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IPP Fax Protocol

IEEE-ISTO Printer Working Group
Draft Standard D0.6

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41 ISSUES are highlighted like this.

Abstract

This standard specifies the IPP Fax (IPPFAX) protocol. The IPPFAX requirements [15] are derived from the requirements for Internet Fax [1].

In summary IPPFAX is used to provide a synchronous, reliable exchange of image Documents between clients and servers. The primary use envisaged of this protocol is to provide a synchronous image transmission service for the Internet. Contrast this with the Internet FAX protocol specified in [2] and [3] that uses the SMTP mail protocol as a transport.

The IPPFAX protocol uses an extended version of IPP/1.1 [4], [5] to create IPPFAX Jobs and REQUIRES that the IPPFAX Receiver support at least the Universal Image Format (UIF) [14] document format. The IPPFAX Receiver MAY also be configured to accept ordinary IPP Jobs concurrently with IPPFAX Jobs.

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61 Table of Contents

62 1 Introduction..... 6

63 1.1 Namespace used..... 6

64 2 Terminology 6

65 2.1 Conformance Terminology..... 6

66 2.2 Other Terminology..... 6

67 2.3 Required exchange..... 7

68 2.4 Gateways 8

69 3 Common IPPFAX Operation Semantics..... 8

70 3.1 Network Address of Target Receiver - “printer-uri” operation attribute..... 9

71 3.2 ippfax-semantic (type2 keyword) Operation/Job Description attribute..... 9

72 3.2.1 ippfax-semantic-supported (1setOf type2 keyword) Printer Description attribute 10

73 4 Get-Printer-Attributes operation semantics..... 11

74 4.1 Get-Printer-Attributes operation attributes 11

75 4.1.1 ippfax-semantic (type2 keyword) operation attribute..... 11

76 4.1.2 ippfax-uif-profiles (1setOf type2 keyword) operation attribute..... 11

77 4.1.3 document-format (mimeMediaType) operation attribute..... 12

78 4.2 Printer Description attributes..... 12

79 4.2.1 document-format-supported (1setOf mimeMediaType) Printer Description attribute..... 12

80 4.2.2 operations-supported Printer Description attribute..... 12

81 5 The values of the “operations-supported” (1setOf type2 enum) Printer Description attribute will

82 depend on the value of the “ippfax-semantic” operation attribute supplied by the Sender. For

83 example, if the IPPFAX Receiver does not support the Cancel-Job operation for IPPFAX Jobs (see

84 section 8.2), then the Cancel-Job enum is not returned as the value of the “operations-supported”

85 attribute. IPPFAX Printer Description Attributes..... 12

86 5.1 ippfax-versions-supported (1setOf type2 keyword) Printer Description attribute..... 13

87 5.1.1 Fallback to IPP Mode..... 14

88 5.2 ippfax-semantic-supported (1setOf type2 keyword) Printer Description attribute 14

89 5.3 document-format-supported (1setOf mimeMediaType) Printer Description attribute..... 15

90 5.4 ippfax-uif-profiles-supported (1setOf type2 keyword) Printer Description attribute 15

91 5.5 ippfax-uif-profile-capabilities (1setOf text(MAX)) Printer Description attribute..... 16

92 5.6 Other Printer Description Attributes..... 16

93 5.7 xxx-supported Job Template Printer attributes..... 17

94 5.7.1 media-supported and media-ready Job Template Printer attributes..... 17

95 5.7.2 printer-resolution-supported Job Template Printer attribute 17

96 5.7.3 Other Job Template xxx-default and xxx-supported Printer attributes 18

97 6 Identity exchange..... 18

98 6.1 ippfax-sending-user-vcard (1setOf text(MAX)) operation/Job Description attribute..... 18

99 6.2 ippfax-receiving-user-vcard (text(MAX)) operation/Job Description attribute..... 19

100 6.3 ippfax-sender-uri (uri) operation/Job Description attribute..... 19

101 6.4 printer-uri-supported (1setOf uri) Printer Description attribute..... 19

102 7 Data Exchange - IPPFAX Job Submission..... 20

103 7.1 Validating the Job using the Validate-Job operation..... 20

104 7.2 Transmission using the Print-Job or other Job Creation operation..... 20

105 7.2.1 IPP/1.1 Validate-Job and Job Creation operation attributes 20

106 7.2.1.1 ippfax-semantic (type2 keyword) operation/Job Description attribute..... 21

107 7.2.1.2 document-format (mimeMediaType) operation attribute..... 22

108 7.2.1.3 ippfax-uif-profiles (1setOf type2 keyword) operation attribute..... 22

109 7.3 Job Template Attributes 23

110 7.3.1 media (type2 keyword | name(MAX)) Job Template attribute..... 25

111 7.3.2 printer-resolution (resolution) Job Template attribute 25

112 7.4 Confirmation using the Document Creation response..... 25

113 7.5 notification-recipient-uri operation attribute and the Get-Notifications operation..... 26

114 7.6 Subscription Template Attributes Conformance Requirements..... 26

115 7.7 Notification Event Conformance Requirements 27

116 7.8 Identity Stamping..... 27

117 8 IPP Implementation of other IPP operations..... 28

118 8.1 Operation Conformance Requirements 28

119 8.2 Canceling jobs..... 29

120 8.3 Querying jobs using Get-Job-Attributes and Get-Jobs operations..... 30

121 8.4 Job submission..... 30

122 9 Security considerations 31

123 9.1 Privacy..... 31

124 9.2 ippfax-sending-user-certificate-uri (uri operation/Job Description attribute 31

125 9.3 Access control 31

126 9.4 Reduced feature set..... 32

127 10 Gateways to other systems 32

128 10.1 Off-Ramps 32

129 10.1.1 ippfax-off-ramp-uri (uri) operation attribute and Job Description attribute 33

130 10.1.1.1 ippfax-off-ramp-schemes-supported (1setOf uriScheme) Printer Description attribute..... 33

131 10.1.2 ippfax-off-ramp-retry-count (integer(0:MAX)) Job Description attribute 33

132 10.1.3 ippfax-off-ramp-max-retry-count (integer(0:MAX)) operation/Job Description attribute..... 34

133 10.1.3.1 ippfax-off-ramp-retry-count-default (integer(0:MAX)) Printer Description attribute 34

134 10.1.3.2 ippfax-off-ramp-retry-count-supported (rangeOfInteger(0:MAX)) Printer Description
135 attribute 34

136 10.1.4 ippfax-off-ramp-retry-interval (integer(0:MAX)) operation/Job Description attribute..... 34

137 10.1.4.1 ippfax-off-ramp-retry-interval-default (integer(0:MAX)) Printer Description attribute..... 34

138 10.1.4.2 ippfax-off-ramp-retry-interval-supported (rangeOfInteger(0:MAX)) Printer Description
139 attribute 34

140 10.2 On-Ramps..... 35

141 11 Attribute Syntax..... 35

142 12 Status codes..... 35

143 12.1 client-error-missing-required-attribute (0x0419)..... 35

144 13 Conformance Requirements 35

145 14 IANA Considerations..... 36

146 15 Appendix B: vCard Example 36

147 16 Appendix C: Generic Directory Schema for an IPPFAX Receiver..... 36

148 17 References 38

149 18 Revision History (to be removed when standard is approved)..... 39

150

151 **ISSUE 01: We did a lot of name changing at the telecon. Are these attribute names ok now? Check**
 152 **the TOC to see all the names together.**

153 **ISSUE 02: I'm not completely happy with the organization of the document. Each attribute has its**
 154 **own section, so it appears in the TOC. Also I've tried to put the corresponding "xxx-supported" right**
 155 **next to the "xxx" attribute description, but in a separate section. However, several operation attributes**
 156 **appear more than once: "ippfax-semantic", "ippfax-profiles", and "document-format". Any**
 157 **suggestions or is this OK?**

158 **Table of Tables**

159 Table 1 - Printer Description attributes conformance requirements in the Get-Printer-Attributes
 160 operation..... 17

161 Table 2 - IPP/1.1 Validate-Job and Job Creation operation attributes 21

162 Table 3 - IPPFAX Semantics for Job Template Attributes 23

163 Table 4 - Subscription Template attributes conformance requirements..... 27

164 Table 5 - Notification Events conformance requirements..... 27

165 Table 6 - Operation Conformance Requirements 28

166 Table 7 - REQUIRED Off-Ramp Attributes 32

167 Table 8 - Generic Schema Directory Entries 37

168

168

169 **1 Introduction**

170 This standard specifies the IPP Fax (IPPFAX) protocol. The IPPFAX requirements [15] are derived
171 from the requirements for Internet Fax [1].

172 IPP Fax (IPPFAX) is primarily intended as a method of supporting a synchronous, secure, high quality
173 document distribution protocol over the Internet. It therefore discusses paper, pages, scanning and
174 printing, etc. There is however no requirement that the input documents comes from actual paper nor is
175 there a requirement that the output of the process be printed paper. The only conformance
176 requirements are those associated with the exchange of data over the network.

177 The IPPFAX protocol uses an extended version of IPP/1.1 [4], [5] to create IPPFAX Jobs and
178 **REQUIRES** that the IPPFAX Receiver support at least the Universal Image Format (UIF) [14]
179 document format. IPPFAX Receivers **MAY** also be configured to accept ordinary IPP Jobs
180 concurrently with IPPFAX Jobs. Note - It is assumed that the reader is familiar with IPP[4],[5],[6].

181 In summary IPPFAX is used to provide a synchronous, reliable exchange of image documents between
182 clients and servers. The primary use envisaged of this protocol is to provide a synchronous image
183 transmission service for the Internet. Contrast this with the Internet FAX protocol specified in [2] and
184 [3] that uses the SMTP mail protocol as a transport.

185 **1.1 Namespace used**

186 The extension specified in this standard uses the prefix 'ippfax-' for all new IPP attributes defined.

187 **2 Terminology**

188 This section defines the following additional terms that are used throughout this standard.

189 **2.1 Conformance Terminology**

190 Capitalized terms, such as **MUST**, **MUST NOT**, **REQUIRED**, **SHOULD**, **SHOULD NOT**, **MAY**,
191 **NEED NOT**, and **OPTIONAL**, have special meaning relating to conformance to this specification.
192 These terms are defined in [RFC2911] section 13.1 on conformance terminology, most of which is
193 taken from RFC 2119 [RFC2119].

194 **2.2 Other Terminology**

195 This standard defines a logical model of an IPPFAX interchange. The following terms are introduced
196 and capitalized in order to indicate their specific meaning:

- 197 **Sender** This is the IPPFAX agent (IPP client software, hardware or some combination) that is used to
198 create and transmit a Document to a Receiver.
- 199 **Receiver** This is the IPPFAX agent (IPP Printer object which can be software, hardware or some
200 combination) that receives the Document sent by the Sender.
- 201 **Document** The electronic representation of a set of one or more pages that the Sender sends to the
202 Receiver.
- 203 **Sending User** The person interacting with the Sender.
- 204 **Receiving User** The intended human recipient of the Document being sent.
- 205 **Attribute Coloring** The changing of attributes and/or values returned in a Get-Printer-Attributes
206 response depending on operation attributes supplied in the request.
- 207 **Job Creation Operation** The IPP operations that creates IPP or IPPFAX Jobs, i.e., the Print-Job,
208 Print-URI, and Create-Job operations (see [4]).
- 209 **IPP Job** A job submitted by a Sender using the IPP Protocol [4, 5] with the “ippfax-semantics”
210 operation attribute either omitted or with the ‘ipp’ value in the Job Creation operation.
- 211 **IPPFAX Job** An IPP job submitted by a Sender using the IPPFAX Protocol (this document) with the
212 “ippfax-semantics” operation attribute with the ‘ippfax’ value in the Job Creation operation and which
213 has been properly authenticated according to the IPPFAX rules.
- 214 **Universal Image Format (UIF)** A document format similar to TIFF/FX, but with higher conformance
215 requirements for improved quality (see [14]).
- 216 **UIF Profile** A minimum set of capabilities of the UIF document format. The UIF specification [14]
217 defines a number of UIF Profiles.
- 218 **Delivered** The Receiver has either printed the Document and delivered the last sheet to the output bin
219 or has forwarded the Document to some other system.
- 220 The terminology defined in [5], such as **attribute**, **operation**, **request**, **response**, **operation attribute**,
221 **Printer Description attribute**, and **Job Description attribute** is also used in the standard with the
222 same capitalization conventions.

223 **2.3 Required exchange**

- 224 The Sending User determines the network location of the Receiver (value of the “printer-uri” operation
225 attribute) – see section 3.1. This standard does not specify how the Sending User does this. Possible
226 methods include directory lookup, search engines, business cards, network enumeration protocols such
227 as SLP, etc.

- 228 1. The Sending User either (1) loads the Document into the Sender or (2) causes the Sender to
229 generate the Document data by means outside the scope of this standard, indicates the Receiver's
230 network location and starts the exchange.
- 231 2. The Sender determines whether or not the Receiver is an IPPFAX capable device and is currently
232 configured to perform IPPFAX operations – see sections 5.1 and 5.2. If the Receiver is not
233 configured to accept IPPFAX operations, the Sender MUST query the Sending User to determine
234 whether to fallback to IPP mode – see section 5.1.1.
- 235 3. The Sender determines the rest of the capabilities of the IPPFAX Receiver (see rest of section 5).
- 236 4. The following identities are determined and exchanged: Sender, Sending User, Receiver, and
237 Receiving User – see section 6.
- 238 5. The Sender decides on the most appropriate data format depending on the Receiver's capabilities.
239 This is described in detail in the UIF specification [14].
- 240 6. The Sender SHOULD validate whether or not the Receiver will accept the IPPFAX Job from this
241 Sending User using the Validate-Job operation. See section 7.1. If the Receiver rejects the
242 Validate-Job operation, the Sender can avoid sending the data.
- 243 7. The Sender either (1) scans the Document and converts it into an acceptable data format or (2)
244 generates or forwards the Document representation in an acceptable data format – see section 5.3.
- 245 8. This Document data is transmitted to the Receiver – see section 7.2.
- 246 9. The Sending User receives a confirmation that the Receiver received the Document – see section
247 7.4.
- 248 10. In addition the Sender MAY choose to receive notification that the Document has been successfully
249 Delivered – see section 7.5
- 250 If the Sender is unable to initiate or complete the exchange then it is assumed that the Sender will
251 perform some form of retry. The mechanisms used and the user-visible behavior in this case is an
252 implementer's choice and beyond the scope of this standard.

253 **2.4 Gateways**

254 The IPPFAX protocol MAY be used as a gateway protocol to or from other image transmission
255 systems. See section 10.

256 **3 Common IPPFAX Operation Semantics**

257 This section describes the IPPFAX semantics that are common to all operation. IPPFAX does not
258 define any new operations. Instead, IPPFAX semantics are provided using existing IPP operations [4,

259 11, 16, 17, etc.] with increased conformance requirements as specified in this document. This section
260 describes the general semantics for all IPPFAX operations. Section 4 describes the Get-Printer-
261 Attributes operation in particular. Section 7 describes the IPPFAX semantics for the Job Creation
262 operations and section 8 describes the IPPFAX semantics for all other operations.

263 3.1 Network Address of Target Receiver - “printer-uri” operation attribute

264 In each operation, the IPP Target, i.e., the “printer-uri” (uri) operation attribute, MUST be the
265 Receiver's network location which MUST be an IPP/1.1 URL using the 'ipp' scheme. See [12].

266 Example: <ipp://www.acme.com/ipp/print5>

267 **ISSUE 03: OK that we are using the 'ipp:' scheme for both IPP and IPPFAX protocols?**

268 **ISSUE 04: Can 'http' scheme be used in the “printer-uri” target attribute? Will 'http' be more likely to**
269 **be configured to get through firewalls? What can a standards track RFC say about this since IPP/1.1**
270 **REQUIRES the use of the 'ipp' scheme?**

271 **ISSUE 05: OK that we are forced to use the same default port for IPPFAX as for IPP? So if a**
272 **Receiver is configured to only receive IPPFAX Jobs from outside its firewall, but receive IPP Jobs from**
273 **inside its firewall, one or the other will be forced to supply an explicit (different) port?**

274 3.2 ippfax-semantics (type2 keyword) Operation/Job Description attribute

275 This operation attribute is defined for all IPP operations and indicates whether the Sender wants IPP or
276 IPPFAX semantics for the operation. A Sender MUST supply and a Receiver MUST support this
277 operation attribute in *all* operations that are implemented. A Sender MUST supply this operation
278 attribute with the 'ippfax' value in order for the Receiver to perform the IPPFAX semantics defined in
279 this document. If the Sender supplies this attribute with the 'ipp' value or omits this operation attribute,
280 the Receiver MUST behave as an IPP/1.1 Printer with any IPP extensions, unless explicitly stated
281 otherwise in this document.

282 Standard keyword values are:

283 'ipp': perform IPP semantics [RFC2910], plus any IPP extensions

284 'ippfax': perform IPPFAX semantics as defined in this document

285

286 For each operation, the Receiver MUST compare the value supplied by the Sender with the Receiver's
287 “ippfax-semantics-supported” Printer Description attribute (see section 3.2.1). If the value supplied is
288 not a value of the Receiver's “ippfax-semantics-supported” Printer Description attribute, the Receiver
289 MUST reject the request and return the 'client-error-attributes-or-values-not-supported' status code
290 along with the attribute and value in the Unsupported Attributes Group. If the client omitted the
291 attribute, and the Receiver's “ippfax-semantics-supported” Printer Description attribute contains the
292 'ipp' value (or both 'ipp' and 'ippfax'), then the Receiver accepts the request; otherwise (only the

293 'ippfax' value is configured), the Receiver MUST reject the request and return the 'client-error-missing-
294 required-attribute' along with the 'ippfax-antics' attribute name keyword in the Unsupported
295 Attributes Group.

296 **ISSUE 06:** If an IPPFAX Receiver is configured for IPP only, should it still accept an IPPFAX job,
297 rather than rejecting it, but perform it with IPP semantics? That is what an IPP/1.1 Printer would do
298 that doesn't know about the IPPFAX spec and the IPP Sender won't make this mistake, since it MUST
299 query to determine if the Receiver is currently accepting IPPFAX requests.

300 **ISSUE 07:** OK to add the new 'client-error-missing-required-attribute' status code? The existing
301 'client-error-bad-request' status code isn't sufficient, since we want to return the missing attribute
302 rather than indicate something wrong with what was submitted. Also the existing 'client-error-
303 forbidden' is too mysterious, since it suggests an authorization and/or authentication problem. In the
304 past, missing REQUIRED attributes are developer errors, so that the 'client-error-bad-request' was
305 sufficient. But this error can happen to a customer who has turned off IPP (or the implementation only
306 supports IPPFAX semantics). This new status code can be used for other cases where 'client-error-
307 bad-request' is used.

308 Note: an IPP/1.1 Printer that is unaware of the IPPFAX specification will simply ignore the "ippfax-
309 semantics" operation attribute (see [RFC2911] section 5.2.2) and accept an IPPFAX Job because it
310 doesn't know any better. Hence, the REQUIREMENT on the Sender to query the Receiver to
311 ascertain that the Receiver is an IPPFAX aware Printer and is configured to accept IPPFAX Jobs.

312 **3.2.1 ippfax-antics-supported (1setOf type2 keyword) Printer Description attribute**

313 The Sender MUST query this Printer Description attribute using the Get-Printer-Attributes operation
314 before sending any other IPPFAX operation; the Receiver MUST support this Printer Description
315 attribute. A Receiver implementation MUST support the 'ippfax' value and MAY also support the
316 'ipp' value. A Receiver implementation MAY be able to be configured with either or both of these
317 values. This attribute identifies the type(s) of semantics that the Receiver is currently configured to
318 support. If this attribute is not returned, then the Printer is NOT an IPPFAX Receiver. The values of
319 this attribute MUST NOT depend on the value of the "ippfax-antics" operation attribute supplied by
320 the client.

321 Standard keyword values are defined in section 3.2:

322 If this attribute contains only the 'ipp' value, then the Printer object is not currently operating as an
323 IPPFAX Receiver and is exhibiting IPP semantics only. If this attribute contains only the 'ippfax' value,
324 then the Printer is currently operating with IPPFAX semantics only. If this attribute contains both
325 values, then the Receiver is supporting both IPP and IPPFAX semantics concurrently, depending on the
326 value supplied by the client in each operation request.

327 A Receiver MAY support allowing a remote administrator to configure the value of this attribute using
328 the Set-Printer-Attributes operation [17], in which case this attribute is a READ-WRITE attribute.

329 In IPP/1.1 [4], the “printer-is-accepting-jobs” Printer attribute is a READ-ONLY attribute and cannot
330 be changed by the Set-Printer-Attributes operation. The Enable-Printer and Disable-Printer operations
331 change the value of the “printer-is-accepting-jobs” Printer attribute. The Enable-Printer and Disable-
332 Printer operations apply to IPPFAX Jobs, as well as IPP Jobs.

333 **4 Get-Printer-Attributes operation semantics**

334 In order to obtain the IPPFAX semantics for the Get-Printer-Attributes operation, the Sender MUST
335 supply the “ippfax-semantics” with the ‘ippfax’ value (see section 3.2). If the Sender supplies this
336 attribute with the ‘ipp’ value or omits the attribute, the Receiver responds with IPP semantics.

337 The Receiver MUST perform Attribute Coloring depending on the value of the “ippfax-semantics”
338 operation attribute supplied by the Sender, i.e., return values in the Get-Printer-Attributes response that
339 depend on the value supplied by the Sender. Note: IPP/1.1 defines OPTIONAL Attribute Coloring for
340 the “document-format” operation attribute in a Get-Printer-Attributes operation which is also
341 OPTIONAL for IPPFAX semantics.

342 **4.1 Get-Printer-Attributes operation attributes**

343 This section describes the new operation attributes and the enhancements to existing operation
344 attributes of the Get-Printer-Attributes operation.

345 **4.1.1 ippfax-semantics (type2 keyword) operation attribute**

346 If the Sender supplies the “ippfax-semantics” operation attribute, the semantics are affected as described
347 in this section. See section 3.2 for more details about this operation attribute.

348 Conversely, if the Sender supplies the “ippfax-semantics” attribute with either the ‘ipp’ value or omits
349 the “ippfax-semantics” operation attribute all together, then the Receiver MUST return the union of the
350 attributes for IPP and IPPFAX Jobs in the Get-Printer-Attributes response. This requirement permits
351 the Sender to determine the IPP and IPPFAX capabilities in a single query. However, if the Sender
352 wants to determine which additional document formats the Receiver supports for IPPFAX Jobs (such as
353 PDF), the Sender MUST make a second request and supply the “ippfax-semantics” operation attribute
354 with the ‘ippfax’ value.

355

356 **4.1.2 ippfax-uif-profiles (1setOf type2 keyword) operation attribute**

357 The Sender SHOULD supply the “ippfax-uif-profiles” operation attribute in the Get-Printer-Attributes
358 request; the Receiver MUST support this operation attribute in a Get-Printer-Attributes operation. This
359 attribute specifies one or more UIF Profiles (see [11]). If any of the UIF Profiles supplied by the Sender
360 are not supported (values are not contained in the Receiver’s “ippfax-uif-profiles-supported” Printer

361 Description attribute - see section 5.4), the Receiver MUST reject the operation and return the ‘client-
362 error-document-format-not-supported’ status code. The Receiver SHOULD perform Attribute
363 Coloring for the attributes indicated in [4] depending on the UIF Profiles supplied by the Sender.

364 **ISSUE 08: How does coloring work when more than one UIF Profile is specified?**

365 **ISSUE 09: Should we REQUIRE the Receiver to color attributes with the “ippfax-uif-profiles”**
366 **supplied by the Sender in a Get-Printer-Attributes operation? If yes, should we REQUIRE the Sender**
367 **to supply the “ippfax-uif-profiles” attribute in the Get-Printer-Attributes?**

368 **4.1.3 document-format (mimeMediaType) operation attribute**

369 The Sender SHOULD supply the IPP/1.1 “document-format” operation attribute (see [RFC2911]) in
370 the Get-Printer-Attributes request; the Receiver MUST support this operation attribute in a Get-Printer-
371 Attributes operation. If the document format supplied by the Sender is not supported (value is not
372 contained in the Receiver’s “document-format-supported” Printer Description attribute - see
373 [RFC2911] section 4.4.22), the Receiver MUST reject the operation and return the ‘client-error-
374 document-format-not-supported’ status code. As in IPP/1.1, the Receiver SHOULD perform Attribute
375 Coloring for the attributes indicated in [4] depending on the document-format supplied by the Sender.

376 **ISSUE 10: Should we REQUIRE the Receiver to color attributes with the “document-format” supplied**
377 **by the Sender in a Get-Printer-Attributes operation? If yes, should we REQUIRE the Sender to supply**
378 **the “document-format” attribute in the Get-Printer-Attributes?**

379 **4.2 Printer Description attributes**

380 This section describes how certain Printer Description attributes are affected by IPPFAX semantics in
381 the Get-Printer-Attributes operation. See section 5.6 for the remaining Printer and Printer Description
382 attributes.

383 **4.2.1 document-format-supported (1setOf mimeMediaType) Printer Description** 384 **attribute**

385 The values of the “document-format-supported” (1setOf mimeMediaType) Printer Description attribute
386 will depend on the value of the “ippfax-semantics” operation attribute supplied by the Sender. For
387 example, IPPFAX Jobs MAY be limited only to the UIF document format [14] (see section 5.3), while
388 the same Printer supports UIF and other document formats for IPP Jobs.

389 **4.2.2 operations-supported Printer Description attribute**

390 **5 The values of the “operations-supported” (1setOf type2 enum) Printer** 391 **Description attribute will depend on the value of the “ippfax-semantics”**

392 **operation attribute supplied by the Sender. For example, if the IPPFAX**
393 **Receiver does not support the Cancel-Job operation for IPPFAX Jobs**
394 **(see section 8.2), then the Cancel-Job enum is not returned as the value**
395 **of the “operations-supported” attribute. IPPFAX Printer Description**
396 **Attributes**

397 This section defines the IPPFAX Printer Description attributes and the IPP Printer Description
398 attributes whose semantics are affected by IPPFAX. The Sender queries these Printer Description
399 attributes using the Get-Printer-Attributes operation [4] while supplying the “ippfax-semantics”
400 operation attribute with a ‘ippfax’ value (see section 3.2) in order to determine the capabilities of a
401 potential IPPFAX Receiver. The order of presentation in this section is the likely order that a Sender
402 would check the values, though the Sender can request all of the attributes in a single Get-Printer-
403 Attributes operation (and the Printer can return them in any order).

404 A Sender **MUST** determine all of the following before submitting an IPPFAX Job:

- 405 a) whether or not the destination URL with the ‘ipp’ scheme locates a valid IPPFAX Receiver
406 destination and what version of IPPFAX the Receiver supports (section 5.1)
- 407 b) whether the IPPFAX Receiver is currently configured to accept IPPFAX Jobs (section 5.2)
- 408 c) which document formats the Receiver supports (section 5.3)
- 409 d) which UIF Profiles of the document format the Receiver supports (section 5.4)
- 410 e) which **OPTIONAL** capabilities of each UIF Profile the Receiver supports if the Sender uses any
411 feature that is **OPTIONAL** for a UIF Profile (section 5.5)
- 412 f) which media is supported and which media is ready (section 5.7.1)
- 413 g) which resolutions are supported (section 5.7.2)
- 414 h) any other Job Template attributes that the Sender is going to use (section 5.7.3)

415 **5.1 ippfax-versions-supported (1setOf type2 keyword) Printer Description attribute**

416 The Sender **MUST** query this Printer Description attribute using the Get-Printer-Attributes operation
417 before sending an IPPFAX Job Creation operation; the Receiver **MUST** support this Printer Description
418 attribute. This attribute identifies the version or versions of the IPPFAX protocol that this Receiver
419 supports, including major and minor versions, i.e., the version numbers for which this Receiver
420 implementation meets the conformance requirements. If this attribute is not returned, then the Printer is
421 **NOT** an IPPFAX Receiver. The values of this attribute **MUST NOT** depend on the value of the
422 “ippfax-semantics” operation attribute supplied by the client.

423 ISSUE 11: OK to REQUIRE the Sender to query the “ippfax-versions-supported” Printer Description
424 attribute, or is using Validate-Job sufficient if we change it from SHOULD to MUST? An IPP/1.1
425 Printer would return success, with the “ippfax-semantic” operation attribute in the Unsupported Group
426 which the Sender could check for. What about an IPP FAX Receiver that is configured only for ‘ipp’?

427 Standard keyword values are:

428 ‘1.0’: Meets the conformance requirements of IPP FAX version 1.0 as specified in this document.

429

430 If this attribute is not returned, then the Sender MUST query the Sending User to inform that person
431 that the Printer does not accept IPP FAX Jobs, so that the Sender has the opportunity to choose to
432 abandon the exchange or to fallback to IPP mode (see section 5.1.1).

433 5.1.1 Fallback to IPP Mode

434 If the IPP FAX Receiver is configured to support the ‘ipp’ value of its “ippfax-semantic-supported”
435 attribute, but is not configured to support the ‘ippfax’ value, then only IPP Jobs will be accepted. In
436 this case, the Sender MUST query the Sending User to inform that person that the Printer is not
437 currently accepting IPP FAX requests, so that the Sender has the opportunity to choose to abandon the
438 exchange or to fallback to IPP mode. From the viewpoint of IPP FAX this is a fallback mode of
439 operation. The main features that will be missing are:

440 - Guaranteed exchange: Since IPP does not mandate any data formats it is possible that the
441 Sender MAY not be able to discover a common data format that both it and the printer
442 support.

443 - Identity exchange (section 6): IPP does not provide the definitive identity exchange that
444 IPP FAX does. In many cases this is acceptable.

445 5.2 ippfax-semantic-supported (1setOf type2 keyword) Printer Description attribute

446 The Sender MUST query this Printer Description attribute using the Get-Printer-Attributes operation
447 before sending any other IPP FAX operation as described in section 3.2. If this attribute is not returned,
448 then the Printer is NOT an IPP FAX Receiver. If the Receiver supports this attribute and returns the
449 ‘ippfax’ value, then the Sender can be sure that it will accept IPP FAX requests. If either the attribute is
450 not returned or does not contain the ‘ippfax’ value, then the Sender MUST query the Sending User to
451 inform that person that the Printer is not currently accepting IPP FAX requests, so that the Sender has
452 the opportunity to choose to abandon the exchange or to fallback to IPP mode (see section 5.1.1).

453 ISSUE 12: OK to REQUIRE the Sender to query the “ippfax-semantic-supported” Printer
454 Description attribute, or is using Validate-Job sufficient if we change it from SHOULD to MUST? An
455 IPP/1.1 Printer would return success, with the “ippfax-semantic” operation attribute in the
456 Unsupported Group which the Sender could check for. What about an IPP FAX Receiver that is
457 configured only for ‘ipp’?

458 **5.3 document-format-supported (1setOf mimeType) Printer Description attribute**

459 A Sender MUST query this Printer Description attribute using the Get-Printer-Attributes request before
 460 sending an IPPFAX Job Creation operation and MUST supply the “ippfax-semantic” operation
 461 attribute with the ‘ippfax’ value, lest non-IPPFAX values be returned (see section 4.2.1); a Receiver
 462 MUST support this Printer Description attribute (see [RFC2911] section 4.4.22). The values of this
 463 attribute indicate which document formats the Receiver supports. The Sender MUST supply the
 464 “document-format” operation attribute in any Job Creation or Validate-Job operation with one of the
 465 values contained in this Printer Description attribute. The values of this attribute MUST depend on the
 466 value of the “ippfax-semantic” operation attribute supplied by the client.

467 Standard mimeType values for IPPFAX and IPP Jobs are:

468	‘image/tiff; application=uiif’:	UIF format defined in UIF [14]; Sender and Receiver MUST
469	support	
470	any other MIME types:	Sender and/or Receiver MAY support

471
 472 A Receiver MUST support the ‘image/tiff; application=uiif’ document format and MAY support other
 473 document formats for IPPFAX Jobs.

474 The Sender is not restricted to sending UIF formats to the Receiver and MAY send any format that the
 475 Receiver supports for IPPFAX Jobs. It is the Sender's choice; the Receiver has no way of indicating
 476 preferred formats from amongst the formats that the Receiver supports for IPPFAX Jobs.

477 **5.4 ippfax-uiif-profiles-supported (1setOf type2 keyword) Printer Description attribute**

478 A Sender MUST query this Printer Description attribute using the Get-Printer-Attributes request before
 479 sending an IPPFAX Job Creation operation if any UIF Profile other than the REQUIRED ‘uiif-s’ Profile
 480 is used; a Receiver MUST support this Printer Description attribute. The values of this attribute
 481 indicate which black/white, grayscale, and color UIF Profiles the Receiver supports. See [14] for the
 482 definition of each of these UIF Profiles and the inter-dependency requirements for UIF Profile support.
 483 The values of this attribute MUST conform to the inter-dependency requirements in [14] for UIF Profile
 484 support (for example, UIF Profile S MUST be supported and UIF Profile C MUST be supported if UIF
 485 Profile L is supported, so ‘uiif-s’ MUST always be present and ‘uiif-c’ MUST be present if ‘uiif-l’ is
 486 present). The values of this attribute MUST NOT depend on the value of the “ippfax-semantic”
 487 operation attribute supplied by the client.

488 Standard keyword values are:

489	‘uiif-s’:	UIF Profile S; Sender and Receiver MUST support
490	‘uiif-f’:	UIF Profile F; Sender and/or Receiver MAY support
491	‘uiif-j’:	UIF Profile J; Sender and/or Receiver MAY support
492	‘uiif-c’:	UIF Profile C; Sender and/or Receiver MAY support
493	‘uiif-l’:	UIF Profile L; Sender and/or Receiver MAY support
494	‘uiif-m’:	UIF Profile M; Sender and/or Receiver MAY support

495

496 **ISSUE 13: Need to add some more UIF Profiles for color versus gray scale for C and L Profiles (same**
497 **issue for UIF spec).**

498 A Receiver **MUST** support the ‘uif-s’ UIF Profile and **MAY** support other UIF Profiles for IPPFAX
499 and IPP Jobs.

500 **5.5 ippfax-uif-profile-capabilities (1setOf text(MAX)) Printer Description attribute**

501 **ISSUE 14: OK that we got rid of the new ‘octetString32k’ attribute syntax and use existing IPP/1.1**
502 **attribute syntaxes, so that existing IPP systems can be used as gateways?**

503 The Sender **MAY** query the value of this Printer Description attribute using the Get-Printer-Attributes
504 request before sending an IPPFAX Job Creation operation, if any **OPTIONAL** capability of a UIF
505 Profile is being used; a Receiver **MUST** support this attribute. The value of this attribute is a **CONNEX**
506 capability string expression as defined in [14]. Each value **MUST** end with explicit White Space where
507 **CONNEX** allows White Space to occur. However, there is no need to break a **CONNEX** expression
508 into more than one value if it all fits into 1023 octets.

509 The values taken together **MUST** conform to the minimum value in [14], plus any additional capabilities
510 that the Receiver supports. **ISSUE 15: are these additional capabilities restricted to the OPTIONAL**
511 **capabilities in the UIF Profile according to the UIF spec ([14]), or MAY they include other capabilities**
512 **as well?** Thus a Sender can determine additional capabilities above the minimum for the UIF Profiles
513 that the Receiver supports (see section 5.4). The values of this attribute **MUST NOT** depend on the
514 value of the “ippfax-semantic” operation attribute supplied by the client.

515 **ISSUE 16: Should the UIF specification [14] add registered UIF Profile tags so that the entire**
516 **minimum string becomes a single named token. Lloyd McIntyre thought this would be a good idea in**
517 **order to shorten the strings and make the processing easier by the Sender.**

518 **5.6 Other Printer Description Attributes**

519 Table 1 lists the IPPFAX conformance requirements for Printer Description attributes. Any other
520 Printer Description attributes defined in IPP/1.1 [4] or IPP Notifications [16] or elsewhere have the
521 same conformance requirements as in IPP/1.1.

522 **Table 1 - Printer Description attributes conformance requirements in the Get-Printer-Attributes**
 523 **operation**

Attribute Name (attribute syntax)	Sender Conformance for Get-Printer-Attributes request	Receiver Conformance for Get-Printer-Attributes response	Section
ippfax-versions-supported (1setOf type2 keyword)	SHOULD	MUST	5.1
ippfax-semantics-supported (1setOf type2 keyword)	MUST	MUST	5.2
document-format-supported (1setOf mimeType)	MUST	MUST	5.3
<u>ippfax-uif-profiles-supported (1setOf type2 keyword)</u>	MUST	MUST	5.4
<u>ippfax-uif-profile-capabilities (octetString32k(MAX))</u>	MAY	MUST	5.5
media-supported (1setOf (type3 keyword name(MAX)))	MUST	MUST	5.7.1
media-ready (1setOf (type3 keyword name(MAX)))	MUST	MUST	5.7.1
printer-resolution-supported (1setOf resolution)	SHOULD *	MUST	5.7.2
other “xxx-supported” Job Template Printer attributes	SHOULD *	MAY	5.7
printer-uri-supported	MAY	MUST	6.4
ippfax-off-ramp-schemes-supported (1setOf uriScheme)	MAY	MUST **	10.1.1.1

524 * The Sender SHOULD query, if submitting the corresponding “xxx” Job Template attribute in the
 525 Validate-Job or Job Creation operation.
 526 ** Only an Off-Ramp Receiver MUST support this attribute.
 527

528 **5.7 xxx-supported Job Template Printer attributes**

529 A Sender MUST query each “xxx-supported” Job Template Printer attribute with the Get-Printer-
 530 Attributes operation for which it is supplying an “xxx” Job Template attribute on the IPPFAX Job.
 531 Then the Sender can avoid sending a Job Template attribute value that the Receiver does not support
 532 which will cause the Printer to reject the IPPFAX Job (since “ipp-attribute-fidelity” MUST be ‘true’).

533 **5.7.1 media-supported and media-ready Job Template Printer attributes**

534 The Sender MUST query the values of the “media-supported” and “media-ready” attributes, since the
 535 Sender MUST supply the “media” Job Template attribute in the Job Creation operation. The “media-
 536 ready” attribute indicates which media are currently loaded and will not require human intervention in
 537 order to be used.

538 **5.7.2 printer-resolution-supported Job Template Printer attribute**

539 If the Sender is using a resolution for a UIF Profile that is not one of the REQUIRED resolutions for
 540 the UIF Profile being used, then the Sender SHOULD query the “printer-resolution-supported” Printer

541 attribute. The “printer-resolution-supported” (1setOf resolution) Printer attribute is the union of the
542 resolutions supported for any UIF Profiles and the UIF Profile S MUST support all of them. This
543 attribute allows the Sender to determine the additional resolutions supported above and beyond the
544 resolutions required for support of each of the UIF Profiles without having to interpret the CONNEG
545 expression values of the “ippfax-uif-profile-capabilities” Printer Description attribute (see section 5.5).
546 Warning: the “printer-resolution-supported” attribute contains all of the resolutions for UIF Profile S,
547 but other UIF Profiles NEED NOT support all of those values, but MUST NOT support any other
548 resolutions.

549 **ISSUE 17:** Should we add the new “ippfax-uif-profile” operation attribute to the Get-Printer-Attributes
550 operation and then REQUIRE the Receiver to perform attribute coloring for the “ippfax-uif-profile”
551 operation attribute? Then the Sender could determine the resolutions supported for a particular UIF
552 Profile without having to do the CONNEG stuff?

553 **5.7.3 Other Job Template xxx-default and xxx-supported Printer attributes**

554 See section 7.3 for the IPP FAX semantics for the other Job Template attributes (“xxx” Job attributes
555 and their corresponding “xxx-default” and “xxx-supported” Printer attributes).

556 **6 Identity exchange**

557 This section defines the attributes used by the Sender and the Recipient to identify the other.

558 **6.1 ippfax-sending-user-vcard (1setOf text(MAX)) operation/Job Description attribute**

559 The Sender SHOULD send this operation attribute in an IPP FAX Job Creation operation; a Receiver
560 MUST support this Print-Job and Validate-Job operation attribute. This attribute identifies the Sending
561 User in MIME vCard [10, 19, 20] format. For a sample vCard see section 15. If the Sender supplies the
562 attribute, then the Receiver MUST use its value to populate the Job object's corresponding Job
563 Description attribute of the same name.

564 **ISSUE 18:** What restrictions on the vCard content do we need to make? vCard can have image, logos,
565 sound!

566 **ISSUE 19:** Denial of service problem: a Sender could bog down a Receiver Job with a huge amount of
567 data which the Receiver is supposed to copy to the Job object

568 The Receiver MAY choose to use this information on a job start and end sheet (banner page) for the
569 job. Whether or not the Receiver prints a separate job start sheet depends on the “job-sheets” Job
570 Template attribute. The Sender can request the Receiver to print a separate start sheet if the Receiver’s
571 “job-sheets-supported” Printer attribute (see [RFC2911] section 4.2.3) contains a value other than
572 ‘none’. The Sender can suppress the Receiver’s separate start sheet if the Receiver’s “job-sheets-

573 supported” Printer attribute contains the ‘none’ value. If the Sender omits the “job-sheets” Job
574 Template attribute, the Receiver’s “job-sheets-default” value will be used.

575 **6.2 ippfax-receiving-user-vcard (text(MAX)) operation/Job Description attribute**

576 The Sender SHOULD send this operation attribute in an IPPFAX Job Creation or Validate-Job
577 operation; a Receiver MUST support this Print-Job operation attribute. This attribute identifies the
578 intended Receiving User in MIME vCard format[10, 19, 20]. For a sample vCard see section 15. If the
579 Sender supplies the attribute, then the Receiver MUST use its value to populate the Job object's
580 corresponding Job Description attribute of the same name.

581 **ISSUE 20: What restrictions on the vCard content do we need to make? vCard can have image, logos,
582 sound!**

583 **ISSUE 21: Denial of service problem: a Sender could bog down a Receiver Job with a huge amount of
584 data which the Receiver is supposed to copy to the Job object**

585 The Receiver MAY choose to use this information on a job start and end sheet (banner page) for the
586 job. See discussion under section 6.1.

587 **6.3 ippfax-sender-uri (uri) operation/Job Description attribute**

588 **ISSUE 22: Did we agree to delete the ippfax-sender-uri (uri) operation/Job Description attribute in
589 favor of depending on TLS authentication?**

590 The Sender MUST send this operation attribute in an IPPFAX Job Creation operation; a Receiver
591 MUST support this Print-Job operation attribute. This attribute identifies the Sender in a similar
592 manner to the way a Sending Station ID is used in a GSTN fax device. The Receiver MUST use its
593 value to populate the Job object's corresponding Job Description attribute of the same name.

594 The value of this identity is not specified but MUST uniquely identify the Sender device. A value
595 derived from the MAC address would be a reasonable starting point but it MUST be human readable
596 text.

597 **ISSUE 23: SHOULD be using a client URL by preference and NOT a MAC address (generally totally
598 unknown to an IPP client application). In any case the IEEE and IETF don't approve the use of MAC
599 address for identifiers anymore except in EUI-64 format (an IEEE standard), which is the basis for
600 canonical IPv6 self-configured global addresses. Ira will look up the RFC references later, if you want
601 EUI-64**

602 **6.4 printer-uri-supported (1setOf uri) Printer Description attribute**

603 This IPP/1.1 Printer Description attribute identifies the Receiving device, so that no new IPPFAX
604 Printer Description attribute is needed.

605 **7 Data Exchange - IPPFAX Job Submission**

606 This section describes how a Sender submits an IPPFAX Job to a Receiver, after having determined the
607 Receiver's capabilities according to section 5.

608 **7.1 Validating the Job using the Validate-Job operation**

609 The Sender SHOULD validate the job attributes using the Validate-Job operation (that doesn't include
610 any Document data) before sending the IPPFAX Job with the same attributes using an IPPFAX Job
611 Creation operation that includes the Document data. For meaningful and complete job validation, the
612 Sender SHOULD supply all the same operation and Job Template attributes in the Validate-Job request
613 as it will supply in the subsequent Job Creation request (see section 7.2).

614 **ISSUE 24: Or should the spec be changed to REQUIRE the Sender to use Validate-Job? Currently the**
615 **spec only RECOMMENDS using Validate-Job and REQUIRES that the Sender query a number of**
616 **Printer Description attributes in order to submit a job the Receiver will accept.**

617 **7.2 Transmission using the Print-Job or other Job Creation operation**

618 The Sender MUST support creating IPPFAX Jobs using the Print-Job operation and MAY support
619 creating IPPFAX Jobs using other Job Creation operations as well. The Receiver MUST support
620 creating IPPFAX Jobs using the Print-Job operation and MAY support creating IPPFAX Jobs with
621 other Job Creations operations as well.

622 **7.2.1 IPP/1.1 Validate-Job and Job Creation operation attributes**

623 Table 2 indicates which IPP/1.1 [4] operation attributes a Sender MUST or MAY supply in a Validate-
624 Job and a Job Creation request and a Receiver MUST or MAY support. Differences in conformance
625 from IPP/1.1 are indicated with footnotes.

626

Table 2 - IPP/1.1 Validate-Job and Job Creation operation attributes

Operation attribute	Section	Sender supplies	Receiver supports
attributes-charset (charset)		MUST	MUST
attributes-natural-language (naturalLanguage)		MUST	MUST
printer-uri (uri)		MUST	MUST
requesting-user-name (name(MAX))		SHOULD	MUST
job-name (name(MAX))		MAY	MUST
ipp-attribute-fidelity (boolean) with 'true' value		MUST ¹	MUST
document-name (name(MAX))		MAY	MUST
compression (type3 keyword)		MAY	MUST
document-format (mimeType) *	7.2.1.2	MUST ²	MUST
document-natural-language (naturalLanguage)		MAY	MAY
job-k-octets (integer(0:MAX))		MAY	MAY
job-impressions (integer(0:MAX))		MAY	MAY
job-media-sheets (integer(0:MAX))		MAY	MAY
ippfax-semantics (type2 keyword)	3.2	MUST	MUST
ippfax-uif-profiles (1setOf type2 keyword)	7.2.1.3	MUST	MUST
ippfax-sending-user-vcard (1setOf text(MAX))	6.1	SHOULD	MUST
ippfax-receiving-user-vcard (text(MAX))	6.2	SHOULD	MUST
ippfax-sender-uri (name(MAX))	6.3	MUST	MUST
ippfax-sending-user-certificate-uri (uri) *	9.2	MAY	MUST
ippfax-off-ramp-uri (uri)	10.1.1	MAY	MUST **
ippfax-off-ramp-retry-count (integer(0:MAX))	10.1.2	MAY	MUST **
ippfax-off-ramp-max-retry-count (integer(0:MAX))	10.1.3	MAY	MUST **
ippfax-off-ramp-retry-interval (integer(1:MAX))	10.1.4	MAY	MUST **

627 *These attributes are NOT Job Description attributes, only Operation attributes for an IPPFAX Job
 628 Creation and Validate-Job operations.

629 ** Only an Off-Ramp Receiver MUST support this attribute.

630

631 7.2.1.1 ippfax-semantics (type2 keyword) operation/Job Description attribute

632 The Sender MUST supply and the Receiver MUST support this operation attribute (see section 3.2) in
 633 all operations, including Job Creation operations, and validate it according to section 3.2. The Receiver
 634 MUST use the value of this attribute supplied by the client to populate the Job's corresponding Job

¹ [RFC2911] does not require the client to supply the "ipp-attribute-fidelity" and allows the client to supply either the 'true' or 'false' value.

² The [RFC2911] does not require the IPP client to supply the "document-format" operation attribute.

635 Description attribute of the same name. If the Sender omits this operation attribute and still accepts the
636 job (see section 3.2), the Receiver MUST set the value of the Job's "ippfax-semantic" Job Description
637 attribute to 'ipp'.

638 The presence of the "ippfax-semantic" Job Description attribute on a Job with the 'ippfax' value marks
639 the Job as an IPPFAX Job. Consequently, subsequent operations on this job MUST follow the IPPFAX
640 semantics defined in this document.

641 **7.2.1.2 document-format (mimeMediaType) operation attribute**

642 The Sender MUST send this operation attribute in the Validate-Job and Job Creation operations; a
643 Receiver MUST validate and support this operation attribute. If the Sender does not supply this
644 attribute, the Receiver MUST reject the operation and return the 'client-error-bad-request' status code.
645 Note: [RFC2911] does not REQUIRE the IPP Client to supply this operation attribute. If the Sender
646 supplies a value that the Receiver does not support, i.e., not a value of the Receiver's "document-format-
647 supported" Printer Description attribute, the Receiver MUST reject the operation and return the 'client-
648 error-document-format-not-supported' status code (IPP conformance).

649 Standard mimeMediaType values are defined in section 5.3.

650 **7.2.1.3 ippfax-uif-profiles (1setOf type2 keyword) operation attribute**

651 The Sender MUST send this operation attribute in the Validate-Job and Job Creation operations; a
652 Receiver MUST validate and support this operation attribute. If the Sender does not supply this
653 attribute, the Receiver MUST reject the operation and return the 'client-error-missing-required-
654 attribute' status code along with the 'ippfax-uif-profiles' attribute keyword name in the Unsupported
655 Attributes Group. If the Sender supplies a value that the Receiver does not support, i.e., not a value of
656 the Receiver's "ippfax-uif-profiles-supported" Printer Description attribute, the Receiver MUST reject
657 the operation and return the 'client-error-document-format-not-supported' status code (IPP
658 conformance).

659 If the Sender obtains the UIF document from another source that document is identified by a MIME
660 Media Type that includes the 'profile' parameter (see [14]). The Sender MUST remove that 'profile'
661 parameter and supply its values as the values of this attribute. For example, if the MIME Media Type
662 for the document is:

```
663     image/tiff; application=uif; profile=uif-c, uif-l
```

664 then the Sender MUST split this MIME Media Type into two separate IPPFAX Job Creation operation
665 attributes, where the "document-format" operation attribute has the 'image/tiff; application-uif' value
666 and the "ippfax-uif-profiles" operation attribute has the 'uif-c', 'uif-l' values (the quotes are not part of
667 the actual value):

668 Standard keyword values are defined in section 5.4.

669 ISSUE 25 (for UIF document): Need to add the multi-valued profile parameter with ‘uif-x’ values to
 670 the image/tiff MIME Media Type registration and only have a single ‘uif’ value for the ‘application’
 671 parameter (instead of ‘uif-s’, ‘uif-c’, ‘uif-l’, etc.).

672 ISSUE 26: OK to REQUIRE the Sender to supply the “ippfax-uif-profiles” of the document being
 673 sent? What if the Sender didn’t create the document?

674 7.3 Job Template Attributes

675 Table 3 lists all of the Job Template attributes defined in other IPP documents and shows their behavior
 676 for IPPFAX Jobs. As in [RFC2911], the term “Job Template attribute” is actually up to four attributes:
 677 the “xxx” Job attributes, and the “xxx-default”, “xxx-supported”, and possibly the “xxx-ready” Printer
 678 attributes. The IPPFAX semantics column contains the following values:

679 “Printer MUST support” - The Printer MUST support the Job Template attribute for an IPPFAX Job.
 680 However, the attributes and values returned by the Printer with the Get-Printer-Attributes
 681 operation MAY depend on the value of the “ippfax-semantics” supplied by the client. Note:
 682 These are attributes which do not affect the appearance of the document or provide a
 683 significantly non-FAX feature.

684 “Printer MUST NOT support” - The Printer MUST NOT support the Job Template attribute for an
 685 IPPFAX Job (and the Sender MUST NOT supply). If these attributes are supplied in an
 686 IPPFAX Job, the Job Creation operation MUST be rejected. When querying the Printer with
 687 the Get-Printer-Attributes operation with “ippfax-semantics” = ‘ippfax’, the corresponding
 688 “xxx-default” and “xxx-supported” MUST NOT be returned. Note: These are attributes which
 689 might degrade the appearance of the document or do not provide a significantly non-FAX
 690 feature.

691 “same as IPP” - if these Job Template attributes are supplied in an IPPFAX Job, the Job Creation
 692 operation MUST be performed as for IPP jobs and when querying the Printer with the Get-
 693 Printer-Attributes operation the attributes and values returned MUST NOT depend on the value
 694 of the “ippfax-semantics” supplied by the client.

695 “Sender MUST supply” - the Sender MUST supply this Job Template attribute in an IPPFAX Job
 696 Creation request.

697 **Table 3 - IPPFAX Semantics for Job Template Attributes**

Job Template Job attribute	IPPFAX semantics	Reference
copies	Printer MUST NOT support	[RFC2911]
cover-back	same as IPP	[prod-print]
cover-front	same as IPP	[prod-print]
document-overrides	same as IPP	[collection]
finishings	same as IPP	[RFC2911]

finishings-col	same as IPP	[prod-print]
force-front-side	same as IPP	[prod-print]
imposition-template	Printer MUST NOT support	[prod-print]
insert-sheet	TBD	[prod-print]
job-account-id	TBD	[prod-print]
job-accounting-sheets	TBD	[prod-print]
job-accounting-user-id	TBD	[prod-print]
job-error-sheet	TBD	[prod-print]
job-hold-until	Printer MUST NOT support	[RFC2911]
job-message-to-operator	TBD	[prod-print]
job-priority	Printer MUST NOT support	[RFC2911]
job-sheet-message	TBD	[prod-print]
job-sheets	TBD	[RFC2911]
job-sheets-col	TBD	[prod-print]
media	Printer MUST support; Sender MUST supply (see section 7.3.1)	[RFC2911]
media-col	TBD	[prod-print]
media-input-tray-check	TBD	[prod-print]
multiple-document-handling	TBD	[RFC2911]
number-up	Printer MUST NOT support	[RFC2911]
orientation-requested	TBD	[RFC2911]
output-bin	TBD	[output-bin]
page-delivery	TBD	[prod-print]
page-order-received	TBD	[prod-print]
page-overrides	TBD	[collection]
page-ranges	TBD	[RFC2911]
pages-per-subset	TBD	[collection]
presentation-direction-number-up	Printer MUST NOT support	[prod-print]
print-quality	Printer MUST NOT support	[RFC2911]
printer-resolution	Printer MUST support; Sender MAY supply (see section 7.3.2)	[RFC2911]
separator-sheets	TBD	[prod-print]
sheet-collate	TBD	[job-prog]
sides	TBD	[RFC2911]
x-image-position	TBD	[prod-print]
x-image-shift	TBD	[prod-print]
x-side1-image-shift	TBD	[prod-print]
x-side2-image-shift	TBD	[prod-print]
y-image-position	TBD	[prod-print]
y-image-shift	TBD	[prod-print]
y-side1-image-shift	TBD	[prod-print]

y-side2-image-shift	TBD	[prod-print]
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698

699 **ISSUE 27:** Need to fill in the TBD entries to indicate the IPPFAX semantics for the Job Template
700 attributes.

701 **7.3.1 media (type2 keyword | name(MAX)) Job Template attribute**

702 The Sender **MUST** supply the “media” Job Template attribute in the Validate-Job and Print-Job
703 requests and the Receiver **MUST** support it, along with the “media-default”, “media-ready”, and
704 “media-supported” Printer attributes. The UIF standard [14] requires that both the Sender and the
705 Receiver be able to determine the dimensions from the keyword value. Therefore, the keyword values
706 **MUST** be Media Size Self Describing names defined in the PWG Standardized Name standard [18].

707 Standard keyword values (see [18]) include:

708 ‘na_letter_8.5x11in’
709 ‘iso_a4_210x297mm’

710 **7.3.2 printer-resolution (resolution) Job Template attribute**

711 The Sender **MAY** supply the “printer-resolution” Job Template attribute in the Validate-Job and Print-
712 Job requests and the Receiver **MUST** support it, along with the “printer-resolution-default”, and
713 “printer-resolution-supported” Printer attributes.

714 If the Sender supplies the “resolution” (resolution) Job Template attribute, the value **MUST** agree with
715 the resolution of each of the pages of the UIF document. If the supplied value disagrees with the
716 resolution of any of the pages of the UIF document, the Receiver **MUST** obey the resolution in the UIF
717 document, on a page by page basis.

718 Note: The main purpose of requiring the Receiver to support the “printer-resolution” Job Template
719 attribute is so that the Sender can query the corresponding “printer-resolution-supported” (1setOf
720 resolution) Printer attribute to see what resolutions are supported in addition to the ones **REQUIRED**
721 for the UIF Profiles supported.

722 **7.4 Confirmation using the Document Creation response**

723 The Sender knows when the Receiver has successfully received the entire Document when the Receiver
724 returns the ‘successful-ok’ status code in the Print-Job, Send-Document, or Send-URI response; the
725 Sender **MUST** then inform the Sending User by means outside the scope of this standard that the
726 document has successfully been received. See section 7.5 for informing the Sending User when the
727 document has been successfully printed.

728 **7.5 notification-recipient-uri operation attribute and the Get-Notifications operation**

729 A Sender MUST use IPP Notification [16] to determine when the Document has been Delivered; a
730 Receiver MUST support the IPP Notification specification [16] and the 'ippget' notification delivery
731 method [11]. The Receiver MUST support the 'job-progress' event (which is OPTIONAL in [16]), as
732 well as all of the REQUIRED events in [16] ('none', 'printer-state-change', 'printer-stopped', 'job-state-
733 change', 'job-created', and 'job-completed'). The Receiver MUST support the Get-Notifications
734 operation as defined in [11]. If the Sender subscribes to the 'job-progress' event, the Receiver MUST
735 generate an event for every sheet, as moderated by the Printer's "notify-time-interval" attribute, which
736 the Sender can obtain using the Get-Notifications request.

737 A Sender MUST use the "notify-recipient-uri" (uri) Print-Job operation attribute [16] to request that
738 the Receiver send it notifications regarding the delivery of the Document. The Receiver MUST support
739 Subscription Creation for the IPP Print-Job operation, but NEED NOT support any other notification
740 operations, such as Create-Job-Subscriptions, Create-Printer-Subscriptions, Get-Subscription-
741 Attributes, Get-Subscription-Attributes, Renew-Subscription, or Cancel-Subscription, even though [16]
742 requires all but the Create-Job-Subscriptions operation.

743 If a Receiver chooses to allow other IPP notification operations then it SHOULD provide a method of
744 restricting all other notification operations to authenticated administrators.

745 For the purposes of IPPFAX 'job-completed' event notifications means that the Receiver has delivered
746 the IPPFAX Job somewhere; either actually delivered printed sheets to the output bin or forwarded the
747 job and document to some other system.

748 **7.6 Subscription Template Attributes Conformance Requirements**

749 Table 4 lists the conformance requirements for Subscription attributes on the Print-Job and Validate-Job
750 requests. If the Receiver supports additional Job Creation and Document Creation operations, then
751 these operation attributes have the same conformance on those operations.

752

Table 4 - Subscription Template attributes conformance requirements

Attribute Name (attribute syntax)	Sender Conformance in Print-Job	Receiver Conformance	Section
notify-recipient-uri (uri)	MAY *	MUST	7.5
notify-events (1setOf type2 keyword)	MAY	MUST	7.5
notify-attributes (1setOf type2 keyword)	MAY	MAY	7.5
notify-user-data (octetString(63))	MAY	MUST	7.5
notify-charset (charset)	MAY	MUST	7.5
notify-natural-language (naturalLanguage)	MAY	MUST	7.5
notify-lease-duration (integer(0:67108863))	MAY	MUST	7.5
notify-time-interval (integer(0:MAX))	MAY	MUST	7.5

753
754

* The Sender MUST supply at least this attribute in order to use Notification.

755

7.7 Notification Event Conformance Requirements

756

Table 5 lists the conformance requirements for notification events.

757

Table 5 - Notification Events conformance requirements

Event	Sender Conformance for Print-Job	Receiver Conformance	Section
none	MAY	MUST	7.5
job-state-changed	MAY	MUST	7.5
job-created	MAY	MUST	7.5
job-completed	MUST	MUST	7.5
job-progress	MAY	MUST *	7.5
printer-state-changed	MAY	MUST	7.5
printer-stopped	MAY	MUST	7.5

758
759
760

* The 'job-progress' event is OPTIONAL in [16], but is REQUIRED for IPPFAX so that the Sender can give page by page feedback.

761

7.8 Identity Stamping

762
763

The Sender MUST place the Sender's identity, date and time at the top of every page of the sent Document. The Sender MAY include additional data (Sending User, Receiver identity, etc.)

764 8 IPP Implementation of other IPP operations

765 IPPFAX restricts the use of IPP in certain cases in order to make attaching a Receiver to the Internet a
766 safe option – see section 9.

767 The Receiver **MUST** fully support the Print-Job, Validate-Job, and Get-Printer-Attributes operations, as
768 defined by IPP/1.1 [4] and the Get-Notifications operation as defined in [11]. The following
769 subsections define restrictions placed the IPP/1.1 Cancel-Job, Get-Job-Attributes, and Get-Jobs
770 operations. In a strict IPPFAX implementation, all other IPP/1.1 operations **MUST NOT** be accepted
771 unless the issuer of the operation can be identified as an administrator. There is no requirement for the
772 Receiver to implement any of the **OPTIONAL** features of IPP unless explicitly stated elsewhere in this
773 standard. If a Receiver is not a strict IPPFAX implementation and it chooses to allow other IPP
774 operations, for example, IPP operations such as Print-URI, Create-Job, Create-Printer-Subscriptions,
775 etc., then it **MUST** provide a method of restricting available operations for non-authorized clients to the
776 operations specified herein.

777 8.1 Operation Conformance Requirements

778 Table 6 lists the conformance requirements for IPP operations for the non-privileged IPPFAX Sender
779 and IPPFAX Receiver. Operations that require operator or administrator privileges are indicated as
780 OPER ONLY meaning they are **OPTIONAL** to support, but if supported, **REQUIRE** authentication
781 and authorization as operator or administrator.

782 **Table 6 - Operation Conformance Requirements**

Operation Name	Code	IPP/1.1 Printer	IPPFAX Sender	IPPFAX Receiver	Reference
reserved, not used	0x0000				[RFC2911]
reserved, not used	0x0001				[RFC2911]
Print-Job	0x0002	MUST	MUST	MUST	7.2
Print-URI	0x0003				[RFC2911]
Validate-Job	0x0004	MUST	SHOULD	MUST	7.1
Create-Job	0x0005				[RFC2911]
Send-Document	0x0006				[RFC2911]
Send-URI	0x0007				[RFC2911]
Cancel-Job	0x0008	MUST	MAY	MAY	8.2
Get-Job-Attributes	0x0009	MUST	MAY	MAY	8.3
Get-Jobs	0x000A	MUST	MAY	MAY	8.3
Get-Printer-Attributes	0x000B	MUST	MUST	MUST	4, 5
Hold-Job	0x000C	MAY	OPER ONLY	OPER ONLY	[RFC2911]
Release-Job	0x000D	MAY	OPER ONLY	OPER ONLY	[RFC2911]
Restart-Job	0x000E	MAY	OPER ONLY	OPER ONLY	[RFC2911]
reserved for a future operation	0x000F				[RFC2911]
Pause-Printer	0x0010	MAY	OPER ONLY	OPER ONLY	[RFC2911]
Resume-Printer	0x0011	MAY	OPER ONLY	OPER ONLY	[RFC2911]
Purge-Jobs	0x0012	MAY	OPER ONLY	OPER ONLY	[RFC2911]

Operation Name	Code	IPP/1.1 Printer	IPPFAX Sender	IPPFAX Receiver	Reference
Set-Printer-Attributes	0x0013	MAY	OPER ONLY	OPER ONLY	5.2
Set-Job-Attributes	0x0014	MAY	OPER ONLY	OPER ONLY	[ipp-set-ops]
Get-Printer-Supported-Values	0x0015	MAY	OPER ONLY	OPER ONLY	[ipp-set-ops]
Create-Printer-Subscription	0x0016	MAY	OPER ONLY	OPER ONLY	[ipp-ntfy]
Create-Job-Subscription	0x0017	MAY	MAY	MAY	[ipp-ntfy]
Get-Subscription-Attributes	0x0018	MAY	MAY	MAY	[ipp-ntfy]
Get-Subscriptions	0x0019	MAY	MAY	MAY	[ipp-ntfy]
Renew-Subscription	0x001A	MAY	OPER ONLY	OPER ONLY	[ipp-ntfy]
Cancel-Subscription	0x001B	MAY	MAY	MAY	[ipp-ntfy]
Get-Notifications	0x001C	MAY	MUST	MUST	7.5
Send-Notifications	0x001D	MAY	MAY	MAY	[ipp-indp-method]
reserved for a future operation					
reserved for a future operation					
reserved for a future operation					
Get-Print-Support-Files	0x0021	MAY	MAY	MAY	[ipp-install]
Enable-Printer	0x0022	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Disable-Printer	0x0023	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Pause-Printer-After-Current-Job	0x0024	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Hold-New-Jobs	0x0025	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Release-Held-New-Jobs	0x0026	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Deactivate-Printer	0x0027	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Activate-Printer	0x0028	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Restart-Printer	0x0029	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Shutdown-Printer	0x002A	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Startup-Printer	0x002B	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Reprocess-Job	0x002C	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Cancel-Current-Job	0x002D	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Suspend-Current-Job	0x002E	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Resume-Job	0x002F	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Promote-Job	0x0030	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]
Schedule-Job-After	0x0031	MAY	OPER ONLY	OPER ONLY	[ipp-ops-set2]

783

784 **ISSUE 28:** Are the entries in the Operations Conformance Table 6 correct?785 **8.2 Canceling jobs**786 It is inappropriate for a Sender to transmit a Document as an IPPFAX Job, receive confirmation of its
787 arrival and then cancel it. Therefore:

788 The Sender SHOULD NOT attempt to cancel the print job once it has been sent to the Receiver.

789 The Receiver MUST either (1) reject Cancel-Job operations not issued by an administrator targeted at
790 IPPFAX Jobs or (2) reject Cancel-Job operations targeted at IPPFAX Jobs altogether, depending on
791 implementation and/or policy. (The Receiver can distinguish IPPFAX Jobs from IPP Jobs by the
792 presence of the mandatory “ippfax-semantic” Job Description attribute - see section 3.2). The Cancel-
793 Job operation therefore becomes a privileged operation on all IPPFAX Jobs or not supported. This
794 behavior is a change to the IPP behavior. Which implementation choice MUST be reflected in the value
795 of the “operations-supported” Printer attribute (see section 4.1.2).

796 If the issuer of the operation can be identified as an administrator, then the operation MUST behave as
797 defined in [4].

798 **8.3 Querying jobs using Get-Job-Attributes and Get-Jobs operations**

799 The public nature of IPPFAX interactions make it inappropriate for a IPP client to be able to query a
800 Receiver for certain information about jobs that it did not send.

801 The Receiver SHOULD restrict the job attributes that any Sender can request for any IPPFAX Job in a
802 Get-Jobs or a Get-Job-Attributes operation to appropriate ones for a public service. For example, an
803 implementation MAY return only the following Job attributes:

804 job-id, job-uri
805 job-k-octets, job-k-octets-completed
806 job-media-sheets, job-media-sheets-completed,
807 time-at-creation, time-at-processing
808 job-state, job-state-reasons
809 number-of-intervening-jobs

810
811 The exact choice of Job attributes that a client can query for IPPFAX Jobs, including not returning any,
812 depends on implementation and security policy and is outside the scope of this standard (as in IPP/1.1).

813 This attribute set allows a client to determine the load on a Receiver (and perhaps choose an alternative
814 destination or warn the Sending User).

815 See the discussion in section 8.4 of [4] for a description of how a Receiver MUST behave if it receives a
816 request for an attribute outside this set.

817 An IPP administrator MAY read all attributes.

818 **8.4 Job submission**

819 The Sender MUST support sending IPPFAX Jobs to the Receiver using the Print-Job operation which
820 MUST include the “ippfax-semantic” operation attribute. The Sender and Receiver MAY support
821 additional Job Creation operations, such as Create-Job and Print-URI, along with the Document
822 Creation operations, such as Send-Document and Send-URI.

823 **9 Security considerations**

824 IPPFAX presents an interesting challenge of balancing security and openness. Many of the envisaged
825 uses of IPPFAX require confidentiality of the data – at the same time the Receiver typically has no prior
826 knowledge of the Sender or the Sending User. This last point will normally rule out all user-based
827 authentication and access control. This is the reason for the restriction placed on querying and canceling
828 IPPFAX Jobs.

829 **9.1 Privacy**

830 Any exchange between a Sender and a Receiver **MUST** be carried using the privacy mechanism
831 specified in IPP/1.1 namely TLS [9]. In some cases this will also result in mutual authentication of the
832 Sender and Receiver (in the case where both sides have certificates).

833 The Receiver **MUST** have a TLS certificate.

834 The Sender **MAY** have a certificate. A Receiver **MAY** decide to reject requests that come from
835 Senders that do not have a certificate and return the ‘client-error-not-authenticated’ status code.

836 A Sender can either use its own certificate or it can use one associated with the Sending User.

837 **9.2 ippfax-sending-user-certificate-uri (uri operation/Job Description attribute**

838 The Sender **MAY** supply this operation attribute in an IPPFAX Job Creation or Validate-Job operation;
839 the Receiver **MUST** support this operation attribute. The use of TLS assures the Sender and the
840 Sending User that the Receiver is what it claims to be.

841 The use of sending side certificates can assure the Receiver that the Sender is who it claims to be (if the
842 Receiver chooses to enforce the requirement that the Sender **MUST** have a certificate). This operation
843 attribute is only valid on the Print-Job and Validate-Job operations. A Receiver **MUST** support this
844 attribute and **MAY** require this attribute so it **MAY** positively identify the Sender. If **REQUIRED** but
845 not supplied then the Receiver **MUST** reject the request and return the ‘client-error-not-authenticated’
846 (see [4]). If supplied then this attribute **MUST** contain the TLS certificate as defined by X.509V3[13].

847 **9.3 Access control**

848 It is expected that the majority of IPPFAX Receivers will operate in a public mode. However a Receiver
849 **MAY** protect itself using any method specified in [4] (digest authentication [9] for example) to restrict
850 access to any or all of its functionality.

851 However the primary intent of IPP Fax is to create a controlled public access mode. It therefore does
852 not really make much sense to combine IPPFAX and user authentication there are achieving the same
853 thing.

854 **9.4 Reduced feature set**

855 An administrator or device implementer MAY choose to setup up a device so that it only works as a
 856 IPPFAX Receiver (i.e., offers no 'native' IPP operations and does not accept IPP Jobs). In this mode it
 857 offers a restricted set of features and MAY be more safely connected to the Internet.

858 A Receiver that is operating in this mode SHOULD do so by rejecting any non-IPPFAX request and
 859 return a 'server-error-operation-not-supported' error status code. For job operations attempted on
 860 IPPFAX Jobs, the Receiver SHOULD return the 'client-error-not-authorized' error status code, unless
 861 the Sender is authenticated as the system administrator and the Receiver supports such access.

862 **10 Gateways to other systems**

863 A common scenario will be where IPPFAX acts as an on-ramp or off-ramp to other Document
 864 transmission systems.

865 **10.1 Off-Ramps**

866 In the IPPFAX 'Off-ramp' scenario the user with a Document to send uses an IPPFAX Sender to
 867 transmit a Document to an IPPFAX Receiver within a gateway that in turn transmits it to some other
 868 destination, i.e. GSTN FAX. Table 7 lists the attributes that a Receiver MUST support if it acts as an
 869 Off Ramp:

870 **Table 7 - REQUIRED Off-Ramp Attributes**

Operation and/or Job Description Attributes	Type	Corresponding Default and Supported Printer Description Attributes
ippfax-off-ramp-uri (uri)	OA, JD	ippfax-off-ramp-schemes-supported (1setOf uriScheme)
ippfax-off-ramp-retry-count (integer(0:MAX))	JD	N/A
ippfax-off-ramp-max-retry-count (integer(0:MAX))	OA, JD	ippfax-off-ramp-max-retry-count-default (integer(0:MAX)) ippfax-off-ramp-max-retry-count-supported (integer(0:MAX))
ippfax-off-ramp-retry-interval (integer(1:MAX))	OA, JD	ippfax-off-ramp-retry-interval-default (integer(1:MAX)) ippfax-off-ramp-retry-interval-supported (rangeOfInteger(1:MAX))

871

872 Legend:

873

874 OA - Operation Attribute in a Job Creation operation

875

JD - Job Description attribute

875 10.1.1 ippfax-off-ramp-uri (uri) operation attribute and Job Description attribute

876 If the Sender is sending the IPPFAX Job to an Off-Ramp Receiver, the Sender MUST supply this
877 operation attribute; if the Receiver supports acting as an Off-Ramp Gateway, the Receiver MUST
878 support this Print-Job and Validate-Job operation attribute.

879 If the Sender supplies the attribute, the Receiver MUST use its value to populate the Job object's
880 corresponding Job Description attribute of the same name.

**881 10.1.1.1 ippfax-off-ramp-schemes-supported (1setOf uriScheme) Printer Description
882 attribute**

883 The Sender SHOULD read this Printer Description attribute using the Get-Printer-Attributes operation
884 if it is going to send the IPPFAX Job to an IPPFAX Receiver acting as an Off-Ramp Gateway; if the
885 Receiver supports acting as an Off-Ramp Gateway, the Receiver MUST support this Printer
886 Description attribute. This attribute identifies the list of off-ramp URI scheme names that the Receiver
887 supports for forwarding Documents to final Destinations. If the Receiver does not act as an Off-Ramp
888 Gateway, then this attribute MUST NOT be supported, i.e., the Receiver does not return this attribute
889 in the Get-Printer-Attributes response.

890 Standard URI scheme values include:

891 'none': No off ramps are supported; MUST NOT be used with other values

892 'mailto': The Receiver attaches the document to a mail note and mails it to the destination URI

893 'tel': The Receiver dials the numbers and forwards the job

894 'fax': The Receiver sends the document to the indicated FAX phone number.

895

896 **ISSUE 29: What does the 'tel' scheme do for IPPFAX?**

897

898 From the list of supported schemes, the user selects the desired scheme with which the Sender then
899 populates the "ippfax-off-ramp-uri" (uri) operation attribute on Print-Job or Validate-Job requests.

900 10.1.2 ippfax-off-ramp-retry-count (integer(0:MAX)) Job Description attribute

901 If the Receiver supports acting as an Off-Ramp Gateway, the Receiver MUST support this Job
902 Description attribute. The Receiver sets this Job Description attribute to 0 when creating the job and
903 increments each time it retries to send the job to the Off Ramp. The Receiver increments the value of
904 this attribute each time it retries to send the job after the first failure. If the first time succeeds, this
905 attribute remains with a 0 value.

906 **10.1.3 ippfax-off-ramp-max-retry-count (integer(0:MAX)) operation/Job Description**
907 **attribute**

908 The Sender MAY supply this attribute when sending to an Off-Ramp; the Receiver MUST support this
909 attribute if it acts as an Off-Ramp. This attribute specifies the maximum number of retries that the
910 Receiver will attempt acting as an Off-Ramp after the first failure to send. If supplied by the Sender, the
911 Receiver populates the “ippfax-off-ramp-max-retry-count” Job Description attribute with the same
912 value.

913 **10.1.3.1 ippfax-off-ramp-retry-count-default (integer(0:MAX)) Printer Description**
914 **attribute**

915 The Receiver MUST support this attribute if it acts as an Off-Ramp. The Printer populates the Job’s
916 “ippfax-off-ramp-max-retry-count” Job Description attribute with this value, if the Sender omits it.

917 **10.1.3.2 ippfax-off-ramp-retry-count-supported (rangeOfInteger(0:MAX)) Printer**
918 **Description attribute**

919 The Receiver MUST support this attribute if it acts as an Off-Ramp. If the Sender submits an “ippfax-
920 off-ramp-max-retry-count”, it MUST be in range of this attribute; otherwise, the Printer MUST reject
921 the operation with the ‘client-error-attributes-or-values-not-supported’.

922 **10.1.4 ippfax-off-ramp-retry-interval (integer(0:MAX)) operation/Job Description**
923 **attribute**

924 The Sender MAY supply this attribute when sending to an Off-Ramp; the Receiver MUST support this
925 attribute if it acts as an Off-Ramp. This attribute specifies the number seconds between retries that the
926 Receiver will attempt acting as an Off-Ramp after the first failure to send. If supplied by the Sender, the
927 Receiver populates the “ippfax-off-ramp-retry-interval” Job Description attribute with the same value.

928 **10.1.4.1 ippfax-off-ramp-retry-interval-default (integer(0:MAX)) Printer Description**
929 **attribute**

930 The Receiver MUST support this attribute if it acts as an Off-Ramp. The Printer populates the Job’s
931 “ippfax-off-ramp-retry-interval” Job Description attribute with this value, if the Sender omits it.

932 **10.1.4.2 ippfax-off-ramp-retry-interval-supported (rangeOfInteger(0:MAX)) Printer**
933 **Description attribute**

934 The Receiver MUST support this attribute if it acts as an Off-Ramp. If the Sender submits an “ippfax-
935 off-ramp-retry-interval”, it MUST be in range of this attribute; otherwise, the Printer MUST reject the
936 operation with the ‘client-error-attributes-or-values-not-supported’.

937 10.2 On-Ramps

938 In the IPPFAX On-Ramp scenario the user originally sent the Document using some other mechanism
939 to some intermediate agent. The intermediate agent, acting as an IPPFAX Sender, then uses the
940 IPPFAX protocol to transmit the Document to an IPPFAX Receiver which MAY be either a final
941 destination or an Off-Ramp. IPPFAX has no specific support for on-ramps.

942 11 Attribute Syntax

943 No new attribute syntaxes are defined. **ISSUE 30: OK that we got rid of the new 'octetString32k'
944 attribute syntax and use existing IPP/1.1 attribute syntaxes, so that existing IPP systems can be used as
945 gateways?**

946 12 Status codes

947 In addition to the status codes defined in [4] and [11], the following status code is defined:.

948 12.1 client-error-missing-required-attribute (0x0419)

949 The client has failed to supply one or more attributes in a request which are REQUIRED to be supplied.
950 The requirement can be because of the Printer's current configuration or because of some other
951 attributes that the client supplied. The Printer MUST reject the request, return the 'client-error-
952 missing-required-attribute' status code, along with the keyword attribute name (but not the value) of the
953 missing attribute(s).

954 **ISSUE 31: Is the description of this new 'client-error-missing-required-attribute' (0x0419) status code
955 sufficient?**

956 13 Conformance Requirements

957 This section summarizes the conformance requirements for IPPFAX Senders and IPPFAX Receivers
958 that are defined elsewhere in this document.

959 **ISSUE 32: Do the conformance requirements look ok?**

- 960 1. The Sender MUST supply and the Receiver MUST support the "ippfax-semantic" operation
961 attribute in all operations to get the IPPFAX semantics as described in section 3.2.
- 962 2. The Sender MUST query and the Receiver MUST support the attributes using the Get-Printer-
963 Attributes operation as described in sections 4 and 5 and Table 1.
- 964 3. The Sender MUST supply and the Receiver MUST support the operation/Job Description
965 attributes for Identify Exchange as described in section 6.

- 966 4. The Sender MUST support submitting and the Receiver MUST accept IPPFAX Jobs as defined
967 in section 7 and Table 2, Table 3, Table 4, and Table 5.
- 968 5. The Sender MUST place the Sender's identity on every page as required in section 7.8.
- 969 6. The Sender and Receiver MUST support the operations as indicated in section 8 and Table 6.
- 970 7. The Sender and Receiver MUST support the security mechanisms indicated in section 9,
971 including TLS.
- 972 8. If the Sender and Receiver support Off-Ramps, they must support the attributes defined in
973 section 10.1.

974 14 IANA Considerations

975 **Need to register the new attributes and the new status code. Text TBD.**

976 15 Appendix B: vCard Example

977 The following ASCII text is a complete vCard [10, 19, 20] example:

978 **ISSUE 33: Need version 3.0 of vCard, since it is an RFC, while version 2.1 is not.**

```
979 BEGIN:VCARD
980 VERSION:2.1
981 N:Moore;Paul
982 FN:Paul Moore
983 ORG:Peerless Systems Networking
984 TEL;CELL;VOICE:(206) 251-7008
985 ADR;WORK;;;10900 NE 8th St;Bellvue;WA;98004;United States of America
986 EMAIL;PREF;INTERNET:pmoore@peerless.com
987 REV:19991207T215341Z
988 END:VCARD
```

990 **ISSUE 34: Is this example accurate? The phone number format seem wrong.**

991 **ISSUE 35 (repeat): What vCard restrictions? No pictures, no logos, no sound?**

992

993 16 Appendix C: Generic Directory Schema for an IPPFAX Receiver

994 This section defines a generic schema for an entry in a directory service. A directory service is a means
995 by which service users can locate service providers. In IPP environments, this means that IPP Printers
996 can be registered (either automatically or with the help of an administrator) as entries of type printer in
997 the directory using an implementation specific mechanism such as entry attributes, entry type fields,

998 specific branches, etc. Directory clients can search or browse for entries of type printer. Clients use the
 999 directory service to find entries based on naming, organizational contexts, or filtered searches on
 1000 attribute values of entries. For example, a client can find all printers in the "Local Department" context.
 1001 Authentication and authorization are also often part of a directory service so that an administrator can
 1002 place limits on end users so that they are only allowed to find entries to which they have certain access
 1003 rights. IPP itself does not require any specific directory service protocol or provider.

1004 Note: Some directory implementations allow for the notion of "aliasing". That is, one directory entry
 1005 object can appear as multiple directory entry objects with different names for each object. In each case,
 1006 each alias refers to the same directory entry object which refers to a single IPP Printer object.

1007 The generic schema is a subset of IPP Printer Job Template and Printer Description attributes
 1008 ([RFC2911] sections 4.2 and 4.4). These attributes are identified as either RECOMMENDED or
 1009 OPTIONAL for the directory entry itself. This conformance labeling is NOT the same conformance
 1010 labeling applied to the attributes of IPP Printers objects. The conformance labeling in this Appendix is
 1011 intended to apply to directory templates and to IPP Printer implementations that subscribe by adding
 1012 one or more entries to a directory. RECOMMENDED attributes SHOULD be associated with each
 1013 directory entry. OPTIONAL attributes MAY be associated with the directory entry (if known or
 1014 supported). In addition, all directory entry attributes SHOULD reflect the current attribute values for
 1015 the corresponding Printer object.

1016 The names of attributes in directory schema and entries SHOULD be the same as the IPP Printer
 1017 attribute names as shown, as much as possible.

1018 In order to bridge between the directory service and the IPP Printer object, one of the
 1019 RECOMMENDED directory entry attributes is the Printer object's "printer-uri-supported" attribute.
 1020 The directory client queries the "printer-uri-supported" attribute (or its equivalent) in the directory entry
 1021 and then the IPP client addresses the IPP Printer object using one of its URIs. The "uri-security-
 1022 supported" attribute identifies the protocol (if any) used to secure a channel.

1023 The following attributes define the generic schema for directory entries of type PRINTER:

1024 **Table 8 - Generic Schema Directory Entries**

1025	All of the attributes in [RFC2911] section 16 Appendix E Generic Directory Schema, plus:		
1026	ippfax-versions-supported (1setOf type2 keyword)	RECOMMENDED	section 5.1
1027	ippfax- semantics-supported (1setOf type2 keyword)	RECOMMENDED	section 5.2
1028	document-format-supported (1setOf mimeType)	RECOMMENDED	section 5.3
1029	ippfax-uif-profiles (1setOf type2 keyword)	RECOMMENDED	section 5.4
1030	ippfax-off-ramp-schemes-supported (1setOf uriScheme)	RECOMMENDED	section 10.1.1.1

1031

1032 **ISSUE 36: What other Receiver attributes should go in the Generic Directory Schema for an IPPFAX**
 1033 **Receiver?**

1034 **ISSUE 37: OK that it is of abstract type printer?**

1035 **ISSUE 38: Should the concrete type be 'IPP' (since the 'ipp' scheme is being used), or 'IPPFAX' to**
 1036 **differentiate it from an IPP Printer?**

1037 **ISSUE 39: Is the conformance right?**

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1088 **ISSUE 40: Should we add authors to PWG standards like we do IETF RFCs?**

1089 **ISSUE 41: Should we add participants to PWG standards like we do IETF RFCs?**

1090 **18 Revision History (to be removed when standard is approved)**

Revision	Date	Author	Notes
1	1/16/01	Paul Moore, Netreon	Initial version
2	2/27/01	Paul Moore, Gail Songer, Netreon	Specify TLS as MUST Removed Cover page and combined device Added need for big text types
3	4/11/01	Gail Songer, Netreon	Move attribute definition to first reference
4	5/24/01	Tom Hastings	Editorially updated the document to follow the style

			of the IPP standard documents. Added 23 issues to be reviewed. Capitalized the special terms throughout without showing revisions in order to make the document with revisions more readable.
5	5/21/01	Tom Hastings, John Pulera, Ira McDonald	Updated from the 6/6/01 telecon agreements on most of the 23 issues. There are 20 issues remaining, mostly new.
6	7/27/01	Tom Hastings, Ira McDonald	Updated from the 6/29/01 telecon. There are 41 issues remaining, mostly new.

1091