



SILICON LABS 8.0.0.0 Bluetooth Mesh SDK User Guide

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Important Information

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 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:

8.0.0.0 released December 16, 2024



KEY FEATURES

- Support added for Micrium and FreeRTOS.
- 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

- Usingwine 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 Metadata 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 SI_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 8.0.0.0

ID #	Description
348529	Replay protection checks to discard messages were too strict for a corner case related to segment s 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 R TOS 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.

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/SiliconLabs/simplicity_sdk for more information. Simplicity Studio installs the Simplicity SDK by default in:

Simplicity Studio installs the Simplicity SDK by default in:

- Windows: C:\Users\\SimplicityStudio\SDKs\simplicity_sdk
- MacOS: /Users//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.

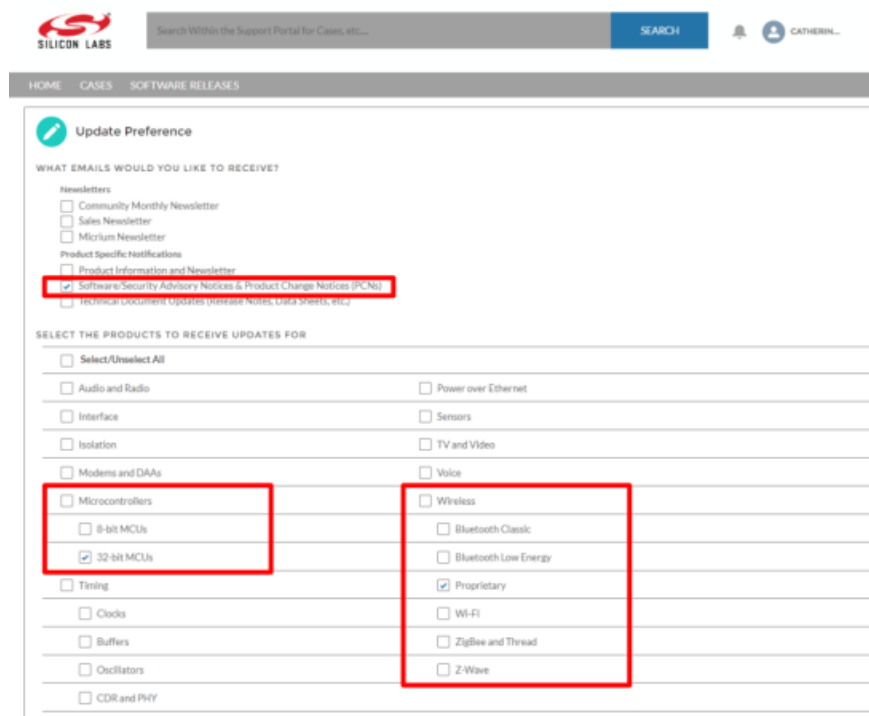
Key	Exportability on a node	Exportability on Provisioner	Notes
Network key	Exportable	Exportable	Derivations of the network key exist only in RAM while network keys are stored on flash
Application key	Non-exportable	Exportable	
Device key	Non-exportable	Exportable	In Provisioner's case, applied to Provisioner's 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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<input type="checkbox"/> CDR and PHY	

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 Policy](#).

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/loT



SW/HW

www.silabs.com/simplicity



Quality

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Support & Community

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Customer Support



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Documents / Resources

	<p>SILICON LABS 8.0.0.0 Bluetooth Mesh SDK [pdf] User Guide 8.0.0.0 Bluetooth Mesh SDK, 8.0.0.0, Bluetooth Mesh SDK, Mesh SDK, SDK</p>
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References

-  [Silicon Labs](#)
-  [Silicon Labs](#)
-  [Silicon Labs Community](#)
-  [IoT – Internet of Things - Silicon Labs](#)
-  [Simplicity Studio - Silicon Labs](#)
-  [Technical Support - Silicon Labs](#)
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