



UG235.08: Using the Command Line Interface with Silicon Labs Connect v2.x

This chapter of the *Connect v2.x User's Guide* describes how to use the Command Line Interface (CLI) with Silicon Labs Connect and offers implementation guidance for adding a CLI command. The Connect stack is delivered as part of the Silicon Labs Proprietary Flex SDK. The *Connect v2.x User's Guide* assumes that you have already installed the Simplicity Studio development environment and the Flex SDK, and that you are familiar with the basics of configuring, compiling, and flashing Connect-based applications. Refer to *UG235.01: Developing Code with Silicon Labs Connect v2.x* for an overview of the chapters in the *Connect v2.x User's Guide*.

The *Connect v2.x User's Guide* is a series of documents that provides in-depth information for developers who are using the Silicon Labs Connect Stack for their application development. If you are new to Connect and the Proprietary Flex SDK, see *QSG138: Proprietary Flex SDK v2.x Quick Start Guide*.

Proprietary is supported on all EFR32FG devices. For others, check the device's data sheet under Ordering Information > Protocol Stack to see if Proprietary is supported. In Proprietary SDK version 2.7.n, Connect is not supported on EFR32xG22.

KEY POINTS

- Introduces the Command Line Interface (CLI).
- Offers implementation guidance for adding a CLI command.

1. Introduction

Embedded application developers need to interact with the embedded system throughout both their development and finished product phases—for example, to change the settings or monitor the operation of a device. In many cases, the easiest and most common way to complete these tasks is to use the device's Universal Asynchronous Receiver/Transmitter (UART) interface. The Connect stack provides an extensible Command Line Interface (CLI) implementation for this purpose.

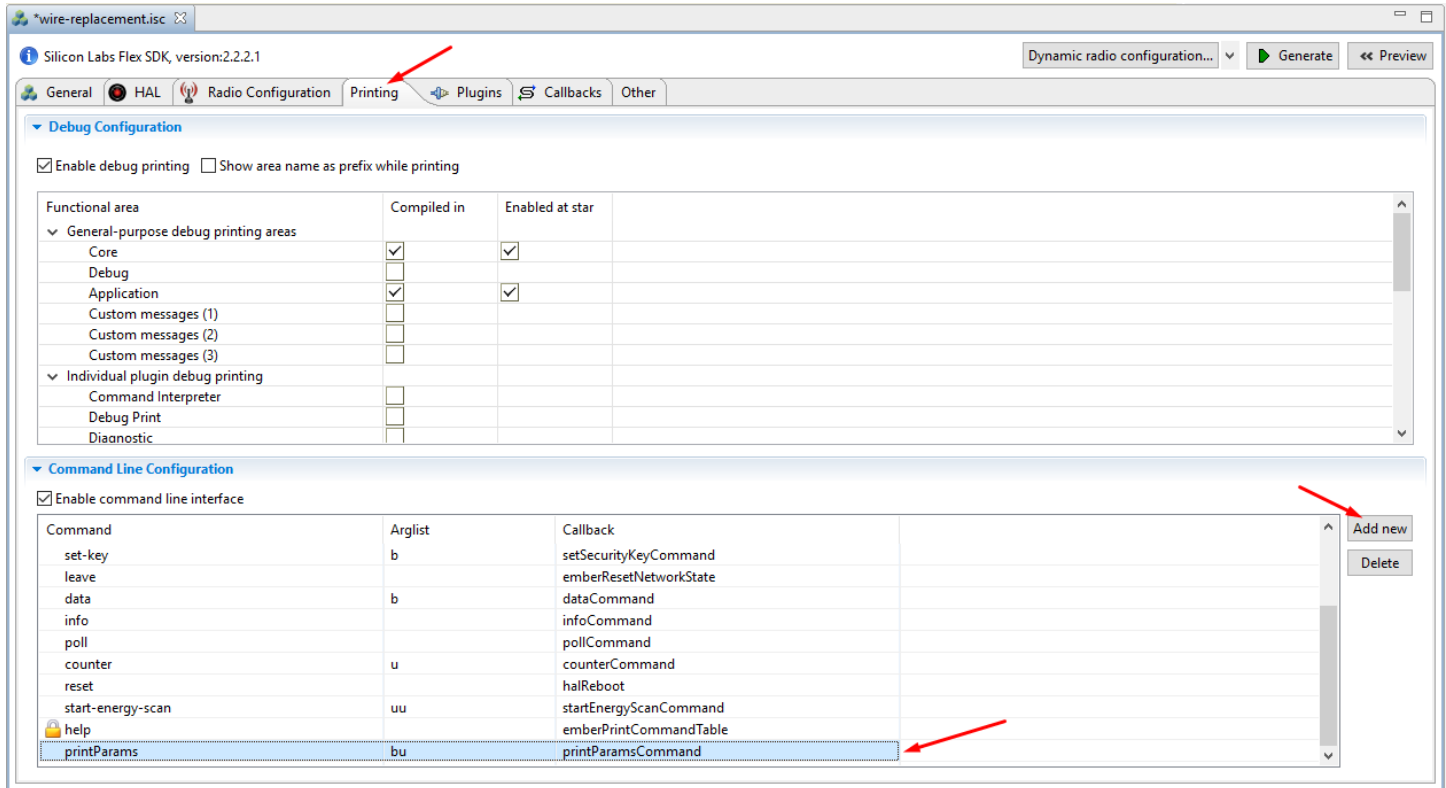
2. Adding a CLI Command

By default, all Connect example projects select CLI commands already implemented that interact with the application through the device's UART interface.

This example project explains how to add other CLI commands using the `Connect (SoC): Wire-Replacement` application. You can create the project by using the example application Project Wizard.

To add a new CLI command:

1. Open AppBuilder (it opens automatically when you create a new project) and then click the **Printing** tab as shown in the following figure.



In the **Command Line Configuration** frame, click the **Add New** button. This will insert a new line at the end of the command line list. (Because it will be inserted at the end, you may need to scroll down to the bottom of the list to see the new line.)

There are three columns for a command:

- **Command:** the command name as it will be available on the UART console.
- **Arglist:** the list of argument types that the command will accept.
- **Callback:** the function that will be called on command execution from the command line.

Arglist accepts the following argument types:

- **u:** one-byte unsigned integer
- **v:** two-byte unsigned integer
- **w:** four-byte unsigned integer
- **s:** one-byte signed integer
- **b:** string

Note: Commands added in AppBuilder will be displayed in the online help, included in the source code, and will be available at the command line.

The string argument can be entered in ASCII by using double quotes—for example: "string"—or in hexadecimal values by using curly braces—for example: {48 45 58 0A}.

You can find the parameter descriptions in the `command-interpreter2.h` file in the `command-interpreter` folder of the project at declaration of `EmberCommandEntry`.

2. Modify the **Command** field to `printParams`, the **Callback** field to `printParamsCommand`, and the **Arglist** to `bu` (a string and a one-byte unsigned integer) and click the **Generate** button.

The generate action will create the prototype of the callback in `flex-cli.c`.

```
void printParamsCommand(void);
```

3. Add the newly created command to the `emberCommandTable[]`.

The corresponding line should look like this:

```
emberCommandEntryAction("printParams", printParamsCommand, "bu", ""),
```

The last parameter is an empty string that is displayed in the online help when the `help` command is executed in the CLI. App-Builder does not support this parameter. It overwrites any modifications made manually in `flex-cli.c`.

4. Implement the callback in `flex-callbacks.c`.

```
void printParamsCommand(void)
{
    uint8_t stringLength;
    uint8_t *stringContents = emberStringCommandArgument(0, &stringLength);
    uint8_t numericValue;
    emberAfCorePrintln("First parameter (string): %s", stringContents);
    emberAfCorePrintln("First parameter length: %d", stringLength);
    numericValue = emberUnsignedCommandArgument(1);
    emberAfCorePrintln("Numeric value: %u", numericValue);
}
```

The `command-interpreter2-util.c` file contains the helper functions for retrieving the values of the command line arguments. The most commonly-used functions are:

- `emberUnsignedCommandArgument()`
- `emberSignedCommandArgument()`
- `emberStringCommandArgument()`

In all cases, the first parameter of the call is the location of the argument in the argument list (zero-based index value). In the case of `emberStringCommandArgument()`, the second parameter is a pointer to the value of the string length.

If the project successfully compiled, the new command appears in the help:

```
wire-replacement>help
type      description
<uint8_t> 8-bit unsigned int, eg: 255, 0xAB
<int8_t>   8-bit signed int, eg: -128, 0xA9
<uint16_t> 16-bit unsigned int, eg: 3000 0xFFAA
<string>   A string, eg: "foo" or {0A 1B 2C}
*          Zero or more of the previous type

counter <uint8_t> -
data <string> -
help -
info -
leave -
null -
printParams <string> <uint8_t> -
reset -
set-key <string> -
set-tx-options <uint8_t> -
set-tx-power <int8_t> -
start-energy-scan <uint8_t> <uint8_t> -
start-master <uint8_t> -
start-slave <uint8_t> -
start-sleepy-slave <uint8_t> -
wire-replacement>
```

Executing the command should print the argument's values on the console:

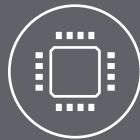
```
wire-replacement>printParams {48 65 6c 6c 6f 00} 42
First parameter (string): Hello
First parameter length: 6
Numeric value: 42
wire-replacement>
```



Smart.
Connected.
Energy-Friendly.



Products
www.silabs.com/products



Quality
www.silabs.com/quality



Support and Community
community.silabs.com

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.

Trademark Information

Silicon Laboratories Inc.®, Silicon Laboratories®, Silicon Labs®, SiLabs® and the Silicon Labs logo®, Bluegiga®, Bluegiga Logo®, ClockBuilder®, CMEMS®, DSPLL®, EFM®, EFM32®, EFR®, Ember®, Energy Micro, Energy Micro logo and combinations thereof, "the world's most energy friendly microcontrollers", Ember®, EZLink®, EZRadio®, EZRadioPRO®, Gecko®, Gecko OS, Gecko OS Studio, ISOModem®, Precision32®, ProSLIC®, Simplicity Studio®, SiPHY®, Telegesis, the Telegesis Logo®, USBXpress®, Zentri, the Zentri logo and Zentri DMS, Z-Wave®, and others are trademarks or registered trademarks of Silicon Labs. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. Wi-Fi is a registered trademark of the Wi-Fi Alliance. All other products or brand names mentioned herein are trademarks of their respective holders.



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

<http://www.silabs.com>