



# Bluetooth<sup>®</sup> mesh SDK 5.0.2.0 GA

## Gecko SDK Suite 4.3


### October 9, 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.

This release includes features supported by the Bluetooth mesh specification version 1.1.

These release notes cover SDK versions:

- 5.0.2.0-released October 9, 2023
- 5.0.1.0-released July 26, 2023
- 5.0.0.0-released June 7, 2023



**KEY FEATURES**

- Support for Mesh Protocol 1.1
- Support for Mesh Model 1.1
- Support for Mesh Binary Large Object Transfer
- Support for Mesh Device Firmware Update

## 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 .....2
  - 1.1 New Features.....2
  - 1.2 New APIs.....2
- 2 Improvements.....3
- 3 Fixed Issues .....4
- 4 Known Issues in the Current Release .....5
- 5 Deprecated Items .....6
- 6 Removed Items .....7
- 7 Using This Release .....8
  - 7.1 Installation and Use.....8
  - 7.2 Security Information .....8
  - 7.3 Support.....9

## 1 New Items

### 1.1 New Features

#### Added in release 5.0.1.0

##### **New Example Support**

Added support for BRD4194A and BRD4187C radio boards for BT Mesh IOP Test Demos

#### Added in release 5.0.0.0

##### **New Hardware Support**

Support was added for EFR32xG27 product family and BG24 WLCSP Radio Boards.

Support was added for EFR32xG22 Revision D.

Support was added for EFR32xG21, Revision C and later.

### 1.2 New APIs

None

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## 2 Improvements

### **Changed in release 5.0.0.0**

Code size optimization of stack and example applications.

Example applications and SLC Components were optimized for No-Code and Low-Code development.

### 3 Fixed Issues

#### Fixed in release 5.0.2.0

| ID #                      | Description  |
|---------------------------|--|
| 1166409                   | Fully corrected the use of multicast delay in Firmware Update Server responses                             |
| 1169206                   | Updated Mesh Proxy Solicitation service UUID to the adopted value  |
| 1172590                   | Implemented storing of SAR configuration model state persistently  |
| 1178876                   | Fixed an issue in handling missing responses to certain configuration model requests on xG24 and xG27      |
| 1182605                   | Fixed a problem in storing more than 127 subscriptions for a model   |
| 1187455                   | Updated the DCD of DFU example apps to match the adopted specification requirements                        |
| 1187639                   | Updated the DFU API to match the adopted specification terminology   |
| 1196510, 1187916, 1187304 | IOP Testing stability issues fixed   |
| 1193472                   | Provisionee component has the config option to enable / disable automatic reset when a node reset arrives. |

#### Fixed in release 5.0.1.0

| ID #    | Description   |
|---------|---|
| 1164433 | Fixed an issue with Firmware Update Server and BLOB Transfer Server models using a too short randomized delay when responding to multicast requests |

#### Fixed in release 5.0.0.0

| ID #                      | Description  |
|---------------------------|--|
| 1102630                   | Optimizations to Device Firmware Update over GATT proxy          |
| 1086169, 1113729, 1117608 | Multiple fixes to BLOB transfer models                           |
| 1123776                   | Fixed an issue with private network beacons sent over GATT proxy |
| 1125121                   | Corrected handling of invalid firmware deletion message          |
| 1133103, 1134497          | Multiple fixes for remote provisioning                           |
| 1134494, 1134495          | Multiple fixes to Large Composition Data models                  |

## 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. |
| 1121605                 | Rounding errors may cause scheduled events to trigger at very slightly different times than expected.                   |   |
| <b>1197398, 1194443</b> | <b>DFU distributor application is currently not able to handle more than 60 nodes successfully.</b>                     | <b>On larger networks DFU update needs to be split to multiple distributions.</b>   |
| <b>1198887</b>          | <b>Private beacon random advertiser address is the same for all subnets while it should be different.</b>               |   |
| <b>1202073</b>          | <b>Btmesh_ncp_empty example does not have enough RAM on BRD4182 with GCC compiler.</b>                                  | <b>Free some RAM or disable an unnecessary component.</b>   |
| <b>1202088</b>          | <b>Btmesh_soc_switch example does not have enough RAM on BRD4311 and BRD4312 with IAR compiler</b>                      | <b>Free some RAM or disable an unnecessary component.</b>   |

## 5 Deprecated Items

None

## 6 Removed Items

None



## 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/SiliconLabs/gecko\\_sdk](https://github.com/SiliconLabs/gecko_sdk) for more information.

The GSDK default install location has changed with Simplicity Studio 5.3 and higher.

- Windows: C:\Users\\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 Provisioner'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.

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## 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>.

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

[www.silabs.com](http://www.silabs.com)