

# Thread Network Stack Software

## 0.6.0

### Release Notes

#### 1 Overview

These release notes pertain to the Freescale Thread wireless network stack. This version corresponds to an early development preview release (version 0.6.0). This document is included in the software package for which it applies.

Refer to [www.freescale.com/wireless](http://www.freescale.com/wireless) for more information on Freescale 802.15.4 platforms.

Refer to [www.freescale.com/thread](http://www.freescale.com/thread) and [www.threadgroup.com](http://www.threadgroup.com) for more information on Thread wireless network technology.

#### Contents

1	Overview .....	1
2	Release Contents .....	2
3	What's New .....	2
4	Desktop System Requirements.....	3
5	Platform Considerations.....	4
6	Known Limitations.....	4
7	Memory Footprint for KW24D512 .....	4

## 2 Release Contents

The table below describes the contents of this release.

**Table 1. Release Contents**

Folder	Sub folder	Description
Thread	app	Applications (IDE projects, applications: source, initialization and configuration files)
	drv	KSDK driver adapter
	framework	Platform framework components
	ieee_802_15_4	IEEE 802.15.4 MAC and PHY
	nwk_ip	Network stack files
KSDK		Freescale Kinetis Software Development Kit

## 3 What's New

This is an early development preview software release. The main features of this release are listed below:

- The stack provides Thread networking components over 802.15.4 MAC 2006 layer.
- The stack has undergone Thread Interoperability Phase 3 testing.
- The network modules available are 6LoWPAN, MLE, MPL, IPv6, ICMP6, Thread routing, Thread Network data, Thread manager, UDP, Berkeley Socket API, DHCPv6 Client and Server.

**Table 2. Specifications Implemented**

Layer	Component	RFC #	
<b>Application Support</b>	DHCPv6	3315	Dynamic Host Configuration Protocol for IPv6
	MLE	-	draft-intarea-mesh-link-establishment-06
<b>Session</b>	BSD Sockets	-	Berkley Sockets API Implementation
<b>Security</b>	AES-128	NIST FIPS PUB 197	Advanced Encryption Standard (AES)
<b>Transport</b>	UDP	768	User Datagram Protocol
<b>Network</b>	IPv6	2460	Internet Protocol, Version 6 (IPv6) Specification
	IPv6Addr	4291, 4944	IP Version 6 Addressing Architecture
	IPv6DefaultAddr	3484	Default Address Selection for Internet Protocol version 6 (IPv6)
	ICMPv6	4443	Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
	MPL	-	draft-ietf-roll-trickle-mcast-06
	Trickle	6206	
	Routing	-	draft-thread-routing-01
<b>6LoWPAN</b>	6LoWPAN	4944	Transmission of IPv6 Packets over IEEE 802.15.4 Networks
	6LoWPAN-HC	6282	Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks

## 4 Desktop System Requirements

- IAR ARM Embedded Workbench v7.30.4 or later is required in order to build the IAR projects included in this release.
- 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 IAR projects for the following platforms:

- TWR-KW24D512
- USB-KW24D512

The Thread stack architecture is RTOS agnostic. Sample applications in the current release use the Freescale MQX configuration. FreeRTOS can be built using the Kinetis SDK OS abstraction layer.

## 6 Known Limitations

- Version 0.6.0 is an early Thread development preview. It is strongly discouraged to use this software release in a production system.
- Individual nodes cannot rejoin when reset without reinitializing the entire network.
- Nodes are not restoring data from flash at startup.
- Platform Low Power modes are not supported.
- The Leader role does not dynamically change to another router in case the current Leader is removed from the network.
- Flash and RAM code size configurations are not optimized. In particular the thread\_end\_device configuration has the same resource footprint as the more complex thread\_router and only the over the air behavior differs.
- Thread Commissioning, Petitioning, full Border Router, Address Caching and Network Partitioning are not included with this release due to early draft status within Thread core specification.
- Sample applications are limited to simple UDP client and server.
- Thread Library/App uses supplemental OS abstraction layer indirection (OSA Ext)
- Task names are not displayed in IAR MQX Task Aware Debugger (TAD)

## 7 Memory Footprint for KW24D512

The below code and data size was generated using the Thread development application projects with the following settings. Code sizes are preliminary and do not include optimizations.

**Table 3. Memory Footprints for TWR-KW24D512  
(IAR Embedded Workbench compiler)**

Layer	Memory Footprint (bytes)		
	READ ONLY CODE	READ ONLY DATA	READ WRITE DATA
Application and Shell	8912	2525	1892
Thread Network (Router)	59982	669	9276
IEEE 802.15.4 MAC	23890	42	2366
MQX RTOS	7414	140	3944
Framework and Platform	24960	541	6528
C standard libraries and other modules	13810	0	4
Dynamic Memory Buffers	264	1137	20884

