI to upgrade one router at a time or you can use AirLink Management Service (ALMS) to upgrade one or multiple routers at the same time. For information on software upgrades using ALMS, see the Firmware Upgrade section of the AirVantage documentation.

The AirLink OS software and radio module firmware are included in the **.ufw** file provided by Semtech.

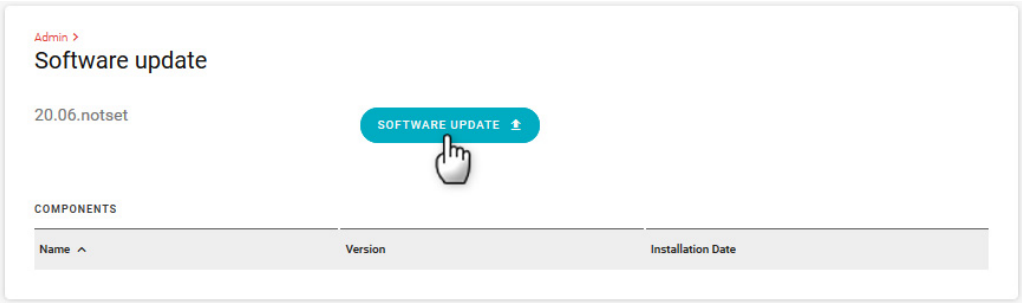
The following flow chart summarizes the upgrade steps.


Start upgrade
AirLink OS UI progress indicator
Update Software processing
Init
installer
uboot
rootfs
EM7511/GENERIC
Reboot
Your device is now rebooting.
You will be redirected to the login page as soon as the device is ready.
Observe router LEDs:
Yellow chase pattern (SW updating)
GNSS
Wi-Fi
Cell XP1/Cellular
Cell XP2/Cell XP
LPWA
Power
AirLink OS log-in window appears
SIERRA WIRELESS
A SEMTECH COMPANY
NAME
admin
PASSWORD
SIGN IN
Observe router LEDs:
Green chase pattern (radio module FW updating, if applicable)
Log in
Check:
Hardware Interfaces > Cellular Interfaces > Configuration (Adapter Status: "No SIM" or "Connected")
Services > Location > General (GNSS State: "Waiting For New Fix" or "Location Fix Acquired")
Insert SIM card(s) in router
Reboot router
System > Admin > Reboot
Observe router LEDs:
Power LED: Solid green
No green LED chase pattern
Unplug router

Upgrading the Router Software

To upgrade AirLink OS software using the local UI:

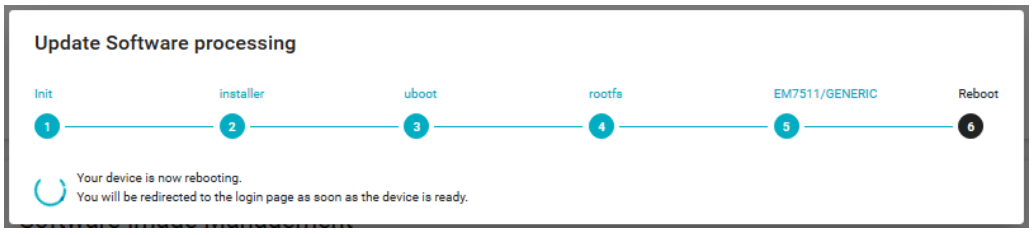
1. Download the required .ufw files provided by Semtech on the Source.
   - XR90
   - XR80
   - XR60
   - RX55
2. In AirLink OS, go to **System > Admin > Software Update**.
3. Click **SOFTWARE UPDATE**.



4. Select the .ufw file and click **Open**.

   The progress bar shows each step of the upgrade process, followed by your router rebooting. Note that the progress bar for some software upgrades may not show every step shown below.

   If a radio module firmware upgrade is part of the process (indicated by "EM7511/GENERIC" below--the exact indication will vary by router model), the upgrade process will take longer than a basic OS-only upgrade. Please see Confirming Software Upgrade Completion on page 6 for more information.

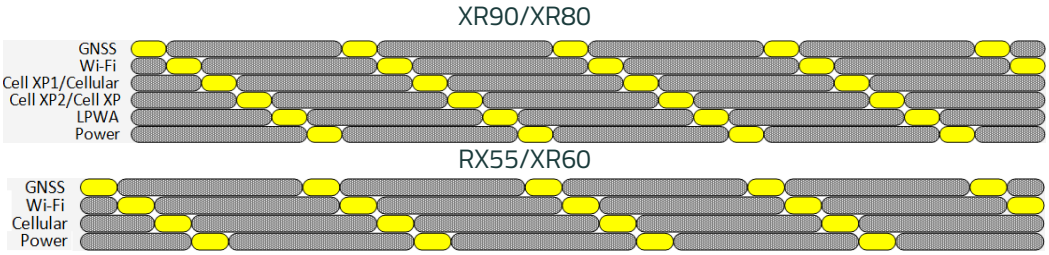


Important: *Do not power off the router during reboot. Depending on the complexity of the software upgrade, the router may be in the reboot state for two minutes or more.*

The router LED patterns indicate the software upgrade progress. The router LEDs are fully documented here:

- XR90
- XR80
- XR60
- RX55

The LEDs will be yellow and flash in a sequential "chase" pattern during the software upgrade.

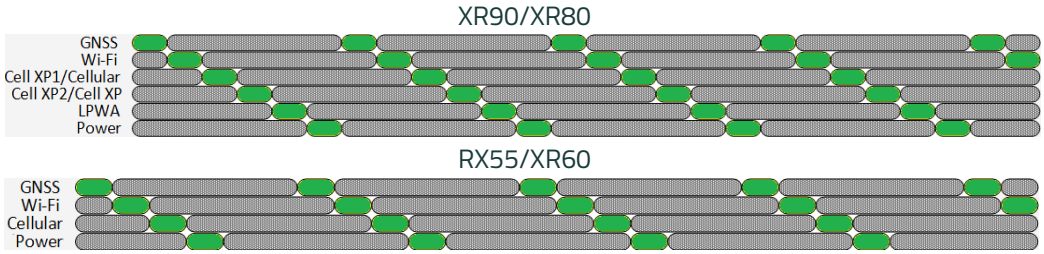


Eventually the chase pattern stops and the Power LED turns green.

Warning: *Do not power off the router or attempt another software upgrade yet.*

After reboot, the AirLink OS log-in window appears. However, certain components, including radio module firmware, GNSS and Wi-Fi drivers, may still be upgrading.

Note the LEDs again. During a radio module firmware update, the LEDs will be green and flash in the sequential "chase" pattern. The radio module firmware upgrade may continue after the AirLink OS log-in window appears.



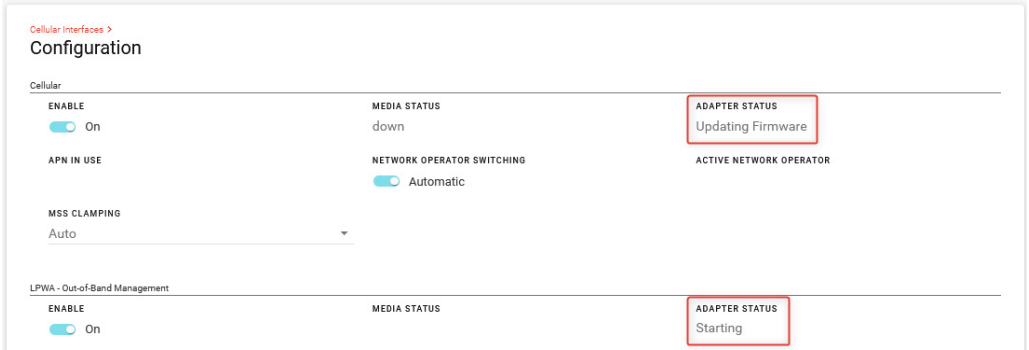
Do not remove power until the following the procedures described in the next section.

Confirming Software Upgrade Completion

To confirm that the software process is complete and successful, log in to AirLink OS and check the Cellular Radio status and GNSS status.

Check the Cellular Radio status:

1. Go to **Hardware Interfaces > Cellular Interfaces > Configuration**.
2. Check the Adapter Status for Cellular and LPWA[1]. The Adapter Status indicates whether a module firmware update is still in progress.

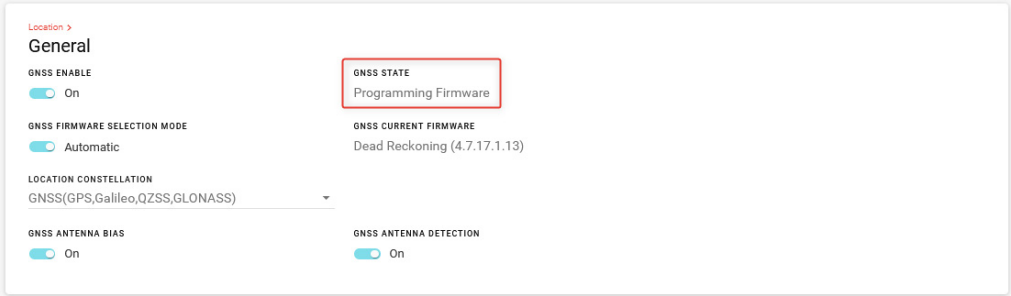


1. The LPWA interface applies only to XR90 and XR80.

3. Wait until the Cellular and LPWA upgrades are complete. When they are complete:
   - the Adapter Status for Cellular should read “No SIM” or “Connected” (if a SIM is inserted).
   - the Adapter Status for LPWA should read “Connected”.

Check the GNSS module status:

1. Go to **Services > Location > General** and check the GNSS State.



You may see the following statuses:

Status	Action
Firmware Upgrade in Progress or Programming Firmware	Wait for the upgrade to complete
Firmware Upgrade Successful	Proceed to the final steps
Firmware Upgrade Failed	If the upgrade fails due to loss of power or otherwise, the router will attempt to upgrade the GNSS module on the next boot, or after you disable and enable GNSS in AirLink OS under **Services > Location > General**.
Waiting For New Fix or Location Fix Acquired	Proceed to the final steps

Final Steps

- Repeat the software update process for any “stepping stone” releases that are required to reach the latest release of AirLink OS, and confirm that each update is complete and successful.

For new routers that have not been deployed yet:

1. After the final software upgrade, apply a device configuration template, if required. For example, you may need to apply a customer-specific template to the router to configure cellular interface settings. For general information about AirLink OS device templates, see the AirLink OS documentation. For information about SIM Templates, see this page in the AirLink OS documentation.
2. Insert the SIM card(s) into the router and reboot. After rebooting the router, ensure that the LED behavior has stabilized before proceeding to the next step. Any LED chase patterns should stop, and the power LED should be green. Refer to the chart on page 4.
3. Power down the router and proceed with upgrading the next unit.