From former student in 95-733 **Ryosuke Nakashima**

I found a way to avoid the crash and make BLE function with Node-RED on Windows 10.

<Cause>

First, the crash of Node-RED is due to the following error raised by node-bluetooth-hci-socket.

Error: No compatible USB Bluetooth 4.0 device found!

This error means a Bluetooth USB adapter of your PC is not supported by node-bluetooth-hci-socket.

In fact, node-bluetooth-hci-socket supports limited hardware as listed in the page below.

https://github.com/noble/node-bluetooth-hci-socket#compatible-bluetooth-40-usb-adapters

It requires Bluetooth 4.0 USB adapter; however, nowadays PCs generally have newer versions of Bluetooth USB adapters.

For example, my PC purchased 1.5 years ago has Bluetooth 5.2 USB adapter.

<Solution>

As the above page also mentions, using WinUSB driver can be a workaround.

You can use a tool called Zadig which enables to replace your Bluetooth USB adapter to WinUSB driver.

The following video explains how to install Zadig and replace your driver.

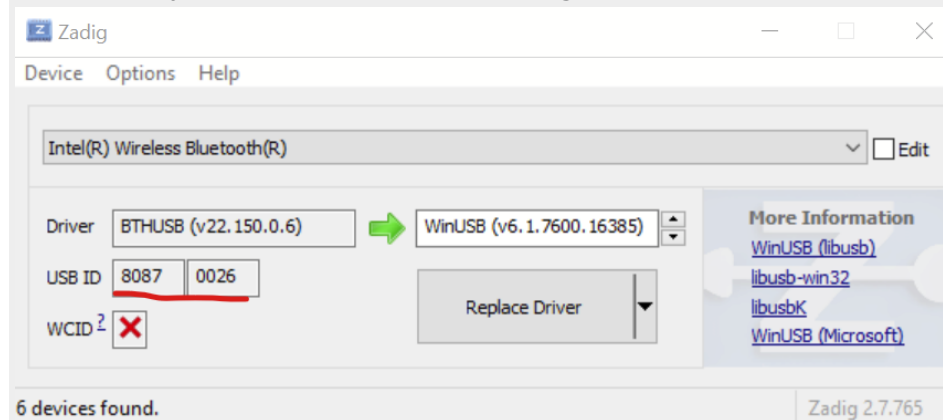https://www.youtube.com/watch?v=mL9B8wuEdms&t=106s

(Warning: Your default Bluetooth driver will be disabled until you rollback it by Device Manager -> Action -> Update driver)
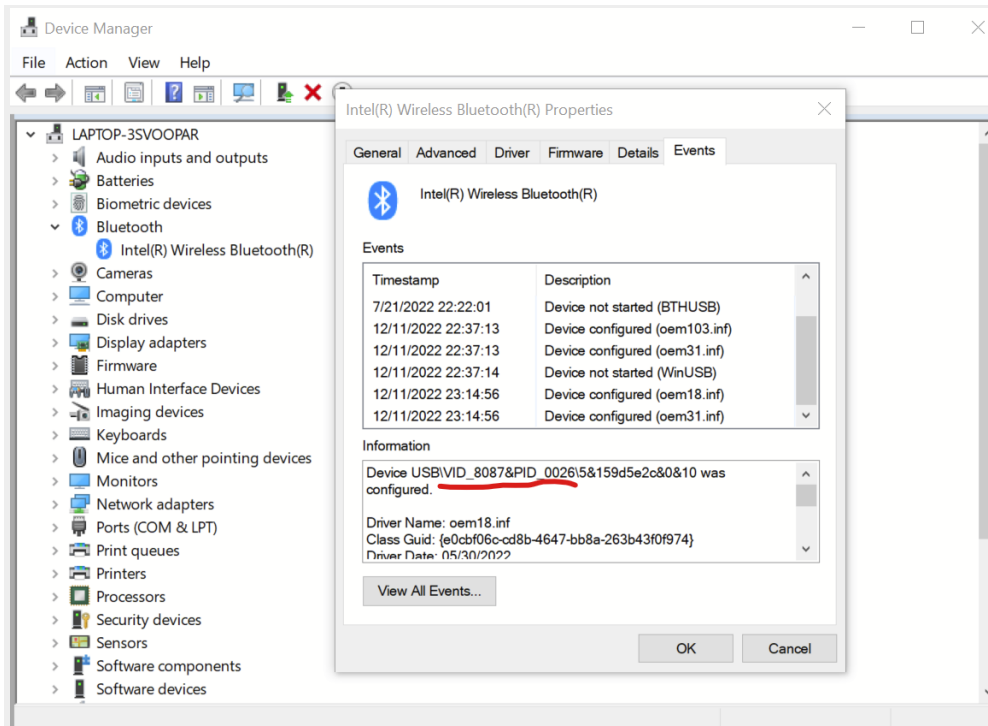
After that, you will need to add your USB VID and PID of your Bluetooth driver to \bluetooth-hci-socket\lib\usb.js.

(In my case, the file is located here: C:\Users\nakas\.node-red\node_modules\@abandonware\bluetooth-hci-socket\lib\usb.js)

You can find your USB VID and PID from Zadig as below.

Or you can find them from Device Manager as follows.

Then, you need to add them to \bluetooth-hci-socket\lib\usb.js as follows.

```javascript
var events = require('events');
var util = require('util');

var debug = require('debug')('hci-usb');
var usb = require('usb');

var HCI_COMMAND_PKT = 0x01;
var HCI_ACLDATA_PKT = 0x02;
var HCI_EVENT_PKT = 0x04;

var OGF_HOST_CTL = 0x03;
var OCF_RESET = 0x0003;

var VENDOR_DEVICE_LIST = [
  {vid: 0x0CF3, pid: 0xE300 }, // Qualcomm Atheros QCA61x4
  {vid: 0x0a5c, pid: 0x21e8 }, // Broadcom BCM20702A0
  {vid: 0x0a5c, pid: 0x21f1 }, // Broadcom BCM20702A0
  {vid: 0x19ff, pid: 0x0239 }, // Broadcom BCM20702A0
  {vid: 0x413c, pid: 0x8143 }, // Broadcom BCM20702A0
  {vid: 0x0a12, pid: 0x0001 }, // CSR
  {vid: 0x0b05, pid: 0x17cb }, // ASUS BT400
  {vid: 0x8087, pid: 0x07da }, // Intel 6235
  {vid: 0x8087, pid: 0x07dc }, // Intel 7260
  {vid: 0x8087, pid: 0x0a2a }, // Intel 7265
  {vid: 0x8087, pid: 0x0a2b }, // Intel 8265
  {vid: 0x0489, pid: 0xe07a }, // Broadcom BCM20702A1
  {vid: 0x0a5c, pid: 0x6412 }, // Broadcom BCM2045A0
  {vid: 0x050D, pid: 0x065A }, // Belkin BCM20702A0
  {vid: 0x1286, pid: 0x204C }, // Marvell AVASTAR
  {vid: 0x8087, pid: 0x0025 }, // Dell Precision 5530
  {vid: 0x8087, pid: 0x0026 },
];
```

After the above steps, the error of the Bluetooth 4.0 USB adapter disappears, and Node-RED won't crash when it gets started.

It starts to listen to BLE notifications from the Argon as follows.

Try it at your own risk :)

<References>

https://github.com/noble/noble/issues/472

https://github.com/noble/node-bluetooth-hci-socket/issues/118

https://github.com/noble/node-bluetooth-hci-socket#compatible-bluetooth-40-usb-adapters

https://newscrewdriver.com/2020/10/01/adding-noble-specified-hardware-failed-to-enable-ble-discovery/