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## Bluetooth device tree configuration



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## 1 Article purpose

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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>



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## 2 Bluetooth DT bindings documentation

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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 *stm32mp151.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 {
    ...
    uart-has-rtscts;                               /* enable hardware flow
control */
    ...
    bluetooth {                                    /* node of Bluetooth
companion chip */
        shutdown-gpios = <&gpioz 6 GPIO_ACTIVE_HIGH>; /* GPIO specifier, used to
enable the BT module */
        compatible = "brcm,bcm43438-bt";
        max-speed = <30000000>;
    };
};
```

Specific properties for USART:

- `uart-has-rtscts`; bool flag to enable hardware flow control



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## 4 How to configure Bluetooth using CubeMX

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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.



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## 5 References

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

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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.)

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