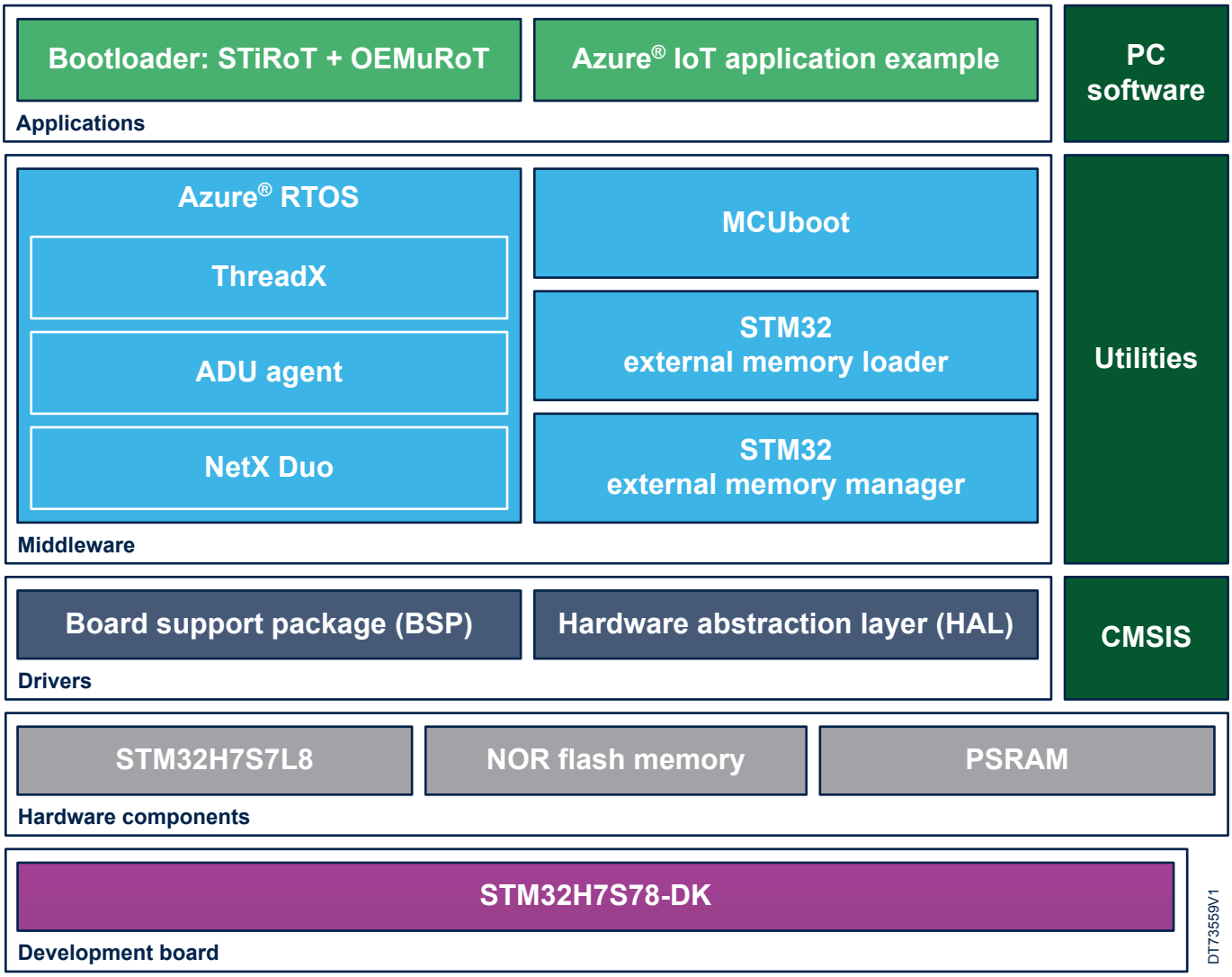
X-CUBE-AZURE-H7S

Data brief

STM32H7S7L8 Microsoft® Azure® IoT software expansion for STM32Cube



Product status link
X-CUBE-AZURE-H7S

Features

- Ready-to-run firmware example using Ethernet connectivity to support the quick evaluation and development of Microsoft® Azure® cloud-connected applications based on the STM32H7S7L8 microcontroller
- Azure® RTOS IoT reference integration for the STM32H7S78-DK Discovery kit
- Azure® RTOS NetX Duo network stack support for Ethernet on STM32H7S78-DK
- TLS encryption
- Secure Boot
- Secure Firmware Update
- Secure storage of private key and user secrets
- Azure® IoT Central
- Azure® Device Provisioning Service (DPS)
- Azure® Device Update support
- Azure® plug and play
- Azure® X.509 certificate attestation
- Prebuilt binaries for quick connection
- Telemetry
- Command-line interface
  - Device provisioning
  - Configuration saving to nonvolatile memory

Description

The X-CUBE-AZURE-H7S Expansion Package consists of an adaptation of the Azure® RTOS IoT reference integration ported on the STM32H7S78-DK Discovery kit acting as an end device.

X-CUBE-AZURE-H7S proposes a sample application that configures the network connectivity parameters and illustrates the various ways for a device to interact with the Microsoft® Azure® IoT Hub. The application shows how a client application connects to the Azure® IoT Hub to publish device state and telemetry data, and receive device configuration from the cloud. The application handles Azure® messages, methods, and twin update commands. This allows, from Azure® IoT Central, the reception of telemetry data, the start-and-stop of telemetry data emission, the remote control of the user LED state, and the change of the telemetry interval.

The device credentials and settings are encrypted by a derived hardware unique key (DHUK) and saved in the external flash memory of the STM32H7S78-DK Discovery kit.

The user application is stored encrypted in the external flash memory, and loaded into the external RAM by the secure bootloader. The traffic to and from the external RAM is encrypted on-the-fly by the MCU hardware, keeping the copy of the user application and data secret to the device.

Note: Microsoft and Azure are trademarks of the Microsoft group of companies.

1 General information

The X-CUBE-AZURE-H7S Expansion Package is demonstrated on an STM32H7S7L8 32-bit microcontroller based on the Arm® Cortex®-M7 processor.

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

arm

1.1 Ordering information

X-CUBE-AZURE-H7S is available for free download from the *www.st.com* website.

1.2 What is STM32Cube?

STM32Cube is an STMicroelectronics original initiative to improve designer productivity significantly by reducing development effort, time, and cost. STM32Cube covers the whole STM32 portfolio.

STM32Cube includes:

- A set of user-friendly software development tools to cover project development from conception to realization, among which are:
  - STM32CubeMX, a graphical software configuration tool that allows the automatic generation of C initialization code using graphical wizards
  - STM32CubeIDE, an all-in-one development tool with peripheral configuration, code generation, code compilation, and debug features
  - STM32CubeCLT, an all-in-one command-line development toolset with code compilation, board programming, and debug features
  - STM32CubeProgrammer (STM32CubeProg), a programming tool available in graphical and command-line versions
  - STM32CubeMonitor (STM32CubeMonitor, STM32CubeMonPwr, STM32CubeMonRF, STM32CubeMonUCPD), powerful monitoring tools to fine-tune the behavior and performance of STM32 applications in real time
- STM32Cube MCU and MPU Packages, comprehensive embedded-software platforms specific to each microcontroller and microprocessor series (such as STM32CubeH7RS for the STM32H7Rx/7Sx microcontrollers), which include:
  - STM32Cube hardware abstraction layer (HAL), ensuring maximized portability across the STM32 portfolio
  - STM32Cube low-layer APIs, ensuring the best performance and footprints with a high degree of user control over hardware
  - A consistent set of middleware components such as RTOS, FAT file system, TCP/IP, USB Host and Device, USB-PD, OpenBL, external memory loader and manager, and MCUboot
  - All embedded software utilities with full sets of peripheral and applicative examples
- STM32Cube Expansion Packages, which contain embedded software components that complement the functionalities of the STM32Cube MCU and MPU Packages with:
  - Middleware extensions and applicative layers
  - Examples running on some specific STMicroelectronics development boards

2 License

X-CUBE-AZURE-H7S is delivered under the SLA0048 software license agreement and its Additional License Terms.

Revision history

Table 1. **Document revision history**

Date	Revision	Changes
19-Jun-2024	1	Initial release.