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STMicroelectronics collaborates with Microsoft to streamline development of highly secure IoT devices

Joint efforts deliver Microsoft Azure IoT cloud reference implementation integrating Arm® trusted firmware and based on STM32U5 IoT discovery kit

Solution combines advanced, embedded Azure Real Time Operating System (RTOS) & IoT Middleware with highly secure, ultra-low power STM32U5 microcontrollers and STSAFE-A110 secure element

Geneva, May 11, 2022 – STMicroelectronics (NYSE: STM), a global semiconductor leader serving customers across the spectrum of electronics applications, has revealed details of its collaboration with [Microsoft, an ST Authorized partner](#), to strengthen the security of emerging Internet-of-Things (IoT) applications.

ST is integrating its [ultra-low-power STM32U5 microcontrollers](#) (MCUs) with [Microsoft Azure RTOS](#) & IoT Middleware and a certified secure implementation of Arm® Trusted Firmware -M (TF-M) secure services for embedded systems. The intensive engineering project has produced a TF-M based, Azure IoT cloud reference implementation that leverages the hardened security features of the STM32U5 complemented with the hardened key store of an [STSAFE-A110 secure element](#).

“Developers of IoT devices face intense pressure to meet time-to-market constraints at the same time as satisfying the highest-level security-industry standards,” said Daniel Colonna, Marketing Director, Microcontroller Division, STMicroelectronics. *“Our solution accelerates embedded development by increasing security as well as power efficiency and performance.”*

“Our collaboration with ST is effective and timely, enabling developer communities to meet widespread market demands for smart, connected solutions that are trusted, robust, and efficient,” said Moe Tanabian, Vice President and General Manager, Azure Edge Devices, Platform and Services.

[Microsoft Azure RTOS](#) provides a comprehensive middleware package optimized for resource-constrained, connected applications such as IoT edge devices and endpoints. It combines the compact footprint of the ThreadX real-time operating system with services for memory management and connectivity including NetX Duo IPv4/IPv6 and TLS secure socket support.

The Arm TF-M suite provides trusted services including secure boot, secure storage, cryptography, and attestation. Architected for Arm® Cortex®-M processors, TF-M suite integrates readily with ST's STM32U5 MCUs, which are based on the advanced Cortex-M33 embedded core.

Additional security features of the STM32U5 include physical-attack resistance, Arm's proven TrustZone® architecture that provides extra isolation for security-critical resources. STM32U5 MCUs achieved PSA Certified Level-3 and SESIP 3 certifications in 2021 and achieved an EEMBC SecureMark®-TLS score of 133,000 for cryptographic processing efficiency.

The STSAFE-A110 EAL5+ certified secure element brings an authentication scheme and personalization service that allow an automated and secured attachment of connected objects to Microsoft Azure. It safely relieves the historical burden on IoT-device makers to protect secret credentials during product manufacture.

The MCUs' ultra-low-power credentials, confirmed by outstanding ULPMark® benchmarks for deep-sleep, peripheral, and active energy demands, enable extended runtime in battery-powered equipment.

ST will release an STM32Cube-based integration of the reference implementation in Q3 2022 that will further simplify IoT-device design leveraging tight integration with the wider [STM32 ecosystem](#).

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About STMicroelectronics

At ST, we are 48,000 creators and makers of semiconductor technologies mastering the semiconductor supply chain with state-of-the-art manufacturing facilities. An independent device manufacturer, we work with more than 200,000 customers and thousands of partners to design and build products, solutions, and ecosystems that address their challenges and opportunities, and the need to support a more sustainable world. Our technologies enable smarter mobility, more efficient power and energy management, and the wide-scale deployment of the Internet of Things and 5G technology. ST is committed to becoming carbon neutral by 2027. Further information can be found at www.st.com.

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