

# Skywire™ Sending GPS Data to Dweet.io with Python on a DE910 or LE910 and Beaglebone Black

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# 1. Introduction

## Applies to These Part Numbers

Orderable Device	Description	Carrier
NL-SWDK	Skywire™ Development Kit	Any
NL-AB-BBBC	Skywire™ BeagleBone Black Cape	Any
NL-SW-EVDO-V	CDMA EVDO, Verizon	Verizon
NL-SW-LTE-TSVG	Verizon LTE	Verizon
NL-SW-LTE-TNAG	LET with HSPA+ Fallback, GPS, GLONASS	Any GSM (AT&T, T-Mobile, etc.)
NL-SW-LTE-TEUG	LTE with HSPA+ Fallback, GPS, GLONASS, EU	Any EU GSM

## Overview

This document describes using a Skywire™ 3G or 4G LTE modem plugged into a BeagleBone Black using the Skywire™ BeagleBone Black Cape. Using PPPd, GPS information is sent to dweet.io using Python.

This example was prepared using Debian Linux on the BeagleBone Black. Specifically, the kernel version is 3.8.13-bone71.

## Prerequisites



This document assumes you have completed the initial setup of your modem. If you have not completed those steps, refer to the Skywire™ Development Kit User Manual and complete the modem setup before proceeding. The modem must already be provisioned or PDP context set before continuing. See the Development Kit User Manual for details on how to accomplish these steps.

This document also assumes that you have successfully completed the steps listed in the PPPd application notes for the respective Skywire™ modem and are able to get an internet connection using PPPd. If not, please consult the PPPd documentation for your specific modem.

If you are using a Beaglebone, or other embedded platform without keyboard and video console, you will need to be connected to that platform via the serial console since later we will take down the Ethernet interface that may be serving as your console connection.

## 2. Installing the Required Libraries

### Check for Updates – Ethernet, wireless, or USB internet only

**Note:** If you want to update your system, make sure you have an internet connection other than PPPd. Updating your BeagleBone Black could exceed the data allowance on your data plan, incurring overage charges.

Make sure your Debian system is fully updated by typing the following command:

```
# apt-get update  
# apt-get upgrade
```

followed by the enter key, and downloading the latest updates.

### Install the Required Python Packages – pySerial and Requests

The example code provided uses two Python packages that must be installed in order for the code to function.

The first package is pySerial, which enables communication from the Python code running on the BeagleBone Black to the Skywire™ modem over a serial connection.

You can read more about pySerial here:

<http://pyserial.sourceforge.net/index.html>

The second package is Requests, which makes sending HTTP commands much easier to do using Python.

You can read more about Requests here:

<http://www.python-requests.org/en/latest/>

There are many ways to install the required Python packages, but we will cover two methods: downloading and extracting a tarball and installing it, or using pip, a package manager that installs packages from the Python Package Index (PyPI). pip functions much like apt, yum, and pacman, making Python packages very easy to install and upgrade.

You can read more about pip here:

<https://pip.pypa.io/en/latest/index.html>

Using pip requires an internet connection to the BeagleBone Black, while installing the libraries manually can be done by transferring the files to the BeagleBone Black using a USB stick or similar method.

**Note: Installing pip and other packages when connected only with PPPd uses up your data allowance for your Skywire™ device. If you opt for this method, it is recommended that you use another internet connection method: wireless, Ethernet, or sharing your internet connection over USB. Otherwise, depending on your data plan, you may incur overage charges installing packages using PPPd.**

### 2.2.1 Manual Installation – No Internet Connection Present on the BeagleBone Black

#### Download the Packages and Save to a USB Drive

Download the pySerial and Requests tarballs, and save them to a USB drive:

pySerial:

<https://pypi.python.org/packages/source/p/pyserial/pyserial-2.7.tar.gz#md5=794506184df83ef2290de0d18803dd11>

Requests:

<https://github.com/kennethreitz/requests/tarball/master>

#### Copy the Packages to your BeagleBone Black and Extract

Copy the tarballs to your user folder on the BeagleBone Black:

```
# cp /media/[usb_drive]/pyserial-2.7.tar.gz ~
# cp
/media/[usb_drive]/kennethreitz-requests-v2.7.0-8
0-gbf436ea.tar.gz ~
# cd ~
# tar -zxvf pyserial-2.7.tar.gz
# tar -zxvf
kennethreitz-requests-v2.7.0-80-gbf436ea.tar.gz
```

**Note: the extracted folders may be a newer version than listed in this guide**

#### Install pySerial

```
# cd ~/pyserial-2.7
# python setup.py install
```

#### Install Requests

```
# cd ~/kennethreitz-requests-bf436ea
```

```
# python setup.py install
```

pySerial and Requests are now installed.

## 2.2.2 Installation Using pip – Internet Connection Present on the BeagleBone Black via Ethernet, Wifi, or USB.

### Download the pip Install Package

```
# wget -v https://bootstrap.pypa.io/get-pip.py
```

### Install pip

```
# python get-pip.py
```

### Update pip to the Latest Version

```
# pip install -U pip
```

### Install pySerial

```
# pip install pyserial
```

### Install Requests

```
# pip install requests
```

pySerial and Requests are now installed.

## Connect Using PPPd

Using the respective PPPd guide for your modem, connect to the internet.

## Send GPS data to Dweet.io

Run the script:

```
# python gps_on_bbb.py
```

This will send GPS information to the following URL:

[https://dweet.io/get/latest/dweet/for/your\\_device\\_id](https://dweet.io/get/latest/dweet/for/your_device_id)

where `your_device_id` is your DE910's MEID or LE910's IMEI.

For example, if your DE910's MEID is A1000012AB3CDE, your URL will be:

<https://dweet.io/get/latest/dweet/for/A1000012AB3CDE>

Your MEID (3G) or IMEI (4G LTE)—called `device_id` in the script—will be populated automatically by the code; there is no need to manually type it in.

## Next Steps

Once you are able to send GPS information to dweet.io, you can send information using Requests to a website of your choice. Consult the Requests documentation for examples to send and receive data.