



## Introduction

This guide describes the setup of ATBTLC1000 to be used in conjunction with a [supported platforms](#) bring-up of the Scan Parameter Service example application that is included as part of the BluSDK software release package.

The Scan Parameter service application example demonstrates retrieving scan interval window information from a peer device implementing this service. The application implements a GATT server role. For the purpose of demonstration, the example also shows how to get the updated scan interval window value, by configuring the scan refresh characteristic for notification.

This document explains the details about:

1. Getting started with the setting up [supported platforms](#).
2. To get the Scan parameters service example application working on the above mentioned setup.

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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<br>(ATSAML21-XPRO-B + ATBTLC1000 XPRO) | Atmel Studio v7.0 |
| SAM L21 (MCU) | ATSAML21J18A | ATBTLC1000           | ATSAML21 XPRO + ATBTLC1000 XPRO                        | Atmel Studio v7.0 |
| SAM D21 (MCU) | ATSAMD21J18A | ATBTLC1000           | ATSAMD21-XPRO + ATBTLC1000 XPRO                        | Atmel Studio v7.0 |
| SAM G55 (MCU) | ATSAMG55J19  | ATBTLC1000           | ATSAMG55-XPRO + ATBTLC1000 XPRO                        | Atmel Studio v7.0 |

## 3 Hardware Setup

### 3.1 SAM L21 Xplained Pro Scan Parameter Service Setup

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



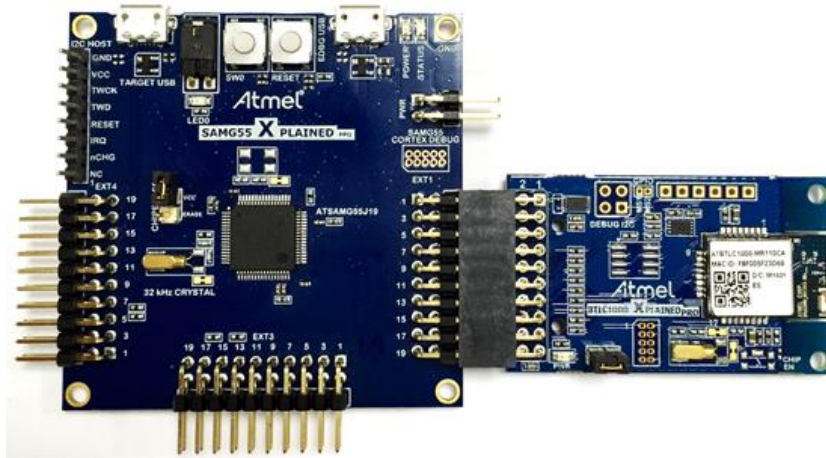
### 3.2 SAM D21 Xplained Pro Scan Parameter Service Setup

Figure 3-2. BTLC1000 Xplained Pro Extension Connected to a SAM D21 Xplained Pro



### 3.3 SAM G55 Xplained Pro Scan Parameter Service 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 7.0 (build 594) Installer – with .NET**]  
<http://www.atmel.com/tools/atmelstudio.aspx>  
(Note: SAM L21 Rev B/SAM D21/SAM G55 part pack is built-in as part of Atmel Studio 7.0)
2. Atmel USB Driver Installer from <http://www.atmel.com/tools/atmelstudio.aspx>.
3. 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.

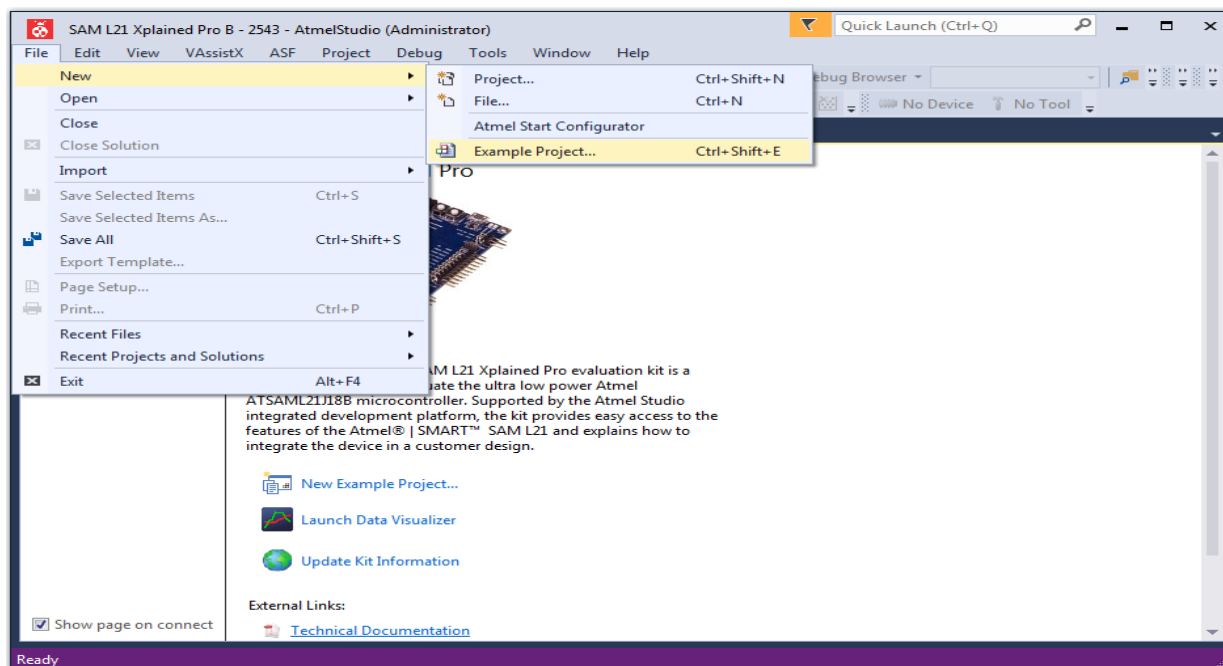
1. Scan Parameter Service Application for SAM L21.
2. Scan Parameter Service Application for SAM D21.
3. Scan Parameter Service Application for SAM G55.

## 4.2 Build Procedure

The following procedure is explained for SAML21 application example. The same procedure is valid for the case of all the other [supported platforms](#) as well.

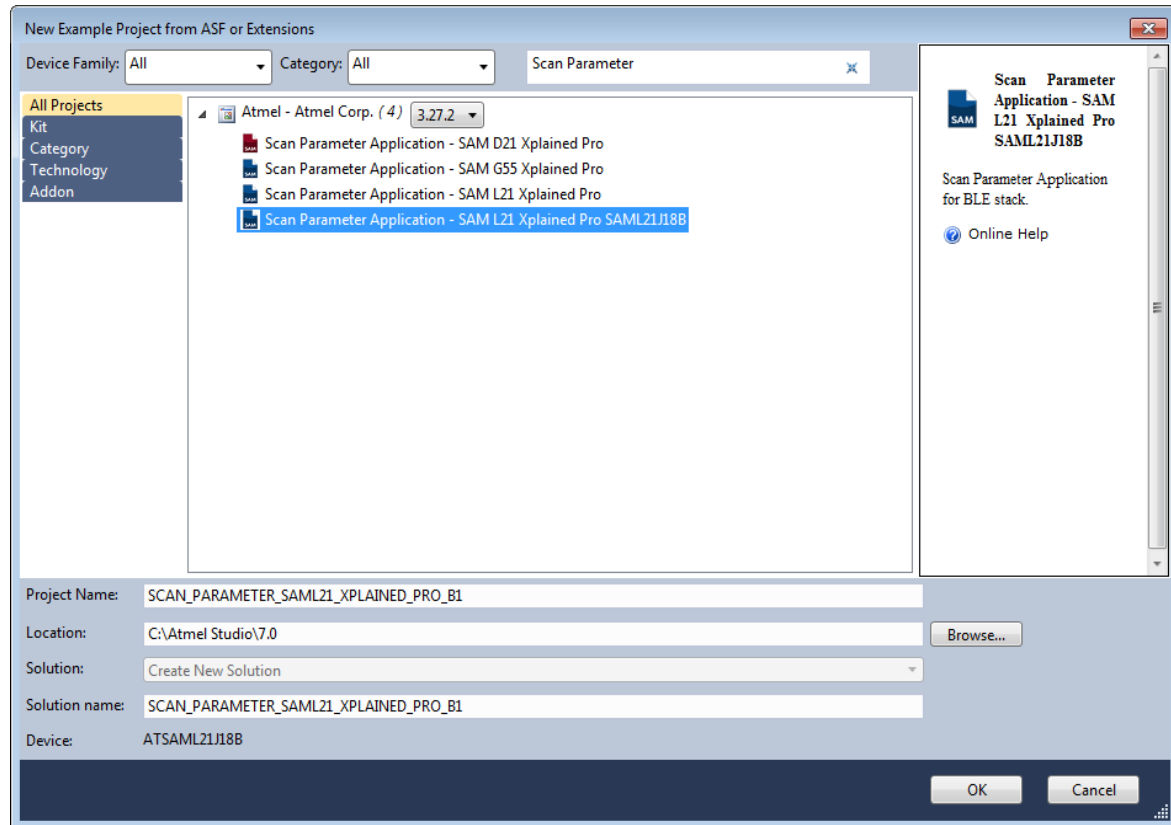
1. Select New Example Project.

**Figure 4-1. Creating a New Project**



2. In search box enter “Scan Parameter” in 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. Scan Parameter Service Application**

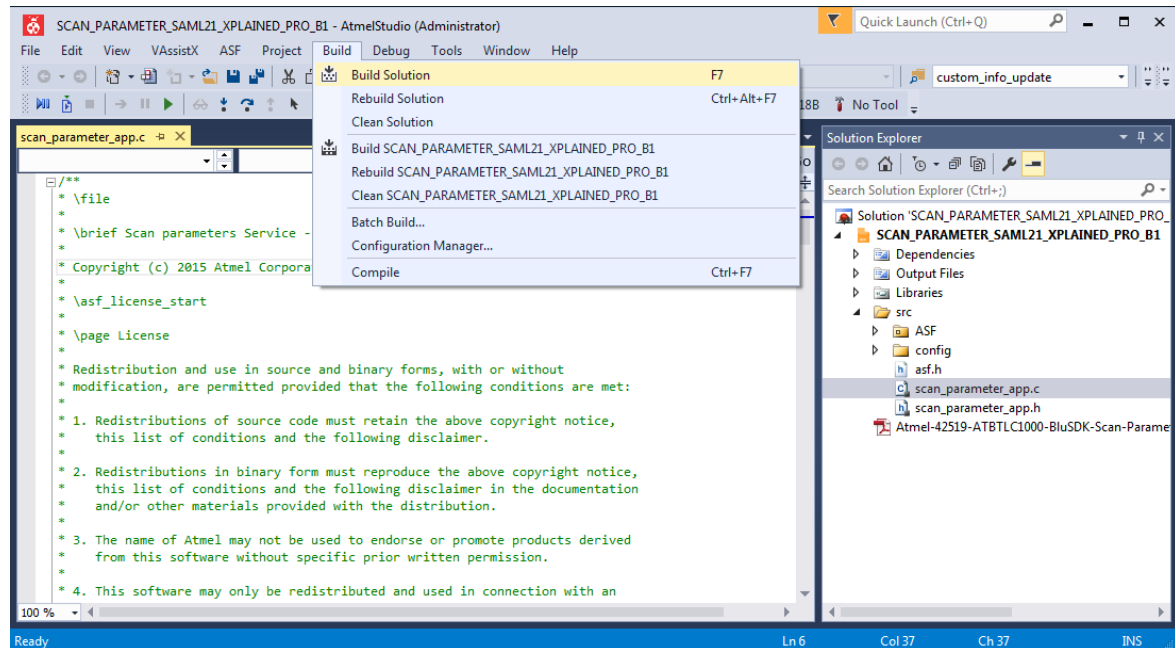


3. Accept the license Agreement. The Atmel studio will generate the Scan Parameter Service Example project for SAM L21.



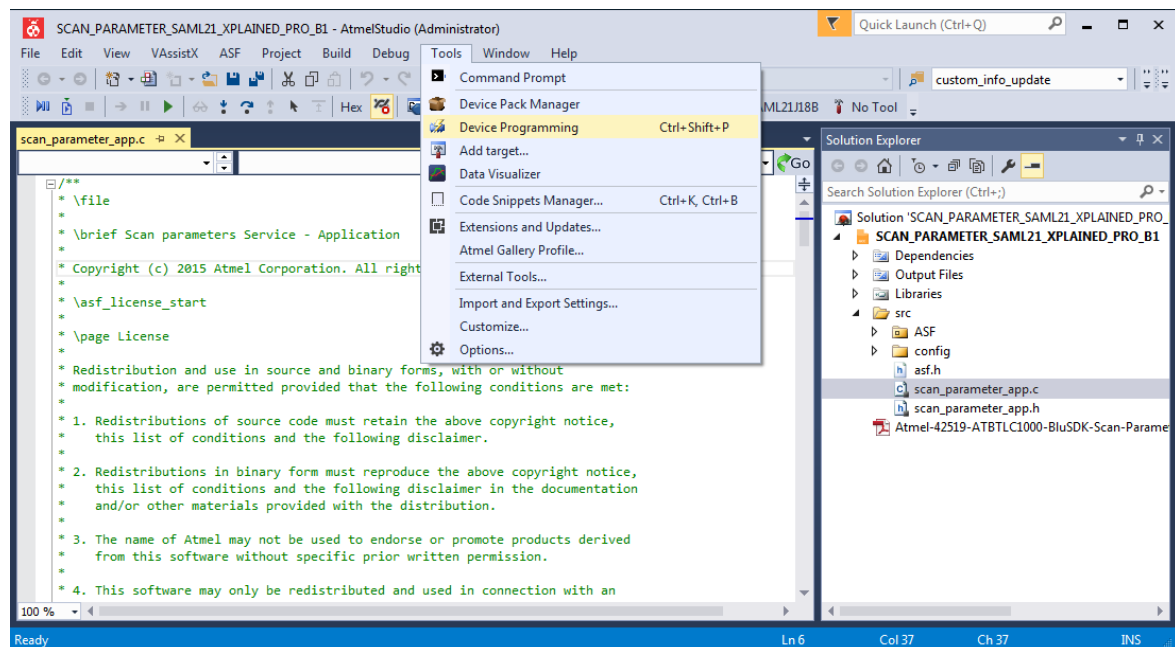
4. Build the solution.

**Figure 4-3. Building Scan Parameter Service Application**



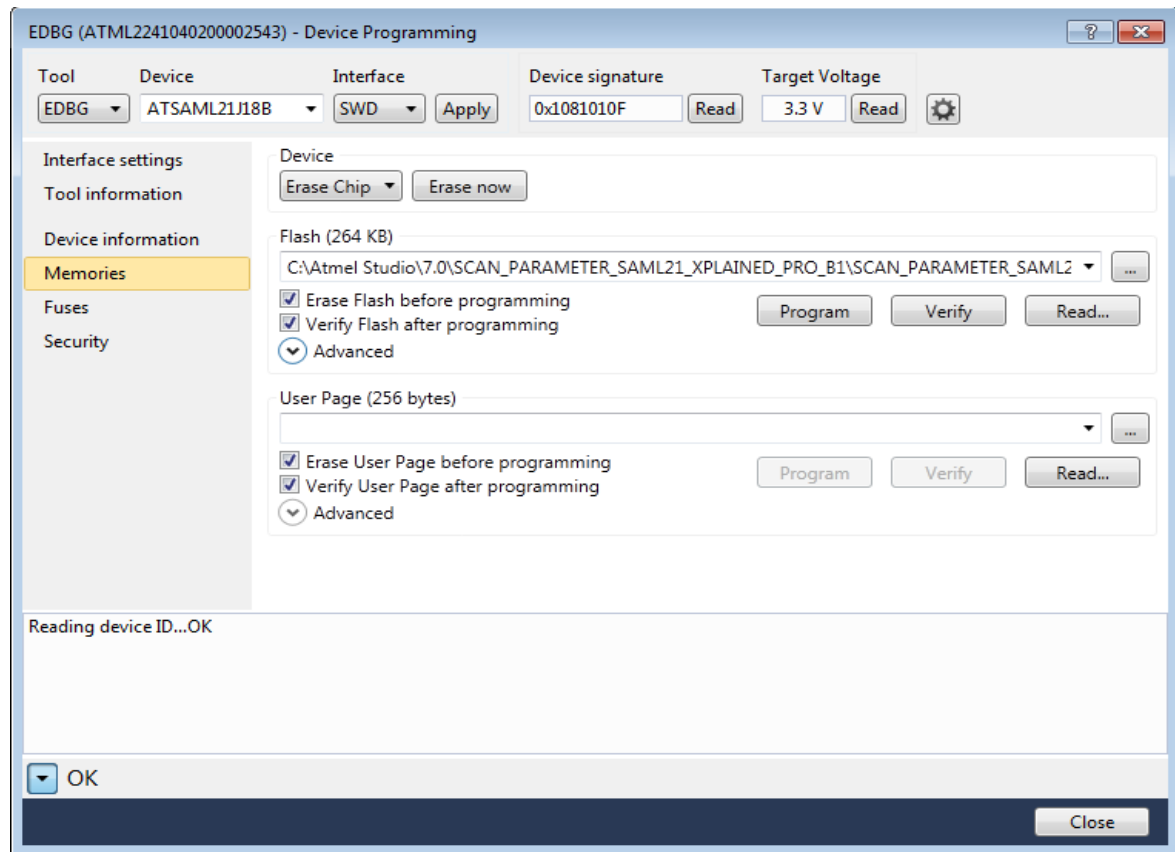
5. Download the application via the DEBUG-USB to the SAM L21 board using Device Programming option available in Tools as mentioned below.

**Figure 4-4. Selecting Device Programming**



6. Inside device programming the user has to select the correct configuration for device and finally program the device by clicking on the 'Program' button.

**Figure 4-5. Flash Programming**



7. Once the application is flashed, it is ready to be used as a BLE device supporting Scan Parameter Service (in a GATT server role).

## 5 Running the Demo

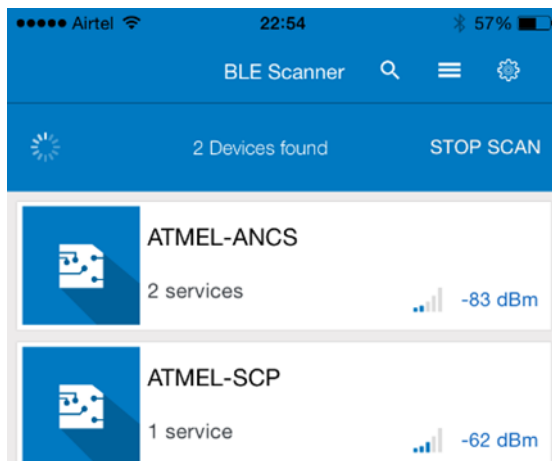
1. Connect the ATBTLC1000 Xplained Pro Board to SAM L21 Xplained Pro EXT1 as indicated in [Figure 3-1](#).
2. Power on the SAM L21 by connecting the USB Cable.
3. Open any Terminal Application (e.g. TeraTerm), select the appropriate COM Port (Settings: Baudrate 115200, None Parity, one Stop bit, one Start bit, no Hardware Handshake)
4. Press the Reset button on the SAM L21 or [supported platforms](#).
5. The device is now in advertising mode.

**Figure 5-1. Console Display for Device in Advertising Mode**

```
Initializing Scan Parameter Application
Initializing BILC1000
BD Address:0xF8F005F23DED, Address Type:0
BLE Started Adv
```

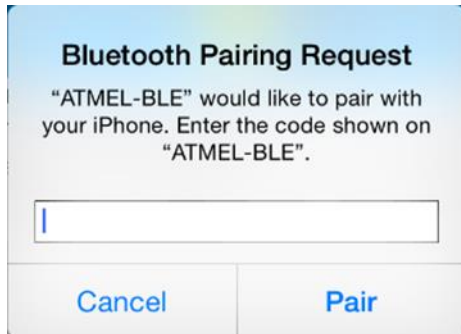
6. Enable Bluetooth from Settings page on iPhone/Android (BLE compatible). Use the Atmel Smart Connect application to scan for peripheral devices. A device with name 'ATMEL-SCP' will appear amongst the list of scanned devices.

**Figure 5-2. Atmel-BLE Device Discovered by Atmel Smart Connect Application**



- Click on ATMEL-SCP device. A pop-up will appear requesting pass-key. Enter “123456” and click on ‘Pair’.

**Figure 5-3. Pairing Pop-up Screen**



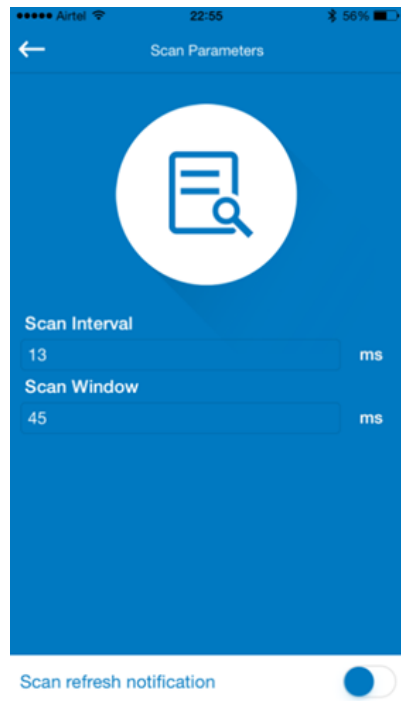
- Once paired, the application displays the scan parameter service as shown below

**Figure 5-4. Display of Scan Parameter Service**



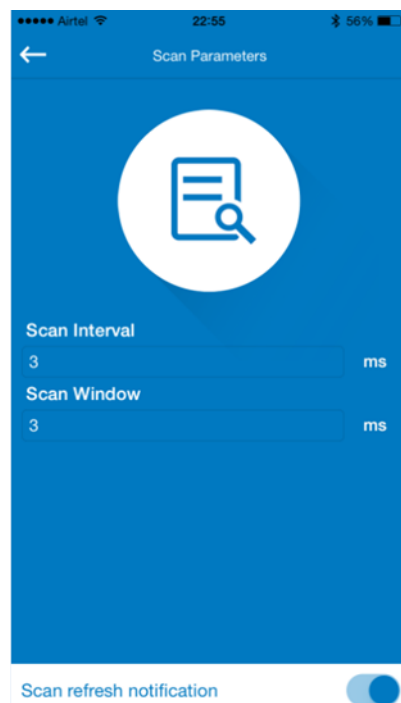
9. On clicking the Scan Parameters service, user keeps getting notifications for scan refresh characteristic value, user can disable notifications as shown below.

**Figure 5-5. Scan Refresh Characteristic Notification Options**



10. User can write the new value for Scan Interval Window characteristic as shown below.

**Figure 5-6. Scan Interval Window Characteristic Write New Value Option**



11. On the device side (SAM L21+ATBTLC1000), the updated new value for scan interval and scan window that was modified on the mobile app as mentioned below.

Figure 5-7. Updated Scan Interval/Window Characteristic Value at ATBTLC1000/SAM L21

```
Initializing Scan Parameter Application
Initializing BTLC1000
BD Address:0xF8F005F23DED, Address Type:0
BLE Started Adv
Connected to peer device with address 0x4e3cd73c6fcc
Connection Handle 0
Peer device request pairing
Sending pairing response
Please Enter the following Pass-code(on other Device):123456
Pairing procedure completed successfully
New scan interval window parameter
Scan Interval 3 ms
Scan Window 3 ms
Scan Refresh Characteristic Value: 0
New scan interval window parameter
Scan Interval 3 ms
Scan Window 3 ms
Scan Refresh Characteristic Value: 0
New scan interval window parameter
Scan Interval 12 ms
Scan Window 3 ms
Scan Refresh Characteristic Value: 0
New scan interval window parameter
Scan Interval 12 ms
Scan Window 3 ms
Device disconnected Reason:0x13 Handle=0x0
BLE Started Adv
```

## 6 Console Logging

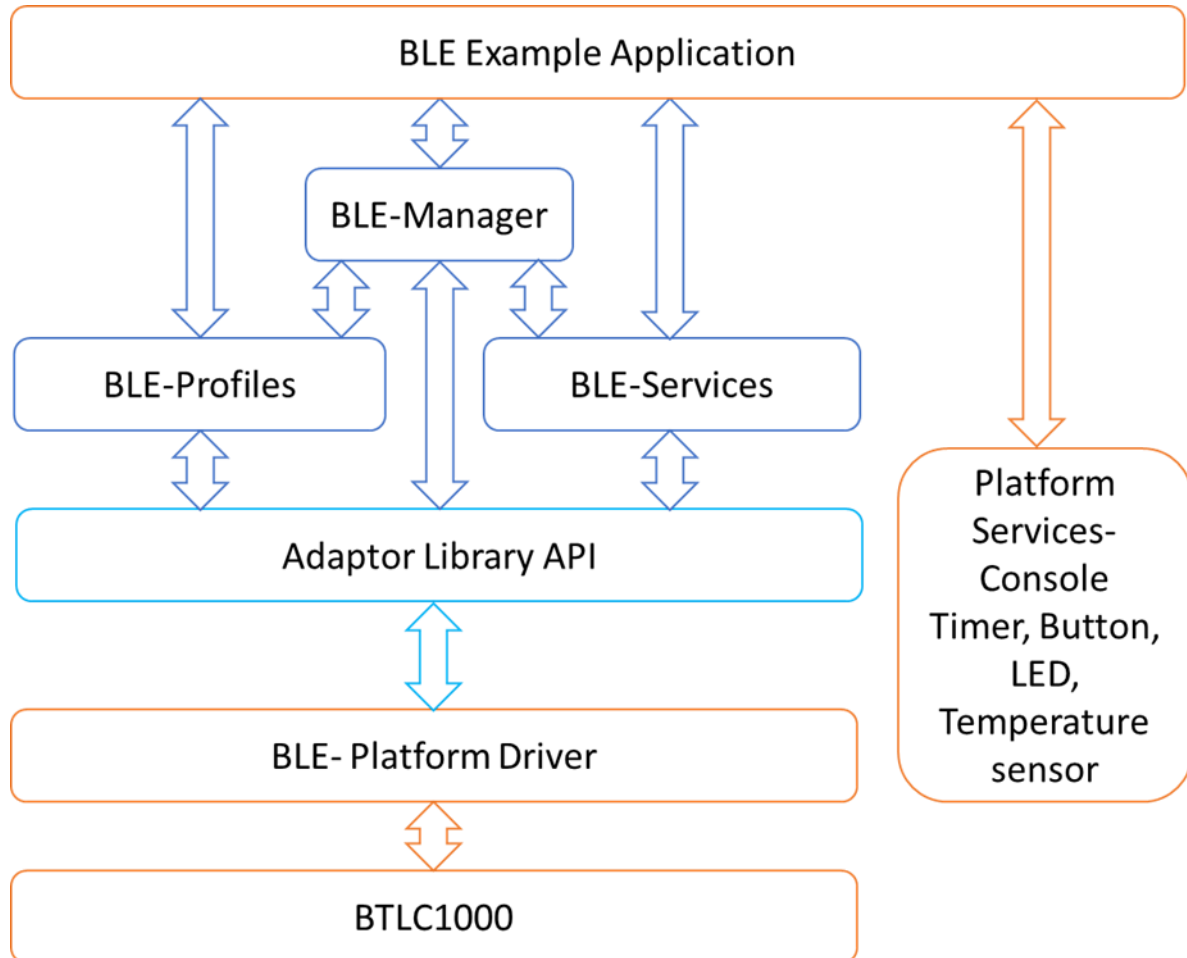
For the purpose of debugging, a logging interface had been implemented in the Scan Parameters service Application.

The logging interface utilizes the same EDBG port that connects to [supported platforms](#). A serial port monitor application (for example TeraTerm) shall be opened and attached to the appropriate COM port enumerated by the PC.

## 7 BluSDK Software Architecture

The following diagram illustrates the various layers in the BluSDK Architecture. The External host can be [supported platforms](#).

Figure 7-1. BluSDK Software Architecture





## 8 ATMEL EVALUATION BOARD/KIT IMPORTANT NOTICE AND DISCLAIMER

This evaluation board/kit is intended for user's internal development and evaluation purposes only. It is not a finished product and may not comply with technical or legal requirements that are applicable to finished products, including, without limitation, directives or regulations relating to electromagnetic compatibility, recycling (WEE), FCC, CE or UL. Atmel is providing this evaluation board/kit "AS IS" without any warranties or indemnities. The user assumes all responsibility and liability for handling and use of the evaluation board/kit including, without limitation, the responsibility to take any and all appropriate precautions with regard to electrostatic discharge and other technical issues. User indemnifies Atmel from any claim arising from user's handling or use of this evaluation board/kit. Except for the limited purpose of internal development and evaluation as specified above, no license, express or implied, by estoppel or otherwise, to any Atmel intellectual property right is granted hereunder. ATMEL SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RELATING TO USE OF THIS EVALUATION BOARD/KIT.

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## 9 Revision History

| Doc Rev. | Date    | Comments  |
|----------|---------|---|
| 42519B   | 11/2015 | Figure 3-1 is updated.<br>The screenshots in Chapter 4 are updated. |
| 42519A   | 09/2015 | Initial document release.   |

