



A Project of the PWG IPPFAX Working Group

IPP Fax Protocol

IEEE-ISTO Printer Working Group
Draft Standard D0.65

~~June 21~~, 2001

<ftp://ftp.pwg.org/pub/pwg/QUALDOCS/ifx-spec-065.pdf>, .doc, .rtf

4120 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 Interchange-Image Format (UIF) [14] document format. The IPPFAX Receiver MAY also be configured to accept ordinary IPP Jobs concurrently with IPPFAX Jobs.

This document is a draft of an IEEE-ISTO PWG Proposed Standard and is in full conformance with all provisions of the PWG Process (see: <ftp://ftp.pwg.org/pub/pwg/general/pwg-process.pdf>). PWG Proposed Standards are working documents of the IEEE-ISTO PWG and its working groups. The list of current PWG projects and drafts can be obtained at <http://www.pwg.org>.

When approved as a PWG standard, this document will be available from:
<ftp://ftp.pwg.org/pub/pwg/standards/pwg510x.y.pdf>, .doc, .rtf

29 Copyright (C) 2001, IEEE Industry Standards and Technology Organization. All rights reserved.

30 This document may be copied and furnished to others, and derivative works that comment on, or
31 otherwise explain it or assist in its implementation may be prepared, copied, published and distributed,
32 in whole or in part, without restriction of any kind, provided that the above copyright notice, this
33 paragraph and the title of the Document as referenced below are included on all such copies and
34 derivative works. However, this document itself may not be modified in any way, such as by removing
35 the copyright notice or references to the IEEE-ISTO and the Printer Working Group, a program of the
36 IEEE-ISTO.

37 Title: IPP FAX Protocol

38 The IEEE-ISTO and the Printer Working Group DISCLAIM ANY AND ALL WARRANTIES,
39 WHETHER EXPRESS OR IMPLIED INCLUDING (WITHOUT LIMITATION) ANY IMPLIED
40 WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

41 The Printer Working Group, a program of the IEEE-ISTO, reserves the right to make changes to the
42 document without further notice. The document may be updated, replaced or made obsolete by other
43 documents at any time.

44 The IEEE-ISTO takes no position regarding the validity or scope of any intellectual property or other
45 rights that might be claimed to pertain to the implementation or use of the technology described in this
46 document or the extent to which any license under such rights might or might not be available; neither
47 does it represent that it has made any effort to identify any such rights.

48 The IEEE-ISTO invites any interested party to bring to its attention any copyrights, patents, or patent
49 applications, or other proprietary rights which may cover technology that may be required to implement
50 the contents of this document. The IEEE-ISTO and its programs shall not be responsible for identifying
51 patents for which a license may be required by a document and/or IEEE-ISTO Industry Group Standard
52 or for conducting inquiries into the legal validity or scope of those patents that are brought to its
53 attention. Inquiries may be submitted to the IEEE-ISTO by e-mail at:

54 ieee-isto@ieee.org.

55 The Printer Working Group acknowledges that the IEEE-ISTO (acting itself or through its designees)
56 is, and shall at all times, be the sole entity that may authorize the use of certification marks, trademarks,
57 or other special designations to indicate compliance with these materials.

58 Use of this document is wholly voluntary. The existence of this document does not imply that there are
59 no other ways to produce, test, measure, purchase, market, or provide other goods and services related
60 to its scope.

61

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.....	9
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.....	12
77	4.1.3 document-format (mimeMediaType) operation attribute.....	12
78	4.2 Printer Description attributes.....	13
79	4.2.1 document-format-supported (1setOf mimeMediaType) Printer Description attribute.....	13
80	4.2.2 operations-supported Printer Description attribute.....	13
81	5 IPPFAX Printer Description Attributes	13
82	5.1 ippfax-versions-supported (1setOf type2 keyword) Printer Description attribute.....	14
83	5.1.1 Fallback to IPP Mode.....	15
84	5.2 ippfax-semantic-supported (1setOf type2 keyword) Printer Description attribute	15
85	5.3 document-format-supported (1setOf mimeMediaType) Printer Description attribute.....	15
86	5.4 ippfax-uif-profiles-supported (1setOf type2 keyword) Printer Description attribute	16
87	5.5 ippfax-uif-profile-capabilities (1setOf text(MAX)) Printer Description attribute.....	17
88	5.6 Other Printer Description Attributes.....	18
89	5.7 xxx-supported Job Template Printer attributes.....	19
90	5.7.1 media-supported and media-ready Job Template Printer attributes.....	19
91	5.7.2 printer-resolution-supported Job Template Printer attribute.....	19
92	5.7.3 Other Job Template xxx-default and xxx-supported Printer attributes	19
93	6 Identity exchange	20
94	6.1 ippfax-sending-user-vcard (1setOf text(MAX)) operation/Job Description attribute.....	20
95	6.2 ippfax-receiving-user-vcard (text(MAX)) operation/Job Description attribute.....	20
96	6.3 ippfax-sender-uri (uri) operation/Job Description attribute.....	21
97	6.4 printer-uri-supported (1setOf uri) Printer Description attribute.....	22
98	7 Data Exchange - IPPFAX Job Submission.....	22
99	7.1 Validating the Job using the Validate-Job operation.....	23

100	7.2 Transmission using the Print-Job or other Job Creation operation.....	23
101	7.2.1 IPP/1.1 Validate-Job and Job Creation operation attributes	23
102	7.2.1.1 ippfax- semantics (type2 keyword) operation/Job Description attribute.....	24
103	7.2.1.2 document-format (mimeType) operation attribute.....	25
104	7.2.1.3 ippfax- uif- profiles (1setOf type2 keyword) operation attribute.....	25
105	7.3 Job Template Attributes	26
106	7.3.1 media (type2 keyword name(MAX)) Job Template attribute.....	28
107	7.3.2 printer-resolution (resolution) Job Template attribute	28
108	7.4 Confirmation using the Document Creation response.....	29
109	7.5 notification-recipient-uri operation attribute and the Get-Notifications operation	29
110	7.6 Subscription Template Attributes Conformance Requirements.....	29
111	7.7 Notification Event Conformance Requirements	30
112	7.8 Identity Stamping.....	30
113	8 IPP Implementation of other IPP operations	31
114	8.1 Operation Conformance Requirements	31
115	8.2 Canceling jobs.....	32
116	8.3 Querying jobs using Get-Job-Attributes and Get-Jobs operations.....	33
117	8.4 Job submission.....	33
118	9 Security considerations	34
119	9.1 Privacy.....	34
120	9.2 ippfax-sending-user-certificate-uri (uri operation/Job Description attribute	34
121	9.3 Access control	34
122	9.4 Reduced feature set.....	35
123	10 Gateways to other systems	35
124	10.1 Off-Ramps	35
125	10.1.1 ippfax-off-ramp-uri (uri) operation attribute and Job Description attribute	36
126	10.1.1.1 ippfax-off-ramp-schemes-supported (1setOf uriScheme) Printer Description attribute.....	36
127	10.1.2 ippfax-off-ramp-retry-count (integer(0:MAX)) Job Description attribute	37
128	10.1.3 ippfax-off-ramp-max-retry-count (integer(0:MAX)) operation/Job Description attribute.....	37
129	10.1.3.1 ippfax-off-ramp-retry-count-default (integer(0:MAX)) Printer Description attribute	37
130	10.1.3.2 ippfax-off-ramp-retry-count-supported (rangeOfInteger(0:MAX)) Printer Description	
131	attribute 37	
132	10.1.4 ippfax-off-ramp-retry-interval (integer(0:MAX)) operation/Job Description attribute.....	38
133	10.1.4.1 ippfax-off-ramp-retry-interval-default (integer(0:MAX)) Printer Description attribute.....	38
134	10.1.4.2 ippfax-off-ramp-retry-interval-supported (rangeOfInteger(0:MAX)) Printer Description	
135	attribute 38	
136	10.2 On-Ramps.....	38
137	11 Attribute Syntax.....	38
138	12 Status codes.....	39
139	12.1 client-error-missing-required-attribute (0x0419).....	39

140 13 Conformance Requirements 39

141 14 IANA Considerations 40

142 15 Appendix B: vCard Example 40

143 16 Appendix C: Generic Directory Schema for an IPPFAX Receiver 40

144 17 References 41

145 18 Revision History (to be removed when standard is approved) 43

146

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

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

154 **Table of Tables**

155 Table 1 - Printer Description attributes conformance requirements in the Get-Printer-Attributes
 156 operation 18

157 Table 2 - IPP/1.1 Validate-Job and Job Creation operation attributes 24

158 Table 3 - IPPFAX Semantics for Job Template Attributes 27

159 Table 4 - Subscription Template attributes conformance requirements 30

160 Table 5 - Notification Events conformance requirements 30

161 Table 6 - Operation Conformance Requirements 31

162 Table 7 - REQUIRED Off-Ramp Attributes 36

163 Table 8 - Generic Schema Directory Entries 41

164

164

165 1 Introduction

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

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

173 The IPPFAX protocol uses an extended version of IPP/1.1 [4], [5] to create IPPFAX Jobs and
174 REQUIRES that the IPPFAX Receiver support at least the Universal Image Interchange-Format (UIF)
175 [14] document format. IPPFAX Receivers MAY also be configured to accept ordinary IPP Jobs
176 concurrently with IPPFAX Jobs. Note - It is assumed that the reader is familiar with IPP[4],[5],[6].

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

181 1.1 Namespace used

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

183 2 Terminology

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

185 2.1 Conformance Terminology

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

190 2.2 Other Terminology

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

193 **Sender** This is the IPPFAX agent (IPP client software, hardware or some combination) that is used to
194 create and transmit a Document to a Receiver.

195 **Receiver** This is the IPPFAX agent (IPP Printer object which can be software, hardware or some
196 combination) that receives the Document sent by the Sender.

197 **Document** The electronic representation of a set of one or more pages that the Sender sends to the
198 Receiver.

199 **Sending User** The person interacting with the Sender.

200 **Receiving User** The intended human recipient of the Document being sent.

201 **Attribute Coloring** The changing of attributes and/or values returned in a Get-Printer-Attributes
202 response depending on operation attributes supplied in the request.

203 **Job Creation Operation** The IPP operations that creates IPP or IPPFAX Jobs, i.e., the Print-Job,
204 Print-URI, and Create-Job operations (see [4]).

205 **IPP Job** A job submitted by a Sender using the IPP Protocol [4, 5] ~~without~~with the “ippfax-
206 semantics~~sender-identity~~” operation attribute either omitted or with the ‘ipp’ value in the Job Creation
207 operation ~~and so it has not been properly authenticated according to the IPPFAX rules.~~

208 **IPPFAX Job** An IPP job submitted by a Sender using the IPPFAX Protocol (this document) with the
209 “ippfax-semantics~~sender-identity~~” operation attribute with the ‘ippfax’ value in the Job Creation
210 operation and which has been properly authenticated according to the IPPFAX rules.

211 ~~**UIF-only Job** A IPP Job submitted by a Sender which uses the UIF document format.~~

212 **Universal Image Format (UIF)** A document format similar to TIFF/FX, but with higher conformance
213 requirements for improved quality (see [14]).

214 **UIF Profile** A minimum set of capabilities of the UIF document format. The UIF specification [14]
215 defines a number of UIF Profiles.

216 **Delivered** The Receiver has either printed the Document and delivered the last sheet to the output bin
217 or has forwarded the Document to some other system.

218 The terminology defined in [5], such as **attribute**, **operation**, **request**, **response**, **operation attribute**,
219 **Printer Description attribute**, and **Job Description attribute** is also used in the standard with the
220 same capitalization conventions.

221 **2.3 Required exchange**

222 The Sending User determines the network location of the Receiver (value of the “printer-uri” operation
223 attribute) – see section 3.1. This standard does not specify how the Sending User does this. Possible

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

252 2.4 Gateways

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

255 **3 Common IPPFAX Operation Semantics**

256 This section describes the IPPFAX semantics that are common to all operation. IPPFAX does not
 257 define any new operations. Instead, IPPFAX semantics are provided using existing IPP operations [4,
 258 11, 16, 17, etc.] with increased conformance requirements as specified in this document. This section
 259 describes the general semantics for all IPPFAX operations. Section 4 describes the Get-Printer-
 260 Attributes operation in particular. Section 7 describes the IPPFAX semantics for the Job Creation
 261 operations and section 8 describes the IPPFAX semantics for all other operations.

262 **3.1 Network Address of Target Receiver - “printer-uri” operation attribute**

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

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

266 **ISSUE 0345:** OK that we are using the 'ipp:' scheme for both IPP and IPPFAX protocols?

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

270 **ISSUE 0546:** OK that we are forced to use the same default port for IPPFAX as for IPP? So if a
 271 Receiver is configured to only receive IPPFAX Jobs from outside its firewall, but receive IPP Jobs from
 272 inside its firewall, one or the other will be forced to supply an explicit (different) port?

273 **3.2 ippfax-semantics (type2 keyword) Operation/Job Description attribute**

274 This operation attribute is defined for all IPP operations and indicates whether the Sender wants IPP or
 275 IPPFAX semantics for the operation. A Sender MUST supply and a Receiver MUST support this
 276 operation attribute in all operations that are implemented. A Sender MUST supply this operation
 277 attribute with the 'ippfax' value in a Get-Printer-Attributes operation in order for the Receiver to
 278 perform the IPPFAX semantics defined in this document. A Receiver MUST support this operation
 279 attribute as an extensions to the IPP/1.1 Get-Printer-Attributes operation [4]. If the Sender supplies this
 280 attribute with the 'ipp' value or omits this operation attribute, the Printer-Receiver returns values MUST
 281 as if the 'ipp' value had been supplied, i.e., the Printer behaves as an IPP/1.1 Printer with any IPP
 282 extensions, unless explicitly stated otherwise in this document.

283 Standard keyword values are:

284 'ipp': return attributes that are supported for IPP Jobs perform IPP semantics [RFC2910], plus any
 285 IPP extensions
 286 'ippfax': restrict attributes that are supported for IPPFAX Jobs perform IPPFAX semantics as
 287 defined in this document

288

289 For each operation, the Receiver MUST compare the value supplied by the Sender with the Receiver's
290 'ippfax- semantics-supported' Printer Description attribute (see section 3.2.1). If the value supplied is
291 not a value of the Receiver's "ippfax- semantics-supported" Printer Description attribute, the Receiver
292 MUST reject the request and return the 'client-error- attributes-or-values-not-supported' status code
293 along with the attribute and value in the Unsupported Attributes Group. If the client omitted the
294 attribute, and the Receiver's "ippfax- semantics-supported" Printer Description attribute contains the
295 'ipp' value (or both 'ipp' and 'ippfax'), then the Receiver accepts the request; otherwise (only the
296 'ippfax' value is configured), the Receiver MUST reject the request and return the 'client-error- missing-
297 required-attribute' along with the 'ippfax- semantics' attribute name keyword in the Unsupported
298 Attributes Group.

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

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

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

315 **3.2.1 ippfax-jobs semantics-supported (1setOf type2 keyword) Printer Description** 316 **attribute**

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

325 Standard keyword values are defined in section 3.2:

326 ~~'ipp': The Receiver will accept IPP Jobs, i.e., the Receiver will behave as a normal IPP Printer~~
327 ~~according to [4].~~

328 ~~'ippfax-authenticated': The Receiver will accept IPPFAX Jobs that meet the requirements of this~~
329 ~~standard (and the UIF standard [14]).~~

330 If this attribute contains only the 'ipp' value, then the Printer object is not currently operating as an
331 IPPFAX Receiver and is exhibiting IPP semantics only. If this attribute contains only the 'ippfax' value,
332 then the Printer is currently operating with IPPFAX semantics only. If this attribute contains both
333 values, then the Receiver is supporting both IPP and IPPFAX semantics concurrently, depending on the
334 value supplied by the client in each operation request. ~~and will reject any IPPFAX Jobs. If both values~~
335 are present, then the Receiver will accept both IPP and IPPFAX Jobs concurrently.

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

338 In IPP/1.1 [4], the "printer-is-accepting-jobs" Printer attribute is a READ-ONLY attribute and cannot
339 be changed by the Set-Printer-Attributes operation. The Enable-Printer and Disable-Printer operations
340 change the value of the "printer-is-accepting-jobs" Printer attribute. The Enable-Printer and Disable-
341 Printer operations apply to IPPFAX Jobs, as well as IPP Jobs.

342 **4 Get-Printer-Attributes operation semantics**

343 In order to obtain the IPPFAX semantics for the Get-Printer-Attributes operation, the Sender MUST
344 supply the "ippfax-semantics" with the 'ippfax' value (see section 3.2). If the Sender supplies this
345 attribute with the 'ipp' value or omits the attribute, the Receiver responds with IPP semantics.

346 ~~Note:~~The Receiver MUST performs Attribute Coloring depending on the value of the "ippfax-
347 semantics" operation attribute supplied by the Sender, i.e., returns values in the Get-Printer-Attributes
348 response that depend on the value supplied by the Sender. Note: IPP/1.1 defines OPTIONAL Attribute
349 Coloring for the "document-format" operation attribute in a Get-Printer-Attributes operation which is
350 also OPTIONAL for IPPFAX semantics.

351 **4.1 Get-Printer-Attributes operation attributes**

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

354 **4.1.1 ippfax-semantics (type2 keyword) operation attribute**

355 If the Sender supplies the "ippfax-semantics" operation attribute, the semantics are affected as described
356 in this section. See section 3.2 for more details about this operation attribute.

357 Conversely, if the Sender supplies the “ippfax-semantic” attribute with either the ‘ipp’ value or omits
358 the “ippfax-semantic” operation attribute all together, then the Receiver MUST return the union of the
359 attributes for IPP and IPPFAX Jobs in the Get-Printer-Attributes response. This requirement permits
360 the Sender to determine the IPP and IPPFAX capabilities in a single query. However, if the Sender
361 wants to determine which additional document formats the Receiver supports for IPPFAX Jobs (such as
362 PDF), the Sender MUST make a second request and supply the “ippfax-semantic” operation attribute
363 with the ‘ippfax-~~authenticated~~’ value.

364 ~~ISSUE 03: OK that the Sender needs to make two Get Printer Attributes requests in order to~~
365 ~~determine both the IPP and IPPFAX document formats supported?~~

366 **4.1.2 ippfax-uif-profiles (1setOf type2 keyword) operation attribute**

367 The Sender SHOULD supply the “ippfax-uif-profiles” operation attribute in the Get-Printer-Attributes
368 request; the Receiver MUST support this operation attribute in a Get-Printer-Attributes operation. This
369 attribute specifies one or more UIF Profiles (see [11]). If any of the UIF Profiles supplied by the Sender
370 are not supported (values are not contained in the Receiver’s “ippfax-uif-profiles-supported” Printer
371 Description attribute - see section 5.4), the Receiver MUST reject the operation and return the ‘client-
372 error-document-format-not-supported’ status code. The Receiver SHOULD perform Attribute
373 Coloring for the attributes indicated in [4] depending on the UIF Profiles supplied by the Sender.

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

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

378 **4.1.3 document-format (mimeMediaType) operation attribute**

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

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

389 **4.2 Printer Description attributes**

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

393 **4.2.1 document-format-supported (1setOf mimeType) Printer Description** 394 **attribute**

395 ~~As another example, t~~The values of the “document-format-supported” (1setOf mimeType) Printer
 396 Description attribute will depend on the value of the “ippfax-semantics” operation attribute supplied by
 397 the Sender. For example, IPPFAX Jobs MAY be limited for IPPFAX Jobs, perhaps, only to the UIF
 398 document format [14] (see section 5.3), while the same Printer supports UIF and other document
 399 formats for IPP Jobs.

400 ~~ISSUE 02: Should we add all of the Job Template attributes which MUST be subsetted for IPP FAX?~~

401 **4.2.2 operations-supported Printer Description attribute**

402 ~~As a third example, t~~The values of the “operations-supported” (1setOf type2 enum) Printer Description
 403 attribute will depend on the value of the “ippfax-semantics” operation attribute supplied by the Sender.
 404 For example, if the IPPFAX Receiver does not support the Cancel-Job operation for IPPFAX Jobs (see
 405 section 8.2), then the Cancel-Job enum is not returned as the value of the “operations-supported”
 406 attribute.

407 **5 IPPFAX Printer Description Attributes**

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

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

- 416 a) whether or not the destination URL with the ‘ipp’ scheme locates a it has representsA-valid
 417 IPPFAX Receiver destination and what version of IPPFAX the Receiver supports (section 5.1)
 418 AND
- 419 b) ~~The whether the~~ IPPFAX Receiver is currently configured to accept IPPFAX Jobs (section 5.2)
- 420 c) which document formats the Receiver supports (section 5.3)

- 421 d) which UIF Profiles of the document format the Receiver supports (section 5.4)
- 422 e) which OPTIONAL capabilities of each UIF Profile the Receiver supports if the Sender uses any
 423 feature that is OPTIONAL for a UIF Profile (section 5.5)
- 424 f) which media is supported and which media is ready (section 5.7.1)
- 425 g) which resolutions are supported (section 5.7.2)
- 426 h) any other Job Template attributes that the Sender is going to use (section 5.7.3)

427 ~~Then the Sender MUST determine the capabilities of the IPPFAX Receiver using the Get-Printer-~~
 428 ~~Attributes operation [4] as defined in the following sections.~~

429 ~~4.1.1 “copies-supported” Job Template Printer attribute~~

430 ~~The Receiver MUST limit IPPFAX Jobs to a subset of the Job Template attributes and values that it~~
 431 ~~supports for Jobs. For example, the “copies” attribute MUST be limited to the value ‘1’ for IPPFAX~~
 432 ~~Jobs, but is not limited for ordinary IPP Jobs (whether or not printing UIF documents). Therefore, if a~~
 433 ~~Printer supports the “copies” attribute for IPP Jobs and the Sender supplies the “ippfax-semantic”~~
 434 ~~operation attribute with the ‘ippfax’ value, then the Printer MUST return a ‘1:1’ value for the “copies-~~
 435 ~~supported” (rangeOfInteger (1:MAX)) Printer attribute.~~

436 **5.1 ippfax-versions-supported (1setOf type2 keyword) Printer Description attribute**

437 The Sender ~~MAY~~ **MUST** ~~read~~ **query** this Printer Description attribute using the Get-Printer-Attributes
 438 operation **before sending an IPPFAX Job Creation operation**; the Receiver MUST support this Printer
 439 Description attribute. This attribute identifies the version or versions of the IPPFAX protocol that this
 440 Receiver supports, including major and minor versions, i.e., the version numbers for which this Receiver
 441 implementation meets the conformance requirements. **If this attribute is not returned, then the Printer is**
 442 **NOT an IPPFAX Receiver. The values of this attribute MUST NOT depend on the value of the**
 443 **“ippfax-semantic” operation attribute supplied by the client.**

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

448 Standard keyword values are:

449 ‘1.0~~+~~’: Meets the conformance requirements of IPPFAX version 1.0 as specified in this document.

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

454 **5.1.1 Fallback to IPP Mode~~Degraded Mode~~**

455 If the IPPFAX Receiver ~~that~~ is configured to support the ‘ipp’ value of its “ippfax-~~semantics~~jobs-
 456 supported” attribute, but is not configured to support the ‘ippfax-~~authenticated~~’ value ~~or the Sender~~
 457 does not wish to send an IPPFAX Job, ~~then~~ only IPP Jobs will be accepted. ~~In this case, the Sender~~
 458 MUST query the Sending User to inform that person that the Printer is not currently accepting IPPFAX
 459 requests, so that the Sender has the opportunity to choose to abandon the exchange or to fallback to
 460 IPP mode. From the viewpoint of IPPFAX this is a ~~degraded-fallback~~ mode of operation. The main
 461 features that will be missing are:

- 462 - Guaranteed exchange: Since IPP does not mandate any data formats it is possible that the
 463 Sender MAY not be able to discover a common data format that both it and the printer
 464 support.
- 465 - Identity exchange (section 6): IPP does not provide the definitive identity exchange that
 466 IPPFAX does. In many cases ~~however~~ this is acceptable.

467 ~~-Authentication of the Sender, Sending User, and Receiver.~~

468 **5.2 ippfax-jobs~~semantics~~-supported (1setOf type2 keyword) Printer Description** 469 **attribute**

470 The Sender MUST ~~read-query~~ this Printer Description attribute using the Get-Printer-Attributes
 471 operation before sending any other IPPFAX operation as described in section 3.2. If this attribute is not
 472 returned, then the Printer is NOT an IPPFAX Receiver. If the Receiver supports this attribute and
 473 returns a at least one keyword value starting with the ‘ippfax-’ value, then the Sender can be sure that it
 474 will accept IPPFAX ~~Jobs~~requests. If either the attribute is not returned or does not contain the ‘ippfax-
 475 ~~authenticated~~’ value, then the Sender MUST query the Sending User to inform that person that the
 476 Printer is not currently accepting IPPFAX ~~Jobs~~requests, so that the Sender has the opportunity to
 477 choose to abandon the exchange or to ~~enter-degraded~~fallback to IPP mode (see section 5.1.1).

478 ISSUE 12: OK to REQUIRE the Sender to query the “ippfax-~~semantics~~-supported” Printer
 479 Description attribute, or is using Validate-Job sufficient if we change it from SHOULD to MUST? An
 480 IPP/1.1 Printer would return success, with the “ippfax-~~semantics~~” operation attribute in the
 481 Unsupported Group which the Sender could check for. What about an IPPFAX Receiver that is
 482 configured only for ‘ipp’?

483 **5.3 ~~document-format~~-supported (1setOf mimeType) Printer Description attribute**

484 A Sender MUST query this Printer Description attribute using the Get-Printer-Attributes request before
 485 sending an IPPFAX Job Creation operation and MUST supply the “ippfax-~~semantics~~” operation
 486 attribute with the ‘ippfax’ value, lest non-IPPFAX values be returned (see section 4.2.1); a Receiver
 487 MUST support this ~~Printer Description~~ attribute (see [RFC2911] section 4.4.22). The values of this
 488 attribute indicate ~~whether or not~~which document formats the Receiver supports ~~the Universal Image~~

489 ~~Format (UIF)[14].~~ The Sender MUST supply the “document-format” operation attribute in any Job
 490 Creation or Validate-Job operation with one of the values contained in this Printer Description attribute.
 491 The values of this attribute MUST depend on the value of the “ippfax-semantic” operation attribute
 492 supplied by the client.

493 Standard mimeType values for IPPFAX and IPP Jobs are:

494 ‘image/tiff; application=ui**bw**’: ~~black and white~~ UIF format defined in UIF [14]; Sender and
 495 Receiver MUST support

496 ~~‘image/tiff; application=uifcolor’:~~ ~~color~~ UIF [14]
 497 any other MIME types: Sender and/or Receiver MAY support

498
 499 ~~In order to usefully exchange Documents between arbitrary IPPFAX end points there MUST be some~~
 500 ~~agreement on what formats are used to represent the data. To this end an IPPFAX Receiver MUST~~
 501 ~~support either (1) black and white UIF[14] or (2) both black and white and color UIF[14], i.e., MUST~~
 502 ~~either be configured to include either (1) the ‘image/tiff; application=ui**bw**’ value or (2) both the~~
 503 ~~‘image/tiff; application=ui**bw**’ and ‘image/tiff; application=uifcolor’ values.~~

504 A Receiver MUST support the ‘image/tiff; application=ui**f**’ document format and MAY support other
 505 document formats for IPPFAX Jobs.

506 The Sender is not restricted to sending UIF formats to the Receiver and MAY send any supported
 507 format ~~to the~~ that the Receiver supports for IPPFAX Jobs. It is the Sender's choice; the Receiver has no
 508 way of indicating preferred formats from amongst the formats that the Receiver supports for IPPFAX
 509 Jobs.

510 **5.4 ippfax-printer-uif-profiles-supported (1setOf type2 keyword) Printer Description** 511 **attribute**

512 A Sender MUST query this Printer Description attribute using the Get-Printer-Attributes request before
 513 sending an IPPFAX Job Creation operation if any UIF Profile other than the REQUIRED ‘uif-s’ Profile
 514 is used; a Receiver MUST support this Printer Description attribute. The values of this attribute
 515 indicate which black/white, grayscale, and color UIF ~~profile~~ Profiles the Receiver supports. See [14] for
 516 the definition of each of these UIF ~~profile~~ Profiles and the inter-dependency requirements for UIF
 517 ~~profile~~ Profile support. The values of this attribute MUST conform to the inter-dependency
 518 requirements in [14] for UIF profile Profile support (for example, UIF Profile S MUST be supported and
 519 UIF Profile C MUST be supported if UIF Profile L is supported, so ‘uif-s’ MUST always be present
 520 and ‘uif-c’ MUST be present if ‘uif-l’ is present). The values of this attribute MUST NOT depend on
 521 the value of the “ippfax-semantic” operation attribute supplied by the client.

522 Standard keyword values are:

523 ‘uif-s’: UIF Profile S; Sender and Receiver MUST support
 524 ‘uif-f’: UIF Profile F; Sender and/or Receiver MAY support
 525 ‘uif-j’: UIF Profile J; Sender and/or Receiver MAY support

526 'uif-c': UIF Profile C; Sender and/or Receiver MAY support
 527 'uif-l': UIF Profile L; Sender and/or Receiver MAY support
 528 'uif-m': UIF Profile M; Sender and/or Receiver MAY support
 529 ~~'uif-t': UIF Profile T [21]~~

530

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

533 ~~ISSUE 04: OK to add UIF Profile T (JBIG2) which is only an I-D?~~

534 A Receiver MUST support the 'uif-s' UIF Profile and MAY support other UIF Profiles for IPPFAX
 535 and IPP Jobs.

536 **5.5 ~~ippfax-printer-uif-profile-capabilities (octetString32k(MAX) 1setOf text(MAX))~~ Printer**
 537 **Description attribute**

538 ISSUE 1418: Can OK that we get-got rid of the new 'octetString32k' attribute syntax and use existing
 539 IPP/1.1 attribute syntaxes, so that existing IPP systems can be used as gateways?

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

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

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

555 ~~ISSUE 05: Should we change the attribute syntax of the "printer-uif-profile-capabilities"~~
 556 ~~(octetString32k) Printer Description attribute to be multi-valued text, i.e., 1setOf text(MAX)? At the~~
 557 ~~last IPP FAX telecon on May 30, this issue was re-raised. From reading the CONNEG RFCs, the same~~
 558 ~~*white space* rules are used between tokens as for email. Thus, we could represent CONNEG strings~~
 559 ~~as 1setOf text, where each text value contains one or more CONNEG tokens. When combining a~~
 560 ~~1setOf text into a CONNEG string, the parser would insert some *white space" between each value.~~

561 ~~Note: each token doesn't have to be a separate text value (though it can be).~~

562 ~~Alternatively, we could just simply chunk the CONNEG value at arbitrary places between each text~~
 563 ~~value.~~

564 ~~The advantage of using existing IPP data types, instead of inventing a new data type, is that existing~~
 565 ~~gateways can be used. Remember that a number of initial IPP implementations were just gateways to~~
 566 ~~existing printing systems.~~

567 **5.6 Other Printer Description Attributes**

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

571 **Table 1 - Printer Description attributes conformance requirements in the Get-Printer-Attributes**
 572 **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 jobs-supported (1setOf type2 keyword)	MUST	MUST	5.2
document-format-supported (1setOf mimeType)	MUST	MUST	5.3
ippfax-printer -uif-profiles-supported (1setOf type2 keyword)	MUST	MUST	5.4
ippfax-printer -uif-profile-capabilities (octetString32k(MAX))	MAY	MUST	5.5
media-supported (1setOf (type3 keyword name(MAX)))	SHOULD MUST	MUST	5.7.1
media-ready (1setOf (type3 keyword name(MAX)))	SHOULD 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
ippfax-receiver-identity (name(MAX)) printer-uri-supported	MAY	MUST	6.4
ippfax- destination off-ramp-scheme(s)-supported (1setOf type2 keyword uriScheme)	MAY	MUST **	10.1.1.1

573 * The Sender SHOULD query, if submitting the corresponding “xxx” Job Template attribute in the
 574 Validate-Job or Job Creation operation.

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

576

577 5.7 xxx-supported Job Template Printer attributes

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

583 5.7.1 media-supported and media-ready Job Template Printer attributes

584 ~~For example, t~~The Sender ~~SHOULD~~MUST query the values of the “media-supported” and “media-
585 ready” attributes, since the Sender MUST supply the “media” Job Template attribute in the Job
586 Creation operation. The “media-ready” attribute indicates which media are currently loaded and will
587 not require human intervention in order to be used.

588 5.7.2 printer-resolution-supported Job Template Printer attribute

589 ~~As another example, i~~f the Sender is using a resolution for a UIF ~~profile~~Profile that is not one of the
590 REQUIRED resolutions for the UIF ~~profile~~Profile being used, then the Sender SHOULD query the
591 “printer-resolution-supported” Printer attribute. The “printer-resolution-supported” (1setOf resolution)
592 Printer attribute is the union of the resolutions supported for any UIF Profiles and the UIF Profile S
593 MUST support all of them. This attribute allows the Sender to determine the additional resolutions
594 supported above and beyond the resolutions required for support of each of the UIF Profiles without
595 having to interpret the CONNEG expression values of the “~~ippfax-printer-uif-profile-capabilities~~”
596 Printer Description attribute (see section 5.5). Warning: the “printer-resolution-supported” attribute
597 contains all of the resolutions for UIF Profile S, but other UIF Profiles NEED NOT support all of those
598 values, but MUST NOT support any other resolutions.

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

603 5.7.3 Other Job Template xxx-default and xxx-supported Printer attributes

604 ~~The following sub-sections define how the “ippfax-semantic” operation attribute affects (colors) the~~
605 ~~Printer attributes returned in a Get-Printer-Attributes response.~~See section 7.3 for the IPPFAX
606 semantic for the other Job Template attributes (“xxx” Job attributes and their corresponding “xxx-
607 default” and “xxx-supported” Printer attributes).

608 6 Identity exchange

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

610 6.1 ippfax-sending-user-vcard identity-(1setOf text(MAX)) operation/Job Description 611 attribute

612 The Sender SHOULD send this operation attribute in ~~the Print-Job~~an IPPFAX Job Creation operation;
613 a Receiver MUST support this Print-Job and Validate-Job operation attribute. This attribute identifies
614 the Sending User in MIME vCard [10, 19, 20] format. For a sample vCard see section 15. If the Sender
615 supplies the attribute, then the Receiver MUST use its value to populate the Job object's "~~ippfax-~~
616 ~~sending-user-identity~~"corresponding Job Description attribute of the same name.

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

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

621 ~~ISSUE 06: The use of "identity" meaning vCard in the "ippfax-sending-user-identity" attribute name is~~
622 ~~quite different from its use in Kerberos and other network single login technologies. Should we change~~
623 ~~the name to something like "ippfax-sending-user-vcard"?~~

624 ~~ISSUE 07: Ok to change the attribute syntax of the "ippfax-sending-user-identity" operation attribute~~
625 ~~from octetString32k(MAX) to text(MAX), since the value is a vCard string and 1023 characters seem~~
626 ~~plenty? Then this attribute would get through IPP/1.1 Gateways.~~

627 ~~ISSUE 08: Or should we make the attribute syntax of the "ippfax-sending-user-identity" operation~~
628 ~~attribute be multi-valued, i.e., 1setOf text(MAX)? Then this attribute would get through IPP/1.1~~
629 ~~Gateways and not be limited to length.~~

630 The Receiver MAY choose to use this information on a job start and end sheet (banner page) for the
631 job. Whether or not the Receiver prints a separate job start sheet depends on the "job-sheets" Job
632 Template attribute. The Sender can request the Receiver to print a separate start sheet if the Receiver's
633 "job-sheets-supported" Printer attribute (see [RFC2911] section 4.2.3) contains a value other than
634 'none'. The Sender can suppress the Receiver's separate start sheet if the Receiver's "job-sheets-
635 supported" Printer attribute contains the 'none' value. If the Sender omits the "job-sheets" Job
636 Template attribute, the Receiver's "job-sheets-default" value will be used.

637 6.2 ippfax-receiving-user-vcard identity-(text(MAX)) operation/Job Description attribute

638 The Sender SHOULD send this operation attribute in ~~a Print-Job~~an IPPFAX Job Creation or Validate-
639 Job operation; a Receiver MUST support this Print-Job operation attribute. This attribute identifies the
640 intended Receiving User in MIME vCard format[10, 19, 20]. For a sample vCard see section 15. If the

641 Sender supplies the attribute, then the Receiver MUST use its value to populate the Job object's
642 ~~corresponding "ippfax-sending-user-identity"~~ Job Description attribute of the same name.

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

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

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

649 ~~ISSUE 09: The use of "identity" meaning vCard in the "ippfax-receiving-user-identity" attribute name~~
650 ~~is quite different from its use in Kerberos and other network single login technologies. Should we~~
651 ~~change the name to something like "ippfax-receiving-user-veard"?~~

652 ~~ISSUE 10: Ok to change the attribute syntax of the "ippfax-receiving-user-identity" operation attribute~~
653 ~~from octetString32k(MAX) to text(MAX), since the value is a vCard string and 1023 characters seem~~
654 ~~plenty? Then this attribute would get through IPP/1.1 Gateways.~~

655 ~~ISSUE 11: Or should we make the attribute syntax of the "ippfax-receiving-user-identity" operation~~
656 ~~attribute be multi-valued, i.e., 1setOf text(MAX)? Then this attribute would get through IPP/1.1~~
657 ~~Gateways and not be limited to length.~~

658 **6.3 ippfax-sender-uri identity (uriname(MAX)) operation/Job Description attribute**

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

661 The Sender MUST send this operation attribute in a ~~Print-Job~~ an IPPFAX Job Creation operation ~~in~~
662 ~~order to indicate that this is an IPPFAX Job~~; a Receiver MUST support this Print-Job operation
663 attribute. This attribute identifies the Sender in a similar manner to the way a Sending Station ID is
664 used in a GSTN fax device. The Receiver MUST use its value to populate the Job object's
665 ~~corresponding "ippfax-sender-identity"~~ Job Description attribute of the same name. ~~The presence of the~~
666 ~~attribute also marks the job as an IPPFAX Job.~~

667 ~~If a Receiver is configured to accept IPP Jobs as well (see section 4.1), then the absence of this~~
668 ~~operation attribute on a Validate-Job or Print-Job request indicates that the job is an IPP Job. An IPP~~
669 ~~Job is a UIF-only Job if the supplied "document-format" is UIF (see section 6.3.1.1).~~

670 ~~If a Receiver is not configured to accept IPP Jobs, then the Receiver MUST reject any Job Creation~~
671 ~~operation for which the "ippfax-sender-identify" is omitted and return the 'client_error_forbidden' status~~
672 ~~code.~~

673 ~~ISSUE 12: Is ‘client_error_forbidden’ status code the proper status code to return for an IPP Job~~
674 ~~submitted to a Receiver that is configured only to accept IPPFAX Jobs, i.e., the value of the Receiver’s~~
675 ~~“ippfax-jobs-supported” contains only the ‘ippfax-authenticated’ value?~~

676 ~~If the Sender is submitting a UIF document but doesn’t want the guarantees and restrictions of an~~
677 ~~IPPFAX Job, the Sender MUST omit this operation attribute. The “document-format” operation~~
678 ~~attribute with the UIF MIME media type identifies the job as a UIF-only Job.~~

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

682 **ISSUE 23+3:** SHOULD be using a client URL by preference and NOT a MAC address (generally
683 totally unknown to an IPP client application). In any case the IEEE and IETF don't approve the use of
684 MAC address for identifiers anymore except in EUI-64 format (an IEEE standard), which is the basis
685 for canonical IPv6 self-configured global addresses. Ira will look up the RFC references later, if you
686 want EUI-64

687 **6.4 printer-uri-supported (1setOf uri) Printer Description attribute**

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

690 **5.4ippfax-receiver-identity (name(MAX)) Printer Description attribute**

691 ~~The Sender MAY read this Printer Description attribute using the Get Printer Attributes operation; the~~
692 ~~Receiver MUST support this Printer Description attribute. This attribute identifies the Receiver.~~

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

695 ~~ISSUE 14: The ippfax-receiver-identity (name(MAX)) Printer Description attribute is bad design. The~~
696 ~~“printer-uri-supported” is EXACTLY what “ippfax-receiver-identity” is supposed to be without all this~~
697 ~~unsuitable discussion about MAC addresses. So can we get rid of the ippfax-receiver-identity~~
698 ~~(name(MAX)) Printer Description attribute and REQUIRE the Sender to query the “printer-uri-~~
699 ~~supported” Printer Description attribute instead?~~

700 **7 Data Exchange - IPPFAX Job Submission**

701 This section describes how a Sender submits an IPPFAX Job to a Receiver, after having determined the
702 Receiver’s capabilities according to section 5.

703 7.1 Validating the Job using the Validate-Job operation

704 The Sender SHOULD validate the job attributes using the Validate-Job operation (that doesn't include
705 any Document data) before sending the IPPFAX Job with the same attributes using ~~the Print-Job~~
706 IPPFAX Job Creation operation that includes the Document data. For meaningful and complete job
707 validation, the Sender SHOULD supply all the same operation and Job Template attributes in the
708 Validate-Job request as it will supply in the ~~Print-Job~~subsequent Job Creation request (see section 7.2).

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

712 7.2 Transmission using the Print-Job or other Job Creation operation

713 The Sender MUST support creating IPPFAX Jobs using the Print-Job operation and MAY support
714 creating IPPFAX Jobs using other Job Creation operations as well. The Receiver MUST support
715 creating IPPFAX Jobs using the Print-Job operation and MAY support creating IPPFAX Jobs with
716 other Job Creations operations as well. Documents MUST be sent using the IPP Print-Job operation.
717 There is no requirement for an IPPFAX Receiver to support any other IPP job submission operations.

718 7.2.1 IPP/1.1 Validate-Job and ~~Print-Job~~Job Creation operation attributes

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

722

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

Operation attribute	<u>Section</u>	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) <u>*</u>	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
<u>ippfax- semantics (type2 keyword)</u>	3.2	<u>MUST</u>	<u>MUST</u>
<u>ippfax- uif- profiles (1setOf type2 keyword)</u>	7.2.1.3	<u>MUST</u>	<u>MUST</u>
<u>ippfax- sending- user- vcard (1setOf text(MAX))</u>	6.1	<u>SHOULD</u>	<u>MUST</u>
<u>ippfax- receiving- user- vcard (text(MAX))</u>	6.2	<u>SHOULD</u>	<u>MUST</u>
<u>ippfax- sender- uri (name(MAX))</u>	6.3	<u>MUST</u>	<u>MUST</u>
<u>ippfax- sending- user- certificate- uri (uri) *</u>	9.2	<u>MAY</u>	<u>MUST</u>
<u>ippfax- off- ramp- uri (uri)</u>	10.1.1	<u>MAY</u>	<u>MUST **</u>
<u>ippfax- off- ramp- retry- count (integer(0:MAX))</u>	10.1.2	<u>MAY</u>	<u>MUST **</u>
<u>ippfax- off- ramp- max- retry- count (integer(0:MAX))</u>	10.1.3	<u>MAY</u>	<u>MUST **</u>
<u>ippfax- off- ramp- retry- interval (integer(1:MAX))</u>	10.1.4	<u>MAY</u>	<u>MUST **</u>

723

*These attributes are NOT Job Description attributes, only Operation attributes for ~~the Print-Job~~ IPPFAX Job Creation and Validate-Job operations.

724

725

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

726

727

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

728

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

729

730

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.

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

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

737 **7.2.1.2 document-format (mimeMediaType) operation attribute**

738 The Sender MUST send this operation attribute in the Validate-Job and ~~Print-Job~~Job Creation
 739 operations; a Receiver MUST validate and support this operation attribute. If the Sender does not
 740 supply this attribute, the Receiver MUST reject the operation and return the 'client-error-bad-request'
 741 status code. Note: [RFC2911] does not REQUIRE the IPP Client to supply this operation attribute. If
 742 the Sender supplies a value that the Receiver does not support, i.e., not a value of the Receiver's
 743 "document-format-supported" Printer Description attribute, the Receiver MUST reject the operation
 744 and return the 'client-error-document-format-not-supported' status code (IPP conformance).

745 Standard mimeMediaType values are defined in section 5.3.:

746 — 'image/tiff; application=uiwbw': black and white UIF [14]

747 — 'image/tiff; application=uiwcolor': color UIF [14]

748 **7.2.1.3 ippfax-uif-profiles (1setOf type2 keyword) operation attribute**

749 The Sender MUST send this operation attribute in the Validate-Job and Job Creation operations; a
 750 Receiver MUST validate and support this operation attribute. If the Sender does not supply this
 751 attribute, the Receiver MUST reject the operation and return the 'client-error-missing-required-
 752 attribute' status code along with the 'ippfax-uif-profiles' attribute keyword name in the Unsupported
 753 Attributes Group. If the Sender supplies a value that the Receiver does not support, i.e., not a value of
 754 the Receiver's "ippfax-uif-profiles-supported" Printer Description attribute, the Receiver MUST reject
 755 the operation and return the 'client-error-document-format-not-supported' status code (IPP
 756 conformance).

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

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

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

766 Standard keyword values are defined in section 5.4.

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

770 ISSUE 26: OK to REQUIRE the Sender to supply the "ippfax-uif-profiles" of the document being
771 sent? What if the Sender didn't create the document?

772 7.3 Job Template Attributes

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

777 "Printer MUST support" - The Printer MUST support the Job Template attribute for an IPPFAX Job.
778 However, the attributes and values returned by the Printer with the Get-Printer-Attributes
779 operation MAY depend on the value of the "ippfax-semantics" supplied by the client. Note:
780 These are attributes which do not affect the appearance of the document or provide a
781 significantly non-FAX feature.

782 "Printer MUST NOT support" - The Printer MUST NOT support the Job Template attribute for an
783 IPPFAX Job (and the Sender MUST NOT supply). If these attributes are supplied in an
784 IPPFAX Job, the Job Creation operation MUST be rejected. When querying the Printer with
785 the Get-Printer-Attributes operation with "ippfax-semantics" = 'ippfax', the corresponding
786 "xxx-default" and "xxx-supported" MUST NOT be returned. Note: These are attributes which
787 might degrade the appearance of the document or do not provide a significantly non-FAX
788 feature.

789 "same as IPP" - if these Job Template attributes are supplied in an IPPFAX Job, the Job Creation
790 operation MUST be performed as for IPP jobs and when querying the Printer with the Get-
791 Printer-Attributes operation the attributes and values returned MUST NOT depend on the value
792 of the "ippfax-semantics" supplied by the client.

793 "Sender MUST supply" - the Sender MUST supply this Job Template attribute in an IPPFAX Job
794 Creation request.

Table 3 - IPPFAX Semantics for Job Template Attributes

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

796

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

799 7.3.1 media (type2 keyword | name(MAX)) Job Template attribute

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

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

806 ‘na_letter_8.5x11in’
 807 ‘iso_a4_210x297mm’

808 7.3.2 printer-resolution (resolution) Job Template attribute

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

812 If the Sender supplies the “resolution” (resolution) Job Template attribute, the value MUST agree with
 813 the resolution of each of the pages of the UIF document. If the supplied value disagrees with the
 814 resolution of any of the pages of the UIF document, the Receiver MUST obey the resolution in the UIF
 815 document, on a page by page basis.

816 Note: The main purpose of requiring the Receiver to support the “printer-resolution” Job Template
 817 attribute is so that the Sender can query the corresponding “printer-resolution-supported” (1setOf
 818 resolution) Printer attribute to see what resolutions are supported in addition to the ones REQUIRED
 819 for the UIF [profile](#) Profiles supported.

820 7.4 Confirmation using the ~~Print-Job~~ Document Creation response

821 The Sender knows when the Receiver has successfully received the entire Document when the Receiver
822 returns the 'successful-ok' status code in the Print-Job, Send-Document, or Send-URI response; the
823 Sender MUST then inform the Sending User by means outside the scope of this standard that the
824 document has successfully been received. See section 7.5 for informing the Sending User when the
825 document has been successfully printed.

826 7.5 notification-recipient-uri operation attribute and the Get-Notifications operation

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

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

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

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

846 7.6 Subscription Template Attributes Conformance Requirements

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

850

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

851

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

852

853

7.7 Notification Event Conformance Requirements

854

Table 5 lists the conformance requirements for notification events.

855

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

856

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

857

858

859

7.8 Identity Stamping

860

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.)

861

862 **8 IPP Implementation of other IPP operations**

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

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

875 **8.1 Operation Conformance Requirements**

876 Table 6 lists the conformance requirements for IPP operations for the non-privileged IPPFAX Sender
877 and IPPFAX Receiver. Operations that require operator or administrator privileges are indicated as
878 OPER ONLY meaning they are OPTIONAL to support, but if supported, REQUIRE authentication
879 and authorization as operator or administrator.~~Any other operations are OPTIONAL for an IPPFAX~~
880 ~~Sender or an IPPFAX Receiver to support.~~

881 **Table 6 - Operation Conformance Requirements**

<u>Operation Name</u>	<u>Code</u>	<u>IPP/1.1 Printer</u>	<u>IPPFAX Sender</u>	<u>IPPFAX Receiver</u>	<u>Reference</u>
<u>reserved, not used</u>	<u>0x0000</u>				<u>[RFC2911]</u>
<u>reserved, not used</u>	<u>0x0001</u>				<u>[RFC2911]</u>
<u>Print-Job</u>	<u>0x0002</u>	<u>MUST</u>	<u>MUST</u>	<u>MUST</u>	7.2
<u>Print-URI</u>	<u>0x0003</u>				<u>[RFC2911]</u>
<u>Validate-Job</u>	<u>0x0004</u>	<u>MUST</u>	<u>SHOULD</u>	<u>MUST</u>	7.1
<u>Create-Job</u>	<u>0x0005</u>				<u>[RFC2911]</u>
<u>Send-Document</u>	<u>0x0006</u>				<u>[RFC2911]</u>
<u>Send-URI</u>	<u>0x0007</u>				<u>[RFC2911]</u>
<u>Cancel-Job</u>	<u>0x0008</u>	<u>MUST</u>	<u>MAY</u>	<u>MAY</u>	8.2
<u>Get-Job-Attributes</u>	<u>0x0009</u>	<u>MUST</u>	<u>MAY</u>	<u>MAY</u>	8.3
<u>Get-Jobs</u>	<u>0x000A</u>	<u>MUST</u>	<u>MAY</u>	<u>MAY</u>	8.3
<u>Get-Printer-Attributes</u>	<u>0x000B</u>	<u>MUST</u>	<u>MUST</u>	<u>MUST</u>	4.5
<u>Hold-Job</u>	<u>0x000C</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[RFC2911]</u>
<u>Release-Job</u>	<u>0x000D</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[RFC2911]</u>
<u>Restart-Job</u>	<u>0x000E</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[RFC2911]</u>
<u>reserved for a future operation</u>	<u>0x000F</u>				<u>[RFC2911]</u>
<u>Pause-Printer</u>	<u>0x0010</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[RFC2911]</u>
<u>Resume-Printer</u>	<u>0x0011</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[RFC2911]</u>

<u>Operation Name</u>	<u>Code</u>	<u>IPP/1.1 Printer</u>	<u>IPPFAX Sender</u>	<u>IPPFAX Receiver</u>	<u>Reference</u>
<u>Purge-Jobs</u>	<u>0x0012</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[RFC2911]</u>
<u>Set-Printer-Attributes</u>	<u>0x0013</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>5.2</u>
<u>Set-Job-Attributes</u>	<u>0x0014</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-set-ops]</u>
<u>Get-Printer-Supported-Values</u>	<u>0x0015</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-set-ops]</u>
<u>Create-Printer-Subscription</u>	<u>0x0016</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ntfy]</u>
<u>Create-Job-Subscription</u>	<u>0x0017</u>	<u>MAY</u>	<u>MAY</u>	<u>MAY</u>	<u>[ipp-ntfy]</u>
<u>Get-Subscription-Attributes</u>	<u>0x0018</u>	<u>MAY</u>	<u>MAY</u>	<u>MAY</u>	<u>[ipp-ntfy]</u>
<u>Get-Subscriptions</u>	<u>0x0019</u>	<u>MAY</u>	<u>MAY</u>	<u>MAY</u>	<u>[ipp-ntfy]</u>
<u>Renew-Subscription</u>	<u>0x001A</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ntfy]</u>
<u>Cancel-Subscription</u>	<u>0x001B</u>	<u>MAY</u>	<u>MAY</u>	<u>MAY</u>	<u>[ipp-ntfy]</u>
<u>Get-Notifications</u>	<u>0x001C</u>	<u>MAY</u>	<u>MUST</u>	<u>MUST</u>	<u>7.5</u>
<u>Send-Notifications</u>	<u>0x001D</u>	<u>MAY</u>	<u>MAY</u>	<u>MAY</u>	<u>[ipp-indp-method]</u>
<u>reserved for a future operation</u>					
<u>reserved for a future operation</u>					
<u>reserved for a future operation</u>					
<u>Get-Print-Support-Files</u>	<u>0x0021</u>	<u>MAY</u>	<u>MAY</u>	<u>MAY</u>	<u>[ipp-install]</u>
<u>Enable-Printer</u>	<u>0x0022</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Disable-Printer</u>	<u>0x0023</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Pause-Printer-After-Current-Job</u>	<u>0x0024</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Hold-New-Jobs</u>	<u>0x0025</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Release-Held-New-Jobs</u>	<u>0x0026</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Deactivate-Printer</u>	<u>0x0027</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Activate-Printer</u>	<u>0x0028</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Restart-Printer</u>	<u>0x0029</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Shutdown-Printer</u>	<u>0x002A</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Startup-Printer</u>	<u>0x002B</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Reprocess-Job</u>	<u>0x002C</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Cancel-Current-Job</u>	<u>0x002D</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Suspend-Current-Job</u>	<u>0x002E</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Resume-Job</u>	<u>0x002F</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Promote-Job</u>	<u>0x0030</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>
<u>Schedule-Job-After</u>	<u>0x0031</u>	<u>MAY</u>	<u>OPER ONLY</u>	<u>OPER ONLY</u>	<u>[ipp-ops-set2]</u>

882

883 **ISSUE 28: Are the entries in the Operations Conformance Table 6 correct?**

884 **8.2 Canceling jobs**

885 It is inappropriate for a Sender to transmit a Document as an IPPFAX Job, receive confirmation of its
886 arrival and then cancel it. Therefore:

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

888 The Receiver MUST either (1) reject Cancel-Job operations not issued by an administrator targeted at
889 IPPFAX Jobs or (2) reject Cancel-Job operations targeted at IPPFAX Jobs altogether, depending on
890 implementation and/or policy. (The Receiver can distinguish IPPFAX Jobs from IPP Jobs by the
891 presence of the mandatory “ippfax-~~semantics~~sender-identity” job-Job Description attribute - see section
892 3.2). The Cancel-Job operation therefore becomes a privileged operation on all IPPFAX Jobs or not
893 supported. This behavior is a change to the IPP behavior. Which implementation choice MUST be
894 reflected in the value of the “operations-supported” Printer attribute (see section 4.1.2).

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

897 **8.3 Querying jobs using Get-Job-Attributes and Get-Jobs operations**

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

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

903 job-id, job-uri
904 job-k-octets, job-k-octets-completed
905 job-media-sheets, job-media-sheets-completed,
906 time-at-creation, time-at-processing
907 job-state, job-state-reasons
908 number-of-intervening-jobs
909

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

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

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

916 An IPP administrator MAY read all attributes.

917 **8.4 Job submission**

918 The Sender MUST support sending IPPFAX Jobs to the Receiver using the Print-Job operation which
919 MUST include the “ippfax-~~semantics~~sender-identity” operation attribute. The Sender and Receiver
920 MAY support additional Job Creation operations, such as Create-Job and Print-URI, along with the
921 Document Creation operations, such as Send-Document and Send-URI.

922 9 Security considerations

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

928 9.1 Privacy

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

932 The Receiver MUST have a TLS certificate.

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

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

936 9.2 `ippfax-sending-user-certificate-uri` (`octetString32k(MAX)`)`uri` operation/Job 937 Description attribute

938 The Sender MAY supply this operation attribute in a [Print-Job](#) or [Validate-Job](#) or [IPP FAX Job Creation](#)
939 operation; the Receiver MUST support this operation attribute. The use of TLS assures the Sender and
940 the Sending User that the Receiver is what it claims to be.

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

947 ~~ISSUE-17: Is this the last use of the new octetString32k attribute syntax? Can we change it to an~~
948 ~~existing data type or 1setOf octetString(MAX), i.e., chunk the data, so that it can be passed through~~
949 ~~existing IPP Gateways?~~

950 9.3 Access control

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

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

957 **9.4 Reduced feature set**

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

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

965 **10 Gateways to other systems**

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

968 **10.1 Off-Ramps**

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

973

Table 7 - REQUIRED Off-Ramp Attributes

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

974

975

976

977

Legend:
OA - Operation Attribute in a Job Creation operation
JD - Job Description attribute

978

979

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

980

981

982

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

983

984

If the Sender supplies the attribute, the Receiver MUST use its value to populate the Job object's corresponding "ippfax-destination-uri" (uri) Job Description attribute of the same name.

985

986

10.1.1.1 ippfax-~~destination~~off-ramp-schemes-supported (1setOf type2 keyworduriScheme) Printer Description attribute

987

988

989

990

991

992

993

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

994

Standard URI scheme values include:

- 995 'none': No off ramps are supported; MUST NOT be used with other values
996 'mailto': The Receiver attaches the document to a mail note and mails it to the destination URI
997 'tel': The Receiver dials the numbers and forwards the job
998 'fax': The Receiver sends the document to the indicated FAX phone number.
999

1000 **ISSUE 29: What does the 'tel' scheme do for IPPFAX?**

1001
1002 From the list of supported schemes, the user selects the desired scheme with which the Sender then
1003 populates the "ippfax-~~destination~~off-ramp-uri" (uri) operation attribute on Print-Job or Validate-Job
1004 requests.

1005 **10.1.2 ippfax-off-ramp-retry-count (integer(0:MAX)) Job Description attribute**

1006 If the Receiver supports acting as an Off-Ramp Gateway, the Receiver MUST support this Job
1007 Description attribute. The Receiver sets this Job Description attribute to 0 when creating the job and
1008 increments each time it retries to send the job to the Off Ramp. The Receiver increments the value of
1009 this attribute each time it retries to send the job after the first failure. If the first time succeeds, this
1010 attribute remains with a 0 value.

1011 **10.1.3 ippfax-off-ramp-max-retry-count (integer(0:MAX)) operation/Job Description** 1012 **attribute**

1013 The Sender MAY supply this attribute when sending to an Off-Ramp; the Receiver MUST support this
1014 attribute if it acts as an Off-Ramp. This attribute specifies the maximum number of retries that the
1015 Receiver will attempt acting as an Off-Ramp after the first failure to send. If supplied by the Sender, the
1016 Receiver populates the "ippfax-off-ramp-max-retry-count" Job Description attribute with the same
1017 value.

1018 **10.1.3.1 ippfax-off-ramp-retry-count-default (integer(0:MAX)) Printer Description** 1019 **attribute**

1020 The Receiver MUST support this attribute if it acts as an Off-Ramp. The Printer populates the Job's
1021 "ippfax-off-ramp-max-retry-count" Job Description attribute with this value, if the Sender omits it.

1022 **10.1.3.2 ippfax-off-ramp-retry-count-supported (rangeOfInteger(0:MAX)) Printer** 1023 **Description attribute**

1024 The Receiver MUST support this attribute if it acts as an Off-Ramp. If the Sender submits an "ippfax-
1025 off-ramp-max-retry-count", it MUST be in range of this attribute; otherwise, the Printer MUST reject
1026 the operation with the 'client-error-attributes-or-values-not-supported'.

1027 **10.1.4 ippfax-off-ramp-retry-interval (integer(0:MAX)) operation/Job Description**
 1028 **attribute**

1029 The Sender MAY supply this attribute when sending to an Off-Ramp; the Receiver MUST support this
 1030 attribute if it acts as an Off-Ramp. This attribute specifies the number seconds between retries that the
 1031 Receiver will attempt acting as an Off-Ramp after the first failure to send. If supplied by the Sender, the
 1032 Receiver populates the “ippfax-off-ramp-retry-interval” Job Description attribute with the same value.

1033 **10.1.4.1 ippfax-off-ramp-retry-interval-default (integer(0:MAX)) Printer Description**
 1034 **attribute**

1035 The Receiver MUST support this attribute if it acts as an Off-Ramp. The Printer populates the Job’s
 1036 “ippfax-off-ramp-retry-interval” Job Description attribute with this value, if the Sender omits it.

1037 **10.1.4.2 ippfax-off-ramp-retry-interval-supported (rangeOfInteger(0:MAX)) Printer**
 1038 **Description attribute**

1039 The Receiver MUST support this attribute if it acts as an Off-Ramp. If the Sender submits an “ippfax-
 1040 off-ramp-retry-interval”, it MUST be in range of this attribute; otherwise, the Printer MUST reject the
 1041 operation with the ‘client-error-attributes-or-values-not-supported’.

1042 **10.2 On-Ramps**

1043 In the IPPFAX On-Ramp scenario the user originally sent the Document using some other mechanism
 1044 to some intermediate agent. The intermediate agent, acting as an IPPFAX Sender, then uses the
 1045 IPPFAX protocol to transmit the Document to an IPPFAX Receiver which MAY be either a final
 1046 destination or an Off-Ramp. IPPFAX has no specific support for on-ramps.

1047 **11 Attribute Syntax**

1048 No new attribute syntaxes are defined. This section defines additional attribute syntaxes defined for use
 1049 in IPPFAX.

1050 **10.1 ‘octetString32k’**

1051 The ‘octetString32k’ attribute syntax is a sequence of octets encoded in a maximum of 32,767 octets
 1052 which is indicated in sub-section headers using the notation: octetString32k(MAX). This syntax type is
 1053 used for opaque data. Both the Sender and Receiver MUST support this attribute syntax.

1054 **ISSUE 3018: Can OK that we get-got rid of the new ‘octetString32k’ attribute syntax and use existing**
 1055 **IPP/1.1 attribute syntaxes, so that existing IPP systems can be used as gateways?**

1056 12 Status codes

1057 ~~No new status codes are defined. In addition to T~~the status codes defined in [4] and [11], the following
1058 status code is defined: are to be used.

1059 12.1 client-error-missing-required-attribute (0x0419)

1060 The client has failed to supply one or more attributes in a request which are REQUIRED to be supplied.
1061 The requirement can be because of the Printer's current configuration or because of some other
1062 attributes that the client supplied. The Printer MUST reject the request, return the 'client-error-
1063 missing-required-attribute' status code, along with the keyword attribute name (but not the value) of the
1064 missing attribute(s).

1065 ISSUE 31: Is the description of this new 'client-error-missing-required-attribute' (0x0419) status code
1066 sufficient?

1067 13 Conformance Requirements

1068 This section summarizes the conformance requirements for IPPFAX Senders and IPPFAX Receivers
1069 that are defined elsewhere in this document.

1070 ISSUE 3219: Do the conformance requirements look ok?

- 1071 1. The Sender MUST supply and the Receiver MUST support the "ippfax-semantic" operation
1072 attribute in all operations to get the IPPFAX semantics as described in section 3.2.
- 1073 2. The Sender MUST query and the Receiver MUST support the attributes using the Get-Printer-
1074 Attributes operation as described in sections 4 and 5 and Table 1.
- 1075 3. The Sender MUST supply and the Receiver MUST support the operation/Job Description
1076 attributes for Identify Exchange as described in section 6.
- 1077 4. The Sender MUST support submitting and the Receiver MUST accept IPPFAX Jobs as defined
1078 in section 7 and Table 2, Table 3, Table 4, and Table 5.
- 1079 5. The Sender MUST place the Sender's identity on every page as required in section 7.8.
- 1080 6. The Sender and Receiver MUST support the operations as indicated in section 8 and Table 6.
- 1081 7. The Sender and Receiver MUST support the security mechanisms indicated in section 9,
1082 including TLS.
- 1083 8. If the Sender and Receiver support Off-Ramps, they must support the attributes defined in
1084 section 10.1.

1085 ~~The Sender and Receiver MUST support the octetString32k attribute syntax defined in section 10.1.~~

1086 **14 IANA Considerations**

1087 **Need to register the new attributes and the new status code. Text TBD.**

1088 **15 Appendix B: vCard Example**

1089 The following ASCII text is a complete vCard [10, 19, 20] example:

1090 **ISSUE 33: Need version 3.0 of vCard, since it is an RFC, while version 2.1 is not.**

```

1091 BEGIN:VCARD
1092 VERSION:2.1
1093 N:Moore;Paul
1094 FN:Paul Moore
1095 ORG:Peerless Systems Networking
1096 TEL;CELL;VOICE:(206) 251-7008
1097 ADR;WORK;;;10900 NE 8th St;Bellvue;WA;98004;United States of America
1098 EMAIL;PREF;INTERNET:pmoore@peerless.com
1099 REV:19991207T215341Z
1100 END:VCARD

```

1102 **ISSUE 3420: Is this example accurate? The phone number format seem wrong.**

1103 **ISSUE 35 (repeat): What vCard restrictions? No pictures, no logos, no sound?**

1104

1105 **16 Appendix C: Generic Directory Schema for an IPPFAX Receiver**

1106 This section defines a generic schema for an entry in a directory service. A directory service is a means
 1107 by which service users can locate service providers. In IPP environments, this means that IPP Printers
 1108 can be registered (either automatically or with the help of an administrator) as entries of type printer in
 1109 the directory using an implementation specific mechanism such as entry attributes, entry type fields,
 1110 specific branches, etc. Directory clients can search or browse for entries of type printer. Clients use the
 1111 directory service to find entries based on naming, organizational contexts, or filtered searches on
 1112 attribute values of entries. For example, a client can find all printers in the "Local Department" context.
 1113 Authentication and authorization are also often part of a directory service so that an administrator can
 1114 place limits on end users so that they are only allowed to find entries to which they have certain access
 1115 rights. IPP itself does not require any specific directory service protocol or provider.

1116 Note: Some directory implementations allow for the notion of "aliasing". That is, one directory entry
 1117 object can appear as multiple directory entry objects with different names for each object. In each case,
 1118 each alias refers to the same directory entry object which refers to a single IPP Printer object.

1119 The generic schema is a subset of IPP Printer Job Template and Printer Description attributes
 1120 ([RFC2911] sections 4.2 and 4.4). These attributes are identified as either RECOMMENDED or
 1121 OPTIONAL for the directory entry itself. This conformance labeling is NOT the same conformance
 1122 labeling applied to the attributes of IPP Printers objects. The conformance labeling in this Appendix is
 1123 intended to apply to directory templates and to IPP Printer implementations that subscribe by adding
 1124 one or more entries to a directory. RECOMMENDED attributes SHOULD be associated with each
 1125 directory entry. OPTIONAL attributes MAY be associated with the directory entry (if known or
 1126 supported). In addition, all directory entry attributes SHOULD reflect the current attribute values for
 1127 the corresponding Printer object.

1128 The names of attributes in directory schema and entries SHOULD be the same as the IPP Printer
 1129 attribute names as shown, as much as possible.

1130 In order to bridge between the directory service and the IPP Printer object, one of the
 1131 RECOMMENDED directory entry attributes is the Printer object's "printer-uri-supported" attribute.
 1132 The directory client queries the "printer-uri-supported" attribute (or its equivalent) in the directory entry
 1133 and then the IPP client addresses the IPP Printer object using one of its URIs. The "uri-security-
 1134 supported" attribute identifies the protocol (if any) used to secure a channel.

1135 The following attributes define the generic schema for directory entries of type PRINTER:

1136 **Table 8 - Generic Schema Directory Entries**

1137	<u>All of the attributes in [RFC2911] section 16 Appendix E Generic Directory Schema, plus:</u>	
1138	<u>ippfax-versions-supported (1setOf type2 keyword)</u>	<u>RECOMMENDED section 5.1</u>
1139	<u>ippfax- semantics-supported (1setOf type2 keyword)</u>	<u>RECOMMENDED section 5.2</u>
1140	<u>document-format-supported (1setOf mimeType)</u>	<u>RECOMMENDED section 5.3</u>
1141	<u>ippfax-uif-profiles (1setOf type2 keyword)</u>	<u>RECOMMENDED section 5.4</u>
1142	<u>ippfax-off-ramp-schemes-supported (1setOf uriScheme)</u>	<u>RECOMMENDED section 10.1.1.1</u>
1143		

1144 ISSUE 36: What other Receiver attributes should go in the Generic Directory Schema for an IPPFAX
 1145 Receiver?

1146 ISSUE 37: OK that it is of abstract type printer?

1147 ISSUE 38: Should the concrete type be 'IPP' (since the 'ipp' scheme is being used), or 'IPPFAX' to
 1148 differentiate it from an IPP Printer?

1149 ISSUE 39: Is the conformance right?

1150 **17 References**

- 1151 [1] Masinter , "Terminology and Goals for Internet Fax", RFC2542
- 1152 [2] Toyoda, Ohno, Murai, Wing "A Simple Mode of Facsimile Using Internet Mail" RFC2305
- 1153 [3] Masinter, Wing, "Extended Facsimile Using Internet Mail", RFC2532

- 1154 [4] deBry, Hastings, Herriot, Isaacson, Powell, "Internet Printing Protocol/1.1: Model and
1155 Semantics", RFC2911, September 2000.
- 1156 [5] Herriot, Butler, Moore, Turner, Wenn, "Internet Printing Protocol/1.1: Encoding and
1157 Transport", RFC2910, September 2000
- 1158 [6] Hastings, Manros, Kugler, Holst, and Zehler "Internet Printing Protocol/1.1: Implementer's
1159 Guide", draft-ietf-ipp-implementers-guide-v11-00.txt, January 25, 2001.
- 1160 [7] Dierks, Allen "The TLS Protocol Version 1.0", RFC 2246
- 1161 [8] Bradner, S., "Key words for use in RFCs to Indicate Requirement Level", RFC2119
- 1162 [9] Franks, Hallam-Baker, Hostetler, Leach, Luotonen., Sink, Stewart, "An Extension to HTTP:
1163 Digest Access Authentication", RFC2069
- 1164 [10] Dawson, Howes, "vCard MIME Directory Profile", RFC 2426, September 1998.
- 1165 [11] Herriot, Kugler, and Lewis, "The 'ippget' Delivery Method for Event Notifications", <draft-ietf-
1166 ipp-notify-get-042.txt>, ~~April 2~~ July 17, 2001
- 1167 [12] Herriot, McDonald, "IPP URL Scheme", <draft-ietf-ipp-url-scheme-03.txt>, ~~October 2~~ April 3,
1168 2001
- 1169 [13] X.509
- 1170 [14] Moore, Pulera, Songer, "Universal Image Format (UIF)", June 20, 2001,
1171 <ftp://ftp.pwg.org/pub/pwg/QUALDOCS/uif-spec-05.pdf>
- 1172 [15] Moore, P., "IPP Fax transport requirements", October 16, 2000,
1173 <ftp://ftp.pwg.org/pub/pwg/QUALDOCS/requirements/ifx-transport-requirements-01.pdf>
- 1174 [16] Isaacson, S., Martin, J., deBry, R., Hastings, T., Shepherd, M., Bergman, R., "Internet Printing
1175 Protocol/1.1: IPP Event Notification Specification", <draft-ietf-ipp-not-spec-076.txt>, ~~January 24~~ July
1176 17, 2001.
- 1177 [17] Hastings, Herriot, Kugler, and Lewis, "Job and Printer Set Operations", <draft-ietf-ipp-job-
1178 printer-set-ops-043.txt>, ~~January 22~~ July 17, 2001.
- 1179 [18] Bergman, Hastings, "Media Standardized Names", when approved:
1180 <ftp://ftp.pwg.org/pub/pwg/standards/pwg5101.1.pdf>; current (May 22, 2001) draft:
1181 <ftp://ftp.pwg.org/pub/pwg/media-sizes/pwg-media-1009.pdf>.
- 1182 [19] T. Howes, M. Smith, F. Dawson, "A MIME Content-Type for Directory Information", RFC
1183 2425, September 1998

1184 [20] Internet Mail Consortium, "vCard - The Electronic Business Card Version 2.1",
1185 <http://www.imc.org/pdi/vcard-21.txt>, September 18, 1996.

1186 [21] L. McIntyre, D. Abercrombie, W. Rucklidge, and R. Buckley, "TIFF-FX Extensions 1", <draft-
1187 ietf-fax-tiff-fx-extension1-01.txt>, March 5, 2001.

1188 [\[collection\]](#)

1189 [deBry, R., , Hastings, T., Herriot, R., "Internet Printing Protocol \(IPP\): collection attribute](#)
1190 [syntax", <draft-ietf-ipp-collection-05.txt>, work in progress, July 17, 2001.](#)

1191 [\[job-prog\]](#)

1192 [Hastings, T., Bergman, R., Lewis, H., "Internet Printing Protocol \(IPP\): Job Progress Attributes",](#)
1193 [<draft-ietf-ipp-job-prog-03.txt> work in progress, July 17, 2001.](#)

1194 [\[output-bin\]](#)

1195 [Hastings, T., and R. Bergman, "Internet Printing Protocol \(IPP\): output-bin attribute extension",](#)
1196 [IEEE-ISTO 5101.2-2001, February 7, 2001,](#)
1197 [ftp://ftp.pwg.org/pub/pwg/standards/pwg5101.2.pdf.](ftp://ftp.pwg.org/pub/pwg/standards/pwg5101.2.pdf)

1198 [\[prod-print\]](#)

1199 [Ocke, K., Hastings, T., "Internet Printing Protocol \(IPP\): Production Printing Attributes - Set1",](#)
1200 [IEEE-ISTO 5100.3-2001, February 12, 2001,](#)
1201 [ftp://ftp.pwg.org/pub/pwg/standards/pwg5103.4.pdf.](ftp://ftp.pwg.org/pub/pwg/standards/pwg5103.4.pdf)

1202 [ISSUE 40: Should we add authors to PWG standards like we do IETF RFCs?](#)

1203 [ISSUE 41: Should we add participants to PWG standards like we do IETF RFCs?](#)

1204 **18 Revision History (to be removed when standard is approved)**

Revision	Date	Author	Notes
1	1/16/01	Paul Moore, Neteon	Initial version
2	2/27/01	Paul Moore, Gail Songer, Neteon	Specify TLS as MUST Removed Cover page and combined device Added need for big text types
3	4/11/01	Gail Songer, Neteon	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.

<u>6</u>	<u>7/27/01</u>	<u>Tom Hastings, Ira McDonald</u>	<u>Updated from the 6/29/01 telecon. There are 41 issues remaining, mostly new.</u>
----------	----------------	-----------------------------------	---

1205