

Infrared Data Association

Point and Shoot JetSend™ Profile



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Editor :

Pete Bramhall (Hewlett-Packard)

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1 INTRODUCTION

This chapter covers topics that apply to all IrDA Application Profiles.

1.1 Symbols and Conventions

Referenced documents are identified in [].

JetSend encodings are shown in bold italics, e.g. ***vAssociation***.

In accordance with normal convention for standards, the mandatory nature of a specification is indicated by the use of the verb “shall”.

1.2 Definitions and Acronyms

Push Server – The device that receives the data being exchanged.

Push Client – The device that pushes the data to the Push Server.

Push Server Mode - The state in which a Push Server is ready to receive data from a Push Client.

1.3 References

[IrLAP]	Serial Infrared Link Access Protocol, IrLAP, Version 1.1, Infrared Data Association, http://www.irda.org
[IrLMP]	Link Management Protocol, IrLMP, Version 1.1, Infrared Data Association
[IrPHY]	Serial Infrared Physical Layer Link Specification, IrPHY, Version 1.3, Infrared Data Association
[IrUM]	IrReady 2000 Usage Models, Infrared Data Association
[TINYTP]	Tiny TP: A Flow Control Mechanism for use with IrLMP, Version 1.1, Infrared Data Association
[JetSend]	HP JetSend Communications Technology Protocol Specification, available from http://www.jetsend.hp.com
[IrJetSendAppNote]	JetSend Protocol on IrDA Application Note, Version 1.1, Infrared Data Association
[JetSendDigPhoto]	JetSend for Digital Photography Application Note, Version 1.0, Infrared Data Association
[vCard]	vCard – The Electronic Business Card Exchange Format, Version 2.1, The Internet Mail Consortium, http://www.imc.org/pdi/vcard-21.doc
[vCal]	vCalendar – The Electronic Calendaring and Scheduling Exchange Format, Version 1.0, The Internet Mail Consortium, http://www.imc.org/pdi/vcal-1.0.doc

2 POINT AND SHOOT JETSEND PROFILE

2.1 User Requirements

2.1.1 Scope

This IrDA profile defines the minimum requirements for the protocols and procedures that shall be used by applications implementing the IrDA Point and Shoot Usage Model (see [IrUM]) with JetSend technology. The most common devices implementing this usage model include PCs, notebooks, PDAs, mobile phones, printers and digital cameras.

2.1.2 User Scenarios

The basic scenario covered by this profile is the usage of an IrDA device to push information to another IrDA device, for example, a mobile phone pushing a business card to a printer.

2.1.3 Data Object Types and Encodings

The default IrDA Point and Shoot profile defines a minimal set of data objects which will establish a common denominator for specific classes of data types, so that interoperability between two devices will occur as required by the Point and Shoot usage model.

This IrDA JetSend Point and Shoot profile, however, does not define such a set of data objects. All information exchange between two devices is done through surfaces. A surface is an object that has a name, a description and content. The description enumerates the attributes of the surface. The content is the perceivable information, i.e. the data which the user wishes to transfer.

A surface is expressed as e-material. This is a hierarchical language that provides many grammar types for encoding surfaces. In a JetSend information exchange operation, the sending device may offer multiple e-material encodings; the receiving device selects which encoding shall be used for the actual exchange. Interoperability is obtained by placing the following requirements for encoding and interpreting e-material on the devices which are exchanging information.

The sending device shall encode e-material with the attributes described by the following default encodings, and the receiving device shall be able to interpret e-material with these characteristics :

vAssociation

vPlane

vImage.vGray.1.(300,300).vRLE

Refer to [JetSend] for the encoding specifications.

Note : It is recommended that additional encodings of the e-material be presented by the sending device, if possible. Such encodings permit devices to exchange e-material with higher degrees of fidelity and cohesiveness than those provided by the default encodings, by allowing the receiving device to select the most suitable encoding according to its capabilities and the purpose of the exchange operation. In this context, the term “cohesiveness” describes the degree to which the final structure and representation of the information in the receiving device are equivalent to the original structure and representation of the information in the sending device. For example, when information that is originally in a vCard file (see [vCard]) in the sender is transmitted in a ***vImage*** encoding, the exchange has low cohesiveness; when the same information is transmitted in a ***vFile.vCard*** encoding, the exchange has total cohesiveness and so the receiving device can create an exact copy of the information representation on the sending device.

Examples of additional encodings are :

vImage.vGray.8.(150,150).vRLE
vImage.vGray.8.(150,150).vNone
vImage.vSRGB.24.(150,150).vNone
vFile
vText

The first three of these offer grayscale and color attributes for image data. ***vText*** offers cohesiveness of text data. ***vFile*** offers total cohesiveness of data that is formatted according to a particular file format, e.g. vCard or vCalendar (see [vCard], [vCal]).

2.1.4 Device Support

For each data object type within the Point and Shoot usage model, a sending device shall either support at least all the default encodings listed in 2.1.3 or shall not offer the user a JetSend data transfer service for that data object type.

For each JetSend data surface presented to a receiving device, that device shall request from the sending device the encoding that offers the highest cohesiveness, integrity and fidelity that is appropriate to the transaction.

2.2 Profile Overview

2.2.1 Configuration and Roles

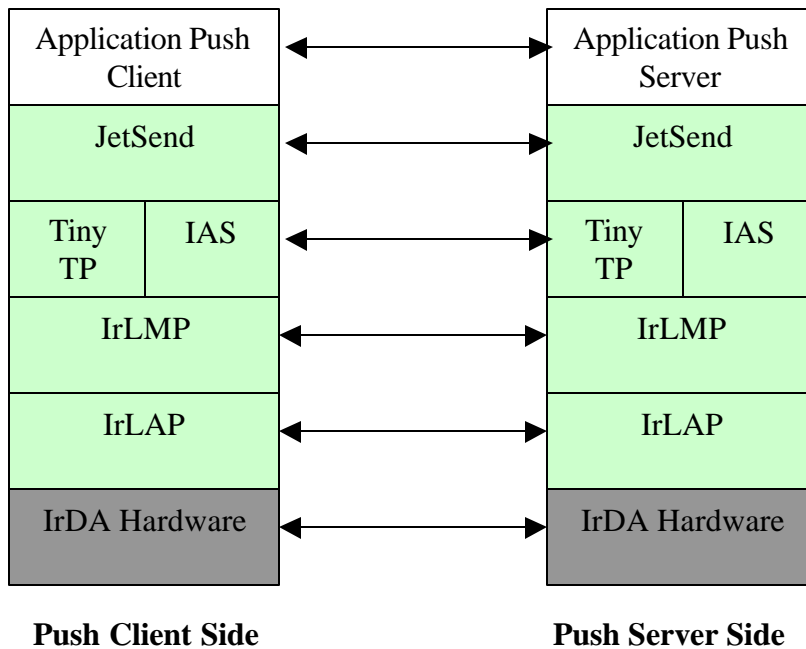
The following roles are defined for this profile :

The Push Server shall wait passively for the client to initiate the data exchange operation.

The Push Client shall initiate the data exchange operation.

2.2.2 Protocol Stack

The following protocol stack shall be used.



IrDA Hardware is governed by the [IrPHY]

IrLAP is the link level protocol specified in [IrLAP].

IrLMP is a multiplexing layer specified in [IrLMP]

Tiny TP provides flow control and is specified in [TINYTP]

IAS is the Information Access Service specified in [IrLMP]

Application Push Client and **Application Push Server** are the application entities which provide the user interface and the highest level of control over the initiation and operation of the Point and Shoot profile.

2.2.3 Conformance

A device for which conformance to this profile is claimed shall support all capabilities indicated as mandatory for this profile in the specified manner. All supported optional and conditional capabilities shall be supported in the specified manner.

Note : Certification of conformity is contingent upon a successful pass through the JetSend conformance test suite. Details are available from <http://www.jetseend.hp.com>

2.3 User Interface Aspects

2.3.1 Mode Selection

A Push Server shall be in Push Server Mode whenever its physical IR port is enabled, i.e. is able to receive signals. When entering this mode the Push Server shall register the JetSend IAS entry and set the JetSend service hint bit (see 2.6 and 2.7). When in this mode it shall be in a state where it is ready to respond to incoming Discovery frames and accept an incoming JetSend connection.

2.3.2 Function Selection

The Push Client user initiates the sending of information to the Push Server. For example, in the Windows environment the user selects a file in the Explorer window, clicks the right mouse button and selects “JetSend” from the “Send to” menu. When the selection is made the data exchange function is started.

The Push Client user shall select the desired Push Server by pointing the IR port of the Push Client at it.

2.3.3 Application Usage

When the user wants to send information from a Push Client to a Push Server the following scenario shall be followed.

Push Client	Push Server
	The user sets the device into Push Server Mode if it is not already.
The user of the Push Client selects the information to send.	
The user points the IR port of the Push Client device at the IR port of the Push Server device.	
The user selects the Data Exchange Function to send the selected information. It is recommended that a progress bar show the progress of the operation.	
	It is recommended that user intervention be kept to a minimum on the Server device. It is possible that the user may be asked, for example, to accept or reject the information or to select the encoding to be used for the exchange.
The device shall notify the user of the result of the operation.	It is recommended that, where appropriate, the user be notified of the result of the operation.

The scenario described above is the typical case. If an IrLAP connection already exists between the Push Client and Push Server then the Push Client shall not initiate an exchange of information to the Push Server if the Push Server is in the process of exchanging information to the Push Client. In this case the Push Client may adopt one of the following alternative behaviors:

1. Not provide a user interface to push objects while objects are being pushed to it, or
2. Fail the attempt to push objects, or
3. Postpone the push operation until the other device is finished.

2.4 Application Layer

2.4.1 Feature Overview

A device conforming to this profile shall be able to perform the functions of a Push Client or a Push Server or both. It shall support at least one of the content types listed in 2.4.2.

2.4.2 Content Types

The content types that are candidates for data transfer under the IrDA Point and Shoot Usage Model, and hence, if transferred by JetSend within that model, shall be so transferred in accordance with this profile are:

- Business cards, Contact lists, Contact detail lists
- Appointments, Task lists, Alarms
- Text notes
- Messages
- Images
- Text files
- Generic files

2.4.3 Generic File Push (*vFile*)

It is assumed that in this case both devices contain applications that understand the file format or that the file is simply stored on the receiving device.

2.4.4 Application Architecture

Application Push Clients and Push Servers shall be built on top of the JetSend application framework and shall conform to the requirements of 2.3.3. Refer to [IrJetSendAppNote].

2.5 JetSend layer

Refer to [JetSend] for the JetSend Protocol Specification. Also, [IrJetSendAppNote] provides supplementary information that is intended to assist implementers, and [JetSendDigPhoto] provides further information and examples that are intended to assist implementers of digital photography data exchange applications.

2.6 Tiny TP/IrLMP

Tiny TP and IrLMP combined form the IrDA transport layer. The Push Client shall set up a Tiny TP connection to a Push Server as follows:

1. Push Client discovers the Push Server and establishes an IrLAP connection.
2. Push Client queries the IAS of the Push Server for the LsapSel entry of the JetSend IAS entry (see 2.7).
3. Push Client performs a Tiny TP connect request to the LsapSel retrieved in step 2.

The Push Server may support one or more additional IrDA Point and Shoot data exchange protocols and profiles. The JetSend Push Client shall attempt to discover the JetSend service first; it shall be utilized if available. If a JetSend service is not available on the Push Server, the Push Client may then attempt to discover the default Point and Shoot service.

2.6.1 Discovering the Push Server

The Push Client shall discover the Push Server using the IrLMP discovery service described in [IrLMP] unless the Push Client already has an IrLAP connection to another device, in which case the Push Server is assumed to be this other device.

The JetSend IrLMP service hint bit has a value of 0x20 in the second hint byte. This indicates that the device supports at least one method of information exchange. This bit shall be set.

2.6.2 Establishing a Tiny TP Connection

The Push Client shall establish a Tiny TP connection to the Push Server using the Connect request procedure described in [TINYTP]. The TinyTP MaxSDUSize parameter is not permitted. The TinyTP layer does not perform segmentation and re-assembly.

2.7 IAS

The Push Server shall have an IAS entry [refer to IrLMP] in which the classname is set to “JetSend” and the LsapSel attribute is present with a value in the range 0x01 to 0x6F.

3 INTEROPERABILITY TESTING

The minimum requirements for interoperability testing of devices that claim conformance to this profile are as follows :

For receiving devices :

The device shall demonstrate successful reception of a surface from at least one device in each of the following classes :

- (i) devices which offer only the default encodings (see 2.1.3)
- (ii) devices which also offer an encoding at the highest level of fidelity and cohesiveness (as defined in 2.1.3) that the receiving device can handle
- (iii) devices which also offer higher levels of fidelity and cohesiveness (as defined in 2.1.3) than the receiving device can handle.

For sending devices :

The device shall demonstrate successful transmission of a surface to at least one device in each of the following classes :

- (i) devices which request only the default encodings (see 2.1.3)
- (ii) devices which request encodings at the highest level of fidelity and cohesiveness that the sending devices offers.

For devices that send and receive :

The device shall meet the appropriate requirement, above, for the send case and for the receive case.

Specific test plans that meet these requirements shall be created and executed. These plans shall identify specific interoperating devices and specific information to send and/or receive.