

Wi-SUN SDK 1.2.1.0 GA Gecko SDK Suite 4.0 January 26, 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.



KEY FEATURES

- FAN 1.0 Certified Wi-SUN Border Router reference design
- Wi-SUN Network Performance Application

These release notes cover SDK versions:

1.2.1.0 released January 26, 2022 1.2.0.0 released December 15, 2021

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 <u>Silicon Labs Release Notes page</u>. 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 <u>Using This Release</u>.

Compatible Compilers:

IAR Embedded Workbench for ARM (IAR-EWARM) version 8.50.9

- 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 10.2.1, provided with Simplicity Studio.

Contents

1	Wi-S	SUN Stack	2
	1.1	New Items.	
	1.2	Improvements	2
	1.3	Fixed Issues	
	1.4	Known Issues in the Current Release	
	1.5	Deprecated Items	
	1.6	Removed Items	
2	Wi-S	SUN Applications	
_	2.1	New Items	
	2.2	Improvements	
	2.3	Fixed Issues	
	2.4	Known Issues in the Current Release	
	2.5	Deprecated Items	
	2.6	Removed Items	
3		g This Release	
0	3.1	Installation and Use	
	3.2	Security Information	
	3.3	Support	
	5.5	συμμοιτ	

1 Wi-SUN Stack

1.1 New Items

Added in release 1.2.0.0

- Added release quality libraries. They provide the same Wi-SUN features but are not logging anything.
- Added a new API sl_wisun_reset_statistics that resets all the counters read by calling sl_wisun_get_statistics.
- Added new APIs sl_wisun_get_neighbor_count() and sl_wisun_get_neighbors() that indicate the neighbor count (parents and children) and their MAC address.
- Added a new API sl_wisun_get_neighbor_info() that returns information about a neighbor.
- Added a new API sl_wisun_set_unicast_settings() that configures the frequency hopping unicast dwell interval.
- Added a new API sl_wisun_set_trace_level() and sl_wisun_set_trace_filter() that configure the stack traces.

1.2 Improvements

Added in release 1.2.1.0

· Reduced the stack log verbosity

Added in release 1.2.0.0

- Added support for mbedtls v3.0
- Stack flash footprint reduction

1.3 Fixed Issues

Fixed in release 1.2.1.0

ID#	Description
756339	Fixed an error that could cause the stack to assert on a RAIL_StartCcaCsmaTx when trying to connect to a network that cannot be reached. The stack MAC was unnecessarily re-initialized in the timeout routine and was invalidating some internal status.
778492	Fixed a build issue that caused the stack entropy source to malfunction.

Fixed in release 1.2.0.0

ID#	Description	
752766	Reworked Wi-SUN stack tasks priorities. A race between an interruption routine and a task was causing intempestive connection losses when using FreeRTOS.	
750407	Fixed the unicast channel filtering. Under certain conditions, a bit-order conversion was missing and was allowing forbidden channels to be used to transmit.	
731225	Fixed an error causing the authentication waiting list to be broken. It was causing the authentication of new devices to be significantly slower when connecting a few dozen in parallel.	

1.4 Known Issues in the Current Release

Issues in bold were added since the previous release.

ID#	Description	Workaround
773952	The stack randomly asserts on RAIL_StartCcaCsmaTx. It seems to occur more often when the communication between the faulty device and its neighbors is non-optimal.	

1.5 Deprecated Items

None

1.6 Removed Items

None

2 Wi-SUN Applications

2.1 New Items

Added in release 1.2.0.0

BRD4002A Support

New Applications:

- Wi-SUN SoC Network Measurement
- Wi-SUN SoC RCP. Used by the border router reference design

2.2 Improvements

Changed in release 1.2.0.0

- Major refactor at the Application Framework
- More granular components (OR relationship)
 - Wi-SUN SDK Application Core
 - Wi-SUN SDK POSIX-compliant Socket
 - Wi-SUN SDK Application CLI
 - Wi-SUN SDK Ping
 - Wi-SUN SDK Event Manager
- CoAP PUT request to LED toggle
- Nanostack dependency removal
- Wi-SUN SoC Border Router: added new CLI commands to configure the frequency hopping unicast and broadcast intervals.
- Wi-SUN SoC CLI: added new CLI commands to read neighbors' information, configure the stack traces and the frequency hopping unicast interval, and reset the stack statistics.

2.3 Fixed Issues

Fixed in release 1.2.1.0

ID#	Description
759495	Added concurrent access protection onto the Linux border router RCP host interface transmit function. On rare occasions, concurrent was causing CRC errors.
758848	Added concurrent access protection onto Wi-SUN CLI application console write function. On rare occasions, concurrent access was causing requests, confirmation, and indication messages to be mixed.

2.4 Known Issues in the Current Release

Issues in bold were added since the previous release.

ID#	Description	Workaround
	Simplicity Studio – Network Analyzer: Wi-SUN Encrypted Packets are not supported yet.	

2.5 Deprecated Items

None

2.6 Removed Items

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.

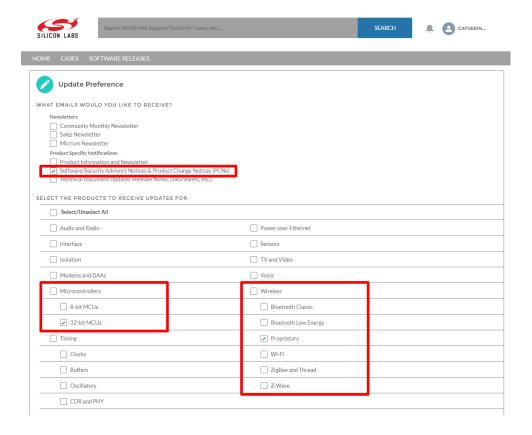
3.2 Security Information

Secure Vault Integration

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

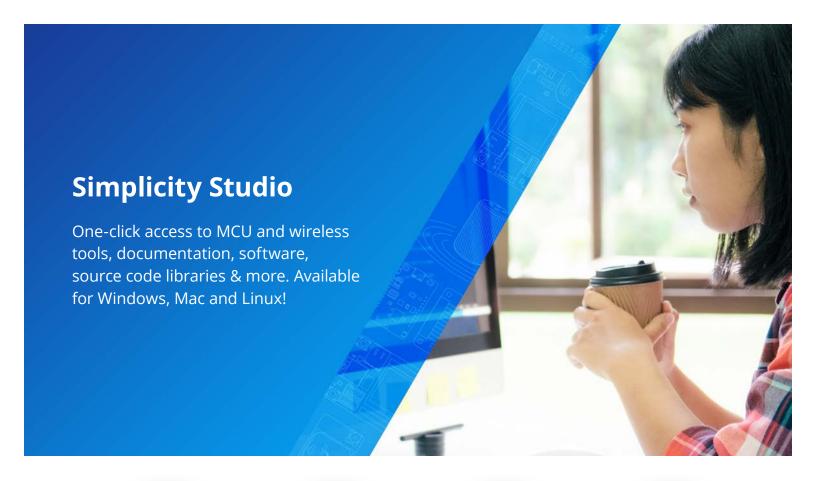
Security Advisories

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.



3.3 Support

Development Kit customers are eligible for training and technical support. Contact Silicon Laboratories support at http://www.si-labs.com/support.





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 weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons. 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 unauthorized applications. Note: This content may contain offensive terminology that is now obsolete. Silicon Labs is replacing these term

information, visit www.shabs.com/about-us/inclusive-lexico

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®, EZRadio®, Cecko®, 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.



Silicon Laboratories Inc. 400 West Cesar Chavez Austin, TX 78701 USA