

# Broadcast Audio Scan Service

## **Bluetooth® Service Specification**

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### **Abstract:**

This service is used by servers to expose their status with respect to synchronization to broadcast Audio Streams and associated data, including Broadcast\_Codes used to decrypt encrypted broadcast Audio Streams. Clients can use the attributes exposed by servers to observe and/or request changes in server behavior.



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# 1 Introduction

## 1.1 Conformance

If conformance to this specification is claimed, all capabilities indicated as mandatory for this specification shall be supported in the specified manner (process-mandatory). This also applies for all optional and conditional capabilities for which support is indicated.

## 1.2 Service dependencies

This service is not dependent upon other services.

## 1.3 Bluetooth Core Specification release compatibility

This service is compatible with Bluetooth Core Specification, Version 5.2 [2] or later.

## 1.4 GATT sub-procedure requirements

Requirements in this section represent a minimum set of requirements for a server. Other Generic Attribute Profile (GATT) sub-procedures may be used if supported by both client and server.

Requirements in this section are defined as “Mandatory” (M), “Optional” (O), “Excluded” (X), and “Conditional” (C.*n*). Conditional statements (C.*n*) are listed directly below the table in which they appear.

Table 1.1 summarizes additional GATT sub-procedure requirements beyond those required by all GATT servers on Unenhanced Attribute Protocol (ATT) bearers.

GATT Sub-Procedure	Requirements
Write Characteristic Value	M
Write Without Response	M
Notifications	M
Read Characteristic Descriptors	M
Write Characteristic Descriptors	M
Write Long Characteristic Value	C.1

Table 1.1: GATT sub-procedure requirements on Unenhanced ATT bearers

C.1: Mandatory if the Add Source operation defined in Section 3.1 is supported.

If the server supports characteristic values larger than the minimum ATT\_MTU for the Unenhanced ATT bearer, then the server should support the Read Long Characteristic Values GATT sub-procedure if not already required by the Bluetooth Core Specification [2].

## 1.5 Transport dependencies

This specification does not impose any transport requirements. If reliability of Notifications is required (See Volume 3, Part F, Section 3.3.2 in [2]), higher layers can require Enhanced ATT bearer support.



## 1.6 Application error codes

This service defines the ATT Application error codes shown in [Table 1.2](#).

Name	Error Code	Description
Opcode Not Supported	0x80	An unsupported opcode has been used in a Broadcast Audio Scan Control Point operation.
Invalid Source_ID	0x81	The Source_ID written by a client does not match any Source_ID exposed in a Broadcast Receive State characteristic value by the server.

Table 1.2: Application error codes

## 1.7 Byte transmission order

All characteristics used with this service shall be transmitted with the least significant octet (LSO) first (i.e., little endian). The LSO is identified in the characteristic definitions in [\[1\]](#).

## 1.8 Language

### 1.8.1 Language conventions

The Bluetooth SIG has established the following conventions for use of the words **shall**, **must**, **will**, **should**, **may**, **can**, **is**, and **note** in the development of specifications:

shall	<u>is required to</u> – used to define requirements.
must	is used to express: a natural consequence of a previously stated mandatory requirement. OR an indisputable statement of fact (one that is always true regardless of the circumstances).
will	<u>it is true that</u> – only used in statements of fact.
should	<u>is recommended that</u> – used to indicate that among several possibilities one is recommended as particularly suitable, but not required.
may	<u>is permitted to</u> – used to allow options.
can	<u>is able to</u> – used to relate statements in a causal manner.
is	<u>is defined as</u> – used to further explain elements that are previously required or allowed.
note	Used to indicate text that is included for informational purposes only and is not required in order to implement the specification. Each note is clearly designated as a “Note” and set off in a separate paragraph.

For clarity of the definition of those terms, see Core Specification Volume 1, Part E, Section 1.

### 1.8.2 Reserved for Future Use

Where a field in a packet, Protocol Data Unit (PDU), or other data structure is described as “Reserved for Future Use” (irrespective of whether in uppercase or lowercase), the device creating the structure shall

set its value to zero unless otherwise specified. Any device receiving or interpreting the structure shall ignore that field; in particular, it shall not reject the structure because of the value of the field.

Where a field, parameter, or other variable object can take a range of values, and some values are described as “Reserved for Future Use,” a device sending the object shall not set the object to those values. A device receiving an object with such a value should reject it, and any data structure containing it, as being erroneous; however, this does not apply in a context where the object is described as being ignored or it is specified to ignore unrecognized values.

When a field value is a bit field, unassigned bits can be marked as Reserved for Future Use and shall be set to 0. Implementations that receive a message that contains a Reserved for Future Use bit that is set to 1 shall process the message as if that bit was set to 0, except where specified otherwise.

The acronym RFU is equivalent to Reserved for Future Use.

### 1.8.3 Prohibited

When a field value is an enumeration, unassigned values can be marked as “Prohibited.” These values shall never be used by an implementation, and any message received that includes a Prohibited value shall be ignored and shall not be processed and shall not be responded to.

Where a field, parameter, or other variable object can take a range of values, and some values are described as “Prohibited,” devices shall not set the object to any of those Prohibited values. A device receiving an object with such a value should reject it, and any data structure containing it, as being erroneous.

“Prohibited” is never abbreviated.

## 1.9 Terminology

Table 1.3 defines terms that are needed to understand features used in this specification. This specification also uses terms that are defined in the Basic Audio Profile (BAP) Specification [3] and in the Core Specification [2].

Term	Definition
broadcast Audio Stream	Defined in BAP [3]
Broadcast_ID	Defined in [3]
Broadcast Isochronous Group (BIG)	Defined in Volume 6, Part B, Section 4.4.6.2 in the Bluetooth Core Specification [2]
Broadcast Isochronous Stream (BIS)	Defined in Volume 6, Part B, Section 4.4.6.1 in [2]
Broadcast Source	Defined in [3]
EATT	An ATT bearer feature introduced in Volume 3, Part F, Section 3.2.11 in [2]
Enhanced ATT bearer	An ATT bearer using the Enhanced Credit Based Flow Control Logical Link Control and Adaption Protocol (L2CAP) channel mode introduced in Volume 3, Part A, Section 10.2 in [2]
Link Layer (LL)	Defined in Volume 6, Part B in [2]



Term	Definition
PA_Interval	Corresponds to the SyncInfo field Interval parameter defined in Volume 6, Part B, Section 2.3.4.6 in [2]
Periodic Advertising Synchronization Transfer (PAST) procedure	Defined in Volume 3, Part C, Section 9.5.4 in [2]
periodic advertising train (PA)	Defined in Volume 6, Part B, Section 4.4.5.1 in [2]
Remote Scanning	Defined in [3]
Service Data AD data type	Defined in the Core Specification Supplement (CSS) [4]
SyncInfo	Defined in Volume 6, Part B, Section 2.3.4.6 in [2]
Unenhanced ATT bearer	An ATT bearer not using the Enhanced Credit Based Flow Control L2CAP channel mode introduced in Volume 3, Part A, Section 10.2 in [2]

Table 1.3: Terminology

## 2 Service

### 2.1 Declaration

There shall be no more than one Broadcast Audio Scan Service (BASS) instance on a server.

BASS shall be a «Primary Service» and the service universally unique identifier (UUID) shall be set to «Broadcast Audio Scan» as defined in [1].

### 2.2 Behavior

BASS can be instantiated on servers to solicit for clients to scan on behalf of the server for broadcast Audio Streams and associated data that are transmitted by Broadcast Sources. Clients scanning on behalf of the server can help reduce the need to scan by the server and reduce power consumption on the server.

Servers can receive information from clients that is associated with broadcast Audio Streams, including decryption keys known as Broadcast\_Codes (as defined in Volume 3, Part C, Section 3.2.6 in [2]) necessary to decrypt encrypted BISes.

Examples of typical devices that might instantiate BASS include, but are not limited to, hearing aids, headsets, and similar devices with limited battery capacity relative to devices such as televisions, smartphones, and smart watches.

There are two characteristic types used in BASS:

1. A single Broadcast Audio Scan Control Point characteristic that can be used by all clients to:
  - Inform the server whether the client is performing Remote Scanning on behalf of the server.
  - Provide a server with information regarding a Broadcast Source.
  - Request to update and/or remove information regarding a Broadcast Source.
  - Request the server to synchronize to, or stop synchronization to, a PA and/or a BIG containing one or more subgroups (as defined in Section 3.7.2.2 in [3]) containing one or more BISes.
  - Provide broadcast Audio Stream encryption keys (Broadcast\_Codes) to the server.
2. One or more Broadcast Receive State characteristics that can be used by all clients to:
  - Determine the server's status with respect to synchronization to one or more PAs and/or a BIG containing one or more subgroups containing one or more BISes.
  - Determine whether the server requires a transfer of SyncInfo data.
  - Determine whether the server is decrypting an encrypted broadcast Audio Stream.
  - Determine whether the server requires a Broadcast\_Code to decrypt an encrypted broadcast Audio Stream.

The decision of the server whether to accept an operation written by a client to the Broadcast Audio Scan Control Point characteristic is left to the implementation unless defined by higher layers.

Each Broadcast Receive State characteristic value represents the current state of the server with respect to any Broadcast Source identified in the characteristic value.

The BASS UUID should be included in the Service Data AD Type in advertising data transported using connectable extended advertising packets transmitted by servers supporting this specification. Higher-layer specifications may define additional service data to be included in the Service Data AD Type used in advertising data.

For all characteristics defined in this specification, arrayed parameters are specified by using the following notation: ParameterA[i]. If more than one set of arrayed parameters is specified (e.g., ParameterA[i], ParameterB[i]), then the order of the parameters is as follows (unless noted otherwise): ParameterA[0], ParameterB[0], ParameterA[1], ParameterB[1], ParameterA[2], ParameterB[2], ...ParameterA[n], ParameterB[n].

### 3 Service characteristics

This section defines the characteristic and descriptor requirements.

Requirements in this section are defined as “Mandatory” (M), “Optional” (O), “Excluded” (X), and “Conditional” (C.n). Conditional statements (C.n) are listed directly below the table in which they appear.

Characteristic Name	Requirement	Mandatory Properties	Optional Properties	Security Permissions
Broadcast Audio Scan Control Point	M	Write, Write Without Response	None	Encryption required
Broadcast Receive State	M	Read, Notify	None	Encryption required

Table 3.1: BASS characteristics

There shall be only one Broadcast Audio Scan Control Point characteristic.

There shall be one or more Broadcast Receive State characteristics.

Servers should expose a number of Broadcast Receive State characteristics at least equal to the number of BIGs that the server can simultaneously maintain synchronization to.

#### 3.1 Broadcast Audio Scan Control Point

When written by a client, the Broadcast Audio Scan Control Point characteristic is defined as an 8-bit enumerated value, known as the opcode, followed by zero or more parameter octets.

Broadcast Audio Scan Control Point opcodes are defined in [Table 3.2](#).

Opcode	Operation	Requirement	Section Reference	Description
0x00	Remote Scan Stopped	C.1	<a href="#">Section 3.1.1.2</a>	Informs the server that the client is not scanning for Broadcast Sources on behalf of the server.
0x01	Remote Scan Started	C.1	<a href="#">Section 3.1.1.3</a>	Informs the server that the client is scanning for Broadcast Sources on behalf of the server.
0x02	Add Source	C.1	<a href="#">Section 3.1.1.4</a>	Requests the server to add information including Metadata for a Broadcast Source, and requests the server to synchronize to a PA and/or BIS transmitted by the Broadcast Source.
0x03	Modify Source	C.1	<a href="#">Section 3.1.1.5</a>	Requests the server to update Metadata, to synchronize to, or to stop synchronizing to a PA and/or BIS transmitted by the Broadcast Source identified by the Source_ID.

Opcode	Operation	Requirement	Section Reference	Description
0x04	Set Broadcast_Code	M	Section <a href="#">3.1.1.6</a>	Provides the server with the Broadcast_Code to decrypt a BIS transmitted by a Broadcast Source identified by the Source_ID.
0x05	Remove Source	C.1	Section <a href="#">3.1.1.7</a>	Requests the server to remove all information for a Broadcast Source identified by the Source_ID.
0x06-0xFF	RFU	—	—	—

Table 3.2: Broadcast Audio Scan Control Point opcodes

C.1: If any one of these operations is supported, all of these operations shall be supported.

### 3.1.1 Characteristic behavior

When the Broadcast Audio Scan Control Point characteristic is written by a client, the first octet of that value shall be interpreted as the opcode. If the server accepts the operation defined by that opcode, the server shall perform the behavior defined for that operation.

#### 3.1.1.1 Error Handling

If the server detects the total length of the opcode and parameter values written using the GATT Write Without Response sub-procedure by a client for any operation defined in Section [3.1.1.2](#) to Section [3.1.1.7](#) to be less than or greater than the total length of the opcode and all fixed length parameter values plus the length of any variable length parameter values for that operation, the server shall ignore the operation.

If the server detects the total length of the opcode and parameter values, written by a client by using the GATT Write Characteristic Value sub-procedure, or any operation defined in Section [3.1.1.2](#) to Section [3.1.1.7](#) to be less than or greater than the total length of the opcode and all fixed length parameter values plus the length of any variable length parameter values for that operation, the server shall respond with an ATT Error Response and shall set the Error Code parameter to Write Request Rejected as defined in [\[4\]](#).

If the server detects that an Opcode parameter value, written by a client by using the GATT Write Characteristic Value sub-procedure, is not supported, the server shall respond with an ATT Error Response and shall set the Error Code parameter to Opcode Not Supported as defined in [Table 1.2](#).

If the server detects that a Source\_ID parameter value written by a client by using the GATT Write Characteristic Value sub-procedure does not match a Source\_ID parameter value exposed in any Broadcast Receive State characteristic value, the server shall respond with an ATT Error Response and shall set the Error Code parameter to Invalid Source\_ID as defined in [Table 1.2](#).

If the server detects that a Source\_ID parameter value written by a client by using the GATT Write Without Response sub-procedure does not match a Source\_ID parameter value exposed in any Broadcast Receive State characteristic value, the server shall ignore the operation.

If the server detects that a BIS\_Sync parameter value written by a client is not 0xFFFFFFFF for a subgroup, and if the server detects that a BIS\_index value written by a client is set to a value of 0b1 in more than one subgroup, the server shall ignore the operation.

### 3.1.1.2 Remote Scan Stopped operation

The Remote Scan Stopped operation is used to inform the server that the client is not scanning on behalf of the server. The server may modify its own scanning behavior as a result of a client writing the Remote Scan Stopped operation.

The Remote Scan Stopped operation has the format defined in [Table 3.3](#).

Opcode	Size (Octets)	Description
0x00	1	0x00 = Remote Scan Stopped operation
Parameter	Size	Description
None	0	Shall not contain any data

Table 3.3: Format of Remote Scan Stopped operation

### 3.1.1.3 Remote Scan Started operation

The Remote Scan Started operation is used to inform the server that the client is scanning on behalf of the server. The server may modify its scanning behavior as a result of a client writing the Remote Scan Started operation.

The Remote Scan Started operation has the format defined in [Table 3.4](#).

Opcode	Size (Octets)	Description
1	1	0x01 = Remote Scan Started operation
Parameter	Size	Description
None	0	Shall not contain any data

Table 3.4: Format of Remote Scan Started operation

### 3.1.1.4 Add Source operation

The Add Source operation is used to provide the server with information regarding a Broadcast Source.

The Add Source operation has the format defined in [Table 3.5](#).

Opcode	Size (Octets)	Description
0x02	1	0x02 = Add Source operation
Parameter	Size (Octets)	Description

Advertiser_Address_Type	1	Advertiser_Address_Type for the Broadcast Source 0x00 = Public Device Address or Public Identity Address 0x01 = Random Device Address or Random (static) Identity Address All other values: RFU
Advertiser_Address	6	Advertiser_Address for the Broadcast Source
Advertising_SID	1	Advertising_SID subfield of the ADI field of the AUX_ADV_IND PDU or the LL_PERIODIC_SYNC_IND containing the SyncInfo that points to the PA transmitted by the Broadcast Source. Range: 0x00-0x0F All other values: RFU
Broadcast_ID	3	Broadcast_ID of the Broadcast Source
PA_Sync	1	0x00: Do not synchronize to PA 0x01: Synchronize to PA – PAST available 0x02: Synchronize to PA – PAST not available All other values: RFU
PA_Interval	2	SyncInfo field Interval parameter value 0xFFFF: PA_Interval unknown
Num_Subgroups	1	Number of subgroups
BIS_Sync[i]	4	BIS_Sync parameter for the [i <sup>th</sup> ] subgroup in the BIG 4-octet bitfield. Bit 0-30 = BIS_index[1-31] 0x00000000: 0b0 = Do not synchronize to BIS_index[x] 0xxxxxxx: 0b1 = Synchronize to BIS_index[x] 0xFFFFFFFF: No preference Shall not exist if Num_Subgroups = 0
Metadata_Length[i]	1	Length of the Metadata parameter value for the [i <sup>th</sup> ] subgroup in the BIG Shall not exist if Num_Subgroups = 0
Metadata[i]	Varies	LTV-formatted Metadata for the [i <sup>th</sup> ] subgroup in the BIG Shall exist only if the Metadata_Length parameter value is ≠ 0x00

Table 3.5: Format of Add Source operation

If the server accepts the Add Source operation, the server shall select an empty Broadcast Receive State characteristic to update, or if the server has no empty Broadcast Receive State characteristics, the server shall first delete all fields in a selected Broadcast Receive State characteristic, and:

- The server shall write a unique Source\_ID value to the Source\_ID field of the selected Broadcast Receive State characteristic.
- The server shall write the value of the Advertiser\_Address\_Type parameter [2] written by the client to the Source\_Address\_Type field of the selected Broadcast Receive State characteristic.
- The server shall write the value of the Advertiser\_Address parameter [2] written by the client to the Source\_Address field of the selected Broadcast Receive State characteristic.
- The server shall write the value of the Advertising\_SID parameter [2] written by the client to the Source\_Adv\_SID field of the selected Broadcast Receive State characteristic.
- The server shall write the value of the Broadcast\_ID parameter [3] written by the client to the Broadcast\_ID field of the selected Broadcast Receive State characteristic.
- If the PA\_Sync parameter value written by the client is set to a value of 0x00 (Do not synchronize to PA), the server shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic and the server shall not attempt to synchronize to the PA.
- If the PA\_Sync parameter value written by the client is set to a value of 0x01 (Synchronize to PA – PAST available), or 0x02 (Synchronize to PA – PAST not available), the server shall either write a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic to request a client to transfer SyncInfo data to the server or the server shall attempt to synchronize with the PA by using the Periodic Advertising Synchronization Establishment procedure defined in Volume 3, Part C, Section 9.5.3 in [2].
  - If the Advertiser\_Address\_Type value written by the client is 0x01, the Advertiser\_Address value written by the client might not match the AdvA field in ADV\_EXT\_IND PDUs transmitted by the Broadcast Source (for example, because the client's Bluetooth Controller is performing Private device address resolution as defined in Vol 6, Part B, Section 1.3.2.3 in [2]). If the server attempts to synchronize with the PA, the server may determine the Advertiser\_Address to be used in the Periodic Advertising Synchronization Establishment procedure by:
    - Comparing the Adv\_SID written by the client to the Adv\_SID subfield of the ADI field of ADV\_EXT\_IND PDUs transmitted by the Broadcast Source.
    - Comparing the Broadcast\_ID written by the client to the Broadcast\_ID in the AdvData field of AUX\_ADV\_IND PDUs transmitted by the Broadcast Source.
- The server shall only write a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic if the server supports the PAST procedure defined in Volume 3, Part C, Section 9.5.4 in [2].
- If the server has written a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic and the server does not receive SyncInfo data from a client within a time period defined by the implementation or by a higher-layer specification, the server shall write a value of 0x04 (No PAST) to the PA\_Sync\_State field of the Broadcast Receive State characteristic and the server shall not attempt to synchronize to the PA.
- If the server has received SyncInfo data from a client, the server shall attempt to synchronize to the PA by using the Periodic Advertising Synchronization Establishment procedure defined in Volume 3, Part C, Section 9.5.3 in [2].
- If the server synchronizes to the PA, the server shall write a value of 0x02 (Synchronized to PA) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic. If the server fails to



synchronize with the PA, the server shall write a value of 0x03 (Failed to synchronize to PA) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic.

- If the server has synchronized to the PA and the server has detected that the BIS is encrypted, and if the server does not have an encryption key to decrypt the BIS, the server shall write a value of 0x01 (Broadcast\_Code required) to the BIG\_Encryption field of the selected Broadcast Receive State characteristic to request a client to provide a Broadcast\_Code.
- The server shall write the value of the Num\_Subgroups parameter to the Num\_Subgroups field of the Broadcast Receive State characteristic.
- For each subgroup, if the server has synchronized to the PA, and if the BIS\_Sync parameter value written by the client is not 0xFFFFFFFF, the server shall attempt to synchronize to each BIS whose BIS\_index value is set to 0b1 only if the BIS\_index value is not set to 0b1 in any other subgroup. However, if the BIS\_Sync parameter value written by the client is set to 0xFFFFFFFF (No preference), the server may attempt to synchronize to any BIS in the BIG. To synchronize to a BIS, the server shall use the Broadcast Isochronous Synchronization Establishment procedure defined in Volume 3, Part C, Section 9.6.3 in [2].
- For each subgroup, if the server has synchronized to a BIS, the server shall set the BIS\_index value of that BIS to 0b1 for the subgroup containing that BIS in the BIS\_Sync field of the selected Broadcast Receive State characteristic.
- If the server has synchronized to a BIS and if the server has detected that the BIS is encrypted, and if the server does not have an encryption key to decrypt the BIS, the server shall write a value of 0x01 (Broadcast\_Code required) to the BIG\_Encryption field of the selected Broadcast Receive State characteristic to request a client to provide a Broadcast\_Code.
- If the BIS is encrypted and the server has the correct encryption key to decrypt the BIS, the server shall write a value of 0x02 (Decrypting) to the BIG\_Encryption field of the selected Broadcast Receive State characteristic.
- If the BIS is encrypted and the server has detected that a Broadcast\_Code parameter value written by a client is not the correct encryption key to decrypt the BIS, the server shall write a value of 0x03 (Bad\_Code) to the BIG\_Encryption field of the selected Broadcast Receive State characteristic and the server shall write the value of the incorrect encryption key to the Bad\_Code field of the selected Broadcast Receive State characteristic.
- If the BIS is not encrypted, the server shall write a value of 0x00 (Not encrypted) to the BIG\_Encryption field of the selected Broadcast Receive State characteristic.
- For each BIS whose BIS\_index value is set to 0b0 in the BIS\_Sync parameter value written by the client for every subgroup, the server shall not attempt to synchronize to that BIS and shall set the BIS\_index value of that BIS to 0b0 in the BIS\_Sync\_State field of the selected Broadcast Receive State characteristic.
- For each subgroup, for each BIS the server attempts to synchronize to and fails, the server shall set the BIS\_index value of that BIS to 0b0 in the BIS\_Sync\_State field of the Broadcast Receive State characteristic. However, if the server fails to synchronize to the BIG, the server shall write a value of 0xFFFFFFFF (Failed to synchronize to BIG) to the BIS\_Sync\_State field of the selected Broadcast Receive State characteristic.
- The server shall not attempt to synchronize to a BIS if the server has not synchronized to the PA.

- If the server has synchronized to the PA and then loses synchronization to the PA, the server shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the selected Broadcast Receive State characteristic.
- For each subgroup, if the server has synchronized to a BIS and then loses synchronization to that BIS, the server shall set the BIS\_index value of that BIS to 0b0 in the BIS\_Sync\_State field of the selected Broadcast Receive State characteristic.
- For each subgroup, if the Metadata\_Length parameter value written by the client is nonzero, the Metadata parameter value written by the client may be written to the Metadata field of the selected Broadcast Receive State characteristic.

If the server does not accept the Add Source operation, the server shall not modify the value of any Broadcast Receive State characteristic with the values written by the client in the Add Source operation.

### 3.1.1.5 Modify Source operation

The Modify Source operation is used to request the server to add or update Metadata for the Broadcast Source, and/or to request the server to synchronize to, or to stop synchronization to, a PA and/or a BIS.

The Modify Source operation has the format defined in [Table 3.6](#).

Opcode	Size (Octets)	Description
0x03	1	0x03 = Modify Source operation
Parameter	Size (Octets)	Description
Source_ID	1	Source_ID assigned by the server to a Broadcast Receive State characteristic
PA_Sync	1	0x00 = Do not synchronize to PA 0x01 = Synchronize to PA – PAST available 0x02 = Synchronize to PA – PAST not available All other values: RFU
PA_Interval	2	SyncInfo field Interval parameter value 0xFFFF: PA_Interval unknown
Num_Subgroups	1	Number of subgroups
BIS_Sync[i]	4	BIS_Sync parameter for the [i <sup>th</sup> ] subgroup in the BIG 4-octet bitfield. Bit 0-30 = BIS_index[1-31] 0x00000000: 0b0 = Do not synchronize to BIS_index[x] 0xxxxxxx: 0b1 = Synchronize to BIS_index[x] 0xFFFFFFFF: No preference Shall not exist if Num_Subgroups = 0

Metadata_Length[i]	1	Length of the Metadata parameter value for the [i <sup>th</sup> ] subgroup in the BIG Shall not exist if Num_Subgroups = 0
Metadata[i]	Varies	LTV-formatted Metadata for the [i <sup>th</sup> ] subgroup in the BIG for the Broadcast Source identified by the Source_ID Shall exist only if the Metadata_Length parameter value is ≠ 0x00

Table 3.6: Format of Modify Source operation

If the server accepts the Modify Source operation, the server shall select the Broadcast Receive State characteristic containing a Source\_ID value that matches the Source\_ID written by the client during the Modify Source operation, and:

- If the PA\_Sync parameter value written by the client is set to a value of 0x00 (Do not synchronize to PA) and the server is not synchronized to the PA, the server shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic and the server shall not attempt to synchronize to the PA.
- If the PA\_Sync parameter value written by the client is set to a value of 0x00 (Do not synchronize to PA) and the server is synchronized to the PA, the server shall stop synchronization with the PA and shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic .
- If the PA\_Sync parameter value written by the client is set to a value of 0x01 (Synchronize to PA – PAST available), or 0x02 (Synchronize to PA – PAST not available), the server shall either write a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field of the Broadcast Receive State characteristic if the server requires a client to transfer SyncInfo data to the server, or the server shall attempt to synchronize with the PA by using the Periodic Advertising Synchronization Establishment procedure defined in Volume 3, Part C, Section 9.5.3 in [2].
  - If the Source\_Address\_Type field of the Broadcast Receive State characteristic is 0x01, the Source\_Address field of the Broadcast Receive State characteristic might not match the AdvA field in ADV\_EXT\_IND PDUs transmitted by the Broadcast Source. If the server attempts to synchronize with the PA, the server may determine the Advertiser\_Address to be used in the Periodic Advertising Synchronization Establishment procedure by:
    - Comparing the Adv\_SID field of the Broadcast Receive State characteristic to the Adv\_SID subfield of the ADI field of ADV\_EXT\_IND PDUs transmitted by the Broadcast Source.
    - Comparing the Broadcast\_ID field of the Broadcast Receive State characteristic to the AdvData field of AUX\_ADV\_IND PDUs transmitted by the Broadcast Source.
- The server shall only write a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field of the Broadcast Receive State characteristic if the server supports the PAST procedure defined in Volume 3, Part C, Section 9.5.4 in [2].
- If the server has written a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field of the Broadcast Receive State characteristic and the server does not receive SyncInfo data from a client within a time period defined by the implementation or by a higher-layer specification, the server shall write a value of 0x04 (No PAST) to the PA\_Sync\_State field of the Broadcast Receive State characteristic and the server shall not attempt to synchronize to the PA.

- If the server has received SyncInfo data from a client, the server shall attempt to synchronize to the PA by using the Periodic Advertising Synchronization Establishment procedure defined in Volume 3, Part C, Section 9.5.3 in [2].
- If the server has synchronized to the PA, the server shall write a value of 0x02 (Synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic; otherwise, the server shall write a value of 0x03 (Failed to synchronize to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic.
- If the server has synchronized to the PA, and the server has detected that the BIS is encrypted, and if the server does not have the correct encryption key to decrypt the BIS, the server shall write a value of 0x01 (Broadcast\_Code required) to the BIG\_Encryption field of the Broadcast Receive State characteristic to request a client to provide a Broadcast\_Code.
- The server shall write the value of the Num\_Subgroups parameter to the Num\_Subgroups field of the Broadcast Receive State characteristic.
- For each subgroup, if the server has synchronized to the PA, and if the BIS\_Sync parameter value written by the client is not 0xFFFFFFFF, the server shall attempt to synchronize to each BIS whose BIS\_index value is set to 0b1 only if the BIS\_index value is not set to 0b1 in any other subgroup in the BIS\_Sync parameter value written by the client. However, if the BIS\_Sync parameter value written by the client is set to 0xFFFFFFFF (No preference), the server may attempt to synchronize to any BIS in the BIG. To synchronize to a BIS, the server shall use the Broadcast Isochronous Synchronization Establishment procedure defined in Volume 3, Part C, Section 9.6.3 in [2].
- For each subgroup, if the server has synchronized to a BIS, the server shall set the BIS\_index value of that BIS to 0b1 for the subgroup containing that BIS in the BIS\_Sync\_State field of the Broadcast Receive State characteristic value.
- If the server has synchronized to a BIS and the server has detected that the BIS is encrypted, and if the server does not have an encryption key to decrypt the BIS, the server shall write a value of 0x01 (Broadcast\_Code required) to the BIG\_Encryption field of the Broadcast Receive State characteristic to request a client to provide a Broadcast\_Code.
- If the BIS is encrypted and the server has the correct encryption key to decrypt the BIS, the server shall write a value of 0x02 (Decrypting) to the BIG\_Encryption field of the Broadcast Receive State characteristic.
- If the BIS is encrypted and the server has detected that a Broadcast\_Code parameter value written by a client is not the correct encryption key to decrypt the BIS, the server shall write a value of 0x03 (Bad\_Code) to the BIG\_Encryption field of the Broadcast Receive State characteristic and the server shall write the value of the incorrect encryption key to the Bad\_Code field of the Broadcast Receive State characteristic.
- If the BIS is not encrypted, the server shall write a value of 0x00 (Not encrypted) to the BIG\_Encryption field of the Broadcast Receive State characteristic.
- For each BIS whose BIS\_index value is set to 0b0 in the BIS\_Sync field written by the client for every subgroup, the server shall not attempt to synchronize to that BIS, or if the server is synchronized to that BIS, the server shall stop synchronization with that BIS and shall set the BIS\_index value of that BIS to 0b0 in the BIS\_Sync\_State field of the Broadcast Receive State characteristic.
- For each subgroup, for each BIS the server attempts to synchronize to and fails, the server shall set the BIS\_index value of that BIS to 0b0 in the BIS\_Sync\_State field of the Broadcast Receive State characteristic. However, if the server fails to synchronize to the BIG, the server shall write a value of

0xFFFFFFFF (Failed to synchronize to BIG) to the BIS\_Sync\_State field of the Broadcast Receive State characteristic.

- The server shall not attempt to synchronize to a BIS if the server has not synchronized to the PA.
- If the server has synchronized to the PA and then loses synchronization to the PA, the server shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic.
- For each subgroup, if the server has synchronized to a BIS and then loses synchronization to that BIS, the server shall set the BIS\_index value of that BIS to 0b0 in the BIS\_Sync\_State field of the Broadcast Receive State characteristic.
- For each subgroup, if the Metadata\_Length parameter value written by the client is nonzero, the Metadata parameter value written by the client may be written by the server to the Metadata field of the Broadcast Receive State characteristic.

If the server does not accept the Modify Source operation, the server shall not modify the value of the Broadcast Receive State characteristic that contains a Source\_ID value that matches the Source\_ID value written by the client in the Modify Source operation.

### 3.1.1.6 Set Broadcast\_Code operation

The Set Broadcast\_Code operation is used by a client to provide a Broadcast\_Code to the server to enable the server to decrypt an encrypted BIS.

The Set Broadcast\_Code operation has the format defined in [Table 3.7](#).

Opcode	Size (Octets)	Description
0x04	1	0x04 = Set Broadcast_Code operation
Parameter	Size (Octets)	Description
Source_ID	1	Source_ID assigned by the server to a Broadcast Receive State characteristic
Broadcast_Code	16	Broadcast_Code for the Source_ID assigned to a Broadcast Receive State characteristic

Table 3.7: Format of Set Broadcast\_Code operation

The server shall use the provided Broadcast\_Code value to attempt to decrypt an encrypted BIS.

### 3.1.1.7 Remove Source operation

The Remove Source operation is used by a client to request the server to remove information for a Broadcast Source identified by the Source\_ID in a Broadcast Receive State characteristic.

The Remove Source operation has the format defined in [Table 3.8](#).

Opcode	Size (Octets)	Description
0x05	1	0x05 = Remove Source operation
Parameter	Size (Octets)	Description
Source_ID	1	Source_ID assigned by the server to a Broadcast Receive State characteristic

Table 3.8: Format of Remove Source operation

If the server accepts the Remove Source operation, the server shall delete all fields of the Broadcast Receive State characteristic containing the Source\_ID value that matches the Source\_ID value written by the client in the Remove Source operation.

The server shall not accept a Remove Source operation for a Source\_ID value that matches the Source\_ID written by the client in the Remove Source operation if the server is synchronized to the PA and/or any BIS as defined by the values of the PA\_Sync\_State and BIS\_Sync\_State fields in the Broadcast Receive State characteristic containing that Source\_ID value.

If the server does not accept the Remove Source operation, the server shall not modify the value of the Broadcast Receive State characteristic that contains a Source\_ID value that matches the Source\_ID value written by the client in the Remove Source operation.

## 3.2 Broadcast Receive State

The Broadcast Receive State characteristic is used by the server to expose information about a Broadcast Source, representing the current synchronization state of the server to a PA and/or a BIG containing one or more subgroups containing one or more BISes transmitted by that Broadcast Source. The Broadcast Receive State characteristic is also used to inform clients whether the server has detected that the BIS is encrypted, whether the server requires a Broadcast\_Code, and whether the server is decrypting the BIS.

When the Broadcast Receive State characteristic value is not empty (zero length), the Broadcast Receive State characteristic has the format defined in [Table 3.9](#).

Field	Size (Octets)	Description
Source_ID	1	Assigned by the server Shall be unique for each instance of the Broadcast Receive State characteristic exposed by the server Range: 0x00-0xFF
Source_Address_Type	1	0x00 = Public Device Address or Public Identity Address 0x01 = Random Device Address or Random (static) Identity Address All other values: RFU
Source_Address	6	Public Device Address, Random Device Address, Public Identity Address or Random (static) Identity Address of the Broadcast Source.
Source_Adv_SID	1	Advertising_SID subfield of the ADI field of the AUX_ADV_IND PDU or the LL_PERIODIC_SYNC_IND containing the SyncInfo that points to the PA transmitted by the Broadcast Source.
Broadcast_ID	3	Broadcast_ID of the Broadcast Source
PA_Sync_State	1	0x00: Not synchronized to PA 0x01: SyncInfo Request 0x02: Synchronized to PA 0x03: Failed to synchronize to PA 0x04: No PAST All other values: RFU
BIG_Encryption	1	0x00: Not encrypted 0x01: Broadcast_Code required 0x02: Decrypting 0x03: Bad_Code (incorrect encryption key) All other values: RFU
Bad_Code	Varies	If BIG_Encryption field value = 0x00, 0x01, or 0x02: empty (zero length) If BIG_Encryption field value = 0x03 (Bad_Code), Bad_Code shall be set to the value of the incorrect 16-octet Broadcast_Code that fails to decrypt the BIG
Num_Subgroups	1	Number of subgroups
BIS_Sync_State[i]	4	BIS_Sync_State for the [i <sup>th</sup> ] subgroup

Field	Size (Octets)	Description
		4-octet bitfield. Bit 0-30 = BIS_index[1-31] 0x00000000: 0b0 = Not synchronized to BIS_index[x] 0xxxxxxx: 0b1 = Synchronized to BIS_index[x] 0xFFFFFFFF: Failed to sync to BIG Shall not exist if Num_Subgroups = 0
Metadata_Length[i]	1	Length of the Metadata field for the [i <sup>th</sup> ] subgroup Shall not exist if Num_Subgroups = 0
Metadata[i]	Varies	LTV-formatted Metadata for the [i <sup>th</sup> ] subgroup Shall exist only if the Metadata_Length parameter value is ≠ 0x00

Table 3.9: Broadcast Receive State characteristic format

### 3.2.1 Characteristic behavior

If the server has not written a Source\_ID value to the Broadcast Receive State characteristic, the Broadcast Receive State characteristic value shall be empty (zero length).

If the Broadcast Receive State characteristic is not empty when read by a client, the Broadcast Receive State characteristic returns the current Source\_ID, Source\_Address\_Type, Source\_Address, Source\_Adv\_SID, and Broadcast\_ID values used to identify a Broadcast Source, and the current PA\_Sync\_State, BIG\_Encryption, Num\_Subgroups, BIS\_Sync\_State, Metadata\_Length, and Metadata values.

The server may modify the Broadcast Receive State characteristic value autonomously or when accepting an operation written by the client using the Broadcast Audio Scan Control Point characteristic.

The Broadcast Receive State characteristic value can be configured for notifications by using the GATT Write Characteristic Descriptors sub-procedure on the Client Characteristic Configuration descriptor.

If the Broadcast Receive State characteristic value changes when in a connection to a client, the server shall notify the new characteristic value to the client.

If the Broadcast Receive State characteristic value is not empty (zero length), and if a bonded client reconnects to the server, the server shall notify the current Broadcast Receive State characteristic value to that bonded client.

#### 3.2.1.1 Source\_ID field

If the server has autonomously synchronized to a PA, the server shall write a unique value to the Source\_ID field.

If the server has accepted an Add Source operation written by a client to the Broadcast Audio Scan Control Point characteristic, the server shall follow the behavior defined in Section 3.1.1.4 to write the value of the Source\_ID field.



### 3.2.1.2 Source\_Address\_Type field

If the server has autonomously synchronized to a PA, the server shall write the value of the Broadcast Source's Advertiser\_Address\_Type parameter to the Source\_Address\_Type field.

If the server has accepted an Add Source operation written by a client to the Broadcast Audio Scan Control Point characteristic, the server shall follow the behavior defined in [Section 3.1.1.4](#) to write the value of the Source\_Address\_Type field.

### 3.2.1.3 Source\_Address field

If the server has autonomously synchronized to a PA, the server shall write the value of the Broadcast Source's Advertiser\_Address parameter to the Source\_Address field.

If the server is aware the Advertiser\_Address for a Broadcast Source has changed, the server shall write the updated Advertiser\_Address to the Source\_Address field.

If the server has accepted an Add Source operation written by a client to the Broadcast Audio Scan Control Point characteristic, the server shall follow the behavior defined in [Section 3.1.1.4](#) to write the value of the Source\_Address field.

If the server receives a transfer of SyncInfo data from a client in an LL\_PERIODIC\_SYNC\_IND PDU as defined in Vol 6, Part B, Section 2.4.2.27 in [\[2\]](#), and if the server is not using the Host Controller Interface (HCI), and if the value received in octet 0 of the ID parameter is 0x02 or 0x03, the server shall write the received AdvA parameter value to the Source\_Address field of the Broadcast Receive State characteristic with the Source\_ID field that matches the Source\_ID value received in octet 1 of the ID parameter.

If the server receives an HCI\_LE\_Periodic\_Advertising\_Sync\_Transfer\_Received\_Event as defined in Vol 4, Part E, Section 7.7.65.24 in [\[2\]](#), and if the value received in octet 0 of the Service\_Data parameter is 0x02 or 0x03, the server shall write the received Advertiser\_Address parameter value to the Source\_Address field of the Broadcast Receive State characteristic with the Source\_ID field that matches the Source\_ID value received in octet 1 of the Service\_Data parameter.

### 3.2.1.4 Source\_Adv\_SID field

If the server has autonomously synchronized to a PA, the server shall write the value of the Advertising\_SID subfield of the ADI field of the AUX\_ADV\_IND PDU [\[2\]](#) used to transport the PA to the Source\_Adv\_SID field.

If the server has accepted an Add Source operation written by a client to the Broadcast Audio Scan Control Point characteristic, the server shall follow the behavior defined in [Section 3.1.1.4](#) to write the value of the Source\_Adv\_SID field.

### 3.2.1.5 Broadcast\_ID field

If the server has autonomously synchronized to a PA, the server shall write the value of the Broadcast\_ID in the AdvData field of the AUX\_ADV\_IND PDU to the Broadcast\_ID field.

If the server has accepted an Add Source operation written by a client to the Broadcast Audio Scan Control Point characteristic, the server shall follow the behavior defined in [Section 3.1.1.4](#) to write the value of the Broadcast\_ID field.

### 3.2.1.6 PA\_Sync\_State field

The PA\_Sync\_State field is used to expose the current synchronization state of the server with respect to a PA.

If the server has accepted an Add Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.4 to write the value of the PA\_Sync\_State field.

If the server has accepted a Modify Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.5 to write the value of the PA\_Sync\_State field.

The server may write a value of 0x01 (SyncInfo Request) to the PA\_Sync\_State field at any time to request a client to provide synchronization information for a PA.

If the server has autonomously synchronized to a PA, the server shall write a value of 0x02 (Synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic.

If the server has autonomously synchronized to a PA and detected, by checking the length of the BIGInfo [2], that a BIS is encrypted, the server shall follow the behavior in Section 3.2.1.7 to request a Broadcast\_Code.

If the server has autonomously attempted and failed to synchronize to a PA, the server shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic.

If the server has autonomously synchronized to a PA and then lost or stopped synchronization with the PA, the server shall write a value of 0x00 (Not synchronized to PA) to the PA\_Sync\_State field of the Broadcast Receive State characteristic.

### 3.2.1.7 BIG\_Encryption field

The BIG\_Encryption field is used to expose the encryption state of one or more BISes that the server is synchronized to.

If the server has accepted an Add Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.4 if the server has accepted an Add Source operation written by the client to write the value of BIG\_Encryption field.

If the server has accepted a Modify Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.5 to write the value of the BIG\_Encryption field.

If the server has detected that a BIS is encrypted, or if the server has autonomously synchronized to a BIS that is encrypted, and the server does not have an encryption key to decrypt the BIS, the server shall write a value of 0x01 (Broadcast\_Code required) to the BIG\_Encryption field of the Broadcast Receive State characteristic to inform clients that the server requires a client to write the Set Broadcast\_Code operation to the Broadcast Audio Scan Control Point characteristic with the correct encryption key to decrypt the BIS.

If the server has autonomously synchronized to a BIS that is encrypted, and the server has the correct encryption key to decrypt the BIS, the server shall write a value of 0x02 (Decrypting) to the BIG\_Encryption field of the Broadcast Receive State characteristic.

If the server has autonomously synchronized to a BIS that is encrypted, and the server has detected that a received encryption key is not the correct encryption key to decrypt the BIS (the server can receive encryption keys via writes to the Broadcast Audio Scan Control Point or by other means), the server shall write a value of 0x03 (Bad\_Code) to the BIG\_Encryption field of the Broadcast Receive State characteristic and the server shall write the value of the received incorrect 16-octet encryption key to the Bad\_Code field of the Broadcast Receive State characteristic.

If the server has autonomously synchronized to a BIS that is not encrypted, the server shall write a value of 0x00 (Not encrypted) to the BIG\_Encryption field of the Broadcast Receive State characteristic.

### 3.2.1.8 Num\_Subgroups field

The Num\_Subgroups field is used to expose the number of subgroups present in the Broadcast Audio Source Endpoint (BASE) structure, defined in Section 3.7.2.2 in [3], used to describe a BIG.

If the server has accepted an Add Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.4 to write the value of the Num\_Subgroups field.

If the server has accepted a Modify Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.5 to write the value of the Num\_Subgroups field.

If the server has autonomously synchronized to a PA, the server shall set the Num\_Subgroups field to the value of the Num\_Subgroups parameter present in the BASE structure of that PA.

### 3.2.1.9 BIS\_Sync\_State field

The BIS\_Sync\_State field is used to expose the synchronization state of the server with respect to one or more BISes for one or more subgroups in a BIG.

If the server has accepted an Add Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.4 to write the value of the BIS\_Sync\_State field.

If the server has accepted a Modify Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.5 to write the value of the BIS\_Sync\_State field.

If the server has autonomously synchronized to a BIS, the server shall set the BIS\_index value of that BIS to 0b1 for the subgroup containing that BIS in the BIS\_Sync\_State field of the Broadcast Receive State characteristic.

If the server has autonomously synchronized to a BIS and then lost or stopped synchronization with that BIS, the server shall set the BIS\_index value of that BIS to 0b0 for the subgroup containing that BIS in the BIS\_Sync\_State field of the Broadcast Receive State characteristic.

### 3.2.1.10 Metadata\_Length field

If the server has autonomously synchronized to the PA, the server may write the length of any Metadata parameters for each subgroup to the Metadata\_Length field.

If the server has accepted an Add Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.4 to write the value of the Metadata\_Length field.

If the server has accepted a Modify Source operation written by the client, the server shall follow the behavior defined in Section 3.1.1.5 to write the value of the Metadata\_Length field.

### 3.2.1.11 Metadata field

If the server has autonomously synchronized to the PA, the server may write Metadata values for each subgroup to the Metadata field of the Broadcast Receive State characteristic, including any Metadata values not present in the BASE that the server wishes to include.

The server shall follow the behavior defined in Section 3.1.1.4 if the server has accepted an Add Source operation written by the client to write the value of Metadata field.

The server shall follow the behavior defined in Section 3.1.1.5 if the server has accepted a Modify Source operation written by the client to write the value of the Metadata field.

## 4 SDP interoperability

When exposing this service over Basic Rate/Enhanced Data Rate (BR/EDR), include the following SDP Record attributes and values.

Requirements in this section are defined as “Mandatory” (M), “Optional” (O), “Excluded” (X), and “Conditional” (C.n). Conditional statements (C.n) are listed directly below the table in which they appear.

Item	Definition	Type	Value	Requirement
Service Class ID List	–	–	–	M
Service Class #0	–	UUID	«Broadcast Audio Scan»	M
Protocol Descriptor List	–	Data Element Sequence	–	M
Protocol #0	–	UUID	«L2CAP»	M
Parameter #0 for Protocol #0	Protocol/Service Multiplexer (PSM)	uint16	PSM = ATT	M
Protocol #1	–	UUID	«ATT»	M
Additional Protocol Descriptor List	–	Data Element Sequence	–	C.1
Protocol Descriptor List	–	Data Element Sequence	–	C.1
Protocol #0	–	UUID	«L2CAP»	C.1
Parameter #0 for Protocol #0	PSM	uint16	PSM = EATT	C.1
Protocol #1	–	UUID	«ATT»	C.1
BrowseGroupList	–	–	PublicBrowseRoot Other browse UUIDs may also be included in the list.	M

Table 4.1: SDP Record

C.1: Mandatory to support if EATT is supported, otherwise Excluded.

## 5 Acronyms and abbreviations

Acronym/Abbreviation	Meaning
ATT	Attribute Protocol
BAP	Basic Audio Profile
BASE	Broadcast Audio Source Endpoint
BASS	Broadcast Audio Scan Service
BIG	Broadcast Isochronous Group
BIS	Broadcast Isochronous Stream
BR/EDR	Basic Rate/Enhanced Data Rate
EATT	Enhanced ATT
GATT	Generic Attribute Profile
HCI	Host Controller Interface
L2CAP	Logical Link Control and Adaption Protocol
LL	Link Layer
LSO	least significant octet
PAST	Periodic Advertising Synchronization Transfer
PDU	Protocol Data Unit
PSM	Protocol/Service Multiplexer
RFU	Reserved for Future Use
UUID	universally unique identifier

Table 5.1: Acronyms and abbreviations

## 6 References

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- [1] Bluetooth SIG Assigned Numbers, <https://www.bluetooth.com/specifications/assigned-numbers>
- [2] Bluetooth Core Specification, Version 5.2 or later
- [3] Basic Audio Profile Specification, Version 1
- [4] Bluetooth Core Specification Supplement, Version 9 or later