Overview
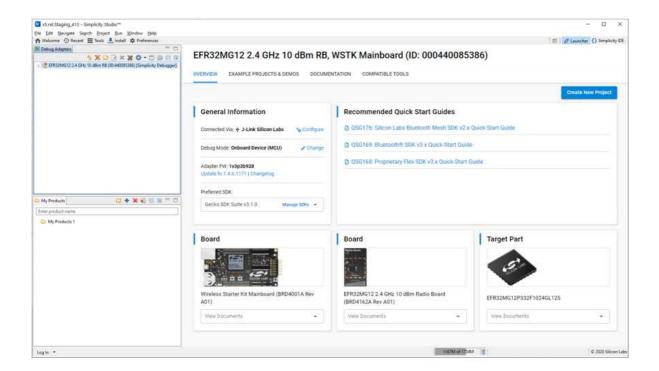
Overview

Simplicity Studio® 5 User's Guide

Simplicity Studio is the core development environment designed to support the Silicon Labs IoT portfolio of system-on-chips (SoCs) and modules. It provides access to target device-specific web and SDK resources; software and hardware configuration tools; an integrated development environment (IDE) featuring industry-standard code editors, compilers and debuggers; and advanced, value-add tools for network analysis and code-correlated energy profiling.

Simplicity Studio is designed to simplify developer workflow. It intelligently recognizes all evaluation and development kit parts released by Silicon Labs and, based on the selected development target, presents appropriate software development kits (SDKs) and other development resources.

Simplicity Studio 5 (SSv5) focuses on developer experience, leveraging feedback from customers, employees and competitive reviews. Developers of all experience levels will benefit from an optimized workflow that supports them through the development journey and produces quicker project progression and device configuration.

The *Simplicity Studio 5 User's Guide* pages are organized into the following groups.

- Getting Started describes how to install SSv5 and the relevant development resources, and provides general overviews of using the SSv5 interface and of developing projects in SSv5. If you are new to SSv5, start here.
- About the Launcher is a reference guide to the features and functions available when you first open SSv5. This is a general reference, although some items may not be applicable to all devices.
- About the Simplicity IDE is a reference guide to the features and functions in the Simplicity integrated development environment. This is a general reference, although some items may not be applicable to all devices.
- Developing for 32-Bit Devices provides instructions and reference material for 32-bit device development in the two development environments: Project Configurator and AppBuilder.
- Developing for 8-Bit Devices provides instructions and reference material for 8-bit device development using the Hardware Configurator.

- Building and Flashing describes how to compile and flash images to various device types.
- Companion IDEs: Visual Studio Code discusses how to generate project code in Simplicity Studio 5 to then be used in the VS Code IDE.
- Testing and Debugging outlines tools and strategies for testing your applications on Silicon Labs devices.
- Using the Tools is a reference guide to the various tools packaged with SSv5. Not all tools are applicable to every development path. Their specific use is described in the individual Developing for pages.

New Features

Simplicity Studio® 5 version 5.11.2 released Sept 24, 2025

This release includes the following key features:

- Support for Simplicity SDK 2025.6.2
- Support for new device products: SixG301
  The SixG301 devices are only supported with CMake/GCC (no IAR support). Refer to the Known Issues and Limitations section for additional details.
- Matter: On Windows, Matter projects from Matter SDK 2.7.0-1.4 (CSA Matter 1.4.2), released with SiSDK 2025.6.2, fail during compilation due to a known GCC 12.x bug related to long command line length. Refer to this Knowledge Article for Studio 5 workaround.

Simplicity Studio® 5 version 5.11.1 released July 24, 2025

This release includes the following key feature:

- Support for Simplicity SDK 2025.6.1

Simplicity Studio® 5 version 5.11.0 released June 16, 2025

This release includes the following key features:

- Support for Simplicity SDK 2025.6.0
- Support for new device products: EFR32BG22L, EFR32BG24L, EFR32xG29
- New Wi-Fi Power Estimator Tool v1.0.0 GUI tool supporting SiWx917 device development
- Wi-Fi Commander: AP mode updated; added Client mode and MQTT Client connection support
- CS Analyzer: Added support of PBR+RTT methodology

Simplicity Studio® 5 version 5.10.3 released April 1, 2025

This release includes the following key feature:

- Support for SiSDK 2024.12.2

Simplicity Studio® 5 version 5.10.2.1 released Feb 27, 2025

This release includes the following key feature:

- Patch to resolve incompatibilities with ZAP custom templates.

Simplicity Studio® 5 version 5.10.1 released Feb 7, 2025

This release includes the following key features:

- Support for Simplicity SDK 2024.12.1.
- Fixed "Preferred SDK" selection bug, so the setting defaults to the latest SDK version installed.

Simplicity Studio® 5 version 5.10.0 released December 17, 2024

This release includes the following key features:

- Support for Simplicity SDK 2024.12.0.
- Improvements to the SDK Installer update flows.
- New Studio Project Retargeting feature for supporting development on Custom Boards.
- New Simplicity Studio and SLC-CLI CMake build exporter for IAR compiler.
- Studio Matter Provisioning GUI tool version 1.1.0 released. Moved to General Availability (GA) quality, see Tool's Release Notes for further details.
- New Simplicity Studio SBOM generation tool, for Simplicity SDK 2024.12.0 or newer.
- New Wi-Fi Commander v1.0.0 GUI tool released supporting SiWx91x device development, see Tool's Release Notes for further details.
- New Wi-Fi Memory Calculator v1.0.0 released supporting SiWx91x device development.

Simplicity Studio® 5 version 5.9.1.0 released June 18, 2024

This release includes the following key features:

- Support for Simplicity SDK 2024.6.0.
- Enable Solutions (CMake) to work with the VS Code IDE.
- Improvements to Radio Configurator.
- Extend BTMesh tools to work with 917.
- New Connectivity firmware update UI for 917 devices.
- SLC workspaces for IAR.
- SLC workspaces for CMake.

Simplicity Studio® 5 version 5.8.0.0 released December 13, 2023

This release includes the following key features:

- Two new project generators have been officially released.
  - Visual Studio Code Project (utilizing CMake and Ninja)
  - CMake
- Matter Provisioning Tool 1.0.0 (Beta) has been released.
  - Requires GSDK 4.4 and Matter Extension 2.2 or newer
  - Documentation will be coming in a future patch release
- Improvements for computers using MAC M1 Hardware.

Simplicity Studio® 5 version 5.7.0.0 released June 7, 2023

This release includes the following key features:

- Amazon Sidewalk: Can now be installed as an extension directly in Simplicity Studio.
- Amazon Sidewalk: Protocol Configurator released.
- Pin Tool: Now supports Analog pin configuration.

Simplicity Studio® 5 version 5.6.3.0 released March 10, 2023

This release includes the following key features:

- Solutions: Enhanced support for TrustZone applications.
- Post-Build Editor: Removes the requirements for manually editing the yaml output files.

Simplicity Studio® 5 version 5.6.2.0 released February 14, 2023

This release includes the following key features:

- Pin Tool: The user interface is redesigned.
- Bluetooth NCP Commander: Updates in support of Bluetooth mesh functionality.

Simplicity Studio® 5 version 5.6.0.0 released December 14, 2022

This release includes the following key features:

- Project Configuration Report Generator: Provides a report including
  - Target hardware device
  - Target hardware device pin mapping
  - Target SDK
  - Software extensions used in the build
  - Installed application, utility, and platform software components
- Post-Build Editor: Allows for ease of post-build image creation:
  - YAML file is modified to include steps.
  - YAML file can be provided to Simplicity Commander to create an OTA upgrade image.
- Support for Visual Studio Code as a Companion IDE: Basic IDE functionality within VS Code using a Silicon Labs Extension.
  - Build
  - Flash
  - Debug
- Extended Matter Enablement Package support to cover example project configuration, build, and debug.

Simplicity Studio® 5 version 5.5.0.0 released September 7, 2022

This release includes the following key features:

- Introduction of Matter Support:
  - Pre-built Matter demos now supported within the Simplicity Studio Launcher perspective.
  - Matter Enablement Package now available from the Installation Manager.
- Integrated Wireshark Launching from the Debug Adapters view.
- Usability improvements to the Package Manager.

Simplicity Studio® 5 version 5.4.2.0 released August 17, 2022

- Support for the EFR32xG24 Explorer Kit.

Simplicity Studio® 5 version 5.4.0.0 released June 8, 2022

This release includes the following key features:

- Eclipse upgraded to v4.23, featuring several bug fixes and improvements, including improved support for the latest MacOS versions.
- Logic Analyzer view added to Energy Profiler for use with the general-purpose logic analyzer input pins of the Wireless Pro Kit mainboard (e.g. xG24-PK6009A featuring BRD4002A).
- New Wi-SUN Configurator tool available, providing easy graphical configuration of the main Wi-SUN application settings.
- New filters added to Launcher -> Example Projects & Demos view to help users filter by wireless technology, device type, level/difficulty, quality, and more.
- New "Quick Links" view added to the SLC Project Configurator.
- Bluetooth Direction Finding (AoA) tool suite update with new playback and visualization features.
- Support for SDK Extensions as defined by the SLC Specification.
- Improvements to the Linux installation dependencies and scripts.

Simplicity Studio® 5 version 5.3.0.0 released December 15, 2021

This release includes the following key features:

- NCP Commander enhancements
- Bluetooth LE Direction Finding tools suite v1.0
- Installation of GSDKs published on GitHub
- Dynamic GATT Configuration

- IDE Dark Theme improvements
- Multi-Project Solutions

Simplicity Studio® 5 version 5.2.0.0 released June 16, 2021

This release includes the following key features:

- Support for upgrading SLC projects to a newer SDK
- NCP Commander updates:
  - Advertiser improvements including ability to build custom advertisement data packets, fine tune the TX Power, and export to incorporate settings into firmware.
  - Devices discovery improvements: ability to favorite devices and new filter by device name, address, RSSI, raw advertising data or favorite devices.
  - RF Regulatory Tests: ability to add CTE to DTM packets
  - Standalone version with access to all system COM ports may be launched through Tools dialog or Compatible Tools tab (see the Bluetooth NCP Commander page for more information)
- Bluetooth Mesh Configurator updates
  - New warnings if Device Composition Data does not comply with the specification
  - Various bug fixes and improvements to validate model rules
- Upgrade to support integrations with IAR Embedded Workbench v8.50.9
- Upgraded default GCC compiler to version Arm GCC v10.2

Simplicity Studio® 5 version 5.1.0.0 released December 9, 2020

This release includes the following key features:

- Beta release of GNU Debugger (GDB) support
  Simplicity Studio 5.1 includes Beta-level support for a GDB client and SEGGER's GDB server.
- GitHub integration for access to software example repositories
  Starting in Simplicity Studio 5.1, developers may clone sample projects from within the Gecko SDK or within compatible GitHub repos.
- Bluetooth Mesh support
  Starting in Simplicity Studio 5.1 and Gecko SDK 3.1, Bluetooth Mesh is supported in the new Project Configurator workflow. Studio 5.1 introduces the all-new Bluetooth Mesh Configurator tool for configuring a Bluetooth Mesh node's Device Composition Data (DCD).
- Bluetooth NCP Commander
  Bluetooth NCP Commander is a new Simplicity Studio 5 interactive console tool for sending BGAPI commands to a Bluetooth NCP application connected to a development host machine.

Simplicity Studio® 5 version 5.0.0.0 released July 29, 2020

The initial release of SSv5 includes the following key features:

- Launcher
  - Fresh, clean user interface
  - Automatic detection of connected development boards
  - Context-aware development board and target device developer resources
  - SDK download and update manager
  - Easy programming of pre-built demo apps
  - Simple cloning of software examples
  - Quick access to software and hardware documentation with search and filter capabilities
- Software creation & management tools
  - Support for Gecko SDK Suite 3.0 and later
  - Creation of projects for
    - The integrated Simplicity Studio IDE
    - IAR Embedded Workbench
    - Command-line GNU toolchain (GNU makefiles)
  - Searchable library of device-relevant software making it easy to add software components to projects
  - Configure software components in a GUI or text (C source) editor
    - Configurable peripheral initialization, drivers, middleware, kernels and utilities

- Built-in software configuration error-checking
- Software dependency manager simplifies porting from
  - SDK to SDK
  - Silicon Labs development kits to custom hardware designs
- Graphical configuration tools
  - Pin tool to assign pin and peripheral hardware resources
  - Proprietary radio configurator tool
  - Editor for Bluetooth LE Generic Attribute Profile (GATT)
- Source/Project management and revision control
  - Option to copy or link SDK source
  - No hard-coded paths
  - Clear separation between SDK and customer source code
  - Easy transfer of projects (share/import/export of projects)
  - Source code management and software engineering workflows
- Development Tools
  - Powerful integrated development environment (IDE)
    - Built on latest Eclipse framework (v4.14 and newer)
    - C/C++ Development Tooling (CDT, v9.10 and newer)
    - Eclipse marketplace to enhance and customize
  - Valuable insights with Silicon Labs analysis tools
    - Wireless network traffic capture and analysis
      - Test and analyze the traffic of your wireless devices and networks
      - Data collected directly from devices under test
      - Includes signal strength, LQI (Link Quality Indicator) and filtering information (unique to Silicon Labs)
    - Capture and display energy usage
      - Monitor single device or multiple nodes on a wireless network
      - Code-correlated energy data – identify where your embedded application is consuming energy and design power-optimized applications
      - Advanced trigger and search functions locate power events

Known Issues

Simplicity Studio® Version 5.9.1

ID	Issue	Workaround
1320466	The error 'java.lang.NullPointerException: Cannot invoke "java.util.List.stream()"' appears when opening a project's .slcp file.	Close Simplicity Studio and use a file manager to delete the .projectlinkstore file from the project directory. The default quicklinks for the project will then be used the next time the .slcp file is opened.

Simplicity Studio® Version 5.8.0

ID	Issue	Workaround
758963	The Navigation Buttons (back, forward, etc) will not be displayed if Simplicity Studio starts up on the Simplicity IDE perspective.	Change to a different perspective such as the Launcher perspective and then back to the Simplicity IDE perspective.
1095792	Changing the Target Part in Project Configurator does not work correctly on custom hardware.	Either create a new software example for the desired target part and port in code changes or manually change the component ID in the .slcp and .slps files with a text editor and then open the Project configurator and do a Force Generation.
1113960	GDB Debug Session Launch fails with "Error in final launch sequence" popup.	Typically, the debug session will launch successfully the next time or after a Simplicity Studio restart. If the issue persists, edit the debug configuration Run > Debug configurations… and uncheck the 'Continue' box on the Startup tab. The debug session will stop before `main()`, but clicking Resume will run to `main()`.
1156776	Custom Network Analyzer Decoders no longer work starting with version 5.7.0.0.	JavaScript custom decoders need to be converted to LUA decoders. See Custom Decoders.
1209674	IAR Toolchain linker command line length can exceed Windows line limit.	When the IAR toolchain is used to compile projects from the Simplicity Studio IDE under Windows, it is possible to get linker errors if the linker line length exceeds the Windows limit of 30,000 characters. The work around is to edit the project properties [C/C++ Build] > [Settings] > [IAR Linker for ARM] [Expert settings] and to use this command line: `@echo "$(OBJS) $(USER_OBJS)" > linker_file.xcl; ${COMMAND} -f linker_file.xcl $(LIBS) ${OUTPUT_FLAG}${OUTPUT_PREFIX}${OUTPUT} ${FLAGS}`
1225683	Blank Project Wizard or Log In windows seen with MacOS Ventura or later.	When running Simplicity Studio under MacOS Ventura or later, if blank windows are seen for the new project wizard, login page or other windows, the internal browser used by Simplicity Studio might not have permissions to make changes to the system. The work around is to go to the MacOS System Settings -> Privacy & Security -> App Management and to add Simplicity Studio as an application that can update or delete other applications.

Revision History

Revision 5.8.0 released December 13, 2023

- Overview: Update new features and known issues
- Getting Started: Add Extension upgrades to Upgrade an Existing Project
- Companion IDEs: Update VSCode Project Generation
- Tools: Network Analyzer: Update custom decoders

Revision 5.7.2 released October 9, 2023

- Overview: Update known issues
- Getting Started: Update the Zigbee Cluster Configurator to ZCL Advanced Platform
- Developing with Project Configurator: Zigbee Cluster Configurator
  - Rename to ZCL Advanced Platform
  - Update user interface illustrations
  - Add information on use with Matter

Revision 5.7.1 released August 17, 2023

- Overview: Update known issues

Revision 5.7.0 released June 7, 2023

- Overview: Update known issues and new features
- Getting Started: Updated first page to reflect that extensions are now installed as part of the normal install process, also update images and the Extensions section
- Developing with Project Configurator: Update Proprietary Radio Configurator
- Companion IDEs - VS Code: Update for current interface and functionality

Revision 5.6.3 released March 16, 2023

- Overview:
  - Add release dates to New Features
  - Update Known Issues
- Getting Started: Restructure and update Solutions and Memory Editor content
- Developing with Project Configurator:
  - Update Pin Tool to reflect new interface
  - Update Solutions section
  - Add Memory Editor section
- Using the Tools: NCP Commander - Update Bluetooth mesh section
- Tips and Tricks:
  - Place a Project Under Source Control (update)
  - Discover Networked Devices (new)

Revision 5.6.0 released December 14, 2022

- Getting Started:
  - Generate project report
  - Software Components tab: quality dropdown, PIN tool button

- Configurator updates
- Developing with Project Configurator:
  - Update Zigbee Cluster Configurator to include Matter projects
  - Update Wi-SUN Configurator for Fan 1.1 changes
- Building and Flashing: Add new post-build editor section
- Add new *Companion IDEs: Visual Studio Code* section.
- Tips & Tricks: Added a new tip about getting an updated Simplicity Commander tool.

Revision 5.5.0 released September 7, 2022

- Getting Started:
  - Changed Update and Install SDK Software to reflect the modification for the Matter extension.
  - Updated for the new approach to installing extensions.
  - Added a section on updating a project to a newer GSDK version.
- About the Launcher:
  - Revised the Toolbar > Install section, SDK tab to show the new interface for updating or adding SDKs.
  - Changed Preferred SDK information in the Welcome and Device tabs section.
- Testing and Debugging:
  - Changed to reflect that the GNU Debugger is now the default.
  - Added a section on using the Wireshark Packet Analyzer.

Revision 5.4.2 released August 17, 2022

- Getting Started: Updated the New Project Wizard interface, removed outdated content; documented the IDE / toolchain options when creating a new project.
- Using the Tools:
  - Updated the Bluetooth Direction Finding Tool Suite section.
  - Added a logic analyzer section to Energy Profiler
- Tips and Tricks: Added instructions for placing a project under source control
- Throughout - Clarified that AppBuilder is a legacy tool.

Revision 5.4.0 released June 8, 2022

- Getting Started: Updated Project Configurator Overview tab; added summary sections for Wi-SUN Configurator and beta Memory Editor.
- About the Launcher: Documented new filter options for example applications.
- Project Configurator: Updated Overview tab; added new Wi-SUN Configurator section.
- Testing and Debugging: GNU Debugger support is now GA.
- Tips and Tricks: Added a tip for installing all parts of an upgrade.

Revision 5.3.2 released March 9, 2022

- Getting Started: Added more information about linking sources in a new project.
- About the Launcher: Clarified the interface overview, with new information about the perspectives menu; added instructions on adding an SDK to the list shown on the General Information card.
- NCP Commander: Added information about the scripting feature.
- Tips and Tricks: Added a tip about working with custom radio boards.

Revision 5.3.1 released January 26, 2022

- Getting Started: Updated Start a Project to reflect other project types available
- NCP Commander: Updated to include Bluetooth mesh functionality
- Using the tools: New section on the Bluetooth Direction Finding Tool Suite
- Various maintenance updates.

Revision 5.3.0 released December 15, 2021

- Installation instructions reflect installing the Gecko SDK from GitHub.
- Project migration text includes newer migration options.
- New SDK Extensions section.
- New Solutions section.
- Project Configurator now supports Zigbee, Bootloader, and Z-Wave.
- New Zigbee Cluster Configurator tool.
- NCP Commander enhanced with dynamic GATT database interactions.
- Tips and Tricks updated with new installation information.

Revision 5.2.0 released June 16, 2021

- Version changed to correlate with Simplicity Studio 5.
- Tools: Standalone NCP Commander documented.
- Getting Started: Linux installation instructions added.
- Energy Profiler: Code correlation software setup instructions updated.
- Tips and Tricks: Links added at the top of the page; tip on changing from GCC to IAR compiler added.
- Various maintenance updates.

Revision 1.1.0 released December 9, 2020

- General updates for Simplicity Studio 5.1.
- Launcher perspective (Getting Started, About the Launcher):
  - Software Examples and Demos tabs combined into a single tab, enhanced filtering options.
  - Examples from GitHub repositories.
  - New security firmware update option for Series 2 devices.
- Developing for 32-Bit Devices:
  - Project Configurator now supports Bluetooth Mesh and 32-Bit MCU SDKs.
  - New Project Configurator Configuration Tools tab.
  - New Bluetooth Mesh Node Configurator tool.
  - Pin Tool, new 'Add Component' functionality.
- Testing & Debugging:
  - New Beta quality GNU Debugger.
- Tools:
  - New Bluetooth NCP Commander tool.
- Tips & Tricks:
  - Update protocol locations for Bluetooth Mesh.
  - New 'Capture a Simplicity Studio 5 Thread Dump' tip.

Revision 1.0.0 released July 29, 2020

- Initial release

For Users of Previous Versions

If you are migrating from Simplicity Studio 4 to SSv5, or if you are transitioning from AppBuilder projects to the component-based architecture, see Project Migration for additional information.