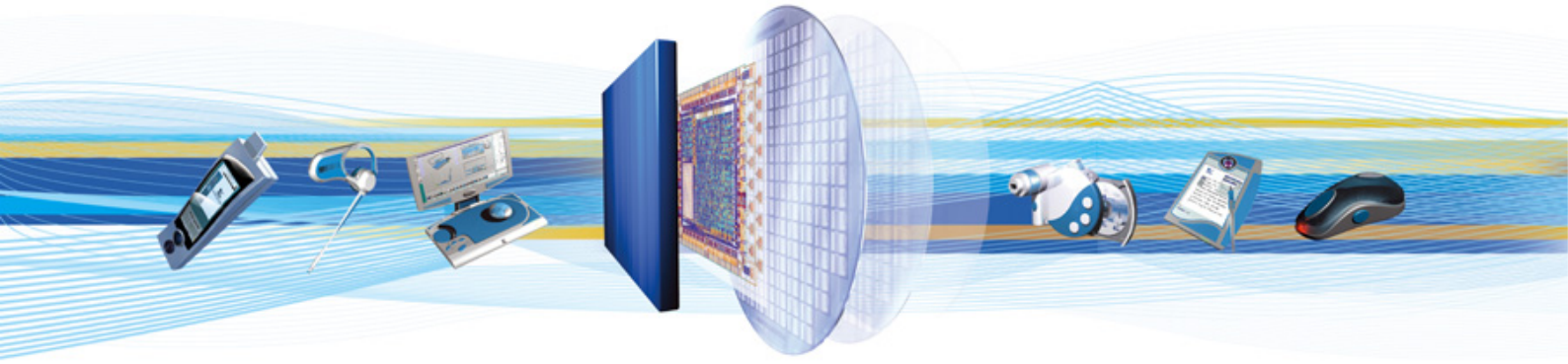
CSR Synergy Bluetooth 18.2.0

OBEX Basic Printing Profile Client

API Description

November 2011



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1 Introduction

1.1 Introduction and Scope

This document describes the message interface provided by the Sender (This is the client device that pushes an object to the printer) of the OBEX Basic Printing Profile (BPP), ref. [BPP].

1.2 Assumptions

The following assumptions and preconditions are made in the following:

- There is a secure and reliable transport between the profile part, i.e. BPP and the application
- The BPP shall only handle one request at the time
- Bonding (pairing) is NOT handled by the BPP

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2 Description

2.1 Introduction

This profile supports both the Simple Push Transfer Model and the Job-Based Transfer Model. If the Simple Push Transfer Model is used there are no mechanisms, to get any type of status or errors from the printer other than those provided by the OBEX transport layer. If the Job-Based Transfer Model is used instead, the application will be able to get more control over the printed output, more detailed information about the Printer, and an alternative way of printing.

The scenario covered by this profile is the following:

- Request details about the printer's capabilities and status (only when using the Job-Based Transfer Model)
- Configure a print job (only when using the Job-Based Transfer Model)
- Send print data (e.g., basic text, vCard, vCalendar, vMessage, HTML) to a Printer

The BPP provides the following services to the application:

- Inquiry of devices
- Screening of those
- Connection handling
- OBEX protocol handling

2.2 Reference Model

The BPP interfaces to the Connection Manager (CM).

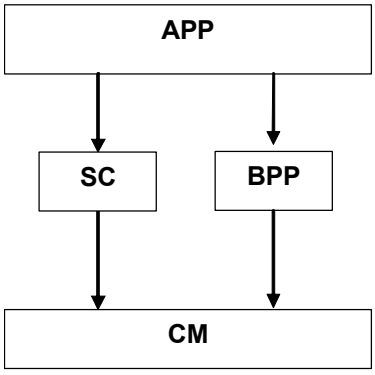

Figure 1: Reference model

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2.3 Sequence Overview

If a connect request is received from the application, BPP starts to connect to the specified device and the CONNECT state is entered.

When the application receives a confirmation from the connect request, the application must decide which transfer model it is going to use.

If the application decides to use the Simple Push Transfer Model the application can direct request to SendDocument in order to send the print data.

If the Job-Based Transfer Model is used the application can request GetPrinterAttributes to query printer status and capabilities, or request CreateJob to configure a print job. After a print job is configured different commands can be issued. GetJobAttributes will return the properties for a created job and CancelJob will delete a job that is currently in queue on the printer. If a GetEvent request is sent, indications from the printer will be transmitted to the client, each time the status changes on the printer. To send the print data a SendDocument request must be issued. Depending on the type of file being sent, a SendDocument might cause the printer to issue a GetReferencedObject request, before the BPP can re-enter Connected state.

When the application disconnects the service, BPP re-enters IDLE state.

The Job-Based Transfer Model uses two channels , one for signaling (the Status Channel) and one for sending data and creating jobs (the Job Channel). However, if the Status Channel is blocked by getEvent the other signals are send on the Job Channel. For certain document types a third channel (the Object Channel) can be requested by the printer to get the remaining data. The Object Channel can e.g. be used for transferring the images which link has been defined in a HTML-file sent on the Job Channel.

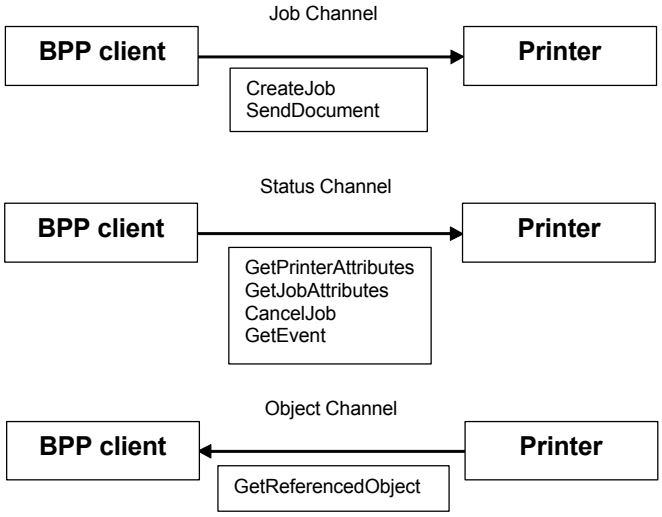

Figure 2: BPP channel diagram

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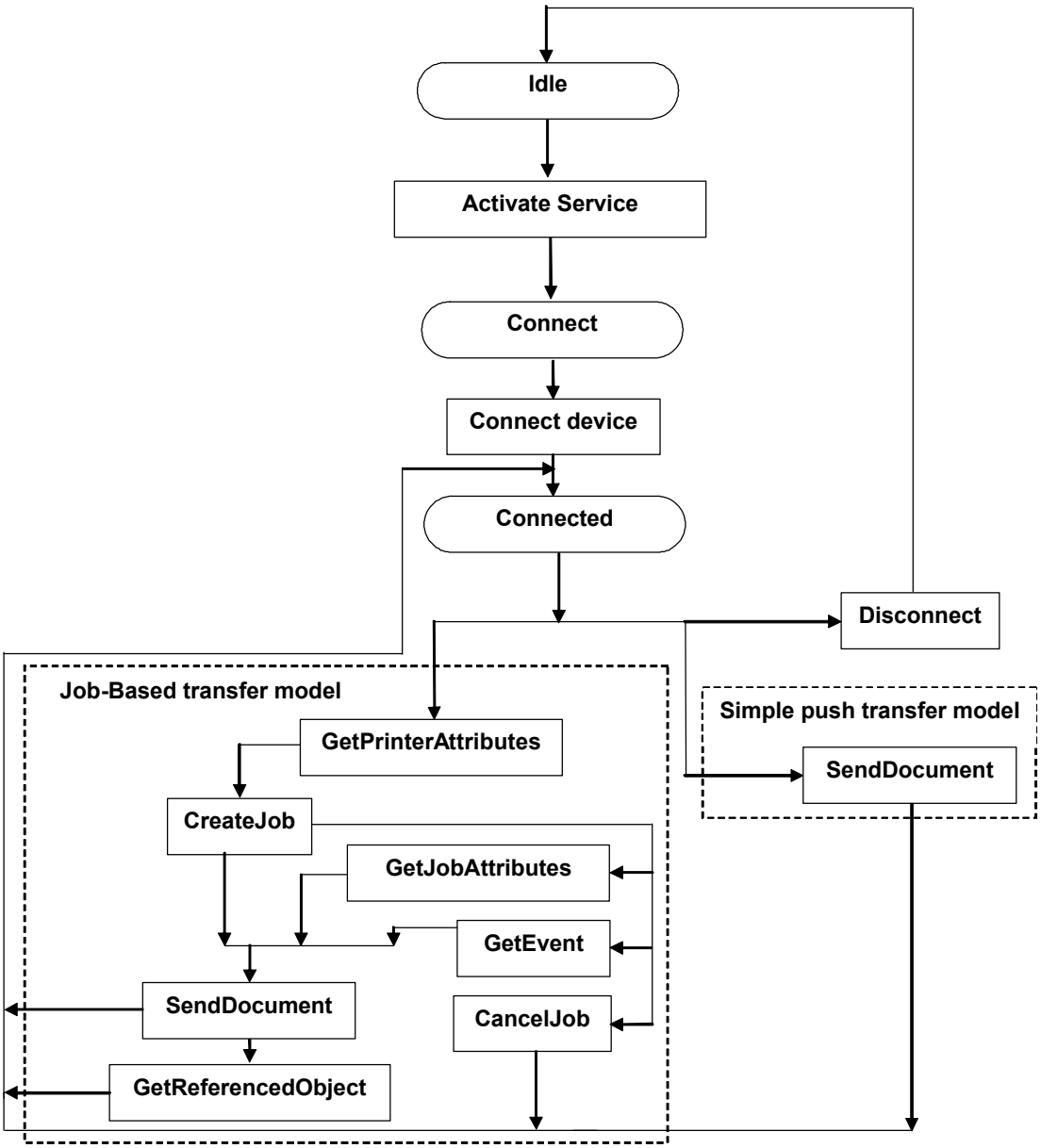

Figure 3: BPP state diagram

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3 Interface Description

3.1 Connect

When the application wants to connect to a printer it has to send a CSR_BT_BPPC_CONNECT_REQ. In this message the application has to specify which device to connect to. The parameter maxPacketSize, indicates the maximum OBEX packet size the application wants to receive from the Printer. The value can be between 255 bytes to 64Kbytes – 1. For more information please refer to [OBEX]. If the packet size is large, it is optimising for quick data transfer, but the disadvantage will be use of big memory blocks.

Note that if the application wants to support referenced objects, it must send a BPP_ACTIVATE_REQ (see section 3.9) before sending a BPP_CONNECT_REQ.

The BPP sends a CSR_BT_BPPC_CONNECT_CFM message to the application, which has the status of the connection establishment - this is the parameter result code. For success in the request the code is CSR_BT_OBEX_SUCCESS_RESPONSE_CODE, any other response code indicates a failure in the connection attempt.

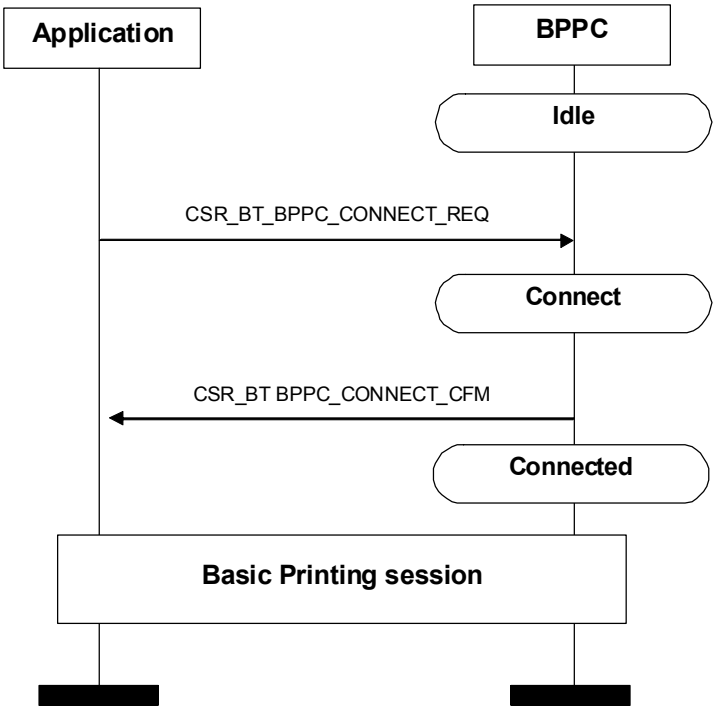

Figure 4: Connect

If the printer requests to open an Object Channel a CSR_BT_BPPC_CONNECT_IND is sent to the Application to which it must reply with a CSR_BT_BPPC_CONNECT_RES containing the appropriate result code.

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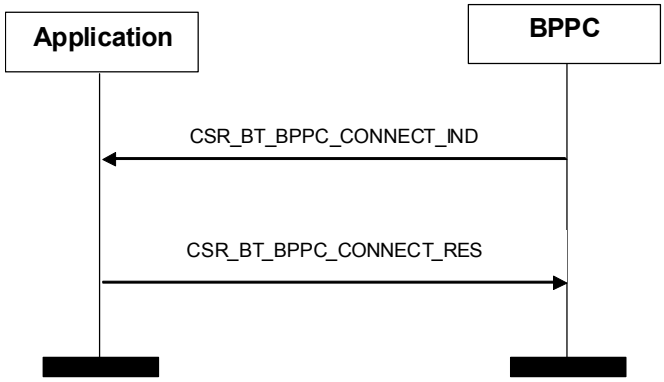

Figure 5: Connect Indication

3.2 Get Printer Attributes

If the application decides to use the Job-Based Transfer Model it can request details about a printer's capabilities and status by sending a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ.

In case the Printer's response to the GetPrinterAttributes operation is large enough to require several OBEX packets, BPP sends a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_IND to the application, which the application must respond with a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_RES message. Please notice that the CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_IND/ CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_RES sequence may be repeated.

When the Get Printer Attributes operation is finished, BPP sends a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the printer's capabilities and status response has been retrieved with success. Any other response code indicates that the printer's capabilities and status could not be retrieved from the Printer.

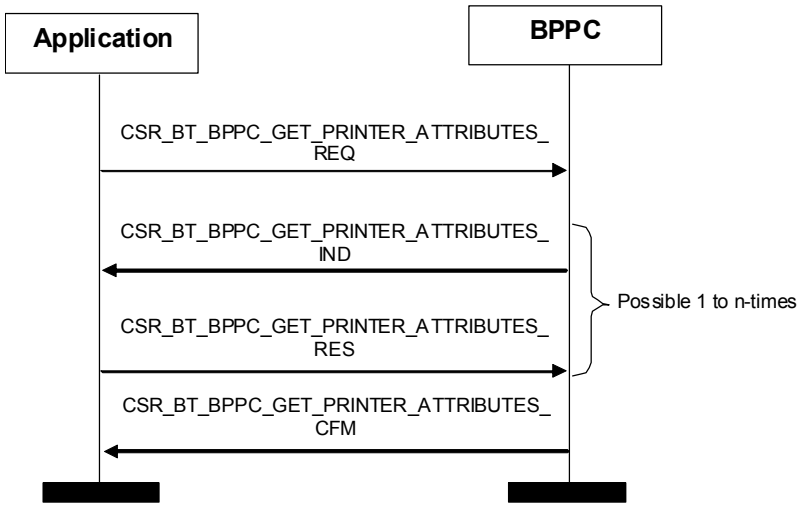

Figure 6: Get Printer Attributes

3.3 Create Job

If the application decides to use the Job-Based Transfer Model it can configure a print job by sending a CSR_BT_BPPC_CREATE_JOB_REQ.

When the Create Job operation is finished, BPP sends a CSR_BT_BPPC_CREATE_JOB_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the CreateJob response has

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been retrieved with success. Any other response code indicates that a CreateJob response could not be retrieved from the printer.

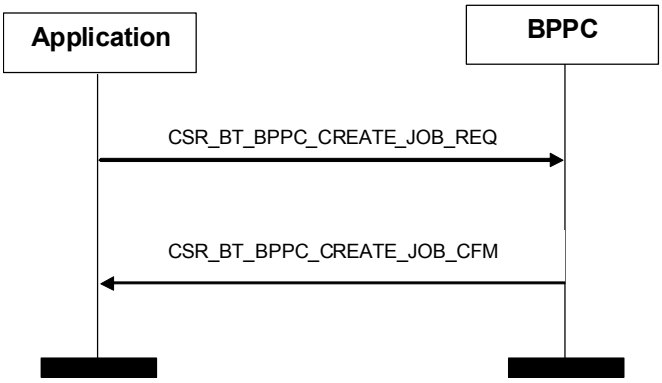

Figure 7: Create Job

3.4 Get Job Attributes

Once a job has been created by the application the properties for the specific job can be retrieved from the printer by sending a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_REQ.

In case that the Printer's response to the GetJobAttributes operation is large enough to require several OBEX packets, BPP sends a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_IND to the application, which the application must respond with a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_RES message. Please notice that the CSR_BT_BPPC_GET_JOB_ATTRIBUTES_IND/ CSR_BT_BPPC_GET_JOB_ATTRIBUTES_RES sequence may be repeated.

When the Get Job Attributes operation is finished, BPP sends a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the job's capabilities and status response has been retrieved with success. Any other response code indicates that the job's capabilities and status could not be retrieved from the Printer.

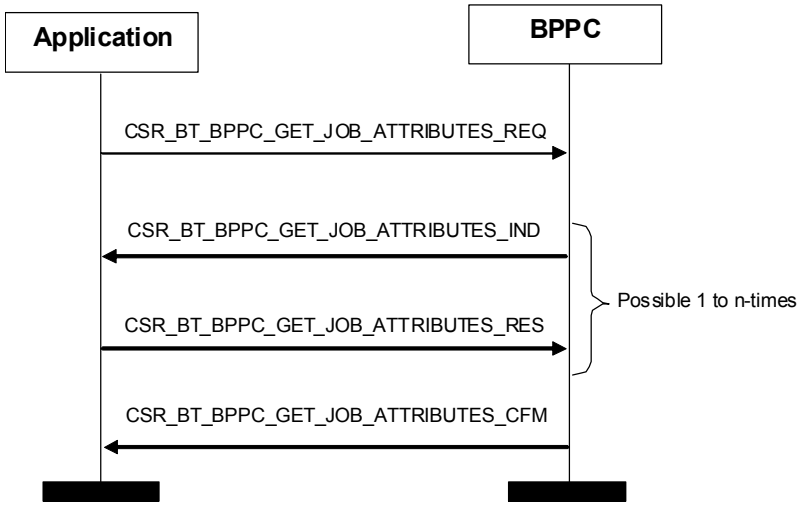

Figure 8: Get Job Attributes

3.5 Cancel Job

If the application has created a job on the printer that it wishes to remove, it can do so by sending a CSR_BT_BPPC_CANCEL_JOB_REQ.

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When the Cancel Job operation is finished, BPP sends a CSR_BT_BPPC_CANCEL_JOB_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the CancelJob response has been retrieved with success. Any other response code indicates that a CancelJob response could not be retrieved from the printer.

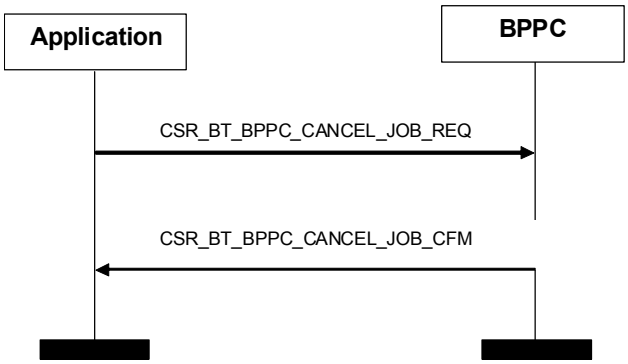

Figure 9: Cancel Job

3.6 Get Event

Once a job has been created the application can send a CSR_BT_BPPC_GET_EVENT_REQ to get information from the printer about its status.

In case that the Printer's response to the GetEvent operation is large enough to require several OBEX packets, BPP sends a CSR_BT_BPPC_GET_EVENT_IND to the application, which the application must respond with a CSR_BT_BPPC_GET_EVENT_RES message. Please notice that the CSR_BT_BPPC_GET_EVENT_IND/ CSR_BT_BPPC_GET_EVENT_RES sequence may be repeated.

Notice that each time the printer state changes it will resolve in a new CSR_BT_BPPC_GET_EVENT_IND, and the GetEvent will remain active until the application sends a CSR_BT_BPPC_ABORT_REQ. This signal is responded with a CSR_BT_BPPC_ABORT_CFM. It is not permitted to issue a new request on the Status Channel (E.g. GetPrinterAttributes, GetJobAttributes, CancelJob) while the GetEvent is active, it must be aborted first. Therefore these signals are send on the Job Channel while getEvent is active.

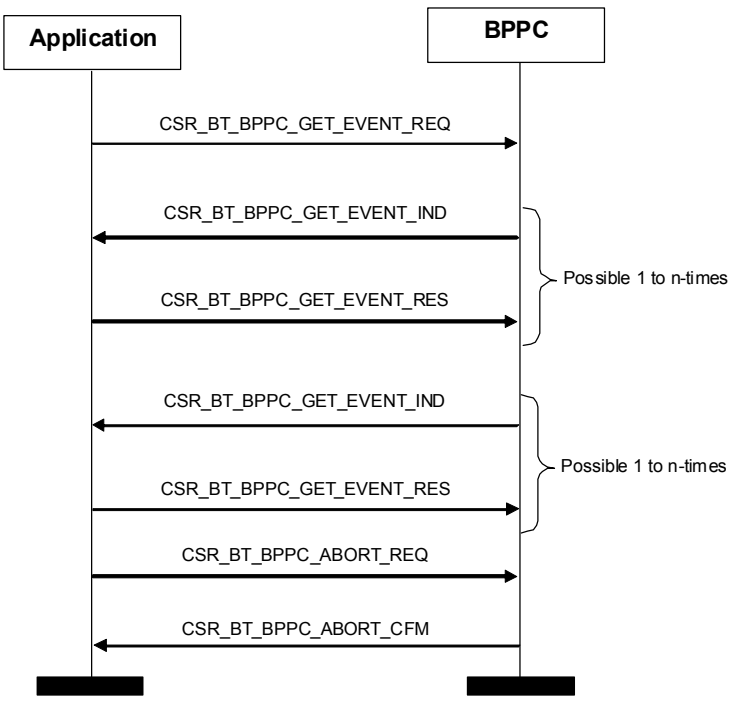

Figure 10: Get Event

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3.7 Send Document

The SendDocument action is used for sending print data to the Printer. Please notice that if the application is using the Job-Based Transfer Model it must for each CreateJob send one and only one SendDocument request.

To send a document the application must send a CSR_BT_BPPC_SEND_DOCUMENT_REQ message. BPP then sends a CSR_BT_BPPC_SEND_DOCUMENT_IND to the application, which the application must respond with a CSR_BT_BPPC_SEND_DOCUMENT_RES message. In case the print data being pushed is large enough to require several OBEX packets the CSR_BT_BPPC_SEND_DOCUMENT_IND/ CSR_BT_BPPC_SEND_DOCUMENT_RES message sequence is repeated.

When the SendDocument procedure is finished, BPP sends a CSR_BT_BPPC_SEND_DOCUMENT_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the print data is pushed to the server with success. Any other response code indicates a failure in the SendDocument procedure.

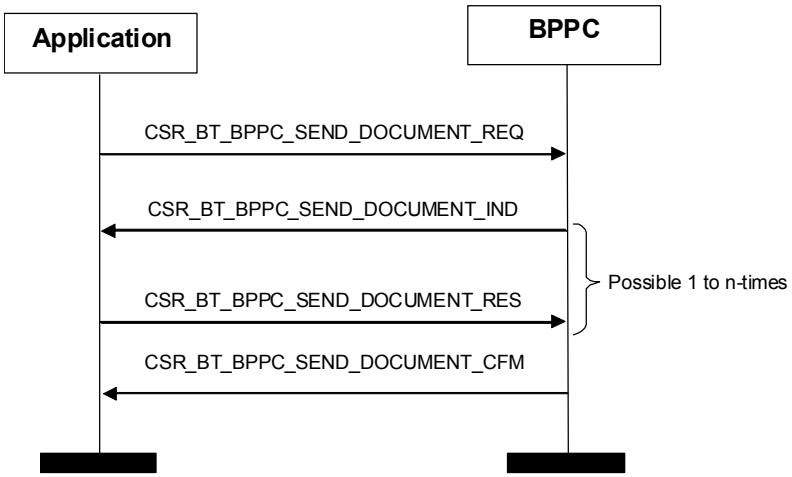

Figure 11: Send document

3.8 Get Referenced Object

If a sent document contains references to other objects (e.g. images in a HTML-file) the printer will create an Object Channel if this has been allowed by the application, see CSR_BT_BPPC_ACTIVATE_REQ.

The application must respond with a CSR_BT_BPPC_GET_REFERENCED_OBJECT_RES to each CSR_BT_BPPC_GET_REFERENCED_OBJECT_IND.

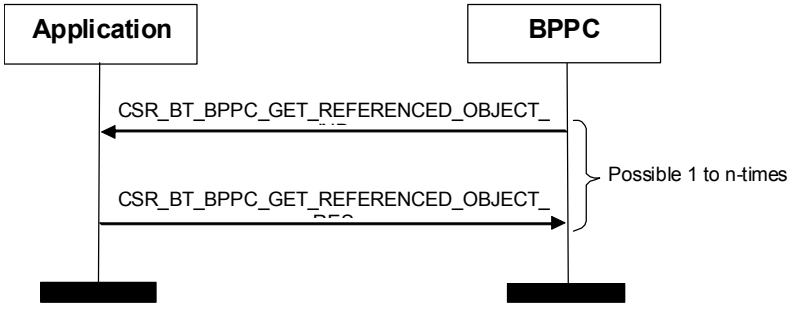

Figure 12: Get Referenced Object

3.9 Activate Signal

To support referenced objects, the BPP_ACTIVATE_REQ signal must be used for allowing an incoming connection on the Object Channel. It is strongly recommended to do this before establishing a Service Level Connection using the BPP_CONNECT_REQ signal. The BPP_ACTIVATE_REQ will register the Object Channel in the Service Discovery Server and make it connectable.

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Figure 13: Activate

3.10 Deactivate Signal

Sending a CSR_BT_BPPC_DEACTIVATE_REQ deactivates the BPP's Object channel. This procedure may take some time depending on the activity of the current BPP. When deactivated, the BPP confirms a CSR_BT_BPPC_DEACTIVATE_CFM message.

Any transaction in progress will be terminated immediately when this message is received by the BPP.

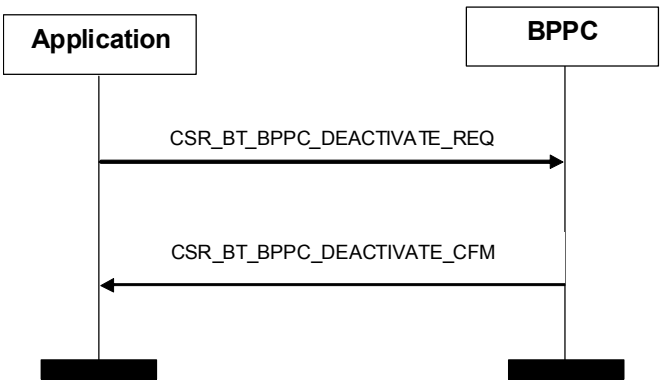

Figure 14: Deactivation

3.11 OBEX Authentication

A Printer can authenticate BPP on every operation individually. If the application receives a CSR_BT_BPPC_AUTHENTICATE_IND it must response with a CSR_BT_BPPC_AUTHENTICATE_RES signal using the password or pin number that the Printer requires. An example of the authenticate sequence is illustrated below.

Authentication is only allowed on the Job Channel.

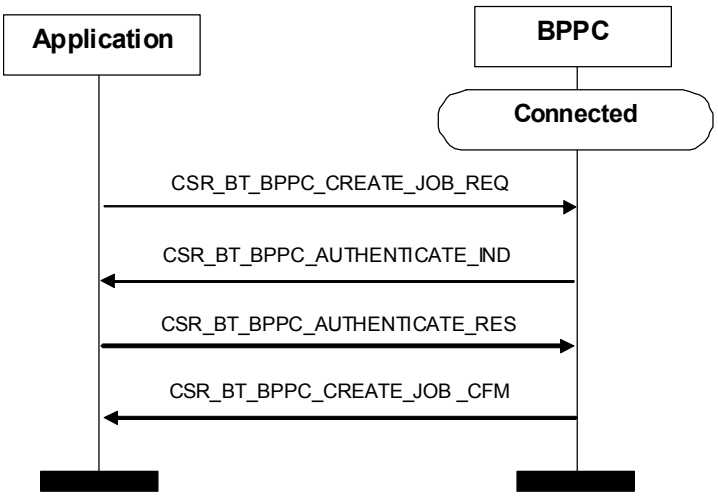

Figure 15: OBEX authentication

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3.12 Abort Operation

The orderly sequence of request (from an OBEX client) followed by response (from an OBEX server) has one exception. An abort operation may be requested in the middle of a request/response sequence. It cancels the current operation.

The application can terminate a multi-packet operation by sending an abort request (CSR_BT_BPPC_ABORT_REQ) to either the Job or Status Channel. The confirmation will be a CSR_BT_BPPC_ABORT_CFM.

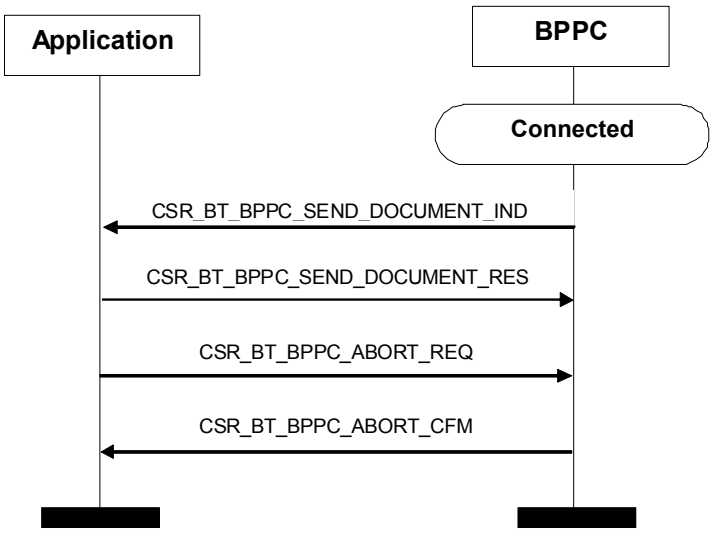

Figure 16: Abort operation Job Channel

For the Status Channel the confirmation will be a CSR_BT_BPPC_ABORT_CFM.

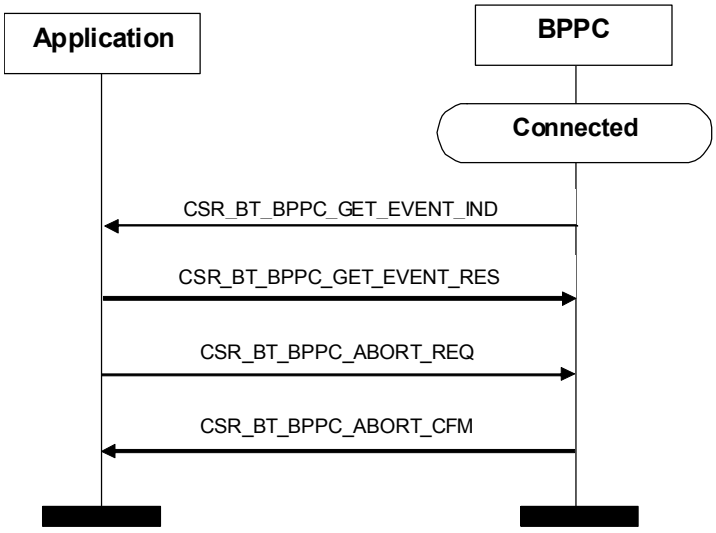

Figure 17: Abort operation Status Channel

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3.13 Disconnect

Sending a CSR_BT_BPPC_DISCONNECT_REQ disconnects the current connection (if any). The disconnect procedure may take some time and is confirmed with a CSR_BT_BPPC_DISCONNECT_IND signal and BPP enters IDLE state. One CSR_BT_BPPC_DISCONNECT_IND per open channel is send to the application, i.e. one for the Job Channel a second for the Status Channel and a third if the Object Channel is activated and connected.

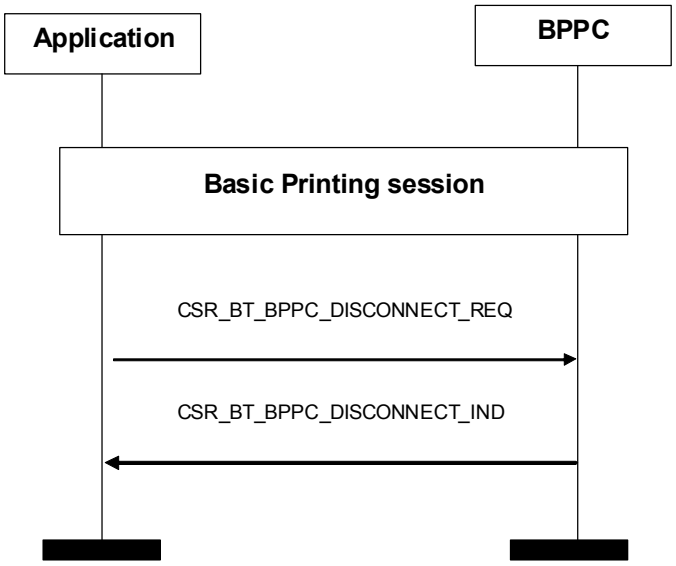

Figure 18: Normal disconnect

In case the peer side prematurely disconnects, the BPP sends a CSR_BT_BPPC_DISCONNECT_IND to the application and enters IDLE state.

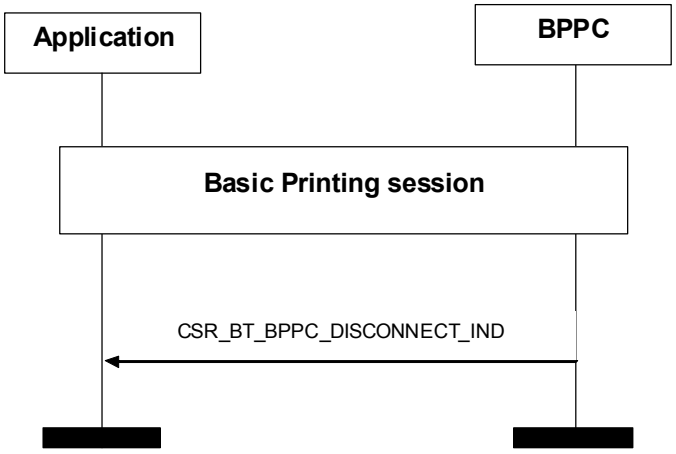

Figure 19: Abnormal disconnect

3.14 Cancel Connect

Sending a CSR_BT_BPPC_CANCEL_CONNECT_REQ will cancel an ongoing connection request. Depending on how far the connection procedure has gone the response from BPP will differ.

If the connection has not been completed the response will be a CSR_BT_BPPC_CONNECT_CFM with the result code CSR_BT_CANCEL_CONNECT_ATTEMPT. If one or more connections have been completed the BPP will send a CSR_BT_BPPC_DISCONNECT_IND for the affected channels.

After the connection request has been cancelled BPP will enter IDLE state.

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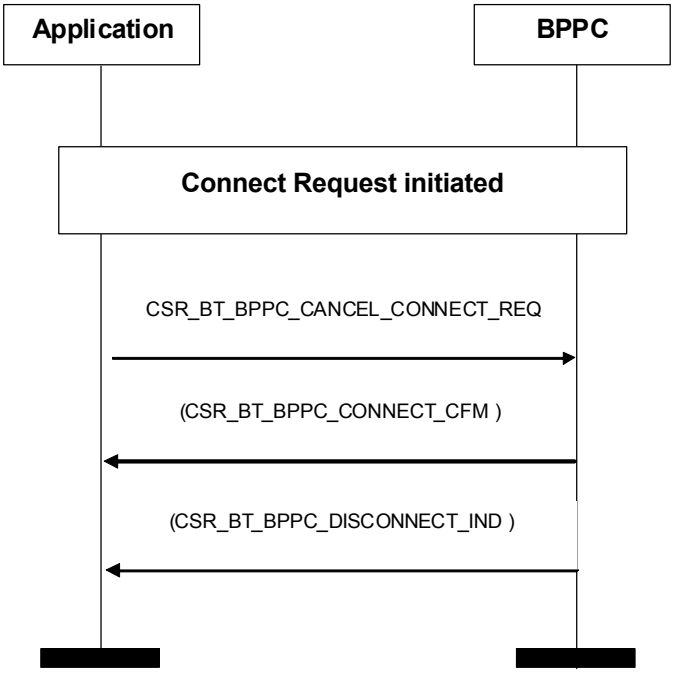

Figure 20: Cancel Connect

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4 OBEX BPP Client Primitives

This section gives an overview of the primitives and parameters in the interface. Detailed information can be found in the corresponding csr_bt_BPPC_prim.h file.

4.1 List of All Primitives

Primitives:	Reference:
CSR_BT_BPPC_CONNECT_REQ	See section 4.2
CSR_BT_BPPC_CONNECT_IND	See section 4.2
CSR_BT_BPPC_CONNECT_RES	See section 4.2
CSR_BT_BPPC_CONNECT_CFM	See section 4.2
CSR_BT_BPPC_GET_PRINTER_ATTRIBUES_REQ	See section 4.3
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_IND	See section 4.3
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_RES	See section 4.3
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_CFM	See section 4.3
CSR_BT_BPPC_CREATE_JOB_REQ	See section 4.4
CSR_BT_BPPC_CREATE_JOB_CFM	See section 4.4
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_REQ	See section 4.5
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_IND	See section 4.5
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_RES	See section 4.5
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_CFM	See section 4.5
CSR_BT_BPPC_CANCEL_JOB_REQ	See section 4.6
CSR_BT_BPPC_CANCEL_JOB_CFM	See section 4.6
CSR_BT_BPPC_GET_EVENT_REQ	See section 4.7
CSR_BT_BPPC_GET_EVENT_IND	See section 4.7
CSR_BT_BPPC_GET_EVENT_RES	See section 4.7
CSR_BT_BPPC_GET_REFERENCE_OBJECT_IND	See section 4.8
CSR_BT_BPPC_GET_REFERENCE_OBJECT_RES	See section 4.8
CSR_BT_BPPC_SEND_DOCUMENT_REQ	See section 4.9
CSR_BT_BPPC_SEND_DOCUMENT_IND	See section 4.9
CSR_BT_BPPC_SEND_DOCUMENT_RES	See section 4.9
CSR_BT_BPPC_SEND_DOCUMENT_CFM	See section 4.9
CSR_BT_BPPC_ACTIVATE_REQ	See section 4.10
CSR_BT_BPPC_DEACTIVATE_REQ	See section 4.11
CSR_BT_BPPC_DEACTIVATE_CFM	See section 4.11
CSR_BT_BPPC_AUTHENTICATE_IND	See section 4.12
CSR_BT_BPPC_AUTHENTICATE_RES	See section 4.12
CSR_BT_BPPC_ABORT_REQ	See section 4.13
CSR_BT_BPPC_ABORT_CFM	See section 4.13
CSR_BT_BPPC_DISCONNECT_REQ	See section 4.14
CSR_BT_BPPC_DISCONNECT_IND	See section 4.14
CSR_BT_BPPC_CANCEL_CONNECT_REQ	See section 4.15
CSR_BT_BPPC_SECURITY_OUT_REQ	See section 4.16
CSR_BT_BPPC_SECURITY_OUT_CFM	See section 4.16

Table 1: List of all primitives

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4.2 CSR_BT_BPPC_CONNECT

Primitives \ Parameters	type	appHandle	maxPacketSize	obexPeerMaxPacketSize	connectionId	deviceAddr	resultCode	resultSupplier	responseCode	colorSupported	duplexSupported	maxPeerPacketSize	maxMediaWidth	maxMediaLength	characterRepertoires[16]	*xhtmlPrintImageFormats	*documentFormatsSupported	*mediaTypesSupported	*printerModelId	length	count	btConnId	windowSize	srmEnable
CSR_BT_BPPC_CONNECT_REQ	✓	✓	✓			✓														✓	✓		✓	✓
CSR_BT_BPPC_CONNECT_IND	✓			✓	✓	✓																✓		
CSR_BT_BPPC_CONNECT_RES	✓																							
CSR_BT_BPPC_CONNECT_CFM	✓						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			✓		

Table 2: CSR_BT_BPPC_CONNECT Primitives

Description

To start an OBEX Printing session against a Printer, the application must send a CSR_BT_BPPC_CONNECT_REQ. BPP will then respond with a CSR_BT_BPPC_CONNECT_CFM. In case the response code in the confirmation message is CSR_BT_OBEX_SUCCESS_RESULT_CODE an OBEX connection is established with success. Any other value indicates a failure in the attempt to initiate an OBEX connection.

The connect messages between the OBEX Printing client and Server is guarded by a timer, thus if for some reason the server do not reply to the OBEX connect request within a fixed time interval the Bluetooth connection is disconnected direct. The timeout functionality is per default set to five seconds. The timeout value can be disable, or change by changing CSR_BT_OBEX_CONNECT_TIMEOUT, which is define in csr_bt_user_config.default.h. Note if the value of CSR_BT_OBEX_CONNECT_TIMEOUT is change, it will influence all OBEX profiles.

The function:

```
CsrBtBppcConnectReqSend (CsrSchedQid appHandle,
                         CsrUint16 maxPacketSize,
                         CsrBtDeviceAddr destination,
                         CsrUint32 length,
                         CsrUint32 count,
                         CsrUint16 windowSize,
                         CsrBool srmEnable );
```

defined in csr_bt_bppc_lib.h, builds and sends the CSR_BT_BPPC_CONNECT_REQ primitive to the BPPC profile.

Parameters

type Signal identity, CSR_BT_BPPC_CONNECT_REQ/IND/RES/CFM.

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appHandle	The identity of the calling process. It is possible to initiate the procedure by any higher layer process as the response is returned to appHandle.
maxPacketSize	The maximum OBEX packet size allowed sending to the application.
obexPeerMaxPacketSize	Indicates the maximum size OBEX packet that is allowed to send to the printer.
connectionId	This value is always zero.
deviceAddr	The Bluetooth® address of the device to connect to.
resultCode	The result code of the operation. Possible values depend on the value of resultSupplier. If e.g. the resultSupplier == CSR_BT_SUPPLIER_CM then the possible result codes can be found in csr_bt_cm_prim.h. If the resultSupplier == CSR_BT_SUPPLIER_OBEX then the possible result codes can be found in csr_bt_obex.h. All values which are currently not specified in the respective prim.h files or csr_bt_obex.h are regarded as reserved and the application should consider them as errors.
resultSupplier	This parameter specifies the supplier of the result given in resultCode. Possible values can be found in csr_bt_result.h
responseCode	The valid result codes are defined in csr_bt_obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that an OBEX connection is establish with success, while any other response code indicates a failure in the connection attempt. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.
colorSupported	This Boolean indicates the support for full color output. If color is supported this Boolean is set to TRUE.
duplexSupported	This Boolean indicates the support of Duplex. If the printer support Duplex this Boolean is set to TRUE.
maxPeerPacketSize	Indicates the maximum OBEX packet size that is allowed to be sent to the Printer.
maxMediaWidth	This value indicates the maximum paper width in mm
maxMediaLength	This value indicates the maximum paper length in mm
characterRepertoires[16]	Allow the application to determine which characters or glyphs a Printer supports for access from XHTML-Print, and the optional Basic Text, vCard, vCalendar, and vMessage formats. Support for glyphs that are indicated in this field does not guarantee support in other data formats. For more information refers to [BPP] section 12.2.3
*xhtmlPrintImageFormats	Is a null terminated utf-8 string that includes the MIME media type followed by a US-ASCII string representing any applicable version of the image format. Please notice that this parameter must be CsrPfree'ed to prevent a memory leak. For more information refers to [BPP] section 12.2.4 Please notice that if this variable is NULL, the same information can be found by sending a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ. In this case the Job-Based Transfer Model must be use.
*documentFormatsSupported	Is a null terminated utf-8 string that includes the Page Description Language (PDL) supported by the printer Multiple documents is represented by a comma-delimited list of MIME media-type:version strings. Please notice that this parameter must be CsrPfree'ed to prevent a memory leak. For more information refers to [BPP] section 12.2.2

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	Please notice that if this variable is NULL, the same information can be found by sending a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ. In this case the Job-Based Transfer Model must be use.
*mediaTypesSupported	Is a null terminated utf-8 string that identifies the type of “paper” that the printer can support. Multiple media types are represented by a comma-delimited list of MIME media type values. Please notice that this parameter must be CsrPfree’ed to prevent a memory leak. For more information refers to [BPP] section 12.2.7 Please notice that if this variable is NULL, the same information can be found by sending a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ. In this case the Job-Based Transfer Model must be use.
*printerModelId	Is a null terminated utf-8 string that identifies the Printer Model 1284 ID .This sting is encoded using ASCII characters. Please notice that this parameter must be CsrPfree’ed to prevent a memory leak.
length	Length is use to express the approximate total length of the bodies of all the objects in the transaction. If set to 0 this header will not be include.
count	Count is use to indicate the number of objects that will be sent during this connection. If set to 0 this header will not be include.
btConnId	Identifier used when moving the connection to another AMP controller, i.e. when calling the `CsrBtAmpmMoveReqSend`-function.
windowSize	Controls how many packets the OBEX profile (and lower protocol layers) are allowed to cache on the data receive side. A value of zero (0) will cause the system to auto-detect this value.
srmEnable	Enable local support for Single Response Mode.

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4.3 CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES

Para-meters / Primi-tives	type	printerName	printerLocation	printerState	printerStateReasons	documentFormatsSupported	colorSupported	maxCopiesSupported	sidesSupported	numberUpSupported	orientationsSupported	mediaSizesSupported	mediaTypesSupported	mediaLoaded	printQualitySupported	queuedJobCount	imageFormatsSupported	basicTextPageWidth	basicTextPageHeight	printerGeneralCurrentOperator	printerAttributeObjectLength	printerAttributeObjectOffset	*payload	payloadLength	responseCode	smpOn
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_IND	✓																				✓	✓	✓	✓		
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_RES	✓																									✓
CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_CFM	✓																				✓	✓	✓	✓	✓	

Table 3: CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES Primitives

Description

This operation is used for requesting details about the printer's capabilities and status. If the requested printer attributes are included in the request, the Printer shall respond only with those attributes specifically requested as long as all those attributes are valid, else the printer shall respond with all attributes that it supports.

To request details about the printer's capabilities and status, the application must send a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ to BPP. In case the printerAttributes response object is large enough to require several OBEX packets, BPP sends a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_IND to the application, which the application must respond with a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_RES message. Please notice that the CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_IND / CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_RES message sequence may be repeated.

When the GetPrinterAttributes procedure is finished BPP sends a CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the printer's attributes is receive with success. Any other response code indicates a failure in receiving the printer's attributes.

Please notice that this primitive is only valid if the Job-Based Transfer Model is use.

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Parameters

type	Signal identity, CSR_BT_BPPC_GET_PRINTER_ATTRIBUTES_REQ/IND/RES/CFM.
printerName	If TRUE the PrinterName attribute is requested.
printerLocation	If TRUE the PrinterLocation attribute is requested.
printerState	If TRUE the PrinterState attribute is requested.
printerStateReasons	If TRUE the PrinterStateReasons attribute is requested.
documentFormatsSupported	If TRUE the DocumentFormatsSupported attribute is requested.
colorSupported	If TRUE the ColorSuppoted attribute is requested.
maxCopiesSupported	If TRUE the MaxCopiesSupported attribute is requested.
sidesSupported	If TRUE the SidesSupported attribute is requested.
numberUpSupported	If TRUE the NumberUpSupported attribute is requested.
orientationsSupported	If TRUE the OrientationsSupported attribute is requested.
mediaSizesSupported	If TRUE the MediaSizesSupported attribute is requested.
mediaTypesSupported	If TRUE the MediaTypesSupported attribute is requested.
mediaLoaded	If TRUE the MediaLoaded attribute is requested.
printQualitySupported	If TRUE the PrintQualitySupported attribute is requested.
queuedJobCount	If TRUE the QueuedJobCount attribute is requested.
imageFormatsSupported	If TRUE the ImageFormatsSupported attribute is requested.
basicTextPageWidth	If TRUE the BasicTextPageWidth attribute is requested.
basicTextPageHeigth	If TRUE the BasicTextPageHeigth attribute is requested.
printerGeneralCurrentOperator	If TRUE the PrinterGeneralCurrentOperator attribute is requested.
printerAttributeObjectLength	The length of a Get Printer Attribute response object from the Printer.
printerAttributeObjectOffset	The payload-relative offset of the object or part of it (i.e., in case of a multi packet operation).
*payload	Pointer to the OBEX data. Offsets are relative to this pointer. The pointer must be freed by the receiver of the signal
payloadLength	Number of bytes in the payload parameter.
responseCode	The valid result codes are defined in csr_bt_obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the printer attributes is received with success, while any other response code indicates a failure in getting printer attributes. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.
smpOn	Reserved for future use. Set to FALSE.

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4.4 CSR_BT_BPPC_CREATE_JOB

Primitives \ Parameters	type	cancelOnLostLink	copies	*sides	numberUp	*orientation	*printQuality	*jobName	*jobUserName	*documentFormat	*mediaSize	*mediaType	responseCode	jobId	operationStatus	smpOn
CSR_BT_BPPC_CREATE_JOB_REQ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				✓
CSR_BT_BPPC_CREATE_JOB_CFM	✓												✓	✓	✓	

Table 4: CSR_BT_BPPC_CREATE_JOB Primitive

Description

To configure a print job, the application must send a CSR_BT_BPPC_CREATE_JOB_REQ to BPP.

When the CreateJob procedure is finished BPP sends a CSR_BT_BPPC_CREATE_JOB_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the print job is created with success. Any other response code indicates a failure in the CreateJob procedure.

Please notice that this primitive is only valid if the Job-Based Transfer Model is use. All pointers shall be freed by the receiving task.

Parameters

type — Signal identity, CSR_BT_BPPC_CREATE_JOB_REQ/CFM.

cancelOnLostLink — TRUE indicates that this job shall be cancel by the Printer if the Bluetooth Radio link is lost or closed.

Copies — Specifies the number of copies of the job to be printed.

*sides — Specifies how pages are to be imposed upon the sides of a selected medium for the job. The sides must be a null terminated utf-8 text string.

See [BPP] (section 7.1.2) for a list of possible values.

numberUp — Indicates the number of print-stream pages to impose upon a single side of an instance of a selected medium for the job. Please notice that numberUp shall be > 0.

Examples :

1 = One page per side
2 = Two pages per side
4 = Four pages per side

*orientation — Indicates the desired orientation for printed pages of the job. The orientation must be a null terminated utf-8 text string.

See [BPP] (section 7.1.2) for a list of possible values.

*printQuality — Specifies the print quality requested for the job. The printQuality must be a null terminated utf-8 text string.

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	See [BPP] (section 7.1.2) for a list of possible values.
*jobName	The user-friendly name of the job being configured. The jobName must be a null terminated utf-8 text string
*jobUserName	The name or identifier of the user that submitted the job. The jobUserName must be a null terminated utf-8 text string. It is recommended that this name is in one of the standard URL contact formats (e.g., 'mailto', 'tel', or 'fax').
*documentFormat	Specifies the document format of the job as a MIME media-type and any applicable version. The documentFormat must be a null terminated utf-8 text string.
*mediaSize	Identifies the size of media to use for the job. The mediaSize must be a null terminated utf-8 text string. For a complete listing of all Media Size Self-Describing Names refers to [MSN].
*mediaType	Identifies the type of medium to be used for the job. The mediaType must be a null terminated utf-8 text string. For a complete listing of all Media Types Names please refer to [MSN].
responseCode	The valid result codes are defined in csr_bt_obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that a printer job is created with success, while any other response code indicates a failure in creating a job. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.
jobId	The job identifier of the job for which the printer can accept print data in a subsequent SendDocument operation.
operationStatus	The status indicates the success or failure of the CreateJob operation. Error codes are mapped to their meanings according to [BPP], section 16.2.
smpOn	Reserved for future use. Set to FALSE.

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4.5 CSR_BT_BPPC_GET_JOB_ATTRIBUTES

Primitives \ Parameters	type	jobId	jobState	jobName	jobOriginatingName	jobMediaSheetsCompleted	numberOfInterveningJobs	jobAttributesObjectLength	jobAttributesObjectOffset	payloadLength	*payload	responseCode	smpOn
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_REQ	✓	✓	✓	✓	✓	✓	✓						✓
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_IND	✓							✓	✓	✓	✓		
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_RES	✓												✓
CSR_BT_BPPC_GET_JOB_ATTRIBUTES_CFM	✓							✓	✓	✓	✓	✓	

Table 5: CSR_BT_BPPC_GET_JOB_ATTRIBUTES Primitive

Description

This operation is used for requesting details about a created job on the printer. If the requested job attributes are included in the request, the Printer shall respond only with those attributes specifically requested as long as all those attributes are valid, otherwise the printer shall respond with all attributes that it supports.

To request details about the job's attributes and status, the application must send a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_REQ to BPP. In case the jobAttributes response object is large enough to require several OBEX packets, BPP sends a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_IND to the application, which the application must respond with a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_RES message. Please notice that the CSR_BT_BPPC_GET_JOB_ATTRIBUTES_IND / CSR_BT_BPPC_GET_JOB_ATTRIBUTES_RES message sequence may be repeated.

When the GetJobAttributes procedure is finished BPP sends a CSR_BT_BPPC_GET_JOB_ATTRIBUTES_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the job's attributes have been received with success. Any other response code indicates a failure in receiving the job's attributes.

Please notice that this primitive is only valid if the Job-Based Transfer Model is used.

Parameters

type	Signal identity, CSR_BT_BPPC_GET_JOB_ATTRIBUTES_REQ/IND/RES/CFM.
jobId	The job identifier of the job for which the printer can accept print data in a subsequent SendDocument operation.
jobState	If TRUE the jobState attribute is requested.
jobName	If TRUE the jobName attribute is requested.
jobOriginatingName	If TRUE the jobOriginatingName attribute is requested.
jobMediaSheetsCompleted	If TRUE the jobMediaSheetsCompleted attribute is requested.
numberOfInterveningJobs	If TRUE the numberOfInterveningJobs attribute is requested.

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jobAttributesObjectLength	The length of a Get Job Attribute response object from the Printer.
jobAttributesObjectOffset	The payload-relative offset of the object or part of it (i.e., in case of a multi packet operation).
payloadLength	Number of bytes in the payload parameter.
*payload	Pointer to the OBEX data. Offsets are relative to this pointer. The pointer will be freed by the receiving task
responseCode	The valid result codes are defined in csr_bt _obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the job attributes is received with success, while any other response code indicates a failure in getting job attributes. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.
smpOn	Reserved for future use. Set to FALSE.

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4.6 CSR_BT_BPPC_CANCEL_JOB

Parameters / Primitives	type	jobId	operationStatus	responseCode
CSR_BT_BPPC_CANCEL_JOB_REQ	✓	✓		
CSR_BT_BPPC_CANCEL_JOB_CFM	✓	✓	✓	✓

Table 6: CSR_BT_BPPC_CANCEL_JOB Primitives

Description

To cancel a print job created on the printer, the application must send a CSR_BT_BPPC_CANCEL_JOB_REQ to BPP.

When the CancelJob procedure is finished BPP sends a CSR_BT_BPPC_CANCEL_JOB_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the print job is cancelled with success. Any other response code indicates a failure in the CancelJob procedure.

Please notice that this primitive is only valid if the Job-Based Transfer Model is use.

Parameters

type	Signal identity, CSR_BT_BPPC_CANCEL_JOB_REQ /CFM.
jobId	The Job identifier obtained in the CreateJob procedure.
operationsStatus	The status indicates the success or failure of the CancelJob operation. Error codes are mapped to their meanings according to [BPP], section 16.2.
responseCode	The valid result codes are defined in csr_bt_obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the cancel job is received with success, while any other response code indicates a failure in canceling the job. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.

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4.7 CSR_BT_BPPC_GET_EVENT

Primitives \ Parameters	type	jobId	eventObjectLength	eventObjectOffset	payloadLength	*payload	smpOn
CSR_BT_BPPC_GET_EVENT_REQ	✓	✓					✓
CSR_BT_BPPC_GET_EVENT_IND	✓	✓	✓	✓	✓	✓	
CSR_BT_BPPC_GET_EVENT_RES	✓						✓

Table 7: CSR_BT_BPPC_GET_EVENT Primitives

Description

This operation is used for requesting information about the current state of the printer. The jobId for a specific job created on the printer must be sent with the request, and after this the printer will send a new getEvent every time the printer's state changes regarding the job in question.

To request a getEvent, the application must send a CSR_BT_BPPC_GET_EVENT_REQ to BPP. In case the getEvent response object is large enough to require several OBEX packets, BPP sends a CSR_BT_BPPC_GET_EVENT_IND to the application, which the application must respond with a CSR_BT_BPPC_GET_EVENT_RES message. Please notice that the CSR_BT_BPPC_GET_EVENT_IND / CSR_BT_BPPC_GET_EVENT_RES message sequence may be repeated.

Notice that the getEvent does not contain a confirm signal. When the getEvent is initiated the Status Channel is reserved for these messages, and no other signals are allowed to be sent on the Status Channel. To cancel the getEvent the application will have to send a CSR_BT_BPPC_ABORT_REQ, after this the printer will no longer send updates about the printer's state and it will be legal for the application to send commands on the Status Channel again.

Please notice that this primitive is only valid if the Job-Based Transfer Model is use.

Parameters

type	Signal identity, CSR_BT_BPPC_GET_EVENT_REQ/IND/RES.
jobId	The Job identifier obtained in the CreateJob procedure.
eventObjectLength	The length of the Get Event response from the printer
eventObjectOffset	The payload-relative offset of the object or part of it (i.e., in case of a multi packet operation).
payloadLength	Number of bytes in the payload parameter.
*payload	Pointer to the OBEX data. Offsets are relative to this pointer. The pointer will be freed by the receiving task
smpOn	Reserved for future use. Set to FALSE.

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4.8 CSR_BT_BPPC_GET_REFERENCE_OBJECT

Primitives \ Parameters	type	responseCode	*file	*fileName	offset	count	fileSize	finalFlag	smpOn
CSR_BT_BPPC_GET_REFERENCE_OBJECT_IND	✓			✓	✓	✓		✓	
CSR_BT_BPPC_GET_REFERENCE_OBJECT_RES	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 8: CSR_BT_BPPC_GET_REFERENCE_OBJECT Primitives

Description

The printer may issue a CSR_BT_BPPC_GET_REFERENCED_OBJ_IND to request objects, referenced in files sent to the printer (e.g. images referenced in a HTML-file).

The application must reply with a CSR_BT_BPPC_GET_REFERENCED_OBJ_RES message, containing the correct information. The message sequence CSR_BT_BPPC_GET_REFERENCED_OBJ_RES/IND can be repeated several times.

Pointers will be freed by the receiving task.

Parameters

type	Signal identity, CSR_BT_BPPC_GET_REFERENCE_OBJECT_IND/RES.
responseCode	The valid result codes are defined in csr_bt_obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the document is sent to the printer with success, while any other response code indicates a failure in sending the document. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.
*file	A pointer to the data being sent as requested by the printer.
*fileName	A pointer to the path and filename to the referenced object. This is an 8 bit Unicoeded string.
offset	The offset in the referenced object in bytes. For more information about the offset see [BPP] section 7.1.6.
count	The number of bytes to be returned to the printer. For more information about the offset see [BPP] section 7.1.6.
fileSize	The total size of the referenced object. For more information about the offset see [BPP] section 7.1.6.
finalFlag	The finalFlag must be set to TRUE if the file object fits in one packet.
smpOn	Reserved for future use. Set to FALSE.

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4.9 CSR_BT_BPPC_SEND_DOCUMENT

Primitives \ Parameters	type	jobId	mimeMediaType	*documentName	*docTypeDependentInfo	*docTypeDependentInfoLength	transferModel	finalFlag	*printContent	printContentLength	responseCode
CSR_BT_BPPC_SEND_DOCUMENT_REQ	✓	✓	✓	✓	✓	✓	✓				
CSR_BT_BPPC_SEND_DOCUMENT_IND	✓									✓	
CSR_BT_BPPC_SEND_DOCUMENT_RES	✓							✓	✓	✓	
CSR_BT_BPPC_SEND_DOCUMENT_CFM	✓										✓

Table 9: CSR_BT_BPPC_SEND_DOCUMENT Primitives

Description

To send the print data to the printer, the application must send a CSR_BT_BPPC_SEND_DOCUMENT_REQ to BPP. BPP then sends a CSR_BT_BPPC_SEND_DOCUMENT_IND to the application, which the application must respond with a CSR_BT_BPPC_SEND_DOCUMENT_RES message. In case the print content object being sent is large enough to require several OBEX packets the CSR_BT_BPPC_SEND_DOCUMENT_IND / CSR_BT_BPPC_SEND_DOCUMENT_RES message sequence is repeated.

When the SendDocument procedure is finished BPP sends a CSR_BT_BPPC_SEND_DOCUMENT_CFM to the application. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the print data is pushed to the printer with success. Any other response code indicates a failure in the SendDocument procedure.

Please notice that for each CreateJob procedure one and only one SendDocument request shall be issued, when using the Job-Based Transfer Model.

Pointers will be freed by the receiving task.

Parameters

type	Signal identity, CSR_BT_BPPC_SEND_DOCUMENT_REQ/IND/RES/CFM.
jobId	The Job identifier obtained in the CreateJob procedure.
mimeMediaType	The MIME Medium Type of the print document. The mimeMediaType must be a null terminated utf-8 text string. For a complete listing of all Media Types Names refers to [MSN].
*documentName	A null terminated 16 bit Unicode text string (UCS2) containing the (document) name of the print object. The function “CsrUtf82Ucs2String” can be used for converting a null terminated UTF8 text string into a null terminated UCS2 text string.

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	Please notice, that it is optional to give a print object a name. If the print object don't require a name *documentName must be set to NULL. If the name is sent it must be CsrPmalloc by the application, the BPP profile will CsrPfree it.
*docTypeDependentInfo	A null terminated 16 bit Unicode text string (UCS2) containing document type dependent information. The function "CsrBtUcs2ByteString" can be used for converting a null terminated UTF8 text string into a null terminated UCS2 text string. Please notice, that it is optional to specify any document type dependent information. If there are no document type dependent information *docTypeDependentInfo must be set to NULL. If the document type dependent information is sent it must be CsrPmalloc by the application, the BPP profile will CsrPfree it.
docTypeDependentInfoLength	The length of the string carrying the document type dependent information.
transferModel	If the application is using the Simple Push Transfer Model this parameter must be set to CSR_BT_SIMPLE_PUSH_TRANSFER_MODEL. If the application is using the Job-Based Transfer Model this parameter must be set to CSR_BT_JOB_BASED_TRANSFER_MODEL. CSR_BT_SIMPLE_PUSH_TRANSFER_MODEL and CSR_BT_JOB_BASED_TRANSFER_MODEL are defined in csr_bt_BPPC_prim.h.
*printContent	The printContent object or a part of it (i.e., in case of a multi packet operation). This must be CsrPmalloc by the application and is CsrPfree by the BPP profile
printContentLength	The length of the printfContent.
finalFlag	The finalFlag must be set to TRUE if the printContent object fits in one packet, or if it is the last packet of a multi packet operation.
responseCode	The valid result codes are defined in csr_bt_obex.h. The CSR_BT_OBEX_SUCCESS_RESPONSE_CODE indicates that the document is sent to the printer with success, while any other response code indicates a failure in sending the document. The responseCodes are defined in (csr_bt_obex.h) with the following type CsrBtObexResponseCode and can also be found in IrDA Object Exchange Protocol.

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4.10 CSR_BT_BPPC_ACTIVATE

Primitives \ Parameters	type	appHandle	supportedProfiles	obexMaxPacketSize	windowSize	srmEnable
CSR_BT_BPPC_ACTIVATE_REQ	✓	✓	✓	✓	✓	✓

Table 10: CSR_BT_BPPC_ACTIVATE Primitive

Description

This signal is used for activating the BPP Object Channel and make it connectable. The process includes:

1. Registering the OBEX BPP service in the service discovery database.
2. Enabling page scan.

The BPP will remain activated until a CSR_BT_BPPC_DEACTIVATE_REQ is received.

Parameters

type	Signal identity, CSR_BT_BPPC_ACTIVATE_REQ.
appHandle	The identity of the calling process. It is possible to initiate the procedure by any higher layer process as the response is returned to appHandle.
supportedFeatures	This should be set to ANY_TYPE_SUPPORT, defined in csr_bt_obex.h.
obexMaxPacketSize	To control the maximum allowed obex packet size the application can receive. There is a define CSR_BT_MAX_OBEX_SIGNAL_LENGHT (in csr_bt_obex.h) to be used for this value, the max allowed value is 64K bytes – 1.
windowSize	Controls how many packets the OBEX profile (and lower protocol layers) are allowed to cache on the data receive side. A value of zero (0) will cause the system to auto-detect this value.
srmEnable	Enable local support for Single Response Mode.

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4.11 CSR_BT_BPPC_DEACTIVATE

Primitives \ Parameters	type
CSR_BT_BPPC_DEACTIVATE_REQ	✓
CSR_BT_BPPC_DEACTIVATE_CFM	✓

Table 11: CSR_BT_BPPC_DEACTIVATE Primitives

Description

This signal deactivates the BPP Object Channel. The service cannot be re-activated until after the application has received a CSR_BT_BPPC_DEACTIVATE_CFM.

The service will no longer be connectable.

Parameters

type Signal identity, CSR_BT_BPPC_DEACTIVATE_REQ/CFM.

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4.12 CSR_BT_BPPC_AUTENTICATE

Primitives \ Parameters	type	options	realmLength	* realm	deviceAddr	passwordLength	*password	*userId
CSR_BT_BPPC_AUTHENTICATE_IND	✓	✓	✓	✓	✓			
CSR_BT_BPPC_AUTHENTICATE_RES	✓					✓	✓	✓

Table 12: CSR_BT_BPPC_AUTHENTICATE Primitives

Description

The indication and response signal is used when the printer wants to OBEX authenticate the application. The application has to response with the password or pin number in the responsePassword and responseUserId for the Printer to identify the proper password. Pointers will be freed by the receiving task.

Parameters

type — Signal identity, CSR_BT_BPPC_AUTHENTICATE_IND/RES.

options — Challenge information of type CsrUint8.

Bit 0 controls the responding of a valid user Id.
If bit 0 is set it means that the application must response with a user Id in a CSR_BT_BPPC_AUTHENTICATE_RES message. If bit 0 is not set the application can just set the userId to NULL.

Bit 1 indicates the access mode being offered by the sender
If bit 1 is set the access mode is read only. If bit 1 is not set the sender gives full access, e.g. both read and write.

Bit 2 - 7 is reserved.

realmLength — Number of bytes in realm of type CsrUint16

* realm — A displayable string indicating for the user which userid and/or password to use. The first byte of the string is the character set of the string. The table below shows the different values for character set.

Note that this pointer must be CsrPfree by the application, and that this pointer can be NULL because the realm field is optional to set by the peer device.

Char set Code	Meaning
0	ASCII
1	ISO-8859-1
2	ISO-8859-2
3	ISO-8859-3

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4	ISO-8859-4
5	ISO-8859-5
6	ISO-8859-6
7	ISO-8859-7
8	ISO-8859-8
9	ISO-8859-9
0xFF = 255	UNICODE

deviceAddr	The Bluetooth address of the device that has initiated the OBEX authentication procedure
passwordLength	The length of the response password.
*password	Containing the response password of the OBEX authentication. This is a pointer which shall be allocated by the application.
*userId	Zero terminated string (ASCII) containing the userId for the authentication. This is a pointer which shall be allocated by the application.

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4.13 CSR_BT_BPPC_ABORT

Primitives \ Parameters	type	channelId
CSR_BT_BPPC_ABORT_REQ	✓	✓
CSR_BT_BPPC_ABORT_CFM	✓	✓

Table 13: CSR_BT_BPPC_ABORT Primitives

Description

The CSR_BT_BPPC_ABORT_REQ is used when the apps decides to terminate a multi-packet operation (such as GET/PUT) before it normally ends. The CSR_BT_BPPC_ABORT_CFM indicates that the server has received the abort response and the server is now resynchronized with the client. If the server does not respond the Abort Request or it response with a response code different from CSR_BT_OBEX_SUCCESS_RESPONSE_CODE, the profile will disconnect the Bluetooth connection and send a CSR_BT_DISCONNECT_IND to the application.

Parameters

type	Signal identity, CSR_BT_BPPC_ABORT_REQ/CFM.
channelId	The channel on which the CSR_BT_BPPC_ABORT_REQ should be sent

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4.14 CSR_BT_BPPC_DISCONNECT

Parameters / Primitives	type	normalDisconnect	connectionId	channelId	reasonCode	reasonSupplier
CSR_BT_BPPC_DISCONNECT_REQ	✓	✓				
CSR_BT_BPPC_DISCONNECT_IND	✓		✓	✓	✓	✓

Table 14: CSR_BT_BPPC_DISCONNECT Primitives

Description

To disconnect a connection to an Imaging Printer (if any), the application must send a CSR_BT_BPPC_DISCONNECT_REQ to BPP which will disconnect all open channels to the printer. When disconnected, BPP will respond with a CSR_BT_BPPC_DISCONNECT_IND for each channel. If the link is dropped in the middle of a session the application will receive a CSR_BT_BPPC_DISCONNECT_IND for the channels indicating that the OBEX printing session is finished, and BPP is ready to start a new session.

The disconnect messages between the OBEX Printing client and Server is guarded by a timer, thus if for some reason the server do not reply to the OBEX disconnect request within a fixed time interval the Bluetooth connection is disconnected direct. The timeout functionality is per default set to five seconds. The timeout value can be disable, or change by changing CSR_BT_OBEX_DISCONNECT_TIMEOUT, which is define in csr_bt_user_config.default.h. Note if the value of CSR_BT_OBEX_DISCONNECT_TIMEOUT is change, it will influence all OBEX profiles.

Parameters

type	Signal identity, CSR_BT_BPPC_DISCONNECT_REQ/IND.
normalDisconnect	FALSE defines an Abnormal disconnect sequence where the Bluetooth connection is release direct. TRUE defines a normal disconnect sequence where the OBEX connection is release before the Bluetooth connection.
connectionId	The value is always zero.
channelId	Informs which channel has been disconnected, can be Job, Status, or Object Channel.
reasonCode	The reason code of the operation. Possible values depend on the value of reasonSupplier. If e.g. the reasonSupplier == CSR_BT_SUPPLIER_CM then the possible reason codes can be found in csr_bt_cm_prim.h. If the reasonSupplier == CSR_BT_SUPPLIER_OBEX then the possible result codes can be found in csr_bt_obex.h. All values which are currently not specified in the respective prim.h files or csr_bt_obex.h are regarded as reserved and the application should consider them as errors.
reasonSupplier	This parameter specifies the supplier of the reason given in reasonCode. Possible values can be found in csr_bt_result.h

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4.15 CSR_BT_BPPC_CANCEL_CONNECT

Primitives \ Parameters	type
CSR_BT_BPPC_CANCEL_CONNECT_REQ	✓

Table 15: CSR_BT_BPPC_CANCEL_CONNECT Primitives

Description

This signal cancels an ongoing connection procedure. The result of a CSR_BT_BPPC_CANCEL_CONNECT_REQ will be a CSR_BT_BPPC_CONNECT_CFM with the result code CSR_BT_CANCEL_CONNECT_ATTEMPT (60) if a connection has not been completed, or if one or more of the connections has been completed the response will be a CSR_BT_BPPC_DISCONNECT_IND for the affected channel(s).

Parameters

type Signal identity, CSR_BT_BPPC_CANCEL_CONNECT_REQ.

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4.16 CSR_BT_BPPC_SECURITY_OUT

Parameters / Primitives	type	appHandle	secLevel	resultCode	resultSupplier
CSR_BT_BPPC_SECURITY_OUT_REQ	✓	✓	✓		
CSR_BT_BPPC_SECURITY_OUT_CFM	✓			✓	✓

Table 16: CSR_BT_BPPC_SECURITY_OUT Primitives

Description

Applications that wish to change the enforcement to a specific profile security level, i.e. authentication, encryption and/or authorisation, can use this API to set up the security level for *new* connections. Note that this API is for the local device only and can be used from within any state.

The *CSR_BT_SECURITY_OUT_REQ* signal sets up the security level for new outgoing connections. Already established and pending connections are not altered. Note that *authorisation* should not be used for outgoing connections as that may be confusing for the user – there is really no point in requesting an outgoing connection and afterwards having to authorise as they are both locally-only decided procedures.

Note, that any attempts to set security to a less secure level than the mandatory security level will be rejected. See csr_bt_profiles.h for mandatory security settings. The default settings used by CSR Synergy Bluetooth are set to require authentication and encryption.

Note that if MITM protection is requested and the remote device does not have the required IO capabilities, pairing/bonding will fail and connections to the remote device *cannot* be made. See [SC] for further details.

Parameters

type — Signal identity CSR_BT_BPPC_SECURITY_OUT_REQ/CFM.

appHandle — Application handle to which the confirm message is sent.

secLevel — The application must specify one of the following values:

- CSR_BT_SEC_DEFAULT : Use default security settings
- CSR_BT_SEC_MANDATORY : Use mandatory security settings
- CSR_BT_SEC_SPECIFY : Specify new security settings

If CSR_BT_SEC_SPECIFY is set the following values can be OR'ed additionally:

- CSR_BT_SEC_AUTHORISATION: Require authorisation
- CSR_BT_SEC_AUTHENTICATION: Require authentication
- CSR_BT_SEC_ CSR_BT_SEC_ENCRYPTION: Require encryption (implies authentication)
- CSR_BT_SEC_MITM: Require MITM protection (implies encryption)

resultCode — The result code of the operation. Possible values depend on the value of

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	resultSupplier. If e.g. the resultSupplier == CSR_BT_SUPPLIER_CM then the possible result codes can be found in csr_bt_cm_prim.h. If the resultSupplier == CSR_BT_SUPPLIER_OBEX then the possible result codes can be found in csr_bt_obex.h. All values which are currently not specified in the respective prim.h files or csr_bt_obex.h are regarded as reserved and the application should consider them as errors.
resultSupplier	This parameter specifies the supplier of the result given in resultCode. Possible values can be found in csr_bt_result.h

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5 Document References

Document	Reference
Basic Printing Profile Interoperability Specification 11 November 2003	[BPP]
Generic Object Exchange Profile Version 1.1 22 February 2001 Profile section K:10	[GOEP]
IrDA Object Exchange Protocol - IrOBEX Version 1.2 18 March 1999	[OBEX]
PWG-ISTO STD.5101.1. Media Standardized Names. ftp://ftp.pwg.org/pub/pwg/standards/pwg5101.1.pdf	[MSN]
CSR Synergy Bluetooth, SC – Security Controller API Description, Document no. api-0102-sc	[SC]

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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
BPP	Basic Printing Profile
SIG	Special Interest Group

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