



## CSR Synergy Bluetooth 18.2.0

# Bluetooth Multi Profile Application

## Description

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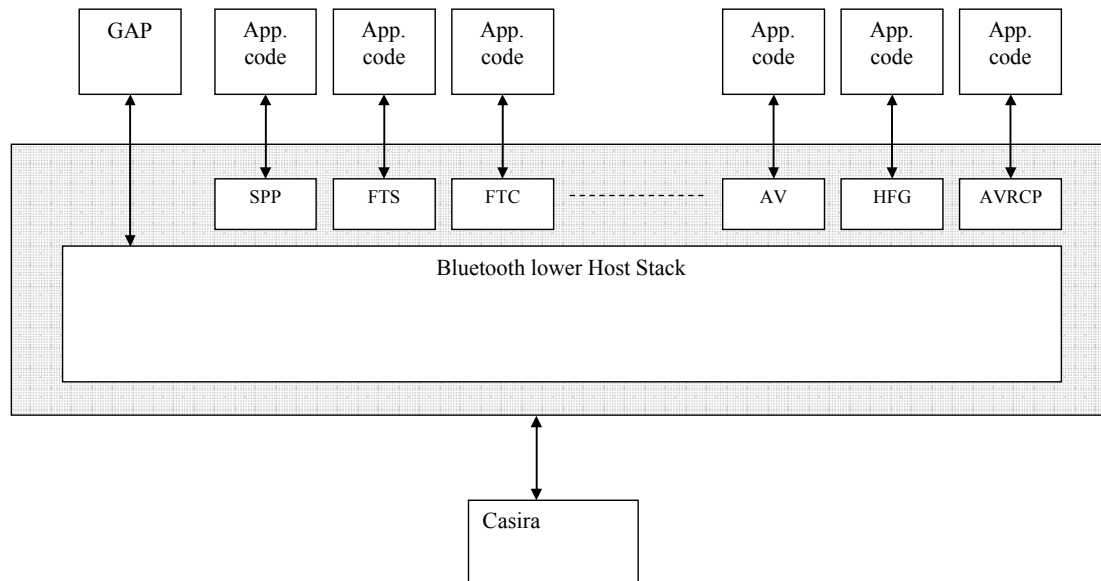
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# 1 Bluetooth Multi Profile Application

## 1.1 Introduction

The Bluetooth Multi Profile Application makes it possible to run multiple Bluetooth Profile at the same time, thereby making it possible to experience and test multi profile behaviour, like using the serial port profile at the same time accessing the FTP server. In Figure 1 this is shown.



**Figure 1: Bluetooth Multi Profile Application**

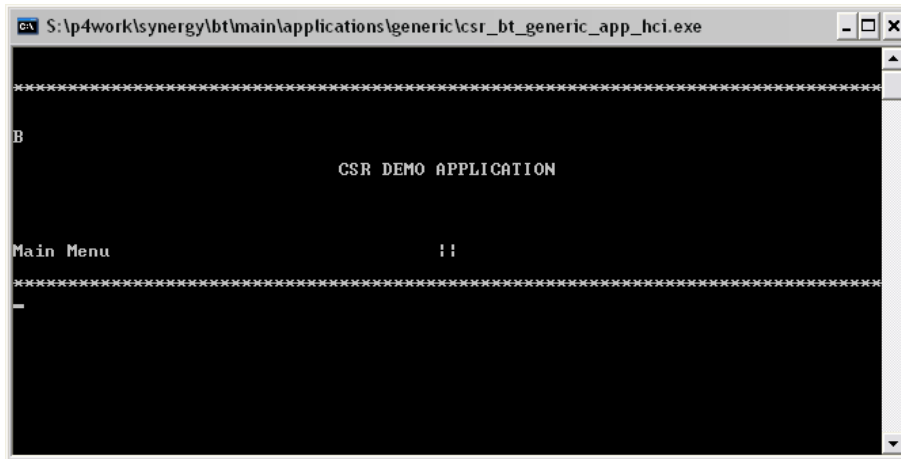
The Bluetooth Multi Profile Application implement the application for running the different profiles but there are no coordination between the profiles, like muting AV when e.g. an incoming call is received etc.

The application implementation is split into a UI part for handling keyboard input and “graphics” output and a “profile” specific part for implementing the code behind the application running the different profiles. As the profiles does not have any coordinating between them the application code handling the different profiles are separated for each profile.

The only part that is common between the different profiles are the GAP part which makes it possible to search, bond, etc.

The demo application is created using the CSR\_APP and CSR\_UI tasks provided by the CSR Synergy Framework. Which has been made to run on Windows, Linux and Nucleus and may be connected to the Casira using either a serial connection using BCSP, a serial connection using H4DS or an USB connection.

The application has an option of running both as a graphical user interface based version, or as a console together with a graphical user interface. The console main screen for Bluetooth Multi Profile Application is shown in Figure 2.



**Figure 2: Text based Bluetooth Multi Profile Application**

In Figure 3 the graphical main screen of the Bluetooth Multi Profile Application is shown.



**Figure 3: GUI based Bluetooth Multi Profile Application**

The application is structured into a menu tree, like shown below

```
Main Menu - Backlog
                - BT      -- GAP
                  -- SPP
                  -- FTS
```

All Bluetooth profiles are saved under the BT menu item.

The backlog is described in more details in section 1.2

The description below is based on the Windows demo application but the description also holds for the Nucleus and Linux demo applications, except there is no support for a graphical user interface on Linux.

## 1.2 Backlog

The Generic Demo Application includes a common Backlog used by all tasks included in the application.

The Backlog is available from the main menus first entry. This is used by the different profile applications to output information during the run, like information about that a certain profile is connected to another device etc.

It is possible to scroll in the backlog to find older items not visible. The backlog has a history of 100 items after which the information will not be available anymore.

## 2 How to build the Bluetooth Multi Profile Application

**NOTE:** This description is for CSR Synergy Bluetooth HCI. The functionality of the application for the RFCOM build is identical. The only difference is the naming: `csr_bt_app_hci.exe` (HCI) versus `csr_bt_app_rfc.exe` (RFCOMM).

The default build is done by means of:

```
> make clean all FW_ROOT=<location of framework>
```

And will build the Bluetooth Multi Profile Application with the default selected set of profiles specified in `makefile.common`, which is:

- 1 Serial Port Profile instance
- OBEX FTP Server

Support for GAP will always be compiled in.

If support for AMP is needed the build is done by means of:

```
> make clean all FW_ROOT=<location of framework> CONFIG=amp
```

### 2.1 Profile selection

To build the Bluetooth Multi Profile Application with other profiles this can be controlled by means of the following compiler defines:

```
CSR_BT_APP_USE_XXX=<some number>
```

Below the different defines and the value they can take is described:

Compiler define	Values	Comment
CSR_BT_APP_USE_SPP	0,1..n	Specify the number of SPP instances.  0 = SPP will not be included  1..n = number of SPP instances
CSR_BT_APP_USE_FTS	0 or 1	Include this profile or not. It is not possible to run multiple FTS instances.  0 = FTS will not be included  1 = FTS will be included

To build a Bluetooth Multi Profile Application with FTS and 3 SPP instances do:

```
> make clean all FW_ROOT=<location of framework> -DCSR_BT_APP_USE_SPP=3 -DCSR_BT_APP_USE_FTS=1
```

To exclude a profile specify it on the command line and set the value to 0 (zero). All default profiles will always be include if not explicitly exclude on command line or in the `makefile.common` file, found in `applications/generic`.

## 2.2 AV specific Settings

If AV profile support is included, the type of audio stream and audio input/out can be specified using a filter selection at compile time with the following directive:

Compiler define	Values	Comment
CSR_BT_APP_AV_FILTER	sbcaudio, sbcfile, sbcwav, mp3, aac	<p>Specify the AV stream type and input/output selection.</p> <p>sbcaudio = SBC stream, grab/render using audio system</p> <p>sbcfile = SBC stream, read/write using SBC-file (no encoding/decoding used)</p> <p>sbcwav = SBC stream, read/write using wav-file</p> <p>mp3 = MP3 stream, read/write using mp3-file (no encoding/decoding used)</p> <p>aac = AAC stream, read/write using aac-file (no encoding/decoding used)</p>

If no AV filter is specified, 'sbcfile' value is used as default.

### 2.2.1 Linux

When compiling on Linux please ensure that the asound developer package is installed.

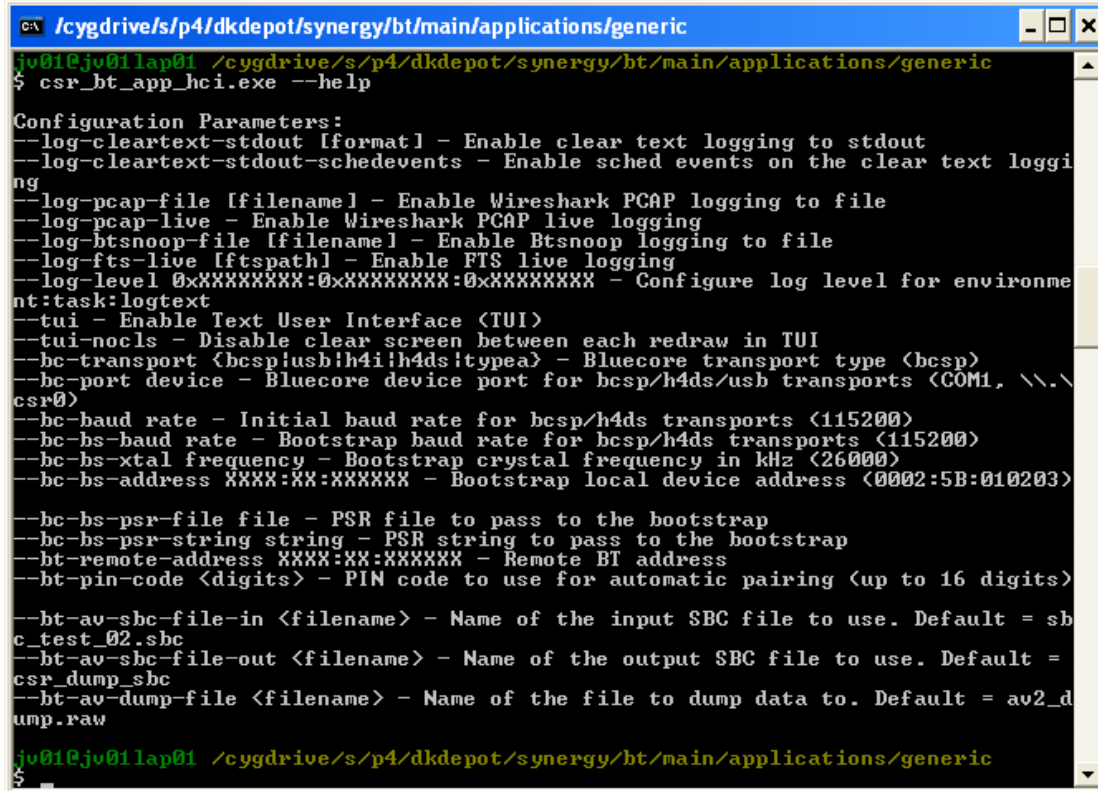
On Ubuntu this is done with:

```
aptitude install asound2-dev
```

### 3 Running the Bluetooth Multi Profile Application

The Bluetooth Multi Profile Application (csr\_bt\_app\_hci.exe) may be started with `-h` on the command line to get list of usage, like:

```
> csr_bt_app_hci.exe --help
```



```
C:\ /cygdrive/s/p4/dkdepot/synergy/bt/main/applications/generic
ju01@ju01lap01 /cygdrive/s/p4/dkdepot/synergy/bt/main/applications/generic
$ csr_bt_app_hci.exe --help

Configuration Parameters:
--log-clear-text-stdout [format] - Enable clear text logging to stdout
--log-clear-text-stdout-sched-events - Enable sched events on the clear text logging
--log-pcap-file [filename] - Enable Wireshark PCAP logging to file
--log-pcap-live - Enable Wireshark PCAP live logging
--log-btsnoop-file [filename] - Enable Btsnoop logging to file
--log-fts-live [ftspath] - Enable FIS live logging
--log-level 0xXXXXXXXX:0xXXXXXXXX:0xXXXXXXXX - Configure log level for environment:task:logtext
--tui - Enable Text User Interface (TUI)
--tui-nocls - Disable clear screen between each redraw in TUI
--bc-transport <bcsp|usb|h4|h4ds|typea> - Bluecore transport type <bcsp>
--bc-port device - Bluecore device port for bcsp/h4ds/usb transports <COM1, \\.\\csr0>
--bc-baud rate - Initial baud rate for bcsp/h4ds transports <115200>
--bc-bs-baud rate - Bootstrap baud rate for bcsp/h4ds transports <115200>
--bc-bs-xtal frequency - Bootstrap crystal frequency in kHz <26000>
--bc-bs-address XXXX:XX:XXXXXX - Bootstrap local device address <0002:5B:010203>
--bc-bs-psr-file file - PSR file to pass to the bootstrap
--bc-bs-psr-string string - PSR string to pass to the bootstrap
--bt-remote-address XXXX:XX:XXXXXX - Remote BT address
--bt-pin-code <digits> - PIN code to use for automatic pairing <up to 16 digits>
--bt-av-sbc-file-in <filename> - Name of the input SBC file to use. Default = sbc_test_02.sbc
--bt-av-sbc-file-out <filename> - Name of the output SBC file to use. Default = csr_dump_sbc
--bt-av-dump-file <filename> - Name of the file to dump data to. Default = av2_dump.raw

ju01@ju01lap01 /cygdrive/s/p4/dkdepot/synergy/bt/main/applications/generic
$
```

Where it is possible to see all the options available for the application.

To start the application with the text UI as well, use the `--tui` options.

Below is a “normal” start of the application when running on USB

```
> csr_bt_app_hci.exe --bc-transport usb --bc-port <port>
```

For running with BCSP the command is:

```
> csr_bt_app_hci.exe --bc-port <com-port> --bc-baud <baud rate>
```

If running without the `--tui` option only the graphical UI will be show, like shown on Figure 3.



## Terms and Definitions

BlueCore®	Group term for CSR's range of Bluetooth wireless technology chips
Bluetooth®	Set of technologies providing audio and data transfer over short-range radio connections
CSR	Cambridge Silicon Radio
SBC	Sub-Band Codec
UniFi™	Group term for CSR's range of chips designed to meet IEEE 802.11 standards

## Document History

Revision	Date	History
1	26 SEP 11	Ready for release 18.2.0

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