Security advisory TN1500-ST-PSIRT: Improper isolation of protected secure resources

Overview

This security advisory pertains to the vulnerability of improperly isolating protected secure resources. It suggests measures to mitigate its impact.

Affected products

Product	Version(1)	Type	Note
STM32MP151A, STM32MP151C, STM32MP151D, STM32MP151F	B, Z	silicon product	-
STM32MP153A, STM32MP153C, STM32MP153D, STM32MP153F			
STM32MP157A, STM32MP157C, STM32MP157D, STM32MP157F			

1. *The version character is displayed in the device revision field of the package marking. Upon reading, the REV_ID[15:0] bitfield of the DBGMCU_IDC register returns 0x2000 for the device revision B and 0x2001 for the device revision Z.*

Description

Certain bus controllers (Cortex®-A7, SDMMC3, MDMA) can perform nonsecure write accesses to SRAM1/2/3/4, BKPSRAM, and RETRAM secure memories and to AHB5 secure peripherals. In addition, ETH can perform nonsecure read and write accesses to SRAM1/2/3/4 and RETRAM secure memories.

Impact

A user application using TrustZone® may potentially be impacted by the vulnerability. The secure boot chain is not impacted. A nonsecure application can write to some secure executable memories.

The overall impact depends on the user application context.

Users must assess the impact case by case, depending on their application requirements and architecture.

The PSA certificate 0716053550392–10316 has been withdrawn.

Remediation

For nonsecure embedded software, restrict the programming of nonsecure bus controller peripherals to the Linux® kernel (privileged mode).

For secure embedded software (software executed in the TrustZone®), apply one of the following measures:

- Do not use SRAM1/2/3/4, BKPSRAM, or RETRAM for storing secure executable code or sensitive data.
- Manage static abort exception and bus controller interrupt to detect illegal accesses. Apply the relevant action depending on the application context.

For the secure embedded software, optionally apply one or more of the following measures:

- Encrypt SRAM1/2/3/4, BKPSRAM, or RETRAM content if applicable.
- Check the integrity of SRAM1/2/3/4, BKPSRAM, or RETRAM content if applicable.
- Check the configuration integrity of the CRYP1, HASH1, RNG1, and AHB5 secure peripherals.
- Program all MDMA channels in secure mode.

Contact information

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Revision history

Table 1. **Document revision history**

Date	Version	Changes
23-Nov-2023	1	Initial version.
02-Feb-2024	2	Initial public release.

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