



The Printer Working Group

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IPP FaxOut Service

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Abstract: This standard defines an IPP extension to support the PWG Semantic Model FaxOut service over IPP.

This document is a PWG Candidate Standard. For a definition of a "PWG Candidate Standard", see: <ftp://ftp.pwg.org/pub/pwg/general/pwg-process30.pdf>

This document is available electronically at:

- <http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfaxout10-20140509.docx>
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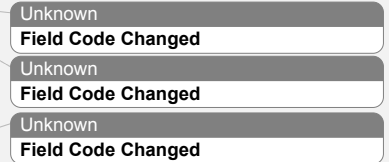
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60 technically competent, has multiple, independent and interoperable implementations with
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70



71 About the Internet Printing Protocol Work Group

72 The Internet Printing Protocol (IPP) working group has developed a modern, full-featured
73 network printing protocol, which is now the industry standard. IPP allows a print client to
74 query a printer for its supported capabilities, features, and parameters to allow the
75 selection of an appropriate printer for each print job. IPP also provides job information
76 prior to, during, and at the end of job processing.

77 For additional information regarding IPP visit:

78 <http://www.pwg.org/ipp/>

79 Implementers of this specification are encouraged to join the IPP mailing list in order to
80 participate in any discussions of the specification. Suggested additions, changes, or
81 clarification to this specification, should be sent to the IPP mailing list for consideration.

82

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204 1. Introduction

205 This document specifies an IPP binding of the PWG FaxOut Service Semantic Model and
206 Service Interface [PWG5108.05]. Because outgoing facsimile and printing share the same
207 general output model, this binding is essentially an extension of IPP that defines a small
208 number of new attributes specific to facsimile.

209 2. Terminology

210 2.1 Conformance Terminology

211 Capitalized terms, such as MUST, MUST NOT, RECOMMENDED, REQUIRED,
212 SHOULD, SHOULD NOT, MAY, and OPTIONAL, have special meaning relating to
213 conformance as defined in Key words for use in RFCs to Indicate Requirement Levels
214 [RFC2119]. The term CONDITIONALLY REQUIRED is additionally defined for a
215 conformance requirement that applies to a particular capability or feature.

216 2.2 Printing Terminology

217 Normative definitions and semantics of printing terms are imported from IETF Printer MIB
218 v2 [RFC3805], IETF Finisher MIB [RFC3806], and IETF Internet Printing Protocol/1.1:
219 Model and Semantics [RFC2911].

220 This document also defines the following terms in order to specify unambiguous
221 conformance requirements:

222 *Client*: Initiator of outgoing IPP session requests and sender of outgoing IPP operation
223 requests (Hypertext Transfer Protocol -- HTTP/1.1 [RFC2616] User Agent).

224 *Document*: An object created and managed by a Printer that contains the description,
225 processing, and status information. A Document object may have attached data and is
226 bound to a single Job.

227 *Imaging Device*: A logical or physical device that supports printing, facsimile, and other
228 imaging services.

229 *ith*: referring to a specific 1setOf value - the first value, the second value, and so forth.

230 *Job*: An object created and managed by a Printer that contains description, processing,
231 and status information. The Job also contains zero or more Document objects.

232 *Job Description*: Attributes supplied by the Client or end user including job processing
233 instructions which are intended to override any Printer object defaults and/or instructions
234 embedded within the document data (IPP Model and Semantics [RFC2911]).

235 *Job Template*: Attributes describing the Job object's identification, state, size, etc. (IPP
236 Model and Semantics [RFC2911])

237 *Job Ticket*: The combination of Job Description and Job Template attributes.

238 *Logical Device*: a print server, software service, or gateway that processes jobs and either
239 forwards or stores the processed job or uses one or more Physical Devices to render
240 output.

241 *Physical Device*: a hardware implementation of a endpoint device, e.g., a marking engine,
242 a fax modem, etc.

243 *Printer*: Listener for incoming IPP session requests and receiver of incoming IPP
244 operation requests (Hypertext Transfer Protocol -- HTTP/1.1 [RFC2616] Server) that
245 represents one or more Imaging Devices.

246 *Spooling Device*: An Imaging Device that stores a Job's document data prior to
247 processing.

248 *Streaming Device*: An Imaging Device that processes a Job's document data as it is
249 received from the Client.

250 **2.3 Acronyms and Organizations**

251 *IANA*: Internet Assigned Numbers Authority, <http://www.iana.org/>

252 *IETF*: Internet Engineering Task Force, <http://www.ietf.org/>

253 *ISO*: International Organization for Standardization, <http://www.iso.org/>

254 *PSTN*: Public Switched Telephone Network

255 *PWG*: Printer Working Group, <http://www.pwg.org/>

256 **3. Requirements**

257 **3.1 Rationale for the IPP FaxOut Service**

258 The Internet Printing Protocol Version 2.0 Second Edition [PWG5100.12] defines a
259 collection of existing IPP specifications that form the basis for IPP/2.0.

260 The MFD Model and Common Semantics [PWG5108.1] defines a common semantic
261 model and service interface for multi-function devices based on IPP.

262 The FaxOut Service Semantic Model and Service Interface v1.0 [PWG5108.05] defines
263 the semantics and interfaces specific to outgoing facsimile.

264 The PWG Raster Format [PWG5102.4] defines simple page-based raster format for
265 printing.

266 Therefore, this IPP FaxOut Service specification should support outgoing facsimile using
267 IPP based on the semantics and interfaces defined by the FaxOut Service Semantic
268 Model and Service Interface v1.0.

269 **3.2 Use Cases**

270 **3.2.1 Fax from an Application**

271 Jane wishes to send a contract to a customer via her multi-function device with facsimile
272 capabilities. She opens the contract in her word processor, initiates a print operation,
273 selects the facsimile service for her MFD, supplies the recipient's name, fax number, and
274 a subject and message for the fax cover page, and then confirms the submission of the
275 fax job. The document is then transformed as needed and queued on the MFD for
276 sending. Jane is able to monitor the status of the transmission from her computer. Finally,
277 her customer receives the fax with the contract.

278 **3.2.2 Fax to Multiple Recipients with Retry and Failure**

279 John needs to submit a printed report to several government entities using his multi-
280 function device with facsimile capabilities. He opens the report program, initiates a print
281 operation, selects the facsimile service for his MFD, supplies the recipient names, fax
282 numbers, and a subject and message for the fax cover pages, and then confirms the
283 submission of the fax job. John is able to monitor the status of the transmissions from his
284 computer for each recipient. As the MFD sends the report to each recipient, it negotiates
285 the necessary format and resolution of the transmission separately and without any action
286 by John.

287 When a transmission error occurs for the first recipient, John is notified through the client
288 user interface and the MFD automatically retries the transmission. The last recipient
289 turned their fax machine off and so the MFD reports each failed transmission to John's
290 computer and aborts the transmission after five failed attempts.

291 **3.2.3 Fax Using a Resource-Constrained MFD**

292 Mary has a MFD with facsimile capabilities but only enough memory to hold a single page
293 of output in memory at any given time. When faxing, Mary's computer streams simple
294 page-based raster data to the MFD, pausing and retrying as needed to allow the fax job to
295 complete.

296 **3.2.4 Fax After Verification**

297 John is visiting a satellite office and needs to send a facsimile to the main corporate office.
298 He prepares the fax document, initiates a facsimile operation, selects a local facsimile
299 service at the satellite office, and then requests verification of the Imaging Device that was

300 selected. After seeing or hearing that the correct Imaging Device will be used, John
301 confirms the sending of the facsimile.

302 **3.3 Out of Scope**

303 The design of the client's user interface and the methods of performing facsimile are out of
304 scope for this specification.

305 **3.4 Design Requirements**

306 The use cases in section 3.2 identify several design requirements:

- 307 1. FaxOut should closely mirror the semantic model for printing.
- 308 2. The Client can supply information for a cover page to be generated by the
309 Printer.
- 310 3. The Client can specify one or more recipients by name and telephone number.
- 311 4. The Printer handles negotiation and conversion of documents for facsimile
312 when the receiving facsimile does not support the Client-supplied document
313 data.
- 314 5. The Client can stream basic page-based raster data.
- 315 6. The Client resubmits jobs when the Printer is unable to send the document to
316 the recipient(s).
- 317 7. The Client can monitor the status of transmission to each recipient.
- 318 8. The Client can request identification of the Imaging Device.

319 **4. FaxOut Service Definition**

320 **4.1 FaxOut Job Processing**

321 From the Client's perspective, FaxOut jobs are largely processed the same way as a Print
322 job, and IPP FaxOut reuses operations, attributes, and status codes from the Internet
323 Printing Protocol/1.1: Model and Semantics [RFC2911] wherever possible. Spooling
324 Printers handle retransmission of whole jobs automatically while streaming Printers put
325 the burden of retransmission on the Client.

326 One primary difference with FaxOut is that the output resolution and color space depend
327 on the receiver of the fax job, and can be different for each destination. In order to simplify
328 implementation and preserve the IPP model and semantics, Printers MUST support
329 scaling and color space conversion of document data to match the negotiated facsimile
330 image format at job processing time. Attribute fidelity specified with the "ipp-attribute-
331 fidelity" [RFC2911] and "job-mandatory-attributes" [PWG5100.7] operation attributes
332 applies only when a Job is created - Printers indicate that fidelity was not honored during
333 transmission by reporting the 'job-completed-with-warnings' keyword in the "job-state-
334 reasons" Job attribute.

335 Another difference is that FaxOut Jobs generally expose different capabilities and use
336 different resources than Print jobs, e.g., fax modems and scanner subunits. Imaging
337 Devices MUST support FaxOut on endpoint(s)/path(s) separate from the Print service(s)
338 in order to expose the capabilities and status corresponding to the service being accessed
339 by the Client.

340 When supported by the Printer, FaxOut Jobs can also be directed to multiple destinations.
341 This requires some additional state information to manage the transmission of the job to
342 each destination.

343 4.1.1 Spooling Devices

344 Imaging Devices that spool print jobs MUST automatically retry fax transmission for PSTN
345 fax and support multiple destination URIs. Such Imaging Devices typically support the
346 PDF ("application/pdf") and/or OpenXPS ("application/openxps") document formats,
347 however they MAY NOT support spooling for all formats. Clients MUST include and
348 Printers MUST support the "document-format" operation attribute in Get-Printer-Attributes
349 requests in order to determine the spooling capabilities of the Printer for a given format.

350 4.1.2 Streaming Devices

351 Imaging Devices that can only stream print jobs to a single destination URI MUST support
352 retransmission of the current page. When an error occurs that requires retransmission of
353 larger portions of the job by the Client, Printers MUST move the job to the aborted state,
354 add the appropriate keyword to the "job-state-reasons" Job Description attribute for the
355 Job, and return the server-error-device-error status code to the Client.

356 Some document formats, e.g., PWG Raster ("image/pwg-raster"), are considered to be
357 streaming-only formats. Clients MUST include and Printers MUST support the "document-
358 format" operation attribute in Get-Printer-Attributes requests in order to determine the
359 spooling capabilities of the Printer for a given format.

360 4.1.3 Job Terminating State

361 The terminating state of an IPP FaxOut Job reflects the final disposition of the Job. Jobs in
362 the 'canceled' state were canceled by a User using the Cancel-Job, Cancel-Jobs, or
363 Cancel-My-Jobs operations, regardless of whether any or all of the Job has been
364 processed or partially transferred to its destination URI(s). The "destination-statuses" Job
365 Description attribute (section 7.3.1) provides detailed information regarding the progress
366 of the job prior to cancellation with the value of the "destination-state" member attribute
367 set to 'completed' for Jobs that were completely sent to the destination or 'canceled'
368 otherwise.

369 Jobs in the 'aborted' state were aborted by the IPP FaxOut service itself, typically due to a
370 fatal processing error or a failed transfer to any of a Job's destination URIs. The
371 "destination-statuses" Job Description attribute (section 7.3.1) provides detailed
372 information regarding the progress of the Job prior to being aborted by the service with the

373 value of the "destination-state" member attribute set to 'completed' for Jobs that were
374 completely sent to the destination or 'aborted' otherwise. The "job-state-reasons" Job
375 Description attribute will contain the keyword 'destination-uri-failed' if the Job was aborted
376 due to a transfer error to one or more destination URIs.

377 Jobs in the 'completed' state were successfully processed and transferred to at least one
378 of the Job's destination URIs. The "destination-statuses" Job Description attribute (section
379 7.3.1) provides detailed information regarding the terminating state of each destination
380 URI. Printers MUST report the 'job-completed-with-errors' keyword in the "job-state-
381 reasons" attribute if the Job was not successfully transferred to any destination URI.

382 4.1.4 Job History

383 IPP FaxOut Job history MUST be retained for a minimum of 300 seconds. The values of
384 certain Job Description attributes, e.g., job-id, job-originating-user-name, destination-uris,
385 etc. MUST be durably logged to the location specified in the "printer-fax-log-uri" (section
386 7.4.26) Printer attribute before a Job can be deleted.

387 This requirement comes from Section 7 of [PWG5108.05].

388 4.1.5 Printer URIs

389 Each instance of an IPP FaxOut service is identified by a URI. The path component of an
390 IPP FaxOut URI MUST be "/ipp/faxout" for the only (or default) instance of the service on
391 an Imaging Device and "/ipp/faxout/instance-name" for each additional, non-default
392 instance on the Imaging Device.

393 4.1.6 Destination URIs

394 IPP FaxOut supports sending of facsimile jobs to one or more destination URIs. The
395 following URI schemes are identified by this specification:

396 'ipp', 'ipps': Facsimile jobs are submitted to the destination URI using the Internet
397 Printing Protocol [RFC2911], typically for printing.

398 'mailto': Facsimile jobs are converted to TIFF G3 or PDF files and sent to the
399 destination email address using Multimedia Internet Mail Exchange [RFC2045]
400 attachments.

401 'sip', 'sips': Facsimile jobs are converted to a compatible format and sent to the
402 destination address using the Session Initiation Protocol [RFC3161].

403 'tel': Facsimile jobs are converted and sent to the destination using a PSTN fax
404 modem.

405

406 **4.2 IPP Operations**

407 Table 1 lists the operations for a Printer conforming to this FaxOut service specification.
 408 The Create-Job and Send-Document operations are required in order to support reliable
 409 job management (e.g., cancellation) during fax job submission, but Printers are not
 410 required to support multiple document jobs.

411 **Table 1 - Operations for FaxOut (note 1)**

Code	IPP Operation Name	SM Operation Name	Reference
0x0004	Validate-Job	ValidateFaxOutJobTicket	RFC 2911
0x0005	Create-Job	CreateFaxOutJob	RFC 2911
0x0006	Send-Document	SendFaxOutDocument	RFC 2911
0x0007	Send-URI (O)	SendFaxOutURI	RFC 2911
0x0008	Cancel-Job	CancelFaxOutJob	RFC 2911
0x0009	Get-Job-Attributes	GetFaxOutJobElements	RFC 2911
0x000A	Get-Jobs	GetActiveFaxOutJobs, GetFaxOutJobHistory	RFC 2911
0x000B	Get-Printer-Attributes	GetFaxOutService Elements	RFC 2911
0x0010	Pause-Printer (O)	PauseFaxOutService	RFC 2911
0x0011	Resume-Printer (O)	ResumeFaxOutService	RFC 2911
0x0013	Set-Printer-Attributes (O)	SetFaxOutService Elements	RFC 3380
0x0014	Set-Job-Attributes (O)	SetFaxOutJobElements	RFC 3380
0x0015	Get-Printer-Supported- Values (O)	-	RFC 3380
0x0016	Create-Printer- Subscriptions (O)	-	RFC 3995
0x0017	Create-Job- Subscriptions (O)	-	RFC 3995
0x0018	Get-Subscription- Attributes (O)	-	RFC 3995
0x0019	Get-Subscriptions (O)	-	RFC 3995
0x001A	Renew-Subscription (O)	-	RFC 3995
0x001B	Cancel-Subscription (O)	-	RFC 3995
0x001C	Get-Notifications (O)	-	RFC 3996
0x0022	Enable-Printer (O)	EnableFaxOutService	RFC 3998
0x0023	Disable-Printer (O)	DisableFaxOutService	RFC 3998
0x0024	Pause-Printer-After- Current-Job (O)	PauseFaxOutService AfterCurrentJob	RFC 3998
0x0025	Hold-New-Jobs (O)	HoldNewFaxOutJobs	RFC 3998
0x0026	Release-Held-New- Jobs (O)	ReleaseHeldFaxOutJobs	RFC 3998
0x0027	Deactivate-Printer (O)	-	RFC 3998
0x0028	Activate-Printer (O)	-	RFC 3998

0x0029	Restart-Printer (O)	RestartFaxOutService	RFC 3998
0x002A	Shutdown-Printer (O)	ShutdownFaxOut Service	RFC 3998
0x002B	Startup-Printer (O)	StartupService (note 3)	RFC 3998
0x002D	Cancel-Current-Job (O)	CancelCurrentFaxOut Job	RFC 3998
0x002E	Suspend-Current-Job (O)	SuspendCurrentFaxOutJ ob	RFC 3998
0x002F	Resume-Job (O)	ResumeFaxOutJob	RFC 3998
0x0030	Promote-Job (O)	PromoteFaxOutJob	RFC 3998
0x0031	Schedule-Job-After (O)	PromoteFaxOutJob	RFC 3998
0x0033	Cancel-Document (O)	CancelFaxOut Document	PWG 5100.5
0x0034	Get-Document- Attributes (O)	GetFaxOutDocument Elements	PWG 5100.5
0x0035	Get-Documents (O)	GetFaxOutDocuments	PWG 5100.5
0x0036	Delete-Document (O)	-	PWG 5100.5
0x0037	Set-Document- Attributes (O)	SetFaxOutDocument Elements	PWG 5100.5
0x0038	Cancel-Jobs (O)	CancelFaxOutJobs	PWG 5100.11
0x0039	Cancel-My-Jobs	CancelMyFaxOutJobs	PWG 5100.11
0x003A	Resubmit-Job (O)	ResubmitFaxOutJob	PWG 5100.11
0x003B	Close-Job	CloseFaxOutJob	PWG 5100.11
0x003C	Identify-Printer	IdentifyFaxOutService	PWG 5100.13
0x003D	Validate-Document (O)	ValidateFaxOutDocument Ticket	PWG 5100.13
0x003E	Add-Document-Images (note 2)	AddFaxOutHardCopy Document	PWG 5100.15

412 "(O)" = OPTIONAL

413

414 Note 1: The legacy IPP Print-Job (0x0002), Print-URI (0x0003), Hold-Job (0x000C),
415 Release-Job (0x000D), Restart-Job (0x000E), Purge-Jobs (0x0012), and
416 Resubmit-Job (0x002C) operations MUST NOT be supported by a conforming IPP
417 FaxOut implementation.

418 Note 2: RECOMMENDED when the Imaging Device supports scanning of
419 hardcopy documents.

420 Note 3: StartupService is an operation on the Semantic Model System Control
421 Service.

422

423 **4.3 IPP Printer Description Attributes**

424 Table 2 lists the REQUIRED Printer Description attributes for a Printer.

425 **Table 2 - Required Printer Description Attributes**

Attribute	Reference
charset-configured	RFC 2911
charset-supported	RFC 2911
color-supported (note 3)	RFC 2911
compression-supported	RFC 2911
confirmation-sheet-print-default	PWG 5100.15
copies-default (note 2)	RFC 2911
copies-supported (note 2)	RFC 2911
cover-sheet-info-default (note 1)	PWG 5100.15
cover-sheet-info-supported (note 1)	PWG 5100.15
destination-uri-schemes-supported	PWG 5100.15
document-format-default	RFC 2911
document-format-supported	RFC 2911
generated-natural-language-supported	RFC 2911
input-attributes-default (note 4)	PWG 5100.15
input-attributes-supported (note 4)	PWG 5100.15
input-color-mode-supported (note 4)	PWG 5100.15
input-media-supported (note 4)	PWG 5100.15
input-orientation-requested-supported (note 4)	PWG 5100.15
input-quality-supported (note 4)	PWG 5100.15
input-resolution-supported (note 4)	PWG 5100.15
input-sides-supported (note 4)	PWG 5100.15
input-source-supported (note 4)	PWG 5100.15
ipp-features-supported	PWG 5100.13
ipp-versions-supported	RFC 2911
job-ids-supported	PWG 5100.11
logo-uri-formats-supported (note 1)	PWG 5100.15
logo-uri-schemes-supported (note 1)	PWG 5100.15
media-bottom-margin-supported	PWG 5100.13
media-col-database	PWG 5100.11
media-col-default	PWG 5100.3
media-col-supported	PWG 5100.3
media-default	RFC 2911
media-left-margin-supported	PWG 5100.13
media-right-margin-supported	PWG 5100.13
media-size-supported	PWG 5100.3
media-supported	RFC 2911
media-top-margin-supported	PWG 5100.13
multiple-destination-uris-supported	PWG 5100.15
multiple-document-handling-supported (note 1)	RFC 2911

Attribute	Reference
multiple-document-jobs-supported	RFC 2911
multiple-operation-time-out	RFC 2911
multiple-operation-time-out-action	PWG 5100.13
natural-language-configured	RFC 2911
number-of-retries-default	PWG 5100.15
number-of-retries-supported (note 6)	PWG 5100.15
operations-supported	RFC 2911
page-ranges-supported (note 1)	RFC 2911
print-quality-default	RFC 2911
print-quality-supported	RFC 2911
printer-alert	PWG 5100.9
printer-alert-description	PWG 5100.9
printer-config-change-date-time	PWG 5100.13
printer-config-change-time	PWG 5100.13
printer-device-id	PWG 5107.2
printer-fax-log-uri	PWG 5100.15
printer-geo-location	PWG 5100.13
printer-get-attributes-supported (note 5)	PWG 5100.13
printer-icons	PWG 5100.13
printer-info	RFC 2911
printer-is-accepting-jobs	RFC 2911
printer-location	RFC 2911
printer-make-and-model	RFC 2911
printer-more-info	RFC 2911
printer-name	RFC 2911
printer-organization	PWG 5100.13
printer-organizational-unit	PWG 5100.13
printer-resolution-default	RFC 2911
printer-resolution-supported	RFC 2911
printer-state	RFC 2911
printer-state-change-date-time	RFC 3995
printer-state-change-time	RFC 3995
printer-state-message	RFC 2911
printer-state-reasons	RFC 2911
printer-up-time	RFC 2911
printer-uri-supported	RFC 2911
printer-uuid	PWG 5100.13
pwg-raster-document-resolution-supported	PWG 5102.4
pwg-raster-document-type-supported (note 3)	PWG 5102.4
queued-job-count	RFC 2911
retry-interval-default (note 6)	PWG 5100.15
retry-interval-supported (note 6)	PWG 5100.15
retry-time-out-default (note 6)	PWG 5100.15
retry-time-out-supported (note 6)	PWG 5100.15
uri-security-supported	RFC 2911

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Deleted: printer-fax-modem-info

... [3]

Attribute	Reference
uri-authentication-supported	RFC 2911
which-jobs-supported	PWG 5100.11

- 427 Note 1: CONDITIONALLY REQUIRED for Printers that support the
 428 "application/openxps" or "application/pdf" MIME media types.
- 429 Note 2: Always one copy for fax jobs.
- 430 Note 3: Define color support of the Printer, not of the recipient.
- 431 Note 4: CONDITIONALLY REQUIRED for Printers with scanning accessories.
- 432 Note 5: MUST include "destination-uri" in order to filter capabilities by URI scheme.
- 433 Note 6: CONDITIONALLY REQUIRED for Spooling Devices

434 4.4 IPP Operation Attributes

435 Table 3 lists the REQUIRED operation attributes for a Printer.

436 **Table 3 - Required Operation Attributes**

Attribute	Reference
compression	RFC 2911
document-format	RFC 2911
document-format-version	PWG 5100.7
document-name	RFC 2911, PWG 5100.5
first-index	PWG 5100.13
input-attributes (note 1)	PWG 5100.15
ipp-attribute-fidelity	RFC 2911
job-ids	PWG 5100.11
job-name	RFC 2911
last-document	RFC 2911
limit	RFC 2911
requesting-user-name	RFC 2911
requesting-user-uri	PWG 5100.13
which-jobs	RFC 2911, PWG 5100.11

- 437 Note 1: CONDITIONALLY REQUIRED for Printers with scanning accessories.
 438

439 **4.5 IPP Job Template Attributes**

440 Table 4 lists the REQUIRED Job Template attributes for a Printer.

441 **Table 4 - Required Job Template Attributes**

Attribute	Reference
confirmation-sheet-print	PWG 5100.15
copies (note 2)	RFC 2911
cover-sheet-info (note 1)	PWG 5100.15
destination-uris	PWG 5100.15
media	RFC 2911
media-col	PWG 5100.3
media-col.media-bottom-margin	PWG 5100.13
media-col.media-left-margin	PWG 5100.13
media-col.media-right-margin	PWG 5100.13
media-col.media-size	PWG 5100.3
media-col.media-top-margin	PWG 5100.13
multiple-document-handling (note 1)	RFC 2911
number-of-retries (note 3)	PWG 5100.15
page-ranges (note 1)	RFC 2911
print-quality	RFC 2911
printer-resolution	RFC 2911
retry-interval (note 3)	PWG 5100.15
retry-time-out (note 3)	PWG 5100.15

442 Note 1: CONDITIONALLY REQUIRED for Printers that support the
443 "application/openxps" or "application/pdf" MIME media types.

444 Note 2: Always one copy for fax jobs.

445 Note 3: CONDITIONALLY REQUIRED for Spooling Devices

446 **4.5.1 Other Job Template Attributes**447 Printers MAY support additional Job Template attributes such as "imposition-template",
448 "number-up", "orientation-requested", "overrides", "presentation-direction-number-up",
449 "print-color-mode", "print-content-optimize", "print-rendering-intent", and so forth. These
450 attributes are applied by the Printer when generating the content to be transmitted to the
451 destination, just as if the content was being printed.

452

453 **4.6 IPP Job Description Attributes**

454 Table 5 lists the REQUIRED Job Description attributes for a Printer.

455 **Table 5 - Required Job Description Attributes**

Attribute	Source
compression-supplied	PWG 5100.7
date-time-at-completed	RFC 2911
date-time-at-creation	RFC 2911
date-time-at-processing	RFC 2911
destination-statuses	PWG 5100.15
document-format-supplied	PWG 5100.7
document-format-version-supplied	PWG 5100.7
document-name-supplied	PWG 5100.7
job-id	RFC 2911
job-impressions	RFC 2911
job-impressions-completed	RFC 2911
job-name	RFC 2911
job-originating-user-name	RFC 2911
job-printer-up-time	RFC 2911
job-printer-uri	RFC 2911
job-state	RFC 2911
job-state-message	RFC 2911
job-state-reasons	RFC 2911
job-uri	RFC 2911
job-uuid	PWG 5100.13
time-at-completed	RFC 2911
time-at-creation	RFC 2911
time-at-processing	RFC 2911

456

457 **5. Document Formats**

458 Printers MUST support documents conforming to the PWG Raster Format [PWG5102.4]
459 ("image/pwg-raster"). IPP/2.1 and IPP/2.2 Printers MUST and IPP/2.0 Printers SHOULD
460 support documents conforming to Document management — Portable document format
461 — Part 1: PDF 1.7 [ISO32000] ("application/pdf"). IPP/2.0, IPP/2.1, and IPP/2.2 Printers
462 are defined in IPP/2.0 Second Edition [PWG5100.12].

463 Printers SHOULD support documents conforming to the Open XML Paper Specification
464 [ECMA388] ("application/openxps").

465 Printers MAY support legacy documents conforming to the Equivalences between 1988
466 X.400 and RFC-822 Message Bodies [RFC1494] ("image/g3fax"), Tag Image File Format
467 (TIFF) - image/tiff MIME Sub-type Registration [RFC3302] ("image/tiff"), Real-time
468 Facsimile (T.38) - image/t38 MIME Sub-type Registration [RFC3362] ("image/t38"), or Tag
469 Image File Format Fax eXtended (TIFF-FX) - image/tiff-fx MIME Sub-type Registration
470 [RFC3950] ("image/tiff-fx").

471 **5.1 Document Conversion**

472 Printers MUST support conversion of supported document formats into the negotiated
473 format, color space, and resolution for 'tel' (PSTN fax) destinations.

474 Printers SHOULD support conversion of supported document formats into supported
475 formats for 'ipp', 'ipps', 'sip', and 'sips' destinations.

476 Printers SHOULD support conversion of supported document formats into Portable
477 Document Format: Image-Streamable (PDF/IS) [PWG5102.3] or Document management
478 — Portable document format — Part 1: PDF 1.7 [ISO32000] ("application/pdf") files for
479 'mailto' destinations.
480

481 6. New Operation

482 6.1 Add-Document-Images Operation

483 The RECOMMENDED Add-Document-Images operation adds a scanned document to an
484 existing job object. Printers with one or more scanning accessories SHOULD support this
485 operation. It is semantically similar to the Send-URI operation, however document data
486 comes from a named input source representing a scanning accessory associated with the
487 Printer. Clients discover the available input sources by querying the "input-source-
488 supported" (section 7.4.18) Printer Description attribute. The source and other input
489 attributes are specified using the "input-attributes" (section 7.1.1) operation attribute.

490 A client SHOULD check to see if the Printer supports the Add-Document-Images
491 operation by querying the values of the "operations-supported" Printer Description
492 attribute.

493 *Access Rights:* The authenticated user (see [RFC2911] section 8.3) performing this
494 operation must either be the job owner (as determined in the Create-Job operation) or an
495 operator or administrator of the Printer object (see [RFC2911] Sections 1 and 8.5).
496 Otherwise, the IPP object MUST reject the operation and return: 'client-error-forbidden',
497 'client-error-not-authenticated', or 'client-error-not-authorized' as appropriate.

498 6.1.1 Add-Document-Images Request

499 The following attributes are part of the Add-Document-Images Request:

500 Group 1: Operation Attributes

501 Natural Language and Character Set:

502 The "attributes-charset (charset)" and "attributes-natural-language
503 (naturalLanguage)" attributes as described in [RFC2911] section 3.1.4.1.

504 Target:

505 The "printer-uri (uri)" plus "job-id (integer(1:MAX))" which define the target for
506 this operation as described in [RFC2911] section 3.1.5. The client MUST
507 NOT supply and the Printer MUST NOT support the "job-uri (uri)" operation
508 attribute for this operation.

509 Requesting User Name:

510 The "requesting-user-name (name(MAX))" and "requesting-user-uri (uri)"
511 attributes SHOULD be supplied by the client as described in [RFC2911]
512 section 8.3 and [PWG5100.13] section 6.1.
513

514 “input-attributes (collection)”

515 The Client OPTIONALLY supplies this attribute and the Printer MUST
516 support this attribute. If the combination of member attribute values are not
517 supported by the Printer, the Printer MUST reject the operation with the
518 'client-error-attributes-or-values-not-supported' status code and place the
519 “input-attributes” attribute in the unsupported attributes group of the
520 response.

521 Group 2: Document Template Attributes

522 Any Document Template attributes supported by the Printer, to be applied to this
523 hardcopy document.

524 6.1.2 Add-Document-Images Response

525 The following attributes are part of the Add-Document-Images Response:

526 Group 1: Operation Attributes

527 Status Message:

528 In addition to the REQUIRED status code returned in every response, the
529 response OPTIONALLY includes a “status-message (text(255))” and/or a
530 “detailed-status- message (text(MAX))” operation attribute as described in
531 [RFC2911] sections 13 and 3.1.6.

532 Natural Language and Character Set:

533 The “attributes-charset (charset)” and “attributes-natural-language
534 (naturalLanguage)” attributes as described in [RFC2911] section 3.1.4.2.

535 Group 2: Unsupported Attributes

536 See [RFC2911] section 3.1.7 for details on returning Unsupported Attributes.

537 Group 3: Document Description Attributes

538 “document-number (integer(1:MAX))”

539 The number of the document that has been added to the Job.

540

541 7. New Attributes

542 7.1 Operation Attribute

543 7.1.1 input-attributes (collection)

544 The CONDITIONALLY REQUIRED "input-attributes" operation attribute specifies the
545 scanning source and other attributes for hardcopy documents in an Add-Document-
546 Images (section 6.1) operation. Printers that support the Add-Document-Images operation
547 MUST support this attribute. The following member attributes are defined: "input-color-
548 mode", "input-orientation-requested", "input-media", "input-quality", "input-resolution",
549 "input-sides", and "input-source". The "input-attributes-supported" Printer attribute (section
550 7.4.8) defines which of the "input-attributes" member attributes are supported.

551 Note: The Semantic Model FaxOut Service [PWG5108.05] defines a single InputSource
552 element, which does not capture all of the necessary input intent. IPP FaxOut instead
553 maps elements from the Semantic Model Copy Service [PWG5108.04]
554 CopyDocumentProcessing.CopyInput group.

555 7.1.1.1 input-auto-exposure (boolean)

556 The "input-auto-exposure" member attribute specifies that the Printer should automatically
557 determine the optimal "input-brightness", "input-contrast", and "input-sharpness" values. If
558 specified with the 'true' value, Clients MUST NOT send and Printers MUST NOT accept
559 the "input-brightness", "input-contrast", or "input-sharpness" member attributes.

560 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
561 Printer supports the "input-auto-exposure" member attribute.

562 7.1.1.2 input-auto-scaling (boolean)

563 The "input-auto-scaling" member attribute specifies that the Printer should automatically
564 determine the optimal "input-scaling-height" and "input-scaling-width". If specified with the
565 'true' value, Clients MUST NOT send and Printers MUST NOT accept the "input-scaling-
566 height" or "input-scaling-width" member attributes.

567 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
568 Printer supports the "input-auto-scaling" member attribute.

569 7.1.1.3 input-auto-skew-correction (boolean)

570 The "input-auto-skew-correction" member attribute specifies that the Printer should
571 automatically correct the scanned image for media skew.

572 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
573 Printer supports the "input-auto-skew-correction" member attribute.

574 7.1.1.4 input-brightness (integer(-100:100))

575 The "input-brightness" member attribute specifies the brightness of the scanned images.
576 Negative numbers darken the images and positive numbers lighten the images.

577 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
578 Printer supports the "input-brightness" member attribute.

579 7.1.1.5 input-color-mode (type2 keyword)

580 The "input-color-mode" member attribute specifies the color scanning mode for hardcopy
581 documents in an Add-Document-Images (section 6.1) operation. The following values are
582 currently defined:

583 'auto': Scans documents in 'color' and automatically reduces to 'monochrome' or
584 'bi-level' as appropriate

585 'bi-level': Scans documents using a thresholding mode or algorithm to produce a
586 two tone image, typically black and white

587 'color': Scans documents in full color

588 'monochrome': Scans documents in a single color, typically grayscale

589 The "input-color-mode-supported" Printer attribute (section 7.4.9) defines the supported
590 values. Printers MUST support and Clients MUST supply this member attribute, either
591 directly or through the "input-attributes-default" Printer attribute (section 7.4.6) value.

592 7.1.1.6 input-content-type (type2 keyword)

593 The "input-content-type" member attribute specifies a hint concerning the type of
594 document being scanned. The following values are defined in this specification:

595 'auto': Automatically determine the type of document

596 'halftone': The document contains halftoned images

597 'line-art': The document contains line art

598 'magazine': The document is a magazine

599 'photo': The document is a photograph

600 'text': The document only contains text

601 'text-and-photo': The document contains a combination of text and photographs

602 The "input-content-type-supported" Printer attribute (section 7.4.10) defines the supported
603 values.

604 **7.1.1.7 input-contrast (integer(-100:100))**

605 The "input-contrast" member attribute specifies the contrast of the scanned images.
606 Negative values will reduce the apparent difference between light and dark pixels in the
607 images. Positive values will increase the apparent difference between light and dark pixels
608 in the images.

609 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
610 Printer supports the "input-contrast" member attribute.

611 **7.1.1.8 input-film-scan-mode (type2 keyword)**

612 The "input-film-scan-mode" member attribute specifies the type of film being scanned. The
613 following values are defined in this specification:

614 'black-and-white-negative-film': The film is black-and-white negatives

615 'color-negative-film': The film is color negatives

616 'color-slide-film': The film is color slides (positives)

617 'not-applicable': The type of film is not applicable to the usage

618 The "input-film-scan-mode-supported" Printer attribute (section 7.4.11) defines the
619 supported values.

620 **7.1.1.9 input-images-to-transfer (integer(1:MAX))**

621 The "input-images-to-transfer" member attribute specifies the number of images to scan.

622 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
623 Printer supports the "input-images-to-transfer" member attribute.

624 **7.1.1.10 input-media (type2 keyword | name(MAX))**

625 The "input-media" member attribute specifies the size of the media being scanned.
626 Defined keyword values are 'auto' (automatically determine size) and any "media" Job
627 Template attribute.

628 The "input-media-supported" Printer attribute (section 7.4.12) defines the supported
629 values. Printers MUST support this member attribute.

630 7.1.1.11 input-orientation-requested (type2 enum)

631 The "input-orientation-requested" member attribute specifies the orientation of the
632 document being scanned. Defined enum values are the same as the "orientation-
633 requested" Job Template attribute.

634 The "input-orientation-requested-supported" Printer attribute (section 7.4.13) defines the
635 supported values.

636 7.1.1.12 input-quality (type2 enum)

637 The "input-quality" member attribute specifies the overall quality of the scanned image(s)
638 of the hardcopy document. Defined enum values are the same as the "print-quality" Job
639 Template attribute. When the "input-resolution" member attribute is not specified, the
640 Printer will select a suitable value based on the "input-color-mode" and "input-quality"
641 member attribute values.

642 The "input-quality-supported" Printer attribute (section 7.4.14) defines the supported
643 values. Printers MUST support this member attribute with at least the value '4' (normal).

644 7.1.1.13 input-resolution (resolution)

645 The "input-resolution" member attribute specifies the resolution of the scanned image(s) of
646 the document. If unspecified, the default value depends on the value of the "input-color-
647 mode" and "input-quality" member attributes.

648 The "input-resolution-supported" member attribute (section 7.4.15) defines the supported
649 values. Printers SHOULD support this member attribute.

650 7.1.1.14 input-scaling-height (integer(1:1000))

651 The "input-scaling-height" member attribute specifies that the Printer should scale the
652 images vertically by the specified percentage. Values less than 100 cause the images to
653 be shortened while values greater than 100 cause the images to be lengthened.

654 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
655 Printer supports the "input-scaling-height" member attribute.

656 7.1.1.15 input-scaling-width (integer(1:1000))

657 The "input-scaling-width" member attribute specifies that the Printer should scale the
658 images horizontally by the specified percentage. Values less than 100 cause the images
659 to be widened while values greater than 100 cause the images to be narrowed.

660 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
661 Printer supports the "input-scaling-width" member attribute.

662 7.1.1.16 input-scan-regions (1setOf collection)

663 The "input-scan-regions" member attribute specifies rectangles to be scanned. Each value
664 consists of four member attributes: "x-origin (integer)" and "y-origin (integer)" specifying
665 the lower lefthand corner of the rectangle and "x-dimension (integer)" and "y-dimension
666 (integer)" specifying the size of the rectangle. All values are in hundredths of millimeters,
667 which is equivalent to 1/2540th of an inch.

668 The "input-scan-regions-supported" Printer attribute (section 7.4.16) specifies the range of
669 origin and dimension values supported by the Printer.

670 7.1.1.17 input-sharpness (integer(-100:100))

671 The "input-sharpness" member attribute specifies the sharpness of the scanned images.
672 Positive values enhance object edges and negative values reduce object edges.

673 The "input-attributes-supported" Printer attribute (section 7.4.8) specifies whether the
674 Printer supports the "input-sharpness" member attribute.

675 7.1.1.18 input-sides (type2 keyword)

676 The "input-sides" member attribute specifies whether the source document is single or
677 double-sided. Defined keyword values are the same as the "sides" Job Template attribute.

678 The "input-sides-supported" Printer attribute (section 7.4.17) defines the supported values.
679 Printers with duplex-capable document feeders MUST support this member attribute.

680 7.1.1.19 input-source (type2 keyword)

681 The "input-source" member attribute specifies the scanning source for hardcopy
682 documents in an Add-Document-Images (section 6.1) operation. The following values are
683 defined:

684 'adf': Scans documents from the auto-document feeder

685 'film-reader': Scans documents from a microfilm reader

686 'platen': Scans a single page document from the scanner glass or platen

687 The "input-source-supported" Printer attribute (section 7.4.6) defines the supported
688 values. Printers MUST support and Clients MUST provide this member attribute, either
689 directly or through the "input-attributes-default" Printer attribute (section 7.4.6) value.

690 **7.2 Job Template Attributes**

691 **7.2.1 confirmation-sheet-print (boolean)**

692 The REQUIRED "confirmation-sheet-print" Job Template attribute specifies whether a
693 confirmation sheet is printed when the Job reaches a terminating state.

694 **7.2.2 cover-sheet-info (collection | no-value)**

695 The CONDITIONALLY REQUIRED "cover-sheet-info" Job Template attribute specifies the
696 information that is shown on the fax cover sheet sent to each recipient. Printers supporting
697 the PDF ("application/pdf") or OpenXPS ("application/oxps") MIME media types MUST
698 support this attribute. The no-value value disables the Printer-generated cover sheet. The
699 "cover-sheet-info-supported" (section 7.4.3) Printer attribute list the member attributes that
700 are supported by the Printer. Clients MAY include any of the supported member attributes
701 below to override the values in the "cover-sheet-info-default" (section 7.4.2) Printer
702 attribute.

703 **7.2.2.1 from-name (text(MAX))**

704 The "from" member attribute provides the sender's name to be shown on the cover page.
705 If not specified, the default value comes from the "job-originating-user-name" Job
706 Description attribute.

707 Note: The name for this member attribute was changed from the Semantic Model element
708 "From" to avoid confusion.

709 **7.2.2.2 logo (uri)**

710 The "logo" member attribute provides a URI to a logo image to be shown on the cover
711 page.

712 **7.2.2.3 message (text(MAX))**

713 The "message" member attribute provides freeform plain text to be shown on the cover
714 page. Long lines are typically wrapped to fit within a message area on the cover page with
715 newlines starting new paragraphs.

716 **7.2.2.4 organization-name (text(MAX))**

717 The "organization-name" member attribute provides the company or organization name to
718 be shown on the cover page.

719 Note: The name for this member attribute was changed from the Semantic Model element
720 "CompanyName" to align IPP FaxOut with existing standards such as LDAP.

721 7.2.2.5 subject (text(MAX))

722 The "subject" member attribute provides a subject line to be shown on the cover page.

723 7.2.2.6 to-name (text(MAX))

724 The "to-name" member attribute provides a recipient name to be shown on the cover
725 page.

726 Note: The name for this member attribute was changed from the Semantic Model element
727 "To" to avoid confusion.

728 7.2.3 destination-uris (1setOf collection)

729 The REQUIRED "destination-uris" Job Template attribute specifies the recipients of the
730 fax job. Besides the mandatory destination URI, destinations using the "tel" URI scheme
731 also support pre- and post-dial strings of the form:

```
732 DialString = 1*(phonedigit / dtmf-digit / flash-character /  
733 pause-character)  
734 flash-character = "f"  
735 pause-character = one-second-pause / wait-for-dial-tone  
736 one-second-pause = "p"  
737 wait-for-dial-tone = "w"  
738 dtmf-digit = "*" / "A" / "B" / "C" / "D" / "#"  
739 phonedigit = DIGIT / [ visual-separator ]  
740 visual-separator = "-" / "." / "(" / ")" / "'"
```

741 7.2.3.1 destination-uri (uri)

742 The REQUIRED "destination-uri" member attribute specifies the phone number to dial as
743 a "tel" URI [RFC3966], an IPP Printer using an "ipp" [RFC3510] or "ipps" URI [IPPS], an
744 email address as a "mailto" URI [RFC6068], or a session using a "sip" or "sips" URI
745 [RFC3261].

746 7.2.3.2 post-dial-string (text(127))

747 The OPTIONAL "post-dial-string" member attribute specifies additional numbers to dial
748 after the number specified by a 'tel' "destination-uri" has connected.

749 7.2.3.3 pre-dial-string (text(127))

750 The OPTIONAL "pre-dial-string" member attribute specifies additional numbers to dial
751 before the number specified by a 'tel' "destination-uri" has been dialed.

752 7.2.3.4 t33-subaddress (integer(0:MAX))

753 The OPTIONAL "t33-subaddress" member attribute specifies additional numbers (typically
754 an extension) to dial after any "post-dial-string" numbers have been sent.

755 7.2.4 number-of-retries (integer(0:MAX))

756 The CONDITIONALLY REQUIRED "number-of-retries" Job Template attribute specifies
757 the number of retries that will be performed in order to successfully transmit the job to the
758 recipient. Spooling Devices MUST support this attribute. When specified, the Printer
759 MUST try sending the document at least "number-of-retries + 1" times in order to
760 successfully send it to the recipient.

761 7.2.5 retry-interval (integer(1:MAX))

762 The CONDITIONALLY REQUIRED "retry-interval" Job Template attribute specifies the
763 number of seconds the Printer will wait between subsequent retries. Spooling Devices
764 MUST support this attribute.

765 7.2.6 retry-time-out (integer(1:MAX))

766 The CONDITIONALLY REQUIRED "retry-time-out" Job Template attribute specifies the
767 maximum number of seconds the Printer will wait to successfully negotiate a facsimile
768 connection. Spooling Devices MUST support this attribute.

769 7.3 Job Description Attributes**770 7.3.1 destination-statuses (1setOf collection)**

771 The REQUIRED "destination-statuses" Job attribute provides the transmission status of
772 each recipient specified by the "destination-uris" Job Template attribute. This attribute
773 MUST have the same cardinality (contain the same number of values) as the "destination-
774 uris" attribute. The "ith" value in the "destination-statuses" attribute corresponds to the "ith"
775 value in the "destination-uris" attribute.

776 7.3.1.1 destination-uri (uri)

777 The "destination-uri" member attribute specifies the destination telephone number as
778 found in the corresponding Job Template attribute value.

779 7.3.1.2 images-completed (integer(0:MAX))

780 The "images-completed" member attribute specifies the number of images (sides) that
781 have been successfully transmitted to the recipient.
782

783 7.3.1.3 transmission-status (type2 enum)

784 The "transmission-status" member attribute specifies the status of the transmission to the
 785 recipient. Table 6 lists the values that may be used and purposely mirrors the allowed
 786 "job-state" values.

787 **Table 6 - "transmission-status" Enumeration Values**

Value	Symbolic Name and Description
'3'	'pending': Job is in queue waiting to be sent
'4'	'pending-retry': Job is in queue waiting to be retried
'5'	'processing': Job is being sent
'7'	'canceled': Job has been canceled
'8'	'aborted': Job has been aborted
'9'	'completed; Job has successfully been sent

788 7.3.2 input-attributes-actual (collection)

789 The "input-attributes-actual" Job Description attribute provides a receipt of the "input-
 790 attributes" (section 7.1.1) operation attribute values that were used in a Add-Document-
 791 Images (section 6.1). Printers that support the Add-Document-Images operation MUST
 792 support this attribute.

793 7.4 Printer Description Attributes**794 7.4.1 confirmation-sheet-print-default (boolean)**

795 The default value supplied by the Printer if the Client omits the "confirmation-sheet-print"
 796 Job Template attribute. This value may be set by the Set-Printer-Attributes operation.

797 7.4.2 cover-sheet-info-default (collection | no-value)

798 The CONDITIONALLY REQUIRED "cover-sheet-info-default" Printer attribute provides the
 799 default value of the "cover-sheet-info" Job Template attribute. Printers supporting the PDF
 800 ("application/pdf") or OpenXPS ("application/oxps") MIME media types MUST support this
 801 attribute. The no-value value disables the Printer-generated cover sheet.

802 7.4.3 cover-sheet-info-supported (1setOf type2 keyword)

803 The CONDITIONALLY REQUIRED "cover-sheet-info-supported" Printer attribute lists the
 804 supported member attributes in the "cover-sheet-info" Job Template attribute. Printers
 805 supporting the PDF ("application/pdf") or OpenXPS ("application/oxps") MIME media types
 806 MUST support this attribute. Printers that support this attribute MUST support the "from-
 807 name", "subject", and "to-name" member attributes.

808 7.4.4 destination-uri-schemes-supported (1setOf uriScheme)

809 The REQUIRED "destination-uri-schemes-supported" Printer attribute lists the supported
810 "destination-uri" URI schemes. Printers MUST support the "tel" URI scheme and MAY
811 support the "ipp", "ipps", "mailto", "sip", and "sips" URI schemes.

812 7.4.5 destination-uris-supported (1setOf type2 keyword)

813 The REQUIRED "destination-uris-supported" Printer attribute lists the supported member
814 attributes in the "destination-uris" (section 7.2.3) Job Template attribute. The value
815 'destination-uri' MUST be listed.

816 7.4.6 from-name-supported (integer(0:1023))

817 The "from-name-supported" Printer attribute specifies the maximum length of the "from-
818 name" member attribute (section 7.2.2.1).

819 7.4.7 input-attributes-default (collection)

820 The CONDITIONALLY REQUIRED "input-attributes-default" Printer attribute defines the
821 default value for the "input-attributes" operation attribute (section 7.1.1). Printers that
822 support the Add-Document-Images operation MUST support this attribute.

823 7.4.8 input-attributes-supported (1setOf type2 keyword)

824 The CONDITIONALLY REQUIRED "input-attributes-supported" Printer attribute lists the
825 member attributes that are supported in the "input-attributes" operation attribute (section
826 7.1.1). Printers that support the Add-Document-Images operation MUST support this
827 attribute and list the values 'input-color-mode', 'input-media', 'input-quality', and 'input-
828 source'.

829 7.4.9 input-color-mode-supported (1setOf type2 keyword)

830 The CONDITIONALLY REQUIRED "input-color-mode-supported" Printer attribute lists the
831 supported values for the "input-color-mode" member attribute (section 7.1.1.5). Printers
832 that support the Add-Document-Images operation MUST support this attribute and list the
833 values 'monochrome' and 'bi-level'. Printer with color scanning accessories MUST list the
834 value 'color'.

835 7.4.10 input-content-type-supported (1setOf type2 keyword)

836 The "input-content-type-supported" Printer attribute lists the supported values for the
837 "input-content-type" member attribute (section 7.1.1.6).

838 7.4.11 input-film-scan-mode-supported (1setOf type2 keyword)

839 The "input-film-scan-mode-supported" Printer attribute lists the supported values for the
840 "input-film-scan-mode" member attribute (section 7.1.1.8).

841 7.4.12 input-media-supported (1setOf type2 keyword | name(MAX))

842 The CONDITIONALLY REQUIRED “input-media-supported” Printer attribute lists the
843 supported values for the “input-media” member attribute (section 7.1.1.10). Printers that
844 support the Add-Document-Images operation MUST support this attribute and SHOULD
845 support the value ‘auto’.

846 7.4.13 input-orientation-requested-supported (1setOf type2 enum)

847 The “input-orientation-requested-supported” Printer attribute lists the supported values for
848 the “input-orientation-requested” member attribute (section 7.1.1.11).

849 7.4.14 input-quality-supported

850 The CONDITIONALLY REQUIRED “input-quality-supported” Printer attribute lists the
851 supported values for the “input-quality” member attribute (section 7.1.1.12). Printers that
852 support the Add-Document-Images operation MUST support this attribute and list the
853 value ‘4’ (normal).

854 7.4.15 input-resolution-supported (1setOf resolution)

855 The RECOMMENDED “input-resolution-supported” Printer attribute lists the supported
856 values for the “input-resolution” member attribute (section 7.1.1.13).

857 7.4.16 input-scan-regions-supported (collection)

858 The “input-scan-regions-supported” Printer attribute specifies the range of values
859 supported for the “input-scan-regions” member attribute (section 7.1.1.16). The collection
860 contains four member attributes: “x-dimension (rangeOfInteger)”, “x-origin
861 (rangeOfInteger)”, “y-dimension (rangeOfInteger)”, and “y-origin (rangeOfInteger)”.

862 7.4.17 input-sides-supported (1setOf type2 keyword)

863 The CONDITIONALLY REQUIRED “input-sides-supported” Printer attribute lists the
864 supported values for the “input-sides” member attribute (section 7.1.1.18). Printers that
865 support the Add-Document-Images operation and have duplex scanning accessories
866 MUST support this attribute.

867 7.4.18 input-source-supported (1setOf type2 keyword)

868 The CONDITIONALLY REQUIRED “input-source-supported” Printer attribute lists the
869 supported values for the “input-source” member attribute (section 7.1.1.19). Printers that
870 support the Add-Document-Images operation MUST support this attribute.

871 7.4.19 logo-uri-formats-supported (1setOf mimeType)

872 The “logo-uri-formats-supported” Printer attribute lists the supported “logo” formats.
873 Printers that support the “logo” member attribute of the “cover-sheet-info” Job Template

874 attribute MUST support the "logo-uri-formats-supported" Printer attribute and MUST list at
875 least the "image/jpeg" MIME media type.

876 **7.4.20 logo-uri-schemes-supported (1setOf uriScheme)**

877 The "logo-uri-schemes-supported" Printer attribute lists the supported "logo" URI
878 schemes. Printers that support the "logo" member attribute of the "cover-sheet-info" Job
879 Template attribute MUST support the "logo-uri-schemes-supported" Printer attribute.

880 **7.4.21 message-supported (integer(0:1023))**

881 The "message-supported" Printer attribute specifies the maximum length of the "message"
882 member attribute (section 7.2.2.3).

883 **7.4.22 multiple-destination-uris-supported (boolean)**

884 The REQUIRED "multiple-destination-uris-supported" Printer attribute specifies whether
885 the Printer supports more than one "destination-uris" Job Template attribute value in a Job
886 creation request.

887 **7.4.23 number-of-retries-default (integer(0:MAX))**

888 The default value supplied by the Printer if the Client omits the "number-of-retries" Job
889 Template attribute. Spooling Devices MUST support this attribute. This value may be set
890 by the Set-Printer-Attributes operation.

891 **7.4.24 number-of-retries-supported (rangeOfInteger(0:MAX))**

892 The range of allowed values for the "number-of-retries" Job Template attribute. Spooling
893 Devices MUST support this attribute. This value may be set by the Set-Printer-Attributes
894 operation and MUST reflect any local regulatory requirements.

895 **7.4.25 organization-name-supported (integer(0:1023))**

896 The "organization-name-supported" Printer attribute specifies the maximum length of the
897 "organization-name" member attribute (section 7.2.2.4).

898 **7.4.26 printer-fax-log-uri (uri)**

899 The REQUIRED READ-WRITE "printer-fax-log-uri" Printer attribute provides the location
900 of the persistent log that is maintained for every Job that is created. The log MUST be
901 formatted as defined in the PWG Common Log Format [PWG5110.3]. Size limits and/or
902 log rotation are implementation-defined. If the Printer supports setting the value of the
903 "printer-fax-log-uri" Printer attribute using the Set-Printer-Attributes operation [RFC3380],
904 it MUST list the attribute in the "printer-settable-attributes-supported" Printer attribute
905 [RFC3380].

906 7.4.27 printer-fax-modem-info (1setOf text(MAX))

907 The RECOMMENDED READ-ONLY "printer-fax-modem-info" Printer attribute provides a
908 description of every fax modem used by the FaxOut service.

909 This attribute MUST have the same cardinality (contain the same number of values) as
910 the "printer-fax-modem-name" and "printer-fax-modem-number" Printer attributes. The ith
911 value in the "printer-fax-modem-info" attribute corresponds to the ith values in the "printer-
912 fax-modem-name" and "printer-fax-modem-number" attributes.

913 7.4.28 printer-fax-modem-name (1setOf name(MAX))

914 The RECOMMENDED READ-ONLY "printer-fax-modem-name" Printer attribute provides
915 the name of every fax modem used by the FaxOut service. These names are used to
916 populate the "output-device-assigned" Job Description attribute.

917 This attribute MUST have the same cardinality (contain the same number of values) as
918 the "printer-fax-modem-info" and "printer-fax-modem-number" Printer attributes. The ith
919 value in the "printer-fax-modem-name" attribute corresponds to the ith values in the
920 "printer-fax-modem-info" and "printer-fax-modem-number" attributes.

921 7.4.29 printer-fax-modem-number (1setOf uri)

922 The RECOMMENDED READ-ONLY "printer-fax-modem-number" Printer attribute
923 provides a "tel" URI [RFC3966] representing the line (source) number for every fax
924 modem used by the FaxOut service.

925 This attribute MUST have the same cardinality (contain the same number of values) as
926 the "printer-fax-modem-info" and "printer-fax-modem-name" Printer attributes. The ith
927 value in the "printer-fax-modem-number" attribute corresponds to the ith values in the
928 "printer-fax-modem-info" and "printer-fax-modem-name" attributes.

929 7.4.30 retry-interval-default (integer(1:MAX))

930 The default value supplied by the Printer if the Client omits the "retry-interval" Job
931 Template attribute. Spooling Devices MUST support this attribute. Streaming Devices
932 MAY support this attribute when retrying the transmission of a single page. This value
933 may be set by the Set-Printer-Attributes operation and MUST reflect any local regulatory
934 requirements.

935 7.4.31 retry-interval-supported (rangeOfInteger(1:MAX))

936 The range of allowed values for the "retry-interval" Job Template attribute. Spooling
937 Devices MUST support this attribute. Streaming Devices MAY support this attribute when
938 retrying the transmission of a single page. This value may be set by the Set-Printer-
939 Attributes operation and MUST reflect any local regulatory requirements.

940 7.4.32 retry-time-out-default (integer(1:MAX))

941 The default value supplied by the Printer if the Client omits the "retry-time-out" Job
942 Template attribute. Spooling Devices MUST support this attribute. Streaming Devices
943 MAY support this attribute when retrying the transmission of a single page. This value
944 may be set by the Set-Printer-Attributes operation and MUST reflect any local regulatory
945 requirements.

946 7.4.33 retry-time-out-supported (rangeOfInteger(1:MAX))

947 The range of allowed values for the "retry-time-out" Job Template attribute. Spooling
948 Devices MUST support this attribute. Streaming Devices MAY support this attribute when
949 retrying the transmission of a single page. This value may be set by the Set-Printer-
950 Attributes operation and MUST reflect any local regulatory requirements.

951 7.4.34 subject-supported (integer(0:1023))

952 The "subject-supported" Printer attribute specifies the maximum length of the "subject"
953 member attribute (section 7.2.2.5).

954 7.4.35 to-name-supported (integer(0:1023))

955 The "to-name-supported" Printer attribute specifies the maximum length of the "to-name"
956 member attribute (section 7.2.2.6).

957 7.5 Document Description Attributes**958 7.5.1 input-attributes-actual (collection)**

959 The "input-attributes-actual" Document Description attribute provides a receipt of the
960 "input-attributes" (section 7.1.1) operation attribute values that were used in the Add-
961 Document-Images (section 6.1) request that created the Document object. Printers that
962 support the Add-Document-Images operation and the IPP Document Object [PWG5100.5]
963 MUST support this attribute.

964

965 **8. Additional Values and Semantics for Existing Attributes**

966 **8.1 ipp-features-supported (1setOf type2 keyword)**

967 This specification defines the REQUIRED keyword 'faxout' for the "ipp-features-supported"
968 Printer attribute.

969 **8.2 job-state-reasons (1setOf type2 keyword)**

970 Table 7 lists the "job-state-reasons" keyword values that are specific to IPP FaxOut. The
971 'fax-modem-xxx' keywords are defined in Printer MIB and IPP MFD Alerts [PWG5107.3].

972 **Table 7 - IPP FaxOut "job-state-reasons" Keyword Values**

Keyword	Description
'connected-to-destination'	The Printer is connected to the destination URI
'connecting-to-destination'	The Printer is connecting to the destination URI (dialing, etc.)
'destination-uri-failed'	The Printer was unable to transfer the Job to one or more destination URIs.
'fax-modem-carrier-lost'	Lost connection to the receiver during send.
'fax-modem-equipment-failure'	Fax modem failed during send.
'fax-modem-inactivity-timeout'	Job timed out due to inactivity.
'fax-modem-line-busy'	Destination line was busy.
'fax-modem-no-answer'	Destination did not answer.
'fax-modem-no-dial-tone'	No dial tone.
'fax-modem-protocol-error'	Fax protocol error.
'fax-modem-training-failure'	The sender and receiver were unable to successfully negotiate a data rate.
'fax-modem-voice-detected'	Fax modem detected sound other than a carrier tone at the destination, e.g. a voice.
'job-transferring'	Job is being transmitted.
'job-transforming'	Job is being transformed to conform to the recipient capabilities.

973

974 **9. Conformance Requirements**

975 This section summarizes the Conformance Requirements detailed in the definitions in this
976 document for Clients and Printers.

977 **9.1 Conformance Requirements for this Specification**

978 In order for a Client or a Printer to claim conformance to this specification a Client MUST
979 be able to supply or a Printer MUST support the following:

- 980 1. The REQUIRED “printer-uri-supported” values defined in section 4.1.5,
- 981 2. The REQUIRED operations defined in sections 4.2 and 6,
- 982 3. The REQUIRED Printer Description attributes and values defined in sections
983 4.3 and 7.3.2,
- 984 4. The REQUIRED operation attributes and values defined in sections 4.4 and 7.1,
- 985 5. The REQUIRED Job Template attributes and values defined in sections 4.5 and
986 7.2,
- 987 6. The REQUIRED Job Description attributes and values defined in section 4.6,
- 988 7. The REQUIRED document formats and behaviors defined in section 5,
- 989 8. The REQUIRED values defined in section 8,
- 990 9. The internationalization considerations in section 10, and
- 991 10. The security considerations in section 11.

992 **9.2 Conditional Conformance Requirements for Printer Objects**

993 To claim conformance to this specification, Spooling Devices MUST support the following:

- 994 1. Automatic retries and retransmission of whole jobs as defined in section 4.1.1,
- 995 2. The “number-of-retries”, “retry-interval”, and “retry-timeout” Job Template
996 attributes (section 7.2),
- 997 9. The “number-of-retries-default”, “retry-interval-default”, and “retry-timeout-“retry-
998 timeout-supported” Printer Description attributes (section 7.3.2).
- 999 10. The “number-of-retries-supported”, “retry-interval-supported”, and “retry-
1000 timeout-supported” Printer Description attributes (section 7.3.2) which MUST
1001 reflect any local regulatory requirements.

1002 To claim conformance to this specification, Printers that support PDF or OpenXPS
1003 documents MUST support the following:

- 1004 1. The “cover-sheet-info”, “multiple-document-handling”, and “page-ranges” Job
1005 Template attributes as defined in sections 4.5 and 7.2.2,
- 1006 11. The “cover-sheet-default”, “cover-sheet-supported”, “from-name-supported”,
1007 “message-supported”, “multiple-document-handling-supported”, “organization-
1008 name-supported”, “page-ranges-supported”, “subject-supported”, and “to-name-
1009 supported” Printer Description attributes as defined in sections 4.3 and 7.3.2.

1010 **10. Internationalization Considerations**

1011 For interoperability and basic support for multiple languages, conforming implementations
1012 MUST support:

- 1013 12. The Universal Character Set (UCS) Transformation Format -- 8 bit (UTF-8)
- 1014 [STD63] encoding of Unicode [UNICODE] [ISO10646]; and
- 1015 13. The Unicode Format for Network Interchange [RFC5198] which requires
- 1016 transmission of well-formed UTF-8 strings and recommends transmission of
- 1017 normalized UTF-8 strings in Normalization Form C (NFC) [UAX15].

1018 Unicode NFC is defined as the result of performing Canonical Decomposition (into base
1019 characters and combining marks) followed by Canonical Composition (into canonical
1020 composed characters wherever Unicode has assigned them).

1021 WARNING – Performing normalization on UTF-8 strings received from IPP Clients and
1022 subsequently storing the results (e.g., in IPP Job objects) could cause false negatives in
1023 IPP Client searches and failed access (e.g., to IPP Printers with percent-encoded UTF-8
1024 URIs now 'hidden').

1025 **11. Security Considerations**

1026 The IPP extensions defined in this document require the same security considerations as
1027 defined in the IPP Model and Semantics [RFC2911].

1028 An end user's FaxOut data can be protected from disclosure by encrypting the content
1029 and protected from modification by signing the data file when the data is stored in a
1030 repository or being transmitted over a communication link. Spooling Devices MUST
1031 protect document data from disclosure to unauthorized parties.

1032 **12. IANA Considerations**

1033 **12.1 Attribute Registrations**

1034 The attributes defined in this document will be published by IANA according to the
1035 procedures in IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1036 <http://www.iana.org/assignments/ipp-registrations>

1037 The registry entries will contain the following information:

1038	Operation attributes:	Reference
1039	-----	-----
1040	input-attributes (collection)	[PWG5100.15]
1041	input-auto-scaling (boolean)	[PWG5100.15]
1042	input-auto-skew-correction (boolean)	[PWG5100.15]

1043	input-brightness (integer(-100:100))	[PWG5100.15]
1044	input-color-mode (type2 keyword)	[PWG5100.15]
1045	input-content-type (type2 keyword)	[PWG5100.15]
1046	input-contrast (integer(-100:100))	[PWG5100.15]
1047	input-film-scan-mode (type2 keyword)	[PWG5100.15]
1048	input-images-to-transfer (integer(1:MAX))	[PWG5100.15]
1049	input-media (type2 keyword name(MAX))	[PWG5100.15]
1050	input-orientation-requested (type2 keyword)	[PWG5100.15]
1051	input-quality (type2 enum)	[PWG5100.15]
1052	input-resolution (resolution)	[PWG5100.15]
1053	input-scaling-height (integer(1:1000))	[PWG5100.15]
1054	input-scaling-width (integer(1:1000))	[PWG5100.15]
1055	input-scan-regions (lsetOf collection)	[PWG5100.15]
1056	x-dimension (integer)	[PWG5100.15]
1057	x-origin (integer)	[PWG5100.15]
1058	y-dimension (integer)	[PWG5100.15]
1059	y-origin (integer)	[PWG5100.15]
1060	input-sharpness (integer(-100:100))	[PWG5100.15]
1061	input-sides (type2 keyword)	[PWG5100.15]
1062	input-source (type2 keyword)	[PWG5100.15]
1063		
1064	Document Description attributes:	Reference
1065	-----	-----
1066	input-attributes-actual (collection)	[PWG5100.15]
1067		
1068	Job Template attributes:	Reference
1069	-----	-----
1070	confirmation-sheet-print (boolean)	[PWG5100.15]
1071	cover-sheet-info (collection)	[PWG5100.15]
1072	from-name (text(MAX))	[PWG5100.15]
1073	logo (uri)	[PWG5100.15]
1074	message (text(MAX))	[PWG5100.15]
1075	organization-name (text(MAX))	[PWG5100.15]
1076	subject (text(MAX))	[PWG5100.15]
1077	to-name (text(MAX))	[PWG5100.15]
1078	destination-uris (lsetOf collection)	[PWG5100.15]
1079	destination-uri (uri)	[PWG5100.15]
1080	post-dial-string (text(127))	[PWG5100.15]
1081	pre-dial-string (text(127))	[PWG5100.15]
1082	t33-subaddress (integer(0:MAX))	[PWG5100.15]
1083	number-of-retries (integer(0:MAX))	[PWG5100.15]
1084	retry-interval (integer(1:MAX))	[PWG5100.15]
1085	retry-timeout (integer(1:MAX))	[PWG5100.15]
1086		
1087	Job Status attributes:	Reference
1088	-----	-----
1089	destination-statuses (lsetOf collection)	[PWG5100.15]
1090	destination-uri (uri)	[PWG5100.15]
1091	images-completed (integer(0:MAX))	[PWG5100.15]
1092	transmission-status (type2 enum)	[PWG5100.15]
1093		
1094	Job Description attributes:	Reference
1095	-----	-----
1096	input-attributes-actual (collection)	[PWG5100.15]
1097		
1098	Printer Description attributes:	Reference

```

1099 -----
1100 confirmation-sheet-print-default (boolean) [PWG5100.15]
1101 cover-sheet-info-supported (1setOf type2 keyword) [PWG5100.15]
1102 destination-uri-schemes-supported (1setOf uriScheme) [PWG5100.15]
1103 destination-uris-supported (1setOf type2 keyword) [PWG5100.15]
1104 from-name-supported (integer(0:1023)) [PWG5100.15]
1105 input-attributes-default (collection) [PWG5100.15]
1106 input-attributes-supported (1setOf type2 keyword) [PWG5100.15]
1107 input-color-mode-supported (1setOf type2 keyword) [PWG5100.15]
1108 input-content-type-supported (1setOf type2 keyword) [PWG5100.15]
1109 input-film-scan-mode-supported (1setOf type2 keyword) [PWG5100.15]
1110 input-media-supported (1setOf (type2 keyword | name(MAX)))
1111 [PWG5100.15]
1112 input-orientation-requested-supported (1setOf type2 enum)
1113 [PWG5100.15]
1114 input-quality-supported (1setOf type2 enum) [PWG5100.15]
1115 input-resolution-supported (1setOf resolution) [PWG5100.15]
1116 input-scan-regions-supported (collection) [PWG5100.15]
1117 x-dimension (rangeOfInteger) [PWG5100.15]
1118 x-origin (rangeOfInteger) [PWG5100.15]
1119 y-dimension (rangeOfInteger) [PWG5100.15]
1120 y-origin (rangeOfInteger) [PWG5100.15]
1121 input-sides-supported (1setOf type2 keyword) [PWG5100.15]
1122 input-source-supported (1setOf type2 keyword) [PWG5100.15]
1123 logo-uri-formats-supported (1setOf mimeType) [PWG5100.15]
1124 logo-uri-schemes-supported (1setOf uriScheme) [PWG5100.15]
1125 message-supported (integer(0:1023)) [PWG5100.15]
1126 multiple-destination-uris-supported (boolean) [PWG5100.15]
1127 number-of-retries-default (integer(0:MAX)) [PWG5100.15]
1128 number-of-retries-supported (rangeOfInteger(0:MAX)) [PWG5100.15]
1129 organization-name-supported (integer(0:1023)) [PWG5100.15]
1130 printer-fax-log-uri (uri) [PWG5100.15]
1131 printer-fax-modem-info (1setOf text(MAX)) [PWG5100.15]
1132 printer-fax-modem-name (1setOf name(MAX)) [PWG5100.15]
1133 printer-fax-modem-number (1setOf uri) [PWG5100.15]
1134 retry-interval-default (integer(1:MAX)) [PWG5100.15]
1135 retry-interval-supported (rangeOfInteger(1:MAX)) [PWG5100.15]
1136 retry-time-out-default (integer(1:MAX)) [PWG5100.15]
1137 retry-time-out-supported (rangeOfInteger(1:MAX)) [PWG5100.15]
1138 subject-supported (integer(0:1023)) [PWG5100.15]
1139 to-name-supported (integer(0:1023)) [PWG5100.15]
1140

```

1141 12.2 Attribute Value Registrations

1142 The keyword attribute values defined in this document will be published by IANA
 1143 according to the procedures in the IPP Model and Semantics [RFC2911] section 6.1 in the
 1144 following file:

1145 <http://www.iana.org/assignments/ipp-registrations>

1146 The registry entries will contain the following information:

1147 Attributes (attribute syntax)

1148	Keyword Attribute Value	Reference
1149	-----	-----
1150	cover-sheet-info-supported (1setOf type2 keyword)	[PWG5100.15]
1151	date-time	[PWG5100.15]
1152	from-name	[PWG5100.15]
1153	logo	[PWG5100.15]
1154	message	[PWG5100.15]
1155	organization	[PWG5100.15]
1156	subject	[PWG5100.15]
1157	to-name	[PWG5100.15]
1158		
1159	input-color-mode (type2 keyword)	[PWG5100.15]
1160	auto	[PWG5100.15]
1161	bi-level	[PWG5100.15]
1162	color	[PWG5100.15]
1163	monochrome	[PWG5100.15]
1164		
1165	input-color-mode-supported (1setOf type2 keyword)	[PWG5100.15]
1166	<any input-color-mode value>	[PWG5100.15]
1167		
1168	input-content-type (type2 keyword)	[PWG5100.15]
1169	auto	[PWG5100.15]
1170	halftone	[PWG5100.15]
1171	line-art	[PWG5100.15]
1172	magazine	[PWG5100.15]
1173	photo	[PWG5100.15]
1174	text	[PWG5100.15]
1175	text-and-photo	[PWG5100.15]
1176		
1177	input-content-type-supported (1setOf type2 keyword)	[PWG5100.15]
1178	<any input-content-type value>	[PWG5100.15]
1179		
1180	input-film-scan-mode (type2 keyword)	[PWG5100.15]
1181	black-and-white-negative-film	[PWG5100.15]
1182	color-negative-film	[PWG5100.15]
1183	color-slide-film	[PWG5100.15]
1184	not-applicable	[PWG5100.15]
1185		
1186	input-film-scan-mode-supported (1setOf type2 keyword)	[PWG5100.15]
1187	< any input-film-scan-mode value>	[PWG5100.15]
1188		
1189	input-media (type2 keyword name(MAX))	[PWG5100.15]
1190	auto	[PWG5100.15]
1191	<any media size name value>	[PWG5100.15]
1192		
1193	input-media-supported (1setOf (type2 keyword name(MAX)))	[PWG5100.15]
1194	<any input-media value>	[PWG5100.15]
1195		
1196		
1197	input-sides (type2 keyword)	[PWG5100.15]
1198	<any sides value>	[PWG5100.15]
1199		
1200	input-sides-supported (1setOf type2 keyword)	[PWG5100.15]
1201	<any sides value>	[PWG5100.15]
1202		
1203	input-source (type2 keyword)	[PWG5100.15]

1204	adf	[PWG5100.15]
1205	film-reader	[PWG5100.15]
1206	platen	[PWG5100.15]
1207		
1208	input-source-supported (1setOf type2 keyword)	[PWG5100.15]
1209	<any input-source value>	[PWG5100.15]
1210		
1211	ipp-features-supported (1setOf type2 keyword)	[PWG5100.13]
1212	faxout	[PWG5100.15]
1213		
1214	job-state-reasons (1setOf type2 keyword)	[RFC2911]
1215	connected-to-destination	[PWG5100.15]
1216	connecting-to-destination	[PWG5100.15]
1217	destination-uri-failed	[PWG5100.15]
1218	job-transferring	[PWG5100.15]
1219	job-transforming	[PWG5100.15]

1220 12.3 Type2 enum Attribute Value Registrations

1221 The enumerations defined in this document will be published by IANA according to the
1222 procedures in the IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1223 <http://www.iana.org/assignments/ipp-registrations>

1224 The registry entries will contain the following information:

1225	Attributes (attribute syntax)	
1226	Enum Value	Enum Symbolic Name
1227	-----	-----
1228	input-orientation-requested (type2 enum)	[PWG5100.15]
1229	<any orientation-requested value>	[PWG5100.15]
1230		
1231	input-orientation-requested-supported (1setOf type2 enum)	
1232		[PWG5100.15]
1233	<any orientation-requested value>	[PWG5100.15]
1234		
1235	input-quality (type2 enum)	[PWG5100.15]
1236	<any print-quality value>	[PWG5100.15]
1237		
1238	input-quality-supported (1setOf type2 enum)	[PWG5100.15]
1239	<any print-quality value>	[PWG5100.15]
1240		
1241	operations-supported (1setOf type2 enum)	[RFC2911]
1242	0x003E Add-Document-Images	[PWG5100.15]
1243		
1244	transmission-status (type2 enum)	[PWG5100.15]
1245	3 pending	[PWG5100.15]
1246	4 pending-retry	[PWG5100.15]
1247	5 processing	[PWG5100.15]
1248	7 canceled	[PWG5100.15]
1249	8 aborted	[PWG5100.15]
1250	9 completed	[PWG5100.15]

1251 12.4 Operation Registrations

1252 The operations defined in this document will be published by IANA according to the
1253 procedures in the IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1254 <http://www.iana.org/assignments/ipp-registrations>

1255 The registry entries will contain the following information:

1256	Operation Name	Reference
1257	-----	-----
1258	Add-Document-Images	[PWG5100.15]

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1363

1364 **15. Changes Since PWG 5100.15-2013**

1365 The following changes were made since the original publication of PWG 5100.15-2013:

- 1366 1. Added the 'f' character to the "pre-dial-string" and "post-dial-string" syntax to
1367 allow for initiating a flash on the phone line.
1368 2. The "printer-fax-modem-xxx" attributes are recommended but are listed as
1369 required in table 2.