AWS Libraries for S32K3 Product Brief

Contents

1.   Software Product Overview

AWS Libraries for S32K3 software product offers support for cloud connectivity libraries, security services (cryptographic operations, TLS) and OTA (NXP Security FW + RTD leveraged).

Other project objectives are:

• Support FreeRTOS Core and FreeRTOS for AWS libraries for microcontrollers;

• Enable connectivity and security;

• Enable edge devices to connect to AWS IoT service;

• Build IoT applications that gather, process, analyze and act on data generated by the connected devices (NXP case: S32K3);
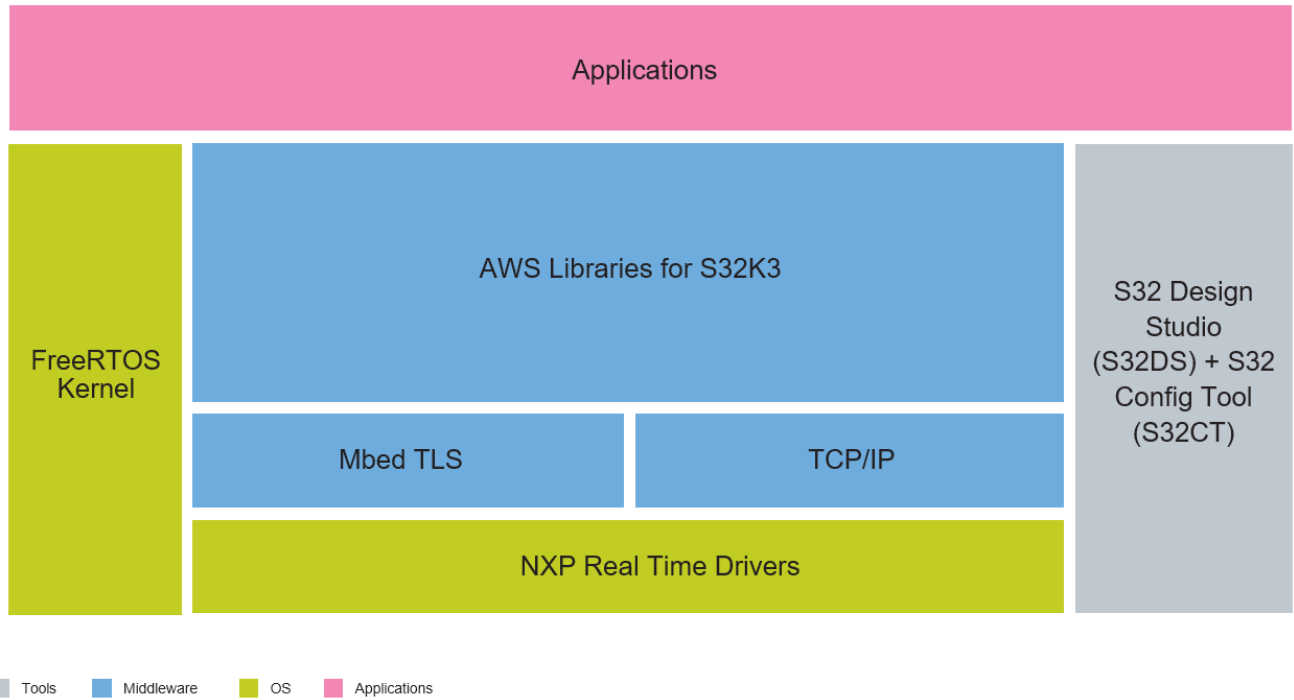
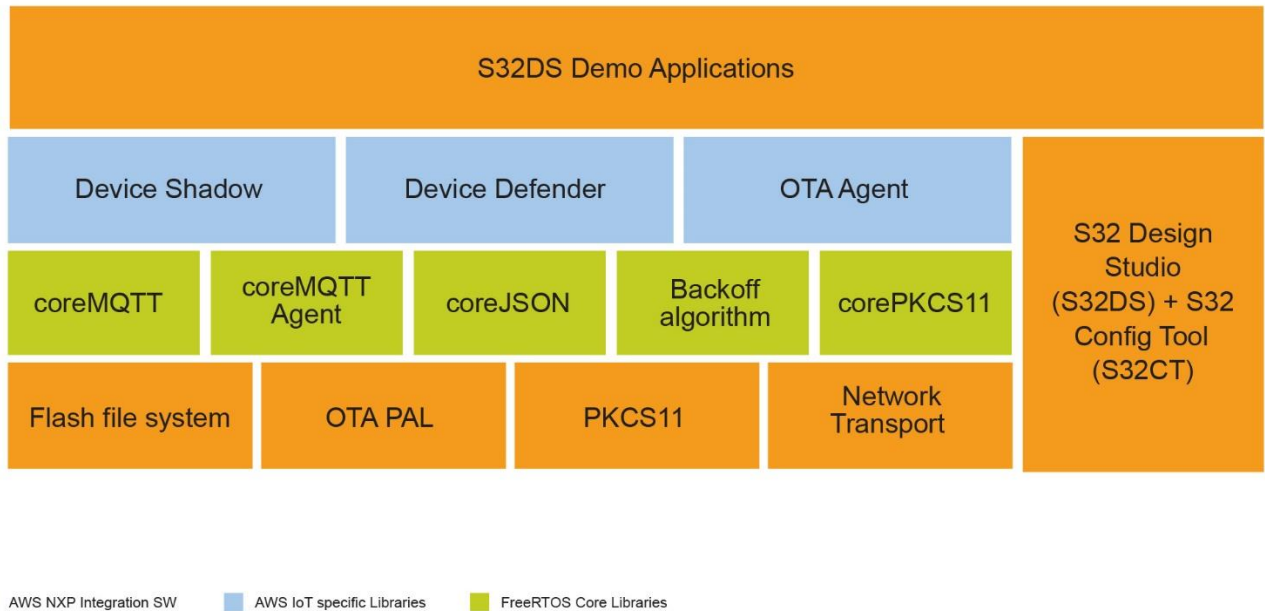• Free and open source.

Figure 1**. NXP Software Environment**

Figure 2. **AWS Libraries for S32K3 Architecture**

2. Software Content

This product includes support for the following:

- **AWS IoT specific Libraries**:
    - o OTA Agent – device firmware update
    - o Device Defender – enables sending security metrics to the AWS IoT Device Defender service
    - o Device Shadow – sync with the device "shadow" in the cloud

- **FreeRTOS Core Libraries**:
    - o coreMQTT – client implementation of the MQTT standard
    - o coreMQTT Agent – adds thread safety to the coreMQTT library
    - o coreJSON – JSON parser
    - o corePKCS11 – implementation of a subset of the PKCS #11 API
    - o Backoff Algorithm – utility library to space out repeated retransmissions of the same block of data, to avoid network congestion

- **Demos**: MQTT, OTA, Device Defender, Device Shadow, GreenGrass Discovery.

NXP deliverables for this product include:

- **S32DS Update Site** including:
    - o FreeRTOS LTS libraries codebase and integration code
    - o S32CT component for configuration
    - o S32DS Demo application for easy development startup
- FreeRTOS LTS libraries – distributed freely under MIT License
- Software dependencies:
    - o Real Time Drivers
    - o FreeRTOS
    - o TCP/IP stack
    - o Mbed TLS

3. Supported Targets

The software described in this document is intended to be used with S32K3 microcontroller devices of NXP Semiconductors.

4. Quality, Standards Compliance and Testing Approach

The product is developed according to NXP SW Process and only to IATF 16949 and Automotive SPICE.

The software packages will support S32DS and will include:

- Source code and configuration templates;

- User Manual;

- Sample application;

- Release Notes.

The software packages (starting with Beta releases) are accompanied by software quality packages containing the following deliverables:

- Test Specification;

- Test Summary Report;

- Traceability Matrix;

- Quality Matrix;

- List of changes.

SW Testing approach is documented in Test Strategy document that contain the following information and can be shared with customers in request.

- Testing scope and objectives;

- Test levels: integration tests;

- Test types: functional, qualification;

- Test techniques: black-box;

- Test cases organization and prioritization;

- Test deliverables (test report, test specification, traceability matrix).

5. Document Information

Table 1.   **Revision history**

Revision number	Date	Substantive changes
1.0	05/2022	Initial version
1.1	07/2022	Update for BETA release
2.0	04/2023	Update for RTM release
2.1	07/2023	Update to latest template

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