Contribution ID: **62** Type: **Paper presentation**

Integrating TLS/SSL with MQTT in NuttX Operating System

Friday 20 September 2024 10:10 (20 minutes)

Communication protocols in the Internet of Things (IoT) are essential for ensuring the security of transmitted data in both device-server and device-device transmission scenarios. Data should be sent through communication protocols that ensure security through mechanisms such as message encryption and signing, while also keeping the overhead as small as possible. The MQTT protocol is widely used in the IoT industry because it is a lightweight and reliable protocol. In this paper, we propose the integration of TLS/SSL with MQTT in the NuttX open-source operating system. We implemented an MQTT application for NuttX that focuses on integrating the TLS/SSL protocol at the transport layer of the TCP/IP stack, in the context of using the MQTT protocol at the application layer of the stack. The integration facilitates faster development times for industry leaders who may use NuttX and would like to improve the security of their applications. Our contributions are geared towards open-source code, with the intent of educating and contributing to the NuttX community.

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Session Classification: Sensor Networking & Pervasive Systems and Computing

Track Classification: Sensor Networking