

# RNG device tree configuration

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## 1 Article purpose

This article explains how to configure the **RNG internal peripheral** when it is assigned to the Linux<sup>®</sup> OS. In that case, it is controlled by the **Hardware random framework**.

The configuration is performed using the **device tree** mechanism that provides a hardware description of the RNG peripheral, used by the STM32 RNG Linux driver.

## 2 DT bindings documentation

The **RNG** is represented by the *STM32 RNG device tree bindings*<sup>[1]</sup>

## 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 RNG node is declared in `stm32mp157c.dtsi`<sup>[2]</sup>. It describes the hardware register address, clock and reset.

```
rng1: rng@54003000 {
    compatible = "st,stm32-rng";
    reg = <0x54003000 0x400>;
    clocks = <&rcc RNG1_K>;
    resets = <&rcc RNG1_R>;
    status = "disabled";
};
```

Comments

--> Register location and



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

## 3.2 DT configuration (board level)

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

A clock-error-detect property is available depending the clock choosen for entropy. It can be enabled to manage the clock detection.

## 3.3 DT configuration examples

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```
&rng1 {  
    status = "okay";  
    clock-error-detect;  
};
```

## 4 How to configure the DT using STM32CubeMX

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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.

## 5 References

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Please refer to the following links for additional information:

1. [↑ Device tree bindings](#)
2. [↑ STM32MP157C device tree](#)

Operating System

Random Number Generator

Device Tree