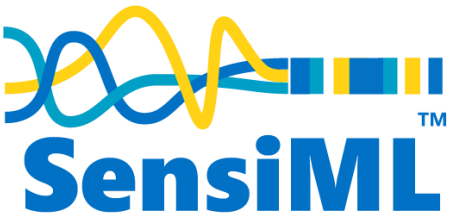


Flashing Firmware to Nordic Thingy

User Guide – Version 1.01

Contents

1.0 Overview

The goal of this guide is to provide a step by step guide on how to flash your *Nordic Thingy:52 IoT Sensor Kit* with a **Knowledge Pack**

Prerequisites

- *Nordic Thingy:52 IoT Sensor Kit*
- *Nordic NRF52 Development Kit*
- *10-pin JTAG/SWD cable* for connecting to the Development Kit

2.0 Preparing Your Device for the First Time

Before you can flash a Knowledge Pack you need to remove the bootloader.

Windows

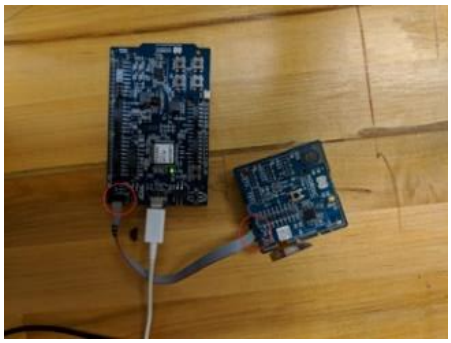
- Install nRFgo Studio
  Available here: https://www.nordicsemi.com/eng/Products/2.4GHz-RF/nRFgo-Studio

Linux

- NRF-Command-Line-Utils
- J-Link Software and Documentation Pack

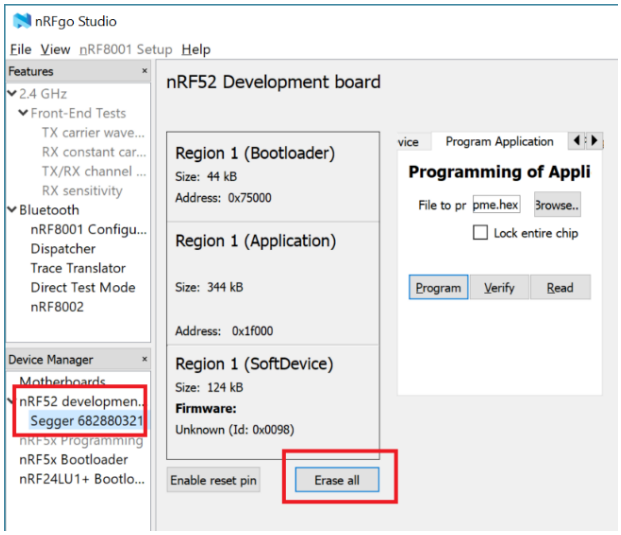
Attach the debug board

1. Attach the debug board using the JTAG/SWD cable to debug out on the NRF52 DK and into the JTAG/SWD port on the thingy52.

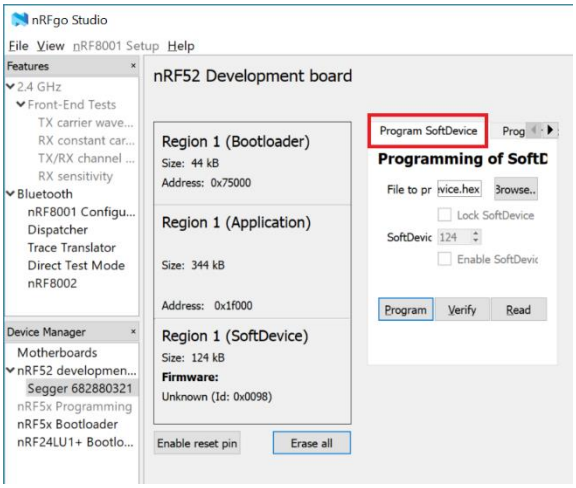


Method 1: Prepare the device for flashing using nRFgo Studio

1. Select the **nrf52 bootloader**, and click **erase all**



2. Open the **Program SoftDevice** tab and select the **s132_nrf52_4.0.2_softdevice.hex** file provided with the SensiML toolkit



3. Click **Program**

Method 2: Prepare the device for flashing using the Command Prompt

To prepare the device without using nRFgo Studio you can use the nrf command line utilities. *(The command line utilities automatically get installed with the nRFgo Studio install, but you can install them separately)*

1. Open the command prompt
2. **Flash the SoftDevice** with the following command

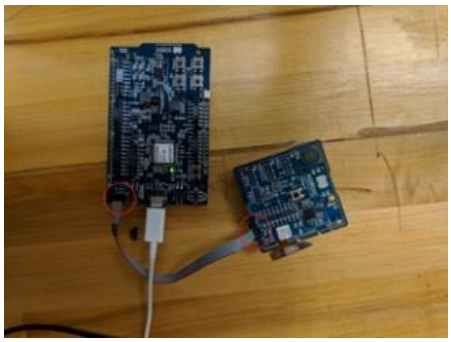
   nrfjprog --program <path to **s132_nrf52_4.0.2_softdevice.hex**> -f nrf52 –chiperase

3.0 Flashing a Knowledge Pack J-Link

Important: After you flash a device with a **Knowledge Pack** it will disable the option for collecting raw sensor data from that device in the SensiML Data Capture Lab. We include steps to reenable data collection in Reenabling Data Collection

Attach the debug board

1. Attach the debug board using the JTAG/SWD cable to debug out on the NRF52 DK and into the JTAG/SWD port on the thingy52.

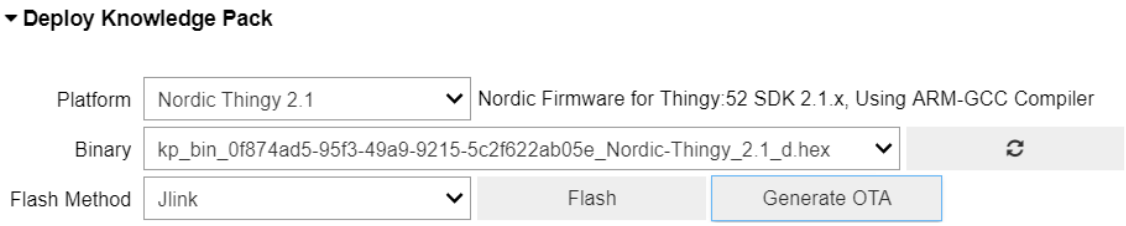


Method 1: Flash a Knowledge Pack using Analytics Studio

1. Import the **Flash widget** using the following command (If you are using the **Dashboard** widget you can skip this step, the flash widget gets loaded automatically in the **Dashboard**):

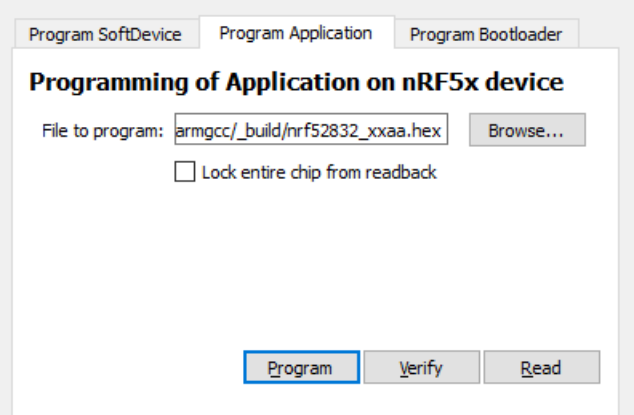
```
FlashWidget(dsk).create_widget()
```

2. Select the Platform **Nordic Thingy 2.1**
3. Select the **Knowledge Pack binary file** you want to flash
4. Click **Flash**



Method 2: Flash a Knowledge Pack using nRFgo Studio

1. Open nRFgo Studio
2. Flash the knowledge pack by going to the **Program Application** tab and selecting your **Knowledge Pack** binary file



3. Click **Program**
4. Your device is now flashed with a SensiML **Knowledge Pack**

Method 3: Flash a Knowledge Pack using the Command Prompt

To quickly flash devices without using nRFgo Studio you can use the nrf command line utilities. *(The command line utilities automatically get installed with the nRFgo Studio install, but you can install them separately)*

1. Open the command prompt
2. Flash the device with a new **Knowledge Pack** using the following command:

   nrfjprog --program <path to **Knowledge Pack**> -f nrf52 --sectorerase

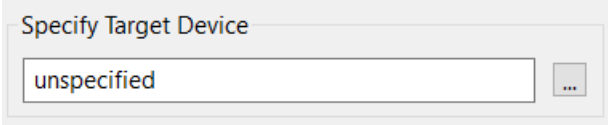
This will allow for rapid flashing of the device when iterating through models.

4.0 Debugging a Knowledge Pack

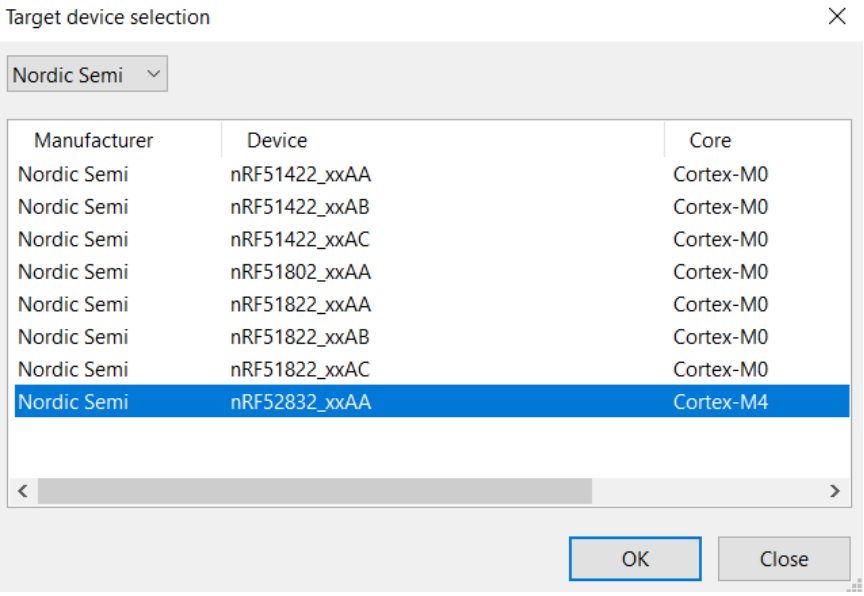
When you build a Knowledge Pack you have the option of turning on a **Debug** flag that gives you extra debugging information about the event classifications. Make sure you select Debug to **True** and have **Serial** output selected in the **Generate Knowledge Pack** widget

Follow the steps below to display the debug messages.

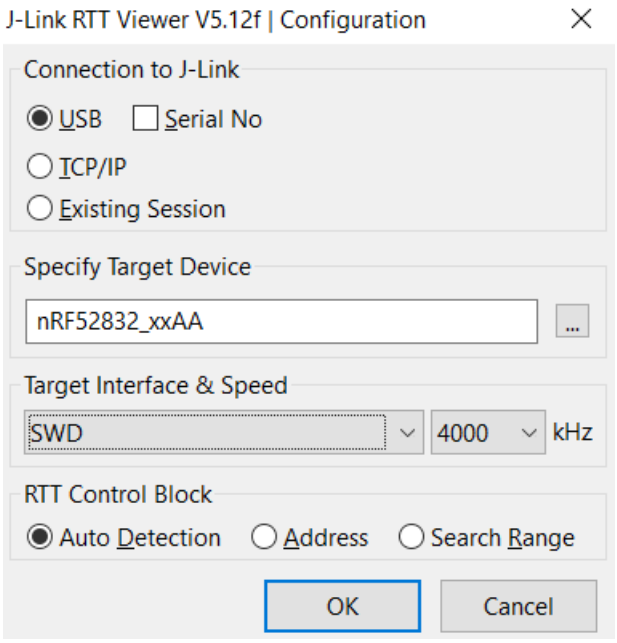
1. Open the **J-LINK RTT Viewer** application *(This gets installed with the nRFgo Studio install)*
2. Select your **target device**



3. Select **Nordic Semi** from the dropdown and then select **nRF52832_xxAA**



4. Leave everything else as the default values and click **OK**



5. The RTT viewer will open the output window and you should now see the debug output from your **Knowledge Pack**

5.0 Reenabling Data Collection

When you flash a device with a Knowledge Pack, it removes the ability to capture raw sensor data from a device.

We provide a copy of the base thingy application that has been signed with our own debugging key so that you can easily reset your device for capturing raw sensor data without needing to re-configure your device every time you need to switch to collecting raw sensor data.

J-Link

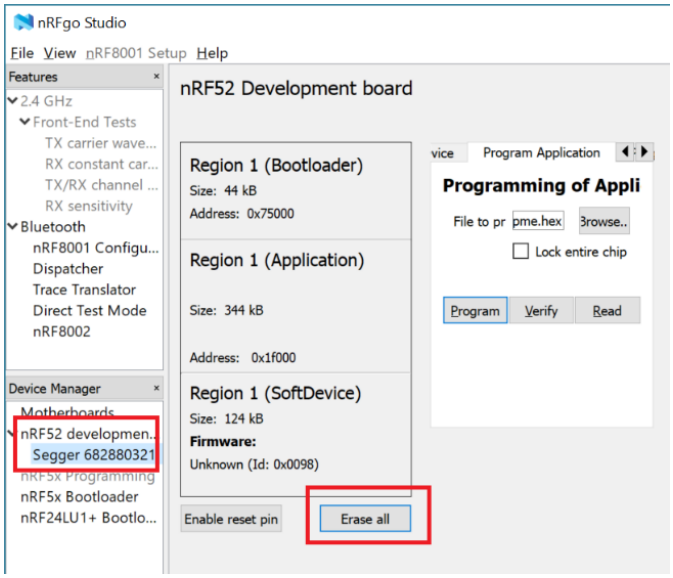
1. Find the zip file **thingy_data_collection.hex** included with the SensiML Toolkit
2. Follow the J-Link guide to flashing, **except** use the **thingy_data_collection.hex** file instead of a **Knowledge Pack hex file**

7.0 Factory Reset

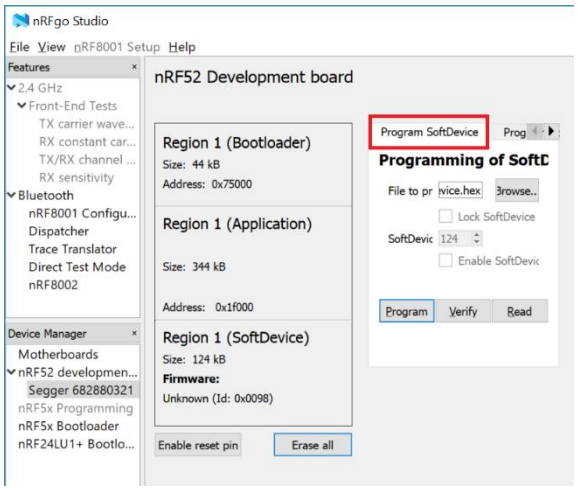
Reenabling data collection just resets the device to a base version of the firmware that we built without a Knowledge Pack. You can instead perform a **complete factory reset** by following the steps below.

Reset via nRFgo Studio

1. Download the pre-compiled HEX file from https://www.nordicsemi.com/eng/Products/Nordic-Thingy-52
2. Select the **nrf52 bootloader**, and click **erase all**



3. Open the **Program SoftDevice** tab and select the **HEX** file



4. Click **Program**

Reset via Command Prompt

1. Download the pre-compiled HEX file from https://www.nordicsemi.com/eng/Products/Nordic-Thingy-52
2. Open the command prompt
3. **Flash the SoftDevice** with the following command

   nrfjprog --program <path to **HEX file**> -f nrf52 –chiperase