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# SILICON LABS 8.0.2.0 Bluetooth Mesh SDK


## Specifications

- Product Name: Simplicity SDK Suite

- Version: 2024.12.2
- Release Date: April 1, 2025
- Features: Bluetooth mesh specification version 1.1

### Product Information

The Simplicity SDK Suite includes features supported by the Bluetooth mesh specification version 1.1. It provides compatibility with various compilers and offers new features, APIs, improvements, and fixes across different releases.

## Product Usage Instructions

### Getting Started

Before using the product, ensure that you have read the Security chapter of the Platform Release Notes for security updates and notices. Subscribe to Security Advisories for up-to-dateinformation. If you are new to the Silicon Labs Bluetooth mesh SDK, refer to the ‘Using This Release’ guide.

### New Features and APIs

The release includes new examples supporting RTOS (Micrium and FreeRTOS) and changes in application components such as Sli_sensor_server_cadence.c being renamed to Sl_sensor_server_cadence.c.

### Improvements

API documentation for OOB authentication data handling on the provisioner and provisionee has been corrected and clarified.

### Fixed Issues

- **Fixed in release 8.0.2.0:** Resolved issues with test BGAPI commands, sl_btmesh_lpn_init, sl_btmesh_node_get_rssi, segmented messages transmitted over local loopback, and Scene Server model initialization.
- **Fixed in release 8.0.1.0:** Addressed problems with Friend acknowledging segmented data and fixed in release 8.0.0.0 related to replay protection checks, null pointer reference, stale outgoing advertisements, synchronization issues, GATT service setup operations, periodic task running, and DFU Standalone Updater deinitialization

sequence.

**Bluetooth® Mesh SDK 8.0.2.0 GA Simplicity SDK Suite 2024.12.2 April 1, 2025**

- 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 de-vice 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 functionality. Developers can add mesh networking communication to LE de-vices such as connected lights, home automation, and asset tracking systems. The soft-ware 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:
  - 8.0.2.0 released April 1, 2025
  - 8.0.1.0 released February 5, 2025
  - 8.0.0.0 released December 16, 2024


**KEY FEATURES**

- Support added for Micrium and Fre-eRTOS.
- Bug fixes and minor enhancements.

**Compatibility and Use Notices**

For more information about security updates and notices, see the Security chapter of the 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 9.40.1

- 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 12.2.1, provided with Simplicity Studio.

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

**New Items**

**New Features**

- Added in release 8.0.0.0

**New examples:**

- Support for RTOS(Micrium and FreeRTOS) has been added for several examples. Micrium and FreeRTOS variants were made for the following applications:
  - btmesh_ncp_empty
  - btmesh_soc_empty
  - btmesh_soc_nlc_basic_scene_selector
  - btmesh_soc_nlc_dimming_control
  - btmesh_soc_switch_ctl

FreeRTOS variant was made for the following applications:

- btmesh_soc_nlc_sensor_ambient_light
- btmesh_soc_nlc_sensor_occupancy
- btmesh_soc_sensor_client
- btmesh_soc_sensor_thermometer

Note that Device Firmware update is not yet supported in RTOS variant applications.

**New components:**

- btmesh_solicitation_config_client
  A component was added for Proxy Service Solicitation.
- App_rta and App_btmesh_rta
  Application runtime adaptor layer for bare metal and RTOS related services.
- Btmesh_lcd_server
  A component for Large Composition Data Models Metadata Page 0 generation.

**Other new features:**

- Models Metatdata Page 0 is supported and automatically generated for the examples.
- App_button_press supports software debouncing.
- Mesh Configurator tool supports generating Composition Data Page 1 and Page 2 for Vendor Models.
- Network Analyzer tool supports Bluetooth Mesh 1.1 specification.

**New APIs**

**Added in release 8.0.0.0**

- Changes in application components:
  - Sli_sensor_server_cadence.c was renamed to Sl_sensor_server_cadence.c

**Improvements**

**Changed in release 8.0.0.0**

- API documentation for OOB authentication data handling on provisioner and provisionee has been corrected and clarified.

## Fixed Issues

**Fixed in release 8.0.2.0**

| ID # | Description |
| --- | --- |
| 1418409, 1151586 | Fixed a number of test BGAPI commands that were not working on provisioner because of a flawed system state check; also fixed sl_btmesh_lpn_init and sl_btmesh_node_get_rssi that were failing on provisioner for the same reason. |
| 1417649 | Fixed an issue with segmented messages transmitted over local loopback. |
| 1401801 | Fixed Scene Server model initialization when the server was on something other than the primary element. |

**Fixed in release 8.0.1.0**

| ID # | Description |
| --- | --- |
| 1285133 | Fixed a problem in Friend acknowledging segmented data it received directly from its LPN. |

**Fixed in release 8.0.0.0**

| ID # | Description |
| --- | --- |
| 348529 | Replay protection checks to discard messages were too strict for a corner case related to segments arriving out of order. |
| 1337570 | Fixed a potential null pointer reference in DFU Client model. |
| 1339163 | Removed stale outgoing advertisements from Tx queue to help manage overload situations. |

| | |
|---|---|
| 1345085, 1345650 | Fixed synchronization and thread safety issues with BGAPI command and event handling when RTOS is in use. |
| 1356050 | Improved the previous fix by eliminating unnecessary GATT service setup operations that could potentially fail. |
| 1378339 | Fixed a periodic task running issue that affected embedded provisioners with GATT functionality. |
| 1378639 | Fixed DFU Standalone Updater deinitialization sequence. |

**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. | |
| 1226127 | Host provisioner example can be stuck when it starts to provision a second node. | Restart the host provisioner app before provisioning the second node. |
| 1204017 | Distributor is not able to handle parallel self FW Update and FW Upload. | Don't run self FW update and FW upload in parallel. |
| **1412121** | **Currently, only one Scheduler Server model is permitted, and it has to be located on the primary element.** | |

**Deprecated Items**

- **Deprecated in release 8.0.0.0** None.

**Removed Items**

- **Removed in release 8.0.0.0** None.

### 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.

### Installation and Use

- The Bluetooth mesh SDK is provided as part of the Simplicity SDK (GSDK), the suite of Silicon Labs SDKs. To quickly get started with the Simplicity SDK, install Simplicity Studio 5, which will set up your development environment and walk you through Simplicity SDK 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, Simplicity SDK may be installed manually by downloading or cloning the latest from GitHub. See https://github.com/Sili-conLabs/simplicity-sdk for more information .
- Simplicity Studio installs the Simplicity SDK by default in:
  - Windows: C:\Users\<NAME>\SimplicityStudio\SDKs\simplicity_sdk
  - MacOS: /Users/<NAME>/SimplicityStudio/SDKs/simplicity_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/.

### Security Information

### Secure Vault Integration

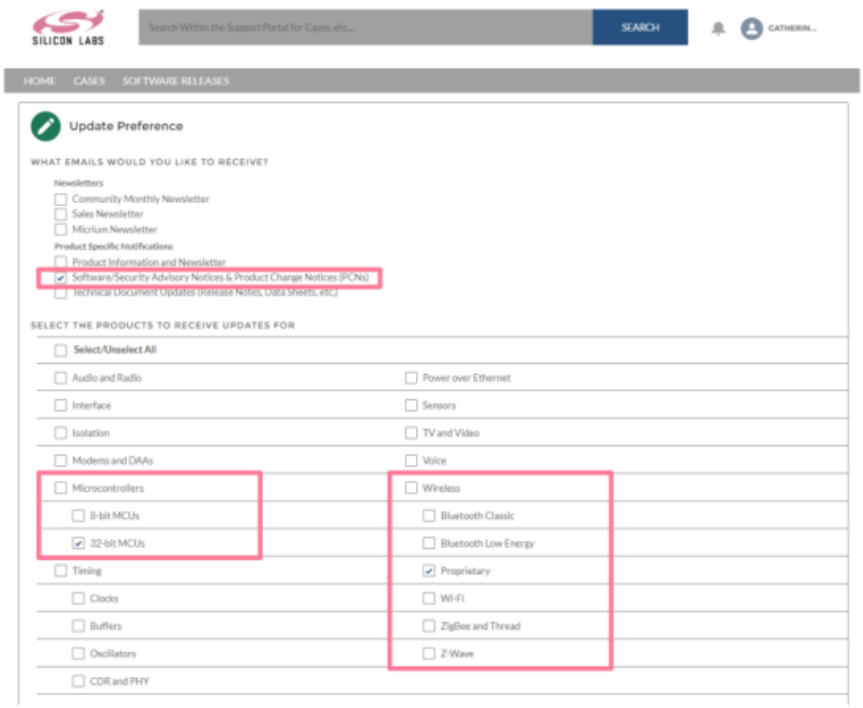
This version of the stack is integrated with Secure Vault Key Management. When deployed to Secure Vault High devices, mesh encryption keys are protected using the Secure Vault Key Management functionality. The table below shows the protected keys and their storage protection characteristics.

| 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.




### 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.

### SDK Release and Maintenance Policy

For details, see SDK Release and Maintenance Poilcy.

### 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
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  www.silabs.com/simplicity
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## FAQs

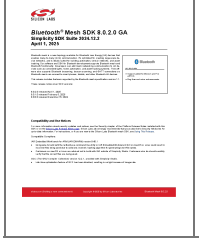
**Q: How do I update the SDK to the latest version?**

A: To update the SDK to the latest version, download the new release package from the Silicon Labs website and follow the installation instructions provided in the documentation.

**Q: Is the SDK compatible with all Bluetooth mesh devices?**

A: The SDK is designed to be compatible with a wide range of Bluetooth mesh devices, but it’s recommended to verify compatibility with specific devices before implementation.

# Documents / Resources

| | |
|---|---|
|  | SILICON LABS 8.0.2.0 Bluetooth Mesh SDK [pdf] User Guide<br>8.0.2.0, 8.0.1.0, 8.0.0.0, 8.0.2.0 Bluetooth Mesh SDK, 8.0.2.0, Bluetooth Mesh SDK, Mesh SDK, SDK |

## References

- User Manual

SILICON LABS

8.0.0.0, 8.0.1.0, 8.0.2.0, 8.0.2.0 Bluetooth Mesh SDK, Bluetooth Mesh SDK, Mesh SDK, SDK, SILICON LABS

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