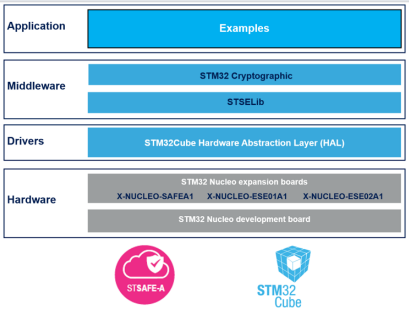
X-CUBE-STSE01

Data brief

Secure element software package with STSAFE-A110, STSAFE-A120 and STSAFE-L010 software expansion for STM32CUBE



Features

- Complete software to build applications using STSAFE-A110, STSAFE-A120 and STSAFE-L010
- Sample implementation available on the X-NUCLEO-SAFEA1, X-NUCLEO-ESE01A1 and X-NUCLEO-ESE02A1 expansion boards plugged to a NUCLEO-L452RE development board
- Easy portability across different MCU families thanks to STM32Cube
- Includes the latest libraries for the secure element
- Free user-friendly license terms
- Package compatible with STM32CubeMX, can be downloaded from and directly installed into STM32CubeMX

Product summary	
Secure element software package with STSAFE-A110, STSAFE-A120 and STSAFE-L010 software expansion for STM32CUBE	X-CUBE-STSE01
Authentication, state-of-the-art security for peripherals and IoT devices	STSAFA110S8SPL02/ STSAFA120S8SPL05/ STSAFL010DFSPL01
Secure element expansion board based on STSAFE-A110/STSAFE-A120	X-NUCLEO-SAFEA1A/X-NUCLEO-ESE01A1/X-NUCLEO-ESE02A1
Applications	Authentication/ StorageEmbedded Security for Communications Equipment, Computers and Peripherals

Description

The X-CUBE-STSE01 software expansion for STM32Cube provides an evaluation software example for STSAFE-A110/STSAFE-A120/STSAFE-L010.

The package is built on STM32Cube software technology to ease portability across different STM32 microcontrollers.

The software comes with sample implementations of the drivers running on the X-NUCLEO-SAFEA1, X-NUCLEO-ESE01A1 and X-NUCLEO-ESE02A1 expansion boards connected to the featured development boards.

The examples illustrate the authentication, key pair generation, key establishment, local envelope wrapping, and pairing features, secure zone/counter access.

1 Detailed description

1.1 What is STM32Cube?

STM32Cube is a combination of a full set of PC software tools and embedded software blocks running on STM32 microcontrollers and microprocessors:

- STM32CubeMX configuration tool for any STM32 device; it generates initialization C code for Cortex-M cores and the Linux device tree source for Cortex-A cores
- STM32CubeIDE integrated development environment based on open-source solutions like Eclipse or the GNU C/C++ toolchain, including compilation reporting features and advanced debug features
- STM32CubeProgrammer programming tool that provides an easy-to-use and efficient environment for reading, writing and verifying devices and external memories via a wide variety of available communication media (JTAG, SWD, UART, USB DFU, I2C, SPI, CAN, etc.)
- STM32CubeMonitor family of tools (STM32CubeMonRF, STM32CubeMonUCPD, STM32CubeMonPwr) to help developers customize their applications in real-time
- STM32Cube MCU and MPU packages specific to each STM32 series with drivers (HAL, low-layer, etc.), middleware, and lots of example code used in a wide variety of real-world use cases
- STM32Cube expansion packages for application-oriented solutions.

1.2 How does this software complement STM32Cube?

This software is based on the STM32CubeHAL, the hardware abstraction layer for the STM32 microcontroller.

The package extends STM32Cube by providing a board support package (BSP) for the STSAFE-A110, STSAFE-A120 and STSAFE-L010.

The STSAFE-A110, STSAFE-A120 and STSAFE-L010 are highly secure solutions that act as a secure element, providing authentication and data management services to a local or remote host.

The package also includes samples to start experimenting with the code:

- Standard initialization of the I²C
- ECDSA authentication (peripherals, IoT, USB Type-C® devices, or Qi wireless power transfer devices)
- ECDH secure-channel establishment with a remote host that includes a TLS handshake
- Pairing and secure channel with host application processor
- Wrapping and unwrapping of local envelopes
- On-chip key-pair generation

Refer to the STSAFE-A110, STSAFE-A120 and STSAFE-L010 datasheet for additional information on the device.

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
27-May-2025	1	Initial release.
27-Nov-2025	2	Updated Title, Cover image, Product summary, Features, Description and Section 1.2: How does this software complement STM32Cube?. Added references to STSAFE-L010.