STGEN internal peripheral

Contents

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Contents

1 Article purpose

The purpose of this article is to:

- briefly introduce the STGEN peripheral and its main features
- indicate the level of security supported by this hardware block
- explain how it can be allocated to the three runtime contexts and linked to the corresponding software components
- explain, when necessary, how to configure the STGEN peripheral.

2 Peripheral overview

The STGEN peripheral provides the reference clock used by the Arm®Cortex®-A7 generic timer for its counters, including the system tick generation.

It is clocked by ACLK (the AXI bus clock), so caution is needed when this clock is changed; otherwise the operating system (running on the Cortex-A7) might run with a varying reference clock.

2.1 Features

Refer to the STM32MP15 reference manuals for the complete list of features, and to the software components, introduced below, to see which features are implemented.

2.2 Security support

The STGEN is a single-instance peripheral that can be accessed via the two following register sets:

- STGEN**C** for the **c**ontrol. That is, a **secure** port (under ETZPC control).
- STGEN**R** for the **r**ead-only access. That is, a **non secure** port.

3 Peripheral usage and associated software

3.1 Boot time

The STGEN is first initialized by the ROM code, then updated by the FSBL (see Boot chain overview) once the clock tree is set up.

3.2 Runtime

3.2.1 Overview

Linux® and OP-TEE use the Arm Cortex-A7 generic timer that gets its counter from the STGEN, but this is transparent at run time.

Hence there is no runtime allocation decision for this peripheral: **both contexts are selected by default**.

3.2.2 Software frameworks

Domain	Peripheral	Software components			Comment
OP-TEE	Linux	STM32Cube			
Core	STGEN	see comment	see comment		Not applicable as the STGEN peripheral is configured at boot time and not accessed at runtime

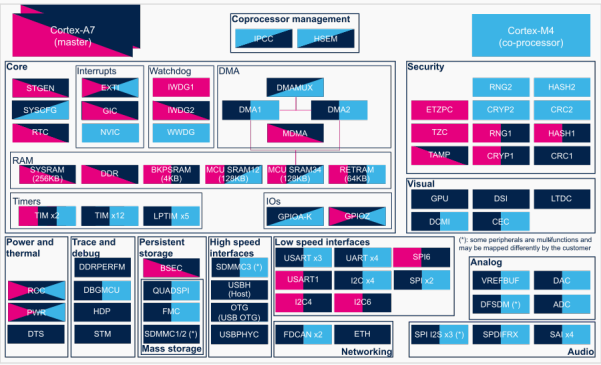
3.2.3 Peripheral configuration

3.2.4 Peripheral assignment

Check boxes illustrate the possible peripheral allocations supported by STM32 MPU Embedded Software:

- means that the peripheral can be assigned () to the given runtime context.
- is used for system peripherals that cannot be unchecked because they are statically connected in the device.

Refer to How to assign an internal peripheral to a runtime context for more information on how to assign peripherals manually or via STM32CubeMX.
The present chapter describes STMicroelectronics recommendations or choice of implementation. Additional possiblities might be described in STM32MP15 reference manuals.



Internal peripherals

Domain	Peripheral	Runtime allocation				Comment
Instance	Cortex-A7 secure (OP-TEE)	Cortex-A7 non-secure (Linux)	Cortex-M4 (STM32Cube)			
Core	STGEN	STGEN				

4 How to go further

5 References

System Time Generator

Cortex®

First Stage Boot Loader

Open Portable Trusted Execution Environment

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