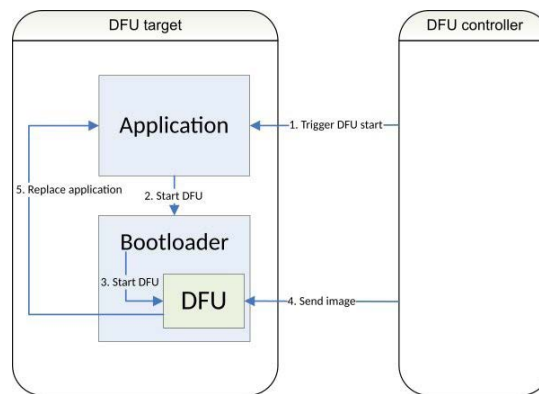


SIMBLEE OTA REFERENCE V1.0

Overview

If you are in the need of programming your Simblee through OTA (Over The Air) because of convenience or inaccessible programming pins, you can use this guide as a reference for implementing OTA to your application. We will go through the use of programming a Simblee device via OTA with an iOS device app. Two devices are required to perform a (DFU) Device Firmware Update via OTA: the DFU target and the DFU controller. We will go over each item in the next section.



What You Will Need

SIMBLEE HARDWARE

In our example, the Simblee device RFD77801 will be our DFU target, as it is the device we will want to update.



MOBILE DEVICE

For this example, we will be using an iOS device, specifically an iPhone as our DFU controller.



SOFTWARE

1. Arduino IDE 1.6.5 or later
2. Xcode 7 or later

Simblee™ OTA Reference

Setting up Simblee Hardware Sketch

Let's start with a simple sketch of turning on an LED the color Green, We will connect an RFD22122 RGB LED Shield to our Simblee device:

```
int led_green = 3;

void setup() {
  pinMode(led_green, OUTPUT);
}

void loop() {
  digitalWrite(led_green, HIGH);
}
```

Uploading the above sketch to your Simblee device will turn on the Green LED and will stay on. Let's now add the ability to begin OTA through a button press:

```
#include "OTA_Bootloader.h"

int led_green = 3;
int buttonA = 5;

void setup() {
  pinMode(led_green, OUTPUT);
  pinMode(buttonA, INPUT);
}

void loop() {
  digitalWrite(led_green, HIGH);

  if(digitalRead(buttonA) == 1){
    ota_bootloader_start(); //begins OTA enabled state
  }
}
```

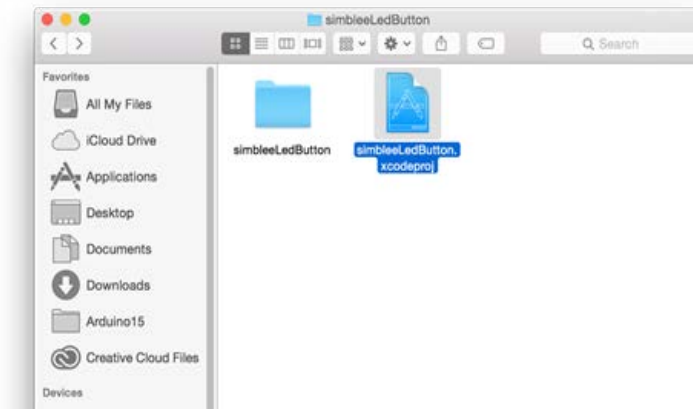
As you can see, we included the following header file "OTA Bootloader.h". When buttonA is pressed, it executes the function "ota_bootloader_start()". This in turn puts the Simblee device into an OTA enabled state and will begin advertising as "dfuTarg". In this state, it will wait until a DFU Controller has connected to it. If 15 seconds has expired before a DFU Controller has connected to the Simblee device, the Simblee device will exit out of the OTA enabled mode and will begin normal operation.

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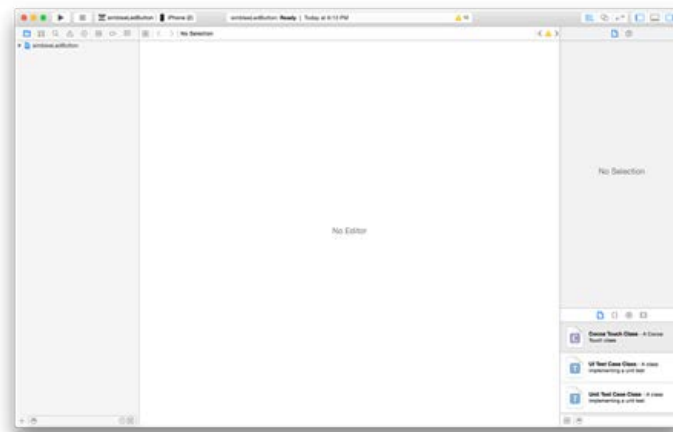
Setting Up the Mobile Device for OTA

We provide a sample iOS application that is already enabled for OTA use in the Simblee library. If you navigate to the Simblee Library, the reference app will be found within the iPhone Apps folder. For Mac OS X, use “Go To…” in Finder and enter the following:

```
~/Library/Arduino15/packages/Simblee/hardware/Simblee/1.0.1/iPhone Apps/simbleeLedButton
```

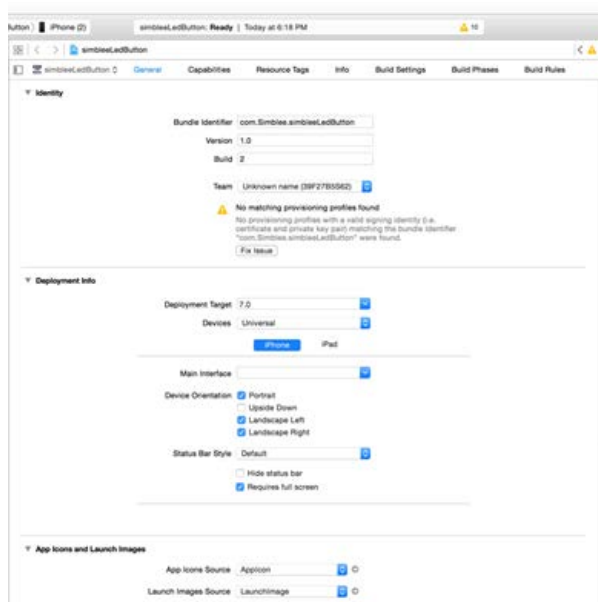


In this directory, you will find the “simbleeLedButton.xcodeproj”. Using Xcode 7, open up the .xcodeproj file

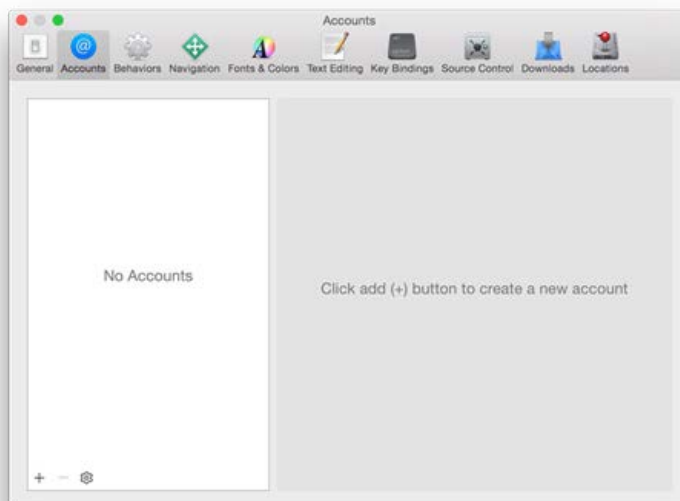


Simblee™ OTA Reference

On the left hand list, click on “simbleeLEDButton”, and the following page will show up:

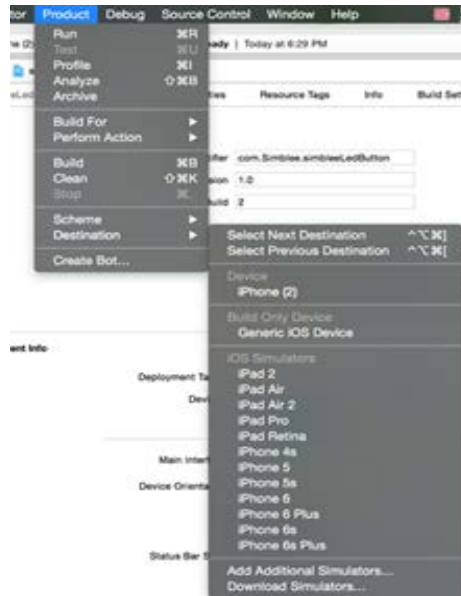


If you have not already, let's setup the Apple ID that will be associated to your iOS device to Xcode. Click on Xcode in the toolbar, and click on Preferences. Click on the “+” on the bottom left and select “Add AppleID” to enter an account. Be sure to have the same account being used for your iOS device.



Simblee™ OTA Reference

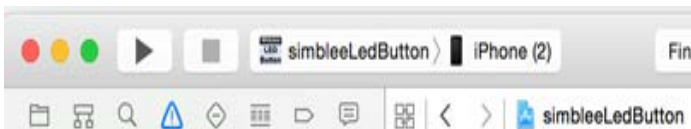
Once the account is added, you can close the Preferences window. With your iOS device connected via USB, click on the “Product” in the toolbar menu, highlight “Destination”, and select your device.



Once a device is selected, we will need to name the “Bundle Identifier”. For this example we named it “com.example.simbleeLEDButton “. Also select your account under “Team”

Bundle Identifier

You will be able to load the app onto your phone by pressing the play button:



You should see the default app icon show up on your mobile device:



Before opening the app, you will need to make sure your permissions are set on the iOS device. Tap on your Settings icon, then General. Scroll down and tap on “Profile”. Tap on our account name and then tap the Trust option to enable it. Once verified, you can now use the app we just loaded.

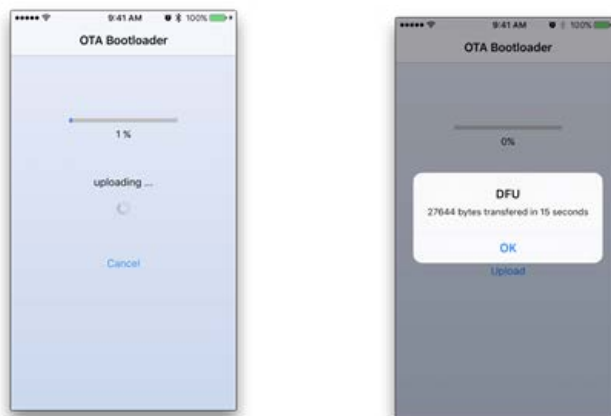
Uploading A New Sketch Via OTA

Now that we have the Simblee device and the iOS device set up, we can now upload the new sketch onto the Simblee device via OTA. The sample Simblee LED Button App already has a sample .hex file that we can load onto the Simblee device. Simply replace that .hex file if you want to change the sketch you want to upload.

With the Simblee device powered, and the Simblee mobile app running, let's press buttonA on our Simblee device to start OTA. When pressed, the iOS app will show the following device advertising:

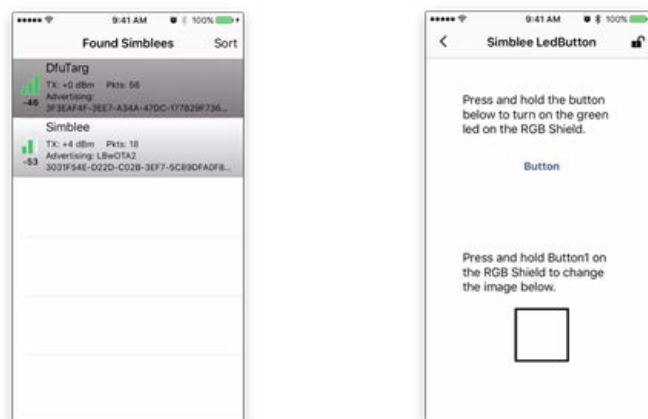


Select "Dfu Targ" by tapping onto the advertisement. It will begin uploading the new sketch.



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Once the upload is complete, the new sketch will run on the Simblee hardware. The example sketch that was loaded is the Simblee LedButton app. Selecting the advertising Simblee on the found Simblees screen will bring up the Simblee LedButton interface. You have successfully uploaded a sketch via OTA!



For more information on programming the Simblee modules, please see:

[Simblee Quick Start Guide](#)

[Simblee User Guide](#)

[Getting Started with SimbleeCOM](#)

[Getting Started with Simblee for Mobile](#)

[Simblee Functions Reference](#)

[Simblee Data Sheet](#)