



SDMMC internal peripheral



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## 1 Article purpose

The purpose of this article is to

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

## 2 Peripheral overview

The **SDMMC** peripheral is used to interconnect STM32 MPU to SD memory cards, SDIO and MMC devices.

### 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

SDMMC1/2/3 instances are either **non-secure** or **secure** peripherals (under ETZPC control).



- When an SDMMC instance is secure internal, the DMA cannot be used to perform data transfers.
- STMicroelectronics does not provide secure MMC driver (see below chapter)

## 3 Peripheral usage and associated software

### 3.1 Boot time

SDMMC1/2 instances can be used to support memory boot on SD or MMC Flash devices.

The SDMMC3 is not used at boot time.

The SDMMC instances are ordered by address in the [device tree arch/arm/boot/dts/stm32mp157c.dtsi](#) file:

```
sdmmc3: sdmmc@48004000 {
...
sdmmc1: sdmmc@58005000 {
...
sdmmc2: sdmmc@58007000 {
```



By default, in [OpenSTLinux](#) distribution, **sdmmc3 is disabled** so the sdmmc1 (SD card on [Evaluation boards](#) and [Discovery kits](#)) and sdmmc2 (eMMC on [Evaluation boards](#) and Wifi on [Discovery kits](#)) are respectively aliased to mmc0 and mmc1.

**If you enable sdmmc3**, it will take the mmc0 alias and the aliases above will shift, so don't forget to update the Linux kernel boot command accordingly!

For instance, 'root=/dev/mmcblk0p6' will become 'root=/dev/mmcblk1p6' to mount the rootfs from the sdmmc1 (SD card) when sdmmc3 is enabled.

### 3.2 Runtime

#### 3.2.1 Overview

SDMMC1/2/3 instances can be allocated to:

- the Arm<sup>®</sup> Cortex<sup>®</sup>-A7 non-secure core to be controlled in Linux<sup>®</sup> by the MMC framework

or

- the Arm<sup>®</sup> Cortex<sup>®</sup>-M4 to be controlled in STM32Cube MPU Package by STM32Cube SDMMC driver

Chapter [#Peripheral assignment](#) describes which peripheral instance can be assigned to which context.





Do ma in st a nc e	Per in h era A 7 se cu re ( O P T E E)	Runtime allocation				Comme nt
		Cortex-A7 non-secure (Linux)	Cortex-M4 (STM32Cube)			
M a s s s t o r a g e	S D M M C	SDMMC1				
		SDMMC2				
		SDMMC3				Assig nment (singl e choic e )

## 4 How to go further

## 5 References

Microprocessor Unit

MultimediaCard

Direct Memory Access

SD memory card (<https://www.sdcard.org>)

former spelling for e•MMC ('e' in italic)

Open Portable Trusted Execution Environment