

RTC device tree configuration

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1 Article purpose

This article explains how to configure the [RTC internal peripheral](#) when it is assigned to the Linux[®]OS. In this case, it is controlled by the **RTC framework**.

The configuration is performed using the [device tree](#) mechanism that provides a hardware description of the RTC peripheral used by the STM32 RTC Linux driver.

2 DT bindings documentation

The **RTC** is represented by the *STM32 RTC device tree bindings*^[1]

3 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.

STM32CubeMX can be used to generate the board device tree. Refer to [How to configure the DT using STM32CubeMX](#) for more details.

3.1 DT configuration (STM32 level)

The **RTC** node is declared in the file *stm32mp151.dtsi*^[2]. It describes the hardware register address, clocks and interrupts.

```
rtc: rtc@5c004000 {
    compatible = "st,stm32mp1-rtc";
    reg = <0x5c004000 0x400>;
    length
    clocks = <&rcc RTCAPB>, <&rcc RTC>;
    clock-names = "pclk", "rtc_ck";
    interrupts-extended = <&intc GIC_SPI 3 IRQ_TYPE_LEVEL_HIGH>,
                        <&exti 19 1>;
    status = "disabled";
};
```

--> Register location and

Warning

This device tree part is related to STM32 microprocessors. It should be kept as is, without being modified by the end-user.

3.2 DT configuration (board level)

This part is used to enable the **RTC** used on a board, which is done by setting the **status** property to **okay**.

An "st,lsco" property is available to select and enable the RTC output on which RTC low-speed clock is output. The valid output values are defined in ^[3]. A pinctrl state named "default" can be defined to reserve a pin for the RTC output.

3.3 DT configuration examples

```
#include <dt-bindings/rtc/rtc-stm32.h>
...
&rtc {
    st,lsco = <RTC_OUT2_RMP>;
    pinctrl-0 = <&rtc_out2_rmp_pins_a>;
    pinctrl-names = "default";
};
```

4 How to configure the DT using STM32CubeMX

The [STM32CubeMX](#) tool can be used to configure the STM32MPU device and get the corresponding [platform configuration device tree](#) files.

STM32CubeMX might 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

Please refer to the following links for additional information:

- [↑ Device tree bindings](#)
- [↑ STM32MP151 device tree](#)
- [↑ STM32 RTC bindings constants](#)

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