



HDP internal peripheral



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This article is based on model **Internal peripheral article model**. It must follow it as much as possible.

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## 1 Article purpose

The purpose of this article is to

- briefly introduce the **HDP** peripheral (hardware debug port) 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 needed, how to configure the HDP peripheral.



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## 2 Peripheral overview

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The **HDP** peripheral is used to output some internal signals on up to 8 **GPIO** pins.

Follow the sequence below to connect a **GPIO** to an internal signal via the **HDP**:

- First of all, look for the internal signal you want to monitor in the **HDP** signal multiplexing table of the [STM32MP15 reference manuals](#):
  - Search for the **HDP** signal on which you can get it among eight possible choices.
  - Note the corresponding **HDPx multiplexing value** to select.
- Then, look for the most suitable **GPIO** pin on which you can output **HDPx** in the [data brief](#):
  - Note the **GPIO bank** and **pin**.
  - Note the corresponding **GPIO alternate function (AF)** to select.

The **GPIO bank**, **pin**, **alternate function** and **HDPx multiplexing value** are the information required to configure each **HDP** signal.

### 2.1 Features

Refer to [STM32MP15 reference manuals](#) for the complete list of features, and to the software components, introduced below, to know which features are really implemented.

### 2.2 Security support

The **HDP** is a **non-secure** peripheral.

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## 3 Peripheral usage and associated software

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### 3.1 Boot time

The **HDP** is not used at boot time.

### 3.2 Runtime

#### 3.2.1 Overview

The **HDP** can be allocated to the **Arm<sup>®</sup> Cortex<sup>®</sup>-A7** non-secure core to be used under **Linux<sup>®</sup>** **HDP** driver.

### 3.2.2 Software frameworks

Do	Peri	Software frameworks			Comment
main Cortex-A7 secure (OPE-TEE)	Cortex-A7 non-secure (Linux)	Cortex-M4 (STM32Cube)			
Trace & Debug	HDP	HDP Linux driver			

### 3.2.3 Peripheral configuration

The configuration is applied by the firmware running in the context to which the peripheral is assigned. The configuration by itself can be performed via the *STM32CubeMX* tool for all internal peripherals. It can then be manually completed (especially for external peripherals) according to the information given in the corresponding software framework article.

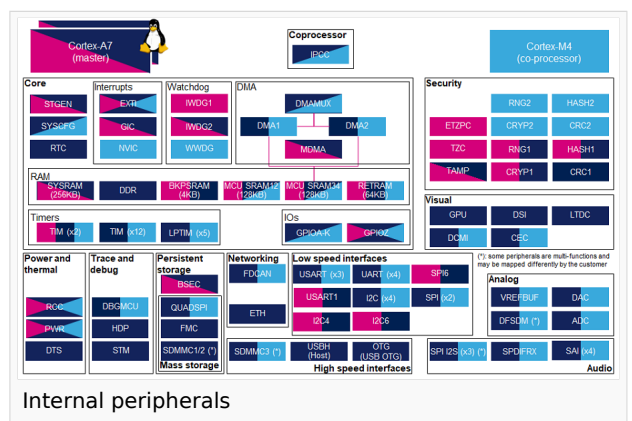
### 3.2.4 Peripheral assignment

**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 possibilities might be described in *STM32MP15* reference manuals.



Do	Peri	Runtime allocation			Comment
main inheritor	Cortex-A7 non-secure (Linux)	Cortex-M4 (STM32Cube)			



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)		
T ra c e & D e b u g	H D P	HDP				

## 4 How to go further

## 5 References

Hardware Debug Port

General-Purpose Input/Output (A realization of open ended transmission between devices on an embedded level. These pins available on a processor can be programmed to be used to either accept input or provide output to external devices depending on user desires and applications requirements.)

GPIO alternate function

Open Portable Trusted Execution Environment