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## Introduction to SFSP versions for STM32H5 MCUs

### Introduction

The system flash security package (SFSP) is stored within the internal boot ROM memory (system memory) of [STM32H5](#) devices. The SFSP is programmed by STMicroelectronics during production and provides various security services to STM32H5 users.

# 1 General information

This document applies to STM32H5 Arm®-based devices.

*Note:* Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.



## 1.1 Reference documents

**Table 1. Reference documents**

Reference	Document name	Document title
[1]	AN4992	STM32 MCUs secure firmware install (SFI) overview (application note)
[2]	AN6007	ST immutable Root of Trust (STiRoT) overview (application note)
[3]	AN6008	STM32 Debug Authentication (DA) overview (application note)
[4]	RM0481	STM32H563/H573 and STM32H562 Arm®-based 32-bit MCUs (reference manual)

## 1.2 Glossary

**Table 2. Glossary**

Abbreviation/notation	Meaning
RSS	Root security services
RSS_LIB	Root security services library
NSS_LIB	Nonsecure domain security library
STiRoT	STMicroelectronics immutable Root of Trust
RSS_DA	Root security services debug authentication
SFSP	System flash security package

## 2 SFSP description

The SFSP contains several types of firmware, each of them dedicated to a specific service:

- RSS is the firmware responsible for installing the RSSe library, which manages the SFI process (refer to reference document [1]).
- STiRoT manages the first secure boot stage of the STM32H5 device when the user selects STiRoT as its device root of trust (refer to reference document [2] for a detailed description of STiRoT). STiRoT provides two main services:
  - The secure boot, which is always executed after a system reset. It activates STM32H5 runtime protections and verifies the authenticity and integrity of the application before jumping to it.
  - The secure firmware update checks if an application image is available, and if found, it verifies the application authenticity and integrity before installing it after decryption.
- RSS\_DA: refer to reference document [3] for a detailed description of RSS\_DA and debug authentication services. RSS\_DA provides the following debug authentication services:
  - Regression and partial regression (if supported) of the STM32H5 device.
  - Secure debug reopening of the STM32H5 device (if supported).
- RSS\_LIB is a collection of services provided by the functions depicted in section 7.7.2 "RSS user functions" of reference document [4]. These services are only callable when the STM32H5 device enables TrustZone® and runs in the secure domain.
- NSS\_LIB is a collection of services provided by the functions depicted in section 7.7.2 "RSS user functions" of reference document [4]. These services are callable when the STM32H5 device enables TrustZone® and runs in the nonsecure domain, or when the STM32H5 device disables TrustZone®.

### 2.1 STM32H503

For STM32H503 devices, the user can read the SFSP version as a word value at the address 0x0BF860CC. STM32H503 SFSP embeds:

- RSS\_DA
- NSS\_LIB

### 2.2 STM32H573/533

For STM32H573 and STM32H533 devices, the user can read the SFSP version as a word value at the address 0x0BF960CC.

For these devices, SFSP embeds:

- RSS
- STiRoT
- RSS\_DA
- RSS\_LIB
- NSS\_LIB

### 2.3 STM32H563/523

For STM32H563 and STM32H523 devices, the user can read the SFSP version as a word value at the address 0x0BF960CC.

For these devices, SFSP embeds:

- RSS
- RSS\_DA
- RSS\_LIB
- NSS\_LIB

## 3 SFSP version history

### 3.1 STM32H503

**Table 3. STM32H503 SFSP version history**

Silicon revision	SFSP version	SFSP version @0x0BF860CC	Description	Known limitations
-	V1.2.0	0x01020000	SFSP structure changes	<ul style="list-style-type: none"> <li>User flash memory not fully visible from BL.</li> <li>BL is not functional when ECC is enabled on SRAM2 via option bytes.</li> <li>Discovery command displays wrong system information when product state is "open".</li> </ul>
-	V1.3.0	0x01030000	<ul style="list-style-type: none"> <li>Handle ECC detection due to OTP flash area not written.</li> <li>Fix known limitations on SFSP V1.2.0.</li> </ul>	Debug authentication (regression and debug reopening) is not functional when the user enables IWDG via option bytes.
-	V1.4.0	0x01040000	Fix known limitations on SFSP V1.3.0.	-

### 3.2 STM32H573/563

**Table 4. STM32H573/563 SFSP version history**

Silicon revision	SFSP version	SFSP version @0x0BF960CC	Description	Known limitations
-	V2.0.0	0x00020000	3 chip certificate in system flash memory.	Data provisioning over SPI.
-	V2.1.0	0x02010000	4 chip certificate in system flash memory.	Data provisioning over SPI.
Rev Z	V2.2.0	0x02020000	<ul style="list-style-type: none"> <li>Enable data provisioning over SPI.</li> <li>Fix known limitations on SFSP V2.1.0.</li> </ul>	<ul style="list-style-type: none"> <li>Regression when EEPROM is enabled.</li> <li>STiRoT max frequency at 240 MHz.</li> </ul>
Rev X	V2.5.0	0x02050000	<ul style="list-style-type: none"> <li>STiRoT alive after partial regression.</li> <li>Fix known limitations on SFSP v2.4.0.</li> </ul>	Debug authentication (regression) not functional on STM32H563 with 1-M flash memory (STM32H562xG/STM32H563xG).
Rev X	V2.6.0	0x02060000	Fix known limitations on SFSP v2.5.0. This SFSP version is limited to STM32H563.	-

### 3.3 STM32H533/523

**Table 5. STM32H533/523 SFSP version history**

Silicon revision	SFSP version	SFSP version @0x0BF960CC	Description	Known limitations
Rev A	V1.0.0	0x01000000	Support all SFSP features.	Debug Authentication not functional on STM32H523 (discovery command returns wrong SoC ID value & certificate chain based on SoC ID cannot be used).
Rev A	V1.2.0	0x01020000	Fix known limitations on SFSP v1.0.0.	-

## Revision history

**Table 6. Document revision history**

Date	Version	Changes
12-Oct-2023	1	Initial release.
18-Mar-2024	2	Updated: <ul style="list-style-type: none"> <li>• Section Introduction</li> <li>• Section 1: General information</li> <li>• Table 1. Reference documents</li> <li>• Table 2. Glossary</li> <li>• Section 2: SFSP description</li> <li>• Section 2.2: STM32H573/533</li> <li>• Section 2.3: STM32H563/523</li> </ul> Added: <ul style="list-style-type: none"> <li>• Section 2.3: STM32H563/523</li> <li>• Section 3.3: STM32H533/523</li> </ul>

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