



Bluetooth[®] mesh SDK 2.0.2.0 GA

Gecko SDK Suite 3.1

April 7, 2021

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 5.2 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:

- 2.0.2.0 released April 7, 2021
- 2.0.1.0 released January 27, 2021
- 2.0.0.0 released December 9, 2020



KEY FEATURES

- Support added for MGM220P, xGM210LA, BGM220SC22HNA modules
- Integration with Gecko SDK Suite
- Simplicity Studio 5 support added
- New Bluetooth Mesh APIs

Compatibility and Use Notices

This Gecko SDK Suite release has a known security compatibility issue with one Gecko Platform component. For more information about this, as well as other 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:

Note: The supported compilers will be upgraded to ARM GCC-10-2020-q4-update and IAR 8.50.9 in the next major release.

IAR Embedded Workbench for ARM (IAR-EWARM) version 8.30.1

- 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 7.2.1, provided with Simplicity Studio.

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

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1 New Items

1.1 New Features

Added in release 2.0.2.0

New Example Applications

Secure NCP host examples (NCP daemon and empty NCP host example) were added to demonstrate Secure NCP communication with the NCP target example (with NCP Security Interface Component enabled).

Low power optimized switch example was added. The switch example is now available in both low power optimized and developer experience optimized versions.

New UC Components

UC component for factory reset functionality was added. The factory reset UC component is capable of performing node reset as well as full NVM3 reset, which can be triggered in reference examples by pushing the left and right push buttons.

UC component for generic models was added to allow separate initialization of lighting and generic models for projects that do not use lighting models.

UC component for application development utility macros was added

Added in release 2.0.1.0

New Hardware Support

Support for the following hardware was added: Thunderboard BG22 B variant, xGM210P module.

Added in release 2.0.0.0

New Hardware Support

Support for the following modules was added: MGM220P, xGM210LA lighting modules, BGM220SC22HNA SIP module.

Gecko SDK Suite

Bluetooth Mesh SDK release 2.0.0.0 is the first Bluetooth Mesh SDK release that has been integrated in the Silicon Labs Gecko SDK Suite.

Simplicity Studio v5

As of SDK version 2.0.0.0, Simplicity Studio v5 is required to run the Bluetooth Mesh SDK, instead of the Simplicity Studio v4 used by the older releases.

1.2 New APIs

The structure and overall interface of the Bluetooth Mesh API has changed in a backward-incompatible manner. For migrating from APIs on the v1.x SDK please refer to *AN1298: Transitioning from the v1.x to the v2.x Bluetooth Mesh SDK*. No major new functionality compared to the latest 1.x release was added in this release.

For additional documentation please refer to the Bluetooth Mesh Software API Reference Manual installed with the Bluetooth Mesh SDK.

2 Improvements

2.1 Changed APIs

Changed in release 2.0.2.0

A configuration item was added for the interval used when writing sequence number updates to flash.

Added BGAPI commands and events for testing replay protection list functionality during development.

The following BGAPI command has been added to the test BGAPI:

```
sl_btmesh_test_set_replay_protection_list_diagnostics()
```

The following BGAPI events have been added to the test BGAPI:

```
sl_btmesh_evt_test_replay_protection_list_entry_set,  
sl_btmesh_evt_test_replay_protection_list_entry_cleared,  
sl_btmesh_evt_test_replay_protection_list_saved,  
sl_btmesh_evt_test_replay_protection_list_full
```

Added a command for reducing relayed data when PDUs are destined to a unicast address across a GATT bearer.

The following BGAPI command has been added to the proxy BGAPI:

```
sl_btmesh_proxy_optimization_toggle()
```

Changed in release 2.0.0.0

Release 2.0.0.0 contains multiple backward-incompatible changes compared to the Bluetooth Mesh 1.x releases. Because of this, existing projects will not work as such and must be migrated to the new API. For migrating from APIs on the v1.x SDK please refer to *AN1298: Transitioning from the v1.x to the v2.x Bluetooth Mesh SDK*.

Other than the overall change of API, the following modifications have been done mainly to add minor new functionality to the existing BGAPI classes:

- Configuration client class command for querying node key refresh state was added.
- Node class command for event filtering was removed as filtering is now implemented in common NCP code.
- Node class command for informing the stack of imminent power cut was added.
- Node class command for querying replay protection list status was added.
- Provisioner class command for checking node identity beacon data in the application was added.
- Test class command for getting the local DCD structure was added.

3 Fixed Issues

Fixed in release 2.0.2.0

ID #	Description
490276	BGAPI command <code>sl_btmesh_node_get_uuid()</code> now also works before the mesh stack is initialized
648641	Fixed link layer scheduling that affected friendship timings
655402	Sequence numbers are now zeroed after IV index recovery
658294	Fixed sensor configuration on certain Thunderboard Sense 2 and BG22 boards
664804	Fixed Bluetooth advertisement configuration when proxy feature is not enabled
667050	Fixed lightness update on scene recall
667077	Fixed UI update handling when called from sleeptimer interrupt context
670760	Fixed network PDU handling for PDUs originating from a device that has TTL=1
674055	Fixed an issue with new application key deployment during a key refresh operation
679039	Fixed an issue with multiple <code>mesh_lib_init()</code> calls
680002	Fixed an issue with Generic Battery status message
683908	Read default transition time server state from persistent storage

Fixed in release 2.0.1.0

ID #	Description
631371	Proper recovery for the rare case when communication fails at the finalization of the provisioning process
640696	Fixed reporting of delayed requests in LC server model
651991, 652878	Fixed an issue with NCP when events and command responses are interleaved
651996	Fixed an issue with LC model organization in sample application device composition data
652915	Fixed a GATT configuration issue if OTA service is removed from project
655727	Fix hardcoded default TTL on embedded provisioner to read the value from the configuration model state instead
658240	Fixed example application visibility for all relevant parts in Simplicity Studio launcher

Fixed in release 2.0.0.0

ID #	Description
5662	Default device UUID now conforms to RFC4122 without explicitly setting it.
357307	Heartbeat publication set command parameter handling fixed.
401549	Added a node command for checking replay protection list state.
443806	Fixed an issue with GATT database service capabilities management.
466452	Fixed provisioning cleanup code in case provisioning fails after device address allocation.
639443	Test command for managing replay protection list added.
646954	Removed an artificial limitation on IV index update age.
646982	Fixed error handling in node and provisioner initialization calls if already initialized.

4 Known Issues in the Current Release

Issues in bold were added since the previous release.

ID #	Description	Workaround
3878	Mesh GATT events visible to the application	Application can ignore BGAPI events related to GATT provisioning and proxying based on service and characteristic parameters
401550	No BGAPI event for segmented message handling failure	Application needs to deduce failure from timeout / lack of application layer response
418636	Issues with mesh_test local configuration state API (node identity, relay, network retransmission)	
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	
454332	Missing Mesh-specific API for generating and receiving scan response data for GATT provisioning service advertisements	Use the LE GAP API
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
650825	Issue with retransmissions when a model is publishing periodically	Set up retransmissions in the model state and trigger periodic publishing by an application timer
653405	Out-of-the-box switch sample application current consumption is higher than before in low power operation	Serial communications and LCD display support increase the current draw and should be disabled
676798	Automatic LPN polling may miss friendship termination deadline due to oscillator inaccuracy	Ensure application timer-based explicit polling takes place before friendship terminates, if the timeout for friendship termination is long
683518	Friendship termination event is not immediately seen when a friendship clear message is received	The event will be raised once friendship timeout expires
690862	SoC empty example does not start beaconing on xG22 hardware	In the project configuration, set IO Stream USART setting "Restrict the energy mode to allow the reception" to on, and rebuild the project

5 Deprecated Items

None

6 Removed Items

Removed in release 2.0.0.0

Commands that have been deprecated in past SDK releases have been removed in Bluetooth Mesh SDK 2.0. Past releases have introduced replacements for the deprecated commands; these replacements have been migrated to the new API.

The events corresponding to the deprecated commands that were also deprecated are also removed. Past releases have introduced replacements for the deprecated events; these replacements have been migrated to the new API.

7 Using This Release

This release contains the following

- Silicon Labs Bluetooth mesh stack library
- Bluetooth 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

A registered account at Silicon Labs is required in order to download the Silicon Labs Bluetooth SDK. You can register at https://siliconlabs.force.com/apex/SL_CommunitiesSelfReg?form=short.

Stack installation instruction are covered in *QSG176: Silicon Labs Bluetooth Mesh SDK v2.x Quick-Start Guide*.

Use the Bluetooth mesh SDK with the Silicon Labs Simplicity Studio V4 development platform. Simplicity Studio ensures that most software and tool compatibilities are managed correctly. Install software and board firmware updates promptly when you are notified.

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 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.

The screenshot shows the 'Update Preference' page in the Silicon Labs customer portal. The page is titled 'Update Preference' and has a search bar at the top. Below the search bar, there are navigation links for 'HOME', 'CASES', and 'SOFTWARE RELEASES'. The main content area is divided into two sections: 'WHAT EMAILS WOULD YOU LIKE TO RECEIVE?' and 'SELECT THE PRODUCTS TO RECEIVE UPDATES FOR'.

In the 'WHAT EMAILS WOULD YOU LIKE TO RECEIVE?' section, there are two sub-sections: 'Newsletters' and 'Product Specific Notifications'. Under 'Product Specific Notifications', the checkbox for 'Software/Security Advisory Notices & Product Change Notices (PCNs)' is checked and highlighted with a red box. Other checkboxes include 'Community Monthly Newsletter', 'Sales Newsletter', 'Micrium Newsletter', and 'Technical Document Updates (Release Notes, Data Sheets, etc.)'.

In the 'SELECT THE PRODUCTS TO RECEIVE UPDATES FOR' section, there are several product categories with checkboxes. The 'Microcontrollers' category is expanded, and the '32-bit MCUs' checkbox is checked and highlighted with a red box. The 'Wireless' category is also expanded, and the 'Proprietary' checkbox is checked and highlighted with a red box. Other categories include 'Audio and Radio', 'Interface', 'Isolation', 'Modems and DAAs', 'Timing', 'Clocks', 'Buffers', 'Oscillators', 'CDR and PHY', 'Power over Ethernet', 'Sensors', 'TV and Video', and 'Voice'.

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>.

8 Legal

8.1 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**

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