

FOTA Update Procedure for NL-SW-LTE-S7xxx Family

NimbeLink Corp

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Table of Contents

Introduction	3
Overview	3
Orderable Parts	3
AirVantage Account Setup	4
Introduction	4
Create Account	4
Create Password	4
Register Device on AirVantage	5
Introduction	5
Get the Skywire modem's IMEI and Serial Number	5
Login To Your Account	5
Register Your Skywire on AirVantage	5
Setup The Skywire	9
Introduction	9
Setup APN	9
Setup Connection Frequency	9
Initiate the First Connection Manually	9
Verify Status	9
Initiate Firmware Update	12
Overview	12
Select Firmware	12
Firmware Update	13
Troubleshooting	15
Synchronized with Errors	15

1. Introduction

1.1 Overview

This guide documents performing a Firmware Over the Air (FOTA) update for the NL-SW-LTE-S7xxx family of Skywire modems using Sierra Wireless® AirVantage® FOTA Edition Service. AirVantage FOTA Edition provides free unlimited FOTA upgrades for your Sierra Wireless-based Skywires. For more information, please see:

<https://www.sierrawireless.com/products-and-solutions/embedded-solutions/fota/>

The FOTA process outlined below is based on Sierra Wireless' documented process. Please see the "Getting Started" guide for more information:

<https://doc.airvantage.net/fota/howto/gettingstarted/>

The FOTA process is a server-initiated firmware update triggered by AirVantage. The Skywire will download the firmware file from the specified server and apply the update. Additional setup is required on the Skywire.

Please email product.support@nimbelink.com should any questions or support requests arise.

The modem cannot be powered down during the firmware download. Doing so will cause the download to fail, and the download will need to be restarted.

This document is using a NL-SW-LTE-S7588-V Skywire as an example. However, the process is the same for any Skywire listed in Section 1.2. Make sure to select your module in Section 3.4.

1.2 Orderable Parts

Orderable Device	Firmware Revision	Description	Manufacturer	Carrier
NL-SW-LTE-S7588-V	V.3.6	4G LTE CAT4 Verizon	NimbeLink	Verizon
NL-SW-LTE-S7588-V-B	V.3.15	4G LTE CAT4 Verizon	NimbeLink	Verizon
NL-SW-LTE-S7588-T	A.2.10	4G LTE CAT4 AT&T/T-Mobile	NimbeLink	AT&T/T-Mobile
NL-SW-LTE-S7588-T-C	A.2.13	4G LTE CAT4 AT&T/T-Mobile	NimbeLink	AT&T/T-Mobile
NL-SW-LTE-S7618RD	V1.10	4G LTE CAT1 Verizon	NimbeLink	Verizon
NL-SW-LTE-S7648	V04.02.A14	4G LTE CAT1 AT&T/T-Mobile	NimbeLink	AT&T/T-Mobile

2. AirVantage Account Setup

2.1 Introduction

In order to perform a FOTA update, you will need to have an AirVantage account. This section provides an overview for creating your account.

2.2 Create Account

To create your account, visit:

<https://eu.airvantage.net/accounts/signup?type=UFOTA>

to create your account.

2.3 Create Password

Once you create your account, a confirmation email will be sent to your email address. Open it, and you will be asked to create a password for your account. Create a password using the required parameters, and click "Save". You'll receive another email saying that your account has successfully been created.

3. Register Device on AirVantage

3.1 Introduction

Each device that you want to perform a FOTA update on will need to be registered on AirVantage. This section provides an overview for adding a device to your AirVantage Account.

3.2 Get the Skywire modem's IMEI and Serial Number

You will need two pieces of information for registering your Skywire: the IMEI and serial number of the Skywire. Connect to the AT command interface of the Skywire to get this information.

The IMEI is a fifteen-digit number you used to activate your line of service. To get the IMEI, issue:

AT+CGSN

Note: the IMEI is also listed on the Skywire label.

The serial number is a fourteen-digit alphanumeric sequence that usually starts with an alpha character. To get the serial number, issue:

AT+KGSN=3

Note both of these for Section 3.4.

3.3 Login To Your Account

Visit:

<https://eu.airvantage.net/start>

and login using your email address and password. When you first login, you may be presented with a tour. NimbeLink recommends walking through the tour to get used to the interface.

3.4 Register Your Skywire on AirVantage

At your main dashboard, click on "Register your 1st System":

Focus on **Everything**

Welcome to AirVantage FOTA Edition

AirVantage[®] FOTA Edition

Experience the unlimited FOTA capability and keep your fleet of modules up to date with the latest firmware version, for free!

Pay a visit to the **Getting Started** section of our user guide. It has numerous resources to help you off to a quick start.

And if you want more (fleet connectivity monitoring, use of APIs, application upgrade, alerting and much more...), then please contact your reseller to try the full AirVantage.

Getting started



Register your 1st System >

Communication status

No data

System Operations

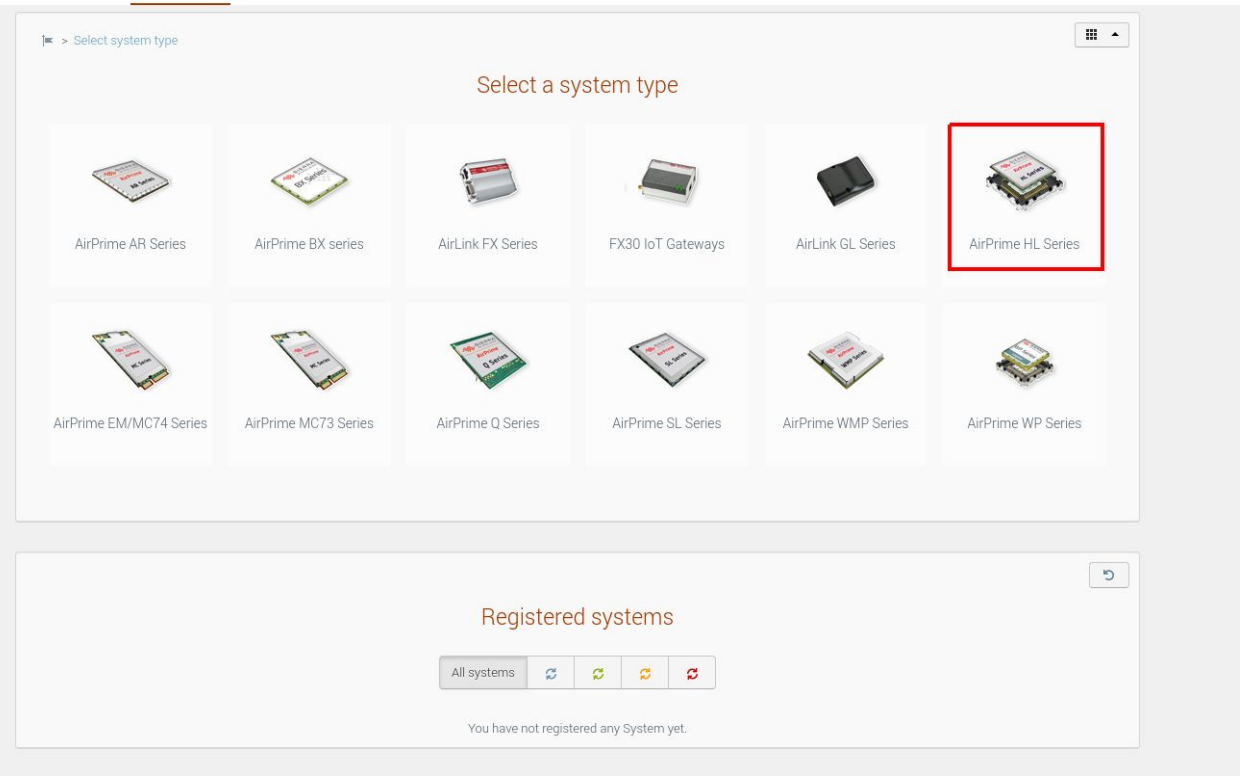
No results.

(All >)

System / Firmware distribution

Upgrade Status

You will next be asked to select a system type. Click on "AirPrime HL Series":



On the next screen, you can select your modem. Under the "Type" dropdown menu, select:


HL7588 (VERIZON)

Type in your serial number and IMEI from Section 3.2. Finally, name your device.

AirVantage Register Inventory Upgrade

Select system type > AirPrime HL Series

Register AirPrime HL Series



Type: HL7888 (VERIZON)

Serial Number: AB123456789012

IMEI/ESN: 012345678901234

Name: FOTA

Pre-configure system

Register or Import a list

1. Select the Type of AirPrime Essential Module you want to register
2. Provide the IMEI and Serial Number of your System
3. Switch on your System
4. In the modem check that communications with AirVantage Platform are configured:
 - o "AT+WDSC=3,x"(x being the frequency of connection in minutes), then
 - o "AT+WDSS=1,1"
5. At first connection the AirVantage Platform will synchronize your new system

Registered systems

All systems

You have not registered any System yet.

Note: the values in the above screenshot are example values, and are not valid.

Once you have all of the values in place, click "Register". You'll receive a notification that the update was successful.

4. Setup The Skywire

4.1 Introduction

To communicate with Sierra Wireless' AirVantage server, the Skywire will require setup to tell it how often to connect. This section provides an overview of the AT commands needed to connect to AirVantage.

4.2 Setup APN

To setup the APN to be used for device management, issue:

```
AT+WDSS=0,"your.apn.com"
```

where `your.apn.com` is your APN. This is the same APN you use to set up a data connection with the `AT+CGDCONT` command.

If you activated your service on `go.nimbelink.com`, the AT command will be:

```
AT+WDSS=0,"nimblink.gw12.vzwentp"
```

If you activated your service elsewhere, contact your cellular representative for the APN.

4.3 Setup Connection Frequency

The Skywire will connect to AirVantage at a rate that you determine. To set that rate, issue:

```
AT+WDSC=3,x
```

where `x` is the frequency in minutes that you wish to connect.

4.4 Initiate the First Connection Manually

To test that everything is setup correctly, you can issue:

```
AT+WDSS=1,1
```

to manually connect to AirVantage. Once you do that, your dashboard will update and say that it is synchronized.

4.5 Verify Status

On your AirVantage dashboard, under the "Upgrade Status", click on your system:

AirVantage Register Inventory Upgrade

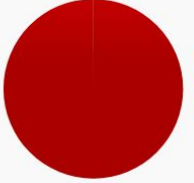
Focus on **Everything**

Welcome to AirVantage FOTA Edition

AirVantage FOTA Edition

Experience the unlimited FOTA capability and keep your fleet of modules up to date with the latest firmware version, for free!
 Pay a visit to the [Getting Started](#) section of our user guide. It has numerous resources to help you off to a quick start.
 And if you want more (fleet connectivity monitoring, use of APIs, application upgrade, alerting and much more...), then please contact your reseller to try the full AirVantage.


Register
 Register new Systems >

Communication status


- Error
- Warning
- Ok
- Undefined
- Pending

 Total: 1

System Operations
 Synchronize System 6 days ago

System / Firmware distribution


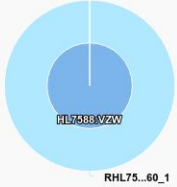
Upgrade Status


HL7588:VZW	
RHL75xx.V.3.6.151600.201606082134.x7...	1 System(s)
RHL75xx.V.3.15.151600.201802071640.x...	0 System(s)

Click on your device in the list:

AirVantage Register Inventory Upgrade

Everything Systems Operations

System / Firmware distribution

 RHL75...60_1

Communication status


- Error
- Warning
- Ok
- Undefined
- Pending

 Total: 1

System Operations
 Synchronize System 6 days ago

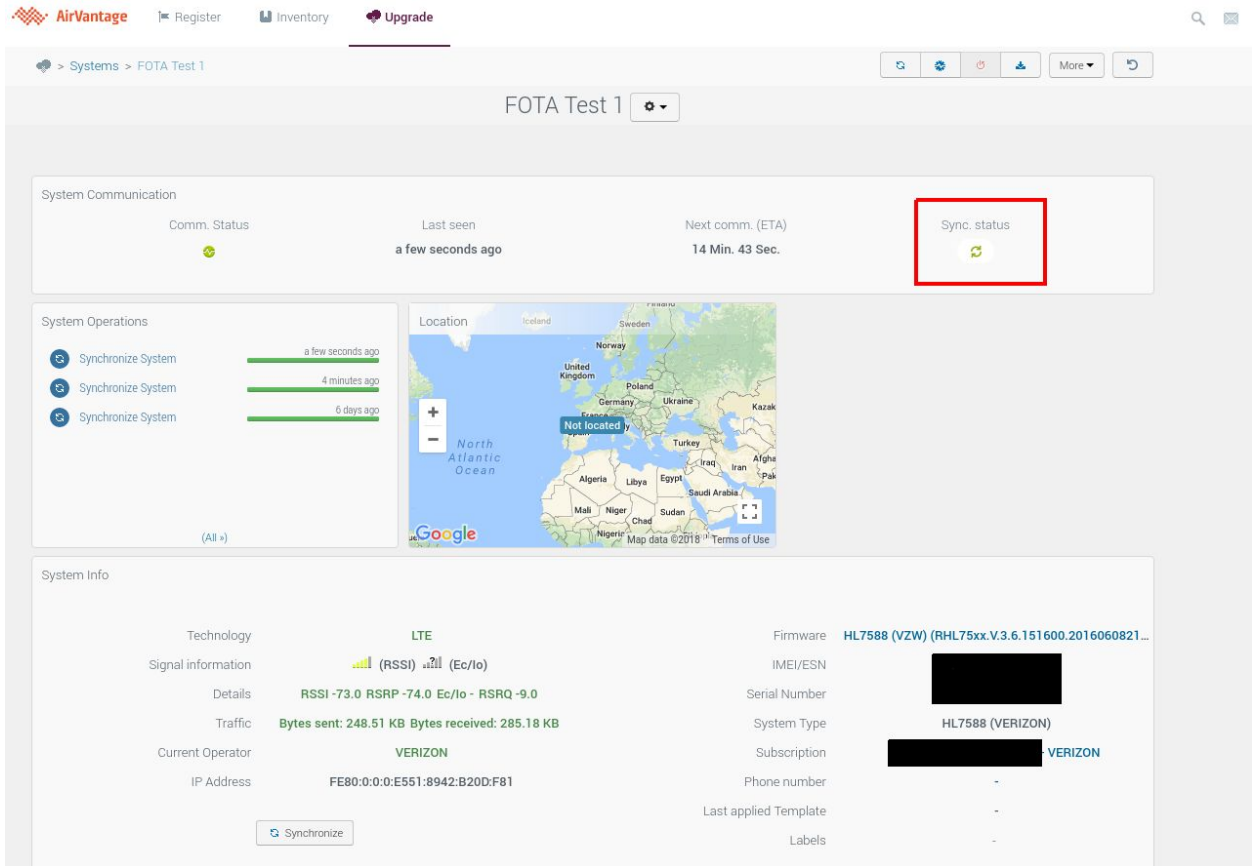
Filters: Name, Name

Company = NimbeLink Development Application/Firmware UID = 7f0e6aebf5dd4a5082316f410fbf81e8

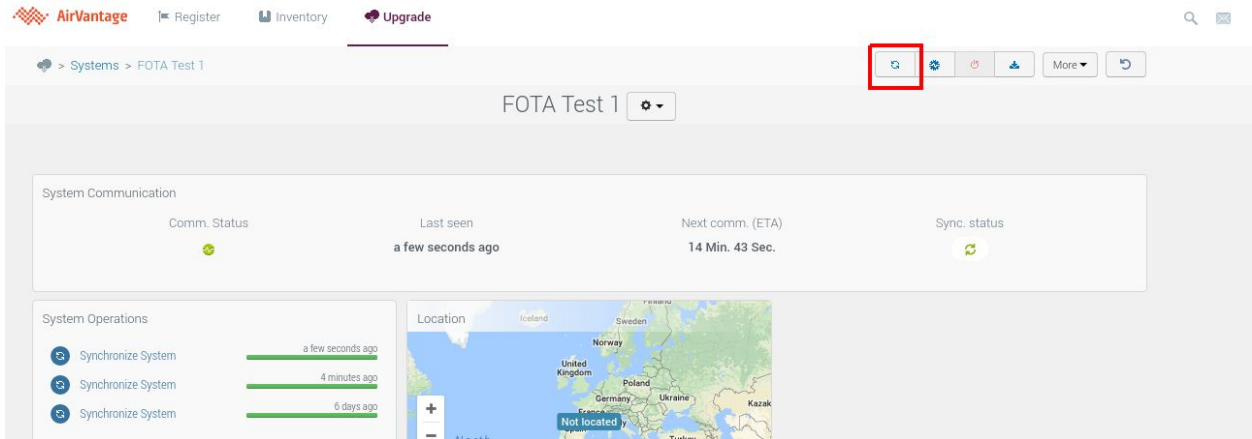
Name	Last Comm. date	IMEI/ESN	Serial Number	MAC Address	Firmware	Labels	Actions
FOTA Test 1	2 minutes ago				HL7588 (VZW) (RHL75x		

Showing 1 to 1 of 1 entries

and verify that the Sync. Status is "Synchronized".



If it is not, you can click the "Synchronize" button at the top and wait for the synchronization to complete:



To test that everything is setup correctly, you can issue:

AT+WDSS=1,1

to manually connect to AirVantage. Once you do that, your dashboard will update and say that it is synchronized.

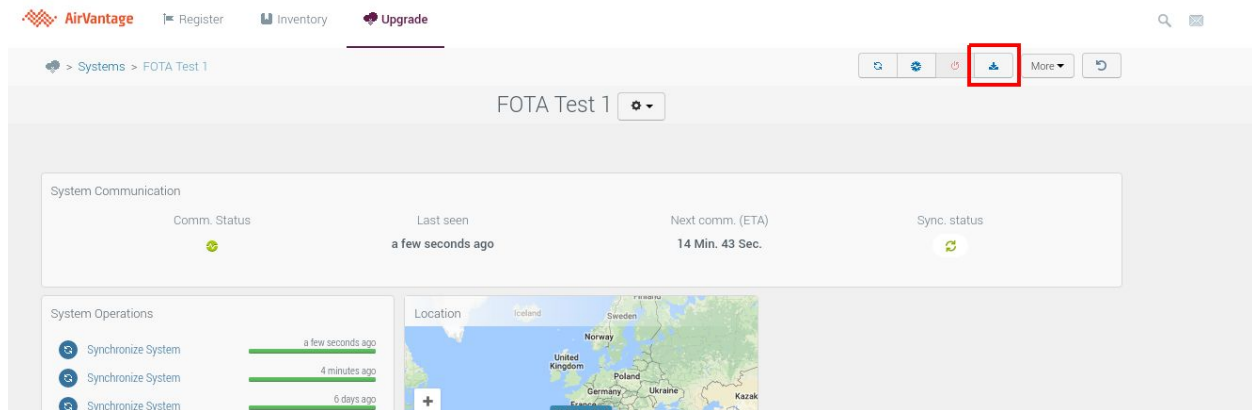
5. Initiate Firmware Update

5.1 Overview

In this section, we will select the firmware we want to use and upgrade it.

5.2 Select Firmware

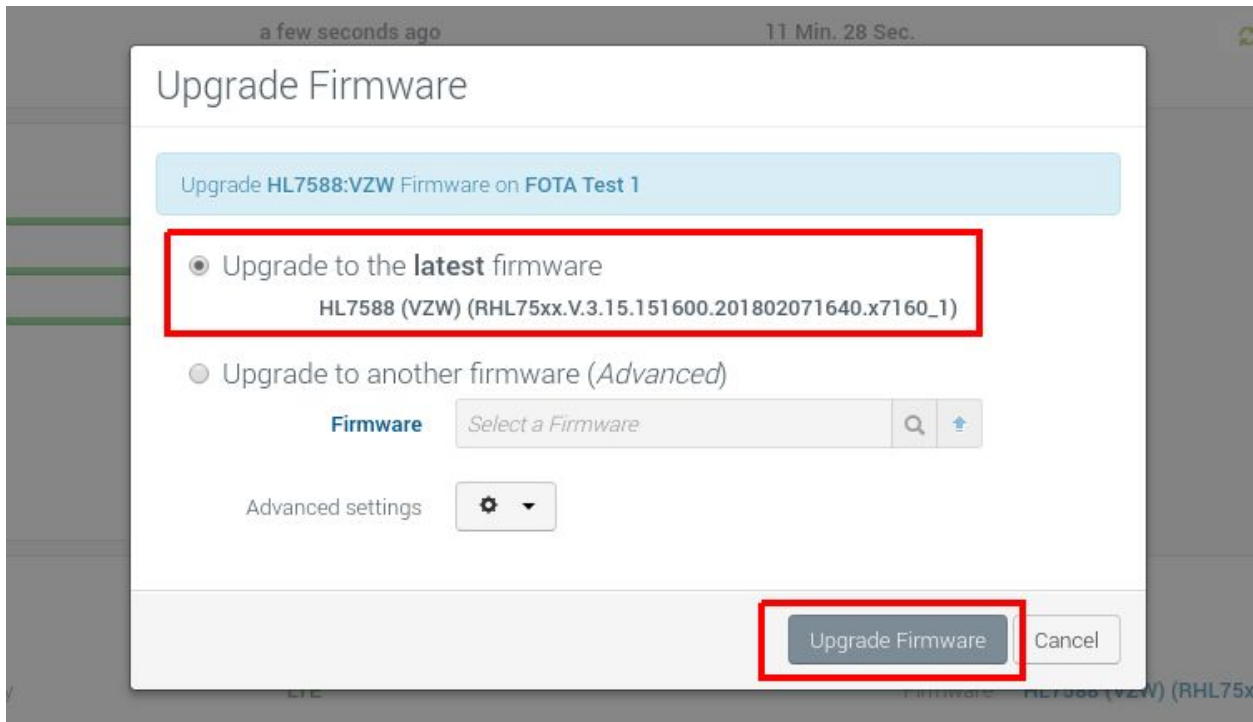
On you device page, click the "Upgrade Firmware" button:



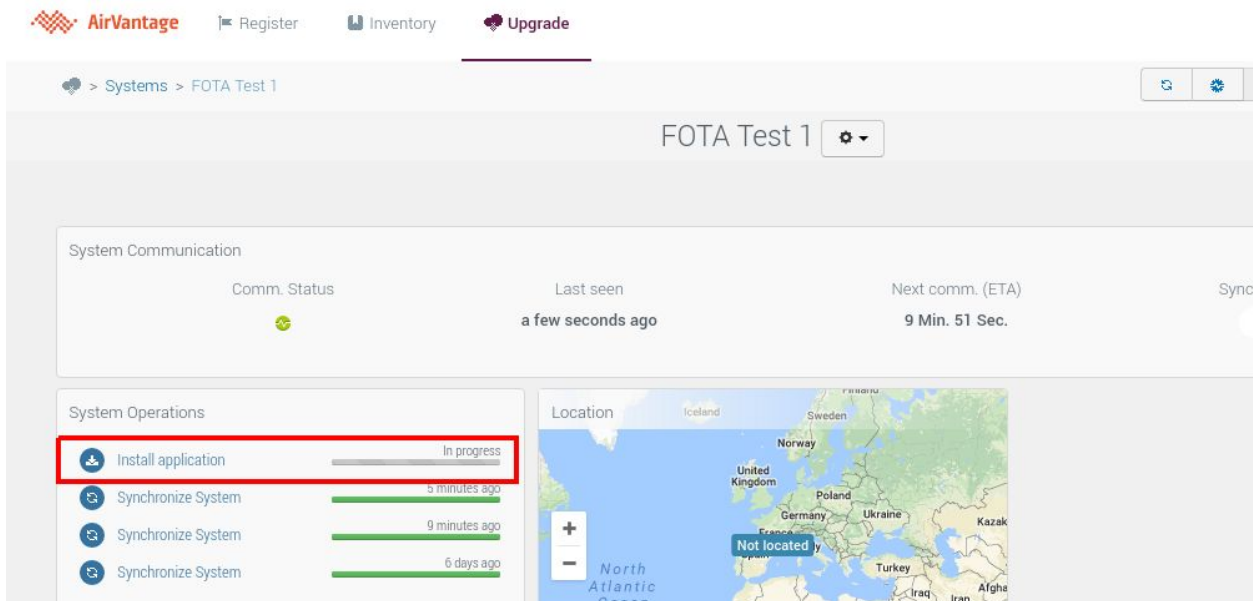
In the window that appears, select the firmware that you'd like to upgrade to. NimbeLink recommends that customers upgrade to V.3.15, which is the latest firmware. Select the "Upgrade to the latest firmware" button, verify that the firmware version is:

RHL75xx.V.3.15.151600.201802071640.x7160_1

and click "Upgrade Firmware":



Under the "System Operations" section, you'll now have a listing for "Install Application" with a progress indicator:



5.3 Firmware Update

Your Skywire will now update at the next check-in time. The firmware will download in the background and restart once the upgrade is complete.

Once complete, your task list will update as "Install application" reports that it is complete. You can refresh your page to see that the reported firmware is updated:

FOTA Test 1

System Communication

Comm. Status	Last seen	Next comm. (ETA)	Sync. status
	a minute ago	13 Min. 19 Sec.	

System Operations

- Install application a minute ago
- Synchronize System 9 minutes ago
- Synchronize System 13 minutes ago
- Synchronize System 6 days ago

(All >)



System Info

Technology	LTE	Firmware	HL7588 (VZW) (RHL75xx.V.3.15.151600.201802071...
Signal information	(RSSI) (Ec/Io)	IMEI/ESN	
Details	RSSI -101.0 RSRP -102.0 Ec/Io - RSRQ -12.5	Serial Number	
Traffic	Bytes sent: 258.85 KB Bytes received: 326.98 KB	System Type	HL7588 (VERIZON)
Current Operator	VERIZON	Subscription	VERIZON
IP Address	FE80:0:0:E551:8942:B20D:F81	Phone number	-

6. Troubleshooting

6.1 Synchronized with Errors

If you are using a different SIM card during a synchronization than when you first checked in, your devices may report that it is "synchronized with errors" instead of "synchronized".