RNG device tree configuration

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== Article purpose == This article explains how to configure the [[RNG internal peripheral|'''RNG''' internal peripheral]] when it is assigned to the Linux^{®} OS. In that case, it is controlled by the [[Hardware random overview|Hardware random framework]]. The configuration is performed using the [[Device tree|device tree]] mechanism that provides a hardware description of the RNG peripheral, used by the STM32 RNG Linux driver. == DT bindings documentation == The [[RNG internal peripheral|''RNG'']] is represented by the "STM32 RNG device tree bindings"<ref>{{CodeSource | Linux kernel | Documentation/devicetree/bindings/rng/st,stm32-rng. txt | Device tree bindings}}</ref> == 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|How to configure the DT using STM32CubeMX]] for more details. ===DT configuration (STM32 level) === The RNG node is declared in stm32mp157c.dtsi<ref>{{CodeSource | Linux kernel | arch/arm/boot/dts/stm32mp157c.dtsi | STM32MP157C device tree}}</ref>. It describes the hardware register address, clock and reset. rng1: rng@54003000 { {{highlight| Comments}} compatible = "st,stm32-rng"; reg = <0x54003000 0x400>; {{highlight|--> Register location and length}} clocks = <&rcc RNG1_K>; resets = <&rcc RNG1_R>; status = "disabled"; }; {{Warning|This device tree part is related to STM32 microprocessors. It must be kept as is, without being modified by the end-user.}} === DT configuration (board level) === 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. === DT configuration examples === &rng1 { status = "okay"; clock-error-detect; }; ==How to configure the DT using STM32CubeMX== The [[STM32CubeMX]] tool can be used to configure the STM32MPU device and get the corresponding [[Device_tree#STM32|platform configuration device tree]] files.
 The STM32CubeMX may not support all the properties described in the above [[#DT bindings documentation|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. ==References== Please refer to the following links for additional information: <references/> <noinclude> {{ArticleBasedOnModel| [[Peripheral or framework device tree configuration model]]}} {{PublicationRequestId | 8900 | 2018-10-08 | AlainF}} [[Category:Device tree configuration]] [[Category:Security]] </noinclude>

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