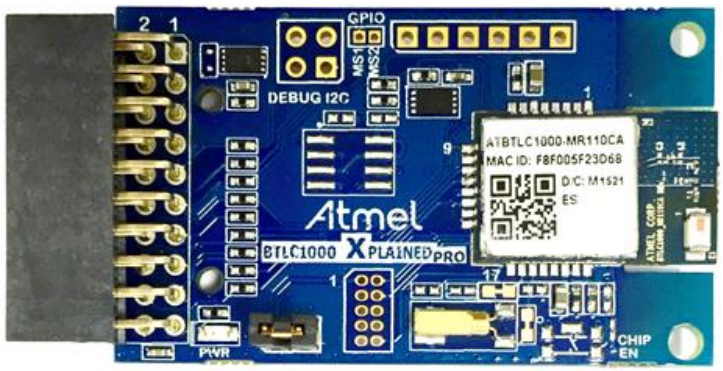
ATBTLC1000 BluSDK

Simple Broadcaster - Getting Started Guide

USER GUIDE



Introduction

This guide describes the setup of the Atmel® ATBTLC1000 to be used in conjunction with supported platforms (see Table 2-1) bringing up an example profile supplied as part of BluSDK release. The Simple Broadcaster application is an example application that is embedded as part of the software release package.

The Simple Broadcaster application continuously broadcasts the advertisement data over the air.

This document explains the details about:

1. Getting started with the setup of supported platforms (see Table 2-1).
2. Using the ATBTLC1000 Wing board as a simple broadcaster to broadcast the data.

The Simple Broadcaster example application supports 10 advertisement data types. They are listed as follows:

- Incomplete List of 16-bit Service Class UUID
- Complete List of 16-bit Service Class UUIDs
- Incomplete List of 32-bit Service Class UUIDs
- Complete List of 32-bit Service Class UUIDs
- Incomplete List of 128-bit Service Class UUIDs
- Complete List of 128-bit Service Class UUIDs
- Shortened Local Name
- Complete Local Name
- Appearance
- Manufacturer Specific Data

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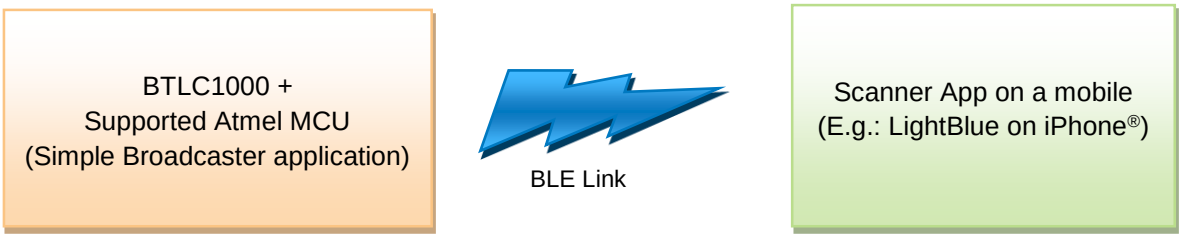
1 Demo Setup



2 Supported Hardware Platforms and IDEs

Table 2-1. BluSDK – Supported Hardware and IDEs

Platform	MCU	Supported BLE device	Supported evaluation kits	Supported IDEs
SAM L21 (MCU)	ATSAML21J18B	ATBTLC1000	ATBTLC1000-XSTK (ATSAML21-XPRO-B + ATBTLC1000 XPRO)	Atmel Studio v6.2
SAM L21 (MCU)	ATSAML21J18A	ATBTLC1000	ATSAML21 XPRO + ATBTLC1000 XPRO	Atmel Studio v6.2
SAM D21 (MCU)	ATSAMD21J18A	ATBTLC1000	ATSAMD21-XPRO + ATBTLC1000 XPRO	Atmel Studio v6.2
SAM G55 (MCU)	ATSAMG55J19	ATBTLC1000	ATSAMG55-XPRO + ATBTLC1000 XPRO	Atmel Studio v6.2

3 Hardware Setup

3.1 SAM L21 Xplained Pro Simple Broadcaster Setup

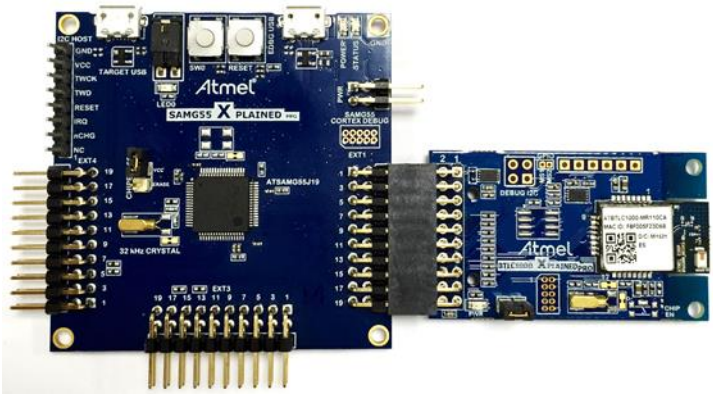
Figure 3-1. ATBTLC1000 Xplained Pro Extension connected to a SAM L21 Xplained Pro

3.2 SAM D21 Xplained Pro Simple Broadcaster Setup

Figure 3-2. ATBTLC1000 Xplained Pro Extension connected to a SAM D21 Xplained Pro

3.3 SAM G55 Xplained Pro Simple Broadcaster Setup

Figure 3-3. ATBTLC1000 Xplained Pro Extension connected to a SAM G55 Xplained Pro



4 Software Setup

4.1 Installation Steps

1. Atmel Studio installation [**Atmel Studio 6.2 sp2 (build 1563) Installer – with .NET**] http://www.atmel.com/tools/atmelstudio.aspx.
   (Note: SAM D21/SAM L21 Rev A part pack is built-in as part of Atmel Studio 6.2 sp2.)
2. Part Packs.
   a. Install SAML21 Rev B Part Pack http://www.atmel.com/images/ATSAML21revB-6.2.6.zip
      (Note: Atmel BTLC1000 X-STK ships with SAML21 XPRO-B and requires this installer)
   b. Install SAMG55 Part pack http://www.atmel.com/images/as-partpack-ATSAMG55-6.2.13.zip.
      (Note: This installer is needed only if the bring-up is being done on the SAM G55 platform)
3. Atmel USB Driver Installer from http://www.atmel.com/tools/atmelstudio.aspx.
4. Install the standalone ASF package from http://www.atmel.com/tools/AVRSOFTWAREFRAMEWORK.aspx .

Note: Refer to the BluSDK release notes for updates to version numbers of the components mentioned above.

This package will install the following examples within the Atmel Studio environment.

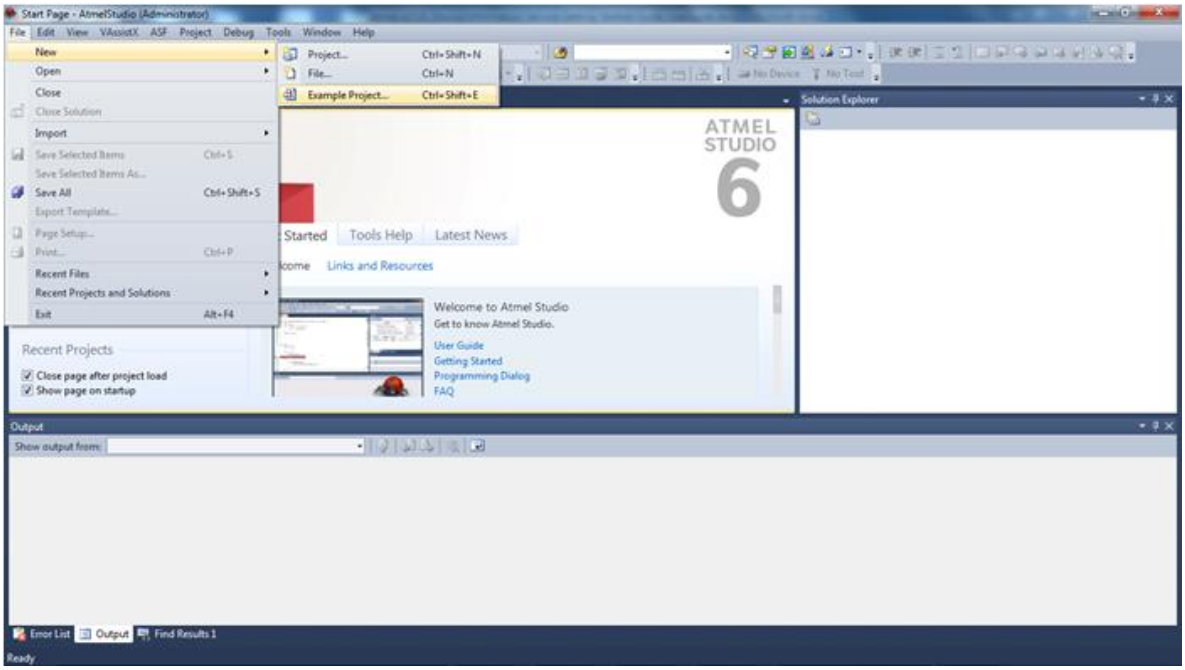
1. Simple Broadcaster Application for SAM L21.
2. Simple Broadcaster Application for SAM D21.
3. Simple Broadcaster Application for SAM G55.

4.2 Build Procedure

The following procedure is explained for SAML21 application example. The same procedure is valid for the case of all other supported platforms (see Table 2-1).

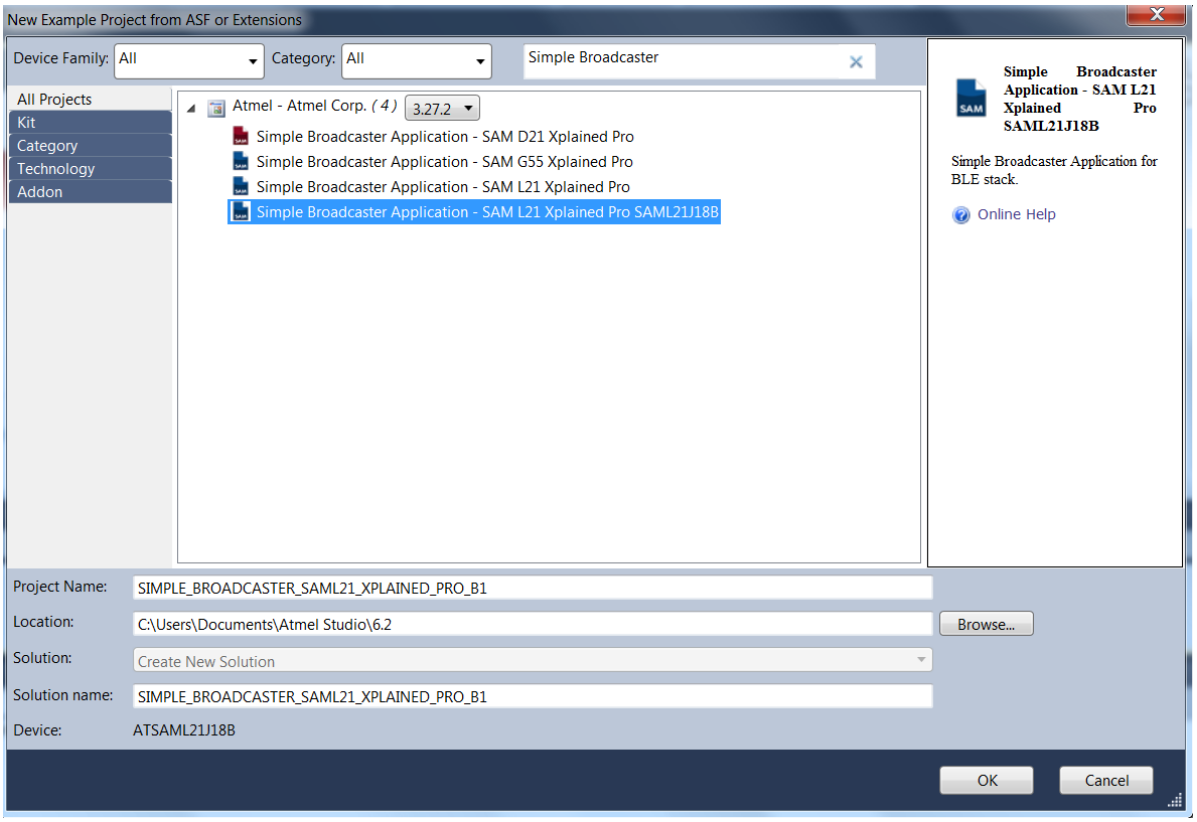
1. Select New Example Project.

Figure 4-1. Creation of Project



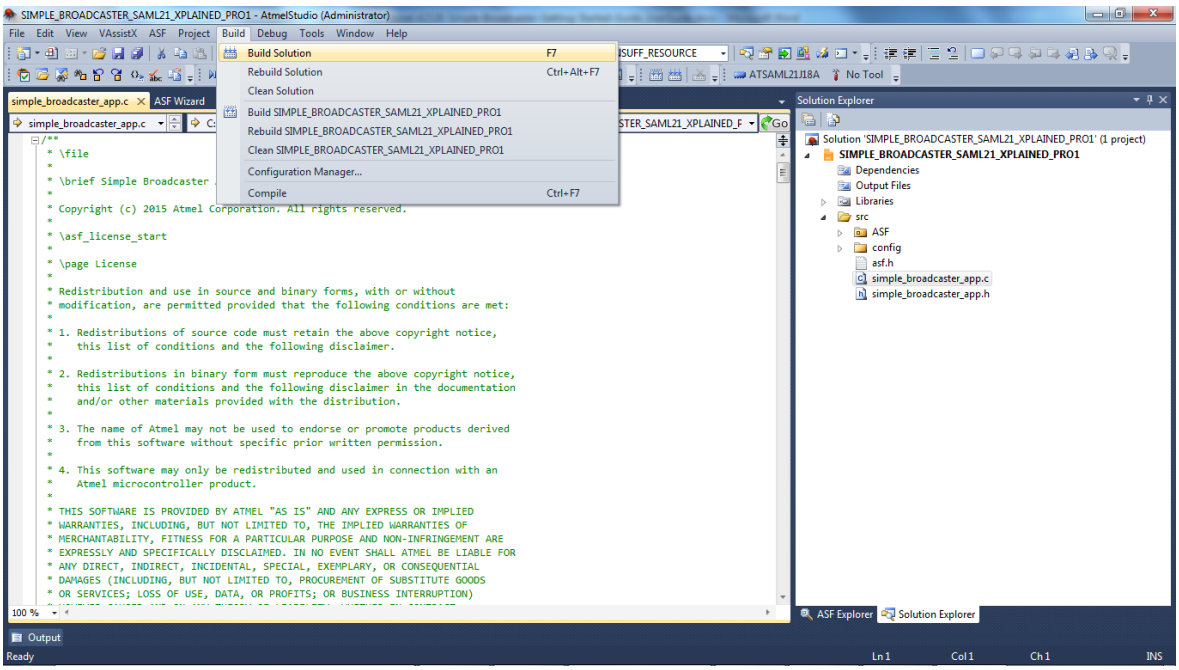
2. Enter “Simple Broadcaster” in the search window and expand Atmel Corp Projects. The location and the name of the project can be selected in the respective fields. Click **OK**.

Figure 4-2. Selection of Simple Broadcaster Application from Example Projects



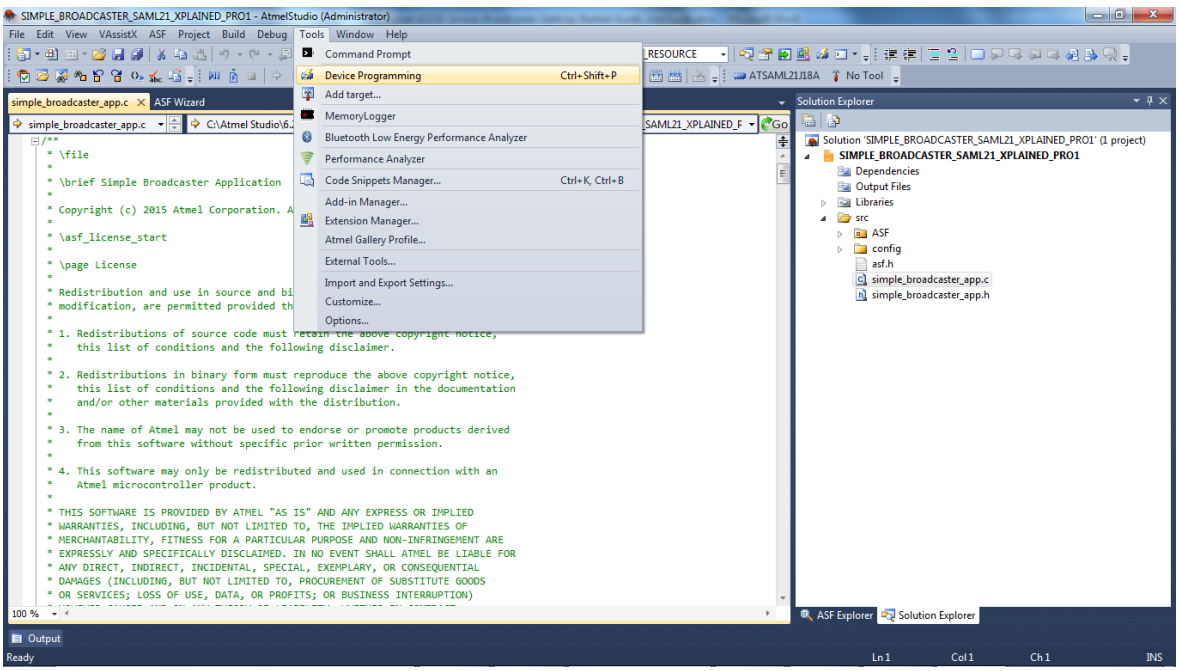
3. Build the solution.

Figure 4-3. Building of the Broadcaster Application



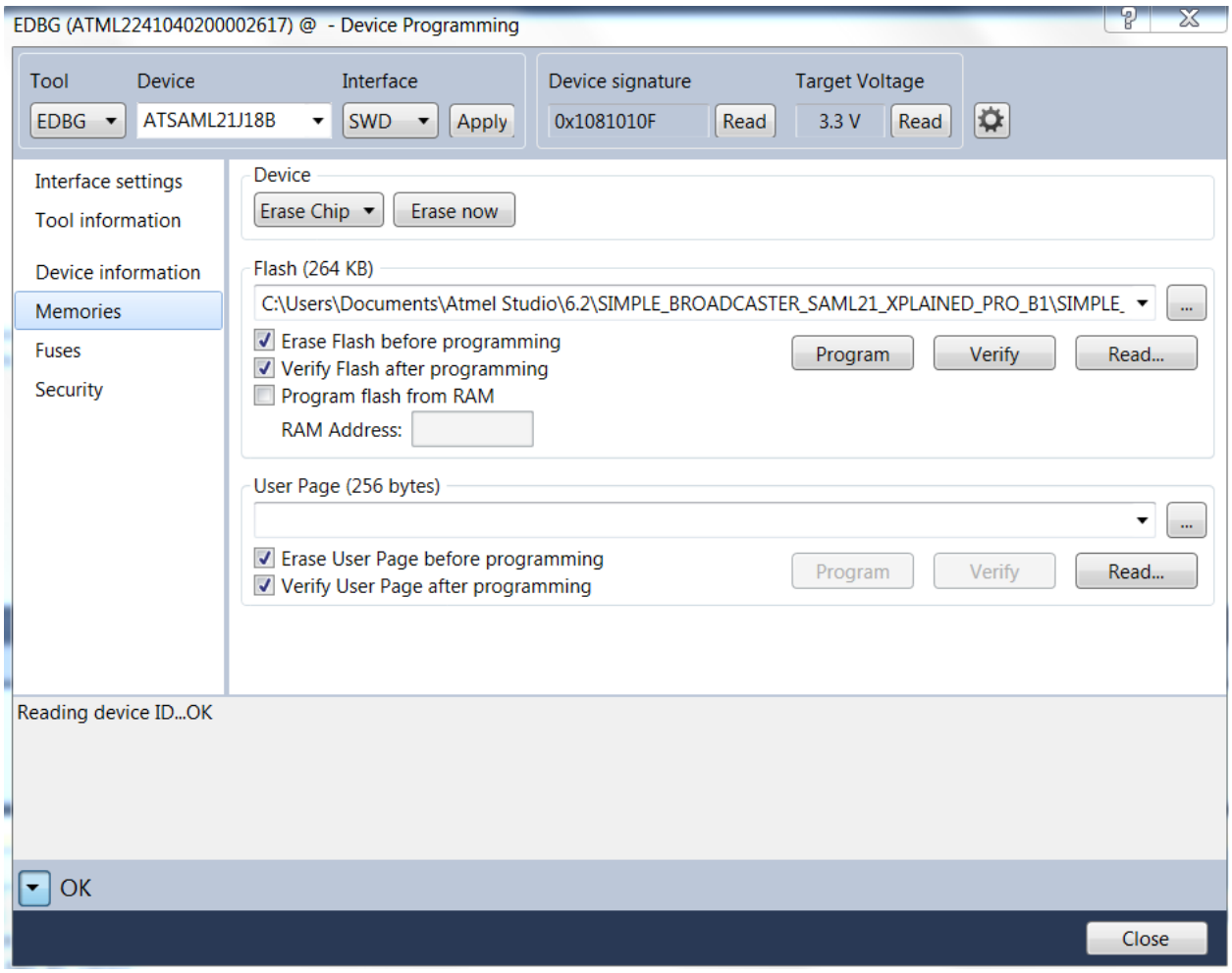
4. Download the application via the USB to the SAM L21 board using Device Programming option available in Tools as shown in Figure 4-4.

Figure 4-4. Selecting Device Programming Option



5. Programming the device to download the Simple Broadcaster application as shown in Figure 4-5.

Figure 4-5. Flashing the Application to SAM L21



6. After flashing the device is now ready to be used as a Simple Broadcaster.

5 Running Demo

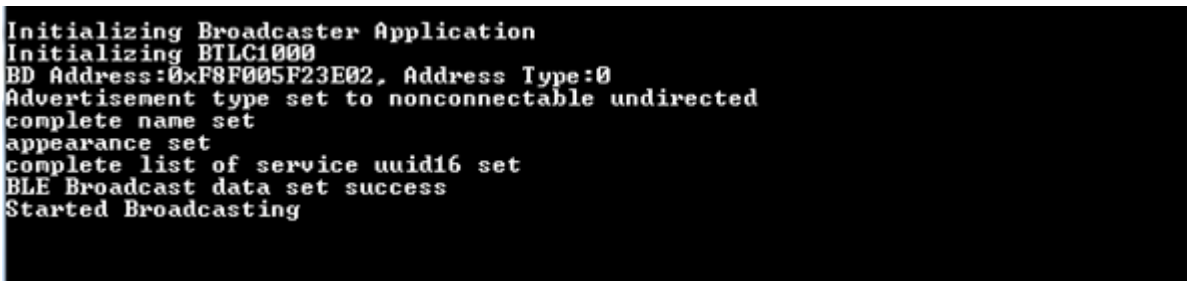
- Connect the ATBTLC1000 Xplained Pro Board to SAM L21 Xplained Pro EXT2 as indicated in Figure 3-2
- Power on the SAM L21 by connecting the USB Cable
- Open any Terminal Application (e.g. TeraTerm), select the COM Port and use following Settings: Baudrate 115200, Parity None, 1 Stop bit, 1 Start bit, No Hardware Handshake
- Press the Reset button on the SAM L21 board or supported platforms (see Table 2-1) board
- The device is now in advertising mode

6 Console Display

For the purpose of debugging, a logging interface has been implemented in the Simple Broadcaster application. The logging interface utilizes the same EDBG port that connects to supported platforms (see Table 2-1). A serial port monitor application (e.g. TeraTerm) shall be opened and attached to the corresponding COM port enumerated on the PC.

Figure 6-1 shows example logs from the Simple Broadcaster application.

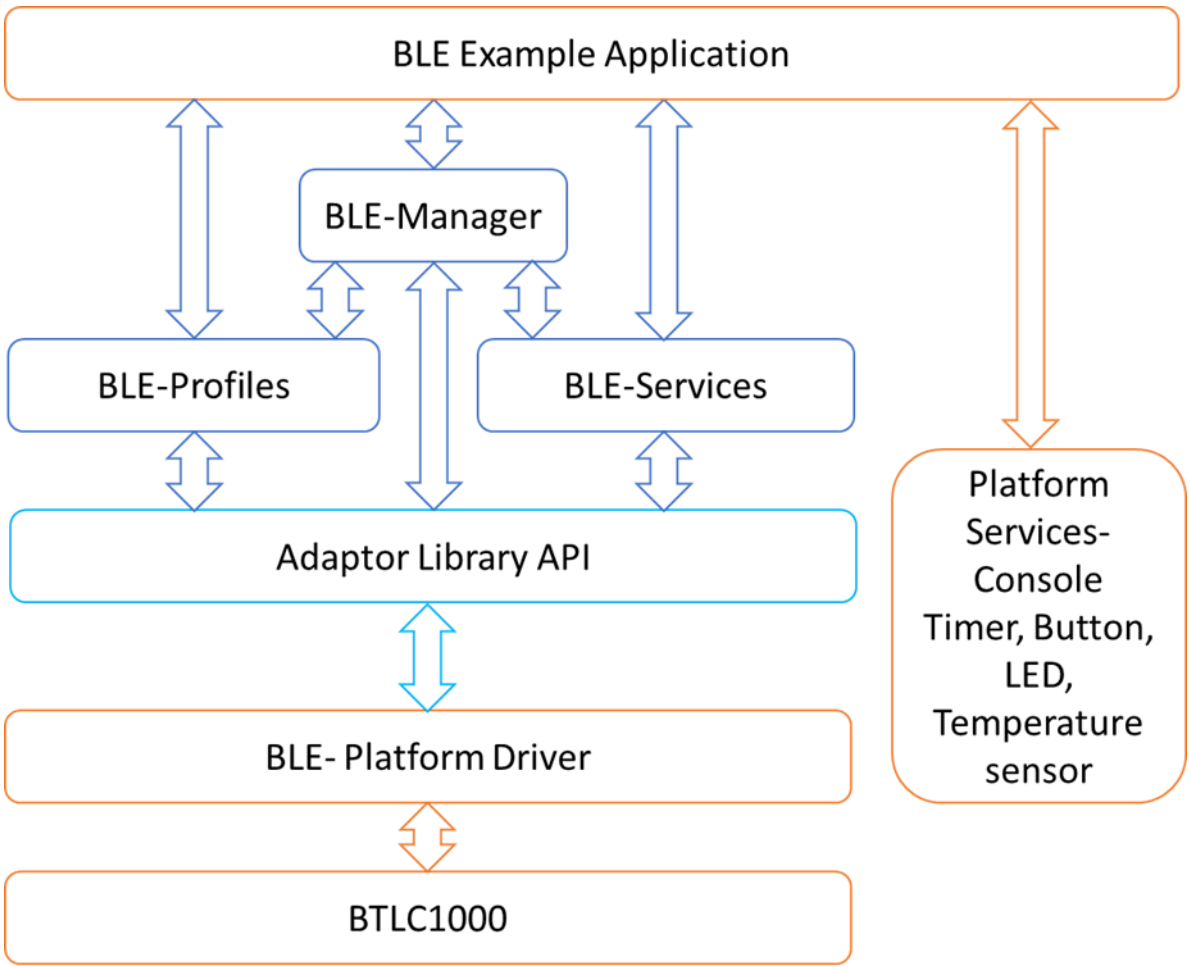
Figure 6-1. Simple Broadcaster Console Display



7 BluSDK Software Architecture

Figure 7-1 illustrates the various layers in the BLE subsystem for the ATBTLC1000 configuration. The External host can be supported platforms (see Table 2-1). This application is an example of simple Broadcaster.

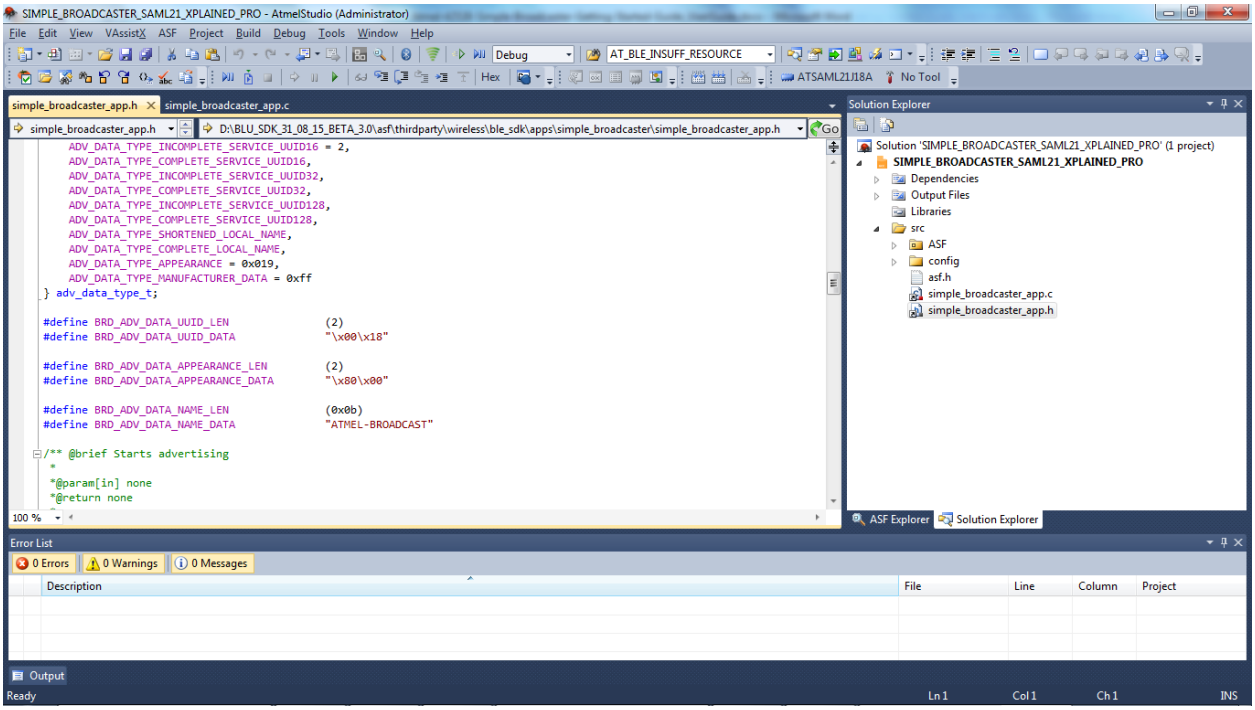
Figure 7-1. BluSDK Software Architecture



8 Configuration Options

- Simple Broadcaster application will advertise with the default configuration provided below:
  - Non-connectable undirected advertisement event
  - Broadcasts data in advertisement data packets only
  - Broadcasts the below advertisement data types:
    - Complete List of 16-bit Service Class UUIDs
    - Complete Local Name
    - Appearance
- The configuration and advertisement data types listed above can be changed by using the Macros provided in the ***simple_broadcaster_app.h*** file as shown in Figure 8-1

Figure 8-1. Simple_broadcaster_app.h Header File for Configurations



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