NXP TCP/IP Stack Product Brief

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1. Software Product Overview

The TCP/IP stack is a light-weight implementation of the TCP/IP protocol suite. It is a port of lwIP stack for NXP automotive processors.

lwIP was originally written by Adam Dunkels at the Computer and Networks Architectures (CNA) lab of the Swedish Institute of Computer Science but now is being actively developed by a team of developers distributed world-wide headed by Kieran Mansley. The development homepage has the latest news and releases: *http://savannah.nongnu.org/projects/lwip*

The focus of the lwIP TCP/IP implementation is to reduce the RAM usage while still having a fullscale TCP.

lwIP is freely available (under a BSD-style license) in C source code format and can be downloaded from the development homepage.

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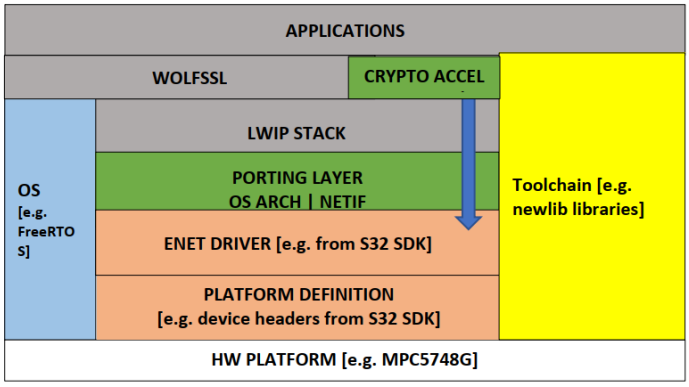

Figure 1. Architecture of TCP/IP stack

2. Software Content

lwIP has three application programming interfaces (APIs) designed for different purposes:

- **Raw API** is a native lwIP API. This API provides the best performance and minimal code size, but adds some complexity to application design because the handling of asynchronous events is done using callbacks.

- **Netconn API** is a high-level sequential API built on top of Raw API. The Netconn API enables multithreaded operations and therefore it requires an operating system (RTOS). It offers increased usability at the expense of lower performance and higher memory footprint.

- **BSD Socket API** Berkeley-like Socket API (developed on top of the Netconn API). It offers portability while sharing the same drawbacks as Netconn API.

3. Supported Targets

The following table shows the supported platforms for TCP/IP stack.

Table 1. Supported platforms, toolchains, etc.

Product	Devices	Toolchains	IDEs	Supported NXP Software	OS
TCP/IP stack for MPC5744P	MPC5744P	GNU C	S32 Design Studio	S32 SDK for MPC5744P	FreeRTOS
TCP/IP stack for MPC5748G	MPC5748G	GNU C	S32 Design Studio	S32 SDK for MPC5748G	FreeRTOS
TCP/IP stack for S32K148	S32K148	GNU C	S32 Design Studio	S32 SDK for S32K148	FreeRTOS
TCP/IP stack for S32R274	S32R274	GNU C	S32 Design Studio	S32 SDK for S32R274	FreeRTOS
TCP/IP stack for MPC5746R	MPC5746R	GNU C	S32 Design Studio	S32 SDK for MPC5746R	FreeRTOS
TCP/IP stack for MPC5777C	MPC5777C	GNU C	S32 Design Studio	S32 SDK for MPC5777C	FreeRTOS
TCP/IP stack for S32V234	S32V234	GNU C	S32 Design Studio	S32 SDK for S32V234	FreeRTOS
TCP/IP stack for S32R294	S32R294	GNU C	S32 Design Studio	SDK drivers for S32R294	FreeRTOS
TCP/IP stack for S32G274	S32G274	GNU C	S32 Design Studio	RTD drivers for S32G274	FreeRTOS
TCP/IP stack for SJA1110	SJA1110	GNU C	S32 Design Studio	SDK drivers for SJA1110	FreeRTOS
TCP/IP stack for S32K344	S32K344	GNU C, GHS, DIAB	S32 Design Studio	RTD drivers for S32K344	FreeRTOS
TCP/IP stack for SAF85XX	SAF85XX	GNU C, GHS, DIAB	S32 Design Studio	RTD drivers for SAF85XX	NXPOS
TCP/IP stack for S32R41	S32R41	GNU C, GHS, DIAB	S32 Design Studio	RTD drivers for S32R41	NXPOS
TCP/IP stack for SAF86XX	SAF86XX	GNU C, GHS, DIAB	S32 Design Studio	RTD drivers for SAF86XX	NXPOS
TCP/IP stack for S32ZE	S32ZE	GNU C, GHS, DIAB	S32 Design Studio	RTD drivers for S32ZE	FreeRTOS
TCP/IP stack for S32G	S32G3 S32G2	GNU C, GHS, DIAB	S32 Design Studio	RTD for S32G	FreeRTOS

4. Quality, Standards Compliance and Testing Approach

TCP/IP Stack is developed according to NXP Software Development Processes that are Automotive-SPICE, IATF 16949 and ISO9001 compliant.

5. Document Information

Table 2. Revision History

Revision	Date	Description
Rev 1.0	07/07/2021	Initial version
Rev 2.0	26/09/2022	Add new product(SAF85/SAF86/ S32ZE)
Rev 3.0	07/02/2023	Update S32G product

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Rev 3.0