Wi-SUN SDK 1.3.0.0 GA
Gecko SDK Suite 4.1
June 8, 2022

Wireless Smart Ubiquitous Network (Wi-SUN) is the leading IPv6 sub-GHz mesh technology for smart city and smart utility applications. Wi-SUN brings Smart Ubiquitous Networks to service providers, utilities, municipalities/local government, and other enterprises, by enabling interoperable, multi-service, and secure wireless mesh networks. Wi-SUN can be used for large-scale outdoor IoT wireless communication networks in a wide range of applications covering both line-powered and battery-powered nodes.

Silicon Labs' Wi-SUN hardware is certified by the Wi-SUN Alliance, a global industry association devoted to seamless LPWAN connectivity. Wi-SUN builds upon open standard internet protocols (IP) and APIs, enabling developers to extend existing infrastructure platforms to add new capabilities. Built to scale with long-range capabilities, high-data throughput and IPv6 support, Wi-SUN simplifies wireless infrastructure for industrial applications and the evolution of smart cities.

These release notes cover SDK versions:

1.3.0.0 released June 8, 2022

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/wi-sun-protocol-stack. 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 Wi-SUN SDK, see Using This Release.

Compatible Compilers:

IAR Embedded Workbench for ARM (IAR-EWARM) version 9.20.4

- Using wine to build with the iarBuild.exe command line utility or IAR Embedded Workbench GUI on macOS or Linux could result in incorrect files being used due to collisions in wine’s hashing algorithm for generating short file names.
- Customers on macOS or Linux are advised not to build with IAR outside of Simplicity Studio. Customers who do should carefully verify that the correct files are being used.

GCC (The GNU Compiler Collection) version 10.3-2021.10, provided with Simplicity Studio.
<table>
<thead>
<tr>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  Wi-SUN Stack................................................................................................................................. 2</td>
</tr>
<tr>
<td>1.1 New Items......................................................................................................................................... 2</td>
</tr>
<tr>
<td>1.2 Improvements..................................................................................................................................... 2</td>
</tr>
<tr>
<td>1.3 Fixed Issues....................................................................................................................................... 2</td>
</tr>
<tr>
<td>1.4 Known Issues in the Current Release ................................................................................................. 2</td>
</tr>
<tr>
<td>1.5 Deprecated Items............................................................................................................................... 2</td>
</tr>
<tr>
<td>1.6 Removed Items.................................................................................................................................... 2</td>
</tr>
<tr>
<td>2  Wi-SUN Applications.............................................................................................................................. 3</td>
</tr>
<tr>
<td>2.1 New Items........................................................................................................................................... 3</td>
</tr>
<tr>
<td>2.2 Improvements..................................................................................................................................... 3</td>
</tr>
<tr>
<td>2.3 Fixed Issues....................................................................................................................................... 3</td>
</tr>
<tr>
<td>2.4 Known Issues in the Current Release ................................................................................................. 3</td>
</tr>
<tr>
<td>2.5 Deprecated Items............................................................................................................................... 3</td>
</tr>
<tr>
<td>2.6 Removed Items.................................................................................................................................... 3</td>
</tr>
<tr>
<td>3  Using This Release................................................................................................................................. 4</td>
</tr>
<tr>
<td>3.1 Installation and Use............................................................................................................................ 4</td>
</tr>
<tr>
<td>3.2 Security Information............................................................................................................................. 4</td>
</tr>
<tr>
<td>3.3 Support............................................................................................................................................... 5</td>
</tr>
</tbody>
</table>
1 Wi-SUN Stack

1.1 New Items

Added in release 1.3.0.0

- Most of the stack crypto operations are now made through ARM PSA Crypto API.
- Added a new API `sl_wisun_set_device_private_key_id()` that indicates which PSA Crypto key handler contains the device private key and has to be used by the stack. It is the application’s responsibility to create the key.
- Added a new API `sl_wisun_set_regulation()` that configures the regional regulation to which the stack must comply. Refer to UG495: Silicon Labs Wi-SUN Developer’s Guide for more information about regional regulation in the Wi-SUN Stack.
- Added a new event `SL_WISUN_MSG_REGULATION_TX_LEVEL_IND_ID` that is fired when the transmission budget crosses one of the transmission budget thresholds. The transmission budget is defined by the regional regulation. Refer to UG495: Silicon Labs Wi-SUN Developer’s Guide for more information about regional regulation in the Wi-SUN Stack.
- Added a new API `sl_wisun_set_regulation_tx_thresholds()` that configures the threshold used to fire `SL_WISUN_MSG_REGULATION_TX_LEVEL_IND_ID` event.
- Added a new API `sl_wisun_set_advert_fragment_duration()` that configures the asynchronous transmission fragment duration. It can be used to reduce the impact on the latency of long advertisement periods.
- Added a new API `sl_wisun_set_unicast_tx_mode()` that enables a high-reliability transmission mechanism for unicast communication. It trades off unicast communication reliability for latency.

1.2 Improvements

Changed in release 1.3.0.0

- `sl_wisun_set_channel_mask()` channel filter is now applied to asynchronous transmissions and unicast listening schedule. The function was renamed `sl_wisun_set_allowed_channel_mask()` to make it more self-explanatory.

1.3 Fixed Issues

Fixed in release 1.3.0.0

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>813440</td>
<td>Fixed an error that was causing radio calibrations to be skipped during Wi-SUN Stack initialization.</td>
</tr>
<tr>
<td>774290</td>
<td></td>
</tr>
</tbody>
</table>

1.4 Known Issues in the Current Release

None

1.5 Deprecated Items

None

1.6 Removed Items

None
2 Wi-SUN Applications

2.1 New Items

Added in release 1.3.0.0

iPerf2 support

- Integrated into Wi-SUN - SoC Network Measurement Application
- Option to install the Iperf2 component to other applications also

Wi-SUN Configurator – UI Tool

- Configuration options are being used by the Applications automatically
  - MAC Address
  - MAC Allow/Deny List
  - Unicast Dwell Interval

CoAP discovery feature (limited, RFC 6690):

- Register Resources
- Return list of Registered Resources in response to GET .well-known/core request

2.2 Improvements

None

2.3 Fixed Issues

None

2.4 Known Issues in the Current Release

Issues in bold were added since the previous release.

<table>
<thead>
<tr>
<th>ID #</th>
<th>Description</th>
<th>Workaround</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Simplicity Studio – Network Analyzer: Wi-SUN Encrypted Packets are not supported.</td>
<td></td>
</tr>
</tbody>
</table>

2.5 Deprecated Items

None

2.6 Removed Items

Removed in release 1.3.0.0

- Wi-SUN - SoC Border Router with backhaul.
3 Using This Release

This release contains the following

- Wi-SUN stack library
- Wi-SUN sample applications
- Wi-SUN border router pre-compiled demos
- Documentation

If you are a first time user, see QSG181: Silicon Labs Wi-SUN Quick-Start Guide.

3.1 Installation and Use

The Wi-SUN SDK is provided as part of the Gecko SDK (GSDK), the suite of Silicon Labs SDKs. To quickly get started with the GSDK, install 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.

Simplicity Studio installs the GSDK by default in:
- (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.

3.2 Security Information

Secure Vault Integration

This version of the stack does not integrate Secure Vault Key Management.
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.

![Security Advisories Gateway](image)

3.3 Support

Development Kit customers are eligible for training and technical support. Contact Silicon Laboratories support at [http://www.silabs.com/support](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.