Wi-SUN SDK 1.2.3.0 GA
Gecko SDK Suite 4.0
March 9, 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:

1.2.3.0 released March 9, 2022
1.2.2.0 released February 21, 2022
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 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 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-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 1.2.3.0

ID #	Description
774290	Applied the PA configuration set in the application. It was previously ignored and the same configuration was always used.

Fixed in release 1.2.2.0

ID #	Description
773952	Fixed a recurrence of the error that could cause the stack to assert on a RAIL_StartCcaCsmaTx when trying to connect to a network that cannot be reached.

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

None

1.5 Deprecated Items

None

1.6 Removed Items

None

2 Wi-SUN Applications

2.1 New Items

Added in release 1.2.3.0

- Some applications are moved from app/wisun to protocol/wisun:
  - *Wi-SUN - SoC CLI*
  - *Wi-SUN - RCP*

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 1.2.3.0

- Minimum heap size reduction (application configuration)

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.	

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.

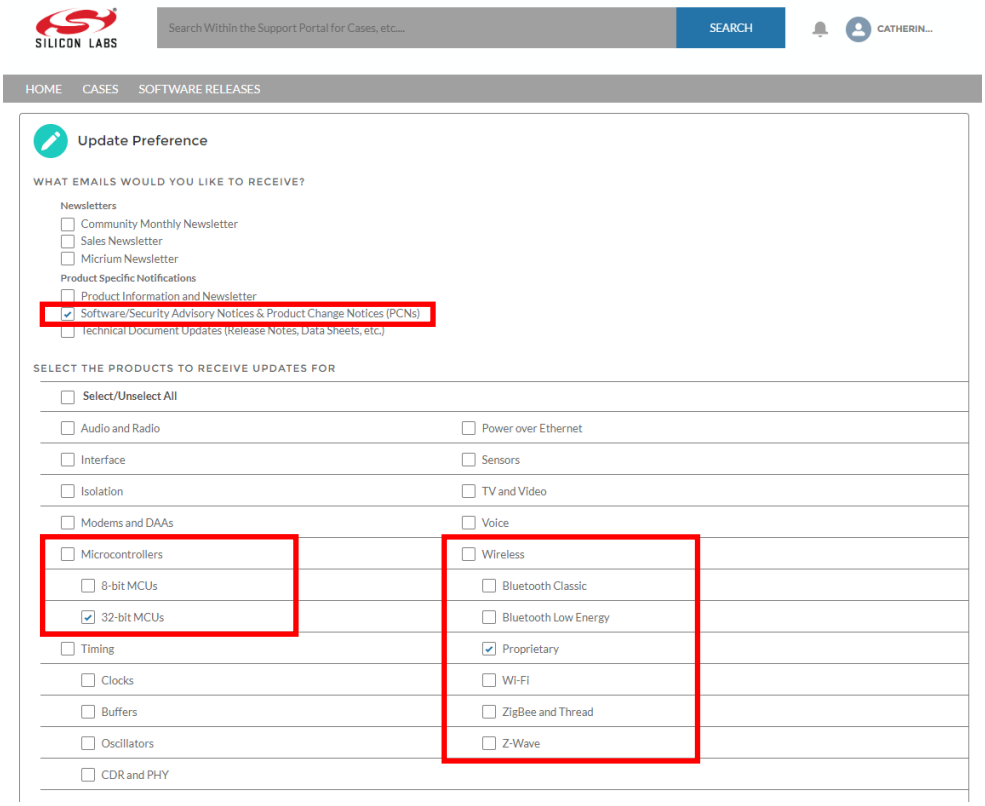
3.2 Security Information

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.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

SILICON LABS

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

www.silabs.com