

Kinetis Thread Stack v.1.1 GA Release Notes

1 Overview

These are the release notes for the Kinetis Thread Stack software version 1.1 implementing a wireless IPv6 mesh network protocol for Internet of Things devices. The release notes are included in the software package for which they apply.

See nxp.com/thread and www.threadgroup.org for more information about the Thread wireless network technology.

See nxp.com/wireless for more information about NXP Thread supported platforms.

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2 Release Contents

The release contents are listed in the table below.

Table 1. Release Contents

Folder	Description
\middleware\wireless\nwk_ip_1.2.1\examples\common	Application source code, initialization and configuration files
\boards	Demo applications, driver examples, rtos examples and wireless application examples
\docs	Documents applying to the release
\boards\<board_type>\wireless_examples\thread\	Applications IAR Embedded Workbench and Kinetis Design Studio IDE sample/demo projects for router eligible devices, end devices, low power end devices and host controlled devices
\tools\wireless\host_sdk	Thread Linux® OS Host Software (Python and C demos)
\boards\<board_type>\wireless_examples\ieee_802_15_4	IEEE® 802.15.4 MAC and PHY
\middleware\wireless\nwk_ip_1.2.1	Thread and network stack files
\devices	Platform linker configuration files for Thread applications
\tools\wireless	HostSDK, MyStarNetwork demo application, bootloader binary images, MAC/BLE/THREAD xml configuration files.
\rtos	Supported operating system for the features included in the Connectivity Software package

3 Features Included

The main features of this release are listed below.

- The stack provides Thread networking components over IEEE-802.15.4 MAC 2006 layer. This software is designed for use specifically with the MKW2xD and MCR20A platforms.
- The stack implements version 1.1 of the Thread Group core specification.
- The stack comes with application examples for implementing Thread Router Eligible Device, Thread End Device (including Low Power End Devices) and Thread Border Router, with application examples for implementing the Over-The-Air Updates in a Thread Large Network.
- The stack comes with application examples and a Host API to implement the host MCU scenario where the Kinetis wireless MCU running the Thread stack is hosted by an application processor running a high level operating system such as Linux OS, Android™ platform, or Windows® OS.
- The stack provides a CoAP (IETF RFC 7252) application profile API.
- The stack provides a CoAP Observe (IETF RFC 7641) application profile API.
- In addition, the Kinetis Thread Stack 1.1 GA Release contains the following improvements.
 - Stability and performance improvements
 - Support for Kinetis Design Studio in addition to the IAR® Embedded Workbench
 - Support for Thread large network
 - Support for Over the Air (OTA) updates
 - CoAP Observe feature
 - Documentation improvements

4 Software Deployment Considerations

- IAR Embedded Workbench for ARM® v7.70 or later is required to build the example projects included in this release and deploy the protocol stack libraries.
- Kinetis Design Studio v3.2.0 is required to build the KDS example projects and deploy the protocol stack libraries.
- Folder paths for projects must be kept short to account for a nested directory path limit. Otherwise, compilation errors referring to header files which cannot be found can arise.

5 Platform Considerations

The current release of Thread stack includes EWARm and KDS projects for the following platforms.

- frdmkw24
- usbkw24d512

- frdmk64f_frdmcr20a
- frdmkl46z_frdmcr20a

The Thread stack architecture is RTOS-agnostic. Sample applications in the current release use the FreeRTOS OS configurations.

6 Known Limitations for Kinetis Thread Stack 1.1 GA Release

- Memory footprint for Thread application is not fully optimized.
- This release supports only the IAR Embedded Workbench toolchain, the Kinetis Design Studio and the FreeRTOS kernel. A bare metal (task scheduler only) system is not supported.
- Maximum file path length in Windows® 7 Operating System: "Windows OS 7 imposes a 260 character maximum length for file paths. When installing the Thread KW2xD GA Release, place it in a directory close to the root to prevent file paths from exceeding the maximum character length specified by Windows OS. The recommended location is the C:\NXP folder."
- Large or long-running networks may display intermittent connectivity and stability issues.
- Missing protection for burst accesses across the 0x2000_0000 boundary that separates the two SRAM arrays for the KDS IDE projects. The GNU linker is not able to distribute objects into different memory segments.

7 Memory Configurations

The following are default memory configurations for the different Thread projects available in this release.

- Thread border router (BR) default configurations:

	Memory Footprint (KB)	
	Flash	RAM
Default Apps	10	1
SDK, Tools, Framework	118	41
MAC/PHY	24	5
SHELL	22	1
Thread	164	12
Total	338	60

- Thread router eligible end devices (REED) default configurations:

	Memory Footprint (KB)	
	Flash	RAM
Default Apps	11	1
SDK, Tools, Framework	106	38
MAC/PHY	24	5
SHELL	21	1
Thread stack	145	11
Total	307	56

- Thread end devices (ED) default configurations:

	Memory Footprint (KB)	
	Flash	RAM
Default Apps	8	1
SDK, Tools, Framework	57	24
MAC/PHY	20	2
SHELL	16	1
Thread stack	99	4
Total	200	32

- Thread low power end devices (LPED) default configurations:

	Memory Footprint (KB)	
	Flash	RAM
Default Apps	9	1
SDK, Tools, Framework	55	24
MAC/PHY	20	1
Thread stack	98	4
Total	182	30

8 Revision History

This table summarizes revisions to this document.

Table 2 Revision history		
Revision number	Date	Substantive changes
1	12/2016	Thread v1.1 KW2xD GA Release

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