IEEE-ISTO

Printer Working Group

IPP Fax Project

Standard for IPPFAX/1.0 Protocol

Working Draft

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Abstract: This document specifies the IPPFAX/1.0 protocol. The IPPFAX requirements [ifx-req] are derived from the requirements for Internet Fax [RFC2542].

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 [RFC2305] and [RFC2532] that uses the SMTP mail protocol as a transport.

The IPPFAX/1.0 protocol is a specialization of the IPP/1.1 [RFC2911], [RFC2910] protocol supporting a subset of the IPP operations with increased conformance requirements in some cases, some restrictions in other cases, and some additional REQUIRED attributes. The IPPFAX Protocol uses the 'ippfax' URL scheme (instead of the 'ipp' URL scheme) in all its operations. Most of the new attributes defined in this document MAY be supported by IPP Printers as OPTIONAL extensions to IPP as well

An IPPFAX Printer object is called a Receiver. A Receiver MUST support at least the PDF/is as specified in [PWG5102.3-2004] which is defined for the 'application/pdf' document format MIME type . A Print System MAY be configured to support both the IPPFAX and IPP protocols concurrently, but each protocol requires separate Printer objects with distinct URLs.

This document is available electronically at: wd-ifx10-20040518.pdf, .doc

A version showing the changes from the previous version is available at: wd-ifx10-20040518-rev.pdf

The latest version of this specification is available at: ftp://pwg.org/pub/pwg/QUALDOCS/wd-ifx10-latest.pdf, .doc

39   Title: The IPPFAX/1.0 Protocol

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69 The Printer Working Group (or PWG) is a Program of the IEEE Industry Standards and Technology Organization
70 (ISTO) with member organizations including printer manufacturers, print server developers, operating system
71 providers, network operating systems providers, network connectivity vendors, and print management application
72 developers. The group is chartered to make printers and the applications and operating systems supporting them
73 work together better. All references to the PWG in this document implicitly mean "The Printer Working Group, a
74 Program of the IEEE ISTO." In order to meet this objective, the PWG will document the results of their work as open
75 standards that define print related protocols, interfaces, procedures and conventions. Printer manufacturers and
76 vendors of printer related software will benefit from the interoperability provided by voluntary conformance to these
77 standards.

78 In general, a PWG standard is a specification that is stable, well understood, and is technically competent, has
79 multiple, independent and interoperable implementations with substantial operational experience, and enjoys
80 significant public support.

81 For additional information regarding the Printer Working Group visit: http://www.pwg.org

82 **Contact information:**

83   IFX Web Page: http://www.pwg.org/qualdocs
84   IFX Mailing List: ifx@pwg.org

85 To subscribe to the ipp mailing list, send the following email:
86   1) send it to majordomo@pwg.org
87   2) leave the subject line blank
88   3) put the following two lines in the message body:
89   subscribe ifx
90   end
91
92 Implementers of this specification are encouraged to join the IFX Mailing List in order to participate in any
93 discussions of clarifications or review of registration proposals for additional names.

94

This is an unapproved IEEE-ISTO PWG Working Draft Standard, subject to change.

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171 **1 Introduction**

172 This document specifies the IPPFAX/1.0 protocol. The IPPFAX requirements [ifx-req] are derived from
173 the requirements for Internet Fax [RFC2542].

174 In summary IPPFAX is used to provide a synchronous, reliable exchange of image documents between
175 clients and servers. The primary use envisaged of this protocol is to provide a synchronous image
176 transmission service for the Internet. Contrast this with the Internet FAX protocol specified in [RFC2305]
177 and [RFC2532] that uses the SMTP mail protocol as a transport.

178 IPPFAX is primarily intended as a method of supporting a synchronous, secure, high quality document
179 distribution protocol over the Internet. It therefore discusses paper, pages, scanning and printing, etc.
180 There is, however, no requirement that the input documents come from actual paper nor is there a
181 requirement that the output of the process be printed paper. The only conformance requirements are those
182 associated with the exchange of data over the network.

183 The IPPFAX/1.0 protocol is a specialization of the IPP/1.1 [RFC2911], [RFC2910] protocol supporting a
184 subset of the IPP operations with increased conformance requirements in some cases, some restrictions in
185 other cases, and some additional REQUIRED attributes. The IPPFAX Protocol uses the 'ippfax' URL
186 scheme (instead of the 'ipp' URL scheme) for all operations.

187 An IPPFAX Printer object is called a Receiver. A Receiver must support at least PDF/is [PWG5102.3-
188 2004] which is defined for the 'application/pdf' document format MIME type..

189 An IPPFAX client is called a Sender. The user of the Sender is called the Sending User. The Sending
190 User either (1a) loads the Document into the Sender or (1b) causes the Sender to generate the
191 Document data by means outside the scope of this standard, (2) indicates the Receiver's network
192 location, and (3) starts the exchange.

193 The target market for an IPPFAX receiver is a midrange imaging device that can support the minimum
194 memory requirements that are required by the data format PDF/is, but the image format is structured in
195 such a way that the Receiver is not required to include a disk or other permanent storage.

196 IPPFax Senders and Receivers must support the operations, Get-Printer-Attributes, Print-Job, Get-Job-
197 Attributes, and should support for authorized administrators Get-Jobs and Cancel-Job. See Section 7

198

1.1 Typical exchange

This section lists a typical exchange of information between a Sender and a Receiver using the four operations listed in section 0.

1. The Sending User determines the network location of the Receiver (value of the "printer-uri" operation attribute) – see section 4.1. This document does not specify how the Sending User does this. Possible methods include directory lookup, search engines, business cards, network discovery protocols such as SLP, etc. See Appendix E Generic Directory Schema of IPP/1.1 [RFC 2911].

2. The Sending User either (1) loads the Document into the Sender or (2) causes the Sender to generate the Document data by means outside the scope of this document, indicates the Receiver's network location and starts the exchange.

3. The Sender can determine other PDF versions supported by the Receiver and the Sender can discover "media-supported" and "media-ready".

4. The Sender converts the document, if necessary, into PDF/is or another PDF subset depending on the Receiver's capabilities. The PDF/is data format is described in detail in the "PDF Image-Streamable (PDF/is)" specification [PWG5102.3-2004].

5. The Sender submits the document in a Print-Job request to the Receiver. The Sender can include the sending user vCard[RFC2426, RFC2425] and receiving user vCard in the Print-Job operations.

6. The Receiver returns a Print-Job response to the Sender, who in turns informs the Sending-User.

7. The Sender can use Get-Job-Attributes to check for successful job completion unless the Sending User requests otherwise.

2 Terminology

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

2.1 Conformance Terminology

Capitalized terms, such as **MUST, MUST NOT, REQUIRED, SHOULD, SHOULD NOT, MAY, NEED NOT,** and **OPTIONAL**, have special meaning relating to conformance to this specification. These terms are defined in [RFC2911] section 13.1 on conformance terminology, most of which is taken from RFC 2119 [RFC2119]. In order to help the reader compare and contrast the IPP and IPPFAX protocols, this document uses lower case "must", "may" etc., to reproduce IPP Protocol conformance requirements

227 for IPP clients and IPP Printer objects as stated in other documents. If such reproduction in this document
228 contradicts an IPP document, it is a mistake, and that IPP document prevails.

229 **2.2 Other Terminology**

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

232 **IPP Protocol** The protocol defined in [RFC2911] and [RFC2910] and any IPP Protocol Extension
233 document (see section 14). For the IPP/1.1 Protocol each operation request must use the 'ipp' URL
234 scheme.

235 **IPPFAX Protocol** The protocol defined in this or a future revision document and any future extension
236 document. For the IPPFAX Protocol each operation request MUST use the 'ippfax' URL scheme (see
237 section 4.1 and 12). Unless a specific version number is appended to "IPPFAX", such as "IPPFAX/1.0",
238 the term IPPFAX applies to all versions.

239 **Printer object (or Printer)** A hardware or software entity that accepts protocol operation requests and
240 returns protocol responses. A Printer object MAY be: (1) an IPP Printer object or (2) an IPPFAX Printer
241 object, DEPENDING ON IMPLEMENTATION but MUST NOT be both (since they support some
242 different operations and attributes and are really two different kinds of Print Services). A Printer object
243 MAY support multiple URLs with different security, authentication, and/or access control (see [RFC2911]
244 sections 4.4.1, 4.4.2, 4.4.3, and 8). However, each URL for a Printer object MUST support the same
245 operations and attributes with the same values, except as restricted depending on the security,
246 authentication, and/or access control implied by the URL. In other words, each URL for a given Printer
247 object is offering the same Print Service.

248 Note: For brevity, this document uses the term "Receiver" instead of "IPPFAX Printer object".
249 This document uses the term "Printer object" (and "Printer") when the statement is intended to
250 apply to a Printer object that MAY support the IPP Protocol or the IPPFAX protocol (but not both).

251 **Print Service** The print functionality offered by a Printer object. Several different Printer objects MAY
252 offer the same Print Service. A Print Service MUST support only one printer object.

253 **IPP Printer object** A Printer object that supports the IPP Protocol and offers the IPP Print Service (by
254 definition).

255 **Receiver** The Printer object that accepts IPPFAX protocol operations and receives the Document sent by
256 the Sender. A Receiver offers the IPPFAX Print Service (by definition).

257 **Print System** All of the Printer objects on a single managed host network node. A Print System MAY
258 support IPP and IPPFAX protocols concurrently for a single output device (or multiple output devices), but
259 each protocol requires separate Printer objects with distinct URLs.

260 **client** A hardware and/or software entity that initiates protocol operation requests and accepts responses.
261 A client MAY be: (1) an IPP client, (2) an IPPFAX client, or (3) both. However, this document uses the
262 term "Sender", instead of "IPPFAX client". This document uses the term "client" when the statement is
263 intended to apply to a client that MAY support the IPP Protocol, the IPPFAX protocol, or both protocols.

264 **IPP client** A client that uses the IPP Protocol to interact with an IPP Printer object.

265 **Sender** A client that uses the IPPFAX Protocol to query a Receiver and transmit a Document to that
266 Receiver.

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

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

270 **Receiving User** The intended human recipient of the Document being sent by the Sender to the Receiver.

271 **IPP Job** A job submitted by an IPP client to an IPP Printer object using the IPP Protocol.

272 **IPPFAX Job** A job submitted by a Sender to a Receiver using the IPPFAX Protocol.

273 **PDF/is** The file format defined by [PWG5102.3-2004].

274 The terminology defined in [RFC2911], such as **attribute**, **operation**, **request**, **response**, **operation**
275 **attribute**, **Printer Description attribute**, **Job Description attribute, integrity,** and **privacy** is also used
276 in this document with the same capitalization conventions and semantics.

277 **3 IPPFAX Model**

278 This sub-section defines the IPPFAX Model and its relationship to the IPP Protocol and Model.

279 **3.1 Printer Object Relationships**

280 A Print System MAY support one or more Printer objects on a single network host. RFC 2911 [RFC2911]
281 defines the relationship between Printer objects and output devices to be many to many (see [RFC2911]
282 section 2.1). So one Printer object can represent one or more output devices and an output device can be

283 represented by one or more Printer objects. The same relationships hold for the IPPFAX Protocol so that
284 the relationship between Receivers and output devices is many to many.

3.2 A Printer object with multiple URLs

286 For a Printer object that has multiple URLs, the multiple URLs MUST only be aliases for the Printer
287 object, not connections to different Print Services. In other words, the semantics of operations and
288 attributes accessed by the different URLs for a given Printer object MUST differ only in the security,
289 authentication, and/or access control depending on the URL used.

290 The three parallel "printer-uri-supported" (1setOf uri), "uri-authentication-supported" (1setOf type2
291 keyword), and "uri-security-supported" (1setOf type2 keyword) Printer Description attributes (see
292 [RFC2911] sections 4.4.1, 4.4.2, and 4.4.3, respectively) MUST contain the URLs, authentication, and
293 security, respectively, supported by the Printer object.

294

4 Common IPPFAX Operation Attribute Semantics

296 This section describes the IPPFAX/1.0 operation attribute semantics that are common to all operations.
297 IPPFAX/1.0 does not define any new operations. Instead, IPPFAX/1.0 semantics are provided using
298 existing IPP operations in [RFC2911], with increased conformance requirements as specified in this
299 document.

4.1 printer-uri (uri) operation attribute

301 This operation attribute specifies the transfer path to the Receiver for the operation. As in IPP/1.1, the
302 client MUST supply the "printer-uri" operation attribute in every IPPFAX request (see [RFC2911] section
303 3.1.5). For IPPFAX, the attribute value MUST be a URL using the 'ippfax' scheme (see section 12)
304 specifying the Receiver's network location.

305 The following is an example value of the target "printer-uri" operation attribute and "printer-uri-supported"
306 Printer Description attribute:

307   ippfax://www.acme.com/ippfax-printers/printer5

308 As in IPP/1.1 [RFC2911] for each operation, the Receiver NEED NOT validate that the "printer-uri"
309 operation attribute is present and that the value supplied by the Sender matches one of the Receiver's
310 "printer-uri-supported" Printer Description attribute (see section 5.1). For URI matching rules see section
311 12.7. If the Receiver does validate the "printer-uri" operation attribute and the URI value supplied does not

312   match any value of the Receiver's "printer-uri-supported" Printer Description attribute, the Receiver
313   MUST reject the request, return the 'client-error-attributes-or-values-not-supported' status code, and return
314   the attribute and value in the Unsupported Attributes Group.

315   **4.2 version-number parameter**

316   This IPP/1.1 operation parameter ([RFC2911] section 3.1.8) specifies the major and minor version number
317   of the IPP Protocol being used *as part of the IPPFAX Protocol*. As in IPP/1.1, the Sender MUST supply
318   this parameter in every request and the Receiver MUST return this parameter in every response.

319   For IPPFAX version 1.0 as specified in this document, the Sender MUST supply the IPP version number
320   parameter with a value of '1.1' or a higher minor version number.

321

322   **4.3 ippfax-version (type2 keyword) operation attribute**

323   The value of this operation attribute indicates the version of the IPPFAX Protocol and encoding that the
324   Sender is requesting and the Receiver is returning. The Sender MUST supply this operation attribute in
325   every request and the Receiver MUST return this operation attribute in every response. This operation
326   attribute MUST be placed in the Operation Attributes Group *immediately* after the operation attributes
327   whose order is specified in IPP/1.1 [RFC2911]. The semantics of the "ippfax-version" operation attribute
328   are the same for the IPPFAX Protocol as the "version-number" parameter for IPP 1.1(see [RFC2911]
329   section 3.1.8).

330   For IPPFAX version 1.0 as specified in this document, the Sender MUST supply the IPPFax version
331   operation attribute with the keyword value of '1.0'.

332   The Receiver MUST list the IPPFAX versions supported in the "ippfax-versions-supported" (1setOf type2
333   keyword) Printer Description attribute (see section 5.3).

334   The Sender MUST send and the Receiver MUST check both the IPP (see section 4.2) and IPPFAX version
335   numbers supplied by the Sender in each request, not just the IPPFAX version number.

336   # 5 IPPFAX Printer Description Attributes

337   This section defines the IPPFAX Printer Description attributes and the IPP Printer Description attributes
338   whose semantics are augmented for IPPFAX.

339   Table 1 lists all the IPPFAX conformance requirements for IPP and IPPFAX Printer Description attributes
340   whose semantics are defined in this document.

341   All Printer Description attributes not listed in Table 1 have the same conformance requirements as defined
342   in IPP/1.1 [RFC2911] or other IETF or PWG standards track IPP documents.

343   See section 7.3.2 for the Receiver conformance requirements for the "xxx-supported", "xxx-default", and
344   "xxx-ready" Job Template Printer attributes.

345   **Table 1 - Printer Description attributes conformance requirements**

Attribute Name (attribute syntax)	IPP Fax Receiver support	Section
printer-uri-supported (1setOf uri) *	MUST	5.1
ipp-versions-supported (1setOf type2 keyword) *	MUST	5.2
ippfax-versions-supported (1setOf type2 keyword)	MUST	5.3
operations-supported (1setOf type2 enum) *	MUST	5.4
document-format-supported (1setOf mimeMediaType) *	MUST	5.5
document-format-version-supported (1setOf text(127)) **	MUST	5.6
digital-signature-supported (1setOf type2 keyword) **	MUST	5.7
pdl-override-supported (type2 keyword) *	MUST	5.8

346   * These IPP/1.1 attributes are defined in [RFC2911], but have enhanced semantics defined in this
347   document.
348   ** These IPP attributes are defined in [PWG 5100.7], but have enhanced or constrained semantics defined
349   in this document.

5.1 printer-uri-supported (1setOf uri)

351   This attribute (see [RFC2911] section 4.4.1) contains the set of target URIs that the Receiver supports, i.e.,
352   the URI values that a client can supply as values of the "printer-uri" target operation attribute in requests.
353   A Receiver MUST support this Printer Description attribute. This attrbribute MUST only contain URIs
354   using the 'ippfax' scheme.

5.2 ipp-versions-supported (1setOf type2 keyword)

356   This attribute (see [RFC2911] section 4.4.1.4) identifies the version or versions of the IPP encoding that
357   this Receiver supports as part of the IPPFAX Protocol (rather than indicating that the Receiver supports the
358   IPP Protocol), including major and minor versions, i.e., the version numbers for which this Receiver meets
359   the conformance requirements. The Receiver MUST support this Printer Description attribute. The

360 Receiver MUST compare the "version-number" parameter (see section 4.2), with the values of this
361 attribute in order to determine whether the Printer supports the IPP version requested by the Sender *as part*
362 *of the IPPFAX Protocol*.

363 Standard keyword values are (from [RFC2911]):

364 '1.1': The IPPFAX operations meets encoding conformance requirements of IPP version 1/1 as specified
365   in [RFC2911] and [RFC2910].
366

5.3 ippfax-versions-supported (1setOf type2 keyword)

368 This attribute identifies the version or versions of the IPPFAX Protocol that this Receiver supports,
369 including major and minor versions, i.e., the version numbers for which this Receiver meets the
370 conformance requirements. The support of this attribute indicates that this Printer object is a Receiver as
371 opposed to a regular IPP Printer object

372 The Receiver MUST compare the "ippfax-version" operation attribute (see section 4.3) supplied by the
373 Sender in each request, with the values of this attribute in order to determine whether the Receiver supports
374 the IPPFAX version requested by the Sender.

375 Standard keyword values are:

376 '1.0': Meets the conformance requirements of IPPFAX 1/0 as specified in this document.
377

5.4 operations-supported (1setOf type2 enum)

379 This attribute (see [RFC 2911] section 4.4.15) identifies the set of supported operations for this Receiver
380 and contained Job objects. A Receiver MUST support this Printer Description attribute.

381 The values of this attribute MAY depend on the URL supplied in the "printer-uri" operation attribute
382 and/or MAY depend on the authority of the authenticated requesting user. For example, a Receiver that
383 supports administrative operations MUST NOT support administrative operations for use by end users, but
384 such a Receiver MAY return the administrative operation enums to end users. See section 9 for
385 conformance requirements for these operations.

386 A receiver MUST only support the following operations:

387 • get-printer-attributes

388 • print-job

389   • cancel-job

390   • get-jobs

391   • get-job-attributes

392   A receiver MUST NOT support any other operation.

5.5 document-format-supported (1setOf mimeMediaType)

394   This attribute (see [RFC 2911] section 4.4.22) identifies which document formats the Receiver supports.
395   The Receiver MUST support this Printer Description attribute. Both the Sender and Receiver MUST only
396   support 'application/pdf'.

5.6 document-format-version-supported (1setOf text(127))

398   This attribute (see [PWG 5100.7] section 7.8) identifies which PDF subsets the Receiver supports. A
399   Receiver MUST support this attribute and a Sender MAY support this attribute. Both the Sender and
400   Receiver MUST support the 'PDF/is-1.0' subset of PDF. The Receiver MAY support other subsets of PDF
401   and if it does then the Receiver MUST only list subsets that it fully supports.

5.7 digital-signatures-supported (1setOf type2 keyword)

403   This attribute (see [PWG 5100.7] section 7.4) identifies which digital signature technologies are supported
404   by the Receiver. A Receiver MUST support this Printer Description attribute.

405   If the Receiver cannot validate the digital signature or if the digital signature fails to verify, then the
406   Receiver MUST notify the Receiving User using an implementation specific method.

5.8 pdl-override-supported (type2 keyword)

408   This attribute (see [RFC 2911] section 4.4.28) identifies Receiver implementation support for overriding
409   document data instructions with IPPFax job attributes. A Receiver MUST support this printer subscription
410   attribute with the value 'attempted'. . A Receiver MUST attempt to override at least the media attribute.
411

412 6 IPPFax Job Description Attributes

413 This section defines the IPPFAX Printer Description attributes and the IPP Printer Description attributes
414 whose semantics are augmented for IPPFAX or are new to IPPFax. .

415   **Table 2 - Summary of Job Description attributes**

Attribute	Sender supplies *	Receiver supports
sending-user-vcard (text(MAX))	MAY	MUST
receiving-user-vcard (text(MAX))	SHOULD	MUST
compression-supplied (type3 keyword) **	MUST NOT	MUST
document-charset-supplied (charset) **	MUST NOT	MUST
document-digital-signature-supplied (type2 keyword)**	MUST NOT	MUST
document-format-details-supplied (1setOf collection) **	MUST NOT	MUST NOT
document-format-supplied (mimeMediaType)**	MUST NOT	MUST
document-format-version-supplied (text(127)) **	MUST NOT	MUST
document-message-supplied (text(MAX))**	MUST NOT	MUST NOT
document-name-supplied (name (MAX)) **	MUST NOT	MUST
document-natural-language-supplied (naturalLanguage)**	MUST NOT	MUST

416   *Sender supplies as an operation attribute in a Print-Job operation.
417   ** These IPP attributes are defined in [PWG 5100.7]
418

419 6.1 sending-user-vcard (text(MAX))

420 This Job Description attribute identifies the Sending User in MIME vCard v3.0 [RFC2426, RFC2425]
421 format (See Appendix B for a sample vCard). The Receiver MUST support this job description attribute
422 according to the vCard v3.0 specification and MUST populate it with the value of the corresponding Print-
423 Job operation attribute. The Receiver MUST support MAX (1023) octets of text. However, the Receiver
424 MAY ignore any image, logo, and sound parts of the vCard, in which case it MUST still accept the Print-
425 Job request and return the 'successful-ok-ignored-or-substituted-attributes' status code (see [RFC2911]
426 section 13.1.2.2). The Receiver MAY choose to use this information on a job start and end sheet (banner
427 page) for the job.

428 6.2 receiving-user-vcard (text(MAX))

429 This Job Description attribute identifies the intended Receiving User in MIME vCard v3.0 [RFC2426,
430 RFC2425] format (See Appendix B for a sample vCard).   The Receiver MUST support this Job
431 Description operation attribute and MUST populate it with the value of the corresponding Print-Job

432   operation attribute. The Receiver MUST support MAX (1023) octets of text. However, the Receiver
433   MAY ignore any image, logo, and sound parts of the vCard, in which case it MUST still accept the Print-
434   Job request and return the 'successful-ok-ignored-or-substituted-attributes' status code (see [RFC2911]
435   section 13.1.2.2).The Receiver MAY choose to use this information on a job start and end sheet (banner
436   page) for the job.

6.3 xxx-supplied attributes

438   An IPPFax Receiver implementation MUST supported compression-supplied, document-charset-supplied,
439   document-digital-signature-supplied, document-format-supplied, document-format-version-supplied,
440   document-name-supplied, and document-natural-language-supplied Job-Description attributes as defined in
441   [PWG 5100.7]

442   An IPPFax Receiver MUST NOT implement document-format-details-supplied and document-message-
443   supplied Job-Description attributes.

444   SHOULD WE INCLUDE Job-Progress attributes job-impressions-completed, job-media-sheets-completed,
445   job-k-octets-processed from RFC 2911? Nothing from RFC3381 applies

7 IPPFAX Operations

447   An IPPFax Receiver implementation MUST support the Get-Printer Attributes, Print Job, Get-Job
448   Attributes, Get-Jobs and Cancel-Job as defined in this section. An IPPFax Receiver MUST NOT support
449   any other IPP operations.

450   An IPPFax Receiver MUST NOT support any optional job-template attributes features of IPP unless
451   explicitly stated in this document. An IPPFax Receiver MAY support any optional operation attributes in
452   the Print-Job operation and MAY support Job-Description attributes in Job Objects.

7.1 Required Operations and Features

454   All IPPFax Senders and Receivers MUST support the following operations:

455

456   1. Get-Printer-Attributes - If the document-format-version is not PDF/is or the media is not
457   iso_a4_210x297mm or na_letter_8.5x11in, then the Sender MUST verify that the Receiver can
458   support the alternate attributes. Rational: Using Get-Printer-Attributes would avoid rejection of
459   the job which is important if the document data is very large.

460   2. Print-Job - Sender MUST submit the IPPFAX job with a single document (Create-Job, Send-
461   document and Send-URI and Print-URI MUST NOT be supported by Senders or Receivers).

462   3. Get-Job-Attributes - The Sender MUST support and MUST use this operation to check for
463   successful job completion unless the Sending User wishes otherwise. Job-History MUST be
464   retained by the Receiver for at least 5 minutes after job completion. See 4.3.7.2 of RFC2911 for
465   printer object Job-History discussion.

466   4. Get-Jobs – Receivers MUST support this operation but only for authenticated Administrators
467   or Operators.

468   5. Job-Cancel – Receivers MUST support this operation but only for authenticated Administrators
469   or Operators.

470   All IPPFax Senders and Receivers MUST NOT support any other IPP operations including job
471   operations and administrative operation.

472   All IPPFax Receivers MUST support receiving PFD/is version 1.0 as defined in [PWG5102.3-
473   2004].

474   All IPPFax Senders MUST support generating and transmitting PFD/is version 1.0 as defined in
475   [PWG5102.3-2004].

476   **7.2 Get-Printer-Attributes**

477   The Sender and Receiver MUST support the discovery of Receiver capabilities using the Get-Printer-
478   Attributes operation.

479   See Section 5 IPPFAX Printer Description Attributes for required Printer Description Attributes for IPPFax
480   Receivers.

481   **7.3 Print-Job**

482   The Sender and Receiver MUST support creating IPPFAX Jobs using the Print-Job operation. The Sender
483   and Receiver MUST NOT support print by reference, i.e., MUST NOT support any other print operation,
484   i.e. Create-Job, Send-Document, Print-URI and Send-URI operations.

485 **7.3.1 Operation Attributes**

486 Table 3 lists the operation attributes for Print-Job operations for Senders, and Receivers. The Receiver
487 MUST NOT support operations attributes defined in other IPP extension documents.

488 **Table 3 - Print-Job operation attributes**

Operation attribute	Section	Sender supplies	Receiver Supports
attributes-charset (charset)		MUST	MUST
attributes-natural-language (naturalLanguage)		MUST	MUST
printer-uri (uri)	4.1	MUST	MUST
requesting-user-name (name(MAX))		SHOULD	MUST
job-name (name(MAX))		MAY	MUST
ipp-attribute-fidelity (boolean)	7.3.1.1	MUST with 'true' value[1]	MUST
document-name (name(MAX)) *	7.3.1.2	MAY	MUST
compression (type3 keyword) *		MAY	MUST
document-format (mimeMediaType) *	7.3.1.3	MUST[2]	MUST
document-format-version (type2 keyword) *	7.3.1.4	MUST[3]	MUST
document-charset (charset) *	7.3.1.5	MAY	MUST
document-natural-language (naturalLanguage) *	7.3.1.6	MAY	MUST
document-digital-signature (type2 keyword)	7.3.1.7	MAY	MUST
job-k-octets (integer(0:MAX))		MAY	MAY
job-impressions (integer(0:MAX))		MAY	MAY
job-media-sheets (integer(0:MAX))		MAY	MAY
sending-user-vcard (1setOf text(MAX))	6.1	SHOULD[3]	MUST
receiving-user-vcard (text(MAX))	6.2	SHOULD[3]	MUST

489 * These IPPFax attributes MUST be copied to their corresponding xxx-supplied Job-Description attributes
490   by the Receiver.
491

---

[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.

[3] These attributes were not defined in [RFC2911].

492 **7.3.1.1 ipp-attribute-fidelity**

493 This operation attribute (see [RFC2911] section 3.2.1.1) indicates whether or not the client requires the
494 Printer to support all Job Template attributes and values supplied. The Sender MUST supply this operation
495 attribute in the Print-Job operations and the value MUST be 'true'. A Receiver MUST validate and support
496 this operation attribute.

497 If the Sender does not supply this attribute or supplies the 'false' value, the Receiver MUST reject the
498 operation, MUST return the 'client-error-bad-request' status code, and SHOULD return the 'ipp-attribute-
499 fidelity' attribute name keyword in the Unsupported Attributes Group.

500 **7.3.1.2 document-name (naturalLanguage)**

501 A Sender MAY supply this operation attribute. A Receiver MUST support this operation attribute. The
502 Receiver MUST copy the value of this attribute to the corresponding document-name-supplied Job
503 Description attribute. (See section 5.2.8 of [PWG5100.7])

504 **7.3.1.3 document-format (mimeMediaType)**

505 This operation attribute (see [RFC2911] section 3.2.1.1) identifies the MIME Media Type of the document
506 that the Sender is sending. The Sender MUST supply this operation attribute in the Print-Job operation
507 with a value of "application/PDF". A Receiver MUST validate that the value of attribute is
508 "application/pdf". The Receiver MUST copy the value of this attribute to the corresponding document-
509 format-supplied Job Description attribute. (See section 5.2.5 of [PWG5100.7])

510 If the Sender does not supply this attribute, the Receiver MUST reject the operation, MUST return the
511 'client-error-bad-request' status code, and SHOULD return the 'document-format' attribute name keyword
512 in the Unsupported Attributes Group

513 Because only one document-format MAY be supported, attribute coloring is not relevant for IPPFax. If the
514 Sender desires to send a different format, then it should use a different transmission protocol than IPPFax.

515 **7.3.1.4 document-format-version (type2 keyword)**

516 This operation attribute is defined in section 3.2.5.7 in [PWG5100.7].

517 This operation attribute identifies the type2 keyword of the subset of PDF. The Sender MUST supply this
518 operation attribute in the Print-Job operation to specify a subset of PDF. A Receiver MUST support and
519 validate this operation attribute. If the supplied document-format-version is not in the Receivers document-
520 format-version-supported list then the Receiver MUST reject the job with a status code "client-error-

521　document-fomat-not-supported". The Receiver MUST copy the value of this attribute to the corresponding
522　document-format-version-supplied Job Description attribute. (See section 5.2.6 of [PWG5100.7])

523　IPPFax Senders and Receivers MUST support PDF/is-1.0.

524　See section 5.6.

7.3.1.5 document-charset (charset)

526　A Sender MAY supply this operation attribute. A Receiver MUST support this operation attribute. The
527　Receiver MUST copy the value of this attribute to the corresponding document-charset-supplied Job
528　Description attribute. (See section 5.2.2 of [PWG5100.7])

7.3.1.6 document-natural-language (naturalLanguage)

530　A Sender MAY supply this operation attribute. A Receiver MUST support this operation attribute. The
531　Receiver MUST copy the value of this attribute to the corresponding document-natural-language-supplied
532　Job Description attribute. (See section 5.2.9 of [PWG5100.7])

7.3.1.7 document-digital-signature (type2 keyword)

534　A Sender MAY supply this operation attribute. A Receiver MUST support this operation attribute. The
535　Receiver MUST copy the value of this attribute to the corresponding document-digital-signature-supplied
536　Job Description attribute. (See section 5.2.3 of [PWG5100.7])

7.3.2 Job Template Attributes

538　As in [RFC2911], the term "Job Template attribute" is actually up to four attributes: the "xxx" Job
539　attribute, and the "xxx-default", "xxx-supported", and possibly the "xxx-ready" Printer attributes.

540　As in [RFC2911], if a Receiver supports the "xxx" Job Template attribute, then it MUST support the
541　corresponding "xxx-default" (if defined) and "xxx-supported" Printer attributes as well, and MAY support
542　the "xxx-ready" attribute (if defined).

543　Senders MUST supply and Receivers MUST support the Job-Template attribute except "media"[RFC2911]
544　job-template attribute section 7.3.2.1. Senders MUST NOT supply and Receivers MUST NOT support any
545　other Job-Template attributes.

546

547   **Table 4 - IPPFAX Defaults for unsupported Job-Template Attributes**

Job Template attribute	IPPFax default behavior
copies (integer(1:MAX))	1 copy
finishings (1setOf type2 enum)	Administrator configuration
job-hold-until (type3 keyword	name(MAX))	'no-hold'
job-priority (integer(1:100)	Administrator configuration
job-sheets (type3 keyword	name(MAX))	Administrator configuration
multiple-document-handling (type2 keyword)	No multiple document jobs
number-up (integer(1:MAX))	1
orientation-requested (type2 enum)	Administrator configuration
page-ranges (1setOf rangeOfInteger(1:MAX))	1:MAX
print-quality (type2 enum)	Administrator's choice
printer-resolution (resolution)	Administrator configuration
sides (type2 keyword)	Administrator configuration

548   **7.3.2.1 media (type2 keyword | name(MAX))**

549   This Job Template attribute (see [RFC2911] section 4.2.11) identifies the medium to be used for all sheets
550   of the job. The Sender MUST supply and the Receiver MUST support the "media" Job Template attribute
551   in Print-Job requests. The Receiver MUST support the "media-default", and "media-supported" Printer
552   attributes and SHOULD support the "media-ready" Printer attribute.

553   The Sender MUST supply Media Size Self Describing names defined in [PWG5101.1].

554   A Receiver MUST at least support the sizes 'na_letter_8.5x11in' and 'iso_a4_210x297mm' and MUST be
555   able to print on at least one of those two sizes. The Receiver MAY scale down at most 10% (PDF/is
556   directives may prohibit this scaling for quality reasons), overflow to another page, or truncate. If the
557   Receiver does truncate then it MUST notify the Receiving User. A Receiver MUST perform only
558   isomorphic scaling.
559
560   A Sender SHOULD use PDF Crop boxes when the Sender knows that the imageable region is less than the
561   media size. If the crop box is the union of the lesser size of iso_a4_210x297mm and na_letter_8.5x11in
562   minus 1/2 of an inch, then the Sender can be sure that the majority of Receivers can print the complete
563   image without loss of data. However, this does not eliminate that the possibility that data may be lost.
564

565 **7.3.2.2 media-supported**

566 The following standard keywords MUST be supported. Any other paper sizes supported MUST use the
567 self-describing names as defined in ([PWG5101.1]):

568 'na_letter_8.5x11in'
569 'iso_a4_210x297mm'
570 'choice_iso_a4_210x297mm_na_letter_8.5x11in' - represents both 'na_letter_8.5x11in' and
571   'iso_a4_210x297mm' and indicates that either is acceptable. See [PWG5100.7].

572 **7.3.3 Delivery Confirmation using the Print-Job response**

573 The Sender knows when the Receiver has successfully received the entire Job when the Receiver returns
574 the 'successful-ok' status code in the Print-Job Response. The Sender MUST then inform the Sending
575 User by means outside the scope of this standard that the Job has successfully been transmitted, unless the
576 Sending User requests otherwise.

577 **7.3.4 Originator identifier image**

578 Consistent with ITU-T T.30 facsimile, the Document Originator (generating application or Sender) MUST
579 include an originator identifier image as required by PDF/is. [PWG5102.3-2004] section 7.1.
580
581 The Document Originator MUST include in the originator identifier image a human readable name of the
582 person, organization or host system that generated this document and MAY include additional data such as
583 Sending User vCard, Receiving User vCard, etc..

584 **7.4 Cancel-Job operation**

585 The Sender MAY support and the Receiver MUST support the Cancel-Job operation but only for
586 authenticated Operators/Administrators.

587 **7.5 Get-Job-Attributes**

588 The Sender and Receiver MUST support the query of Job-Attributes using the Get-Job-Attributes
589 operation.

590

591 **7.6 Get-Jobs**

592 The Sender MAY support and the Receiver MUST support the Get-Jobs operation but only for
593 authenticated Operators/Administrators.

594 **8 Security considerations**

595 Entire section needs rewritting

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

601 **8.1 Data Integrity and authentication**

602 Any exchange between a Sender and a Receiver MUST be carried using the data integrity mechanism
603 specified in IPP/1.1 namely TLS/1.0 [RFC2246] or later versions of TLS.

604 A Receiver MUST have a TLS certificate and be authenticated by the sender.

605 A Sender MAY have a TLS certificate for client authentication. A Receiver MAY decide to reject
606 requests that come from Senders that do not have a TLS certificate and return the 'client-error-not-
607 authenticated' status code.

608 A Sender MAY use its own TLS certificate or it can use one associated with the Sending User.

609 A Receiver MUST have a TLS certificate, and the Send MUST have the public keys of the top level public
610 key Certificate Authorities (as current browsers do). If a Sender gets a public key from a Receiver that is
611 doesn't recognize, the Sender MUST resolve the unrecognized key or inform the Sending User that data
612 integrity has been lost and MUST abort the job.

613 The distribution of private keys to Senders or Receivers is outside the scope of this document, but if it is
614 done over the network, it MUST be over a secure channel. See Internet Key Exchange (IKE) [RFC2409].

615 **8.2 Data Privacy (encryption)**

616 A Sender MAY chose use data privacy (encryption) as defined in TLS/1.0 [RFC2246].

617 **8.3 uri-authentication-supported (1setOf type2 keyword)**

618 This attribute (see [RFC2911] section 4.4.2) identifies the Client Authentication mechanism associated
619 with each URI listed in the "printer-uri-supported" attribute (see section 5.1).

620 <center>**Table 5 - Authentication Requirements**</center>

"uri-authentication-supported" keyword	Sender support and usage	Receiver support and usage
none	MAY support and MAY use	MAY support and MAY use. If the 'none' value is supported by an implementation, then the administrator MUST be able to configure the Printer to not support the 'none' value (by means outside the scope of this document)
requesting-user-name	MUST NOT	MUST NOT
basic	MAY support and MAY use when the TLS channel is secured with Data Privacy using the cipher suites indicated below* or stronger	MAY support and MAY use when the TLS channel is secured with Data Privacy using the cipher suites indicated below* or stronger
digest	MUST support and MUST use, including the MD5 and MD5-sess algorithms and Message Integrity, unless using 'certificate' or 'negotiate'	MUST support and MAY use, including the MD5 and MD5-sess algorithms and Message Integrity
certificate	SHOULD support and MAY use when not using any of the above	MUST support and MAY use. For this value, the Receiver MUST validate the certificate for all client requests

621 * TLS_DHE_DSS_WITH_3DES_EDE_CBC_SHA mandated by [RFC2246].

622 Table 6 compares the Digest Authentication requirements for IPP/1.1 clients, IPP/1.1 Printers, IPPFAX
623 Senders, and IPPFAX Receivers.

624 **Table 6 - Digest Authentication Conformance Requirements**

Feature	IPP/1.1 Client	IPP/1.1 Printer	IPPFAX Sender	IPPFAX Receiver
MD5 and MD5-sess	must support must use	should support should use	MUST support MUST use	MUST support MUST use
The Message Integrity feature	must support may use	should support may use	MUST support MUST use	MUST support MUST use

625

8.4 uri-security-supported (1setOf type2 keyword)

627 This attribute (see [RFC2911] section 4.4.3) identifies the security (Integrity and Privacy) mechanisms
628 used for each URI listed in the "printer-uri-supported" attribute (see section 5.1).

629 **Table 7 - Security (Integrity and Privacy) Requirements**

uri-security-supported	Sender support and usage	Receiver support and usage
none	MUST NOT	MUST NOT
ssl2	MUST NOT	MUST NOT
ssl3	MUST NOT	MUST NOT
tls	TLS Data Integrity - MUST support and MUST use	MUST support and MUST use
	TLS Data Privacy - MUST support and MAY use. The Sender (device) MUST query the Sending User (human) before omitting Privacy (encryption).	MUST support and MAY use

630

631   Table 8 compares the TLS conformance requirements for IPP/1.1 clients, IPP/1.1 Printers, IPPFAX
632   Senders, and IPPFAX Receivers.

633   **Table 8 - Transport Layer Security (TLS) Conformance Requirements**

TLS Feature	IPP/1.1 Client	IPP/1.1 Printer	IPPFAX Sender	IPPFAX Receiver
Server Authentication	must support should use	should support may use	MUST use	MUST support
Client Authentication*	may support may use	may support may use	SHOULD support	MUST support MAY use
Data Integrity	may support may use	should support should use	MUST use	MUST support
Data Privacy	may support may use	should support may use	MUST support MAY** use.	MUST support

634   * The 'certificate' keyword value for the "uri-authentication-supported" attribute [RFC2911].

635   ** The Sender MUST query the Sending User before omitting the Data Privacy encryption.

636   Senders and Receivers MUST support the TLS_DHE_DSS_WITH_3DES_EDE_CBC_SHA cipher suite as
637   mandated by RFC 2246 [RFC2246]. All stronger cipher suites are OPTIONAL; weaker cipher suites
638   MUST NOT be supported or used by Senders or Receivers.

639   A Receiver MAY support Basic Authentication (described in HTTP/1.1 [RFC2617]) for Client
640   Authentication if the TLS channel is secured with Data Privacy. TLS with the above mandated cipher suite
641   or stronger can provide such a secure channel.

642   **8.5 Using IPPFAX with TLS**

643   The Sender MUST use only TLS for all IPPFAX operations on the IPPFAX URL. The client MUST start
644   the transaction in TLS, rather than using HTTP upgrade requests. The following paragraph of [RFC2818]
645   further explains:

646   The agent acting as the HTTP client should also act as the TLS client. It should initiate a
647   connection to the server on the appropriate port and then send the TLS ClientHello to begin the TLS
648   handshake. When the TLS handshake has finished. The client may then initiate the first HTTP
649   request. All HTTP data MUST be sent as TLS "application data". Normal HTTP behavior,
650   including retained connections should be followed.

651   Contrast this IPPFAX requirement with the IPP requirement in section 8.2 of [RFC2910]. The following
652   client actions compare IPP with IPPFAX from a client's point of view:

653   IPP/1.1 sequence:
654   1. Start TCP connection
655   2. Zero or more HTTP/IPP requests
656   3. HTTP/IPP request with Upgrade to TLS header
657   4. TLS handshake
658   5. Finish the HTTP/IPP request securely
659   6. Send more HTTP/IPP requests securely ...
660
661   IPPFAX sequence:
662   1. Start TCP connection
663   2. Send TLS ClientHello
664   3. Rest of TLS handshake
665   4. Send HTTP/IPPFAX requests securely ... (which usually will be a Get-Printer-Attributes,
666   followed by the Print-Job operation).
667

8.6 Access control

669 ==Needs re-writting==

670 It is expected that the majority of IPPFAX Receivers will operate in a public mode when operating on the
671 Internet, so that anonymous users can send documents without requiring client authentication
672 (corresponding to the 'none' value for the "uri-authentication-supported" attribute - see section 8.3).
673 However a Receiver MAY protect itself using any Client Authentication method specified in [RFC2911]
674 (digest authentication [RFC2069] for example) to restrict access to any or all of its functionality.

675 However, the primary intent of IPPFAX is to create a controlled public access mode. It therefore does not
676 really make much sense to combine IPPFAX and user authentication; they are achieving the same thing.

8.7 Reduced feature set

678 ==Needs re-writting==

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

682 A Receiver that is operating in this mode MUST do so by rejecting any non-IPPFAX request and return a
683 'client-error-attributes-or-values-not-supported' error status code as indicated in section 4.1 for an
684 unsupported value of the "printer-uri" operation attribute. For job operations attempted on IPPFAX Jobs,

685 the Receiver MUST return the 'client-error-not-authorized' error status code, unless the Sender is
686 authenticated as the system administrator and the Receiver supports such access.

9 Attribute Syntaxes

688 No new attribute syntaxes are defined in this document.

10 Status codes

690 No new Status codes are defined and semantics for existing status codes have not been modified in this
691 document.

11 Conformance Requirements

693 Need to be re-worked.

694 The Sender MUST:

695 - Support PDF/is, see section 1

696 - Support the only the operations listed in Section 1.1

697 - Multiple URL's must conform to the rules in section 3.2

698 - Implement Operations defined in section 7 as required for Senders

699 The Receiver MUST:

700 Document Originator MUST:

701

11.1 Operation Conformance Requirements

703 **Error! Reference source not found.** lists the conformance requirements for Printer operations for (1) an
704 IPP/1.1 Printer ('ipp' URL), (2) the non-privileged IPPFAX Sender, (3) an IPPFAX Receiver receiving a
705 request from a non-privileged User, and (4) an IPPFAX Receiver receiving a request from an authenticated
706 and authorized operator or administrator, if the Receiver supports operator/administrator authentication and
707 authorization.

708 **Error! Reference source not found.** lists the conformance requirements for Job and Subscription
709 operations for (1) an IPP/1.1 Printer ('ipp') URL, (2) the non-privileged IPPFAX Sender which MUST be
710 on the same URL as the job was created (the target "printer-uri" MUST match the Job's "job-printer-uri"
711 Job Description attribute), (3) an IPPFAX Receiver receiving a request from the Job or Subscription Object
712 Owner, (4) from some other non-privileged user, and (5) if the operation is supported at all - from an
713 authenticated and authorized operator or administrator.

714   **Table 9 - Conformance for IPPFax/1.0 Operations**

Operation Name	IPPFAX Sender support for a User	IPPFAX Receiver from a User	IPPFAX Receiver from an Operator	Reference
Print-Job	MUST	MUST	MUST	section
Get-Jobs	MUST NOT	MUST NOT	MUST	section 7.5
Get-Printer-Attributes	MUST	MUST	MUST	sections **Error! Reference source not found.**, 5
Cancel-Job				
Get-Job-Attributes				

715 Legend:
716

717 Legend:
718   **MAY*** - Get-Job-Attributes restricts certain. See section 7.5.
719   **Owner** refers to the owner of the Job or Subscription object.
720

721

722 This section summarizes the conformance requirements for Senders and Receivers that are defined
723 elsewhere in this document.

724   1. A Sender and Receiver MUST observe the attribute name space conventions specified in section
725   **Error! Reference source not found.**.

726   2. The Sender MUST supply and the Receiver MUST support (1) the "printer-uri" operation attribute
727   with the 'ippfax' scheme, (2) the "version-number" parameter with the IPP/1.1 '1.1' (or higher
728   minor version) value, and (3) the "ippfax-version" operation attribute with the IPPFAX/1.0 '1.0'
729   keyword value in all operations to get the IPPFAX semantics as described in section 4.

730 3. The Receiver MUST support the Get-Printer-Attributes operation as described in sections **Error!**
731   **Reference source not found.**.

732 4. The Receiver MUST support the Printer Description attributes as specified in section 5.

733 5. ==The Sender MUST validate that the target Printer is IPPFAX-capable using the Get-Printer-==
734   ==Attributes operation and validate that the Receiver supports the job using the Validate-Job operation==
735   ==as specified in section== **Error! Reference source not found.**.

736 6. The Sender MUST supply and the Receiver MUST support the operation/Job Description attributes
737   for Identify Exchange as described in section **Error! Reference source not found.**.

738 7. The Sender MUST support submitting and the Receiver MUST accept IPPFAX Jobs as defined in
739   section **Error! Reference source not found.**.

740 8. The Sender MUST place the Sender's identity in the document according to section **Error!**
741   **Reference source not found.**.

742 9. The Sender and Receiver MUST support the operations as indicated in section 7.

743 10. The Sender and Receiver MUST support the security mechanisms indicated in section 8, including
744   TLS.

745 The [set-ops], enable-printer and disable-printer operations MUST only be preformed on a connection that
746 has been authenticated by TLS and the user has the rights to perform them.

747 12 IPPFAX URL Scheme

748 ==Use pwg-ippfax rather than ippfax==

749 ==Need to be re-worked to be consistent RFC 3510==

750 ==Need to register a port with IANA for IPPFax.==

751 This section is intended for use in registering the 'ippfax' URL scheme with IANA and fully conforms to
752 the requirements in [RFC2717].

753 12.1 IPPFAX URL Scheme Applicability and Intended Usage

754 This document defines the 'ippfax' URL (Uniform Resource Locator) scheme for specifying the location of
755 an IPPFAX Receiver which implements the IPPFAX Protocol specified in this document.

756 The 'ippfax' URL scheme defined in this document is based on the ABNF for the basic hierarchical URL
757 syntax in [RFC2396]; however relative URL forms, parameters, and/or query parts are NOT allowed in an
758 IPPFAX URL. The 'ippfax' URL scheme is case-insensitive in the host name or host address part;
759 however the path part is case-sensitive, as in [RFC2396]. Codepoints outside [US-ASCII] MUST be hex
760 escaped by the mechanism defined in [RFC2396].

761 The intended usage of the 'ippfax' URL scheme is COMMON.

12.2 IPPFAX URL Scheme Associated IPPFAX Port

763 All IPPFAX URLs which do NOT explicitly specify a port MUST be used over IANA-assigned well-
764 known port xxx [TBA by IANA] for the IPPFAX Protocol.

765 See: IANA Port Numbers Registry [IANA-PORTREG].

12.3 IPPFAX URL Scheme Associated MIME Type

767 All IPPFAX protocol operations (requests and responses) MUST be conveyed in an 'application/ipp'
768 MIME media type [RFC2910] as registered in [IANA-MT]. IPPFAX URLs MUST refer to IPPFAX
769 Receivers which support this 'application/ipp' operation encoding.

770 See: IANA MIME Media Types Registry [IANA-MT].

12.4 IPPFAX URL Scheme Character Encoding

772 The IPPFAX URL scheme defined in this document is based on the ABNF for the HTTP URL scheme
773 defined in HTTP/1.1 [RFC2616], which is derived from the URI Generic Syntax [RFC2396] and further
774 updated by [RFC2732] and [RFC2373] (for IPv6 addresses in URLs). The IPPFAX URL scheme is case-
775 insensitive in the 'scheme' and 'host' (host name or host address) part; however, the 'abs_path' part is
776 case-sensitive, as in [RFC2396]. Code points outside [US-ASCII] MUST be hex escaped by the
777 mechanism specified in [RFC2396].

12.5 IPPFAX URL Scheme Syntax in ABNF

779 The IPP protocol places a limit of 1023 octets (NOT characters) on the length of a URI (see section 4.1.5
780 'uri' in [RFC2911]). An IPPFAX Receiver MUST return 'client-error-request-value-too-long' (see section
781 13.1.4.10 in [RFC2911]) when a URI received in a request is too long.

782   Note: IPPFAX Receivers ought to be cautious about depending on URI lengths above 255 bytes, because
783   some older client or proxy implementations might not properly support these lengths.

784   IPPFAX URLs MUST be represented in absolute form. Absolute URLs always begin with a scheme name
785   followed by a colon. For definitive information on URL syntax and semantics, see "Uniform Resource
786   Identifiers (URI): Generic Syntax and Semantics" [RFC2396]. This specification adopts the definitions of
787   "port", "host", "abs_path", and "query" from [RFC2396], as updated by [RFC2732] and [RFC2373] (for
788   IPv6 addresses in URLs).

789   The IPPFAX URL scheme syntax in ABNF is as follows:

790   **ippfax_URL = "ippfax:" "//" host [":" port] [abs_path ["?" query]]**
791

792   If the port is empty or not given, the IANA-assigned port as defined in section 12.2 is assumed. The
793   semantics are that the identified resource (see section 5.1.2 of [RFC2616]) is located at the IPPFAX
794   Notification Recipient listening for HTTP connections on that port of that host, and the Request-URI for
795   the identified resource is 'abs_path'.

796   Note: The use of IP addresses in URLs SHOULD be avoided whenever possible (see [RFC1900]).

797   If the 'abs_path' is not present in the URL, it MUST be given as "/" when used as a Request-URI for a
798   resource (see section 5.1.2 of [RFC2616]). If a proxy receives a host name which is not a fully qualified
799   domain name, it MAY add its domain to the host name it received. If a proxy receives a fully qualified
800   domain name, the proxy MUST NOT change the host name.

801   **12.6 IPPFAX URL Examples**

802   The following are examples of valid IPPFAX URLs for Notification Recipient objects (using DNS host
803   names):

804   ippfax://abc.com
805   ippfax://abc.com/listener
806
807   Note: The use of IP addresses in URLs SHOULD be avoided whenever possible (see [RFC1900]).

808   The following literal IPv4 addresses:

809   192.9.5.5   ; IPv4 address in IPv4 style
810   186.7.8.9   ; IPv4 address in IPv4 style
811
812   are represented in the following example IPPFAX URLs:

This is an unapproved IEEE-ISTO PWG Working Draft Standard, subject to change.

```
813        ippfax://192.9.5.5/listener
814        ippfax://186.7.8.9/listeners/tom
815
```

816 The following literal IPv6 addresses (conformant to [RFC2373]):

```
817        ::192.9.5.5                    ; IPv4 address in IPv6 style
818        ::FFFF:129.144.52.38           ; IPv4 address in IPv6 style
819        2010:836B:4179::836B:4179      ; IPv6 address per RFC 2373
820
```

821 are represented in the following example IPPFAX URLs:

```
822        ippfax://[::192.9.5.5]/listener
823        ippfax://[::FFFF:129.144.52.38]/listener
824        ippfax://[2010:836B:4179::836B:4179]/listeners/tom
825
```

826 **12.7 IPPFAX URL Comparisons**

827 When comparing two IPPFAX URLs to decide if they match or not, the comparer MUST use the same
828 rules as those defined for HTTP URI comparisons in [RFC2616], with the sole following exception:

829   • A port that is empty or not given MUST be treated as equivalent to the port as defined in section
830   12.2 for that IPPFAX URL;

831 **13 IANA Considerations**

832 IANA shall register the ippfax URL scheme as defined in section 12 according to the procedures of
833 [RFC2717] and assign a well known port.

```
834 Operation Attributes:
835 ippfax-version (type2 keyword)                IEEE-ISTO 510n.y 4.3
836
837 Operation/Job Description attributes:
838 sending-user-vcard (text(MAX))                        IEEE-ISTO 510n.y 6.1
839 receiving-user-vcard (text(MAX))                      IEEE-ISTO 510n.y 6.2
840
841 Printer Description Attributes:
842 ippfax-versions-supported (1setOf type2 keyword) IEEE-ISTO 510n.y 5.3
```

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844 **14.1 Normative**

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949
950   Contact Information:
951
952   IPPFAX Web Page: http://www.pwg.org/qualdocs/
953   IPPFAX Mailing List: ifx@pwg.org
954
955   To subscribe to the IPPFAX mailing list, send the following email:
956   1) send it to majordomo@pwg.org
957   2) leave the subject line blank
958   3) put the following two lines in the message body:
959   subscribe ifx
960   end
961
962   Implementers of this specification document are encouraged to join the IPPFAX Mailing List in order
963   to participate in any discussions of clarification issues and review of registration proposals for
964   additional attributes and values. In order to reduce spam the mailing list rejects mail from non-
965   subscribers, so you must subscribe to the mailing list in order to send a question or comment to the
966   mailing list.
967
968   Other Participants:

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969
970   1. Appendix A:

16 Appendix B: vCard Example

972   <mark>Update the example</mark>

973   The following ASCII text is a complete vCard v3.0 [RFC2426, RFC2425] example:

```
974         BEGIN:VCARD
975         VERSION:3.0
976         N:Moore;Paul
977         FN:Paul Moore
978         ORG:Netreon
979         TEL;CELL;VOICE:1+206-251-7008
980         ADR;WORK:;;10900 NE 8th St;Bellvue;WA;98004;United States of America
981         EMAIL;PREF;INTERNET:pmoore@netreon.com
982         REV:19991207T215341Z
983         END:VCARD
984
985
```

986 **17 Revision History (to be removed when standard is approved)**

Revision	Date	Author	Notes
1	1/16/01	Paul Moore, Netreon	Initial version
2	2/27/01	Paul Moore, Gail Songer, Netreon	Specify TLS as MUST Removed Cover page and combined device Added need for big text types
3	4/11/01	Gail Songer, Netreon	Move attribute definition to first reference
4	5/24/01	Tom Hastings	Editorially updated the document to follow the style of the IPP standard documents. Added 23 issues to be reviewed. Capitalized the special terms throughout without showing revisions in order to make the document with revisions more readable.
5	5/21/01	Tom Hastings, John Pulera, Ira McDonald	Updated from the 6/6/01 telecon agreements on most of the 23 issues. There are 20 issues remaining, mostly new.
6	7/27/01	Tom Hastings, Ira McDonald	Updated from the 6/29/01 telecon. There are 41 issues remaining, mostly new.
7	10/8/01	Tom Hastings, Ira McDonald	Updated with all the resolutions to the 41 ISSUES from the August 1, 2001 IPPFAX WG meeting in Toronto, and the subsequent telecons: August, 9, 14, and 17, 2001. There are 4 (new) issues remaining.
8	11/17/01	Tom Hastings	Updated with the agreements from the IPPFAX WG meeting, 10/24/01, Texas. See minutes. There are 5 issues remaining.
9	12/31/01	Tom Hastings	Updated with the agreements reached at the 12/14/01 telecon.
10	2/19/02	Tom Hastings	Updated with the agreements reached as the 2/5/02 IPPFAX WG meeting. There are no remaining issues.
11	9/20/02	Tom Hastings	Replaced all occurrences of UIF with PDFax and uif with PDFax.
12	10/16/02 10/24/02	Rick Seeler Gail Songer	Updated to reflect PDF/is as file format. Replace CONNEG with UPDF. Attributes for OPTIONAL PDF/is functionality.
13	11/22/02	Rick Seeler	Replaced 'PDFax' with 'PDF/is' or 'pdfis'. Updated spec to match 0.3 PDF/is specification.
14	03/18/03	Gail Songer	Removed pdfis-profile-requested and pdfis-profile-supported and pdfis-profiles; all image formats are

			required Removed pdfis-cache-size-k-octets (now fixed value) Removed pdfis-banding-direction-supported Started to split references into two sections, "normative" and "informative" and update descriptions to references Other editorial changes
15	03/24/03	Gail Songer	Added digital-signatures-supported. Added pdf-format and pdf-format supported. Put "coloring" back to optional. Removed PDF data encryption (leave for a future version of PDF/is and IPPFax)
16		Gail Songer Dennis Carney	Remove all references to coloring Changed pdf-format to document-format-version Remove the requirement that [set-ops] supports document-format coloring (we only allow document-format==PDF) ALL admin operations require TLS to have authenticated the user and the user has admin rights Other editorial changes
17	05/21/03 05/28/03	Dennis Carney Tom Hastings	Editorial updates Added new 'choice_iso_a4_210x297mm_na_letter_8.5x11in' value for "media" and a reference to [jobx]. Fixed conformance for "media-ready".
18	10/03 11/03	Gail Songer	Reviewed in light of the Requirements specification. Noted lots of places in which the document MUST be changed.

987

988   <mark>Allow Cancel-job for Administrators.</mark>