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1 Working Draft, May 3019, 2003   Important information to review is highlighted like this.
2 Maturity Level: DevelopmentInterimThere are 102 ISSUES highlighted like this.
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The Printer Working Group (PWG)

Standard for

The Internet Printing Protocol (IPP):

Job Extensions

10

11 **Abstract:** This IPP specification extends the Job semantics of the IPP Model and Semantics [rfc2911] object model.
12 This specification defines the Close Job operation and some new Operation attributes for use in Job Creation and
13 Document Creation operations. The Printer copies these Operation Job attributes to the corresponding Job
14 Description attributes, which the clients may query. The Document Creation Operation attributes describe the
15 Document Content and permit the Printer to reject requests that it cannot process correctly. Some cCorresponding
16 "xxx-default" and "xxx-supported" Printer attributes are defined. This specification defines some Job Template
17 attributes that apply to a multi-document Job as a whole and a Job Template attribute for sub-dividing the input print-
18 stream pages into separate Page Subsets. This specification also defines some additional values for the "job-state-
19 reasons" Job Description attribute. Each of the operations and attributes defined in this specification are
20 independent of each other and are OPTIONAL for a Printer to support.
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A Program of the IEEE-ISTO

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24   Working Draft, May 30~~19~~, 2003

The Printer Working Group (PWG)

Standard for
The Internet Printing Protocol (IPP):
Job Extensions

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31   This version of the PWG Proposed Standard is available electronically at:

32

33   ftp://ftp.pwg.org/pub/pwg/ipp/new_JOBX/wd-ippjobx10-20030530~~19~~.pdf, .doc, .rtf

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47   Title: The Printer Working Group Standard for the Internet Printing Protocol (IPP): Job and Document
48   Operation extensions

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70 **About the IEEE-ISTO**
71
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73 and support services. The IEEE-ISTO provides a forum not only to develop standards, but also to facilitate activities
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80 **About the IEEE-ISTO PWG**

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

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

93 For additional information regarding the Printer Working Group visit: http://www.pwg.org
94
95

96 **Contact information:**

97   IPP Web Page: http://www.pwg.org/ipp/
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99 To subscribe to the ipp mailing list, send the following email:
100   1) send it to majordomo@pwg.org
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103   subscribe ipp
104   end

105 Implementers of this specification are encouraged to join the IPP Mailing List in order to participate in any
106 discussions of clarifications or review of registration proposals for additional names. Requests for additional
107 extensions, for inclusion in this specification, should be sent to the IPP Mailing list for consideration. In order to
108 reduce spam the mailing list rejects mail from non-subscribers, so you must subscribe to the mailing list in order to
109 send a question or comment to the mailing list.
110

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1 Introduction and Summary

This IPP specification extends the Job semantics of the IPP Model and Semantics [rfc2911] object model. This specification defines ~~the Close-Job operation and~~ some new Operation attributes for use in Job Creation and Document Creation operations. The Printer copies these Operation ~~Job~~ attributes to the corresponding Job Description attributes, which the clients may query. The Document Creation Operation attributes describe the Document Content and permit the Printer to reject requests that it cannot process correctly. Some cCorresponding "xxx-default" and "xxx-supported" Printer attributes are defined. This specification defines some Job Template attributes that apply to a multi-document Job as a whole. This specification also defines the "pages-per-subset" Job Template attribute which partitions the input print-stream pages into separate Page Subsets which are treated as Finished Documents in order to provide a subset finishing capability[1]. This specification also defines some additional values for the "job-state-reasons" Job Description attribute. Each of the operations and attributes defined in this specification are independent of each other and are OPTIONAL for a Printer to support.

The intent is to propose this specification as an IPP extension and which will be referenced as part of the PWG Semantic Model. The purpose for these extensions is so that the print industry can have a common semantic specification for use in IPP, the PWG Semantic Model [pwg-sm], the PWG Print Service Interface (PSI) project [pwg-psi], the PWG IPP Fax (IPPFAX) project [ippfax], and the Free Standards Group Job Ticket API [fsg-jt]. Note: There are a number of footnotes that~~which~~ relate this IPP specification to the PWG Semantic model and other PWG projects, such as the Print Service Interface (PSI) [pwg-psi].

1.1 Scope

~~Table 1 summarizes the new operations defined in this specification.~~

~~Table 1 - Summary of operations~~

~~Operation Name~~	~~Printer support~~	~~Brief Description~~
~~Close-Job~~	~~OPTIONAL~~	~~Closes a multi-document Job.~~

Table 2 summarizes the Operation attributes defined in this specification for use with Job Creation operations. The Printer copies these Operation attributes to corresponding Job Description attributes defined in this specification.

Table 2 - Summary of Job Creation Operation attributes

Operation attribute	Printer support	Description
ipp-attribute-fidelity (boolean)	MUST	Allows the client to indicate whether or not the Printer MUST support all Job Template attributes supplied in Job Creation operations or MUST reject the job. Defined in [rfc2911] section 3.2.1.2 and 15.
job-mandatory-attributes (1setOf type2 keyword)	MAY	Allows the client to list the~~which~~ Job Template attributes that the Printer MUST support when supplied in Job Creation

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[1] The "pages-per-subset" Job Template attribute was specified in the IEEE-ISTO 5100.4 Trial Use standard [pwg5100.4] approved in February 2001. That specification is being revised to contain only a simplified "overrides" Job Template attribute [ippOverride]. The somewhat simplified "pages-per-subset" Job Template attribute defined in this [ippjobx] specification is intended to obsolete the "pages-per-subset" attribute defined in [pwg5100.4].

		operations or MUST reject the job.

253

254 Table 3 summarizes the Operation attributes defined in this specification for use with Document Creation operations.
255 These Operation attributes allow the client to supply descriptions of the Document Content to the Printer about
256 individual Document Contents at request time. This specification does *not* define corresponding Document
257 Description attributes, since this specification does not include or depend on a Document object[2].

258 **Table 3 - Summary of Document Creation Operation aAttributes**

Operation attribute	Printer support	Description
document-charset (charset)	CMUST[3]	The charset of the Document content
document-digital-signature (type2 keyword)	MAY	The type of digital signature, if any used in the Document Content.
document-format-details (1setOf collection)	CMUST[4]	The details of the Document Content, including when its a package of files (e.g., zip, multipart/related). The details include information, such as the application and the operating system that created the document, the intended device type (when the format is device-dependent), and the natural languages of the document. DMC ISSUE for Tom: Please rework this sentence—it doesn't parse, but I'm not sure what it is supposed to say.
document-format-version (text(127))	MAY	The version of the document format.
document-format-natural-language (naturalLanguage)	MAY	The primary natural language of the Document Content.
job-mandatory-attributes (1setOf type2 keywords)	MAY	The Job Template attributes that the client is requesting that the Printer MUST support or reject the Job.
output-device-requested (name(127)	MAY	The output device that the client is requesting for a Printer that represents multiple output devices.

259 DMC ISSUE: The CMUSTs in the above table seem a bit meaningless. See the last sentence in the first paragraph
260 of section 2.1, which states
261 For example, the term MUST in this document means "MUST if this OPTIONAL operation or attribute is
262 implemented".
263 Table 4 summarizes the Job Template attributes defined in this specification for use with Job Creation operations.
264 These Job Template attributes are defined to apply to the Job as a whole, independent of the value of the "multiple-
265 document-handling" Job Template attribute ([rfc2911] section 4.2.4) whose 'separate-documents-collated-copies' and
266 'separate-documents-uncollated-copies' which cause the Printer to produce separate Output Documents.
267

268 **Table 4 - Summary of Job Template Attributes**

Job Template attribute	Printer support	Description
job-copies (integer(1:MAX))	MAY	The number of copies of the entire Job.
job-cover-back (collection)	MAY	The cover for the back of the entire Job.
job-cover-front (collection)	MAY	The cover for the front of the entire Job.
job-finishings (1setOf type2 enum)	MAY	The finishing for the entire Job.

---

[2] For Document Description attributes that correspond to the Operation attributes defined for Document Creation operations, see the Document object defined in [ippdoc].

[3] The Printer MUST support the "document-charset" operation attribute if the Printer supports a document-format in which the charset may be ambiguous in the Document content, such as 'application/vnd.hp-PCL' where the charset escape sequence MAY be omitted from the data (see section 3.2.1).

[4] The Printer MUST support the "document-format-details" operation attribute, if the Printer supports a packaging document format, such as 'application/zip' or 'multipart/related'.

| job-finishings-col (1setOf collection) | MAY | The finishing characteristics for the entire Job. |
| pages-per-subset | MAY | The Page counts for subsets of the input print-stream Pages called Page Subsets. |

269

2   Terminology

271   This section defines terminology used throughout this document.

2.1 Conformance Terminology

273   Capitalized terms, such as **MUST, MUST NOT, REQUIRED, SHOULD, SHOULD NOT, MAY,** and **OPTIONAL**, have
274   special meaning relating to conformance as defined in RFC 2119 [rfc2119]. All of the operations and attributes
275   defined in the specification are independently OPTIONAL. If an implementation supports an operation or attribute
276   extension described in this specification, then these terms apply to the implementation of that operation or attribute;
277   otherwise, they do not. For example, the term MUST in this document specification means "MUST if this the
278   OPTIONAL operation or attribute being described is implemented".

279   The term **CONDITIONALLY REQUIRED** means that the Printer **MUST** support the feature, if the specified condition
280   is true. The term **CMUST** means **MUST** if the specified "condition" is true.

2.2 Other Terminology

282   This document uses the same terminology as [rfc2911], such as "**client**", "**Printer**"[5], "**attribute**", "**attribute value**",
283   "**keyword**", "**Job Template attribute**", "**Operation attribute**", "**operation**", "**request**", "**response**", and "**support**"
284   with the same meaning. In addition, the following terms are defined for use in this document:

285   **Best Effort** - a Printer is said to perform Best Effort semantics for a supplied attribute if the Printer accepts the
286   attribute and either (1) supports the attribute and its supplied value, (2) supports the attribute and substitutes another
287   value, or (3) ignores the attribute all together. In other words, with Best Effort semantics for an attribute, the Printer
288   never rejects the job for any value supplied.

289   **Document Creation operation** - operations that accept Document Content. Specifically: Print-Job, Print-URI, Send-
290   Document and Send-URI. Note: the Print-Job and Print-URI are both **Job Creation** and **Document Creation**
291   operations.

292   **Finished Document -** The result that the Printer produces on **Sheets** after the operations of printing, folding, cutting.
293   finishing, etc. are completed.

294   **Honor** - a Printer is said to **Honor** an attribute supplied by the client, if the Printer **supports** that attribute and the its
295   supplied value and by performings the indicated semantics (see [rfc2911] section 12.2.3 for the definition of
296   **support**).   If the client supplies the "ipp-attribute-fidelity" or "job-mandatory-attributes" Operation attribute, the client
297   is indicating which supplied Job Template attributes the Printer MUST **Honor.**

298   **Job Attribute** - an **Operation attribute** or a **Job Template** attribute that applies to the Job (object) as a whole. For
299   example, "job-name" is an **Operation attribute** and "job-priority" is a **Job Template attribute**.

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[5] [rfc2911] uses the terms "Printer object" and "Printer" interchangeably to mean the same thing. For simplicity, this
document uses the term "Printer" exclusively, except for definitions copied directly from [rfc2911]. None the less, the
intent is as in [rfc2911]: a Printer is an object that MAY be hosted in the device or in a server as in [rfc2911].

300 **Job Creation operation** - operations that create Job objects, specifically: Print-Job, Print-URI, and Create-Job as
301 defined in [rfc2911].

302 **Operation attribute** - an attribute supplied by a client in the Operation Attribute group of a request in order to affect
303 the behavior of the operation or an attribute returned by the Printer in the Operation Attributes group in an operation
304 response in order to report the results of the operation. For some Operation attributes, the Printer copies the values
305 supplied by the client to corresponding Job Description attributes.

306 **Page -** a synonym for the term "print-stream page" as defined in [rfc2911] section 12.2.4. A **Page** is a page
307 according to the definition of a page in the language used to express the document data (PDL). Usually a **Page**
308 contains a single page as intended by the author of the source document. However, if the application that generates
309 the PDL places multiple author pages on a single **Page**, they are still considered a single **Page** as far as the Printer
310 and this specification is concerned.

311 **Page Subset** - a grouping of consecutive **Pages** to which the client can request the Printer to apply Job Template
312 attributes as a whole. For example, the client can request the Printer to divide the **Pages** into **Page Subsets** of 10
313 **Pages** each and request the Printer to staple each **Page Subset** separately.

314 **Sheet** - the unit of media that a printer puts marks on. A **Sheet** is the most basic unit of output from a Printer. A
315 printer may mark on one side or on both sides of a **Sheet**.

316 3 New Job operations

317 This section defines the new Close-Job operation.

318 3.1 Close-Job

319 This OPTIONAL operation closes the Job. The Printer MUST support this operation. The client SHOULD issue this
320 operation to close the job, instead of supplying the "last-document" Operation attribute with a 'true' value in a
321 Document Creation operation (or a Send-Document operation with no data - see [rfc2911] section 3.3.1). The Printer
322 MUST support both means of closing jobs for backward compatibility with [rfc2911].

323 If the Job has already been closed (either by a Close-Job operation or by the client supplying the "last-document"
324 operation attribute with a 'true' value), the Printer MUST reject the request and return the 'client-error-not-possible'
325 (see [rfc2911] section 13.1.4.5) status code.

326 *Access Rights:* The authenticated user (see [rfc2911] section 8.3) performing this operation must either be the job
327 owner (as determined in the Create-Job operation) or an operator or administrator of the Printer (see [rfc2911]
328 sections 1 and 8.5). Otherwise, the Printer MUST reject the operation and return: 'client-error-forbidden', 'client-error-
329 not-authenticated', or 'client-error-not-authorized' as appropriate.

330 3.1.1 Close-Job Request

331 The client supplies the following groups as part of the Close-Job Request:

332 **Group 1: Operation Attributes**

333   **Natural Language and Character Set:**
334   First, the client MUST supply the "attributes-charset" and "attributes-natural-language" Operation attributes
335   as described in [rfc2911] section 3.1.4.1. The Printer MUST copy these values to the corresponding Job
336   Description attributes described in [rfc2911] sections 4.3.19 and 4.3.20.

337 **Target:**
338 Next, the client MUST supply either (1) the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri"
339 (uri) Operation attribute(s) which define the target Job object for this operation as described in [rfc2911]
340 section 3.1.5. The client MAY supply the remaining Operation attributes in any order following:

341 **Requesting User Name:**
342 The "requesting-user-name" (name(MAX)) attribute SHOULD be supplied by the client as described in
343 [rfc2911] section 8.3.

3.1.2 Close-Job Response

345 The Printer MUST return the following sets of attributes to the client as part of the Close-Job response:

346 **Group 1: Operation Attributes**

347 **Status Message:**
348 In addition to the REQUIRED status code returned in every response, the response OPTIONALLY includes a
349 "status-message" (text(255)) and/or a "detailed-status-message" (text(MAX)) Operation attribute as
350 described in [rfc2911] sections 13 and 3.1.6.

351 **Natural Language and Character Set:**
352 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.2.

353 **Group 2: Unsupported Attributes**

354 See [rfc2911] section 3.1.7 for details on returning Unsupported Attributes.

355 **Group 3: Job Object Attributes**

356 In addition, the Printer MUST return the same Job status attributes that [rfc2911] REQUIRES for the Send-
357 Document and Send-URI operation responses (which are the same as for the Print-Job response - [rfc2911]
358 section 3.2.1.2):

359 "job-uri" (uri) - see [rfc2911] section 4.3.1
360 "job-id" (integer(1:MAX)) - see [rfc2911] section 4.3.2
361 "job-state" (type1 enum) - see [rfc2911] section 4.3.7
362 "job-state-reasons" (1setOf type2 keyword) - see [rfc2911] section 4.3.8
363
364 The Printer MAY return:

365 "job-state-message" (text(MAX)) - see [rfc2911] section 4.3.9
366 "number-of-intervening-jobs" (integer(0:MAX)) - see [rfc2911] section 4.3.15
367

3 Operation Attributes for Job Creation and Document Creation operations

369 This section defines Operation attributes for use in Job Creation operations and/or Document Creation operations
370 and as such describe characteristics of the Job and Document, rather than instructions to the Printer. For some of
371 these Operation attributes there are corresponding "xxx-default" and "xxx-supported" Printer Description attributes
372 (see section 7). Note: As in [rfc2911] Operation attributes relate to the operation and do not depend on the printing
373 capabilities of the Printer.

374 DMC ISSUE: What does the last sentence just above mean? Saying that 'document-format', for example, does not
375 depend on the printing capabilities doesn't seem to be right? Maybe this sentence needs to be reworded to more
376 clearly express its point?

377 Table 5 lists the Operation attributes and their attributes syntaxes supplied in Job Creation and Document Creation
378 operations and the attribute syntaxes of their corresponding "xxx-default" and "xxx-supported" Printer Description
379 attributes, if any. A "-" indicates that there isn't an "xxx-default" or "xxx-supported" Printer Description attribute.

380   **Table 5 - Operation, Default, and Supported Attributes**

Operation attribute: **attribute name "xxx"**	Operation attribute syntax	Printer: Default Value attribute syntax "xxx-default"	Printer: Supported Values attribute syntax "xxx-supported"
document-charset	charset	charset	1setOf charset
document-digital-signature	type2 keyword	type2 keyword	1setOf type2 keyword
document-format	mimeMediaType	mimeMediaType	1setOf mimeMediaType
document-format-details	1setOf collection	1setOf collection	1setOf type2 keyword[6]
document-source-application-name	name(MAX)	name(MAX)	-
document-source-application-version	text(127)	text(127)	-
document-source-os-name	name(40)	name(40)	-
document-source-os-version	text(40)	text(40)	-
document-format	mimeMediaType	mimeMediaType	-
document-format-device-id	text(127)	text(127)	-
document-format-version	text(127)	text(127)	-
document-natural-language	naturalLanguage	naturalLanguage	-
document-format-version	text(127)	text(127)	1setOf text(127)
document-natural-language	naturalLanguage	naturalLanguage	1setOf naturalLanguage
ipp-attribute-fidelity	boolean	-	-
job-mandatory-attributes	1setOf type2 keyword	-	- See ISSUE 01 below
output-device-requested	name(127)	- See ISSUE 02 below	1setOf name(127)

381 ISSUE 01: From DMC: Might it be useful for a Printer to be able to say which attributes it was able to guarantee? Or
382 would we want to do that through Validate-Job? ISSUE: OK that the "job-mandatory-attributes" Operation attribute
383 has nothing to do with guaranteeing (that the attribute will supersede the PDL), but only with whether the Printer will
384 accept the job with unsupported attributes requested - TNH

385 ISSUE 02: From DMC: It seems like it might be possible, for certain implementations, to have a default output-
386 device. The problem is that normally the "xxx-default" is REQUIRED [TH: not for operation attributes, so we say a
387 Printer MAY support the "output-device-default"], whereas my idea would be more to allow a Printer to advertise a
388 default only if it matched its actual implementation.

389 Table 6 lists the Operation attributes that clients supply in Job and Document Creation operations and whether the
390 Printer copies (indicated by "P") the supplied value to the corresponding Job Description[7] attribute.

---

[6] There is also a "document-format-details-implemented" (1setOf collection), see section 7.7.

[7] The operations defined for Document Creation operations do not have corresponding Document Description
attributes defined in this specification, since this specification does not assume that there is a Document object. See
[ippdoc] for the corresponding Document Description attributes.

Legend:	
"**Creation operations**"	column indicates which operations the Operation attribute can be supplied in: PJ=Print-Job, PU=Print-URI, CJ=Create-Job, SD=Send-Document, and SU=Send-URI.
"**y**"	the Operation attribute is defined for use with the indicated operations.
"**yÞ**"	the Operation attribute is defined for use with the indicated operations and has a corresponding Job Description attribute (see Table 10) defined to which the Printer MAY MUST support and copy this Operation attribute, if it supports the Operation attribute. See Table 5 for whether there are corresponding "xxx-default" and "xxx-supported" Printer Description attributes defined.
"**-**"	the Operation attribute is *not* defined for the indicated operation.
"**Conformance**"	column indicates the conformance requirements for what the client supplies in a request and the Printer supports in a request. For (indented) member attributes, a MUST means if the collection attribute is supplied or supported.
"**Section**"	column indicates where the Operation attribute is defined in this spec.

391

392   **Table 6 - Operation Attributes supplied in Job and Document Creation Requests**

Operation attribute name for Job and Document Creation *requests*	Attribute Syntax	Creation operations			Conformance		Section
		CJ	PJ, PU	SD, SU	Client supply	Printer support	
document-charset	charset	-	y	y	MAY	CMUST[8]	§3.2.1
document-digital-signature	type2 keyword	-	y	y	MAY	MAY	§3.2.2
document-format	mimeMediaType	-	y	y	MAY	MUST	§3.2.3
document-format-details	1setOf collection	-	y	y	MAY	CMUST[9]	§3.2.4
document-source-application-name	name(MAX)	-	y	y	MAY	MAY	§3.2.4.1
document-source-application-version	text(127)	-	y	y	MAY	MAY	§3.2.4.2
document-source-os-name	name(40)	-	y	y	MAY	MAY	§3.2.4.3
document-source-os-version	text(40)	-	y	y	MAY	MAY	§3.2.4.4
document-format	mimeMediaType	-	y	y	MUST	MUST	§3.2.4.5
document-format-device-id	text(127)	-	y	y	MAY	MAY	§3.2.4.6
document-format-version	text(127)	-	y	y	SHOULD	MUST	§3.2.4.7
document-natural-language	naturalLanguage	-	y	y	MAY	MAY	§3.2.4.8
document-format-version	text(127)	-	y	y	MAY	MAY	§3.2.5
document-natural-language	naturalLanguage	-	y	y	MAY	MAY	§3.2.6
ipp-attribute-fidelity	boolean	yÞ [10]	yÞ [10]	-	MAY	MUST	§3.1.1,
job-mandatory-attributes	1setOf type2 keyword	yÞ	yÞ	-	MAY	MUSTMAY	§3.1.2
output-device-requested	name(127)	yÞ	yÞ	-	MAY	MAY	§3.1.3

393

---

[8] The Printer MUST support the "document-charset" Operation/Document Description attributes, if the Printer supports a charset-ambiguous document format (see section 3.2.1).

[9] The Printer MUST support the "document-format-details" Operation/Document Description attributes if the Printer supports a *packaging* MIME type document format, such as 'application/zip' or 'multipart/related'.

[10] The Printer MAY copy the "ipp-attribute-fidelity" Operation attribute to the corresponding (new) Job Description attribute defined in this specification, if supported. DMC ISSUE: What is the need for this footnote?

394 ## 3.1 Operation attributes for Job Creation operations

395 This section defines additional operation attributes that the client MAY supply in Job Creation operations (Print-Job,
396 Print-URI, and Create-Job).

397 The following statements apply to all of these Operation attributes and are *not* repeated in each attribute Description:

398 If the Printer doesn't support the "xxx" Operation attribute, the Printer MUST ignore the "xxx" attribute (as with any
399 OPTIONAL Operation attribute) and return the "xxx" attribute with the supplied value as unsupported in the
400 Unsupported Aattributes group as specified in [rfc2911] section 3.1.7.

401 If the Printer supports the "xxx" Operation attribute, the Printer MUST also:

402 1. support the corresponding "xxx-default" and "xxx-supported" Printer Description attributes as well, if defined
403 (see Table 5 and section 7). If the Printer supports either of the "xxx-default" or "xxx-supported" Printer
404 Description attributes, then the Printer MUST also support the corresponding Operation attributes., and vice
405 versa. (DMC ISSUE: I'm not in love with the "and vice versa"—what is it supposed to mean?)

406 2. validate the values supplied by the client in the "xxx" Operation attribute against the values indicated in the
407 Printer's corresponding "xxx-supported" Printer Description attribute (see section 7). If the values do not
408 validate, the Printer MUST perform one of the actions indicated for that Operation, unless explicitly specified
409 otherwise in the Description, such as (1) reject the request, (2) accept the request and either (a) hold the job
410 for operator intervention or (b) print the Job ignoring the attribute. In all of these cases, the Printer MUST
411 return the Operation attribute with the unsupported value in the Unsupported Attributes group in the
412 response (see [rfc2911] section 3.1.7).

413 ### 3.1.1 ipp-attribute-fidelity (boolean) ([rfc2911] section 3.2.1 and 15)

414 This REQUIRED Operation attribute specifies the policy for the Printer to use (see [rfc2911] §3.2.1.1)– when the
415 client supplies unsupported Job Template attributes [11] or values in a Job Creation operation. The value 'true'
416 indicates that total fidelity to client-supplied Job Template attributes and values is required for this Job Creation
417 operation. If the client supplies the value 'false' or omits the attribute, then the Printer MUST accept the Job Creation
418 operation.

419 The Printer MUST copy this attribute to the corresponding (new) Job Description attribute (see section 5.1). DMC
420 ISSUE: In Legend table above in row for "y P", it says "MAY copy".

421 **3.1.1.1 What there are no "ipp-attribute-fidelity-default" and "ipp-attribute-fidelity-supported" attributes**

422 Because [rfc2911] defines the default value to be 'false' there is no point to define an "ipp-attribute-fidelity-default"
423 Printer Description attribute. Because [rfc2911] REQUIRES a Printer to support the "ipp-attribute-fidelity" Operation
424 attribute there is no need for an "ipp-attribute-fidelity-supported" Printer Description attribute.

425 ### 3.1.2 job-mandatory-attributes (1setOf type2 keyword) Operation attribute

426 This OPTIONAL Operation attribute identifies which Job Template attributes the Printer MUST Honor in this Job
427 Creation request. The Printer MUST reject this Job Creation operation, if the client supplies an unsupported Job
428 Template attribute or value in the request that is also identified in this list. The client MAY supply this the "job-
429 mandatory-attributes" Operation attribute in a Job Creation operation or Validate-Job operation and MUST NOT
430 supply this attribute in any other operation. If the Printer supports the "job-mandatory-attributes" Operation attribute,

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[11] The value of the "ipp-attribute-fidelity" Operation attribute has no effect on other *O*peration attributes supplied by
the client, only on Job Template attributes supplied by the client.

431 the Printer MUST support this attribute in all Job Creation operations that it supports and in the Validate-Job
432 operation.

433 The Printer MUST copy this attribute to the corresponding "job-mandatory-attributes" Job Description attribute (see
434 section 5.3) for auditing and trouble-shooting purposes[12].

435 The values of the "job-mandatory-attributes" attribute are the keyword attribute names that identify Job Template
436 attributes;, for example, 'job-hold-until', 'job-finishings' (see section 4.1.4), 'copies' and 'media'. In order to identify a
437 member attribute of a collection attribute, the keyword names of both the collection attribute and the member
438 attribute are given separated by a period (.) character. For example, to make the "media" attribute of the "cover-
439 front" collection attribute mandatory, supply the keyword value: 'cover-front.media'.

440 The Printer MUST accept *any* keyword values whether or not the corresponding Job Template attributes are
441 supported by the Printer and MUST NOT return those unsupported keywords in the Unsupported Attributes Group in
442 the response. If the client supplies this "job-mandatory-attributes" Operation attribute in a Job Creation operation
443 with values that represent Job Template attributes that the Printer doesn't support, the Printer MUST otherwise
444 accept the attribute anyway. The Printer MUST reject this Job Creation only if the client *actually supplies* any of the
445 identified Job Template attributes that the Printer doesn't support. Because the Printer doesn't reject when the "job-
446 mandatory-attributes" Operation attribute has the unsupported attribute keyword names, the client MAY supply all of
447 the attribute keyword names that the client supports without having to tailor the list to the particular Printer to
448 whichthat the client is submitting the Job Creation operation, thereby, simplifying client use of this attribute.

449 **3.1.2.1 What there are no "job-mandatory-attributes-default" and "job-mandatory-attributes-supported"**
450 **attributes**

451 By definition, omission of the "job-mandatory-attributes" Operation attribute means that the client is requesting that all
452 attributes be Best Effort, i.e., the Printer MUST NOT reject the job because of any unsupported Job Template
453 attributes. So the default is an empty list, so there is no point to have a "job-mandatory-attributes-default" Printer
454 attribute.

455 By definition, the client can supply any Job Template attribute in the value list of the "job-mandatory-attributes"
456 Operation attribute, whether or not the Printer actually supports that Job Template attribute. Therefore, it is not
457 possible to have a "job-mandatory-attributes-supported" list, since all possible keywords would have to be expressed.

458 Note: the client MAY query the Printer's "job-creation-attributes-supported" (see [ippsave] section 7.1) and
459 "document-creation-attributes-supported" (see [ippdoc] section 10.1) to see which Job Template and Document
460 Template attributes the Printer actually supports.

461 ### 3.1.3 output-device-requested (name(127))

462 This OPTIONAL Operation attribute specifies the name of the target output device for a Printer that fans-out to
463 multiple devices (see [rfc2911] section 2.1). This allows the client to control which output device the Printer selects.
464 If this attribute is omitted, the Printer selects whichever output device seems best for the job in an implementation
465 dependent manner. The client can discover which output devices the Printer supports by querying the Printer's
466 "output-device-requested-supported" Printer attribute (see section 7.12).

467 If the Printer supports this Operation attribute, the Printer MUST support it only on Job Creation operations, not
468 subsequent Document Creation operations for this Job.

469 If the Printer supports this Operation attribute, the Printer MUST support the "output-device-assigned" Job
470 Description attribute with the same values (see [rfc2911] section 4.3.13).

---

[12] The Printer uses the "job-mandatory-attributes" Job Description attribute for validating subsequent Document
Creation operations for this job when also supporting [ippdoc]. DMC ISSUE: Why only when supporting [ippdoc]?

471   If a client supplies this "output-device-requested" Operation attribute with a value that the Printer doesn't support, the
472   Printer MUST perform one of the following actions depending on implementation: (1) reject the request OR (2)
473   accept the request and either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute.
474   See section 3 above3.2 below for more details.

475   **3.1.3.1 Why there is no "output-device-requested-default" attribute**

476   ISSUE 02 (repeat): From DMC: Should we add an "output-device-requested-default" Printer Description attribute that
477   a Printer MAY support when it supports the "output-device-requested" Operation attribute?

3.2 Operation attributes for Document Creation operations

479   This section defines the semantics for the Operation attributes that a client MAY supply in a Document Creation
480   operation (Print-Job, Print-URI, Send-Document and Send-URI). Note: Print-Job and Print-URI are both Job
481   Creation and Document Creation operations.

482   The following statements apply to all of these Operation attributes and are *not* repeated in each attribute Description:

483   If the Printer doesn't support the "xxx" Operation attribute, the Printer MUST ignore the "xxx" attribute (as with any
484   OPTIONAL Operation attribute) and return the "xxx" attribute with the supplied value as unsupported in the
485   Unsupported Aattributes group as specified in [rfc2911] section 3.1.7.

486   If the Printer supports the "xxx" Operation attribute, the Printer MUST also:

487   1.support the corresponding "xxx-default" and "xxx-supported" Printer Description attributes as well, if defined
488   (see Table 5 and section 7), and vice versa. (DMC ISSUE: I'm not in love with the "and vice versa"—what is
489   it supposed to mean?)

490   2.validate the values supplied by the client in the "xxx" Operation attribute against the values indicated in the
491   Printer's corresponding "xxx-supported" Printer Description attribute (see section 7). If the values do not
492   validate, the Printer MUST perform one of the actions indicated for that Operation, unless specified
493   otherwise, such as (1) reject the request, (2) accept the request and either (a) hold the job for operator
494   intervention or (b) print the Job ignoring the attribute. In all of these cases, the Printer MUST return the
495   Operation attribute with the unsupported value in the Unsupported Attributes group in the response (see
496   [rfc2911] section 3.1.7).

497   DMC ISSUE: I think the above comments (all but the first paragraph of this section) should be moved up to section
498   3—that is, these comments about support of "xxx-default" and "xxx-supported" should be at the Operation attributes
499   level, not the *Document Creation* Operation attributes level. I realize that the Document Creation ones all have
500   default and supported attributes (but didn't we get rid of 'document-format-version-default' in the telecon today?) and
501   the Job Creation ones mostly don't have default and supported attributes, but I think it is cleaner to put the general
502   rules at the top. Note that rule #1 above has the words "if defined".

503   DMC COMMENT—This is as far as I got in my review.

3.2.1 document-charset (charset)

505   This CONDITIONALLY REQUIRED Operation attribute identifies the charset of the Document Content.

506   If a client supplies the "document-charset" Operation attribute in a Document Creation operation with a value that the
507   Printer doesn't support, the Printer MUST reject the job and return the status code: 'client-error-charset-not-
508   supported' (see [rfc2911] section 3.1.4.14), since the interpretation of the content will be mis-understood by the
509   Printer..

510 The standard values for these attributes are Internet Media types (sometimes called MIME types). For further details
511 see the description of the 'mimeMediaType' attribute syntax in [rfc2911] section 4.1.9.

512 The Printer MUST support this attribute if it supports a document format for which the Document Content can be
513 ambiguous with respect to the charset being used to encode the data. For example, the 'application/vnd.hp-PCL'
514 MAY omit the charset escape sequence. Although [rfc2854] strongly RECOMMENDS that 'text/html', include a ";
515 charset=charset' parameter in the MIME type itself (that is, explicitly in the value of the "document-format" attribute),
516 often the charset= parameter is not present in the MIME type and the Printer MUST assume a charset. Thus a
517 Printer that supports the text/html MIME type MUST support the "document-charset" operation attributes. Also many
518 text files use the various 8-bit ISO 8859 charsets in which the lower half is US-ASCII and the upper half is various
519 Latin sets (about 8 or 9), Greek, Cyrillic, Hebrew, and Arabic. Shift JIS is another example where the left half is US-
520 ASCII, but the right half can be one of a number of things. But if the data doesn't contain the charset escape
521 sequences, this attribute can help the Printer know what the charset is in the Document. Such document formats are
522 called "charset-ambiguous" document formats. Finally, even though [rfc2046] REQUIRES the "; charset=" MIME
523 type parameter if the file contains other than US-ASCII, in practice, the "; charset=" MIME type parameter is often
524 omitted, thus making 'text/plain' a charset-ambiguous document format. See the discussion in [rfc2911] section 4.1.9
525 and [rfc2046].

526 Printer MAY also check the Document content while processing to see that the document data meets the coding
527 requirements for the supplied charset. If the data contains something that is outside the charset encoding, the
528 Printer MUST either (1) hold the job or (2) abort, and SHOULD NOT continue printing square boxes for encoded
529 characters that are outside the charset supplied by the client.

530 Many other document formats, such as 'application/postscript' and 'application/pdf', are *not* charset-ambiguous, so
531 that Printers that support only such formats MAY omit support of the "charset" Operation/ Description attributes.

532 If the Printer supports the "document-charset" Operation attribute, it MUST also support the corresponding
533 "document-charset-default" and "document-charset-supported" Printer Description attributes as well and vice versa
534 (see sections 7.1 and 7.2).

535 ### 3.2.2 document-digital-signature (type2 keyword)

536 This OPTIONAL Operation attribute identifies the technology of digital signature in the Document content.

537 If a client supplies this "document-digital-signature" Operation attribute in a Document Creation operation with a
538 value that the Printer doesn't support, the Printer MUST perform one of the following actions depending on
539 implementation: (1) reject the request OR (2) accept the request, set the Job's "job-state-reasons" attribute to
540 'digital-signature-type-not-supported' (see section 6.1), and either (a) put the Job in the 'pending-held' state or (b)
541 process the job ignoring the attribute. See section 3.2 above for more details.

542 If the Printer supports this attribute and the value supplied by the client, the Printer MAY verify the signature
543 according to the rule for that signature format and "document-format". If the signature does not verify, then the
544 Printer MUST perform one of the following actions depending on implementation (which MAY depend on the
545 "document-format" and a site-established policy):

546 1.   ignore the signature (and MAY indicate on the printed output some how) and MUST set the Job's "job-state-
547   reasons" Job Description attribute to the 'digital-signature-did-not-verify' value (see section 6.1).

548 2.   put the job on hold and wait for human intervention and MUST set the Job's "job-state-reasons" Job
549   Description attribute to the 'job-digital-signature-wait' and 'digital-signature-did-not-verify' values (see section
550   6.1), OR

551   3.   abort the job depending on implementation and/or site configuration and MUST set the Job's "job-state-
552   reasons" Job Description attribute to the 'job-aborted-by-system' and 'digital-signature-did-not-verify' values
553   (see section 6.1).

554   Different PDLs have different techniques of embedding the signature. If the Printer supports the "document-digital-
555   signature" attribute and the supplied "document-format", the Printer MUST accept the document. However, if the
556   Printer either doesn't support the value of the "document-digital-signature' Operation attribute or doesn't support the
557   technique used by the supplied "document-format" attribute, the Printer MUST either (1) ignore the signature or (2)
558   put the job on hold and wait for human intervention, depending on implementation. If the Printer doesn't support the
559   supplied value, the Printer MUST return the "document-digital-signature" attribute with its value as unsupported in the
560   Unsupported attributes group as specified in [rfc2911] section 3.1.7.

561   The following standard keyword values are defined:

562   'dss': Digital Signature Standard (DDS) [dss].

563   'none': There is not a digital signature in the Document content. If this attribute is supported, the 'none'
564   value MUST be supported.

565   'pgp': PGP Message Exchange Formats [rfc1991].

566   'smime': Enhanced Security Services for S/MIME [rfc2634].

567   'xmldsig' XML Digital Signature [xmldsig].

3.2.3 document-format (mimeMediaType)

569   This REQUIRED Operation attribute (see [rfc2911] section 3.2.1.1) indicates the document format of the supplied
570   Document Content. If a client supplies the "document-format" Operation attribute with a value that the Printer doesn't
571   support, the Printer MUST reject the job and return the status code: 'client-error-document-format-not-supported'
572   (see [rfc2911] section 3.1.4.11), since the Printer cannot process the data.

573   The standard values for this attribute are Internet Media types (sometimes called MIME types). For some MIME
574   types, such as 'text/plain' [rfc2046], the "; charset=" parameter is defined which specifies the charset of the Document
575   content. The Printer MUST support the charset MIME parameter as well as the "document-charset" Operation
576   attribute (section 3.2.1) if the Printer supports any text MIME type, such as 'text/plain' or 'text/html'. For further
577   details see the description of the 'mimeMediaType' attribute syntax in [rfc2911] section 4.1.9 and [rfc2046] and the
578   "document-charset" Operation attribute (section 3.2.1).

579   Many printer languages in the Printer MIB do not have a MIME type registered with IANA.[13] It is the intent of the
580   PWG to registers all of the Printer MIB v2 XXX Printer Languages as 'application/vnd.PWG-XXX'. If a Printer
581   Language already has a registered MIME Media type or gets a registration in the future, then that MIME Type MUST
582   be used in preference to the 'application/vnd.PWG-XXX' MIME Type. For example, PostScript® has the MIME
583   Media type: 'application/postscript' and PCL has the MIME Media Type: 'application/vnd.HP-PCL, so those MIME
584   Media types MUST be used instead of 'application/vnd.PWG-PS' and 'application/vnd.PWG-PCL'. For example, the
585   NEC NPDL printer language from the Printer MIB does not have a MIME type registered with IANA. Therefore, the
586   "document-format" = 'application/vnd.PWG-NPDL' MUST be used.

587   Note: CIP4 did not agree to register MIME types for other organizations and standards. Instead, CIP4 will just add
588   values to the flat file that aren't MIME types. The values will not start with any of the MIME type roots: application/,
589   audio/, image/, message/, model/, multipart/, test/, or video. It is proposed that CIP4 [cip4] register the YYY
590   document formats with IANA as 'application/vnd.CIP4-YYY' that CIP4 is using that don't have a registered MIME
591   Media type. For example, TIFF/IT [iso12639] would be registered as: 'application/vnd.CIP4-TIFF-IT'. Then CIP4

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[13] Companies are urged to register there Printer languages with IANA using the 'application/vnd.XX-yyy vendor tree. There has also been a long standing PWG proposal to register all of these as 'application/vnd.pwg-yyy.

592 ~~would keep a list of TIFF/IT versions. For example: 'TIFF/IT-CT/P1:1998' to use with the "document-format-version"~~
593 ~~attribute (and the CIP4 JDF equivalent MimeTypeVersion attribute).~~

594   ~~ACTION ITEM (Tom): Get CIP4 buy-in to use the same flat file (which will require an additional field for the~~
595   ~~JDF FileType attribute.~~ <mark>ACTION ITEM (Tom and Ira): Propose a format for the file.</mark>

596 See also the "document-format-version" Operation attribute in section 3.2.5 and the "document-format-details"
597 Operation attribute in section 3.2.4.

3.2.4 document-format-details (1setOf collection)
598

599 This CONDITIONALLY REQUIRED Operation attribute supplied in Document Creation operations summarizes the
600 details of the Document content, including any files contained in the Document. See Table 7 for a list of the member
601 attributes along with the client and Printer conformance requirements.

602 If a Printer supports a *packaging* MIME type, such as 'multipart/related' or 'application/zip', the Printer MUST support
603 this "document-format-details" Operation attribute. If a Printer does not support a packaging MIME type, it MAY omit
604 support of the "document-format-details" Operation attribute and Description attribute. The purpose of the
605 "document-format-details" Operation attribute is to describe the details of the document format or formats in the
606 supplied Document, including the packaging format itself, so that the Printer knows what to expect.

607 If a client supplies the "document-format-details" Operation attribute in a Document Creation request with member
608 attributes and/or values that the Printer doesn't support, the Printer MUST perform one of the following actions
609 depending on implementation: (1) reject the request OR (2) accept the request and either (a) put the Job in the
610 'pending-held' state or (b) process the job ignoring the attribute. See section 3.2 above for more details. However, if
611 the "document-charset" or the "document-format" member attributes are the ones in question, the Printer MUST
612 reject the request, same as for the "document-charset" and "document-format" Operation attributes (see sections
613 3.2.1 and 3.2.3) and return the 'client-error-charset-not-supported' (see [rfc2911] section 13.1.4.16) or the 'client-
614 error-document-format-not-supported' (see [rfc2911] section 13.1.4.11), respectively.

615 For a packaging format, the "document-format-details" attribute does not provide means to associate each collection
616 value with particular document in the archive file, so it does not provide a "manifest"[14] of the packaging. One of the
617 packaging collection values MAY describe the packaging format itself, in which case that collection value MUST be
618 the first collection value. The remaining collection values provides the summary of the details of the contained files in
619 any order.

620 There MUST NOT be any duplicate collection values, that is, no collection values with all the same member attribute
621 values; it's a set, not a sequence. So 100 PostScript files with the same details in a .zip file:

622   (1) MAY have one collection value with the "document-format" member attribute = 'application/zip' MIME type
623   value and MAY have additional member attributes that give details about the .zip file itself and

624   (2) MUST have one collection value containing a "document-format" member attribute =
625   'application/postscript' and MAY have additional member attributes that give the details about the PostScript
626   files.

627 If a file in a packaging file is itself a packaging file, the single "document-format-details" (1setOf collection) Operation
628 attribute SHOULD contain the flattened distinct collection values for all files at all nested levels. Therefore, the
629 "document-format-details" collection attribute is not recursively defined and MUST NOT contain the "document-
630 format-details" attribute as a member attribute.

---

[14] If the client wants to achieve a "manifest", that is a complete list of each file in a packaging, then the client needs to
extract each file from the package and submit each one in a separate Document Creation operation. Note: the client
can re-compress each file before sending, so the compression isn't lost when sending each document separately.

631 **Table 7 - "document-format-details" member Operation attributes**

Member Attribute Name	Attribute Syntax	Client supplies	Printer Support	Member Attribute Section	Top Level Attribute Section
document-source-application-name	name(MAX)	MAY	MAY	3.2.4.1	N/A
document-source-application-version	text(127)	MAY	MAY	3.2.4.2	N/A
document-source-os-name	name(40)	MAY	MAY	3.2.4.3	N/A
document-source-os-version	text(40)	MAY	MAY	3.2.4.4	N/A
document-format	mimeMediaType	MUST	MUST	3.2.4.5	3.2.3
document-format-device-id	text(127)	MAY	MAY	3.2.4.6	N/A
document-format-version	text(127)	SHOULD	MUST	3.2.4.7	3.2.5
document-natural-language	1setOf naturalLanguage	MAY	MAY	3.2.4.8	3.2.6

632
633 The client can determine which member attributes of the "document-format-details" are supporter by querying the
634 Printer's "document-format-details-supported" (1setOf type2 keyword) Printer Description attribute (see section 7.6).
635 The client can determine a supported set of document details by querying the Printer's "document-format-details-
636 implemented" (1setOf collection) Printer Description attribute (see section 7.7).

637 Table 7 shows that three of the member attributes also have comparable top level Operation attributes defined with
638 the same names. See the sections listed in the rightmost column. These three high level attributes have
639 corresponding "xxx-default" and "xxx-supported" Printer Description attributes. These values are also for use with
640 the corresponding three member attributes. The remaining member attributes do not have any corresponding "xxx-
641 default" and "xxx-supported" Printer Description attribute. The client MAY query the Printer's "document-format-
642 details-implemented" Printer Description attribute to determine what values the Printer has implemented. However,
643 the Printer MAY accept other values, such as later or earlier versions.

644 If a client supplies this "document-format-details" Operation attribute with a member attribute with a value that the
645 Printer doesn't support, the Printer MUST perform one of the following actions: (1) reject the request OR (2) accept
646 the request and either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See
647 section 3.2 above for more details.

648 **3.2.4.1 document-source-application-name (name(MAX))**

649 This OPTIONAL member Operation attribute identifies the application that generated the document. The
650 version number MUST NOT be included (see the "document-source-application-version" attribute).
651 Examples: "Photoshop", "Microsoft Word".

652 **3.2.4.2 document-source-application-version (text(127))**

653 This OPTIONAL member Operation attribute identifies the version number of the application that created the
654 document.   The intent of this attribute is for purposes of affecting the interpreting by the Printer for any
655 formats for which the source application version might have different semantics. Examples:

656 "8.1 (4331)" for Winzip®, "5.0.5 10/26/2001" for Acrobat®, "2000 (9.0.4119 SR-1)" for Microsoft® Word

657 When populating the "document-source-application-version-implemented" member attribute of the
658 "document-format-details-implemented" Printer Description attribute, some of the trailing information MAY be
659 omitted, so that a substring match of the Printer's value with the value supplied by the client is sufficient for a
660 match. For example, the Printer's value MAY be "8.1", "5.0", and "2000", respectively, as compared to the
661 corresponding example values above that MAY be supplied by the client.

662   If the client omits this member attribute or supplies a zero length string, that matches with any version.
663   Similarly, the Printer's member attribute MAY be omitted or be a zero length string to indicate any.

664   **3.2.4.3 document-source-os-name (name(40))**

665   This OPTIONAL member Operation attribute identifies the name of the operating system on which the
666   document was generated. Valid values are the operating system names defined in the IANA Operating
667   System name registry [os-names] with the version number portion removed (see the "document-source-os-
668   version" attribute). IANA Operating System Names are consist of up to 40 *uppercase* US-ASCII letters,
669   hyphen ("-"), period ("."), and slash ("/") characters. The zero length string represents unknown[15].

670   Example IANA OS Registry values: 'AIX, 'DOS', 'LINUX', 'MACOS', 'MSDOS', 'MVS', 'NETWARE', 'OS/2',
671   'SUN', 'SUN-OS', 'UNIX', 'VMS', 'WINDOWS'.

672   **3.2.4.4 document-source-os-version (text(40))**

673   This OPTIONAL member Operation attribute identifies the version of the operating system on which the
674   document was generated. Valid values include the version portion of any of the operating system names
675   defined in the IANA Registry [os-names]. The value MUST NOT include the name portion of the registered
676   OS name (see "document-source-os-name" attribute). The zero length string represents unknown[15].

677   Example values for the indicated "document-source-os-name" value are:
678   For 'AIX': '370', 'PS/2'
679   For 'LINUX': '1.0', '1.2', '2,0', '2.2', '2.4'
680   For 'MVS': 'SP'
681   For 'NETWARE': '3', '3.11', '4.0', '4.1', '5.0'
682   For 'SUN-OS': '3.5', '4.0'
683   For 'UNIX': 'BSD', 'V', 'V.1', 'V.2', 'V.3', 'PC'
684   For 'WINDOWS': '95', '98', 'CE', 'NT', 'NT-2', 'NT-3', 'NT-3.5', 'NT-3.51', 'NT-4', 'NT-5', '2000', 'XP'
685   [not registered yet]

687   **3.2.4.5 document-format (mimeMediaType)**

688   This REQUIRED member Operation attribute identifies the document format (see [rfc2911] §3.2.1.1) of the
689   collection value of which it is a member. The client MUST supply and the Printer MUST support this member
690   attribute in each collection value. The values for this member attribute are Internet Media types (sometimes
691   called MIME types) and have the same values and semantics as for the top level "document-format"
692   Operation attribute with the same name (see section 3.2.3 for the semantics).

693   **3.2.4.6 document-format-device-id (text(127))**

694   This OPTIONAL member Operation attribute identifies the type of device for which the document was
695   formatted, including manufacturer and model. This attribute is intended to identify document formats that are
696   not portable, e.g., PDLs that are device dependent. The value of this variable MUST exactly match the IEEE
697   1284-2000 Device ID string (see [IEEE1284] clause 6), except the length field MUST NOT be specified. See
698   the Microsoft Universal Plug and Play [upnp] section 2.2.6 DeviceId parameter for details and examples.
699   Here is an example showing only the required fields for a PostScript document:
700   `MANUFACTURER:ACME Co.;COMMAND SET:PS;MODEL:LaserBeam 9;`

---

[15] The IANA Registry of OS Names does have an "UNKNOWN" value. However, that value is not being used for the "document-creator-os-name" and "document-creator-os-version" attributes. Instead, a zero length string indicates unknown, so that clients don't have to make a special case check for the UNKNOWN token and localize UNKNOWN to the language of the user while the client is not localizing any other OS name or version values.

701 **3.2.4.7 document-format-version (text(127))**

702 This REQUIRED member Operation attribute identifies the level or version of the document format identified
703 by the "document-format" member attribute. The client MAY supply and the Printer MUST support this
704 member attribute if the Printer supports the "document-format-details" Operationattribute. The semantics
705 and supported values of this "document-format-version" member attribute MUST be the same as for the top
706 level "document-format-version" Operation attribute with the same name (see section 3.2.5 for the
707 semantics).

708 **3.2.4.8 document-natural-language (1setOf naturalLanguage)**

709 This OPTIONAL member Operation attribute specifies the natural language(s) of the collection value of
710 which it is a member. The values for this attribute are natural language codes (with optional country codes)
711 and have the same values and semantics as for the top level "document-natural-language"
712 (naturalLanguage) operation attribute with the same name (see section 3.2.6 for the semantics). If the
713 document contains multiple natural languages, then the first value MUST be the primary language of the
714 document.

715 3.2.5 document-format-version (text(127))

716 This OPTIONAL Operation attribute identifies the level or version of the document format of the Document content
717 identified by the "document-format" Operation attribute (section 3.2.3).

718 If the client supplies this "document-format-version" Operation attribute, the client MUST also supply the "document-
719 format" Operation attribute (section 3.2.3), so that the Printer does not need to parse the "document-format-version"
720 string in order to determine the document format and version.

721 If a client supplies this "document-format-version" Operation attribute with a value that the Printer doesn't support as
722 indicated by the Printer's "document-format-version-supported" attribute (see section 7.9), the Printer MUST perform
723 one of the following actions, depending on implementation: (1) reject the request OR (2) accept the request and
724 either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See section 3.2 above
725 for more details.

726 The defined values are taken from the Printer MIB [rfc1759] langTC values (after removing the "lang") used in the
727 prtInterpreterLangFamily and the prtInterpreterLangLevel attributes (SNMP calls them "objects") separated by the "/"
728 character. If there is no version, just the langTC prefix without the "/" is used. Note: the Printer MIB
729 prtInterpreterLangVersion attribute is not used, since no standard values are given in the Printer MIB.

730 The short first field before the "/" character are unique, so that the version values are self-identifying so that all the
731 versions for all document formats can be combined into a single list for the Printer's "document-format-version-
732 supported" Printer attribute. The first field also tends to be the acronym for the document format and often is also the
733 file name extension registered with IANA. The Printer MIB shows the first field in uppercase for readability.
734 However, the Printer MUST perform case-insensitive matching of supplied values with supported values. If the
735 common acronym includes a "/", such as TIFF/IT, the "/" is changed to "-" so that the first field ends with the first "/."

736 Example values:

737 'PS/3': For Postscript level 3 [rfc1759].
738 'PCL/5e': For PCL 5e [rfc1759].
739 'PDF/1.4': For PDF version 1.4 [pdf]
740 'PDF/X-1a:2001': For PDF/X-1a [iso15930]
741 'DCS/2.0' For Document Color Separation (DCS), version 2.0. [dcs2.0]
742 'TIFF-/IT/-FP:1998': TIFF/IT [iso12639] - Full Page - baseline.
743 'TIFF-/IT/-CT:1998': TIFF/IT [iso12639] - Continuous Tone picture data - baseline
744 'TIFF-/IT/-FP/P1:1998': TIFF/IT [iso12639] - Full Page - profile 1

745 'TIFF-/IT/-CT/P1:1998': TIFF/IT [iso12639] - Continuous Tone picture data - profile 1
746 'Automatic': auto sense the format [rfc1759]. Is use in combination with the 'application/octet-stream' (see
747 [rfc2911] section 4.1.9.1) value of the "document-format" attribute (section 3.2.3).
748

749 If a client supplies this "document-format-version" Operation attribute with a value that the Printer doesn't support as
750 indicated by the Printer's "document-format-version-supported" attribute (see section 7.9), the Printer MUST perform
751 one of the following actions, depending on implementation: (1) reject the request OR (2) accept the request and
752 either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See section 3.2 above
753 for more details.

754 **3.2.5.1 Why no "document-format-version-default"**

755 There is no "document-format-version-default" since to meaningful, the default would have to depend on the
756 "document-format". Currently, there are no "xxx-default" attributes whose values depend on the value of other
757 attributes. Thus an implementation is free to supply its own defaults the depend on the "document-format".

758 ISSUE 03: (Thought up while writing up the reason for no default): [rfc2911] does have the concept of attribute
759 coloring that causes the values of Printer attributes to depend on the "document-format". Thus, we could have
760 "document-format-version-default" whose value depends on the value of the "document-format". Do we want to have
761 "document-format-version-default", which, if supported, the Printer MUST color the value depending on the
762 "document-format" Operation attribute supplied in the Get-Printer-Attributes request?

763 ~~The Printer produces the value indicated by its "document-format-version-default" Printer attribute only if the client~~
764 ~~does not supply the "document-format-version" Operation attribute and the "document-format" Operation attribute. If~~
765 ~~the client supplies the "document-format" Operation attribute, but not the "document-format-version" Operation~~
766 ~~attribute, the Printer applies an appropriate default version for the supplied document format.~~

767 ~~ISSUE 01: Or should the "document-format-version-default" be a 1setOf since the version string is self-identifying~~
768 ~~with the PDL? Then the different defaults could be indicated for each document format?~~

769 ## 3.2.6 document-natural-language (naturalLanguage)

770 This OPTIONAL Operation attribute specifies the natural language of the Document content (see [rfc2911] section
771 3.2.1.1 and section 4.1.8).

772 If the client supplies this "document-natural-language" Operation attribute with a value that the Printer doesn't
773 support, the Printer MUST perform one of the following actions: (1) reject the request OR (2) accept the request and
774 either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See section 3.2 above
775 for more details.

776 The values MAY include region as well as the language according to [rfc2911 section 4.1.8. If the document
777 contains more than one language, the value is the first or primary language of the document. The Printer MAY use
778 this value to select fonts or other Globalization processing. As indicated in [rfc2911] section 4.1.8, example include:

779 'en': for English
780 'en-us': for US English
781 'fr': for French
782 'de': for German
783

784 4 Job Template attributes

785 Table 8 lists the new Job Template attributes defined in this specification. These Job Template attributes can be
786 supplied in the Job Creation operations: Print-Job, Print-URI, and Create-Job operations and the Validate-Job
787 operation.

788 Job Template attributes are OPTIONAL for a Printer to support and for a client to supply in a Job Creation request. If
789 a Printer supports a Job Template attribute, then it MUST copy the supplied attribute to the Job object, respectively
790 so that a client MAY query the attributes in subsequent Get-Job-Attributes/Get-Jobs operations (see [rfc2911]
791 section 4.2).

792 If a Job Template collection attribute is supported (see [rfc3382]), then there are conformance requirements for which
793 member attributes MUST be supported and which member attributes a client MUST supply as indicated in the
794 Conformance column for each collection member attribute in Table 8.

795 **Table 8 - Job Template attributes**

Job Template attribute name "xxx"	Attribute Syntax	Printer: Default Value attribute syntax "xxx-default"	Printer: Supported Values attribute syntax "xxx-supported"
job-copies	integer(1:MAX)	integer(1:MAX)	rangeOfInteger(1:MAX)
job-cover-back	collection	collection	1setOf type2 keyword
cover-type	type2 keyword	-	1setOf type2 keyword
media	type3 keyword | name(MAX)	-	1setOf (type3 keyword | name(MAX))
media-col	collection	-	1setOf type2 keyword
member attributes [pwg5100.3]	*See* [pwg5100.3]	-	-
job-cover-front	collection	collection	1setOf type2 keyword
member attributes - same as **job-cover-back**	**see job-cover-back**		
job-finishings	1setOf type2 enum	1setOf type2 enum[16]	1setOf type2 enum
job-finishings-col	collection	collection[16]	1setOf type2 keyword
finishing-template	name(MAX)	-	1setOf name(MAX)
stitching	collection		1setOf type2 keyword
stitching-reference- edge	type2 keyword	-	1setOf type2 keyword
stitching-offset	integer (0:MAX)	-	1setOf (integer(0:MAX) | rangeOfInteger(0:MAX))
stitching-locations	1setOf integer(0:MAX)	-	1setOf (integer(0:MAX) | rangeOfInteger(0:MAX))
pages-per-subset	1setOf integer(1:MAX)	-	boolean

796 4.1 Job Template attributes defined for Job-wide effect in use with multi-document
797 jobs

798 This section defines additional Job Template attributes that have Job-wide effect and so are intended for use in the
799 creation of with multi-document Jobs. These Job Template attributes have the "job-" prefix to indicate this their Job
800 wide scope. When Clients supply these job-wide Job Template attributes, Client MUST supply Tthese Job Template
801 attributes MUST be supplied in Job Creation and Validate-Job operations only. Clients MUST NOT supply these Job
802 Template attributes as Document Template attributes in the Send-Document and Send-URI operations ([ippdoc]) or
803 in any other operations. Clients MUST NOT supply these This Job Template attributes MUST NOT be supplied as
804 member attributes of in the "page-overrides" Job Template attribute [ippoOverride]. Unless specified otherwise.

---

[16] The "job-finishings" and "job-finishings-col" Job Template attributes also include corresponding "job-finishings-
ready" (1setOf enum) and "job-finishings-col-ready" (1setOf collection).

805 each Job Template attribute has a corresponding "xxx-default" and "xxx-supported Job Template Printer attribute.
806 See Table 11 for the attribute syntax.

807 **4.1.1 job-copies (integer(1:MAX))**

808 This OPTIONAL Job Template attribute specifies the number of job copies, i.e., with all of the Documents taken
809 together. Its interpretation is independent of the value of the "multiple-document-handling" Job Template attribute.
810 See the "copies" Job Template attribute defined in [rfc2911] section 4.2.5 which switches between job copies and
811 document copies depending on the value of the "multiple-document-handling" Job Template attribute ([rfc2911]
812 section 4.2.4). The "job-copies" Job Template attribute is equivalent to "copies" with "multiple-document-handling" =
813 'single-document-new-sheet'.

814 4.1.1.1 job-copies default (integer(1:MAX))

815 This OPTIONAL Job Template Printer attribute specifies the default number of copies for the job as a whole. The
816 Printer MUST support this attribute if it supports the "job-copies" Job Template attribute.

817 4.1.1.2 job-copies supported (rangeOfInteger(1:MAX))

818 This OPTIONAL Job Template Printer attribute specified the supported range of the number of copies for the job as a
819 whole. The Printer MUST support this attribute if it supports the "job-copies" Job Template attribute.

820 **4.1.2 job-cover-back (collection)**

821 This OPTIONAL Job Template attribute specifies the cover for the back of the job, i.e., with all of the Documents
822 taken together and is independent of the value of the "multiple-document-handling" Job Template attribute. The
823 member attributes are the same as "cover-back" (see [pwg5100.3] section 3.1). However, the "cover-back" Job
824 Template attribute switches between a job back cover and a document back cover depending on the value of the
825 "multiple-document-handling" Job Template attribute ([rfc2911] section 4.2.4). The "job-cover-back" Job Template
826 attribute is equivalent to "cover-back" with "multiple-document-handling" = 'single-document-new-sheet'.

827 4.1.2.1 job-cover-back-default (collection)

828 This OPTIONAL Job Template Printer attribute specifies the default the cover for the back of the job. The Printer
829 MUST support this attribute if it supports the "job-cover-back" Job Template attribute.

830 4.1.2.2 job-cover-back-supported (1setOf type2 keyword)

831 This OPTIONAL Job Template Printer attribute specified the supported member attributes of the "job-cover-back"
832 Job Template collection attributes. The Printer MUST support this attribute if it supports the "job-cover-back" Job
833 Template attribute.

834 **4.1.3 job-cover-front (collection)**

835 This OPTIONAL Job Template attribute specifies the cover for the front of the job, i.e., with all of the Documents
836 taken together and is independent of the value of the "multiple-document-handling" Job Template attribute. The
837 member attributes are the same as the "cover-front" Job Template attribute (see [pwg5100.3] section 3.2). However,
838 the "cover-front" Job Template attribute switches between a job front cover and a document front cover depending on
839 the value of the "multiple-document-handling" Job Template attribute ([rfc2911] section 4.2.4). The "job-cover-front"
840 Job Template attribute is equivalent to "cover-front" with "multiple-document-handling" = 'single-document-new-
841 sheet'.

842 **4.1.3.1 job-cover-front-default (collection)**

843 This OPTIONAL Job Template Printer attribute specifies the default the cover for the front of the job. The Printer
844 MUST support this attribute if it supports the "job-cover-front" Job Template attribute.

845 **4.1.3.2 job-cover-front-supported (1setOf type2 keyword)**

846 This OPTIONAL Job Template Printer attribute specified the supported member attributes of the "job-cover-front" Job
847 Template attributes. The Printer MUST support this attribute if it supports the "job-cover-front" Job Template
848 collection attribute.

849 4.1.4 job-finishings (1setOf type2 enum)

850 This OPTIONAL Job Template attribute specifies the job finishings, i.e., with all of the Documents taken together. Its
851 interpretation is independent of the value of the "multiple-document-handling" Job Template attribute. See the
852 "finishings" Job Template attribute defined in [rfc2911] section 4.2.6 which switches between job finishings and
853 document finishings depending on the value of the "multiple-document-handling" Job Template attribute ([rfc2911]
854 section 4.2.4). The "job-finishings" Job Template attribute is equivalent to "finishings" with "multiple-document-
855 handling" = 'single-document-new-sheet'.

856 **4.1.4.1 job-finishings-default (1setOf type2 enum)**

857 This OPTIONAL Job Template Printer attribute specifies the default job finishings. The Printer MUST support this
858 attribute if it supports the "job-finishings" Job Template attribute.

859 **4.1.4.2 job-finishings-ready (1setOf type2 enum)**

860 This OPTIONAL Job Template Printer attribute specifies the ready job finishings, that is, the job finishings that maybe
861 used without operation intervention. The Printer MUST support this attribute if it supports the "job-finishings" Job
862 Template attribute.

863 **4.1.4.3 job-finishings-supported (1setOf type2 keyword)**

864 This OPTIONAL Job Template Printer attribute specified the supported job finishings values. The Printer MUST
865 support this attribute if it supports the "job-finishings" Job Template attribute.

866 4.1.5 job-finishings-col (1setOf collection)

867 This OPTIONAL Job Template attribute specifies the job finishings collection, i.e., with all of the Documents taken
868 together. Its interpretation is independent of the value of the "multiple-document-handling" Job Template attribute.
869 See the "finishings-col" Job Template attribute defined in [pwg5100.3] section 3.2 which switches between job
870 finishings collection and document finishings collection depending on the value of the "multiple-document-handling"
871 Job Template attribute ([rfc2911] section 4.2.4). The "job-finishings-col" Job Template attribute is equivalent to
872 "finishings-col" with "multiple-document-handling" = 'single-document-new-sheet'.

873 **4.1.5.1 job-finishings-col-default (collection)**

874 This OPTIONAL Job Template Printer attribute specifies the default job finishings collection. The Printer MUST
875 support this attribute if it supports the "job-finishings-col" Job Template attribute.

876 **4.1.5.2 job-finishings-col-ready (collection)**

877 This OPTIONAL Job Template Printer attribute specifies the ready job finishings collection, that is, the job finishings
878 collection that maybe used without operation intervention. The Printer MUST support this attribute if it supports the
879 "job-finishings-col" Job Template attribute.

880 **4.1.5.3 job-finishings-col-supported (1setOf type2 keyword)**

881 This OPTIONAL Job Template Printer attribute specified the supported member attributes of the "job-finishings-col"
882 Job Template collection attribute. The Printer MUST support this attribute if it supports the "job-finishings-col" Job
883 Template attribute.

4.2 pages-per-subset (1setOf integer)

885 This OPTIONAL Job Template attribute partitions all of the input Pages of the Job into separate Page Subsets. The
886 Printer MUST apply all other supplied Job Template attributes that separately affect Documents to each of the Page
887 Subsets instead to Documents. So the Printer produces each Page Subset and Page Subset copy as a separate
888 Finished Document. As a consequence, the Printer MUST start each Page Subset on a new Sheet. For example, if
889 the "finishings" Job Template attribute is also supplied with a value of 'staple', the Printer MUST staple each Page
890 Subset separately.

891 If the Printer supports an 'xxx' Job Template attribute that affects Documents, such as "finishings" or "media" (as
892 opposed to affecting Jobs as a whole, such as "job-priority" or "job-finishings") and supports the "pages-per-subset"
893 attribute, the Printer MUST support that 'xxx' Job Template attribute in combination with the "pages-per-subset" Job
894 Template attribute as well. For example, if the Printer supports the "finishings" = 'staple' Job Template attribute and
895 the "pages-per-subset" Job Template attribute, the Printer MUST support "finishings" = 'staple' in combination with
896 "pages-per-subset" attribute as well.

897 For Job Template attributes that affect the Job as a whole, such as "job-priority", "job-hold", and "job-finishings" (see
898 section 4.1.4), the Printer MUST affect the Job as a whole even when "pages-per-subset" is supplied.

899 The value of the "pages-per-subset" attribute specifies the number of Pages that the Printer MUST produce in each
900 Page Subset and Page Subset copy. When the number of integers in this attribute is 1, the Printer divides the Pages
901 into separate Page Subsets containing that number of Pages. When the number of integers in this attribute exceeds
902 1, the first integer specifies the number of Pages in the first Page Subset; the second integer specifies the number of
903 Pages in the second Page Subset and so on.

904 If the integer sequence of values of the "pages-per-subset" Job Template attribute are exhausted before partitioning
905 all of the Pages of the Job, the Printer MUST start over at the beginning of the sequence and continue until all Pages
906 are partitioned. The last Page Subset does not have to coincide with the last value in this attribute. Furthermore, the
907 last Page Subset does not have to have a full number of Pages. Neither condition is considered a warning or an
908 error.

909 If the client supplies more integer values for the "pages-per-subset" attribute than the Printer supports, the Printer
910 MUST treat the remaining values as Unsupported Attribute values as follows (see [rfc2911] section 3.1.7):

911   If the client supplies the "attribute-fidelity" Operation attribute with a 'false' value (see section 3.1.1) or omits
912   the attribute altogether, the Printer MUST (1) otherwise accept the Job, (2) return the 'successful-ok-
913   attributes-ignored-or-substituted' status code, and (3) return in the Unsupported Attribute Group the
914   additional values not supported.

915   If the client supplies either the "attribute-fidelity" Operation attribute with a 'true' value or the "job-mandatory-
916   attributes" Operation attribute with the 'pages-per-subset' keyword value (see section 3.1.2), the Printer
917   MUST reject the job.

918   ISSUE 04: PWG 5100.4 was silent on whether a Printer MUST support any number of integer values for "pages-per-
919   subset" or whether the number was implementation dependent. Is supporting only a single value considered a
920   conforming implementation so that the above error handling is sufficient?

4.2.1 Effect of "multiple-document-handling" and "copies" attributes on Page Subsets

922   The Printer MUST treat the sequence of input Pages from all of the Documents in the Job as a single sequence of
923   consecutive Pages, independent of the value of the "multiple-document-handling" Job Template attribute (see
924   [rfc2911] section 4.2.4). In other words, when partitioning the input Pages of the Job, the Printer MUST NOT
925   observe Document boundaries. So some Page Subsets may have Pages belonging to more than one Document.

926   If the "copies" Job Template attribute is '1', the resulting Page Subsets are the same for all values of the "multiple-
927   document-handling" Job Template attribute. When the "copies" Job Template attribute is greater than '1', Table 9
928   show the effect on the Page Subsets of the "multiple-document-handling" Job Template (if supplied or defaulted).
929   Assume that the partitioning of the Pages into Page Subsets 1, 2, 3 and that "copies" = '4'.

930   **Table 9 - Effect of "multiple-document-handlinge" attribute on Page Subsets when "copies" > 1**

"multiple-document-handling" value	Effect on Page Subsets 1,2,3 when "copies" = '4'
'separate-documents-uncollated-copies'	1,1,1,1 2,2,2,2 3,3,3,3
'separate-documents-collated-copies'	1, 2, 3 1, 2, 3 1, 2, 3 1, 2, 3
'single-document'	1, 2, 3 1, 2, 3 1, 2, 3 1, 2, 3
'single-document-new-sheet'	1, 2, 3 1, 2, 3 1, 2, 3 1, 2, 3

931

4.2.2 Examples of the "pages-per-subset" attribute

933   This subsection gives various examples to show normal and corner cases involving the "pages-per-subset" attribute
934   in order of increasing complexity.

4.2.2.1 A single 11-page document with a single "pages-per-subset" value: '3'

936   A single document consisting of 11 Pages: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 is partitioned into Page Subsets consisting
937   of 3 Pages each which are stapled:

```
938        Print-Job
939           job attribute group:
940                "finishings" = 'staple'
941                "sides' = 'two-sided-long'
942                "pages-per-subset" = '3'
943
```
944   The result is 4 separately stapled Page Subsets (subsets with only 1 sheet SHOULD NOT be stapled):

```
945        Page Subset 1:
946            Page 1 on the front side of the first Sheet
947            Page 2 on the back side of the first Sheet
948            Page 3 on the front side of the second Sheet
949        Page Subset 2:
950            Page 4 on the front side of the first Sheet
951            Page 5 on the back side of the first Sheet
952            Page 6 on the front side of the second Sheet
953        Page Subset 3:
954            Page 7 on the front side of the first Sheet
955            Page 8 on the back side of the first Sheet
956            Page 9 on the front side of the second Sheet
957        Page Subset 4:
958            Page 10 on the front side of the first Sheet
959            Page 11 on the back side of the first Sheet
960
```

4.2.2.2 A single 11-page document with four "pages-per-subset" values: '3', '2', '4', '2'

A single document consisting of 11 Pages: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 is partitioned into 4 Page Subsets consisting of 3, 2, 4, and 2 Pages each which are stapled:

```
        Print-Job
            job attribute group:
                "finishings" = 'staple'
                "sides' = 'two-sided-long'
                "pages-per-subset" = '3', '2', '4', '2'
```

The result is 4 separately stapled Page Subsets (subsets with only 1 sheet SHOULD NOT be stapled):

```
        Page Subset 1:
            Page 1 on the front side of the first Sheet
            Page 2 on the back side of the first Sheet
            Page 3 on the front side of the second Sheet
        Page Subset 2:
            Page 4 on the front side of the first Sheet
            Page 5 on the back side of the first Sheet
        Page Subset 3:
            Page 6 on the front side of the first Sheet
            Page 7 on the back side of the first Sheet
            Page 8 on the front side of the second Sheet
            Page 9 on the front side of the first Sheet
        Page Subset 4:
            Page 10 on the front side of the first Sheet
            Page 11 on the back side of the first Sheet
```

4.2.2.3 A single 11-page document with two "pages-per-subset" values: '3', '2'

A single document consisting of 11 Pages: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 is partitioned into Page Subsets consisting of 3 and 2 Pages each which are stapled.

```
990      Print-Job
991         job attribute group:
992            "finishings" = 'staple'
993            "sides' = 'two-sided-long'
994            "pages-per-subset" = '3', '2'
995
```

996   The result is 5 separately stapled Page Subsets (subsets with only 1 sheet SHOULD NOT be stapled):

```
997      Page Subset 1:
998         Page 1 on the front side of the first Sheet
999         Page 2 on the back side of the first Sheet
1000        Page 3 on the front side of the second Sheet
1001     Page Subset 2:
1002        Page 4 on the front side of the first Sheet
1003        Page 5 on the back side of the first Sheet
1004     Page Subset 3:
1005        Page 6 on the front side of the first Sheet
1006        Page 7 on the back side of the first Sheet
1007        Page 8 on the front side of the second Sheet
1008     Page Subset 4:
1009        Page 9 on the front side of the first Sheet
1010        Page 10 on the back side of the first Sheet
1011     Page Subset 5:
1012        Page 11 on the front side of the first Sheet
1013
```

1014   **4.2.2.4 A two 5-page documents with one "pages-per-subset" value: '3'**

1015   A two document consisting of 5 Pages eachwhere Document 1 has Pages: 1, 2, 3, 4, 5 and Document 2 has Pages:
1016   6, 7, 8, 9, 10 is partitioned into Page Subsets consisting of 3 Pages each which are stapled:

```
1017     Create-Job
1018        job attribute group:
1019           "finishings" = 'staple'
1020           "sides' = 'two-sided-long'
1021           "pages-per-subset" = '3'
1022     Send-Document
1023     Send-Document
1024
```

1025   The result is 4 separately stapled Page Subsets (subsets with only 1 sheet SHOULD NOT be stapled):

```
1026        Page Subset 1:
1027           Page 1 (1st Page of Document 1) on the front side of the first Sheet
1028           Page 2 on the back side of the first Sheet
1029           Page 3 on the front side of the second Sheet
1030        Page Subset 2:
1031           Page 4 on the front side of the first Sheet
1032           Page 5 on the back side of the first Sheet
1033           Page 6 (1st Page of Document 2) on the front side of the second Sheet
1034        Page Subset 3:
1035           Page 7 on the front side of the first Sheet
1036           Page 8 on the back side of the first Sheet
1037           Page 9 on the front side of the second Sheet
1038        Page Subset 4:
1039           Page 10 on the front side of the first Sheet
1040
```

1041   **4.2.2.5 Two 5-page documents with one "pages-per-subset" value: '3', "copies" = '2', "multiple-document-**
1042   **handling" = 'separate-documents-uncollated-copies'**

1043   A two document consisting of 5 Pages each where Document 1 has Pages: 1, 2, 3, 4, 5 and Document 2 has Pages:
1044   6, 7, 8, 9, 10 is partitioned into Page Subsets consisting of 3 Pages each which are stapled. In addition, "copies" =
1045   '2' and "multiple-document-handling" = 'separate-documents-uncollated-copies':

```
1046        Create-Job
1047           job attribute group:
1048                 "copies" = '2'
1049                 "multiple-document-handling" = 'separate-documents-uncollated-copies'
1050                 "finishings" = 'staple'
1051                 "sides' = 'two-sided-long'
1052                 "pages-per-subset" = '3'
1053        Send-Document
1054        Send-Document
1055
```

1056   The result is 8 separately stapled Page Subsets (subsets with only 1 sheet SHOULD NOT be stapled):

```
1057      Page Subset 1:
1058         Page 1 (1st Page of Document 1) on the front side of the first Sheet
1059         Page 2 on the back side of the first Sheet
1060         Page 3 on the front side of the second Sheet
1061      Page Subset 2 (copy of Page Subset 1):
1062         Page 1 (1st Page of Document 1) on the front side of the first Sheet
1063         Page 2 on the back side of the first Sheet
1064         Page 3 on the front side of the second Sheet
1065      Page Subset 3:
1066         Page 4 on the front side of the first Sheet
1067         Page 5 on the back side of the first Sheet
1068         Page 6 (1st Page of Document 2) on the front side of the second Sheet
1069      Page Subset 4 (copy of Page Subset 3):
1070         Page 4 on the front side of the first Sheet
1071         Page 5 on the back side of the first Sheet
1072         Page 6 (1st Page of Document 2) on the front side of the second Sheet
1073      Page Subset 5:
1074         Page 7 on the front side of the first Sheet
1075         Page 8 on the back side of the first Sheet
1076         Page 9 on the front side of the second Sheet
1077      Page Subset 6 (copy of Page Subset 5):
1078         Page 7 on the front side of the first Sheet
1079         Page 8 on the back side of the first Sheet
1080         Page 9 on the front side of the second Sheet
1081      Page Subset 7:
1082         Page 10 on the front side of the first Sheet
1083      Page Subset 8 (copy of Page Subset 7):
1084         Page 10 on the front side of the first Sheet
1085
```

1086   **4.2.2.6 Two 5-page documents with one "pages-per-subset" value: '3', "copies" = '2', "multiple-document-**
1087   **handling" = 'separate-documents-collated-copies' or 'single-document' or 'single-document-new-**
1088   **sheet'**

1089   This example is the same as example 4.2.2.5, but with the other values of "multiple-document-handling". A two
1090   document consisting of 5 Pages each where Document 1 has Pages: 1, 2, 3, 4, 5 and Document 2 has Pages: 6, 7,
1091   8, 9, 10 is partitioned into Page Subsets consisting of 3 Pages each which are stapled. In addition, "copies" = '2' and
1092   "multiple-document-handling" = 'separate-documents-uncollated-copies':

```
1093      Create-Job
1094         job attribute group:
1095             "copies" = '2'
1096             "multiple-document-handling" = 'separate-documents-collated-copies'
1097                                     OR 'single-document'
1098                                     OR 'single-document-new-sheet'
1099             "finishings" = 'staple'
1100             "sides' = 'two-sided-long'
1101             "pages-per-subset" = '3'
1102      Send-Document
1103      Send-Document
1104
```

1105   The result is 8 separately stapled Page Subsets (subsets with only 1 sheet SHOULD NOT be stapled):

```
1106        Page Subset 1:
1107           Page 1 (1st Page of Document 1) on the front side of the first Sheet
1108           Page 2 on the back side of the first Sheet
1109           Page 3 on the front side of the second Sheet
1110        Page Subset 2:
1111           Page 4 on the front side of the first Sheet
1112           Page 5 on the back side of the first Sheet
1113           Page 6 (1st Page of Document 2) on the front side of the second Sheet
1114        Page Subset 3:
1115           Page 7 on the front side of the first Sheet
1116           Page 8 on the back side of the first Sheet
1117           Page 9 on the front side of the second Sheet
1118        Page Subset 4:
1119           Page 10 on the front side of the first Sheet
1120
1121        Page Subset 5 (copy of Page Subset 1):
1122           Page 1 (1st Page of Document 1) on the front side of the first Sheet
1123           Page 2 on the back side of the first Sheet
1124           Page 3 on the front side of the second Sheet
1125        Page Subset 6 (copy of Page Subset 2):
1126           Page 4 on the front side of the first Sheet
1127           Page 5 on the back side of the first Sheet
1128           Page 6 (1st Page of Document 2) on the front side of the second Sheet
1129        Page Subset 7 (copy of Page Subset 3):
1130           Page 7 on the front side of the first Sheet
1131           Page 8 on the back side of the first Sheet
1132           Page 9 on the front side of the second Sheet
1133        Page Subset 8 (copy of Page Subset 4):
1134           Page 10 on the front side of the first Sheet
1135
```

1136   4.2.3 Why no "pages-per-subset-default" Printer attribute?

1137   There is no "pages-per-subset-default" Printer attribute because it isn't clear that users would find it useful to use the
1138   same partitioning over and over. Furthermore, if there were a "pages-per-subset-default" Printer attribute that the
1139   Printer applied when the client omits the "pages-per-subset" Job Template attribute there would be no simple way for
1140   the client to indicate the most likely case that no Page Subsets were wanted.

1141   4.2.4 pages-per-subset-supported (boolean)

1142   This attribute specifies whether or not the Printer supports the "pages-per-subset" Job Template attribute.

1143   ISSUE 05: PWG 5100.4 had the "pages-per-subset-supported" attribute specified as a boolean. MUST a Printer
1144   support any number of integer values for the "pages-per-subset" (1setOf integer(1:MAX)) Job Template attribute? If
1145   supporting a maximum number, even as low as '1', is considered conforming, should we change the attribute syntax
1146   of the "pages-per-subset-supported" to integer(1:MAX) to indicate the maximum number of values supported by the
1147   Printer? Or is it sufficient for the Printer to return in the Unsupported Attributes group the remaining values of the
1148   "pages-per-subset" (integer(1:MAX)) attribute that aren't supported?

1149   ISSUE 06: What about the maximum number of pages in a Page Subset? MUST a Printer support any number up
1150   to MAX in any Page Subset?

1151 5   Job Description attributes

1152 Table 10 lists the new Job Description defined in this IPP specification. Job Description attributes are Job object
1153 attributes that are filled in by the Printer. Some Job Description attribute values are supplied by the client in the Job
1154 operation using corresponding Operation attributes as indicated with "**▶y**". The Printer MUST NOT support
1155 modification of any of these Job Description attributes using the Set-Job-Attributes operation ([rfc3380]).

Legend:	
IPP attribute syntax	the attribute syntax (see [rfc2911] section 4.1).
Set by	indicates whether the value is set by the client or Printer in the Job Creation operation:
	client - means that the Printer MUST populate this Job Description attribute by copying *from* the corresponding Operation attribute that the client MAY supply in the Job Creation operation. See Table 6 for the corresponding Operation attribute.
	Printer - means that the Printer sets the value based on the state of the Printer.
Printer conformance	indicates MUST or MAY for Printer conformance.
Reference	references to the sub-section in this document if there is significant information there. Those subsections that are only references to other specifications contain only that reference in the Reference column.

1156   **Table 10 - Job Description attributes**

Job Description attribute name	IPP Attribute Syntax	Set by	Printer conformance	Reference
ipp-attribute-fidelity	boolean	client	MAY	[this spec] §5.1
job-errors-count	integer(0:MAX)	Printer	MAY	[this spec] §5.2
job-mandatory-attributes	1setOf type2 keyword	client	MAY	[this spec] §5.3
job-warnings-count	integer(0:MAX)	Printer	MAY	[this spec] §5.4
output-device-requested	name(127)	client	MAY	[this spec] §5.5
output-device-assigned	name(127)	Printer	MAY	[rfc2911] §4.3.7.2

1157
1158 Most of the existing "job-state" and "job-state-reasons" Job Description attribute values apply equally well to
1159 individual documents in a multi-document job (with removal of the 'job-' prefix for those that apply to both Job and
1160 Document). Furthermore, the job states are completely service-type neutral, so they can apply to scanning. faxing,
1161 formatting processes as well. The job state reasons have a number of reasons that are print service specific, but
1162 most can apply to other types of service as well. The reason for separating state from reasons, is so that the states
1163 can be the fundamental states that most implementations have, while the state reasons can vary depending on the
1164 sophistication of the system. The states are the ones that clients are most likely to base actions upon, and the state
1165 reasons are more information, both for programs and people.

1166 5.1 ipp-attribute-fidelity (boolean)

1167 This OPTIONAL Job Description attribute indicates the value of the corresponding "ipp-attribute-fidelity" Operation
1168 attribute ([rfc2911] section 3.2.1.1)[17] that the client supplied in the Job Creation operation. This Job Description
1169 attribute has no effect on the processing of the job once the Job Creation operation has been accepted[18]. However,
1170 this attribute does provide an audit capability to the user and service desk for comparing unexpected printed results
1171 with what was submitted.

---

[17] The "ipp-attribute-fidelity" attribute is defined only as an Operation attribute in [rfc2911]. This specification is defining it as a Job Description attribute as well which the Printer MAY support.
[18] The "ipp-attribute-fidelity" and "job-mandatory-attributes" Operation attributes do have effect after the Job Creation operation when the Document Object is supported [ippdoc].

5.2 job-errors-count (integer(0:MAX))

This OPTIONAL Job Description attribute counts the number of errors encountered processing the job as a whole. An error where some portion of the printed output is not present, such as a glyph encountered which isn't in the Printer's font or an image in a page was in a format that the Printer didn't support, though the Printer did support the overall document format.

5.3 job-mandatory-attributes (1setOf type2 keyword)

This OPTIONAL Job Description attribute indicates which Job Template attributes that the client required that the Printer Honor in order to accept the Job Creation request. The Printer populates this attribute with the value of the corresponding "job-mandatory-attributes" Operation attribute (see section 3.1.2) supplied by the client in the Job Creation operation. This Job Description attribute has no effect on the processing of the job once the Job Creation operation has been accepted[18]. However, this Job Description attribute does provide an audit capability of the Job object in the Job History (see [rfc2911] section 4.3.7.2) to the user and service desk for comparing unexpected printed results with what was submitted. See section 3.1.2 for additional details of the semantics of this "job-mandatory-attributes" Operation attribute that are not repeated here.

5.4 job-warnings-count (integer(0:MAX))

This OPTIONAL Job Description attribute counts the number of warnings encountered processing the job as a whole. A warning is where no information is lost, but the appearance of the printed output MAY not be as expected.

5.5 output-device-requested (name(127))

This OPTIONAL Job Description attribute indicates the name of the output device that the client has supplied in the "output-device-requested" Operation attribute (see section 3.1.3), if any, in the Job Creation operation. The Printer sets the Job's "output-device-assigned" Job Description attribute (see [rfc2911] section) to the name of the actual device assigned.

6 New values to existing attributes

This section defines new values to existing attributes.

6.1 New job-state-reasons(1setOf type2 keyword) Values

The REQUIRED "job-state-reasons" Job Description attributes ([rfc2911] section 4.3.8) provide additional information about the job's current state, i.e., information that augments the value of the job's "job-state" attribute.

These new values MAY be used with any job state for which the reason makes sense. When implemented, the Printer MUST return these values when the reason applies and MUST NOT return them when the reason no longer applies whether the value of the Job's "job-state" attribute changed or not. When the Job does not have any reasons for being in its current state, the value of the Job's "job-state-reasons" attribute MUST be 'none'.

Note: While values cannot be added to the "job-state" attributes without impacting deployed clients that take actions upon receiving "job-state" values, it is the intent that additional "job-state-reasons" values can be defined and registered without impacting such deployed clients. In other words, the "job-state-reasons" attribute are intended to be extensible.

1207   Table 11 lists the new keyword values for the "job-state-reasons" attribute defined in this specification as indicated in
1208   the References column. In Table 11 the keywords are listed in alphabetic order, while in their descriptions following
1209   Table 11, they are listed in the most likely order of occurrence to help understanding.

1210   **Table 11 - New "job-state-reasons" attribute values**

IPP Job Description attribute name	IPP Attribute Syntax plus Values	Printer conformance	Reference
job-state-reasons	1setOf type2 keyword	MUST	[rfc2911] §4.3.8
	digital-signature-did-not-verify	MAY	[this spec] §6.1
	digital-signature-type-not-supported	MAY	[this spec] §6.1
	errors-detected	MAY	[this spec] §6.1
	job-digital-signature-wait	MAY	[this spec] §6.1
	warnings-detected	MAY	[this spec] §6.1

1211
1212   For ease of understanding, the following value descriptions are presented in the order in which the reasons are likely
1213   to occur (if implemented):

1214   **'digital-signature-type-not-supported'**: The Job contains a digital signature type that is not supported.
1215   Implementation or site policy determines the state of the Job once this condition is detected.

1216   **'job-digital-signature-wait'**: The Job is currently being held because the Job was submitted with a
1217   "document-digital-signature" attribute value that is not supported. The operator MAY either cancel
1218   the job or release it to be processed.

1219   **'digital-signature-did-not-verify'**: The Job contains a digital signature type that is supported (see section
1220   3.2.2), but the signature did not verify when the Printer attempted to verify the signature.

1221   **'errors-detected'** : If the Printer supports this value, the Printer MUST add this value to "job-state-reasons"
1222   when the Printer generates the first error message. That is, a single occurrence of this value is
1223   present in the "job-state-reasons" Job Description attribute if the Printer has generated one or more
1224   errors. An error indicates loss of information, such as a page not imaged. See also the 'warnings-
1225   detected' value.

1226   **'warnings-detected'** : If the Printer supports this value, the Printer MUST add this value to "job-state-
1227   reasons" when the Printer generates the first warning message. That is, a single occurrence of this
1228   value is present in the "job-state-reasons" Job Description attribute if the Printer has generated one
1229   or more warnings. A warning indicates something did not go as expected, but there was no loss of
1230   information. For example, a font substitution. See also the 'errors-detected' value.

6.2 New media (type 3 keyword | name(MAX)) Values

1232   This section specifies one new value for the "media" Job Template attribute:

1233   **'choice_iso_a4_210x297mm_na_letter_8.5x11in'**: The client has explicitly allowed a choice of media for
1234   the Job. The Printer MUST choose physical media of size na_letter_8.5x11in (215.9 x 279.4 mm) or
1235   iso_a4_210x297mm. The Printer MUST NOT choose physical media of any other size. Applications
1236   generating document content for such choice media MUST format the document data so that no
1237   scaling is needed in order to fit on any of the specified choices of media. The Printer MAY scale the
1238   image to fit, but any scaling MUST be isomorphic scaling and without image content loss.

1239   **ISSUE 07:** Why even allow the Printer to scale? Lets simplify this choice concept to sizes that are
1240   approximately the same, such as A4 and na-letter, rather than allowing a choice, of, say, A4 or A3
1241   which would require scaling. That makes interoperability more difficult.

1242   This section also generalizes the choice mechanism for inclusion in a revision to the PWG IEEE/ISTO 5101.1
1243   Candidate Standard [pwg5101.1]. This specification gives the *outline* of the proposed addition to [pwg5101.1] for
1244   information only, in order to agree to the one new value defined for use with IPPFAX, namely,
1245   **'choice_iso_a4_210x297mm_na_letter_8.5x11in'.**

1246   The proposed extension to [pwg5101.1] will have the following requirements:

1247   1.   The ABNF will be extended to define the **`choice_`** prefix to introduce a list of choices of self describing
1248   names.

1249   2.   Following the **`choice_`** prefix will be two or more fully self describing names, including all three fields.

1250   3.   The order of the list of fully self describing names MUST be in alphabetic order, so that there is only one
1251   canonical order for each list of choices.

1252   4.   Printer MAY support dynamic combinations of supported values or MAY support the entire choice value as a
1253   conventional keyword which it simply matches for validation purposes.

1254   5.   Printer MUST map the choice value to a particular supported value when selecting the actual media for
1255   marking.

1256   6.   If the Printer supports a **'choice_xxx'** "media" attribute value and the "media-ready" Printer attribute, the
1257   Printer MUST include the **'choice_xxx'** value in its "media-ready" Printer attribute as well as the currently
1258   loaded value(s) when at least one of the members of a choice value is ready. For example, if
1259   **'iso_a4_210x297mm'** is loaded, then the "media-ready" Printer attribute MUST include the
1260   **'iso_a4_210x297mm'** and the **'choice_iso_a4_210x297mm_na_letter_8.5x11in'** values.

7   New Printer Description attributes

1262   This section lists *the new* Printer Description attributes defined in this document. These Printer attributes describe
1263   the Printer, such as "printer-name" and "printer-location". Some of them are "xxx-supported" and "xxx-default" for
1264   Operation attributes (see section 3) that the client can supply in a Job Creation or Document Creation request.
1265
1266   The column labels are:

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Column Heading	
"**Attribute Syntax**"	the attribute syntax (see [rfc2911] section 4.1). Many "xxx-default" and "xxx-supported" attributes have the 'collection' syntax which consists of a number of member attributes. These member attributes are not listed in this table when they are the same as the corresponding "xxx" attribute in Table 8. Only those few Printer attribute collection attributes that do not have a corresponding Job Template attributes show the member attributes in this table.
"**Printer Conf.**"	the IPP/1.1 Printer conformance requirements for supporting the attribute. Those attributes labeled as "MAY" may have conditional requirements that require their support, if the Printer supports the corresponding Operation attribute. If a Printer supports the "xxx" Operation attribute, then it MUST also support the corresponding "xxx-default" and "xxx-supported" Printer attributes.
"**Reference**"	the section which defines the semantics of the attribute.

1267

1268   **Table 12 - New Printer Description attributes**

Printer **Description** attribute name	Attribute Syntax	Printer Conf.	Reference
document-charset-default	charset	CMUST[19]	[this-spec] §7.1
document-charset-supported	1setOf charset	CMUST[19]	[this-spec] §7.2
document-digital-signature-default	type2 keyword	MAY	[this-spec] §7.3
document-digital-signature-supported	1setOf type2 keyword	MAY	[this-spec] §7.4
document-format-details-default	collection	CMUST[20]	[this-spec] §7.5
document-format-details-supported	1setOf type2 keyword	CMUST[20]	[this-spec] §7.6
document-format-details-implemented	1setOf collection	CMUST[20]	[this-spec] §7.7
document-format-version-default	text(127)	MAY	[this-spec] §7.8
document-format-version-supported	1setOf text(127)	MAY	[this-spec] §7.9
document-natural-language-default	naturalLanguage	MAY	[this-spec] §7.10
document-natural-language-supported	1setOf naturalLanguage	MAY	[this-spec] §7.11
output-device-requested-supported	1setOf name(127)	MAY	[this spec] §7.12

1269
1270   The remainder of this section defines the Printer Description attributes that are not defined in other specifications.
1271   Most of these are "xxx-default" and "xxx-supported" Printer Description attributes. A Printer MUST support these
1272   Printer Description attributes, if it supports the corresponding Operation attributes, in order to indicate the default and
1273   supported values that the Printer supports.

1274   7.1 document-charset-default (charset)

1275   This CONDITIONALLY REQUIRED Printer Description attribute indicates the default charset that the Printer will
1276   assume for charset-ambiguous document formats when the client omits the "document-charset" Operation attribute
1277   (section 3.2.1). The Printer MUST support this attribute if it supports any charset-ambiguous document formats (see
1278   section 3.2.1)

---

[19] The Printer MUST support the "document-charset-default" and "document-charset-supported" Printer Description
attributes, if the Printer supports a charset-ambiguous document format (see section 3.2.1).
[20] The Printer MUST support the "document-format-details-default", "document-format-details-supported", and
"document-format-details-implemented" Printer attributes if the Printer supports a packaging document format, such
as application/zip or multipart/related.

1279 ## 7.2 document-charset-supported (1setOf charset)

1280 This CONDITIONALLY REQUIRED Printer Description attribute indicates the charsets that the Printer supports in
1281 Document Content, that is, supports as values of the "document-charset" Operation attribute (section 3.2.1). The
1282 Printer MUST support this attribute if it supports any charset-ambiguous document formats (see section 3.2.1).

1283 ## 7.3 document-digital-signature-default (type2 keyword)

1284 This OPTIONAL Printer Description attribute indicates the default digital signature, if any, that the Printer will assume
1285 when the client omits the "document-digital-signature" Operation attribute (section 3.2.2). The Printer MUST support
1286 this attribute if it supports the "document-digital-signature" Operation attribute.

1287 ## 7.4 document-digital-signature-supported (1setOf type2 keyword)

1288 This OPTIONAL Printer Description attribute indicates the digital signature technologies that the Printer supports in
1289 Document Contents, that is, supports as values of the "document-digital-signature" Operation attribute (section
1290 3.2.2). The Printer MUST support this attribute if it supports the "document-digital-signature" Operation attribute.

1291 ## 7.5 document-format-details-default (collection)

1292 This CONDITIONALLY REQUIRED Printer Description attribute indicates the default document format details that
1293 the Printer will assume when the client omits the "document-format-details" Operation attribute (section §3.2.4). The
1294 member attributes are the same as "document-format-details" (see section 3.2.4). The Printer MUST support this
1295 attribute if it supports the "document-format-details" Operation attribute.

1296 ## 7.6 document-format-details-supported (1setOf type2 keyword)

1297 This CONDITIONALLY REQUIRED Printer Description attribute lists the type2 keyword names of the member
1298 attributes of "document-format-details" that the Printer supports. If the Printer supports the "document-format-details"
1299 (1setOf collection) Operation attribute, the Printer MUST support this "document-format-details" (1setOf type2
1300 keyword) Printer Description attribute. Table 13 lists the type2 keywords defined for use in the "document-format-
1301 details-supported" Printer attribute.

1302   **Table 13 - Keyword values of "document-format-details-supported Printer attribute**

Type2 keyword values	Printer conformance
document-source-application-name	MAY
document-source-application-version	MAY
document-source-os-name	MAY
document-source-os-version	MAY
document-format	MUST
document-format-device-id	MAY
document-format-version	MUST
document-natural-language	MAY

1303

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1304 7.7 document-format-details-implemented (1setOf collection)

1305 ISSUE 08: Who needs the "document-format-details-implemented" attribute? Does PSI? We assume yes.
1306 However, if PSI does support Capabilities, then we shouldn't define "document-format-details-implemented" in this
1307 spec, since "document-format-details-implemented" is a poor man's capability mechanism. ACTION ITEM (Tom):
1308 Ask PSI whether they intend to use "document-format-details-implemented"? If not, should "document-format-
1309 details-implemented" be moved to the IPP Futures document, or just deleted and wait for someone to request it?

1310 This CONDITIONALLY REQUIRED[21] Printer Description attribute lists the combinations of the values of the member
1311 attributes of "document-format-details" that the Printer has implemented for a given "document-format". If the Printer
1312 supports the "document-format-details" Operation attribute, the Printer MUST support this "document-format-details-
1313 implemented" Printer Description attribute with the same member attributes that it supports for the "document-format-
1314 details" Operation attribute (section 3.2.4) as indicated in the Printer's "document-format-details-supported" Printer
1315 Description attribute (section 7.6). Each "xxx-implemented" member attribute is multi-valued with the same attribute
1316 syntax as the corresponding "document-format-details" attribute, with the exception of the "document-format-
1317 implemented" member attribute which is single-valued since it is the key attribute.

1318 The client SHOULD NOT assume that other combinations aren't supported or that a document will not be processed
1319 correctly if the document content does not contain the values that the document instances uses. For example, for
1320 the application/pdf MIME Media Type, if the "document-format-version" member attribute, is '1.3', '1.4', the client
1321 SHOULD NOT assume that a PDF/1.5 document cannot be processed.

1322 ISSUE 02: Bob's issue about truth in advertising. Don't penalize truth. Does allowing these Operation attribute
1323 keyword names in the "user-defined-attributes-supported" Printer attribute allow the Printer to accept any values
1324 without returning the attribute in the Unsupported Attributes group?

1325   **Table 14 - Member attributes of the "document-format-details-implemented" Printer attribute**

"document-format-details-implemented" member attributes	Reference
document-source-application-name-implemented (1setOf name(MAX))	3.2.4.1
document-source-application-version-implemented (1setOf text(127))	3.2.4.2
document-source-os-name-implemented (1setOf name(40))	3.2.4.3
document-source-os-version-implemented (1setOf text(40))	3.2.4.4
document-format-implemented (1setOf mimeMediaType)	3.2.4.5
document-format-device-id-implemented (1setOf text(127))	3.2.4.6
document-format-version-implemented (1setOf text(127))	3.2.4.7
document-natural-language-implemented (1setOf naturalLanguage)	3.2.4.8

1326
1327 Example: Suppose that a Printer implements a PostScript™c Level 3 interpreter which also interprets Level 1 and
1328 Level 2 documents and a PCL interpreter that interprets '5' and '5e' variants. Suppose that the Printer has fonts for
1329 English, French and German for PostScript™, but only English for PCL. The value of the "document-format-details-
1330 implemented" attribute would have the following *two* collection values:

1331   { {"document-format-implemented" = 'application/postscript',
1332   "document-format-version-implemented" = 'PS/1', 'PS/2', 'PS/3',
1333   "document-natural-language-implemented" = 'en', 'fr', 'de'},
1334   {"document-format-implemented" = 'application/vnd.hp-PCL',
1335   "document-format-version-implemented" = 'PCL/5', 'PCL/5e',
1336   "document-natural-language-implemented" = 'en'}
1337   }

---

[21] The Printer MUST support the "document-format-details-implemented" Printer Description attribute if the Printer
supports a packaging document format, such as application/zip or multipart/related MIME types.

1338 The Printer MUST have no more than one collection value with the same value for the "document-format-
1339 implemented" member attribute, unless there are different values for different versions of the "document-format".
1340 Typically, there will only be one value for each "document-format-implemented" member attribute in each collection
1341 value. However, there MAY be more than one occurrence of a collection value with the same "document-format-
1342 implemented" member attribute value. See the following example which has two PostScript collection values
1343 because the implemented values are different for different versions of PostScript.

1344 Example: Suppose that a Printer implements a PostScript™c Level 3 interpreter which also interprets Level 1 and
1345 Level 2 documents and a PCL interpreter that interprets '5' and '5e' variants. Suppose that the Printer only has fonts
1346 for French and German for PostScript™ level 3. The value of the "document-format-details-implemented" attribute
1347 would have the following *three* collection values:

1348   { {"document-format-implemented" = 'application/postscript',
1349   "document-format-version-implemented" = 'PS/1', 'PS/2', 'PS/3'},
1350   "document-natural-language" = 'en'},
1351   {"document-format-implemented" = 'application/postscript',
1352   "document-format-version-implemented" = 'PS/3',
1353   document-natural-language-implemented" }= 'en', 'fr', 'de'},
1354   {"document-format-implemented" = 'application/vnd.hp-PCL',
1355   "document-format-version-implemented" = 'PCL/5', 'PCL/5e'}
1356   "document-natural-language-implemented" = 'en'}
1357   }

1358 7.8 document-format-version-default (text(127))

1359 This OPTIONAL Printer Description attribute indicates the default document format version that the Printer will
1360 assume when the client omits the "document-format-version" Operation attribute (section 3.2.5). The Printer MUST
1361 support this attribute if it supports the "document-format-version" Operation attribute.

1362 7.9 document-format-version-supported (1setOf text(127))

1363 This OPTIONAL Printer Description attribute indicates the document format versions that the Printer supports for
1364 Document Contents, that is, supports as values of the "document-format-version" Operation attribute (section 3.2.5).
1365 The Printer MUST support this attribute if it supports the "document-format-version" Operation attribute.

1366 7.10 document-natural-language-default (naturalLanguage)

1367 This OPTIONAL Printer Description attribute indicates the default document natural language that the Printer will
1368 assume for Document Content when the client omits the "document-natural-language" Operation attribute ([rfc2911]
1369 section 3.2.1.1). The Printer MUST support this attribute if it supports the "document-natural-language" Operation
1370 attribute.

1371 7.11 document-natural-language-supported (1setOf naturalLanguage)

1372 This OPTIONAL Printer Description attribute lists the natural languages supported in any of the supported document
1373 formats, that is, it is the union of the natural languages. The Printer MUST support this attribute if it supports the
1374 "document-natural-language" Operation attribute ([rfc2911] section 3.2.1.1). See the "document-format-details-
1375 implemented" (1setOf collection) Printer Description attribute (section 7.7) for how the Printer MAY expose the list of
1376 natural languages supported by particular document formats.

1377 ## 7.12 output-device-requested-supported (1setOf name(127))

1378 This OPTIONAL Printer Description attributes lists the names of output devices that the Printer supports. The Printer
1379 MUST support this attribute if it supports the "output-device-requested" Operation attribute (see section 3.1.3).

1380 # 9 New Values for Existing Printer Description Attributes

1381 This section contains those attributes for which additional values are added.

1382 ## 9.1 operations-supported (1setOf type2 enum)

1383 The following "operation-id" values are added in order to support the new operations defined in this document:

1384 **Table 14 - Operation-id assignments**

Value	Operation Name	Reference
0x000F	Close-Job	[this-spec] §3.1

1385

1386 # 8   Conformance Requirements

1387 This specification contains a number of independent OPTIONAL operations and attributes. This section summarizes
1388 the conformance requirements for Printers and clients.

1389 ## 8.1 Printer conformance requirements

1390 In order to claim conformance to this specification, a Vendor MUST explicitly identify the operations and/or attributes
1391 supported by the Printer implementation in any such claim of conformance. In addition, the Vendor's Printer
1392 implementation:

1393 1.   MUST meet the conformance requirements for Printers specified in [rfc2911].

1394 2.   MAY support any Operation attribute according to section 3 and the corresponding Job Description
1395   attributes in section 5 and corresponding Printer attributes in section 7.

1396 3.   MAY support any Job Template attribute according to section 4.

1397 4.   MAY support any of the "job-state-reasons" values according to section 6.

1398 ## 8.2 Client conformance requirements

1399 In order to claim conformance to this specification, a Vendor MUST explicitly identify the operations and/or attributes
1400 supported by the client implementation in any such claim of conformance. In addition, the Vendor's client:

1401 1. MUST meet the conformance requirements for clients specified in [rfc2911]

1402 2. MAY support any Operation attribute according to section 3 and the corresponding Job Description attributes
1403   in section 5 and corresponding Printer attributes in section 7.

1404   3. MAY support any Job Template attribute according to section 4.

9 Normative References

1406   [dcs2.0]
1407   Document Color Separation (DCS), version 2.0. ISSUE 10: Need a reference

1408   [dss]
1409   U.S. Department of Commerce, "Digital Signature Standard (DDS)", Federal Information Processing
1410   Standards Publication 186-1 (FIPS PUB 186-1), December 15, 1998.

1411   [ippdoc]
1412   Hastings, T., and P. Zehler, "Internet Printing Protocol (IPP): Document Object", October 14, 2002,
1413   ftp://ftp.pwg.org/pub/pwg/ipp/new_DOC/wd-ippdoc10-20030519.doc, .pdf, .rtf <work in progress>

1414   [ippOverride]
1415   Zehler, P., Herriot, R., and K. Ocke, "Internet Printing Protocol (IPP): Page Overrides", May 27, 2003,
1416   ftp://ftp.pwg.org/pub/pwg/ipp/new_EXC/wd-ippOverride10-20030527.doc, .pdf, .rtf, <work in progress>

1417   [ippjobx] - this specification
1418   Hastings, T., and P. Zehler, "Internet Printing Protocol (IPP): Job Extensions", May 30, 2003,
1419   ftp://ftp.pwg.org/pub/pwg/ipp/new_JOBX/wd-ippjobx10-20030530.doc, .pdf, .rtf, <work in progress>.

1420   [iso12639]
1421   ISO 12639:1998 Graphic technology -- Prepress digital data exchange -- Tag image file format for image
1422   technology (TIFF/IT), 1998.

1423   [iso15930]
1424   ISO 15930-1:2001 Graphic technology -- Prepress digital data exchange -- Use of PDF -- Part 1: Complete
1425   exchange using CMYK data (PDF/X-1 and PDF/X-1a), 2001.

1426   [pdf]
1427   "Adobe Portable Document Format", Version 1.4, PDF Reference, Third Edition, Adobe Systems
1428   Incorporated, http://www.adobe.com, December 2001.

1429   [pwg5100.4]
1430   Herriot, R., Ocke, K., "Internet Printing Protocol (IPP): Override Attributes for Documents and Pages", IEEE-
1431   ISTO 5100.4-2001, February 7, 2001, ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.4.pdf. - being replaced
1432   obsoleted by (1) a new Page Overrides specification which removes the "document-overrides" Job Template
1433   attribute and Operation attribute in favor of using the Document Object [ippdoc] and (2) this specification
1434   [ippjobx] definition of "pages-per-subset" Job Template attribute.

1435   ISSUE 09: The IETF process never revises an RFC, but just updates or obsoletes one with another RFC. On the
1436   other hand most other standards organizations, such as ANSI, ISO, (IEEE?), and POSIX, require that
1437   standards be reviewed and if necessary be "revised". I think that we are "revising" PWG IEEE-ISTO 5100.4,
1438   not "obsoleting" it. This is just a terminology question.

1439   The second paragraph of the PWG process section 4.2 says:

1440 "Working Drafts and Candidate Standards correspond to a specific version of the Standard they are
1441 defining. Unless the working group is engaged in an effort to revise an existing PWG Standard, the
1442 Working Drafts and Candidate Standards are always defining PWG Standard Version 1.0."

1443 and section 4.4.1 says:

1444 "Although the maturity level will not appear on PWG Candidate Standards or PWG Standards, if a
1445 Candidate Standard needs to be revised, any resulting PWG Working Drafts will have a maturity level
1446 indicated on their title page."

1447 [pwg5100.3]
1448 Ocke, K., Hastings, T., "Internet Printing Protocol (IPP): Production Printing Attributes - Set1", IEEE-ISTO
1449 5100.3-2001, February 12, 2001, ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.3.pdf.

1450 [rfc1991]
1451 D. Atkins, W. Stallings, P. Zimmermann, "PGP Message Exchange Formats", RFC 1991, August, 1996.

1452 [rfc2046]
1453 Freed, N., and N. Borenstein, "Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types", RFC
1454 2046, November 1996.

1455 [rfc2634]
1456 P. Hoffman, "Enhanced Security Services for S/MIME", RFC 2634, June 1999.

1457 [rfc2854]
1458 Connolly, D., and L. Masinter, "The 'text/html' Media Type", RFC 2854, June 2000.

1459 [rfc2911]
1460 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.1: Model and
1461 Semantics", RFC 2911, September 2000.

1462 [rfc3380]
1463 Hastings, T., Herriot, R., Kugler, C., and H. Lewis, "Internet Printing Protocol (IPP): Job and Printer Set
1464 Operations", RFC 3380, September 2002.

1465 [rfc3382]
1466 deBry, R., Hastings, T., Herriot, R., Ocke, K., and P. Zehler, "Internet Printing Protocol (IPP): The 'collection'
1467 attribute syntax", RFC 3382, September 2002.

1468 [upnp]
1469 Microsoft, "Basic *PrintBasic:1.0* Service Template Version 1.01 For Universal Plug and Play Version 1.0"

1470 [xmldsig]
1471 D. Eastlake, J. Reagle, D. Solo "XML-Signature Syntax and Processing", <draft-ietf-xmldsig-core-11.txt>,
1472 October 31, 2000.

10 Informative References

1474 [ippdoc]
1475 Hastings, T., and P. Zehler, "Internet Printing Protocol (IPP): Document Object", October 14, 2002,
1476 ftp://ftp.pwg.org/pub/pwg/ipp/new_DOC/wd-ippdoc20030516.doc, .pdf, .rtf <work in progress>

1477 [fsg-jt]
1478 Free Software Group, Open Printing Job Ticket API, Visit: http://www.freestandards.org/openprinting/

1479 [ippact]
1480 Carney, D., and H. Lewis, "Internet Printing Protocol (IPP), "-actual" attributes extension", work in progress,
1481 January 31, 2003, ftp://ftp.pwg.org/pub/pwg/ipp/new_ACT/pwg-ipp-actual-attrs-v04-030131.pdf

1482 [ippfax]
1483 Moore, P., Songer, G., Hastings, T., McDonald, Pulera, and M. Joel, "IPP FAX Protocol", July 26, 2001,
1484 ftp://ftp.pwg.org/pub/pwg/QUALDOCS/pwg-ifx-ippfax-P16-030423.pdf.

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1486 "Print Service Interface (PSI)", work in progress to become a PWG IEEE-ISTO standard. Visit
1487 http://www.pwg.org/.

1488 [pwg-sm]
1489 Zehler, P., and S. Albright, "PWG Semantic Model", work in progress to become a PWG IEEE-ISTO standard,
1490 version 0.11, September 27, 2002. ftp://ftp.pwg.org/pub/pwg/Semantic-Model/PWG-Semantic-Model.pdf

1491 [rfc2565]
1492 Herriot, R., Butler, S., Moore, P., and R. Turner, "Internet Printing Protocol/1.0: Encoding and Transport",
1493 RFC 2565, April 1999.

1494 [rfc2566]
1495 R. deBry, T. Hastings, R. Herriot, S. Isaacson, and P. Powell, "Internet Printing Protocol/1.0: Model and
1496 Semantics", RFC 2566, April 1999.

1497 [rfc2567]
1498 Wright, D., "Design Goals for an Internet Printing Protocol", RFC 2567, April 1999.

1499 [rfc2568]
1500 Zilles, S., "Rationale for the Structure and Model and Protocol for the Internet Printing Protocol", RFC 2568,
1501 April 1999.

1502 [rfc2569]
1503 Herriot, R., Hastings, T., Jacobs, N., Martin, J., "Mapping between LPD and IPP Protocols", RFC 2569, April
1504 1999.

1505 [rfc3196]
1506 Hastings, T., Manros, C., Zehler, P., Kugler, C., and H. Holst, "Internet Printing Protocol/1.1: Implementer's
1507 Guide", RFC 3196, November 2001.

1508 [rfc3239]
1509   Kugler, C., Lewis, H. and T. Hastings, "Internet Printing Protocol (IPP): Requirements for Job, Printer, and
1510   Device Administrative Operations", RFC 3239, February 2002.

1511 11 IANA Considerations

1512 This section contains the registration information for IANA to add to the various IPP Registries according to the
1513 procedures defined in RFC 2911 [rfc2911] section 6 to cover the definitions in this document. The resulting
1514 registrations will be published in the http://www.iana.org/assignments/ipp-registrations registry.

1515   *Note to the PWG Editor: Replace the References below to [this spec] with the IEEE-ISTO standard number*
1516   *for the appropriate document, so that it accurately reflects the content of the information for the IANA Registry.*

1517 11.1 Attribute Registrations

1518 The following table lists all the attributes defined in this specification. These are to be registered according to the
1519 procedures in RFC 2911 [rfc2911] section 6.2. If the attribute has a separate sub-section definition in this
1520 specification, that sub-section is listed as the Reference. This table contains the reference to another specification
1521 that completely defines each attribute.
1522
```
1523  Attribute Name (attribute syntax)              Reference    Section
1524  ---------------------------------              ----------   --------
1525
1526  Job Description attributes:
1527  job-attribute-fidelity (boolean)               [this spec]  5.1
1528  job-errors-count (integer(0:MAX))              [this spec]  5.2
1529  job-mandatory-attributes (1setOf type2 keyword) [this spec] 5.3
1530  job-warnings-count (integer(0:MAX))            [this spec]  5.4
1531  output-device-requested(name(127))             [this spec]  5.5
1532
1533  Job Template attributes:
1534  job-copies (integer(1:MAX))                    [this spec]  4.1.1
1535  job-copies-default (integer(1:MAX))            [this spec]  4.1.1.1
1536  job-copies-supported (rangeOfInteger(1:MAX))   [this spec]  4.1.1.2
1537  job-cover-back (collection)                    [this spec]  4.1.2
1538    <member attributes are the same as "cover-back"[pwg5100.3]  3.1>
1539  job-cover-back-default (collection)            [this spec]  4.1.2.1
1540    <member attributes are the same as "cover-back"[pwg5100.3]  3.1>
1541  job-cover-back-supported (1setOf type2 keyword) [this spec] 4.1.2.2
1542  job-cover-front (collection)                   [this spec]  4.1.3
1543    <member attributes are the same as "cover-front"[pwg5100.3] 3.1>
1544  job-cover-front-default (collection)           [this spec]  4.1.3.1
1545    <member attributes are the same as "cover-front"[pwg5100.3] 3.1>
1546  job-cover-front-supported (1setOf type2 keyword) [this spec] 4.1.3.2
1547    <member attributes are the same as "cover-front">
1548  job-finishings (1setOf type2 enum)             [this spec]  4.1.4
1549  job-finishings-default (1setOf type2 enum)     [this spec]  4.1.4.1
```

```
1550  job-finishings-ready (1setOf type2 enum)        [this spec]  4.1.4.2
1551  job-finishings-supported (1setOf type2 keyword) [this spec]  4.1.4.3
1552  job-finishings-col (1setOf collection)          [this spec]  4.1.5
1553    <member attributes are the same as "finishings-col"[pwg5100.3] 3.2>
1554  job-finishings-col-default (1setOf type2 enum)  [this spec]  4.1.5.10
1555  job-finishings-col-ready (1setOf type2 enum)    [this spec]  4.1.5.2
1556  job-finishings-col-supported (1setOf type2 keyword)
1557                                                  [this spec]  4.1.5.3
1558  pages-per-subset (1setOf integer(1:MAX))        [this spec]  4.2
1559  pages-per-subset-supported (boolean)            [this spec]  4.2.4
1560
1561  Printer Description attributes:
1562  document-charset-default (charset)                    [this spec]  7.1
1563  document-charset-supported (1setOf charset)           [this spec]  7.2
1564  document-digital-signature-default (type2 keyword)    [this spec]  7.3
1565  document-digital-signature-supported (1setOf type2 keyword)
1566                                                        [this spec]  7.4
1567  document-format-details-default (collection)          [this spec]  7.5
1568    <member attributes are the same as "document-format-details"
1569                                                  [this spec] 3.2.4>
1570  document-format-details-supported (1setOf type2 keyword)
1571                                                        [this spec]  7.6
1572  document-format-details-implemented (1setOf collection)
1573                                                        [this spec]  7.7
1574    document-source-application-name-implemented (1setOf name(MAX))
1575                                                  [this spec]  7.7
1576    document-source-application-version-implemented (1setOf text(127))
1577                                                  [this spec]  7.7
1578    document-source-os-name-implemented (1setOf name(40))
1579                                                  [this spec]  7.7
1580    document-source-os-version-implemented (1setOf text(40))
1581                                                  [this spec]  7.7
1582    document-format-implemented (mimeMediaType)       [this spec]  7.7
1583    document-format-device-id-implemented (1setOf text(127))
1584                                                  [this spec]  7.7
1585    document-format-version-implemented (1setOf text(127)
1586                                                  [this spec]  7.7
1587    document-natural-language-implemented (1setOf naturalLanguage)
1588                                                  [this spec]  7.7
1589  document-format-version-default (text(127))        [this spec]  7.8
1590  document-format-version-supported (1setOf text(127)) [this spec]  7.9
1591  document-natural-language-default (naturalLanguage)  [this spec]  7.10
1592  document-natural-language-supported (1setOf naturalLanguage)
1593                                                        [this spec]  7.11
1594  output-device-requested-supported (1setOf name(127)) [this spec]  7.12
1595
```

```
1596
1597  Operation attributes:
1598  document-charset (charset)                    [this spec]   3.2.1
1599  document-digital-signature (type2 keyword)    [this spec]   3.2.2
1600  document-format-details (1setOf collection)   [this spec]   3.2.4
1601    document-source-application-name (name(MAX)) [this spec]  3.2.4.1
1602    document-source-application-version (text(127))
1603                                                [this spec]   3.2.4.2
1604    document-source-os-name (name(40))          [this spec]   3.2.4.3
1605    document-source-os-version (text(40))       [this spec]   3.2.4.4
1606    document-format (mimeMediaType)-            [this spec]   3.2.4.5
1607    document-format-device-id (text(127))       [this spec]   3.2.4.6
1608    document-format-version (text(127)          [this spec]   3.2.4.7
1609    document-natural-language (1setOf naturalLanguage)
1610                                                [this spec]   3.2.4.8
1611  document-format-version (text(127))           [this spec]   3.2.5
1612  document-natural-language (naturalLanguage)   [this spec]   3.2.6
1613  job-mandatory-attributes (1setOf type2 keyword) [this spec] 3.1.2
1614  output-device-requested (name(127))           [this spec]   3.1.3
```

1615 ## 11.2 Keyword attribute values

```
1616  document-digital-signature (type2 keyword)    [this spec]   3.2.2
1617  document-digital-signature-default (type2 keyword)
1618                                                [this spec]   7.3
1619  document-digital-signature-supported (1setOf type2 keyword)
1620                                                [this spec]   7.4
1621    dss                                         [this spec]   3.2.2
1622    none                                        [this spec]   3.2.2
1623    pgp                                         [this spec]   3.2.2
1624    smime                                       [this spec]   3.2.2
1625    xmldsig                                     [this spec]   3.2.2
1626
1627  document-format-details-supported (1setOf type2 keyword)
1628                                                [this spec]   7.6
1629    document-source-application-name           [this spec]   7.6
1630    document-source-application-version        [this spec]   7.6
1631    document-source-os-name                    [this spec]   7.6
1632    document-source-os-version                 [this spec]   7.6
1633    document-format                            [this spec]   7.6
1634    document-format-device-id                  [this spec]   7.6
1635    document-format-version                    [this spec]   7.6
1636    document-natural-language                  [this spec]   7.6
1637
1638  job-cover-back-supported (1setOf type2 keyword) [this spec] 4.1.2.2
1639    <same as "cover-back-supported"           [pwg5100.3]   3.1.4
1640  job-cover-front-supported (1setOf type2 keyword) [this spec] 4.1.2.2
```

```
1641      <same as "cover-front-supported"                    [pwg5100.3]   3.1.4
1642   job-mandatory-attributes (1setOf type2 keyword)     [this spec]   3.1.2
1643     <any Job Template attribute keyword>
1644

1645   job-state-reasons (1setOf type2 keyword)            [rfc2911]     4.3.8
1646      digital-signature-did-not-verify                 [this spec]   6.1
1647      digital-signature-type-not-supported             [this spec]   6.1
1648      errors-detected                                  [this spec]   6.1
1649      job-digital-signature-wait                       [this spec]   6.1
1650      warnings-detected                                [this spec]   6.1
1651

1652   media (type2 keyword | name(MAX))                   [rfc2911]     4.2.11
1653      choice_iso_a4_210x297mm_na_letter_8.5x11in       [this spec]   6.2
1654
```

11.3 Enum Attribute Values

The following table lists all the new enum attribute values defined in this document as additional type2 enum values. These are to be registered according to the procedures in RFC 2911 [rfc2911] section 6.1.

```
1659   job-finishings (1setOf type2 enum)                  [this spec] 4.1.4
1660   job-finishings-default (1setOf type2 enum)          [this spec] 4.1.4.1
1661   job-finishings-ready (1setOf type2 enum)            [this spec] 4.1.4.2
1662   job-finishings-supported (1setOf type2 enum)        [this spec] 4.1.4.3
1663      <enum values are the same as "finishings">
1664

1665   job-finishings-col-supported (1setOf type2 keyword)
1666                                                       [this spec] 4.1.5.3
1667      <same as for "finishing-col-supported"          [pwg5100.3] 3.2.5
1668   operations-supported (type2 enum)                   [rfc2911]   4.4.15
1669      0x000F    Close-Job                             [this spec] 3.1
1670
```

13.4 Operations

The following table lists all of the operations defined in this document. These are to be registered according to the procedures in RFC 2911 [rfc2911] section 6.4.

```
Operations                                         Reference      Section
----------------------------                       ---------      -------
Close-Job                                          [this spec]    3.1
```

12 Internationalization Considerations

The internationalization considerations for the extensions defined in this specification are the same as for handling the Job object in [rfc2911].

1681 ## 13 Security Considerations

1682 This specification adds no more security burden on Printer implementations than does [rfc2911]. ~~Printer~~
1683 ~~implementations MUST ensure that the Close-Job operation is being performed by a client with proper authorization.~~
1684 ~~Otherwise, a malicious user could close other people's jobs, thereby denying the rightful owner from adding~~
1685 ~~additional documents to his/her Job. See section 3.1.~~

1686 ## 14 Contributors

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1688   Ira McDonald, High North
1689   Dennis Carney, IBM

1690 ## 15 Acknowledgments

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1710 ## 17 Annex B: Differences between the "pages-per-subset" defined in
1711 ## [pwg5100.4] and this specification [ippjobx]

1712 This Appendix lists the differences between the "pages-per-subset" Job Template attribute defined in [pwg5100.4]
1713 and this specification [ippjobx]:

1714   1. Removed the warning condition that a partial Page Subset is no longer a warning, so that the 'job-warnings'
1715   value (section 6.1) of the "job-state-reasons" attribute and the Job's "job-warnings-count" Job Description
1716   attribute (section 5.4) are not affected.

1717   2. Clarified that the Printer MUST start each Page Subset and Page Subset copy on a new sheet.

1718   3. Clarified that the Printer MUST support all of the Job Template attributes in combination with "page-per-
1719   subset' that it supports separately.

4. Clarified that the Job Template attributes that affect a Job as a whole, also do so when used in combination with "pages-per-subset".

5. Clarified that the number of integer values of the "pages-per-subset" attribute that the Printer supports depends on implementation.

6. Clarified that the Printer MUST return "successful-ok-ignored-or-substitutes-attributes' status code and the additional values in the Unsupported Attributes group, if the client supplies more values than the Printer supports.

7. Clarified the interaction of "copies" and "multiple-document-handling".

8. Added more examples.

1718Annex CB: Change Log (informative - to be removed before publication)

The following summaries of the changes in reverse chronological order:

Version 0.1, 18 May 2003:
1. Split document out of Document Object specification.
2. Moved "document-format-target" and "document-format-version-target" from the Job Template section to the Operation Attributes section so that it can be supplied with Document Creation operations and so that it MUST be honored, even if "job-attribute-fidelity" is 'false' or omitted.
3. Removed all Document Description attributes and the concept of Job Level and Document Level. That terminology is introduced in the Document Object spec [ippdoc]. Now [ippdoc] is only an Informative Reference, not a Normative Reference.

Version 0.2, 19 May 2003:
1. Did *not* include the document-format-target and document-format-version-target attributes. PSI has their own definitions and we can avoid the discussion as to whether they should be Document Template attributes or Operation attributes on Document Creation operations and whether there should be a "document-format-target-default" and a "document-format-version-target-default".

Version 0.3, 28 May 2003:
Agreements reaches at the May 28, 2003 telecon:
1. Moved the Close-Job operation to the futures specification.
2. Added the "pages-per-subset" Job Template from [pwg5100.4]. See Appendix B section 17 for the minor differences.
3. Added the terms: "Best Effort, Finished Document, Page, Page Subset, and Sheet.
4. Clarified the conformance relationships between "xxx" Operation attributes and their corresponding "xxx-default" and "xxx-supported" Printer attributes.
5. Added rationale for each missing "xxx-default" and "xxx-supported" attribute.
6. Added 'errors-detected' and 'warnings-detected' "job-state-reasons" values.
7. Added the new **'choice_iso_a4_210x297mm_na_letter_8.5x11in'** "media" attribute value which is a choice of two approximately equal media.
8. Added the requirements for choice media keyword values for inclusion in a revision of the PWG IEEE-ISTO 5101.1.
9. Changed the "document-format-implemented" member attribute from 1setOf mimeMediaType to mimeMediaType since it is the key attribute value.
10. Added another "document-format-implemented" example.
11. Updated the IANA section to agree with the additions.