Bluetooth® mesh SDK 3.0.5.0 GA
Gecko SDK Suite 4.1
June 28, 2023

Bluetooth mesh is a new topology available for Bluetooth Low Energy (LE) devices that enables many-to-many (m:m) communication. It's optimized for creating large-scale device networks, and is ideally suited for building automation, sensor networks, and asset tracking. Our software and SDK for Bluetooth development supports Bluetooth Mesh and Bluetooth 5.3 functionality. Developers can add mesh networking communication to LE devices such as connected lights, home automation, and asset tracking systems. The software also supports Bluetooth beaconing, beacon scanning, and GATT connections so Bluetooth mesh can connect to smart phones, tablets, and other Bluetooth LE devices.

These release notes cover SDK versions:

3.0.5.0 released June 28, 2023 (support for EFR32xG21, Revision C and later)
3.0.4.0 released January 18, 2023
3.0.3.0 released October 19, 2022 (early access part support)
3.0.2.0 released September 28, 2022
3.0.1.0 released August 17, 2022
3.0.0.0 released June 8, 2022

KEY FEATURES

- Reducedf project flash consumption by optimizing Mesh stack code size
- Support added for xGM240P PCB Modules and BG22/BGM220 Explorer Kits
- Support added for GCC version 10.3-2021.10 and IAR version 9.20.4

Compatibility and Use Notices

For more 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 Bluetooth mesh 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.

- Link-time optimization feature of GCC has been disabled, resulting in a slight increase of image size.

Contents

1 New Items

1.1 New Features

Added in release 3.0.0.0

New Development Tools

More user-friendly filtering for Software Examples in Simplicity Studio

New Hardware Support

Support was added for xGM240P PCB Modules and BG22/BGM220 Explorer Kits.

1.2 New APIs

None

2 Improvements

The supported complier versions have been updated. GCC version 10.3-2021.10 and IAR version 9.20.4 are now supported.

The flash footprint of the Mesh stack implementation has been reduced by optimization of structures and removal of unnecessary dependencies between components. Exact reduction depends on the features used by the project.

3 Fixed Issues

Fixed in release 3.0.4.0

ID #	Description
1064324	Fixed an issue with factory reset on embedded provisioner with Series 1 devices.
1081419	Fixed transport layer segmentation timing calculations.

Fixed in release 3.0.2.0

ID #	Description
465318	Fixed the issue with periodic publishing and publish retransmissions not working simultaneously.
1015385	Fixed GATT proxy server advertisement restart after proxy client disconnection.
1017565, 650825	Publish retransmissions issue fixed for generic models and lighting models, as well as Time Server model.
1024154	Perform a full reset of Series 2 device when Config Reset message is processed and the device is reset.
1024849	Fixed an issue with Scheduler actions not triggering after a power cycle.
1024851	Fixed an issue with Scheduler repeated events being one hour late.
1032627	Discard broken advertisement indications before attempting to decrypt instead of after.

Fixed in release 3.0.1.0

ID #	Description
818000	Corrected an issue with Light LC model PTS tests where reported lightness values were off by a small amount.
844593, 846010, 846598, 849377	Increased call stack of all applications to avoid running out of call stack when GATT proxy or GATT provisioning is in use.

Fixed in release 3.0.0.0

ID #	Description
764197	Set the default friend queue size to be a power of two.
818395	Fixed a potential crash in a situation where persistent storage contains more data than the project is configured to handle (e.g., after a firmware update without a factory reset).
818523	Corrected the check that the key used for publication is bound to the model to include virtual address publication as well.
831921	Fixed a regression with cleaning up the provisioning session after link failure.
833535	Updated the list of property IDs to contain the full current list of properties.

4 Known Issues in the Current Release

Issues in bold were added since the previous release.

ID #	Description	Workaround
401550	No BGAPI event for segmented message handling failure	Application needs to deduce failure from timeout / lack of application layer response; for vendor models an API has been provided
454059	A large number of key refresh state change events are generated at the end of KR process, and that may flood NCP queue	Increase NCP queue length in the project
454061	Slight performance degradation compared to 1.5 in round-trip latency tests was observed	
624514	Issue with re-establishing connectable advertising if all connections have been active and GATT proxy is in use	Allocate one more connection than is needed
841360	Poor performance of segmented message transmission over GATT bearer	Ensure that the underlying BLE connection's Connection interval is short; ensure that ATT MTU is large enough to fit a full Mesh PDU; tune the minimum connection event length to allow multiple LL packets to be transmitted per connection event.
1013958	Mesh stack and BLE API that specifically used legacy, extended, or periodic advertisements cannot be used together	Write the BLE application so that it uses the old BGAPI for advertisements.

5 Deprecated Items

None

6 Removed Items

Removed in release 3.0.0.0

The deprecated BGAPI command **sl_btmesh_node_erase_mesh_nvm()** has been removed. Use **sl_btmesh_node_reset()** instead.

7 Using This Release

This release contains the following

- Silicon Labs Bluetooth mesh stack library
- Bluetooth mesh sample applications

If you are a first time user, see *QSG176: Silicon Labs Bluetooth Mesh SDK v2.x Quick-Start Guide*.

7.1   Installation and Use

The Bluetooth mesh 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/Sili-conLabs/gecko_sdk for more information.

The GSDK default install 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. Additional information can often be found in the knowledge base articles (KBAs). API references and other information about this and earlier releases is available on https://docs.silabs.com/.

7.2   Security Information

Secure Vault Integration

This version of the stack is integrated with Secure Vault Key Management. When deployed to Secure Vault High devices, mesh encryption keys are protected using the Secure Vault Key Management functionality. The table below shows the protected keys and their storage protection characteristics.

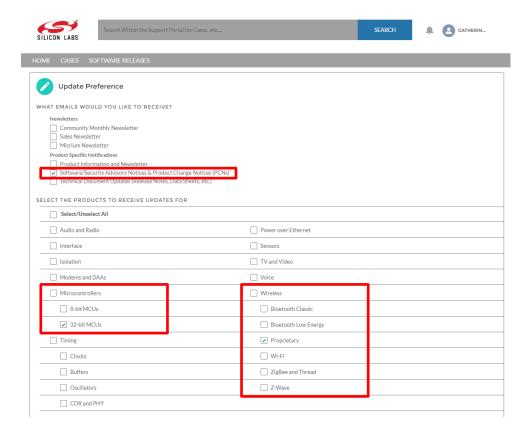| Key	Exportability on a node	Exportability on Provisioner	Notes
Network key	Exportable	Exportable	Derivations of the network key exist only in RAM while network keys are stored on flash
Application key	Non-exportable	Exportable	
Device key	Non-exportable	Exportable	In Provisioner's case, applied to Provisionerr's own device key as well as other devices' keys

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

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
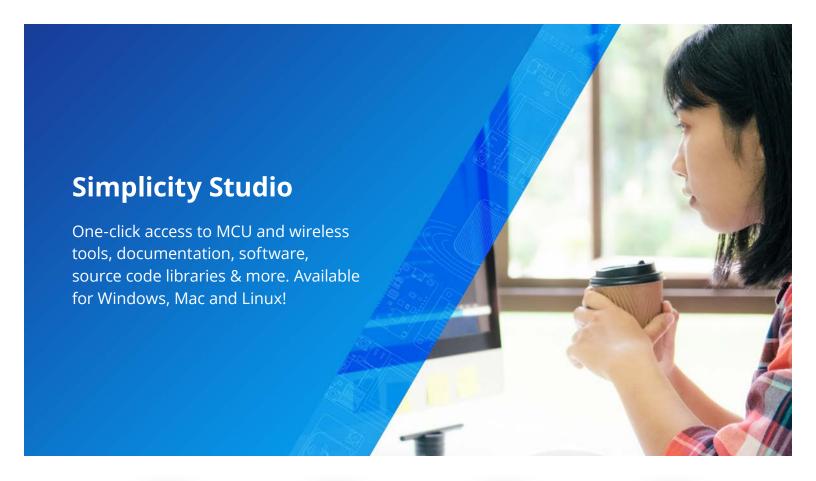
Security Advisories

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.

7.3   Support

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

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

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www.silabs.com