Making ST-Link V2.1 from Chinese ST-Link V2

Hello, Habr!

In this article I will tell you how to modify ST-Link V2 to ST-Link V2.1.

This may not be news to some, but I couldn't find much information on this topic on the internet.

If anyone is interested, please see cat.

Preface

It just so happened that I was tired of the extra wires.

After thinking a little, I remembered that on the Nucleo and Discovery boards, ST-Link combines SWD and VCP (Virtual Com Port).

The first thing that came to mind was to buy the cheapest of these boards, try to dump the firmware bypassing the protection and upload it to a programmer from China, or build a new board.
However, they suggested a link to GitHub with the bootloader already pulled out, and in the end it turned out what it turned out to be.

Let's get started

The modification can only be made on the Windows version of the software; the cross-platform version of the software refuses to update the device!

There are several modification options, and some of them cannot be done if the chip is not suitable (there is not enough memory).

For example, the modification STM32+MSD+VCP can only be done if the chip is STM32F1xxCBxx, but it has an analogue STM32+Audio, which will give STM32+VCP (in principle, what we need).

You will need:

- Soldering iron;
— Multimeter with continuity;
— PC with Windows OS (maybe it will work through Wine, haven't tried it);
— Archive with the necessary software and bootloader (PASS: QWK2tn+fM.EdjX6z).
— Chinese clone ST-Link V2;
— USB-UART adapter or second ST-Link.

Let's open...

The boards and chips are different in everyone

Firmware

There are two ways - USB-UART (a little more complicated) or the second ST-Link.
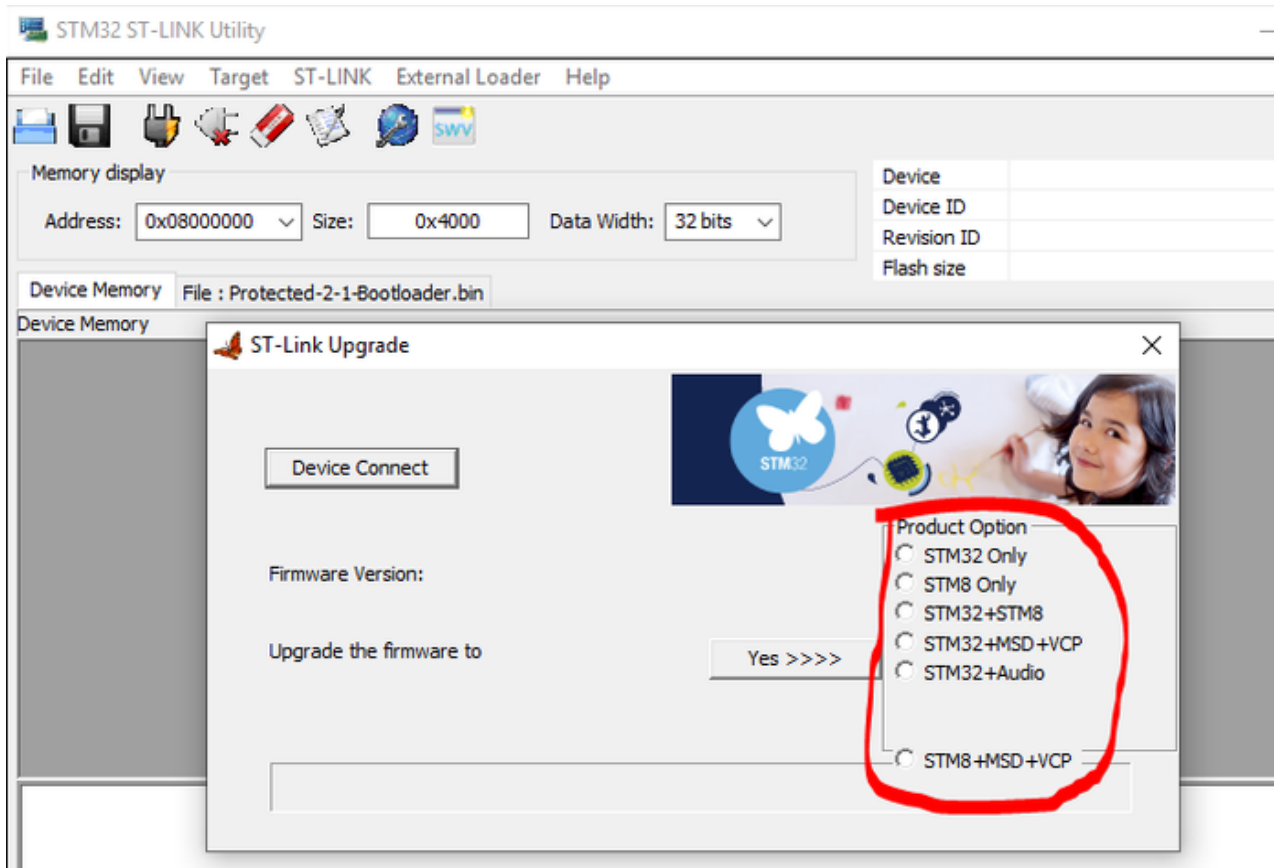
USB-UART

ST-Link

Upgrade to ST-Link V2.1

After the firmware, we connect the firmware ST-Link (already almost V2.1) to the PC.
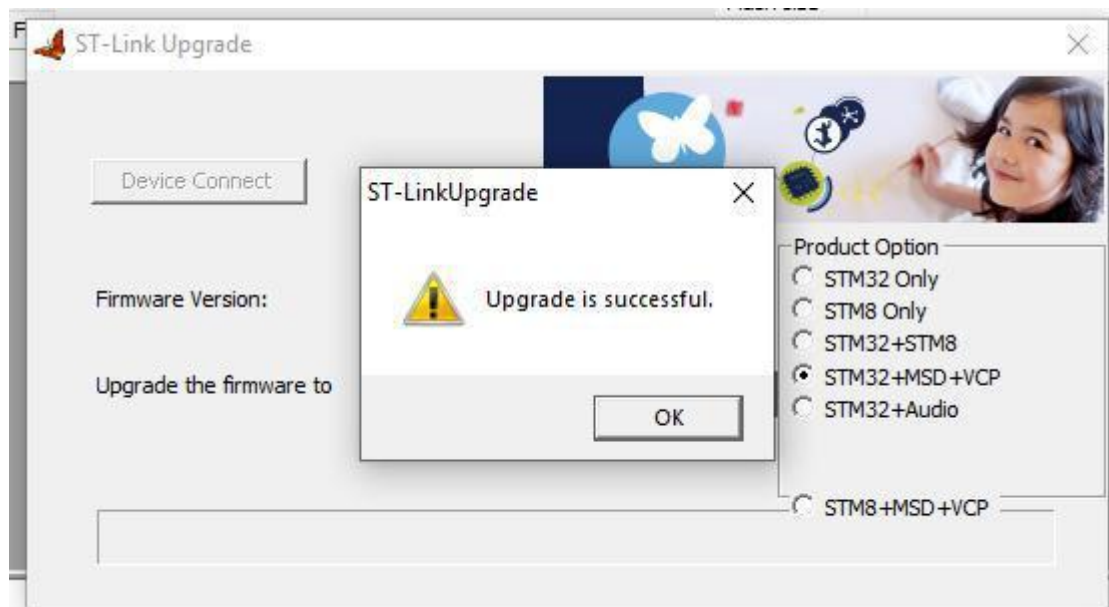
In the **STM32 ST-LINK Utility V4.3** program , click **ST-LINK > Firmware update** .

Click **Device Connect** - we get a list of possible modifications:

Select the modification you need, in my case **STM32+MSD+VCP** , click *Yes >>>>* .

We are waiting for the update to complete...

Profit!

Final part

Since SWIM and RST do not work after such modification, I cut them off.

I also cut off the duplicate 5V and 3.3V.

This leaves 4 free pins.

I solder them with wires to the chip:

PA10 -> SWO
PB0 -> NRST
PA3 -> RX
PA2 -> TX

I output everything to the main connector, to the remaining free pins.

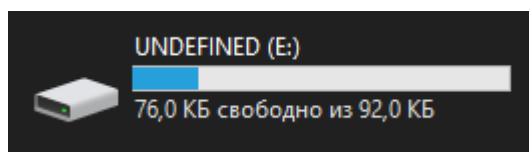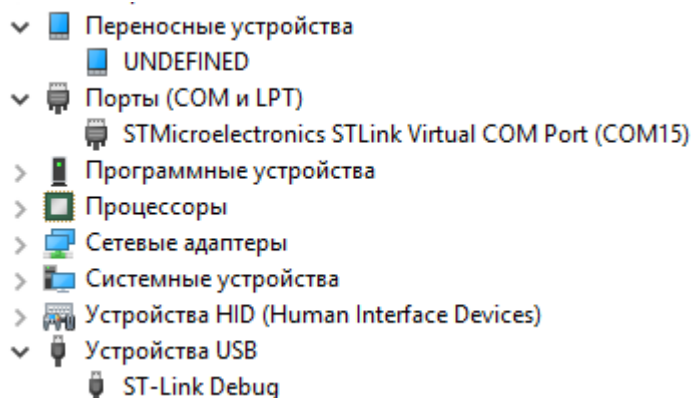The result was the following pinout:

NRST	1	2	SWDIO
GND	3	4	GND
SWO	5	6	SWCLK
5.0V	7	8	3.3V
RX	9	10	TX

My device after modification

Don't forget to wash the board after soldering!

As a result, in a PC the device is defined as follows:

I have no idea what the volume of the virtual flash drive is (in this case, the F103C8 was connected to ST-Link V2.1).

If you upload a firmware file onto it, the programmer will flash the chip without programs.

Checking VCP:


```
COM5 - PuTTY
Привет, 123, тест, ST-LINK V2.1
COM15 - PuTTY
Hello Habr!
```
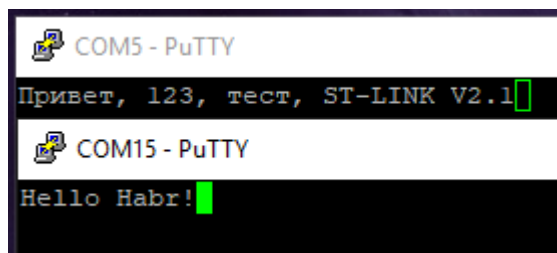
Thanks for your attention!
When copying, please leave a link to the original source.

If you have any questions, ask in the comments, I will help in any way I can.