



## Bluetooth device tree configuration



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## 1 Article purpose

This article explains how to configure *Bluetooth*<sup>[1]</sup> when the peripheral (or peripheral associated to the framework) is assigned to the Linux<sup>®</sup>OS.

The configuration is performed using the **device tree mechanism**<sup>[2]</sup>.

The Bluetooth companion chip chosen on our platform is a Cypress chip<sup>[3]</sup>

## 2 Bluetooth DT bindings documentation

The *Bluetooth*<sup>[4]</sup> tree bindings are composed of:

- STM32 USART device tree bindings<sup>[5]</sup>
- The Cypress device, used as child node<sup>[6]</sup> of the host USART device to which the slave device is attached.

## 3 Bluetooth DT configuration

This hardware description is a combination of the STM32 microprocessor device tree files (.dtsi extension) and board device tree files (.dts extension). See the device tree for an explanation of the device tree file split.



## 3.1 Bluetooth DT configuration (STM32 level)

The USART peripheral node is located in *stm32mp157c.dtsi*

- This is a set of properties that may not vary for given STM32 device, such as: registers address, clock, reset...

The USART DT configuration is explained in [Serial TTY device tree configuration](#)

## 3.2 Bluetooth DT configuration (board level)

```
&usart2 {
    ..
    st,hw-flow-ctrl;                /* enable hardware flow control */
    ..
    bluetooth {                    /* node of Bluetooth companion chip
*/
        pinctrl-names = "default";
        pinctrl-0 = <btreg>;      /* GPIO to power up or down the
internal companion chip regulators */
        compatible = "brcm,bcm43438-bt";
        max-speed = <3000000>;
    };
};
```

Specific properties for USART:

- btreg: GPIO to power up or down the internal CYW4343W regulators used by the Bluetooth section
- st,hw-flow-ctrl: bool flag to enable hardware flow control

## 4 How to configure Bluetooth using CubeMX

The *STM32CubeMX* tool can be used to configure the STM32MPU device and get the corresponding platform configuration device tree files.

The *STM32CubeMX* may not support all the properties described in the above [DT bindings documentation](#) paragraph. If so, the tool inserts **user sections** in the generated device tree. These sections can then be edited to add some properties and they are preserved from one generation to another. Refer to *STM32CubeMX* user manual for further information.

## 5 References

- [Bluetooth](#)
- [Device tree](#)
- [MURATA CYW4343W datasheet](#)
- [WLAN\\_and\\_Bluetooth\\_hardware\\_component](#)
- [Serial TTY device tree configuration](#)
- [Documentation/devicetree/bindings/net/broadcom-bluetooth.txt](#)



## Bluetooth device tree configuration

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Operating System

Device Tree

Universal Synchronous/Asynchronous Receiver/Transmitter

General-Purpose Input/Output (A realization of open ended transmission between devices on an embedded level. These pins available on a processor can be programmed to be used to either accept input or provide output to external devices depending on user desires and applications requirements.)