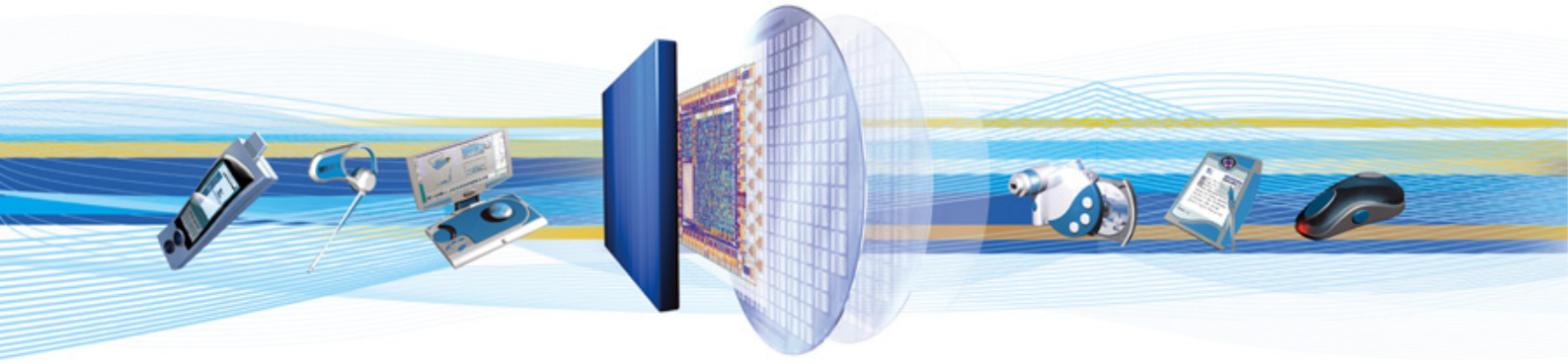
CSR Synergy Bluetooth 18.2.0

SAP Sim Access Profile

API Description

November 2011



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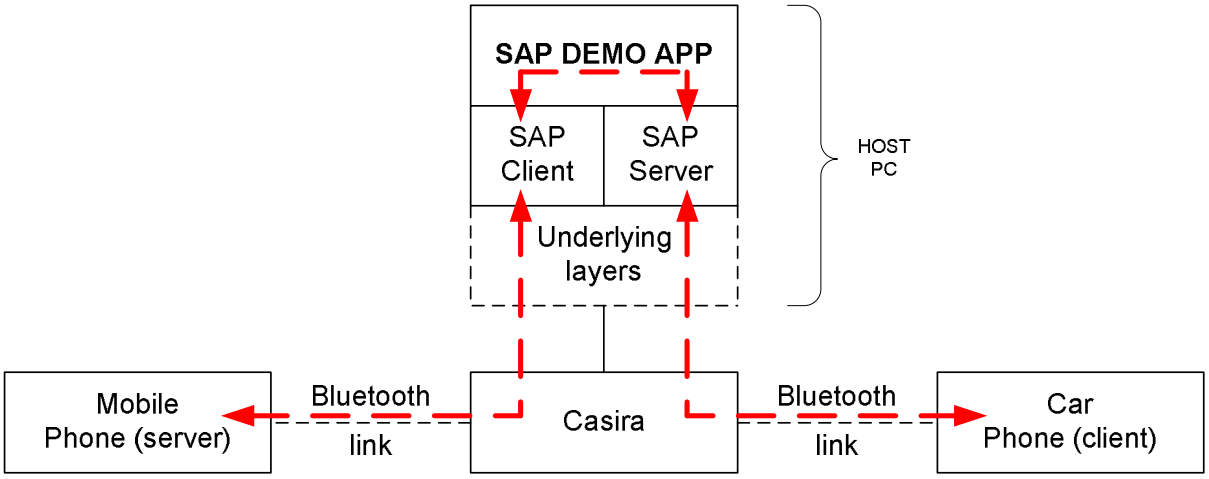
1 SIM Access Profile (SAP)

1.1 Generally

The SAP demo application can be used for establishing a SAP connection between a car phone and a mobile phone (assumed that they both support SAP). The purpose of the demo application is to show that both the SAP Server (SAPS) and SAP Client (SAPC) developed by CSR are compliant with other SAPs and the specification proposed by the Bluetooth SIG. Furthermore, the demo application must be considered as an example of how to utilize the SAP API.



The figure above shows the physical setup of the demo application scenario. The car phone connects to the mobile phone through the SAPS, SAP demo application and SAPC. The SAP demo application behaves as a transparent bridge connecting the two devices. Messages can be sent both from the car phone and the mobile phone, and the task performed by the SAP demo application is to call the appropriate functions upon reception of messages from the two devices. I.e. if the car phone wants to connect to the mobile phone, the SAP demo application receives a CSR_BT_SAPS_CONNECT_IND from the SAP server, which leads to calling CsrBtSapcConnectReqSend() in the SAPC lib. Hence, the primary tasks of the SAP demo application are message forwarding in order to keep a transparent SAP connection between the mobile phone and the car phone.

NOTE: The Casira connected to the SAP Demo application must support at least 64 bit encryption in order for the SIM Access Profile to work.

The application has been made to run on Windows and Linux and may be connected to the Casira using either a serial connection using BCSP (`rfc_sap_demo_app.exe`), a serial connection using H4DS (`rfc_sap_demo_app_h4ds.exe`) or an USB connection (`rfc_sap_demo_app_usb.exe`), and their HCI equivalent.

The description below is based on the Windows demo application but the description also holds for the Linux Demo Application.

1.2 Use of Program hci_sap_demo_app.exe

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: hci_sap_demo_app.exe versus rfc_sap_demo_app.exe.

The SAP demo application scenario actually has three possible sides for user interaction: the SAP demo application (hci_sap_demo_app.exe), the Mobile Phone and the Car Phone. Interaction at all three sides must take place during execution of the demo app.

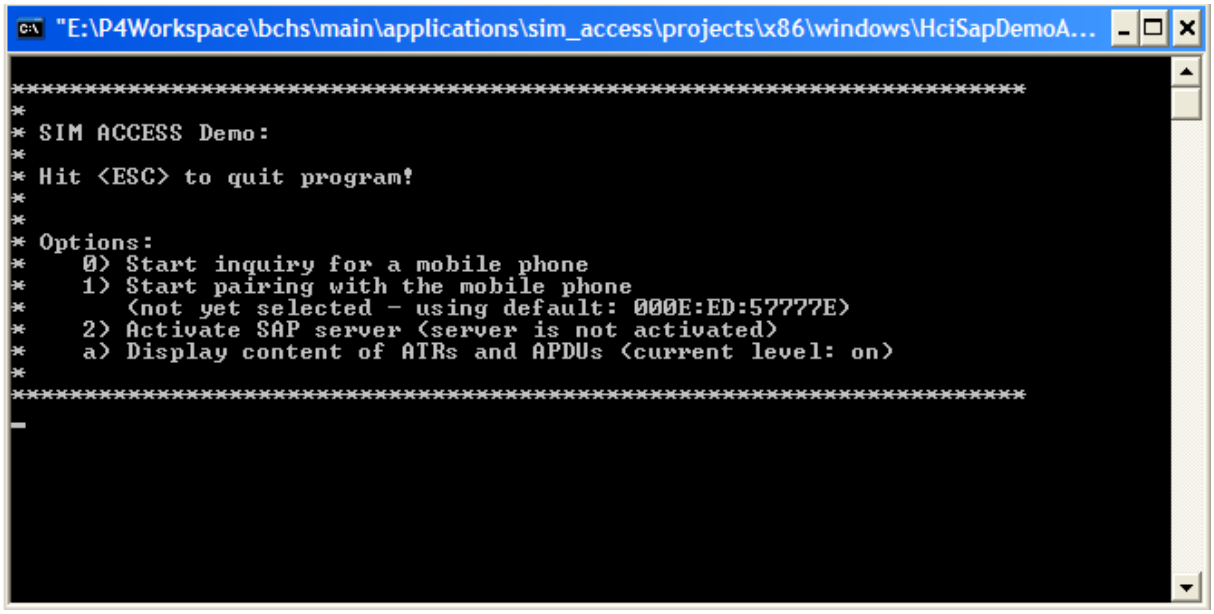
Start the program hci_sap_demo_app.exe:
The hci_sap_demo_app.exe program must be executed using certain execution parameters. This can be done using e.g. a 'command prompt'. The following parameters must be specified:

-B <baudrate>	specifies the baud rate for the COM port connected to the Casira. If no parameter is given, the default value of 115200 baud will be used.
-C <COM port>	specifies the COM port number connected to the Casira. If no parameter is specified, COM1 will be used as default value. (On Linux the default port is /dev/ttyS0)
-A <BD addr.>	To specify a device address for default, e.g. hci_sap_demo_app.exe –a 0002:5b:01a494. If no address is specified it is necessary to perform a search for servers in order to establish a connection. This parameter is optional.

An example of the program execution using COM3 with baud rate 230400 and using "0002:5b:01a494" as the default connection is given below:

```
hci_sap_demo_app.exe -B 230400 -C COM3 -A 0002:5b:01a494
```

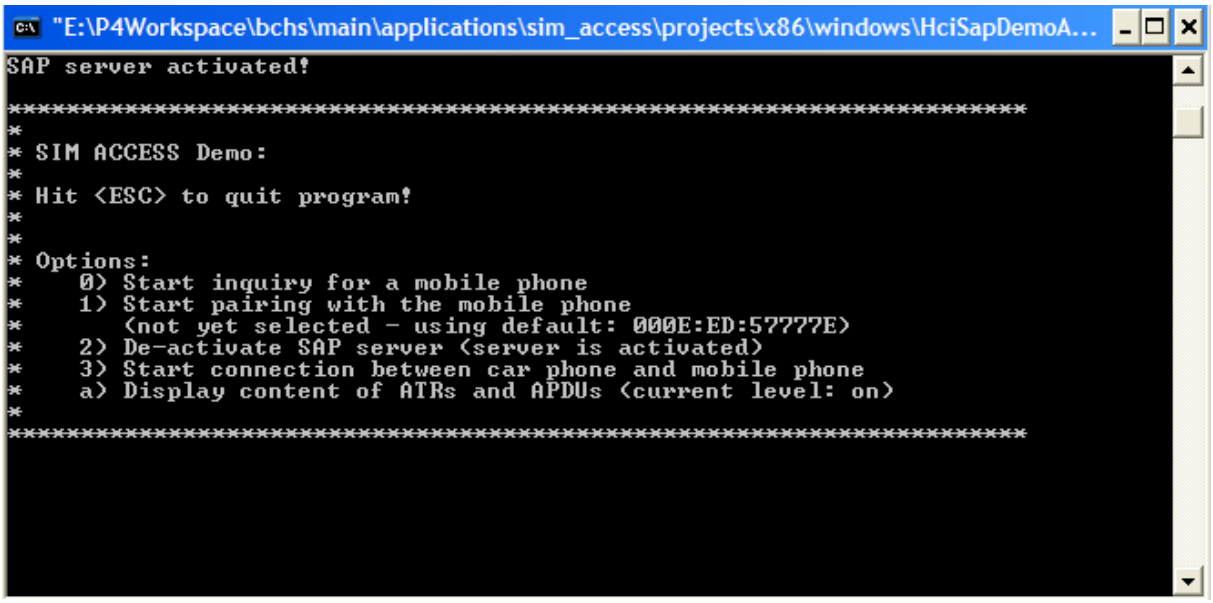
Using the SAP demo application:
Once the hci_sap_demo_app.exe is started the following screen appears:



NOTE: Before choosing any of the displayed options please notice that Bluetooth must be enabled on both the mobile phone and the car phone.

A valid use of the demo application follows the following procedure:

1. Make an inquiry for the mobile phone to the SAP Server containing the SIM card to be accessed. This is done by choosing menu option '0'. The devices near the Casira appear in a list – choose the right one by entering the number of the device. The chosen device appears in menu item '1' as the device to pair with the Casira. If the '-A' parameter is specified during application start it is possible to skip the device inquiry.
2. Pair the Casira and the mobile phone just found during the inquiry by choosing menu option '1'. If the inquiry was not performed a default device address will be used (the default address is very useful in crowded environments – it can be changed in the sap_app.c source code file).
3. Now activate the SAP Server by choosing menu option '2'. Now a new modified menu appears with an additional option:



4. Start the connection establishment by choosing ‘3’. Now the SAP Client in the “bridge” awaits a connection from the car phone – hence connect to the Casira using the car phone. The bridge will forward the connection request to the mobile phone which will prompt the user, if a new connection can be accepted, answer yes. Now the connection is established, and a lot of APDU commands and responses will be transferred between the mobile phone and the car phone transparently through the ”bridge”. The content of the APDUs and ATRs will be printed to the screen. Upon an indication from the car phone calls and other actions requiring the SIM card can be made from the car phone. The menu options will not appear again before a disconnection is done at either the mobile phone or car phone.

At any given time with the menu being present, the ‘a’ option can be chosen. This option will enable/disable displaying the content of the APDUs and ATRs as hex values. Default is enabled.

2 Linux

This section describes how to build and run the SAP demo application on Linux.

The basic SAP demo application (pure user space), located in ./applications/sim_access, may be compiled on Linux by means of:

> make clean all TARGET_ARCH=Linux-2.6-x86

This will generate six files: `hci_sap_demo_app`, `hci_sap_demo_h4ds`, and `hci_sap_demo_app_usb`, for serial and USB communication using a HCI split and `rfc_sap_demo_app`, `rfc_sap_demo_app_h4ds` and `rfc_sap_demo_app_usb`, for serial and USB communication using a RFC split

The demo applications are used like described above for Windows.

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
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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