Microchip Transparent Credit Based Service (v1.0)

Abstract:

The Service is used for Transparent Credit Based Profile to establish one or more LE L2CAP connection oriented channels (L2CAP CoC) that intended for higher layer application burst data exchange.

Revision History

Revision	Date (yyyy-mm-dd)	Comments
V1.0	2020-0720	Initiate this document
V1.0 r1	2020-1201	Revise the spec for the new added Characteristic

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1. INTRODUCTION

The Transparent Credit Based Service (TRCBS) is used for Transparent Credit Based Profile (TRCBP) to establish one or more LE L2CAP connection oriented channels that intended for higher layer application burst data exchange.

1.1 Service Dependency

This service is not dependent upon any other services.

1.2 Bluetooth Specification Release Compatibility

This specification is compatible with Bluetooth Core Specification 4.1 or later version of the Core Specification [1].

1.3 GATT Sub-Procedure Requirements

Requirements in this section represent a minimum set of requirements for a Server. Other GATT sub-procedures may be used if supported by both Client and Server.

Table 1.1 summarizes additional GATT sub-procedure requirements beyond those required by all GATT Servers.

GATT Sub-Procedure	Requirements
Read Characteristic Value	M
Write Characteristic Value	M
Notifications	M
Write Characteristic Descriptors	M

Table 1.1: GATT Sub-procedure Requirements

1.4 Byte Transmission Order

All characteristics used with this service shall be transmitted with the least significant octet first (i.e., little endian). The least significant octet is identified in the characteristic definitions in [2].

1.5 Error Codes

This service does not define any Attribute Protocol Application Error codes.

2. SERVICE DECLARATION

In most cases, the Transparent Credit Based Service (TRCBS) should be instantiated as a «Primary Service»; however, it can be refined by upper layer profile or specification.

The default service UUID is set to《49535343-2120-45FC-BDDB-E8A01AEDEC50》.

3. SERVICE CHARACTERISTICS

The following characteristics are exposed in the TRCBS:

- **L2CAP PSM Value (L2PSM) Characteristic**: UUID 49535343-C2DB-4991-9A9F-68C13B25DD1F
- **Transparent Credit Based Control Point (TRCBCP) Characteristic** UUID 49535343-0284-18AE-1E46-35E91AF7D03C

3.1 L2CAP PSM Value (L2PSM) Characteristic

This characteristic is used to record PSM values of LE L2CAP CoC. Permission is read only. To initiate L2CAP CoC connection, Client can read it via Characteristic Value read operation.

There is one L2CAP PSM values included in this characteristic. The L2CAP PSM value size is 16 bit. See below definition:

<<PSM_Data>>: 0x0081

3.2 Transparent Credit Based Control Point (TRCBCP) Characteristic

The structure of TCP characteristic is defined as below. To ensure the successful operation, this Client Characteristic Configuration Descriptor (CCCD) of Transparent Credit Based Control Point (TRCBCP) on Server should be enabled via Write Request by Client

	Op Code	Parameter
Octet Order	N/A	LSO…MSO
Data Type	UNIT 8	Variable
Size	1 Octet	Variable

Table 3.1: Structure of Transparent Credit Based Control Point

3.2.1 Transparent Credit Based Control Point Procedure Requirements

Table 3.2 shows the OP Code definition of TRCBCP characteristic. Range from 0x00 to 0x1F are reserved for the future used. Range from 0x20 to 0xFF are reserved for higher layer specification application.

Op Code	Description	Parameter	Response Code Triggered
0x00-0x1F	Reserved	N/A	N/A
0x20-0xFF	Reserved for higher layer specification	N/A	N/A

Table 3.2: Definition of Op Code in TRCBCP characteristic

3.2.2 Transparent Credit Based Control Point Characteristic Behavior

While the Transparent Credit Based Control Point is used by a Client to control certain behaviors of the Server. The procedures are triggered by Write a Characteristic Value that includes an Op Code specifying the operation and the Server will Notify the result of the operations.

While the Transparent Credit Based Control Point is used by a Server to control certain behaviors of the Client. The procedures are triggered by Notify a Characteristic Value that includes an Op Code specifying the operation and Client will Write the result of the operations.

4. ACRONYMS AND ABBREVIATIONS

Acronyms and Abbreviations	Meaning
GATT	Generic Attribute Profile
LE	Low Energy
L2CAP CoC	L2CAP Connection oriented Channels
L2CAP PSM	L2CAP protocol/service multiplexer
TRCBP	Transparent Credit Based Profile
TRCBS	Transparent Credit Based Service

Table 4.1: Acronyms and Abbreviations

5. REFERENCES

[1] Bluetooth Core Specification v4.0 or later version of the Core Specification.

[2] Characteristic and Descriptor descriptions are accessible via the Bluetooth SIG Assigned Numbers.