



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.

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59 technically competent, has multiple, independent and interoperable implementations with
60 substantial operational experience, and enjoys significant public support.

61 For additional information regarding the Printer Working Group visit:

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69

70 About the Internet Printing Protocol Work Group

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

76 For additional information regarding IPP visit:

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

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

81

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197 **1. Introduction**

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

202 **2. Terminology**

203 **2.1 Conformance Terminology**

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

209 **2.2 Printing Terminology**

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

213 This document also defines the following terms in order to specify unambiguous
214 conformance requirements:

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

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

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

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

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

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

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

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

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

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

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

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

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

243 **2.3 Acronyms and Organizations**

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

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

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

247 *PSTN*: Public Switched Telephone Network

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

249 **3. Requirements**

250 **3.1 Rationale for the IPP FaxOut Service**

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

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

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

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

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

262 **3.2 Use Cases**

263 **3.2.1 Fax from an Application**

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

271 **3.2.2 Fax to Multiple Recipients with Retry and Failure**

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

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

284 **3.2.3 Fax Using a Resource-Constrained MFD**

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

289 **3.2.4 Fax After Verification**

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

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

295 **3.3 Out of Scope**

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

298 **3.4 Design Requirements**

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

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

312 **4. FaxOut Service Definition**

313 **4.1 FaxOut Job Processing**

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

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

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

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

336 **4.1.1 Spooling Devices**

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

343 **4.1.2 Streaming Devices**

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

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

353 **4.1.3 Job Terminating State**

354 The terminating state of an IPP FaxOut Job reflects the final disposition of the Job. Jobs in
355 the 'canceled' state were canceled by a User using the Cancel-Job, Cancel-Jobs, or
356 Cancel-My-Jobs operations, regardless of whether any or all of the Job has been
357 processed or partially transferred to its destination URI(s). The "destination-statuses" Job
358 Description attribute (section 7.3.1) provides detailed information regarding the progress
359 of the job prior to cancellation with the value of the "transmission-status" member attribute
360 (section 7.3.1.3) set to 'completed' for Jobs that were completely sent to the destination or
361 'canceled' otherwise.

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

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

370 Jobs in the 'completed' state were successfully processed and transferred to at least one
371 of the Job's destination URIs. The "destination-statuses" Job Description attribute (section
372 7.3.1) provides detailed information regarding the terminating state of each destination
373 URI. Printers MUST report the 'job-completed-with-errors' keyword in the "job-state-
374 reasons" attribute if the Job was not successfully transferred to any destination URI.

375 **4.1.4 Job History**

376 IPP FaxOut Job history MUST be retained for a minimum of 300 seconds. The values of
377 certain Job Description attributes, e.g., job-id, job-originating-user-name, destination-uris,
378 etc. MUST be durably logged to the location specified in the "printer-fax-log-uri" (section
379 7.4.26) Printer attribute before a Job can be deleted.

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

381 **4.1.5 Printer URIs**

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

386 **4.1.6 Destination URIs**

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

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

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

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

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

398

399 **4.2 IPP Operations**

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

404 **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

405 "(O)" = OPTIONAL

406

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

411 Note 2: RECOMMENDED when the Imaging Device supports scanning of
412 hardcopy documents.

413 Note 3: StartupService is an operation on the Semantic Model System Control
414 Service.

415

416 **4.3 IPP Printer Description Attributes**

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

418 **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-current-time	RFC 2911
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

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

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

421 Note 2: Always one copy for fax jobs.

422 Note 3: Define color support of the Printer, not of the recipient.

423 Note 4: CONDITIONALLY REQUIRED for Printers with scanning accessories.

424 Note 5: MUST include "destination-uri" in order to filter capabilities by URI scheme.

425 Note 6: CONDITIONALLY REQUIRED for Spooling Devices

426 4.4 IPP Operation Attributes

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

428 **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

429 Note 1: CONDITIONALLY REQUIRED for Printers with scanning accessories.
430

431 4.5 IPP Job Template Attributes

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

433 **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

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

436 Note 2: Always one copy for fax jobs.

437 Note 3: CONDITIONALLY REQUIRED for Spooling Devices

438 4.5.1 Other Job Template Attributes

439 Printers MAY support additional Job Template attributes such as "imposition-template",
440 "number-up", "orientation-requested", "overrides", "presentation-direction-number-up",
441 "print-color-mode", "print-content-optimize", "print-rendering-intent", and so forth. These
442 attributes are applied by the Printer when generating the content to be transmitted to the
443 destination, just as if the content was being printed.

444

445 **4.6 IPP Job Description Attributes**

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

447 **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

448

449 **5. Document Formats**

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

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

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

463 **5.1 Document Conversion**

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

466 Printers **SHOULD** support conversion of supported document formats into supported
467 formats for 'ipp', 'ipps', 'sip', and 'sips' destinations.

468 Printers **SHOULD** support conversion of supported document formats into Portable
469 Document Format: Image-Streamable (PDF/IS) [PWG5102.3] or Document management
470 — Portable document format — Part 1: PDF 1.7 [ISO32000] ("application/pdf") files for
471 'mailto' destinations.
472

473 **6. New Operation**

474 **6.1 Add-Document-Images Operation**

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

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

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

490 **6.1.1 Add-Document-Images Request**

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

492 Group 1: Operation Attributes

493 Natural Language and Character Set:

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

496 Target:

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

501 Requesting User Name:

502 The "requesting-user-name (name(MAX))" and "requesting-user-uri (uri)"
503 attributes SHOULD be supplied by the client as described in [RFC2911]
504 section 8.3 and [PWG5100.13] section 6.1.
505

506 “input-attributes (collection)”

507 The Client OPTIONALLY supplies this attribute and the Printer MUST
508 support this attribute. If the combination of member attribute values are not
509 supported by the Printer, the Printer MUST reject the operation with the
510 'client-error-attributes-or-values-not-supported' status code and place the
511 “input-attributes” attribute in the unsupported attributes group of the
512 response.

513 Group 2: Document Template Attributes

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

516 **6.1.2 Add-Document-Images Response**

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

518 Group 1: Operation Attributes

519 Status Message:

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

524 Natural Language and Character Set:

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

527 Group 2: Unsupported Attributes

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

529 Group 3: Document Description Attributes

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

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

532

533 **7. New Attributes**

534 **7.1 Operation Attribute**

535 **7.1.1 input-attributes (collection)**

536 The CONDITIONALLY REQUIRED "input-attributes" operation attribute specifies the
537 scanning source and other attributes for hardcopy documents in an Add-Document-
538 Images (section 6.1) operation. Printers that support the Add-Document-Images operation
539 MUST support this attribute. The following member attributes are defined: "input-color-
540 mode", "input-orientation-requested", "input-media", "input-quality", "input-resolution",
541 "input-sides", and "input-source". The "input-attributes-supported" Printer attribute (section
542 7.4.8) defines which of the "input-attributes" member attributes are supported.

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

547 **7.1.1.1 input-auto-exposure (boolean)**

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

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

554 **7.1.1.2 input-auto-scaling (boolean)**

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

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

561 **7.1.1.3 input-auto-skew-correction (boolean)**

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

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

566 7.1.1.4 input-brightness (integer(-100:100))

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

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

571 7.1.1.5 input-color-mode (type2 keyword)

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

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

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

579 'color': Scans documents in full color

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

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

584 7.1.1.6 input-content-type (type2 keyword)

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

587 'auto': Automatically determine the type of document

588 'halftone': The document contains halftoned images

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

590 'magazine': The document is a magazine

591 'photo': The document is a photograph

592 'text': The document only contains text

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

594 The “input-content-type-supported” Printer attribute (section 7.4.10) defines the supported
595 values.

596 **7.1.1.7 input-contrast (integer(-100:100))**

597 The "input-contrast" member attribute specifies the contrast of the scanned images.
598 Negative values will reduce the apparent difference between light and dark pixels in the
599 images. Positive values will increase the apparent difference between light and dark pixels
600 in the images.

601 The “input-attributes-supported” Printer attribute (section 7.4.8) specifies whether the
602 Printer supports the "input-contrast" member attribute.

603 **7.1.1.8 input-film-scan-mode (type2 keyword)**

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

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

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

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

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

610 The “input-film-scan-mode-supported” Printer attribute (section 7.4.11) defines the
611 supported values.

612 **7.1.1.9 input-images-to-transfer (integer(1:MAX))**

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

614 The “input-attributes-supported” Printer attribute (section 7.4.8) specifies whether the
615 Printer supports the "input-images-to-transfer" member attribute.

616 **7.1.1.10 input-media (type2 keyword | name(MAX))**

617 The “input-media” member attribute specifies the size of the media being scanned.
618 Defined keyword values are ‘auto’ (automatically determine size) and any “media” Job
619 Template attribute.

620 The “input-media-supported” Printer attribute (section 7.4.12) defines the supported
621 values. Printers MUST support this member attribute.

622 7.1.1.11 input-orientation-requested (type2 enum)

623 The “input-orientation-requested” member attribute specifies the orientation of the
624 document being scanned. Defined enum values are the same as the “orientation-
625 requested” Job Template attribute.

626 The “input-orientation-requested-supported” Printer attribute (section 7.4.13) defines the
627 supported values.

628 7.1.1.12 input-quality (type2 enum)

629 The “input-quality” member attribute specifies the overall quality of the scanned image(s)
630 of the hardcopy document. Defined enum values are the same as the “print-quality” Job
631 Template attribute. When the “input-resolution” member attribute is not specified, the
632 Printer will select a suitable value based on the “input-color-mode” and “input-quality”
633 member attribute values.

634 The “input-quality-supported” Printer attribute (section 7.4.14) defines the supported
635 values. Printers MUST support this member attribute with at least the value ‘4’ (normal).

636 7.1.1.13 input-resolution (resolution)

637 The “input-resolution” member attribute specifies the resolution of the scanned image(s) of
638 the document. If unspecified, the default value depends on the value of the “input-color-
639 mode” and “input-quality” member attributes.

640 The “input-resolution-supported” member attribute (section 7.4.15) defines the supported
641 values. Printers SHOULD support this member attribute.

642 7.1.1.14 input-scaling-height (integer(1:1000))

643 The “input-scaling-height” member attribute specifies that the Printer should scale the
644 images vertically by the specified percentage. Values less than 100 cause the images to
645 be shortened while values greater than 100 cause the images to be lengthened.

646 The “input-attributes-supported” Printer attribute (section 7.4.8) specifies whether the
647 Printer supports the “input-scaling-height” member attribute.

648 7.1.1.15 input-scaling-width (integer(1:1000))

649 The “input-scaling-width” member attribute specifies that the Printer should scale the
650 images horizontally by the specified percentage. Values less than 100 cause the images
651 to be widened while values greater than 100 cause the images to be narrowed.

652 The “input-attributes-supported” Printer attribute (section 7.4.8) specifies whether the
653 Printer supports the “input-scaling-width” member attribute.

654 7.1.1.16 input-scan-regions (1setOf collection)

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

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

662 7.1.1.17 input-sharpness (integer(-100:100))

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

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

667 7.1.1.18 input-sides (type2 keyword)

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

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

672 7.1.1.19 input-source (type2 keyword)

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

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

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

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

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

682 **7.2 Job Template Attributes**

683 **7.2.1 confirmation-sheet-print (boolean)**

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

686 **7.2.2 cover-sheet-info (collection | no-value)**

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

695 **7.2.2.1 from-name (text(MAX))**

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

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

701 **7.2.2.2 logo (uri)**

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

704 **7.2.2.3 message (text(MAX))**

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

708 **7.2.2.4 organization-name (text(MAX))**

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

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

713 7.2.2.5 subject (text(MAX))

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

715 7.2.2.6 to-name (text(MAX))

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

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

720 7.2.3 destination-uris (1setOf collection)

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

```
724     DialString = 1*(phonedigit / dtmf-digit / flash-character /  
725                   pause-character)  
726     flash-character = "f"  
727     pause-character = one-second-pause / wait-for-dial-tone  
728     one-second-pause = "p"  
729     wait-for-dial-tone = "w"  
730     dtmf-digit = "*" / "A" / "B" / "C" / "D" / "#" / "  
731     phonedigit = DIGIT / [ visual-separator ]  
732     visual-separator = "-" / "." / "(" / ")" / "'"
```

733 7.2.3.1 destination-uri (uri)

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

738 7.2.3.2 post-dial-string (text(127))

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

741 7.2.3.3 pre-dial-string (text(127))

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

744 7.2.3.4 t33-subaddress (integer(0:MAX))

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

747 7.2.4 number-of-retries (integer(0:MAX))

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

753 7.2.5 retry-interval (integer(1:MAX))

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

757 7.2.6 retry-time-out (integer(1:MAX))

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

761 7.3 Job Description Attributes**762 7.3.1 destination-statuses (1setOf collection)**

763 The REQUIRED "destination-statuses" Job attribute provides the transmission status of
764 each recipient specified by the "destination-uris" Job Template attribute. This attribute
765 MUST have the same cardinality (contain the same number of values) as the "destination-
766 uris" attribute. The "ith" value in the "destination-statuses" attribute corresponds to the "ith"
767 value in the "destination-uris" attribute.

768 7.3.1.1 destination-uri (uri)

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

771 7.3.1.2 images-completed (integer(0:MAX))

772 The "images-completed" member attribute specifies the number of images (sides) that
773 have been successfully transmitted to the recipient.
774

775 7.3.1.3 transmission-status (type2 enum)

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

779 **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

780 7.3.2 input-attributes-actual (collection)

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

785 7.4 Printer Description Attributes**786 7.4.1 confirmation-sheet-print-default (boolean)**

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

789 7.4.2 cover-sheet-info-default (collection | no-value)

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

794 7.4.3 cover-sheet-info-supported (1setOf type2 keyword)

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

800 7.4.4 destination-uri-schemes-supported (1setOf uriScheme)

801 The REQUIRED "destination-rui-schemes-supported" Printer attribute lists the supported
802 "destination-uri" URI schemes. Printers MUST support the "tel" URI scheme and MAY
803 support the "ipp", "ipps", "mailto", "sip", and "sips" URI schemes.

804 7.4.5 destination-uris-supported (1setOf type2 keyword)

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

808 7.4.6 from-name-supported (integer(0:1023))

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

811 7.4.7 input-attributes-default (collection)

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

815 7.4.8 input-attributes-supported (1setOf type2 keyword)

816 The CONDITIONALLY REQUIRED "input-attributes-supported" Printer attribute lists the
817 member attributes that are supported in the "input-attributes" operation attribute (section
818 7.1.1). Printers that support the Add-Document-Images operation MUST support this
819 attribute and list the values 'input-color-mode', 'input-media', 'input-quality', and 'input-
820 source'.

821 7.4.9 input-color-mode-supported (1setOf type2 keyword)

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

827 7.4.10 input-content-type-supported (1setOf type2 keyword)

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

830 7.4.11 input-film-scan-mode-supported (1setOf type2 keyword)

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

833 7.4.12 input-media-supported (1setOf type2 keyword | name(MAX))

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

838 7.4.13 input-orientation-requested-supported (1setOf type2 enum)

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

841 7.4.14 input-quality-supported

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

846 7.4.15 input-resolution-supported (1setOf resolution)

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

849 7.4.16 input-scan-regions-supported (collection)

850 The "input-scan-regions-supported" Printer attribute specifies the range of values
851 supported for the "input-scan-regions" member attribute (section 7.1.1.16). The collection
852 contains four member attributes: "x-dimension (rangeOfInteger)", "x-origin
853 (rangeOfInteger)", "y-dimension (rangeOfInteger)", and "y-origin (rangeOfInteger)".

854 7.4.17 input-sides-supported (1setOf type2 keyword)

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

859 7.4.18 input-source-supported (1setOf type2 keyword)

860 The CONDITIONALLY REQUIRED "input-source-supported" Printer attribute lists the
861 supported values for the "input-source" member attribute (section 7.1.1.19). Printers that
862 support the Add-Document-Images operation MUST support this attribute.

863 7.4.19 logo-uri-formats-supported (1setOf mimeType)

864 The "logo-uri-formats-supported" Printer attribute lists the supported "logo" formats.
865 Printers that support the "logo" member attribute of the "cover-sheet-info" Job Template

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

868 **7.4.20 logo-uri-schemes-supported (1setOf uriScheme)**

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

872 **7.4.21 message-supported (integer(0:1023))**

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

875 **7.4.22 multiple-destination-uris-supported (boolean)**

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

879 **7.4.23 number-of-retries-default (integer(0:MAX))**

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

883 **7.4.24 number-of-retries-supported (rangeOfInteger(0:MAX))**

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

887 **7.4.25 organization-name-supported (integer(0:1023))**

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

890 **7.4.26 printer-fax-log-uri (uri)**

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

898 7.4.27 printer-fax-modem-info (1setOf text(MAX))

899 The RECOMMENDED READ-ONLY “printer-fax-modem-info” Printer attribute provides a
900 description of every fax modem used by the FaxOut service.

901 This attribute MUST have the same cardinality (contain the same number of values) as
902 the “printer-fax-modem-name” and “printer-fax-modem-number” Printer attributes. The ith
903 value in the “printer-fax-modem-info” attribute corresponds to the ith values in the “printer-
904 fax-modem-name” and “printer-fax-modem-number” attributes.

905 7.4.28 printer-fax-modem-name (1setOf name(MAX))

906 The RECOMMENDED READ-ONLY “printer-fax-modem-name” Printer attribute provides
907 the name of every fax modem used by the FaxOut service. These names are used to
908 populate the “output-device-assigned” Job Description attribute.

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

913 7.4.29 printer-fax-modem-number (1setOf uri)

914 The RECOMMENDED READ-ONLY “printer-fax-modem-number” Printer attribute
915 provides a “tel” URI [RFC3966] representing the line (source) number for every fax
916 modem used by the FaxOut service.

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-name” Printer attributes. The ith
919 value in the “printer-fax-modem-number” attribute corresponds to the ith values in the
920 “printer-fax-modem-info” and “printer-fax-modem-name” attributes.

921 7.4.30 retry-interval-default (integer(1:MAX))

922 The default value supplied by the Printer if the Client omits the “retry-interval” Job
923 Template attribute. Spooling Devices MUST support this attribute. Streaming Devices
924 MAY support this attribute when retrying the transmission of a single page. This value
925 may be set by the Set-Printer-Attributes operation and MUST reflect any local regulatory
926 requirements.

927 7.4.31 retry-interval-supported (rangeOfInteger(1:MAX))

928 The range of allowed values for the “retry-interval” Job Template attribute. Spooling
929 Devices MUST support this attribute. Streaming Devices MAY support this attribute when
930 retrying the transmission of a single page. This value may be set by the Set-Printer-
931 Attributes operation and MUST reflect any local regulatory requirements.

932 7.4.32 retry-time-out-default (integer(1:MAX))

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

938 7.4.33 retry-time-out-supported (rangeOfInteger(1:MAX))

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

943 7.4.34 subject-supported (integer(0:1023))

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

946 7.4.35 to-name-supported (integer(0:1023))

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

949 7.5 Document Description Attributes**950 7.5.1 input-attributes-actual (collection)**

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

956

957 **8. Additional Values and Semantics for Existing Attributes**958 **8.1 ipp-features-supported (1setOf type2 keyword)**

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

961 **8.2 job-state-reasons (1setOf type2 keyword)**

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

964 **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.

965

966 **9. Conformance Requirements**

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

969 **9.1 Conformance Requirements for this Specification**

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

- 972 1. The REQUIRED “printer-uri-supported” values defined in section 4.1.5,
- 973 2. The REQUIRED operations defined in sections 4.2 and 6,
- 974 3. The REQUIRED Printer Description attributes and values defined in sections
975 4.3 and 7.3.2,
- 976 4. The REQUIRED operation attributes and values defined in sections 4.4 and 7.1,
- 977 5. The REQUIRED Job Template attributes and values defined in sections 4.5 and
978 7.2,
- 979 6. The REQUIRED Job Description attributes and values defined in section 4.6,
- 980 7. The REQUIRED document formats and behaviors defined in section 5,
- 981 8. The REQUIRED values defined in section 8,
- 982 9. The internationalization considerations in section 10, and
- 983 10. The security considerations in section 11.

984 **9.2 Conditional Conformance Requirements for Printer Objects**

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

- 986 1. Automatic retries and retransmission of whole jobs as defined in section 4.1.1,
- 987 2. The “number-of-retries”, “retry-interval”, and “retry-timeout” Job Template
988 attributes (section 7.2),
- 989 3. The “number-of-retries-default”, “retry-interval-default”, and “retry-timeout-“retry-
990 timeout-supported” Printer Description attributes (section 7.3.2).
- 991 4. The “number-of-retries-supported”, “retry-interval-supported”, and “retry-
992 timeout-supported” Printer Description attributes (section 7.3.2) which MUST
993 reflect any local regulatory requirements.

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

- 996 1. The “cover-sheet-info”, “multiple-document-handling”, and “page-ranges” Job
997 Template attributes as defined in sections 4.5 and 7.2.2,
- 998 2. The “cover-sheet-default”, “cover-sheet-supported”, “from-name-supported”,
999 “message-supported”, “multiple-document-handling-supported”, “organization-
1000 name-supported”, “page-ranges-supported”, “subject-supported”, and “to-name-
1001 supported” Printer Description attributes as defined in sections 4.3 and 7.3.2.

1002 **10. Internationalization Considerations**

1003 For interoperability and basic support for multiple languages, conforming implementations
1004 MUST support:

- 1005 3. The Universal Character Set (UCS) Transformation Format -- 8 bit (UTF-8)
1006 [STD63] encoding of Unicode [UNICODE] [ISO10646]; and
- 1007 4. The Unicode Format for Network Interchange [RFC5198] which requires
1008 transmission of well-formed UTF-8 strings and recommends transmission of
1009 normalized UTF-8 strings in Normalization Form C (NFC) [UAX15].

1010 Unicode NFC is defined as the result of performing Canonical Decomposition (into base
1011 characters and combining marks) followed by Canonical Composition (into canonical
1012 composed characters wherever Unicode has assigned them).

1013 WARNING – Performing normalization on UTF-8 strings received from IPP Clients and
1014 subsequently storing the results (e.g., in IPP Job objects) could cause false negatives in
1015 IPP Client searches and failed access (e.g., to IPP Printers with percent-encoded UTF-8
1016 URIs now 'hidden').

1017 **11. Security Considerations**

1018 The IPP extensions defined in this document require the same security considerations as
1019 defined in the IPP Model and Semantics [RFC2911].

1020 An end user's FaxOut data can be protected from disclosure by encrypting the content
1021 and protected from modification by signing the data file when the data is stored in a
1022 repository or being transmitted over a communication link. Spooling Devices MUST
1023 protect document data from disclosure to unauthorized parties.

1024 **12. IANA Considerations**

1025 **12.1 Attribute Registrations**

1026 The attributes defined in this document will be published by IANA according to the
1027 procedures in IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1028 <http://www.iana.org/assignments/ipp-registrations>

1029 The registry entries will contain the following information:

1030	Operation attributes:	Reference
1031	-----	-----
1032	input-attributes (collection)	[PWG5100.15]
1033	input-auto-scaling (boolean)	[PWG5100.15]
1034	input-auto-skew-correction (boolean)	[PWG5100.15]

1035	input-brightness (integer(-100:100))	[PWG5100.15]
1036	input-color-mode (type2 keyword)	[PWG5100.15]
1037	input-content-type (type2 keyword)	[PWG5100.15]
1038	input-contrast (integer(-100:100))	[PWG5100.15]
1039	input-film-scan-mode (type2 keyword)	[PWG5100.15]
1040	input-images-to-transfer (integer(1:MAX))	[PWG5100.15]
1041	input-media (type2 keyword name(MAX))	[PWG5100.15]
1042	input-orientation-requested (type2 keyword)	[PWG5100.15]
1043	input-quality (type2 enum)	[PWG5100.15]
1044	input-resolution (resolution)	[PWG5100.15]
1045	input-scaling-height (integer(1:1000))	[PWG5100.15]
1046	input-scaling-width (integer(1:1000))	[PWG5100.15]
1047	input-scan-regions (1setOf collection)	[PWG5100.15]
1048	x-dimension (integer)	[PWG5100.15]
1049	x-origin (integer)	[PWG5100.15]
1050	y-dimension (integer)	[PWG5100.15]
1051	y-origin (integer)	[PWG5100.15]
1052	input-sharpness (integer(-100:100))	[PWG5100.15]
1053	input-sides (type2 keyword)	[PWG5100.15]
1054	input-source (type2 keyword)	[PWG5100.15]
1055		
1056	Document Description attributes:	Reference
1057	-----	-----
1058	input-attributes-actual (collection)	[PWG5100.15]
1059		
1060	Job Template attributes:	Reference
1061	-----	-----
1062	confirmation-sheet-print (boolean)	[PWG5100.15]
1063	cover-sheet-info (collection)	[PWG5100.15]
1064	from-name (text(MAX))	[PWG5100.15]
1065	logo (uri)	[PWG5100.15]
1066	message (text(MAX))	[PWG5100.15]
1067	organization-name (text(MAX))	[PWG5100.15]
1068	subject (text(MAX))	[PWG5100.15]
1069	to-name (text(MAX))	[PWG5100.15]
1070	destination-uris (1setOf collection)	[PWG5100.15]
1071	destination-uri (uri)	[PWG5100.15]
1072	post-dial-string (text(127))	[PWG5100.15]
1073	pre-dial-string (text(127))	[PWG5100.15]
1074	t33-subaddress (integer(0:MAX))	[PWG5100.15]
1075	number-of-retries (integer(0:MAX))	[PWG5100.15]
1076	retry-interval (integer(1:MAX))	[PWG5100.15]
1077	retry-timeout (integer(1:MAX))	[PWG5100.15]
1078		
1079	Job Status attributes:	Reference
1080	-----	-----
1081	destination-statuses (1setOf collection)	[PWG5100.15]
1082	destination-uri (uri)	[PWG5100.15]
1083	images-completed (integer(0:MAX))	[PWG5100.15]
1084	transmission-status (type2 enum)	[PWG5100.15]
1085		
1086	Job Description attributes:	Reference
1087	-----	-----
1088	input-attributes-actual (collection)	[PWG5100.15]
1089		
1090	Printer Description attributes:	Reference

1091	-----	-----
1092	confirmation-sheet-print-default (boolean)	[PWG5100.15]
1093	cover-sheet-info-supported (1setOf type2 keyword)	[PWG5100.15]
1094	destination-uri-schemes-supported (1setOf uriScheme)	[PWG5100.15]
1095	destination-uris-supported (1setOf type2 keyword)	[PWG5100.15]
1096	from-name-supported (integer(0:1023))	[PWG5100.15]
1097	input-attributes-default (collection)	[PWG5100.15]
1098	input-attributes-supported (1setOf type2 keyword)	[PWG5100.15]
1099	input-color-mode-supported (1setOf type2 keyword)	[PWG5100.15]
1100	input-content-type-supported (1setOf type2 keyword)	[PWG5100.15]
1101	input-film-scan-mode-supported (1setOf type2 keyword)	[PWG5100.15]
1102	input-media-supported (1setOf (type2 keyword name(MAX)))	
1103		[PWG5100.15]
1104	input-orientation-requested-supported (1setOf type2 enum)	
1105		[PWG5100.15]
1106	input-quality-supported (1setOf type2 enum)	[PWG5100.15]
1107	input-resolution-supported (1setOf resolution)	[PWG5100.15]
1108	input-scan-regions-supported (collection)	[PWG5100.15]
1109	x-dimension (rangeOfInteger)	[PWG5100.15]
1110	x-origin (rangeOfInteger)	[PWG5100.15]
1111	y-dimension (rangeOfInteger)	[PWG5100.15]
1112	y-origin (rangeOfInteger)	[PWG5100.15]
1113	input-sides-supported (1setOf type2 keyword)	[PWG5100.15]
1114	input-source-supported (1setOf type2 keyword)	[PWG5100.15]
1115	logo-uri-formats-supported (1setOf mimeType)	[PWG5100.15]
1116	logo-uri-schemes-supported (1setOf uriScheme)	[PWG5100.15]
1117	message-supported (integer(0:1023))	[PWG5100.15]
1118	multiple-destination-uris-supported (boolean)	[PWG5100.15]
1119	number-of-retries-default (integer(0:MAX))	[PWG5100.15]
1120	number-of-retries-supported (rangeOfInteger(0:MAX))	[PWG5100.15]
1121	organization-name-supported (integer(0:1023))	[PWG5100.15]
1122	printer-fax-log-uri (uri)	[PWG5100.15]
1123	printer-fax-modem-info (1setOf text(MAX))	[PWG5100.15]
1124	printer-fax-modem-name (1setOf name(MAX))	[PWG5100.15]
1125	printer-fax-modem-number (1setOf uri)	[PWG5100.15]
1126	retry-interval-default (integer(1:MAX))	[PWG5100.15]
1127	retry-interval-supported (rangeOfInteger(1:MAX))	[PWG5100.15]
1128	retry-time-out-default (integer(1:MAX))	[PWG5100.15]
1129	retry-time-out-supported (rangeOfInteger(1:MAX))	[PWG5100.15]
1130	subject-supported (integer(0:1023))	[PWG5100.15]
1131	to-name-supported (integer(0:1023))	[PWG5100.15]
1132		

1133 12.2 Attribute Value Registrations

1134 The keyword attribute values defined in this document will be published by IANA
 1135 according to the procedures in the IPP Model and Semantics [RFC2911] section 6.1 in the
 1136 following file:

1137 <http://www.iana.org/assignments/ipp-registrations>

1138 The registry entries will contain the following information:

1139 Attributes (attribute syntax)

1140	Keyword Attribute Value	Reference
1141	-----	-----
1142	cover-sheet-info-supported (1setOf type2 keyword)	[PWG5100.15]
1143	date-time	[PWG5100.15]
1144	from-name	[PWG5100.15]
1145	logo	[PWG5100.15]
1146	message	[PWG5100.15]
1147	organization	[PWG5100.15]
1148	subject	[PWG5100.15]
1149	to-name	[PWG5100.15]
1150		
1151	input-color-mode (type2 keyword)	[PWG5100.15]
1152	auto	[PWG5100.15]
1153	bi-level	[PWG5100.15]
1154	color	[PWG5100.15]
1155	monochrome	[PWG5100.15]
1156		
1157	input-color-mode-supported (1setOf type2 keyword)	[PWG5100.15]
1158	<any input-color-mode value>	[PWG5100.15]
1159		
1160	input-content-type (type2 keyword)	[PWG5100.15]
1161	auto	[PWG5100.15]
1162	halftone	[PWG5100.15]
1163	line-art	[PWG5100.15]
1164	magazine	[PWG5100.15]
1165	photo	[PWG5100.15]
1166	text	[PWG5100.15]
1167	text-and-photo	[PWG5100.15]
1168		
1169	input-content-type-supported (1setOf type2 keyword)	[PWG5100.15]
1170	<any input-content-type value>	[PWG5100.15]
1171		
1172	input-film-scan-mode (type2 keyword)	[PWG5100.15]
1173	black-and-white-negative-film	[PWG5100.15]
1174	color-negative-film	[PWG5100.15]
1175	color-slide-film	[PWG5100.15]
1176	not-applicable	[PWG5100.15]
1177		
1178	input-film-scan-mode-supported (1setOf type2 keyword)	[PWG5100.15]
1179	< any input-film-scan-mode value>	[PWG5100.15]
1180		
1181	input-media (type2 keyword name(MAX))	[PWG5100.15]
1182	auto	[PWG5100.15]
1183	<any media size name value>	[PWG5100.15]
1184		
1185	input-media-supported (1setOf (type2 keyword name(MAX)))	[PWG5100.15]
1186	<any input-media value>	[PWG5100.15]
1187		
1188		
1189	input-sides (type2 keyword)	[PWG5100.15]
1190	<any sides value>	[PWG5100.15]
1191		
1192	input-sides-supported (1setOf type2 keyword)	[PWG5100.15]
1193	<any sides value>	[PWG5100.15]
1194		
1195	input-source (type2 keyword)	[PWG5100.15]

1196	adf	[PWG5100.15]
1197	film-reader	[PWG5100.15]
1198	platen	[PWG5100.15]
1199		
1200	input-source-supported (1setOf type2 keyword)	[PWG5100.15]
1201	<any input-source value>	[PWG5100.15]
1202		
1203	ipp-features-supported (1setOf type2 keyword)	[PWG5100.13]
1204	faxout	[PWG5100.15]
1205		
1206	job-state-reasons (1setOf type2 keyword)	[RFC2911]
1207	connected-to-destination	[PWG5100.15]
1208	connecting-to-destination	[PWG5100.15]
1209	destination-uri-failed	[PWG5100.15]
1210	job-transferring	[PWG5100.15]
1211	job-transforming	[PWG5100.15]

1212 12.3 Type2 enum Attribute Value Registrations

1213 The enumerations defined in this document will be published by IANA according to the
1214 procedures in the IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1215 <http://www.iana.org/assignments/ipp-registrations>

1216 The registry entries will contain the following information:

1217	Attributes (attribute syntax)		
1218	Enum Value	Enum Symbolic Name	Reference
1219	-----	-----	-----
1220	input-orientation-requested (type2 enum)		[PWG5100.15]
1221	<any orientation-requested value>		[PWG5100.15]
1222			
1223	input-orientation-requested-supported (1setOf type2 enum)		
1224			[PWG5100.15]
1225	<any orientation-requested value>		[PWG5100.15]
1226			
1227	input-quality (type2 enum)		[PWG5100.15]
1228	<any print-quality value>		[PWG5100.15]
1229			
1230	input-quality-supported (1setOf type2 enum)		[PWG5100.15]
1231	<any print-quality value>		[PWG5100.15]
1232			
1233	operations-supported (1setOf type2 enum)		[RFC2911]
1234	0x003E Add-Document-Images		[PWG5100.15]
1235			
1236	transmission-status (type2 enum)		[PWG5100.15]
1237	3 pending		[PWG5100.15]
1238	4 pending-retry		[PWG5100.15]
1239	5 processing		[PWG5100.15]
1240	7 canceled		[PWG5100.15]
1241	8 aborted		[PWG5100.15]
1242	9 completed		[PWG5100.15]

1243 **12.4 Operation Registrations**

1244 The operations defined in this document will be published by IANA according to the
1245 procedures in the IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1246 <http://www.iana.org/assignments/ipp-registrations>

1247 The registry entries will contain the following information:

1248	Operation Name	Reference
1249	-----	-----
1250	Add-Document-Images	[PWG5100.15]

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15. Changes Since PWG 5100.15-2013

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

1. Added the 'f' character to the "pre-dial-string" and "post-dial-string" syntax to allow for initiating a flash on the phone line.
2. The "printer-fax-modem-xxx" attributes are recommended but are listed as required in table 2.
3. Section 4.1.3 incorrectly referenced a member attribute called "destination-state" which is actually "transmission-status".
4. Table 2 was missing the "printer-current-time" attribute.