

PMT User Manual

Version 1.0

Spring 2020

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PMT Web Hosting-side

Overview

To allow PMT to send the collected gps data through possible **Free Open Hotspots**, we need to set up a Free Hosting Account and then add the provided files (**PMT_Web_Files.zip**). The procedures contained in this document are needed to successfully set up the PMT.

What do I need?

1. [PMT Web Files.zip](#)
2. Free Hosting Account (Step-by-step below)
3. PMT Device

Procedure

- a. Download [PMT Web Files.zip](#)
- b. Free Hosting Account

Any hosting provider that supports PHP can be used.

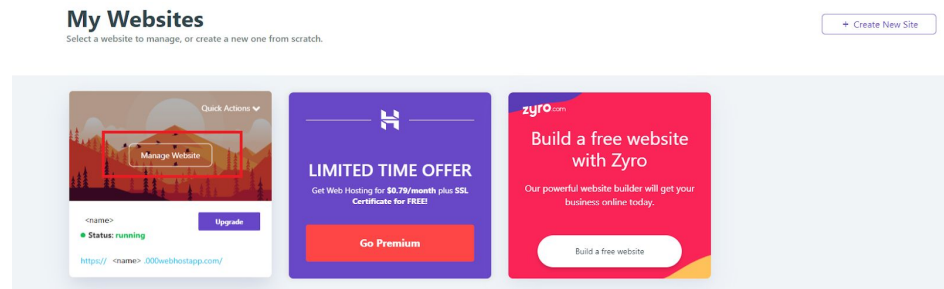
The following Free Hosting Providers are recommended:

1. 000webhost.com (Free SSL Certificate)
 - a. Sign up and verify email address
 - b. Create a new website (top-right corner)

+ Create New Site

- c. Select and set a **Website Name** or **ALIAS** (needed later for PMT Device setup). In this example `<name>.000webhostapp.com` [**HOST**]

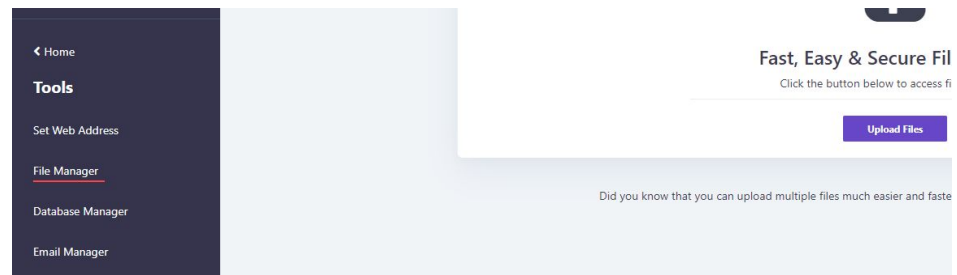
- d. **Login** and go to **My Websites**. Select **Manage Website** under your previously named website.



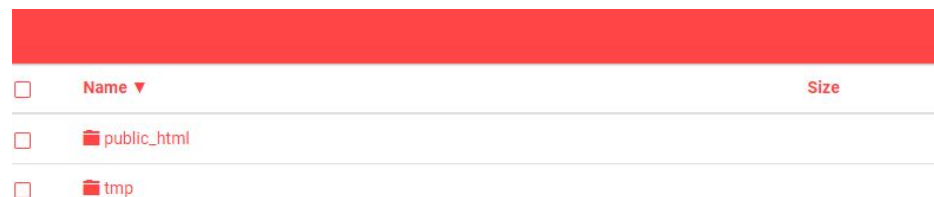
- e. Select **Tools**, under the Left-side Navigation Bar.



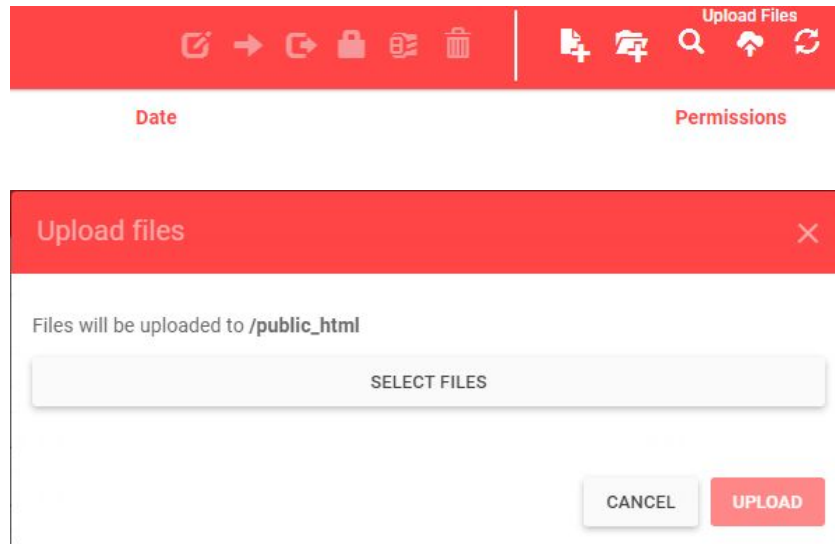
- f. Select **File Manager** and click **Upload Files**



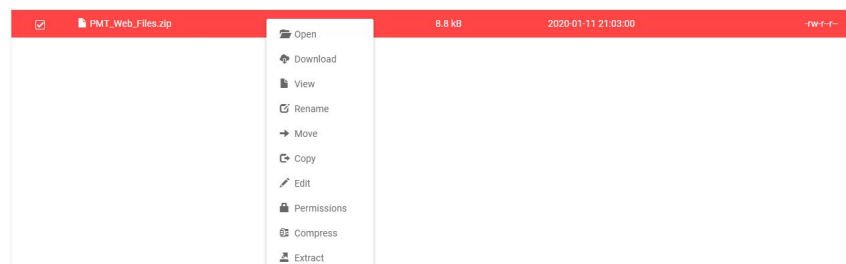
- g. Open or Double-click **public_html** folder



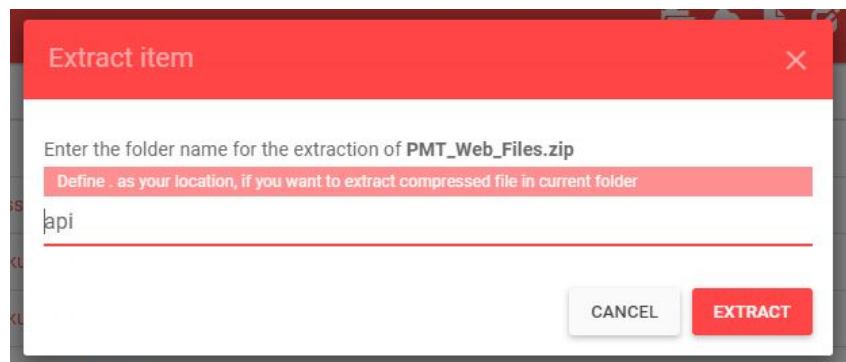
- h. Click **Upload Files** and **Upload** [PMT_Web_Files.zip](#)



- i. **Right-click** the .zip file and **extract**



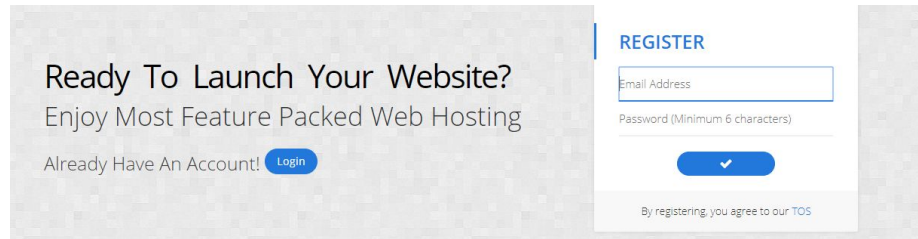
- j. **Rename** to **api** and confirm **Extraction**



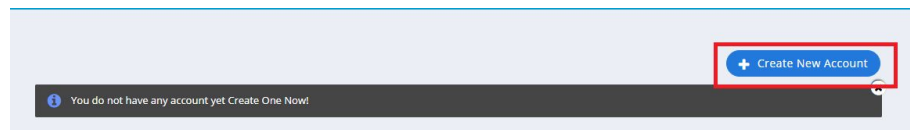
IMPORTANT: extracted folder has to be named **api**

k. Sign out

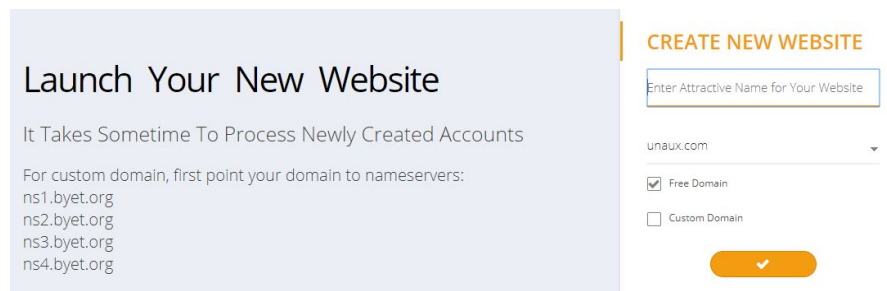
2. infinityfree.net (No Free SSL Certificate) [Same procedure as profreehost.com]
3. profreehost.com (No Free SSL Certificate)
 - a. Sign up and verify email address to activate account



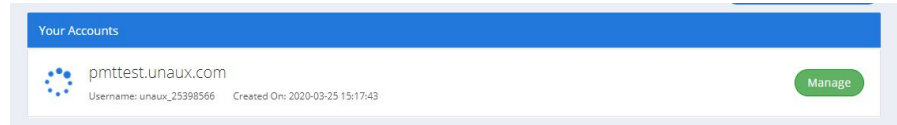
- b. Create a new website (top-right corner)



- c. Select and set a **Website Name** or **ALIAS** (needed later for PMT Device setup). In this example our **Name**=pmttest. Therefore, **pmttest.unaux.com** is the [**HOST**].

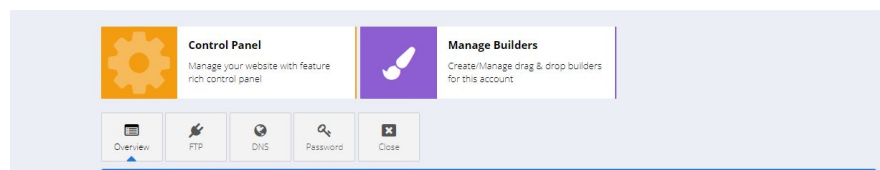


- d. **Login** and go to your **Account**. Select **Manage** under your previously named website.



IMPORTANT: Might take a few minutes for its creation

- e. Select **Control Panel**, under the Manage Page.



IMPORTANT: Might take a few minutes for its creation

- f. OPTIONAL: If a temporary page shows up, "Approve" and continue.
- g. In the Control Panel, under the FILES container, select **Online File Manager**.



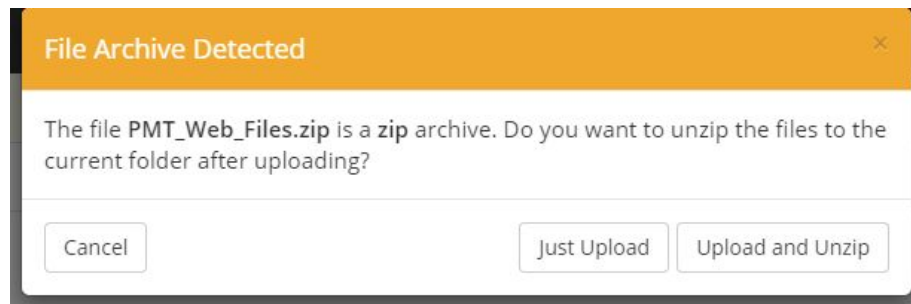
- h. Open or Double-click **htdocs** folder



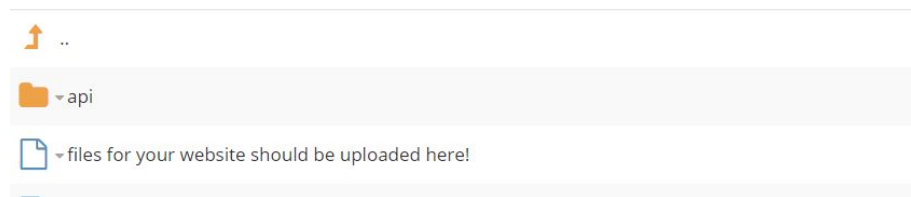
- i. Click the **Upload Files icon** on the **bottom-left** and **Upload Zip...**



- j. And Browse to the location where [PMT_Web_Files.zip](#) is contained and select it. Click **Upload and Unzip**



- k. Verify that the unzip file is called **api**



IMPORTANT: extracted folder has to be named **api**

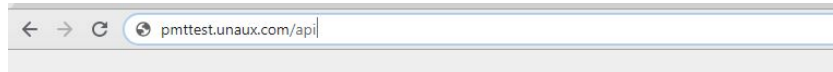
- l. **Sign out**

Important Information: The new hosting website might take up to 72 hours to be available for use.

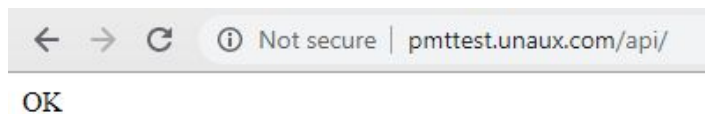
4. Test Website Status

Through any browser of your choice, go to the created website using the URL input field. Using the previous Free Hosting Name created above (**pmttest.unaux.com**) as an example.

- a. Type the **HOST** name followed by **/api**



- b. You should see a white page with the text **"OK"**. If so, PMT Web Files are set up correctly.



Error Hints: extracted folder has to be named **api** or the new hosting website might not be available yet (it can take up to 72 hours to be available for use).

5. PMT Setup (Configuration file)

- a. Plug in the SD card you plan to use for PMT in your computer and browse to it.
- b. Open the file **pmt.conf** and **Edit**. If pmt.conf is not there, see the PMT Configuration File section.

Add the previously created Website name [**HOST**] to the **'host'** parameter.

You should see the following parameters (from example above):

```
{  
  'host': 'http://pmttest.unaux.com',  
  'gps_interval': 5,  
}
```

Additional Information: **HTTP** if NO SSL. **HTTPS** if SSL.

6. Insert the SD card back into PMT and you are ready to go!!!

PMT Configuration File

Overview

To allow PMT to operate and send the collected gps data to the Web Hosting site ([Setup](#)), a configuration file is needed in the SD card.

What do I need?

1. SD Card
2. File editor

Procedure

- a. **Format** the SD Card to Fat32 filesystem.

IMPORTANT: SD card cannot be bigger than 16GB

- b. Browse to the SD Card and move the **pmt.conf** file into it or create a new one.
- c. Open it up with a File Editor of your choice and set it up according to operation behavior.

The configuration file will look like the following:

```
{
  'host': 'http://pmttest.unaux.com',
  'gps_interval': 10,
}
```

PARAMETERS	Description
host	Corresponds to the URL to the Web Hosting from PMT Web Hosting-side
gps_interval	Corresponds to GPS data rate. Period in seconds.

Manufacturing

Overview

To provide instructions for assembling PMT hardware and components.

What do I need?

1. Full parts list as per the BOM
2. Phillips screwdriver
3. Soldering equipment

Procedure

- a. Printed Circuit Board (PCB) Soldering
 - i. Solder male header pins into all the following breakout boards: EspPicoD4, MicroSD module, NEO-M8N GPS module, Triple Axis Accelerometer. **DO NOT solder male header pins into the Accelerometer holes listed as "A1, A2, A3"** as these will be unused and would make the Accelerometer module unable to be placed on the PCB. **Make sure to solder the male header pins into the GPS module UPSIDE DOWN** since this is how the GPS module will be placed on the PCB.
 - ii. Most components have designated locations as etched in the PCB for easy reference. Notes are the board listing all 3.3V solder pads listed on the PCB for reference when placing components to solder.
 - iii. Place the Esp32PicoD4 with the micro USB port facing off the board.
 - iv. Place the MicroSD Card module with the SD card facing off the board.
 - v. Place the GPS module upside down. The pinout is listed on the PCB for reference (3.3V, RX, TX, GND).
 1. Solder the GPS antenna onto the top of the GPS module. There are 4 large square solder footprints where the antenna is meant to be placed and soldered.
 - vi. Place the 3.3V Voltage Regulator with the heat sink laying against the PCB. The correct orientation of the Voltage Regulator is listed on the PCB as well as the pinout (Vin, GND, 3.3V Out).
 - vii. Solder the 2.2uF and 0.47uF ceramic disk capacitors into the holes behind the Voltage Regulator. The polarity does not matter when placing these capacitors.

- viii. Solder the RGB LEDs with the longest leg (GND) in the 2nd hole for each RGB LED.
- ix. Solder the 100 ohm resistors into the appropriate holes next to the RGB LEDs. The polarity does not matter when placing these resistors.
- x. Solder the Screw Terminal with the front (input side) facing off the board.
- xi. Solder the LIPO Battery connector with the locking mechanism facing towards the inside of the board.
- b. Mount the PCB with M3x10mm Female standoffs with M3x6mm Screws into each corner of the board. Use a small screwdriver for tightening.
- c. Connect the LIPO battery to the PCB connector titled "LIPO_BAT". The LIPO battery can then be stored underneath the PCB.
- d. An external 3.7-12V power supply can be attached to the PCB by inserting the positive and negative wires of the power supply into the screw terminals on the PCB. Polarity for the screw terminals is written on the PCB as "+" for Positive Power and "-" for Ground.
- e. Once the desired power supplies have been attached to the board, use the slider switch on the PCB to select which power source you would like to use to power the system. Sliding the switch towards the LIPO battery connector will use the LIPO battery. Likewise, sliding the switch towards the screw terminals will use the screw terminal power.
- f. Insert an SD card into the SD card module on the board. The SD card must be no greater than 32 GB.
- g. The PCB can then be mounted in the enclosure box and screwed shut.

Materials & Resources

Reading Rainbow Tip: When choosing supplementary materials and resources for your lesson plan (books, videos, etc.), try to put yourself in the shoes of your students. Find resources that ENHANCE your lesson and make your instruction an inviting learning experience for your class!

- a. Instructional Materials:
- b. Resources:

Assessment

Lorem ipsum dolor sit amet, interdum fermentum integer, ac adipiscing neque suscipit. Et molestie sit amet tincidunt sed in, dictum viverra pharetra convallis pellentesque, a luctus nisi aliquet amet neque, justo egestas leo, ut magna.

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