Silicon Labs OpenThread SDK 2.3.2.0 GA
Gecko SDK Suite 4.3
October 9, 2023

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):

2.3.2.0 GA released on October 9, 2023
2.3.1.0 GA released on July 26, 2023
2.3.0.0 GA released on June 7, 2023

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 TECH DOCS tab on https://www.silabs.com/developers/thread. 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 10.3-2021.10, provided with Simplicity Studio.
# Contents

1  New Items .................................................................................................................................................................................. 1
   1.1  New Components................................................................................................................................................................ 1
   1.2  New Features...................................................................................................................................................................... 1
   1.3  New APIs............................................................................................................................................................................ 1
   1.4  New Radio Board Support ................................................................................................................................................... 2

2  Improvements............................................................................................................................................................................. 3

3  Fixed Issues ............................................................................................................................................................................... 4

4  Known Issues in the Current Release .......................................................................................................................................... 5

5  Deprecated Items ....................................................................................................................................................................... 6

6  Removed Items .......................................................................................................................................................................... 7

7  Multiprotocol Gateway and RCP.................................................................................................................................................. 8
   7.1  New Items........................................................................................................................................................................... 8
   7.2  Improvements ..................................................................................................................................................................... 8
   7.3  Fixed Issues......................................................................................................................................................................... 9
   7.4  Known Issues in the Current Release .................................................................................................................................. 9
   7.5  Deprecated Items.............................................................................................................................................................. 10
   7.6  Removed Items................................................................................................................................................................ . 10

8  Using This Release .................................................................................................................................................................. 11
   8.1  Installation and Use........................................................................................................................................................... 11
   8.2  OpenThread GitHub Repository ......................................................................................................................................... 11
   8.3  OpenThread Border Router GitHub Repository .................................................................................................................. 11
   8.4  Using the Border Router .................................................................................................................................................... 11
   8.5  NCP/RCP Support............................................................................................................................................................. 12
   8.6  Security Information .......................................................................................................................................................... 12
   8.7  Support............................................................................................................................................................................. 13
1 New Items

1.1 New Components

**Added in release 2.3.2.0**

- `ot_platform_ext` – This component extends access to platform-specific extension APIs and optional CLI commands.

**Added in release 2.3.1.0**

- `ot_ncp_vendor_extension` – This component extends the behavior of the OpenThread NCP controller to allow the processing and handling of vendor-defined Spinel attributes.

1.2 New Features

**Added in release 2.3.0.0**

- The versions of OpenThread and the OpenThread Border Router have been updated. See sections 8.2 and 8.3.
- Thread 1.3.1 (experimental)
  - IPv4/v6 public internet connectivity: NAT64 improvements, optimization of published routes and prefixes in network data
  - DNS enhancements for OTBR
  - Thread over Infrastructure (TREL)
- Network Diagnostics Improvements (experimental)
  - Child supervision by parent
  - Additional link quality information in child table
  - Uptime for routers
- Support for the `ot-cli` sample application with CPC on Android Host
  - The `ot-cli` sample application can now be used with CPC on an Android host. To build, download the Android NDK toolchain, define the environment variable "NDK" to point to the toolchain, and run the script/cmake-build-android script instead of script/cmake-build.

1.3 New APIs

**Added in release 2.3.2.0**

- `otPlatDiagGpioSet` - Set the gpio value.
- `otPlatDiagGpioGet` - Get the gpio value.
- `otPlatDiagGpioSetMode` - Set the gpio mode.
- `otPlatDiagGpioGetMode` - Get the gpio mode.
- `otPlatRadioExtensionGetRadioCounters` – Get RAIL debug counter values.
- `otPlatRadioExtensionClearRadioCounters` - Clear RAIL debug counter values.

**Added in release 2.3.1.0**

- `otPlatRadioExtensionGetTxAntennaMode` - Get the antenna diversity transmit antenna mode.
- `otPlatRadioExtensionSetTxAntennaMode` - Set the antenna diversity transmit antenna mode.
- `otPlatRadioExtensionGetRxAntennaMode` - Get the antenna diversity receive antenna mode.
- `otPlatRadioExtensionSetRxAntennaMode` - Set the antenna diversity receive antenna mode.
- `otPlatRadioExtensionSetActivePhy` - Get the antenna diversity active phy state.
- `otPlatRadioExtensionSetDpState` - Get the coexistence directional priority state and pulse width.
- `otPlatRadioExtensionSetDpState` - Set the coexistence directional priority state and pulse width.
- `otPlatRadioExtensionGetGpioInputOverride` - Get the override input value of a GPIO.
- `otPlatRadioExtensionSetGpioInputOverride` - Set the override input value of a GPIO.
- `otPlatRadioExtensionGetActiveRadio` - Get the coexistence active phy state.
- `otPlatRadioExtensionGetPhySelectTimeout` - Get the coexistence phy select state and timeout.
- `otPlatRadioExtensionSetPhySelectTimeout` - Set the coexistence phy select state and timeout.
- `otPlatRadioExtensionGetCoexOptions` - Get the coexistence bitmask of features.
- `otPlatRadioExtensionSetCoexOptions` - Set the coexistence bitmask of features.
- `otPlatRadioExtensionGetCoexConstantOptions` - Get the coexistence bitmask of constant PTA features that can not be modified using public APIs.
- `otPlatRadioExtensionIsCoexEnabled` - Get the coexistence enabled status.
- `otPlatRadioExtensionSetCoexEnable` - Set the coexistence enabled status.
- `otPlatRadioExtensionGetRequestPwmArgs` - Get the coexistence PWM configuration.
- `otPlatRadioExtensionSetRequestPwmArgs` - Set the coexistence PWM configuration.
- `otPlatRadioExtensionClearCoexCounters` - Clear the coexistence counters.
- `otPlatRadioExtensionGetCoexCounters` - Get the coexistence counters.
- `otPlatRadioExtensionSetRadioHoldoff` - Set the coexistence radio holdoff status.

### 1.4 New Radio Board Support

**Added in release 2.3.1.0**

Support has been added for the following radio boards:
- BRD4186Z - EFR32xG24

**Added in release 2.3.0.0**

Support has been added for the following radio boards:
- BRD4196B - EFR32xG21B
- BRD2704A - Sparkfun Thing Plus MGM240P
2 Improvements

Changed in release 2.3.2.0

- Added support for "diag gpio" CLI command.
  - `diag gpio get <gpio>` - Get the gpio value.
  - `diag gpio set <gpio> <value>` - Set the gpio value.
  - `diag gpio mode <gpio>` - Get the gpio mode.
  - `diag gpio mode <gpio> in` - Set the given gpio to the input mode without pull resistor.
  - `diag gpio mode <gpio> out` - Set the given gpio to the output mode.

  Note: The 32-bit <gpio> value is encoded with the 16 most significant bits used for the port and the 16 least significant bits used for the pin. For example, the PB1 gpio would be encoded into 0x10001, 65537 decimal, where port A starts from value 0.

- Updated Coordinated Sampled Listening (CSL).
  - `otPlatRadioGetCslAccuracy` now depends on platform generated values `SL_DEVICE_INIT_HFXO_PRECISION` and `SL_DEVICE_INIT_LFXO_PRECISION`, depending on the board configuration. Review these values before testing CSL on your boards.
  - `otPlatRadioGetCslUncertainty` depends on `SL_OPENTHREAD_CSL_TX_UNCERTAINTY`, which can be set by the user, but has been optimized by Silicon Labs for optimal receive window size on SSEDs. Increasing this value may improve the reliability of CSL, but will increase receive window sizes on SSEDs, therefore increasing power usage.

- Added support for "radio counters" CLI command.
  - `efr32 counters radio` - Display the values of the platform radio debug counter fields.
  - `efr32 counters radio reset` - Reset the values of the platform radio debug counter fields to 0.

Changed in release 2.3.1.0

With regard to the OpenThread border router, `radio_url` can now take a list of IIDs. This is to control IIDs a host can accept spinel frames from other than its own IID. RCP uses IID zero for the received broadcast packet to deliver a spinel frame to all the connected hosts/endpoints. An example of the new `radio_url` is `spinel+cpc://cpcd_0?iid=1&iid-list=0`.

Changed in release 2.3.0.0

- Support for "diag cw" and "diag stream"
  - `diag cw start` - Start transmitting continuous carrier wave
  - `diag cw stop` - Stop transmitting continuous carrier wave
  - `diag stream start` - Start transmitting a stream of characters.
  - `diag stream stop` - Stop transmitting a stream of characters.

- Bootloader support for sample applications
  - The bootloader_interface component has been added to the Thread sample apps. The component introduces support for bootloaders and also results in the creation of GBL files when building.

- Reduction to code size of Certified OpenThread Libraries
  - The pre-built certification libraries no longer include JOINER functionality.
## 3 Fixed Issues

### Fixed in release 2.3.2.0

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1169011</td>
<td>The ot-ble-dmp sample application running on an MG24 no longer faults while being commissioned on to the thread network.</td>
</tr>
<tr>
<td>1193331</td>
<td>Added openthread diag gpio CLI support. The 32-bit &lt;gpio&gt; value is encoded with the 16 most significant bits used for the port and the 16 least significant bits used for the pin. For example, the PB1 gpio would be encoded into 0x10001, 65537 decimal, where port A starts from value 0.</td>
</tr>
<tr>
<td>1193726</td>
<td>Simplicity Studio no longer shows SoC projects when the MR21 part is chosen.</td>
</tr>
<tr>
<td>1194843</td>
<td>The “diag repeat” and “diag send” commands no longer cause RCP TX failures.</td>
</tr>
<tr>
<td>1171933, 1194875</td>
<td>Increased timer task priority for BLE DMP sample apps to avoid memory corruption in a BLE task.</td>
</tr>
<tr>
<td>1196827</td>
<td>Addressed issue in key importation.</td>
</tr>
</tbody>
</table>

### Fixed in release 2.3.1.0

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>754514</td>
<td>Fixed an issue where a double ping reply was observed for OTBR ALOC address.</td>
</tr>
<tr>
<td>1041112</td>
<td>Fixed an issue where the OTBR / EFR32 RCP can miss forwarding packets from a CSL child if it configures an alternate channel for CSL communication.</td>
</tr>
<tr>
<td>1085737</td>
<td>Fixed an issue where a Matter SSED over Thread is unreachable with CSL.</td>
</tr>
<tr>
<td>1132004</td>
<td>Fixed an issue where the RCP can become unresponsive when receiving excessive beacon requests.</td>
</tr>
<tr>
<td>1156792</td>
<td>Fixed a bug that caused SSED devices to lose buffer during long runs.</td>
</tr>
</tbody>
</table>

### Fixed in release 2.3.0.0

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1023725</td>
<td>Fixed an issue where detached MTDs on the Thread network hit an assert while re-attaching to the OTBR after the OTBR is rebooted.</td>
</tr>
<tr>
<td>1079667</td>
<td>Fixed an issue where devices can no longer communicate after reporting transient out-of-buffers condition.</td>
</tr>
<tr>
<td>1084368</td>
<td>Fixed failing HomeKit HCA test when using board 4186c and the DMP application.</td>
</tr>
<tr>
<td>1095059</td>
<td>Added openthread 'diag stream' and 'diag cw' CLI commands. See Improvements section for additional details.</td>
</tr>
<tr>
<td>1113046</td>
<td>Radio PAL now maintains max channel power table.</td>
</tr>
<tr>
<td>1126570</td>
<td>Addressed a memory leak associated with PSA keys which occurs when otInstanceFinalise() is called without power cycling.</td>
</tr>
<tr>
<td>1133240</td>
<td>Fixed a bug in setting link parameters in the meshcop forwarding layer.</td>
</tr>
<tr>
<td>1139318</td>
<td>Request to Reduce Codesize of Certified OpenThread Library. See Improvements section for additional details.</td>
</tr>
<tr>
<td>1139449</td>
<td>Fixed an issue where devices stopped receiving during Tx storm.</td>
</tr>
<tr>
<td>1142231</td>
<td>Radio SPINEL no longer asserts when no entries are available in source match table.</td>
</tr>
</tbody>
</table>
## 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.silabs.com/developers/thread in the Tech Docs tab.

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td>482915 495241</td>
<td>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.</td>
<td>No known workaround</td>
</tr>
<tr>
<td>815275</td>
<td>Ability to modify the Radio CCA Modes at compile-time using a configuration option in Simplicity Studio is currently not supported.</td>
<td>Use the SL_OPENTHREAD_RADIO_CCA_MODE configuration option defined in openthread-core-efr32-config.h header file included with your project.</td>
</tr>
<tr>
<td>1094232</td>
<td>Intermittently, ot-ctl terminates after a factoryreset when using a CPCd connection.</td>
<td>No known workaround</td>
</tr>
<tr>
<td>1064242</td>
<td>OpenThread prefix commands sometimes fail to add prefix for OTBR over CPC.</td>
<td>No known workaround</td>
</tr>
<tr>
<td>1148720</td>
<td>Intermittently, SED current draw is too high.</td>
<td>No known workaround</td>
</tr>
<tr>
<td>1163281</td>
<td>The OTBR DUTs that need to pass Thread Certification Test &quot;5.10.2 MATN-TC-02: Multicast listener registration and first use&quot; need to enable the 'REFERENCE_DEVICE' flag during OTBR bootstrap and setup. This issue will be addressed in a later release with a newer OpenThread stack that fixes this issue.</td>
<td>Compile with REFERENCE_DEVICE.</td>
</tr>
<tr>
<td>1177718</td>
<td>MG24 Hangs when otInstanceErasePersistentInfo() is run in app_init()</td>
<td>No known workaround</td>
</tr>
<tr>
<td>1185623</td>
<td>When Matter hub is down, MADs lose routing of unicast messages (bindings)</td>
<td>No known workaround</td>
</tr>
</tbody>
</table>
5 Deprecated Items

None.
6 Removed Items

**Removed in release 2.3.0.0**

- The ot-remote-cli component has been removed. There is no replacement for this component because the functionality provided by the component is no longer required.
- The Silicon Labs HomeKit extension is no longer included with this release.
7  Multiprotocol Gateway and RCP

7.1  New Items

**Added in release 2.3.0.0**

Added a new application z3-light_ot-ftd_soc that demonstrates Zigbee and OpenThread Concurrent Multiprotocol functionality. It features a router on the Zigbee side and a Full Thread Device (FTD) on the OpenThread side. See the project description or app/framework/scenarios/z3/z3-light_ot-ftd_soc/readme.html for details.

First GA-quality release of CPC GPIO Expander module. The Co-Processor Communication (CPC) General Purpose Input/Output (GPIO) Expander is a software component designed to enable a Host device to utilize a Secondary device’s GPIOs as if they were its own. With the CPC GPIO Expander, the Host device can seamlessly integrate with the Secondary device and make use of its GPIO capabilities. See https://github.com/SiliconLabs/cpc-gpio-expander/README.md for documentation.

Added antenna diversity and coex EZSP command support to Zigbee.

Added better assert reporting to Zigbee.

Added bt_host_empty application (option: -B for the run.sh script) to the multiprotocol docker container.

Zigbee now includes an implementation of emberGetRestoredEui64() which loads the CREATOR_STACK_RESTORED_EUI64 token from the host_token.nvm file.

The multiprotocol container now sets the size of syslog to 100 MB by default. Users are able to change the size by modifying the "/etc/logrotate.d/rsyslog" and "/etc/rsyslog.d/50-default.conf" files and restarting the rsyslog service inside the container.

**7.2  Improvements**

**Changed in release 2.3.1.0**

Radio_url can now take a list of IIDs. This is to control IIDs a host can accept spinel frames from other than its own IID. RCP uses IID zero for the received broadcast packet to deliver a spinel frame to all the connected hosts/endpoints. An example of the new radio_url is ‘spinel+cpc://cpcd_0?iid=1&iid-list=0’.

CLI commands used by z3-light_ot-ftd_soc sample application have been moved from the project into a new component called ot_up_cli.

**Changed in release 2.3.0.0**

Reduced CPC Tx and Rx queue sizes to fit the DMP NCP on the MG13 family.

Configured options on the multiprotocol RCP projects to provide ~3.3k in RAM savings, particularly for the MG1 part. This was accomplished by

- Reducing
  - The number of user CPC endpoints to 0
  - Tx CPC queue size to 15 from 20
  - Rx buffer count to 15
- Disabling OpenThread RTT logs

For further savings, customers can look into reducing the Tx and Rx queue sizes further. Note that the downside to this change would be a reduction in message throughput due to added retries. Also, customers can look into reducing the NVM cache size based on need. As a last resort, customers may also choose to disable CPC security on both the RCP and the host. We do not recommend the last option.

Changed zigbee_ble_event_handler to print scan responses from legacy advertisements in the DMPLight(Sed) app.

The rcp-xxx-802154 apps now by default support 192 µsec turnaround time for non-enhanced acks while still using 256 µsec turnaround time for enhanced acks required by CSL.
7.3 Fixed Issues

Fixed in release 2.3.2.0

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1090921</td>
<td>An issue has been fixed that caused Z3GatewayCpc not being able to form the zigbee network in a noisy environment.</td>
</tr>
<tr>
<td>1190859</td>
<td>An EZSP issue when sending mfglib packets CMP RCP setup has been fixed.</td>
</tr>
</tbody>
</table>

Fixed in release 2.3.1.0

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1113498</td>
<td>Resolved several issues that caused intermittent failures in zigbeed when attempting to join 100 or more Zigbee devices to the network.</td>
</tr>
<tr>
<td>1135805</td>
<td>An issue has been fixed that caused failure on the host if a communication error occurred when reading the NCP version.</td>
</tr>
<tr>
<td>1153055</td>
<td>An argument parsing issue has been fixed in the CLI command ping_ipaddr of the ot_up_cli component.</td>
</tr>
</tbody>
</table>

Fixed in release 2.3.0.0

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1078323</td>
<td>Resolved issue where Z3GatewayCPC asserts when there is a communication failure with the NCP during address table initialization. We will now try to reconnect to the NCP upon failure.</td>
</tr>
<tr>
<td>1080517</td>
<td>Z3GatewayCPC now automatically handles a reset of the NCP (CPC secondary).</td>
</tr>
<tr>
<td>1117789</td>
<td>Fixed an issue where modifying OPENTHREAD_CONFIG_PLATFORM_RADIO_SPINEL_RX_FRAME_BUFFER_SIZE caused a linker error when building Zigbeed.</td>
</tr>
<tr>
<td>1118077</td>
<td>In the CMP RCP, Spinel messages were being dropped under heavy traffic load due to CPC not keeping up with the incoming packets. Fixed this by bundling all Spinel messages ready to be sent over CPC into one payload on the RCP and unbundling them on the host. This dramatically improves the efficiency of CPC so that it can keep up with the incoming radio traffic.</td>
</tr>
<tr>
<td>1129821</td>
<td>Fixed null pointer dereference in Zigbeed in an out-of-buffer scenario while receiving packets.</td>
</tr>
<tr>
<td>1139990</td>
<td>Fixed an assert in the OpenThread Spinel code that could be triggered when joining many Zigbee devices simultaneously.</td>
</tr>
<tr>
<td>1144268</td>
<td>Fixed an issue where excessive radio traffic can cause the Zigbee-BLE NCP to get into a state where it continually executes the NCP and CPC initialization.</td>
</tr>
<tr>
<td>1147517</td>
<td>Fixed an issue with Z3GatewayCPC on startup that could cause the reset handling of the secondary to not work correctly.</td>
</tr>
</tbody>
</table>

7.4 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.silabs.com/developers/gecko-software-development-kit.

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td>811732</td>
<td>Custom token support is not available when using Zigbeed.</td>
<td>Support is planned in a future release.</td>
</tr>
<tr>
<td>1074205</td>
<td>The CMP RCP does not support two networks on the same PAN id.</td>
<td>Use different PAN ids for each network. Support is planned in a future release.</td>
</tr>
<tr>
<td>1122723</td>
<td>In a busy environment the CLI can become unresponsive in the z3-light_of-ftd_soc app.</td>
<td>This app is released as experimental quality and the issue will be fixed in a future release.</td>
</tr>
<tr>
<td>1124140</td>
<td>z3-light_of-ftd_soc sample app is not able to form the Zigbee network if the OT network is up already.</td>
<td>Start the Zigbee network first and the OT network after.</td>
</tr>
<tr>
<td>ID #</td>
<td>Description</td>
<td>Workaround</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>1129032</td>
<td>Experimental concurrent listening feature on xG24 devices is disabled in this release.</td>
<td>Support is planned in a future release.</td>
</tr>
<tr>
<td>1143857</td>
<td>Antenna Diversity is not available on the CMP RCP for xG21 and xG24 parts, since the antenna diversity hardware is used for concurrent listening.</td>
<td>Intended behavior.</td>
</tr>
<tr>
<td>1155676</td>
<td>CMP RCP will discard all received unicast packets (after MAC Acking) if multiple 15.4 interfaces happen to share the same 16-bit node ID.</td>
<td>Contact customer support.</td>
</tr>
<tr>
<td>1199234</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.5  **Deprecated Items**

None

7.6  **Removed Items**

None
8 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.

8.1 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/SiliconLabs/gecko_sdk for more information.

The GSDK default installation location has changed beginning with Simplicity Studio 5.3.

- 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/2.1/.

8.2 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 e6df00dd6. 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

8.3 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 bb565ca01. 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

8.4 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.
8.5 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.

8.6 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.

<table>
<thead>
<tr>
<th>Wrapped Key</th>
<th>Exportable / Non-Exportable</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thread Master Key</td>
<td>Exportable</td>
<td>Must be exportable to form the TLVs</td>
</tr>
<tr>
<td>PSKc</td>
<td>Exportable</td>
<td>Must be exportable to form the TLVs</td>
</tr>
<tr>
<td>Key Encryption Key</td>
<td>Exportable</td>
<td></td>
</tr>
<tr>
<td>MLE Key</td>
<td>Non-Exportable</td>
<td></td>
</tr>
<tr>
<td>Temporary MLE Key</td>
<td>Non-Exportable</td>
<td></td>
</tr>
<tr>
<td>MAC Previous Key</td>
<td>Non-Exportable</td>
<td></td>
</tr>
<tr>
<td>MAC Current Key</td>
<td>Non-Exportable</td>
<td></td>
</tr>
<tr>
<td>MAC Next Key</td>
<td>Non-Exportable</td>
<td></td>
</tr>
</tbody>
</table>

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.
8.7 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.
Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!

IoT Portfolio
www.silabs.com/IoT

SW/HW
www.silabs.com/simplicity

Quality
www.silabs.com/quality

Support & Community
www.silabs.com/community

Disclaimer
Silicon Labs intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Labs products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and “Typical” parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Labs reserves the right to make changes without further notice to the product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Without prior notification, Silicon Labs may update product firmware during the manufacturing process for security or reliability reasons. Such changes will not alter the specifications or the performance of the product. Silicon Labs shall have no liability for the consequences of use of the information supplied in this document. This document does not imply or expressly grant any license to design or fabricate any integrated circuits. The products are not designed or authorized to be used within any FDA Class III devices, applications for which FDA premarket approval is required or Life Support Systems without the specific written consent of Silicon Labs. A "Life Support System" is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Labs products are not designed or authorized for military applications. Silicon Labs products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons. Silicon Labs disclaims all express and implied warranties and shall not be responsible or liable for any injuries or damages related to use of a Silicon Labs product in such unauthorized applications.

Note: This content may contain offensive terminology that is now obsolete. Silicon Labs is replacing these terms with inclusive language wherever possible. For more information, visit www.silabs.com/about-us/inclusive-lexicon-project

Trademark Information
Silicon Laboratories Inc.®, Silicon Laboratories®, Silicon Labs®, SiLabs® and the Silicon Labs logo®, Bluegiga®, Bluegiga Logo®, EFM®, EFM32®, EFR, Ember®, Energy Micro, Energy Micro logo and combinations thereof, "the world's most energy friendly microcontrollers", Redpine Signals®, WiSeConnect®, n-Link, ThreadArch®, EZLink®, EZRadio®, EZRadioPRO®, Gecko®, Gecko OS, Gecko OS Studio, Precision32®, Simplicity Studio®, Telegesis, the Telegesis Logo®, USBXpress®, Zentri, the Zentri logo and Zentri DMS, Z-Wave®, and others are trademarks or registered trademarks of Silicon Labs. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. Wi-Fi is a registered trademark of the Wi-Fi Alliance. All other products or brand names mentioned herein are trademarks of their respective holders.