Silicon Labs OpenThread SDK 2.0.1.0 GA
Gecko SDK Suite 4.0
January 26, 2022

Thread is a secure, reliable, scalable, and upgradeable wireless IPv6 mesh networking protocol. It provides low-cost bridging to other IP networks while optimized for low-power / battery-backed operation. The Thread stack is designed specifically for Connected Home applications where IP-based networking is desired and a variety of application layers may be required.

OpenThread released by Google is an open-source implementation of Thread. Google has released OpenThread in order to accelerate the development of products for the connected home and commercial buildings. With a narrow platform abstraction layer and a small memory footprint, OpenThread is highly portable. It supports system-on-chip (SoC), network co-processor (NCP), and radio co-processor (RCP) designs.

Silicon Labs has developed an OpenThread-based SDK tailored to work with Silicon Labs hardware. The Silicon Labs OpenThread SDK is a fully tested enhanced version of the GitHub source. It supports a broader range of hardware than does the GitHub version, and includes documentation and example applications not available on GitHub.

These release notes cover SDK version(s):

2.0.1.0 GA released on January 26, 2022
2.0.0.0 GA released on December 15, 2021

KEY FEATURES

- Multiprotocol and multi-PAN radio coprocessor (RCP) model
- Thread Duckhorn feature support

Compatibility and Use Notices

For information about security updates and notices, see the Security chapter of the Gecko Platform Release notes installed with this SDK or on the Silicon Labs Release Notes page. Silicon Labs also strongly recommends that you subscribe to Security Advisories for up-to-date information. For instructions, or if you are new to the Silicon Labs OpenThread SDK, see Using This Release.

Compatible Compilers:

GCC (The GNU Compiler Collection) version 10.2.1, provided with Simplicity Studio.

Contents

1   New Items

1.1   New Components

None

1.2   New Features

Added in release 2.0.0.0

Multiprotocol and multi-PAN radio coprocessor

This release supports a multiprotocol and multi-PAN radio coprocessor (RCP) model. For more information, see *AN1333: Running Zigbee, OpenThread, and Bluetooth Concurrently on a Linux Host with a Multiprotocol RCP*, provided with the OpenThread and Zigbee SDKs.

Thread Duckhorn Features

All Thread Duckhorn features in the OpenThread GitHub repo up to and including commit **9dedd1869** and the OpenThread Border Router GitHub repo up to and including commit **58d09bee8** are included and enabled by default.

Documentation

The following documents have been added:

- AN1372: Configuring OpenThread Applications for Thread 1.3
- AN1333: Running Zigbee, OpenThread, and Bluetooth Concurrently on a Linux Host with a Multiprotocol RCP

2 Improvements

None

3   Fixed Issues

Fixed in release 2.0.1.0

ID #	Description
757778	All OpenThread applications now include the rail_util_rssi component.
759209	Fixed issue where building OpenThread apps on efr32mg2x parts with coexistence enabled gives undeclared identifier error for SL_RAIL_UTIL_COEX_RUNTIME_PHY_SELECT.
764331	For Raspberry Pi and Linux users, please make sure to run "sudo modprobe ip6table_filter" for OTBR firewall support. This allows OTBR scripts to create rules inside the Docker container before otbr-agent starts. This step should be done before starting a docker container.

Fixed in release 2.0.0.0

ID #	Description
624220	MBEDTLS_SSL_MAX_CONTENT_LEN needs to be increased to 900 for CoAP.
703615	If the RCP is taken offline, the OTBR doesn't recover.
714451 731194	Issues with promptness and accuracy of enhanced ACKs to CSL children.
730680	Host with CPCd support crashes on cpc read.
752385	OpenThread Sleepy-demo apps that utilize LED and Button ports and pins conflict for 43xx boards

4 Known Issues in the Current Release

Issues in bold were added since the previous release. If you have missed a release, recent release notes are available on https://www.si-labs.com/products/software.

ID #	Description	Workaround
482915 495241	A known limitation with the UART driver can cause characters to be lost on CLI input or output. This can happen during particularly long critical sections that may disable interrupts, so it can be alleviated by repeating the CLI or waiting long enough for state changes.	No known workaround
620720	diag radio state CLI with Factory Diagnostics Module always returns invalid.	No known workaround
745530	Thread 1.1 certification test 5.8.4 with Thread 1.2 Leader DUT fails for missing Discovery Reply.	No known workaround
754514	Double ping reply observed for OTBR ALOC address.	No known workaround
759780	Restarting the multi-PAN RCP causes CPC-enabled Open-Thread host apps such as otbr-agent and ot-cli to disconnect from CPCd.	No known workaround

5 Deprecated Items

None

6 Removed Items

Removed in release 2.0.0.0

AN1295: Developing with Thread 1.2 has been removed.

7   Using This Release

This release contains the following

- Silicon Labs OpenThread stack
- Silicon Labs OpenThread sample applications
- Silicon Labs OpenThread border router

For more information about the OpenThread SDK see QSG170: Silicon Labs OpenThread QuickStart Guide. If you are new to Thread see UG103.11: Thread Fundamentals.

7.1   Installation and Use

The OpenThread SDK is part of the Gecko SDK (GSDK), the suite of Silicon Labs SDKs. To quickly get started with OpenThread and the GSDK, start by installing Simplicity Studio 5, which will set up your development environment and walk you through GSDK installation. Simplicity Studio 5 includes everything needed for IoT product development with Silicon Labs devices, including a resource and project launcher, software configuration tools, full IDE with GNU toolchain, and analysis tools. Installation instructions are provided in the online Simplicity Studio 5 User's Guide.

Alternatively, Gecko SDK may be installed manually by downloading or cloning the latest from GitHub. See https://github.com/Sili-conLabs/gecko_sdk for more information.

The GSDK default installation location has changed with Simplicity Studio 5.3, used with this release.

- Windows: C:\Users\<NAME>\SimplicityStudio\SDKs\gecko_sdk
- MacOS: /Users/<NAME>/SimplicityStudio/SDKs/gecko_sdk

Documentation specific to the SDK version is installed with the SDK. API references and other information about this release are available on https://docs.silabs.com/openthread/1.2/.

7.2   OpenThread GitHub Repository

The Silicon Labs OpenThread SDK includes all changes from the OpenThread GitHub repo (https://github.com/openthread/openthread) up to and including commit **55af6ce2c**. An enhanced version of the OpenThread repo can be found in the following Simplicity Studio 5 GSDK location:

<GSDK Installation Location>\util\third_party\openthread

7.3   OpenThread Border Router GitHub Repository

The Silicon Labs OpenThread SDK includes all changes from the OpenThread border router GitHub repo (https://github.com/openthread/ot-br-posix) up to and including commit **fb0b32c4b**. An enhanced version of the OpenThread border router repo can be found in the following Simplicity Studio 5 GSDK location:

<GSDK Installation Location>\util\third_party\ot-br-posix

7.4   Using the Border Router

For ease of use, Silicon Labs recommends the use of a Docker container for your OpenThread border router. Refer to AN1256: Using the Silicon Labs RCP with the OpenThread Border Router for details on how to set up the correct version of OpenThread border router Docker container. It is available at https://hub.docker.com/r/siliconlabsinc/openthread-border-router.

If you are manually installing a border router, using the copies provided with the Silicon Labs OpenThread SDK, refer to AN1256: Using the Silicon Labs RCP with the OpenThread Border Router for more details.

Although updating the border router environment to a later GitHub version is supported on the OpenThread website, it may make the border router incompatible with the OpenThread RCP stack in the SDK.

7.5 NCP/RCP Support

The OpenThread NCP support is included with OpenThread SDK but any use of this support should be considered experimental. The OpenThread RCP is fully implemented and supported.

7.6 Security Information

Secure Vault Integration

When deployed to Secure Vault High devices, sensitive keys are protected using the Secure Vault Key Management functionality. The following table shows the protected keys and their storage protection characteristics.

Wrapped Key	Exportable / Non-Exportable	Notes
Thread Master Key	Exportable	Must be exportable to form the TLVs
PSKc	Exportable	Must be exportable to form the TLVs
Key Encryption Key	Exportable	Must be exportable to form the TLVs
MLE Key	Non-Exportable	
Temporary MLE Key	Non-Exportable	
MAC Previous Key	Non-Exportable	
MAC Current Key	Non-Exportable	
MAC Next Key	Non-Exportable	

Wrapped keys that are marked as "Non-Exportable" can be used but cannot be viewed or shared at runtime.

Wrapped keys that are marked as "Exportable" can be used or shared at runtime but remain encrypted while stored in flash.

For more information on Secure Vault Key Management functionality, see AN1271: Secure Key Storage.

Security Advisories

To subscribe to Security Advisories, log in to the Silicon Labs customer portal, then select **Account Home**. Click **HOME** to go to the portal home page and then click the **Manage Notifications** tile. Make sure that 'Software/Security Advisory Notices & Product Change Notices (PCNs)' is checked, and that you are subscribed at minimum for your platform and protocol. Click **Save** to save any changes.

7.7   Support

Development Kit customers are eligible for training and technical support. Use the Silicon Laboratories Thread web page to obtain information about all Silicon Labs OpenThread products and services, and to sign up for product support.

You can contact Silicon Laboratories support at http://www.silabs.com/support.

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