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## The Printer Working Group (PWG) Standard for The Internet Printing Protocol (IPP): Job Extensions

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9 **Abstract:** This IPP specification extends the Job semantics of the IPP Model and Semantics [rfc2911] object model.  
10 This specification defines the Close-Job operation and some new Operation attributes for use in Job Creation and  
11 Document Creation operations. The Printer copies the Job attributes to the corresponding Job Description attributes  
12 which the clients may query. The Document Creation Operation attributes describe the Document Content and  
13 permit the Printer to reject requests that it cannot process correctly. Corresponding "xxx-default" and "xxx-  
14 supported" Printer attributes are defined. This specification also defines some additional values for the "job-state-  
15 reasons" Job Description attribute. Each of the operations and attributes defined in this specification are  
16 independent of each other and OPTIONAL for a Printer to support.  
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20 | Working Draft, May 1998, 2003

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# The Printer Working Group (PWG)

## Standard for

### The Internet Printing Protocol (IPP):

### Job Extensions

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

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[ftp://ftp.pwg.org/pub/pwg/ipp/new\\_JOBX/wd-ippjobx10-200305198.pdf](ftp://ftp.pwg.org/pub/pwg/ipp/new_JOBX/wd-ippjobx10-200305198.pdf), .doc, .rtf

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97 2) leave the subject line blank

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99 subscribe ipp

100 end

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

106

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## 212 1 Introduction and Summary

213 This IPP specification extends the Job semantics of the IPP Model and Semantics [rfc2911] object model. This  
 214 specification defines the Close-Job operation and some new Operation attributes for use in Job Creation and  
 215 Document Creation operations. The Printer copies the Job attributes to the corresponding Job Description attributes  
 216 which the clients may query. The Document Creation Operation attributes describe the Document Content and  
 217 permit the Printer to reject requests that it cannot process correctly. Corresponding "xxx-default" and "xxx-  
 218 supported" Printer attributes are defined. This specification also defines some additional values for the "job-state-  
 219 reasons" Job Description attribute. Each of the operations and attributes defined in this specification are  
 220 independent of each other and OPTIONAL for a Printer to support.

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

### 227 1.1 Scope

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

229 **Table 1 - Summary of operations**

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

230  
 231 Table 2 summarizes the Operation attributes defined in this specification for use with Job Creation operations. The  
 232 Printer copies these Operation attributes to corresponding Job Description attributes defined in this specification.

233 **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 <u>supplied in Job Creation operations or MUST reject the job</u> . Defined in [rfc2911] section 3.2.1.2 and 15. |
| job-mandatory-attributes (1setOf type2 keyword) | MAY             | Allows the client to list which Job Template attributes that the Printer MUST support <u>when supplied in Job Creation operations or MUST reject the job</u> .   |

234  
 235 Table 3 summarizes the Operation attributes defined in this specification for use with Document Creation operations.  
 236 These Operation attributes allow the client to supply descriptions of the Document Content to the Printer about



237 individual Document Contents at request time. This specification does *not* define corresponding Document  
 238 Description attributes, since this specification does not include or depend on a Document object<sup>1</sup>.

239 **Table 3 - Summary of Document Creation Operation Attributes**

| Operation attribute                                   | Printer support    | Description   |
|---|--------------------|---|
| document-charset (charset)                            | CMUST <sup>2</sup> | 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 <sup>3</sup> | The details of the Document Content, including when its package of files (zip, multipart/related), such as application and operating system that created the document, the intended device type (when the format is device-dependent), the natural languages of the document. |
| <del>document-format-target (documentFormat)</del>    | <del>MAY</del>     | <del>The document format that the Printer is to convert to for Printers that convert document formats.</del>  |
| document-format-version (text(127))                   | MAY                | The version of the document format.   |
| <del>document-format-version-target (text(127))</del> | <del>MAY</del>     | <del>The document format level or version that the Printer is to convert to for Printers that convert document formats.</del>   |
| 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.  |

240  
 241 Table 4 summarizes the Job Template attributes defined in this specification for use with Job Creation operations.  
 242 These Job Template attributes are defined to apply to the Job as a whole, independent of the value of the "multiple-  
 243 document-handling" Job Template attribute ([rfc2911] section 4.2.4) whose 'separate-documents-collated-copies' and  
 244 'separate-documents-uncollated-copies' which cause the Printer to produce separate Output Documents.  
 245

246 **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.                 |
| job-finishings-col (1setOf collection) | MAY             | The finishing characteristics for the entire Job. |

247

<sup>1</sup> For Document Description attributes that correspond to the Operation attributes defined for Document Creation operations, see the Document object defined in [ippdoc].

<sup>2</sup> 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 4.2.1).

<sup>3</sup> 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'

## 248 2 Terminology

249 This section defines terminology used throughout this document.

### 250 2.1 Conformance Terminology

251 Capitalized terms, such as **MUST**, **MUST NOT**, **REQUIRED**, **SHOULD**, **SHOULD NOT**, **MAY**, and **OPTIONAL**, have  
252 special meaning relating to conformance as defined in RFC 2119 [rfc2119]. All of the operations and attributes  
253 defined in the specification are independently **OPTIONAL**. If an implementation supports an operation or attribute  
254 extension described in this specification, then these terms apply to the implementation of that operation or attribute;  
255 otherwise, they do not. For example, the term **MUST** in this document means “**MUST** if this **OPTIONAL** operation or  
256 attribute is implemented”.

257 The term **CONDITIONALLY REQUIRED** means that the Printer **MUST** support the feature, if the specified condition  
258 is true. The term **CMUST** means **MUST** if the specified “condition” is true.

### 259 2.2 Other Terminology

260 This document uses the same terminology as [rfc2911], such as “**client**”, “**Printer**”<sup>4</sup>, “**attribute**”, “**attribute value**”,  
261 “**keyword**”, “**Job Template attribute**”, “**Operation attribute**”, “**operation**”, “**request**”, “**response**”, and “**support**”  
262 with the same meaning. In addition, the following terms are defined for use in this document:

263 **Document Creation operation** - operations that accept Document Content. Specifically: Print-Job, Print-URI, Send-  
264 Document and Send-URI. Note: the Print-Job and Print-URI are both **Job Creation** and **Document Creation**  
265 operations.

266 **Honor** - a Printer is said to **Honor** an attribute supplied by the client, if the Printer **supports** that attribute and the  
267 supplied value and performs the indicated semantics. If the client supplies the “ipp-attribute-fidelity” or “job-  
268 mandatory-attributes” Operation attribute, the client is indicating which supplied Job Template attributes the Printer  
269 **MUST Honor**.

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

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

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

## 278 3 New Job operations

279 This section defines the new Close-Job operation.

---

<sup>4</sup> [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].

## 280 3.1 Close-Job

281 This OPTIONAL operation closes the Job<sup>5</sup>. The Printer MUST support this operation. The client SHOULD issue this  
282 operation to close the job, instead of supplying the "last-document" Operation attribute with a 'true' value in a  
283 Document Creation operation (or a Send-Document operation with no data - see [rfc2911] section 3.3.1). The Printer  
284 MUST support both means of closing jobs for backward compatibility with [rfc2911].

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

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

### 292 3.1.1 Close-Job Request

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

#### 294 Group 1: Operation Attributes

##### 295 Natural Language and Character Set:

296 First, the client MUST supply the "attributes-charset" and "attributes-natural-language" Operation attributes  
297 as described in [rfc2911] section 3.1.4.1. The Printer MUST copy these values to the corresponding Job  
298 Description attributes described in [rfc2911] sections 4.3.19 and 4.3.20.

##### 299 Target:

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

##### 303 Requesting User Name:

304 The "requesting-user-name" (name(MAX)) attribute SHOULD be supplied by the client as described in  
305 [rfc2911] section 8.3.

### 306 3.1.2 Close-Job Response

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

#### 308 Group 1: Operation Attributes

##### 309 Status Message:

310 In addition to the REQUIRED status code returned in every response, the response OPTIONALLY includes a  
311 "status-message" (text(255)) and/or a "detailed-status-message" (text(MAX)) Operation attribute as  
312 described in [rfc2911] sections 13 and 3.1.6.

##### 313 Natural Language and Character Set:

314 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.2.

---

<sup>5</sup> ~~Close-Job is a new operation defined by this Document object specification and is not defined in [rfc2911].~~

### 315 **Group 2: Unsupported Attributes**

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

### 317 **Group 3: Job Object Attributes**

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

321 "job-uri" (uri) - see [rfc2911] section 4.3.1  
322 "job-id" (integer(1:MAX)) - see [rfc2911] section 4.3.2  
323 "job-state" (type1 enum) - see [rfc2911] section 4.3.7  
324 "job-state-reasons" (1setOf type2 keyword) - see [rfc2911] section 4.3.8  
325

326 The Printer MAY return:

327 "job-state-message" (text(MAX)) - see [rfc2911] section 4.3.9  
328 "number-of-intervening-jobs" (integer(0:MAX)) - see [rfc2911] section 4.3.15  
329

## 330 **4 Operation Attributes for Job Creation and Document Creation operations**

331 This section defines Operation attributes for use in Job Creation operations and/or Document Creation operations. .  
332 Note: As in [rfc2911] Operation attributes relate to the operation and do not depend on the printing capabilities of the  
333 Printer.

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

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

| <b>Operation attribute:</b><br>attribute name "xxx" | Operation<br>attribute syntax  | Printer: Default<br>Value<br>attribute syntax<br>"xxx-default"                   | Printer: Supported Values<br>attribute syntax<br>"xxx-supported"                           |
|---|--|--|--|
| <b>document-charset</b>                             | charset  | charset  | 1setOf charset   |
| <b>document-digital-signature</b>                   | type2 keyword  | type2 keyword  | 1setOf type2 keyword   |
| <b>document-format</b>                              | <a href="#">documentFormat</a> <a href="#">mime</a><br><a href="#">MediaType</a> | <a href="#">documentFormat</a> <a href="#">mi</a><br><a href="#">meMediaType</a> | 1setOf<br><a href="#">documentFormat</a> <a href="#">mimeMe</a><br><a href="#">diaType</a> |
| <b>document-format-details</b>                      | 1setOf collection  | 1setOf collection  | 1setOf type2 keyword <sup>6</sup>  |

<sup>6</sup> There is also a "document-format-details-implemented" (1setOf collection), see section 8.7.

| Operation attribute:<br>attribute name "xxx" | Operation<br>attribute syntax | Printer: Default<br>Value<br>attribute syntax<br>"xxx-default" | Printer: Supported Values<br>attribute syntax<br>"xxx-supported" |
|--|-------------------------------|--|--|
| 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-target                       | mimeMediaType                 | mimeMediaType  | 1setOf MimeMediaType   |
| document-format-version                      | text(127)                     | text(127)  | 1setOf text(127)   |
| document-format-version-target               | text(127)                     | text(127)  | 1setOf text(127)   |
| document-natural-language                    | naturalLanguage               | naturalLanguage  | 1setOf naturalLanguage   |
| job-mandatory-attributes                     | 1setOf type2 keyword          | -  | -  |
| output-device-requested                      | name(127)                     | -  | 1setOf name(127)   |

338

339 Table 6 lists the Operation attributes that clients supply in Job and Document Creation operations and whether the  
340 Printer copies (indicated by "P ") the supplied value to the corresponding Job Description<sup>7</sup> attribute.

| 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.   |
| "yP "                 | the Operation attribute is defined for use with the indicated operations and has a corresponding Job Description attribute (see Table 9) defined to which the Printer MAY copy this Operation attribute. See Table 5 for whether there are corresponding "xxx-default" and "xxx-supported" Printer Description attribute defined. |
| "."                   | the Operation attribute is <i>not</i> 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.  |
| "Section"             | column indicates where the Operation attribute is defined in this spec.   |

341

342

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

| Operation attribute name for<br>Job and Document Creation<br>requests | Attribute Syntax | Creation operations |           |           | Conformance      |                    | Section |
|---|------------------|---------------------|-----------|-----------|------------------|--------------------|---------|
|   |                  | CJ                  | PJ,<br>PU | SD,<br>SU | Client<br>supply | Printer<br>support |         |
| document-charset  | charset          | -                   | y         | y         | MAY              | CMUST <sup>8</sup> | §4.2.1  |
| document-digital-signature  | type2 keyword    | -                   | y         | y         | MAY              | MAY                | §4.2.2  |

<sup>7</sup> 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.

<sup>8</sup> The Printer MUST support the "document-charset" Operation/Document Description attributes, if the Printer supports a charset-ambiguous document format (see section 4.2.1).

| Operation attribute name for Job and Document Creation requests | Attribute Syntax   | Creation operations |                 |        | Conformance   |                    | Section  |
|---|--|---------------------|-----------------|--------|---------------|--------------------|----------|
|   |  | CJ                  | PJ, PU          | SD, SU | Client supply | Printer support    |          |
| <b>document-format</b>  | <a href="#">documentFormat</a> <a href="#">mimeMediaType</a> | -                   | y               | y      | MAY           | MUST               | §4.2.3   |
| <b>document-format-details</b>                                  | 1setOf collection  | -                   | y               | y      | MAY           | CMUST <sup>9</sup> | §4.2.4   |
| <b>document-source-application-name</b>                         | name(MAX)  | -                   | y               | y      | MAY           | MAY                | §4.2.4.1 |
| <b>document-source-application-version</b>                      | text(127)  | -                   | y               | y      | MAY           | MAY                | §4.2.4.2 |
| <b>document-source-os-name</b>                                  | name(40)   | -                   | y               | y      | MAY           | MAY                | §4.2.4.3 |
| <b>document-source-os-version</b>                               | text(40)   | -                   | y               | y      | MAY           | MAY                | §4.2.4.4 |
| <b>document-format</b>  | mimeMediaType  | -                   | y               | y      | MUST          | MUST               | §4.2.4.5 |
| <b>document-format-device-id</b>                                | text(127)  | -                   | y               | y      | MAY           | MAY                | §4.2.4.6 |
| <b>document-format-version</b>                                  | text(127)  | -                   | y               | y      | SHOULD        | MUST               | §4.2.4.7 |
| <b>document-natural-language</b>                                | naturalLanguage  | -                   | y               | y      | MAY           | MAY                | §4.2.4.8 |
| <b>document-format-target</b>                                   | <a href="#">mimeMediaType</a>                                | -                   | y               | y      | MAY           | MAY                | §4.2.5   |
| <b>document-format-version</b>                                  | text(127)  | -                   | y               | y      | MAY           | MAY                | §4.2.5   |
| <b>document-format-version-target</b>                           | <a href="#">text(127)</a>                                    | -                   | y               | y      | MAY           | MAY                | §4.2.7   |
| <b>document-natural-language</b>                                | naturalLanguage  | -                   | y               | y      | MAY           | MAY                | §4.2.6   |
| <b>ipp-attribute-fidelity</b>                                   | boolean  | y <sup>10</sup>     | y <sup>10</sup> | -      | MAY           | MUST               | §4.1.1,  |
| <b>job-mandatory-attributes</b>                                 | 1setOf type2 keyword   | y <sup>10</sup>     | y <sup>10</sup> |        | MAY           | MUST               | §4.1.2   |
| <b>output-device-requested</b>                                  | name(127)  | y <sup>10</sup>     | y <sup>10</sup> |        | MAY           | MAY                | §4.1.3   |

343

344

## 4.1 Operation attributes for Job Creation operations

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

### 347 4.1.1 ipp-attribute-fidelity (boolean) ([rfc2911] section 3.2.1 and 15)

348 This REQUIRED Operation attribute specifies the policy for the Printer to use (see [rfc2911] §3.2.1.1)\_when the  
349 client supplies unsupported Job Template attributes<sup>11</sup> or value in a Job Creation operation. The value 'true' indicates  
350 that total fidelity to client-supplied Job Template attributes and values is required for this Job Creation operation. If  
351 the client supplies the value 'false' or omits the attribute, then the Printer MUST accept the Job Creation operation.

352 The Printer MUST copy this attribute to the corresponding (new) Job Description attribute (see section 6.1).

<sup>9</sup> 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'.

<sup>10</sup> The Printer MAY copy the "ipp-attribute-fidelity" Operation attribute to the corresponding (new) Job Description attribute defined in this specification, if supported.

<sup>11</sup> The value of the "ipp-attribute-fidelity" Operation attribute has no effect on other *Operation* attributes supplied by the client, only on Job Template attributes supplied by the client.

### 353 **4.1.2 job-mandatory-attributes (1setOf type2 keyword) Operation attribute**

354 This OPTIONAL Operation attribute identifies which Job Template attributes the Printer MUST Honor in this Job  
355 Creation request. The Printer MUST reject this Job Creation operation, if the client supplies an unsupported Job  
356 Templateattribute or value in the request that is also identified in this list. The client MAY supply this attribute in a  
357 Job Creation operation. If the Printer supports the "job-mandatory-attributes" Operation attribute, the Printer MUST  
358 support this attribute in Job Creation operations and the Validate-Job operation.

359 The Printer MUST copy this attribute to the corresponding "job-mandatory-attributes" Job Description attribute (see  
360 section 6.3) for auditing and trouble shooting purposes<sup>12</sup>.

361 The values of the "job-mandatory-attributes" attribute are the keyword attribute names that identify Job Template  
362 attributes, for example, 'job-hold-until', 'job-finishings' (see section 5.1.4), 'copies' and 'media'. In order to identify a  
363 member attribute of a collection attribute, the keyword names of both the collection attribute and the member  
364 attribute are given separated by a period (.) character. For example, to make the "media" attribute of the "cover-  
365 front" collection attribute mandatory, supply the keyword value: 'cover-front.media'.

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

### 375 **4.1.3 output-device-requested (name(127))**

376 This OPTIONAL Operation attribute specifies the name of the target output device for a Printer that fans-out to  
377 multiple devices (see [rfc2911] section 2.1). This allows the client to control which output device the Printer selects.  
378 If this attribute is omitted, the Printer selects whichever output device seems best for the job in an implementation  
379 dependent manner. The client can discover which output devices the Printer supports by querying the Printer's  
380 "output-device-requested-supported" Printer attribute (see section 8.12).

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

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

385 If a client supplies this "output-device-requested" Operation attribute with a value that the Printer doesn't support, the  
386 Printer MUST perform one of the following actions depending on implementation: (1) reject the request OR (2)  
387 accept the request and either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute.  
388 See section 4.2 below for more details.

## 389 **4.2 Operation attributes for Document Creation operations**

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

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<sup>12</sup> The Printer uses the "job-mandatory-attributes" Job Description attribute for validating subsequent Document Creation operations for this job when also supporting [ippdoc].

392 Creation and Document Creation operations. The following statements apply to all of these Operation attributes and  
393 are *not* repeated in each attribute Description:

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

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

398 1. support the corresponding "xxx-default" and "xxx-supported" Printer Description attributes as well, if defined  
399 (see Table 5 and section 8) and vice versa.

400 2. validate the values supplied by the client in the "xxx" Operation attribute against the values indicated in the  
401 Printer's corresponding "xxx-supported" Printer Description attribute (see section 8). If the values do not  
402 validate, the Printer MUST perform one of the actions indicated for that Operation, unless specified  
403 otherwise, such as (1) reject the request, (2) accept the request and either (a) hold the job for operator  
404 intervention or (b) print the Job ignoring the attribute. In all of these cases, the Printer MUST return the  
405 Operation attribute with the unsupported value in the Unsupported Attributes group in the response (see  
406 [rfc2911] section 3.1.7).

#### 407 **4.2.1 document-charset (charset)**

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

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

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

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

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

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



435 If the Printer supports the "document-charset" Operation attribute, it MUST also support the corresponding  
 436 "document-charset-default" and "document-charset-supported" Printer Description attributes as well and vice versa  
 437 (see sections 8.1 and 8.2).

#### 438 **4.2.2 document-digital-signature (type2 keyword)**

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

440 If a client supplies this "document-digital-signature" Operation attribute in a Document Creation operation with a  
 441 value that the Printer doesn't support, the Printer MUST perform one of the following actions depending on  
 442 implementation: (1) reject the request OR (2) accept the request, set the Job's "job-state-reasons" attribute to  
 443 'digital-signature-type-not-supported' (see section 7.1), and either (a) put the Job in the 'pending-held' state or (b)  
 444 process the job ignoring the attribute. See section 4.2 above for more details.

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

- 449 1. ignore the signature (and MAY indicate on the printed output some how) and MUST set the Job's "job-state-  
 450 reasons" Job Description attribute to the 'digital-signature-did-not-verify' value (see section 7.1).
- 451 2. put the job on hold and wait for human intervention and MUST set the Job's "job-state-reasons" Job  
 452 Description attribute to the 'job-digital-signature-wait' and 'digital-signature-did-not-verify' values (see section  
 453 7.1), OR
- 454 3. abort the job depending on implementation and/or site configuration and MUST set the Job's "job-state-  
 455 reasons" Job Description attribute to the 'job-aborted-by-system' and 'digital-signature-did-not-verify' values  
 456 (see section 7.1).

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

464 The following standard keyword values are defined:

- 465 'dss': Digital Signature Standard (DDS) [dss].
- 466 'none': There is not a digital signature in the Document content. If this attribute is supported, the 'none'  
 467 value MUST be supported.
- 468 'pgp': PGP Message Exchange Formats [rfc1991].
- 469 'smime': Enhanced Security Services for S/MIME [rfc2634].
- 470 'xmldsig' XML Digital Signature [xmldsig].

#### 471 **4.2.3 document-format (mimeMediaType)**

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

476 The standard values for this attribute are Internet Media types (sometimes called MIME types). For some MIME  
 477 types, such as 'text/plain' [rfc2046], the "; charset=" parameter is defined which specifies the charset of the Document  
 478 content. The Printer MUST support the charset MIME parameter as well as the "document-charset" Operation  
 479 attribute (section 4.2.1) if the Printer supports any text MIME type, such as 'text/plain' or 'text/html'. For further  
 480 details see the description of the 'mimeMediaType' attribute syntax in [rfc2911] section 4.1.9 and [rfc2046] and the  
 481 "document-charset" Operation attribute (section 4.2.1).

482 Many printer languages in the Printer MIB do not have a MIME type registered with IANA.<sup>13</sup> It is the intent of the  
 483 PWG to registers all of the Printer MIB v2 XXX Printer Languages as 'application/vnd.PWG-XXX'. If a Printer  
 484 Language already has a registered MIME Media type or gets a registration in the future, then that MIME Type MUST  
 485 be used in preference to the 'application/vnd.PWG-XXX' MIME Type. For example, PostScript® has the MIME  
 486 Media type: 'application/postscript' and PCL has the MIME Media Type: 'application/vnd.HP-PCL', so those MIME  
 487 Media types MUST be used instead of 'application/vnd.PWG-PS' and 'application/vnd.PWG-PCL'. For example, the  
 488 NEC NPDL printer language from the Printer MIB does not have a MIME type registered with IANA. Therefore, the  
 489 "document-format" = 'application/vnd.PWG-NPDL' MUST be used.

490 Note: It is proposed that CIP4 [cip4] register the YYY document formats with IANA as 'application/vnd.CIP4-YYY'  
 491 that CIP4 is using that don't have a registered MIME Media type. For example, TIFF/IT [iso12639] would be  
 492 registered as: 'application/vnd.CIP4-TIFF-IT'. Then CIP4 would keep a list of TIFF/IT versions. For example:  
 493 'TIFF/IT-CT/P1:1998' to use with the "document-format-version" attribute (and the CIP4 JDF equivalent  
 494 MimeTypeVersion attribute).

495 ACTION ITEM (Tom): Get CIP4 buy-in to use the same flat file (which will require an additional field for the  
 496 JDF FileType attribute. ACTION ITEM (Tom and Ira): Propose a format for the file.

497 See also the "document-format-version" Operation attribute in section 4.2.5 and the "document-format-details"  
 498 Operation attribute in section 4.2.4.

#### 499 4.2.4 document-format-details (1setOf collection)

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

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

508 If a client supplies the "document-format-details" Operation attribute in a Document Creation request with member  
 509 attributes and/or values that the Printer doesn't support, the Printer MUST perform one of the following actions  
 510 depending on implementation: (1) reject the request OR (2) accept the request and either (a) put the Job in the  
 511 'pending-held' state or (b) process the job ignoring the attribute. See section 4.2 above for more details. However, if  
 512 the "document-charset" or the "document-format" member attributes are the ones in question, the Printer MUST  
 513 reject the request, same as for the "document-charset" and "document-format" Operation attributes (see sections  
 514 4.2.1 and 4.2.3) and return the 'client-error-charset-not-supported' (see [rfc2911] section 13.1.4.16) or the 'client-  
 515 error-document-format-not-supported' (see [rfc2911] section 13.1.4.11), respectively.

<sup>13</sup> Companies are urged to register their 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'.

516 For a packaging format, the “document-format-details” attribute does not provide means to associate each collection  
 517 value with particular document in the archive file, so it does not provide a “manifest”<sup>14</sup> of the packaging. One of the  
 518 packaging collection values MAY describe the packaging format itself, in which case that collection value MUST be  
 519 the first collection value. The remaining collection values provides the summary of the details of the contained files in  
 520 any order.

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

523 (1) MAY have one collection value with the “document-format” member attribute = ‘application/zip’ MIME type  
 524 value and MAY have additional member attributes that give details about the .zip file itself and

525 (2) MUST have one collection value containing a “document-format” member attribute =  
 526 ‘application/postscript’ and MAY have additional member attributes that give the details about the PostScript  
 527 files.

528 If a file in a packaging file is itself a packaging file, the single “document-format-details” (1setOf collection) Operation  
 529 attribute SHOULD contain the flattened distinct collection values for all files at all nested levels. Therefore, the  
 530 “document-format-details” collection attribute is not recursively defined and MUST NOT contain the “document-  
 531 format-details” attribute as a member attribute.

532 **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             | 4.2.4.1                  | N/A                         |
| document-source-application-version | text(127)              | MAY             | MAY             | 4.2.4.2                  | N/A                         |
| document-source-os-name             | name(40)               | MAY             | MAY             | 4.2.4.3                  | N/A                         |
| document-source-os-version          | text(40)               | MAY             | MAY             | 4.2.4.4                  | N/A                         |
| document-format                     | mimeMediaType          | MUST            | MUST            | 4.2.4.5                  | 4.2.3                       |
| document-format-device-id           | text(127)              | MAY             | MAY             | 4.2.4.6                  | N/A                         |
| document-format-version             | text(127)              | SHOULD          | MUST            | 4.2.4.7                  | 4.2.5                       |
| document-natural-language           | 1setOf naturalLanguage | MAY             | MAY             | 4.2.4.8                  | 4.2.6                       |

533 The client can determine which member attributes of the “document-format-details” are supporter by querying the  
 534 Printer’s “document-format-details-supported” (1setOf type2 keyword) Printer Description attribute (see section 8.6).  
 535 The client can determine a supported set of document details by querying the Printer’s “document-format-details-  
 536 implemented” (1setOf collection) Printer Description attribute (see section 8.7).  
 537

538 Table 7 shows that three of the member attributes also have comparable top level Operation attributes defined with  
 539 the same names. See the sections listed in the rightmost column. These three high level attributes have  
 540 corresponding “xxx-default” and “xxx-supported” Printer Description attributes. These values are also for use with  
 541 the corresponding three member attributes. The remaining member attributes do not have any corresponding “xxx-  
 542 default” and “xxx-supported” Printer Description attribute. The client MAY query the Printer’s "document-format-  
 543 details-implemented" Printer Description attribute to determine what values the Printer has implemented. However,  
 544 the Printer MAY accept other values, such as later or earlier versions.

<sup>14</sup> 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 ~~as a separate Document object~~ **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.

545 If a client supplies this "document-format-details" Operation attribute with a member attribute with a value that the  
 546 Printer doesn't support, the Printer MUST perform one of the following actions: (1) reject the request OR (2) accept  
 547 the request and either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See  
 548 section 4.2 above for more details.

#### 549 **4.2.4.1 document-source-application-name (name(MAX))**

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

#### 553 **4.2.4.2 document-source-application-version (text(127))**

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

557 "8.1 (4331)" for Winzip®, "5.0.5 10/26/2001" for Acrobat®, "2000 (9.0.4119 SR-1)" for Microsoft® Word

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

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

#### 565 **4.2.4.3 document-source-os-name (name(40))**

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

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

#### 573 **4.2.4.4 document-source-os-version (text(40))**

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

578 Example values for the indicated "document-source-os-name" value are:

579 For 'AIX': '370', 'PS/2'

580 For 'LINUX': '1.0', '1.2', '2.0', '2.2', '2.4'

---

<sup>15</sup> 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.

581 For 'MVS': 'SP'  
 582 For 'NETWARE': '3', '3.11', '4.0', '4.1', '5.0'  
 583 For 'SUN-OS': '3.5', '4.0'  
 584 For 'UNIX': 'BSD', 'V', 'V.1', 'V.2', 'V.3', 'PC'  
 585 For 'WINDOWS': '95', '98', 'CE', 'NT', 'NT-2', 'NT-3', 'NT-3.5', 'NT-3.51', 'NT-4', 'NT-5', '2000', 'XP'  
 586 [not registered yet]  
 587

#### 588 **4.2.4.5 document-format (mimeMediaType)**

589 This REQUIRED member Operation attribute identifies the document format (see [rfc2911] §3.2.1.1) of the  
 590 collection value of which it is a member. The client MUST supply and the Printer MUST support this member  
 591 attribute in each collection value. The values for this member attribute are Internet Media types (sometimes  
 592 called MIME types) and have the same values and semantics as for the top level "document-format"  
 593 Operation attribute with the same name (see section 4.2.3 for the semantics).

#### 594 **4.2.4.6 document-format-device-id (text(127))**

595 This OPTIONAL member Operation attribute identifies the type of device for which the document was  
 596 formatted, including manufacturer and model. This attribute is intended to identify document formats that are  
 597 not portable, e.g., PDLs that are device dependent. The value of this variable MUST exactly match the IEEE  
 598 1284-2000 Device ID string (see [IEEE1284] clause 6), except the length field MUST NOT be specified. See  
 599 the Microsoft Universal Plug and Play [upnp] section 2.2.6 DeviceId parameter for details and examples.  
 600 Here is an example showing only the required fields for a PostScript document:  
 601 MANUFACTURER:ACME Co.;COMMAND SET:PS;MODEL:LaserBeam 9;

#### 602 **4.2.4.7 document-format-version (text(127))**

603 This REQUIRED member Operation attribute identifies the level or version of the document format identified  
 604 by the "document-format" member attribute. The client MAY supply and the Printer MUST support this  
 605 member attribute if the Printer supports the "document-format-details" Operation attribute. The semantics  
 606 and supported values of this "document-format-version" member attribute MUST be the same as for the top  
 607 level "document-format-version" Operation attribute with the same name (see section 4.2.5 for the  
 608 semantics).

#### 609 **4.2.4.8 document-natural-language (naturalLanguage)**

610 This OPTIONAL member Operation attribute specifies the natural language(s) of the collection value of  
 611 which it is a member. The values for this attribute are natural language codes (with optional country codes)  
 612 and have the same values and semantics as for the top level "document-natural-language"  
 613 (naturalLanguage) operation attribute with the same name (see section 4.2.6 for the semantics).

### 614 **4.2.5 document-format-target (mimeMediaType)**

615 ~~This OPTIONAL Operation attribute specified the document format that the Printer is to produce.~~

616 ~~If a client supplies the "document-format-target" Operation attribute with a value that the Printer doesn't support as~~  
 617 ~~indicated by the Printer's "document-format-target-supported" attribute (see section 8.9), the Printer MUST reject the~~  
 618 ~~job and return the status code: 'client-error-document-format-not-supported' (see [rfc2911] section 3.1.4.11), since~~  
 619 ~~the Printer cannot produce the requested data. For this error, the Printer MUST also return the "document-format-~~  
 620 ~~target" attribute with its unsupported value in the Unsupported Attributes group in the response in order to distinguish~~  
 621 ~~this case from the "document-format" Operation attribute value being unsupported.~~

622 ~~The values of this attribute are MIME Media Types as defined for the "document-format" Operation attribute (see~~  
 623 ~~section 4.2.3). Support of this Operation attribute is intended for Printers that perform document format conversion~~  
 624 ~~as part of their service.~~

625 **ISSUE 01:** OK that we defined the "document-format-target" and "document-format-version-target" attributes to be  
 626 Operation attributes (SM-Description attributes) instead of Job Template attributes (SM-Document-Processing  
 627 attributes), so that the Printer MUST perform the requested action without the client having to use the "ipp-attribute-  
 628 fidelity" or "job-mandatory-attributes" operation attribute and so the client can supply different values for different  
 629 documents without requiring the Document Object [ippdoc]?

#### 630 **4.2.64.2.5 document-format-version (text(127))**

631 This OPTIONAL Operation attribute identifies the level or version of the document format of the Document content  
 632 identified by the "document-format" Operation attribute (section 4.2.3).

633 If the client supplies this "document-format-version" Operation attribute, the client MUST also supply the "document-  
 634 format" Operation attribute (section 4.2.3), so that the Printer does not need to parse the "document-format-version"  
 635 string in order to determine the document format and version.

636 If a client supplies this "document-format-version" Operation attribute with a value that the Printer doesn't support as  
 637 indicated by the Printer's "document-format-version-supported" attribute (see section 8.9), the Printer MUST perform  
 638 one of the following actions, depending on implementation: (1) reject the request OR (2) accept the request and  
 639 either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See section 4.2 above  
 640 for more details.

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

645 The short first field before the "/" character are unique, so that the version values are self-identifying so that all the  
 646 versions for all document formats can be combined into a single list for the Printer's "document-format-version-  
 647 supported" Printer attribute. The first field also tends to be the acronym for the document format and often is also the  
 648 file name extension registered with IANA. The Printer MIB shows the first field in uppercase for readability.  
 649 However, the Printer MUST perform case-insensitive matching of supplied values with supported values.

650 Example values:

651 'PS/3': For Postscript level 3 [rfc1759].  
 652 'PCL/5e': For PCL 5e [rfc1759].  
 653 'PDF/1.4': For PDF version 1.4 [pdf]  
 654 'PDF/X-1a:2001': For PDF/X-1a [iso15930]  
 655 'TIFF/IT-FP:1998': TIFF/IT [iso12639] - Full Page - baseline.  
 656 'TIFF/IT-CT:1998': TIFF/IT [iso12639] - Continuous Tone picture data - baseline  
 657 'TIFF/IT-FP/P1:1998': TIFF/IT [iso12639] - Full Page - profile 1  
 658 'TIFF/IT-CT/P1:1998': TIFF/IT [iso12639] - Continuous Tone picture data - profile 1  
 659 'Automatic': auto sense the format [rfc1759]. Is use in combination with the 'application/octet-stream' (see  
 660 [rfc2911] section 4.1.9.1) value of the "document-format" attribute (section 4.2.3).  
 661

662 If a client supplies this "document-format-version" Operation attribute with a value that the Printer doesn't support as  
 663 indicated by the Printer's "document-format-version-supported" attribute (see section 8.9), the Printer MUST perform  
 664 one of the following actions, depending on implementation: (1) reject the request OR (2) accept the request and  
 665 either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See section 4.2 above

666 for more details. ~~ISSUE 02: Or should we require the Printer to always reject a request for an unsupported target~~  
 667 ~~version?~~

668 The Printer produces the value indicated by its "document-format-version-default" Printer attribute only if the client  
 669 does not supply the "document-format-version" Operation attribute and the "document-format" Operation attribute. If  
 670 the client supplies the "document-format" Operation attribute, but not the "document-format-version" Operation  
 671 attribute, the Printer applies an appropriate default version for the supplied document format.

672 ~~ISSUE 03: OK not to have a "document-format-col-default" (collection) which is pairs of "document-format" and~~  
 673 ~~"document-format-version" values, since the "document-format-version" is self-describing which includes short~~  
 674 ~~abbreviation of the document format?~~

675 ~~ISSUE 0104: Or should the "document-format-version-default" be a 1setOf since the version string is self-identifying~~  
 676 ~~with the PDL? Then the different defaults could be indicated for each document format?~~

#### 677 **4.2.7 document-format-version-target (text(127))**

678 ~~This OPTIONAL Operation attribute specifies the document format level or version that the Printer is to produce.~~

679 ~~If the client supplies this "document-format-version-target" Operation attribute, the client MUST also supply the~~  
 680 ~~"document-format-target" Operation attribute (section 4.2.7), so that the Printer does not need to parse the~~  
 681 ~~"document-format-version-target" string in order to determine the document format and version.~~

682 ~~If a client supplies this "document-format-version-target" Operation attribute with a value that the Printer doesn't~~  
 683 ~~support as indicated by the Printer's "document-format-version-target-supported" attribute (see section 8.13), the~~  
 684 ~~Printer MUST perform one of the following actions, depending on implementation: (1) reject the request OR (2)~~  
 685 ~~accept the request and either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute.~~  
 686 ~~See section 4.2 above for more details. ISSUE 05: Or should we require the Printer to always reject a request for~~  
 687 ~~an unsupported target version?~~

688 ~~The values are the document format version strings as defined for the "document-format-version" Operation attribute~~  
 689 ~~(see section 4.2.6). Support of this Job Template attribute is intended for Printers that perform document format~~  
 690 ~~conversion as part of their service.~~

691 ~~The Printer produces the value indicated by its "document-format-version-target-default" Printer attribute (see section~~  
 692 ~~8.8) only if the client does not supply the "document-format-target-version" Operation attribute and the "document-~~  
 693 ~~format-target" Operation attribute. If the client supplies the "document-format-target" Operation attribute, but not the~~  
 694 ~~"document-format-version-target" Operation attribute, the Printer applies an appropriate default version for the~~  
 695 ~~supplied document format.~~

696 ~~ISSUE 06: Does it make sense to have a "document-format-target-default" or not?~~

#### 697 **4.2.84.2.6 document-natural-language (naturalLanguage)**

698 This OPTIONAL Operation attribute specifies the natural language of the Document content (see [rfc2911] section  
 699 3.2.1.1 and section 4.1.8).

700 If the client supplies this "document-natural-language" Operation attribute with a value that the Printer doesn't  
 701 support, the Printer MUST perform one of the following actions: (1) reject the request OR (2) accept the request and  
 702 either (a) put the Job in the 'pending-held' state or (b) process the job ignoring the attribute. See section 4.2 above  
 703 for more details.

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

707 'en': for English  
 708 'en-us': for US English  
 709 'fr': for French  
 710 'de': for German  
 711

## 712 5 Job Template attributes

713 Table 8 lists the new Job Template attributes defined in this specification. The Job Template attributes can be  
 714 supplied in the Job Creation operations: Print-Job, Print-URI, and Create-Job operations.

715 Job Template attributes are OPTIONAL for a Printer to support and for a client to supply in a Job Creation request. If  
 716 a Printer supports a Job Template attribute, then it MUST copy the supplied attribute to the Job object, respectively  
 717 so that a client MAY query the attributes in subsequent Get-Job-Attributes/Get-Jobs operations

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

721 **Table 8 - Job Template attributes**

| <b>Job Template attribute name "xxx"</b> | Attribute Syntax | Printer: Default Value attribute syntax<br>"xxx-default" | Printer: Supported Values attribute syntax<br>"xxx-supported" |
|--|------------------|--|---|
| <b>job-copies</b>                        | integer(1:MAX)   | integer(1:MAX)   | rangeOfInteger(1:MAX)   |



| Job Template attribute name "xxx"                 | Attribute Syntax          | Printer: Default Value attribute syntax "xxx-default" | Printer: Supported Values attribute syntax "xxx-supported" |
|---|---------------------------|---|--|
| <b>job-cover-back</b>                             | collection                | collection  | 1setOf type2 keyword                                       |
| <b>cover-type</b>                                 | type2 keyword             | -   | 1setOf type2 keyword                                       |
| <b>media</b>                                      | type3 keyword   name(MAX) | -   | 1setOf (type3 keyword   name(MAX))                         |
| <b>media-col</b>                                  | collection                | -   | 1setOf type2 keyword                                       |
| <b>member attributes [pwg5100.3]</b>              | See [pgw5100.3]           | -   | -  |
| <b>job-cover-front</b>                            | collection                | collection  | 1setOf type2 keyword                                       |
| <b>member attributes - same as job-cover-back</b> | see <b>job-cover-back</b> |   |  |
| <b>job-finishings</b>                             | 1setOf type2 enum         | 1setOf type2 enum <sup>16</sup>                       | 1setOf type2 enum  |
| <b>job-finishings-col</b>                         | collection                | collection <sup>16</sup>                              | 1setOf type2 keyword                                       |
| <b>finishing-template</b>                         | name(MAX)                 | -   | 1setOf name(MAX)   |
| <b>stitching</b>                                  | collection                |   | 1setOf type2 keyword                                       |
| <b>stitching-reference-edge</b>                   | type2 keyword             | -   | 1setOf type2 keyword                                       |
| <b>stitching-offset</b>                           | integer (0:MAX)           | -   | 1setOf (integer(0:MAX)   rangeOfInteger(0:MAX))            |
| <b>stitching-locations</b>                        | 1setOf integer(0:MAX)     | -   | 1setOf (integer(0:MAX)   rangeOfInteger(0:MAX))            |

## 722 5.1 Job Template attributes defined for use with multi-document jobs

723 This section defines additional Job Template attributes for use with multi-document Jobs. These Job Template  
 724 attributes MUST be supplied in Job Creation operations only. They have the "job-" prefix to indicate this scope. This  
 725 Job Template attribute MUST NOT be supplied in the "page-overrides" Job Template attribute [override]. Unless  
 726 specified otherwise, each Job Template attribute has a corresponding "xxx-default" and "xxx-supported" Job Template  
 727 Printer attribute. See Table 11 for the attribute syntax.

### 728 5.1.1 job-copies (integer(1:MAX))

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

#### 735 5.1.1.1 job-copies-default (integer(1:MAX))

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

#### 738 5.1.1.2 job-copies-supported (rangeOfInteger(1:MAX))

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

<sup>16</sup> 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).

## 741 **5.1.2 job-cover-back (collection)**

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

### 748 **5.1.2.1 job-cover-back-default (collection)**

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

### 751 **5.1.2.2 job-cover-back-supported (1setOf type2 keyword)**

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

## 755 **5.1.3 job-cover-front (collection)**

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

### 763 **5.1.3.1 job-cover-front-default (collection)**

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

### 766 **5.1.3.2 job-cover-front-supported (1setOf type2 keyword)**

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

## 770 **5.1.4 job-finishings (1setOf type2 enum)**

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

### 777 **5.1.4.1 job-finishings-default (1setOf type2 enum)**

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

**780 5.1.4.2 job-finishings-ready (1setOf type2 enum)**

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

**784 5.1.4.3 job-finishings-supported (1setOf type2 keyword)**

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

**787 5.1.5 job-finishings-col (1setOf collection)**

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

**794 5.1.5.1 job-finishings-col-default (collection)**

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

**797 5.1.5.2 job-finishings-col-ready (collection)**

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

**801 5.1.5.3 job-finishings-col-supported (1setOf type2 keyword)**

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

**805 6 Job Description attributes**

806 Table 9 lists the new Job Description defined in this IPP specification. Job Description attributes are Job object  
807 attributes that are filled in by the Printer. Some Job Description attribute values are supplied by the client in the Job  
808 operation using corresponding Operation attributes as indicated with "P y". The Printer MUST NOT support  
809 modification of any of these Job Description attributes using the Set-Job-Attributes operation ([rfc3380]).

| Legend:                     |  |
|-----------------------------|--|
| <b>IPP attribute syntax</b> | the attribute syntax (see [rfc2911] section 4.1).  |
| <b>Set by</b>               | indicates whether the value is set by the client or Printer in the Job Creation operation:<br><b>client</b> - means that the Printer <b>MUST</b> populate this Job Description attribute by copying <i>from</i> the corresponding Operation attribute that the client <b>MAY</b> supply in the Job Creation operation. See Table 6 for the corresponding Operation attribute.<br><b>Printer</b> - means that the Printer sets the value based on the state of the Printer. |
| <b>Printer conformance</b>  | indicates <b>MUST</b> or <b>MAY</b> for Printer conformance.   |
| <b>Reference</b>            | 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.  |

810 **Table 9 - Job Description attributes**

| Job Description attribute name  | IPP Attribute Syntax | Set by  | Printer conformance | Reference          |
|---------------------------------|----------------------|---------|---------------------|--------------------|
| <b>ipp-attribute-fidelity</b>   | boolean              | client  | MAY                 | [this spec] §6.1   |
| <b>job-errors-count</b>         | integer(0:MAX)       | Printer | MAY                 | [this spec] §6.2   |
| <b>job-mandatory-attributes</b> | 1setOf type2 keyword | client  | MAY                 | [this spec] §6.3   |
| <b>job-warnings-count</b>       | integer(0:MAX)       | Printer | MAY                 | [this spec] §6.4   |
| <b>output-device-requested</b>  | name(127)            | client  | MAY                 | [this spec] §6.5   |
| <b>output-device-assigned</b>   | name(127)            | Printer | MAY                 | [rfc2911] §4.3.7.2 |

811 Most of the existing “job-state” and “job-state-reasons” Job Description attribute values apply equally well to  
812 individual documents in a multi-document job (with removal of the ‘job-’ prefix for those that apply to both Job and  
813 Document). Furthermore, the job states are completely service-type neutral, so they can apply to scanning, faxing,  
814 formatting processes as well. The job state reasons have a number of reasons that are print service specific, but  
815 most can apply to other types of service as well. The reason for separating state from reasons, is so that the states  
816 can be the fundamental states that most implementations have, while the state reasons can vary depending on the  
817 sophistication of the system. The states are the ones that clients are most likely to base actions upon, and the state  
818 reasons are more information, both for programs and people.  
819

820 **6.1 ipp-attribute-fidelity (boolean)**

821 This OPTIONAL Job Description attribute indicates the value of the corresponding “ipp-attribute-fidelity” Operation  
822 attribute ([rfc2911] section 3.2.1.1)<sup>17</sup> that the client supplied in the Job Creation operation. This Job Description  
823 attribute has no effect on the processing of the job once the Job Creation operation has been accepted<sup>18</sup>. However,  
824 this attribute does provide an audit capability to the user and service desk for comparing unexpected printed results  
825 with what was submitted.

826 **6.2 job-errors-count (integer(0:MAX))**

827 This OPTIONAL Job Description attribute counts the number of errors encountered processing the job as a whole.  
828 An error where some portion of the printed output is not present, such as a glyph encountered which isn't in the  
829 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  
830 overall document format.

<sup>17</sup> 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.

<sup>18</sup> 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].

### 831 **6.3 job-mandatory-attributes (1setOf type2 keyword)**

832 This OPTIONAL Job Description attribute indicates which Job Template attributes that the client required that the  
833 Printer Honor in order to accept the Job Creationrequest. The Printer populates this attribute with the value of the  
834 corresponding "job-mandatory-attributes" Operation attribute (see section 4.1.2) supplied by the client in the Job  
835 Creation operation. This Job Description attribute has no effect on the processing of the job once the Job Creation  
836 operation has been accepted<sup>18</sup>. However, this Job Description attribute does provide an audit capability of the Job  
837 object in the Job History (see [rfc2911] section 4.3.7.2) to the user and service desk for comparing unexpected  
838 printed results with what was submitted. See section 4.1.2 for additional details of the semantics of this "job-  
839 mandatory-attributes" Operation attribute that are not repeated here.

### 840 **6.4 job-warnings-count (integer(0:MAX))**

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

### 843 **6.5 output-device-requested (name(127))**

844 This OPTIONAL Job Description attribute indicates the name of the output device that the client has supplied in the  
845 "output-device-requested" Operation attribute (see section 4.1.3), if any, in the Job Creation operation. The Printer  
846 sets the Job's "output-device-assigned" Job Description attribute (see [rfc2911] section ) to the name of the actual  
847 device assigned.

## 848 **7 New values to existing attributes**

849 This section defines new values to existing attributes.

### 850 **7.1 New job-state-reasons(1setOf type2 keyword) Values**

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

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

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

861 Table 10 lists the new keyword values for the "job-state-reasons" attribute defined in this specification as indicated in  
862 the References column. In Table 10 the keywords are listed in alphabetic order, while in their descriptions following  
863 Table 10, they are listed in the most likely order of occurrence to help understanding.

864

**Table 10 - New "job-state-reasons" attribute values**

| IPP Job Description attribute name | IPP Attribute Syntax plus Values     | Printer conformance | Reference        |
|------------------------------------|--------------------------------------|---------------------|------------------|
| <b>job-state-reasons</b>           | 1setOf type2 keyword                 | MUST                | [rfc2911] §4.3.8 |
|                                    | digital-signature-did-not-verify     | MAY                 | [this spec] §7.1 |
|                                    | digital-signature-type-not-supported | MAY                 | [this spec] §7.1 |
|                                    | job-digital-signature-wait           | MAY                 | [this spec] §7.1 |

865

866

867

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

868

869

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

870

871

872

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

873

874

**'digital-signature-did-not-verify'**: The Job contains a digital signature type that is supported (see section 4.2.2), but the signature did not verify when the Printer attempted to verify the signature.

875

876

## 8 New Printer Description attributes

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881

This section lists *the new* Printer Description attributes defined in this document. These Printer attributes describe the Printer, such as "printer-name" and "printer-location". Some of them are "xxx-supported" and "xxx-default" for Operation attributes that the client can supply in a Job Creation request.

The column labels are:

| Column Heading            |  |
|---------------------------|--|
| <b>"Attribute Syntax"</b> | 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. |
| <b>"Printer Conf."</b>    | 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.   |
| <b>"Reference"</b>        | the section which defines the semantics of the attribute.  |

882

883 **Table 11 - New Printer Description attributes**

| Printer Description attribute name              | Attribute Syntax                     | Printer Conf.       | Reference                         |
|---|--------------------------------------|---------------------|-----------------------------------|
| <b>document-charset-default</b>                 | charset                              | CMUST <sup>19</sup> | [this-spec] §8.1                  |
| <b>document-charset-supported</b>               | 1setOf charset                       | CMUST <sup>19</sup> | [this-spec] §8.2                  |
| <b>document-digital-signature-default</b>       | type2 keyword                        | MAY                 | [this-spec] §8.3                  |
| <b>document-digital-signature-supported</b>     | 1setOf type2 keyword                 | MAY                 | [this-spec] §8.4                  |
| <b>document-format-details-default</b>          | collection                           | CMUST <sup>20</sup> | [this-spec] §8.5                  |
| <b>document-format-details-supported</b>        | 1setOf type2 keyword                 | CMUST <sup>20</sup> | [this-spec] §8.6                  |
| <b>document-format-details-implemented</b>      | 1setOf collection                    | CMUST <sup>20</sup> | [this-spec] §8.7                  |
| <b>document-format-target-default</b>           | <a href="#">mimeMediaType</a>        | <a href="#">MAY</a> | <a href="#">[this-spec] §8.8</a>  |
| <b>document-format-target-supported</b>         | <a href="#">1setOf mimeMediaType</a> | <a href="#">MAY</a> | <a href="#">[this-spec] §8.9</a>  |
| <b>document-format-version-default</b>          | text(127)                            | MAY                 | [this-spec] §8.8                  |
| <b>document-format-version-supported</b>        | 1setOf text(127)                     | MAY                 | [this-spec] §8.9                  |
| <b>document-format-version-target-default</b>   | <a href="#">mimeMediaType</a>        | <a href="#">MAY</a> | <a href="#">[this-spec] §8.12</a> |
| <b>document-format-version-target-supported</b> | <a href="#">1setOf mimeMediaType</a> | <a href="#">MAY</a> | <a href="#">[this-spec] §8.13</a> |
| <b>document-natural-language-default</b>        | naturalLanguage                      | MAY                 | [this-spec] §8.10                 |
| <b>document-natural-language-supported</b>      | 1setOf naturalLanguage               | MAY                 | [this-spec] §8.11                 |
| <b>output-device-requested-supported</b>        | 1setOf name(127)                     | MAY                 | [this spec] §8.12                 |

884 The remainder of this section defines the Printer Description attributes that are not defined in other specifications.  
 885 Most of these are “xxx-default” and “xxx-supported” Printer Description attributes. A Printer MUST support these  
 886 Printer Description attributes, if it supports the corresponding Operation attributes, in order to indicate the default and  
 887 supported values that the Printer supports.  
 888

889 **8.1 document-charset-default (charset)**

890 This CONDITIONALLY REQUIRED Printer Description attribute indicates the default charset that the Printer will  
 891 assume for charset-ambiguous document formats when the client omits the “document-charset” Operation attribute  
 892 (section 4.2.1). The Printer MUST support this attribute if it supports any charset-ambiguous document formats (see  
 893 section 4.2.1)

894 **8.2 document-charset-supported (1setOf charset)**

895 This CONDITIONALLY REQUIRED Printer Description attribute indicates the charsets that the Printer supports in  
 896 Document Content, that is, supports as values of the “document-charset” Operation attribute (section 4.2.1). The  
 897 Printer MUST support this attribute if it supports any charset-ambiguous document formats (see section 4.2.1).

898 **8.3 document-digital-signature-default (type2 keyword)**

899 This OPTIONAL Printer Description attribute indicates the default digital signature, if any, that the Printer will assume  
 900 when the client omits the “document-digital-signature” Operation attribute (section 4.2.2). The Printer MUST support  
 901 this attribute if it supports the “document-digital-signature” Operation attribute.

<sup>19</sup> 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 4.2.1).

<sup>20</sup> 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.

## 902 8.4 document-digital-signature-supported (1setOf type2 keyword)

903 This OPTIONAL Printer Description attribute indicates the digital signature technologies that the Printer supports in  
 904 Document Contents, that is, supports as values of the “document-digital-signature” Operation attribute (section  
 905 4.2.2). The Printer MUST support this attribute if it supports the “document-digital-signature” Operation attribute.

## 906 8.5 document-format-details-default (collection)

907 This CONDITIONALLY REQUIRED Printer Description attribute indicates the default document format details that  
 908 the Printer will assume when the client omits the “document-format-details” Operation attribute (section §4.2.4). The  
 909 Printer MUST support this attribute if it supports the “document-format-details” Operation attribute.

## 910 8.6 document-format-details-supported (1setOf type2 keyword)

911 This CONDITIONALLY REQUIRED Printer Description attribute lists the type2 keyword names of the member  
 912 attributes of “document-format-details” that the Printer supports. If the Printer supports the “document-format-details”  
 913 (1setOf collection) Operation attribute, the Printer MUST support this “document-format-details” (1setOf type2  
 914 keyword) Printer Description attribute. Table 12 lists the type2 keywords defined for use in the “document-format-  
 915 details-supported” Printer attribute.

916 **Table 12 - 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                 |

917

## 918 8.7 document-format-details-implemented (1setOf collection)

919 This CONDITIONALLY REQUIRED<sup>21</sup> Printer Description attribute lists the combinations of the values of the member  
 920 attributes of “document-format-details” that the Printer has implemented. If the Printer supports the “document-  
 921 format-details” Operation attribute, the Printer MUST support this “document-format-details-implemented” Printer  
 922 Description attribute with the same member attributes that it supports for the “document-format-details” Operation  
 923 attribute (section 4.2.4) as indicated in the Printer’s “document-format-details-supported” Printer Description attribute  
 924 (section 8.6). Each “xxx-implemented” member attribute is multi-valued with the same attribute syntax as the  
 925 corresponding “document-format-details” attribute.

926 | **ISSUE 0207:** Bob’s issue about truth in advertising. Don’t penalize truth. Does allowing these Operation attribute  
 927 keyword names in the “user-defined-attributes-supported” Printer attribute allow the Printer to accept any values  
 928 without returning the attribute in the Unsupported Attributes group?

<sup>21</sup> 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.



929

**Table 13 - 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))    | 4.2.4.1   |
| document-source-application-version-implemented (1setOf text(127)) | 4.2.4.2   |
| document-source-os-name-implemented (1setOf name(40))              | 4.2.4.3   |
| document-source-os-version-implemented (1setOf text(40))           | 4.2.4.4   |
| document-format-implemented (1setOf mimeType)                      | 4.2.4.5   |
| document-format-device-id-implemented (1setOf text(127))           | 4.2.4.6   |
| document-format-version-implemented (1setOf text(127))             | 4.2.4.7   |
| document-natural-language-implemented (1setOf naturalLanguage)     | 4.2.4.8   |

930

931 Typically, there will only be one value for each "document-format-implemented" member attribute in each collection  
 932 value. However, there MAY be more than one occurrence of a collection value with the same "document-format-  
 933 implemented" member attribute value. See the following example which has two PostScript collection values.

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

```

938 {{"document-format-implemented" = 'application/postscript', "document-format-version-implemented" = 'PS/1', 'PS/2', 'PS/3'},
939 {"document-format-implemented" = 'application/postscript', "document-format-version-implemented" = 'PS/3',
940  document-natural-language}=en, fr, de),
941 {"document-format-implemented" = 'application/vnd.hp-PCL', "document-format-version-implemented" = 'PCL/5', 'PCL/5e'}}
```

942 **8.8document-format-target-default (text(127))**

943 ~~This OPTIONAL Printer Description attribute indicates the default document format version that the Printer will~~  
 944 ~~assume when the client omits the "document-format-target" Operation attribute (section 4.2.5). The Printer MUST~~  
 945 ~~support this attribute if it supports the "document-format-target" Operation attribute.~~

946 ~~ISSUE 06 repeat: Does it make sense to have a "document-format-target-default" or not?~~

947 ~~ISSUE 08: OK not to have a "document-format-target-col-default" (collection) which is pairs of "document-format-~~  
 948 ~~target" and "document-format-version-target" values, since the "document-format-version" is self-describing which~~  
 949 ~~includes short abbreviation of the document format?~~

950 ~~ISSUE 09: Or should the "document-format-version-target-default" be a 1setOf since the version string is self-~~  
 951 ~~identifying with the PDL? Then the different defaults could be indicated for each document format?~~

952 **8.9document-format-target-supported (1setOf text(127))**

953 ~~This OPTIONAL Printer Description attribute indicates the target document format that the Printer supports for~~  
 954 ~~converting Document Content, that is, supports as values of the "document-format-target" Operation attribute~~  
 955 ~~(section 4.2.5). The Printer MUST support this attribute if it supports the "document-format-target" Operation and Job~~  
 956 ~~Description attributes.~~

957 **8.108.8 document-format-version-default (text(127))**

958 This OPTIONAL Printer Description attribute indicates the default document format version that the Printer will  
959 assume when the client omits the “document-format-version” Operation attribute (section 4.2.5). The Printer MUST  
960 support this attribute if it supports the “document-format-version” Operation attribute.

961 **8.118.9 document-format-version-supported (1setOf text(127))**

962 This OPTIONAL Printer Description attribute indicates the document format versions that the Printer supports for  
963 Document Contents, that is, supports as values of the “document-format-version” Operation attribute (section 4.2.5).  
964 The Printer MUST support this attribute if it supports the “document-format-version” Operation attribute.

965 **8.12document-format-version-target-default (text(127))**

966 ~~This OPTIONAL Printer Description attribute indicates the default document format level and version that the Printer  
967 will assume when the client omits the “document-format-version-target” Operation attribute (section 4.2.7). The  
968 Printer MUST support this attribute if it supports the “document-format-version-target” Operation attribute.~~

969 **8.13document-format-version-target-supported (1setOf text(127))**

970 ~~This OPTIONAL Printer Description attribute indicates the target document format levels and versions that the Printer  
971 supports for converting Document Content, that is, supports as values of the “document-format-version-target”  
972 Operation attribute (section 4.2.7). The Printer MUST support this attribute if it supports the “document-format-  
973 version-target” Operation attribute.~~

974 **8.148.10 document-natural-language-default (naturalLanguage)**

975 This OPTIONAL Printer Description attribute indicates the default document natural language that the Printer will  
976 assume for Document Content when the client omits the “document-natural-language” Operation attribute ([rfc2911]  
977 section 3.2.1.1). The Printer MUST support this attribute if it supports the “document-natural-language” Operation  
978 attribute.

979 **8.158.11 document-natural-language-supported (1setOf naturalLanguage)**

980 This OPTIONAL Printer Description attribute lists the natural languages supported in any of the supported document  
981 formats, that is, it is the union of the natural languages. The Printer MUST support this attribute if it supports the  
982 “document-natural-language” Operation attribute ([rfc2911] section 3.2.1.1). See the “document-format-details-  
983 implemented” (1setOf collection) Printer Description attribute (section 8.7) for how the Printer MAY expose the list of  
984 natural languages supported by particular document formats.

985 **8.168.12 output-device-requested-supported (1setOf name(127))**

986 This OPTIONAL Printer Description attributes lists the names of output devices that the Printer supports. The Printer  
987 MUST support this attribute if it supports the “output-device-requested” Operation attribute (see section 4.1.3).

988 **9 New Values for Existing Printer Description Attributes**

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

990 **9.1 operations-supported (1setOf type2 enum)**

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

992 **Table 14 - Operation-id assignments**

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

994 **10 Conformance Requirements**

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

997 **10.1 Printer conformance requirements**

998 In order to claim conformance to this specification, a Vendor MUST explicitly identify the operations and/or attributes  
 999 supported by the Printer implementation in any such claim of conformance. In addition, the Vendor's Printer  
 1000 implementation:

- 1001 1. MUST meet the conformance requirements for Printers specified in [rfc2911].
- 1002 2. MAY support the Close-Job operation according to section 3.1 and the corresponding enum value of the  
 1003 "operations-supported" Printer Description attribute according to section 9.1.
- 1004 3. MAY support any Operation attribute according to section 4 and the corresponding Job Description  
 1005 attributes in section 6 and corresponding Printer attributes in section 8.
- 1006 4. MAY support any Job Template attribute according to section 5.
- 1007 5. MAY support any of the "job-state-reasons" values according to section 7.

1008 **10.2 Client conformance requirements**

1009 In order to claim conformance to this specification, a Vendor MUST explicitly identify the operations and/or attributes  
 1010 supported by the client implementation in any such claim of conformance. In addition, the Vendor's client:

- 1011 1. MUST meet the conformance requirements for clients specified in [rfc2911]
- 1012 2. MAY support the Close-Job operation according to section 3.1.
- 1013 3. MAY support any Operation attribute according to section 4 and the corresponding Job Description attributes  
 1014 in section 6 and corresponding Printer attributes in section 8.
- 1015 4. MAY support any Job Template attribute according to section 5.

## 1016 11 Normative References

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## 1098 13 IANA Considerations

1099 This section contains the registration information for IANA to add to the various IPP Registries according to the  
1100 procedures defined in RFC 2911 [rfc2911] section 6 to cover the definitions in this document. The resulting  
1101 registrations will be published in the <http://www.iana.org/assignments/ipp-registrations> registry.

1102 *Note to the PWG Editor: Replace the References below to [this spec] with the IEEE-ISTO standard number*  
1103 *for the appropriate document, so that it accurately reflects the content of the information for the IANA Registry.*

### 1104 13.1 Attribute Registrations

1105 The following table lists all the attributes defined in this specification. These are to be registered according to the  
1106 procedures in RFC 2911 [rfc2911] section 6.2. If the attribute has a separate sub-section definition in this  
1107 specification, that sub-section is listed as the Reference. This table contains the reference to another specification  
1108 that completely defines each attribute.

| 1109 | Attribute Name (attribute syntax)               | Reference   | Section |
|------|---|-------------|---------|
| 1110 | -----   | -----       | -----   |
| 1111 |   |             |         |
| 1112 |   |             |         |
| 1113 |   |             |         |
| 1114 | Job Description attributes:                     |             |         |
| 1115 | job-attribute-fidelity (boolean)                | [this spec] | 6.1     |
| 1116 | job-errors-count (integer(0:MAX))               | [this spec] | 6.2     |
| 1117 | job-mandatory-attributes (1setOf type2 keyword) | [this spec] | 6.3     |
| 1118 | job-warnings-count (integer(0:MAX))             | [this spec] | 6.4     |
| 1119 | output-device-requested(name(127))              | [this spec] | 6.5     |
| 1120 |   |             |         |
| 1121 | Job Template attributes:                        |             |         |
| 1122 | job-copies (integer(1:MAX))                     | [this spec] | 5.1.1   |

|      |  |                        |                 |
|------|--|------------------------|-----------------|
| 1123 | job-copies-default (integer(1:MAX))                                    | [this spec]            | 5.1.1.1         |
| 1124 | job-copies-supported (rangeOfInteger(1:MAX))                           | [this spec]            | 5.1.1.2         |
| 1125 | job-cover-back (collection)  | [this spec]            | 5.1.2           |
| 1126 | <member attributes are the same as "cover-back">                       |                        |                 |
| 1127 | job-cover-back-default (collection)                                    | [this spec]            | 5.1.2.1         |
| 1128 | job-cover-back-supported (lsetOf type2 keyword)                        | [this spec]            | 5.1.2.2         |
| 1129 | job-cover-front (collection)   | [this spec]            | 5.1.3           |
| 1130 | job-cover-front-default (collection)                                   | [this spec]            | 5.1.3.1         |
| 1131 | job-cover-front-supported (lsetOf type2 keyword)                       | [this spec]            | 5.1.3.2         |
| 1132 | <member attributes are the same as "cover-front">                      |                        |                 |
| 1133 | job-finishings (lsetOf type2 enum)                                     | [this spec]            | 5.1.4           |
| 1134 | job-finishings-default (lsetOf type2 enum)                             | [this spec]            | 5.1.4.1         |
| 1135 | job-finishings-ready (lsetOf type2 enum)                               | [this spec]            | 5.1.4.2         |
| 1136 | job-finishings-supported (lsetOf type2 keyword)                        | [this spec]            | 5.1.4.3         |
| 1137 | job-finishings-col (lsetOf collection)                                 | [this spec]            | 5.1.5           |
| 1138 | <member attributes are the same as "finishings-col">                   |                        |                 |
| 1139 | job-finishings-col-default (lsetOf type2 enum)                         | [this spec]            | 0               |
| 1140 | job-finishings-col-ready (lsetOf type2 enum)                           | [this spec]            | 5.1.5.2         |
| 1141 | job-finishings-col-supported (lsetOf type2 keyword)                    |                        |                 |
| 1142 |  | [this spec]            | 5.1.5.3         |
| 1143 |  |                        |                 |
| 1144 |  |                        |                 |
| 1145 | Printer Description attributes:  |                        |                 |
| 1146 | document-charset-default (charset)                                     | [this spec]            | 8.1             |
| 1147 | document-charset-supported (lsetOf charset)                            | [this spec]            | 8.2             |
| 1148 | document-digital-signature-default (type2 keyword)                     | [this spec]            | 8.3             |
| 1149 | document-digital-signature-supported (lsetOf type2 keyword)            |                        |                 |
| 1150 |  | [this spec]            | 8.4             |
| 1151 | document-format-details-default (collection)                           | [this spec]            | 8.5             |
| 1152 | document-format-details-supported (lsetOf type2 keyword)               |                        |                 |
| 1153 |  | [this spec]            | 8.6             |
| 1154 | document-format-details-implemented (lsetOf collection)                |                        |                 |
| 1155 |  | [this spec]            | 8.7             |
| 1156 | <del>document-format-target-default (text(127))</del>                  | <del>[this spec]</del> | <del>8.8</del>  |
| 1157 | <del>document-format-target-supported (lsetOf text(127))</del>         | <del>[this spec]</del> | <del>8.9</del>  |
| 1158 | document-format-version-default (text(127))                            | [this spec]            | 8.8             |
| 1159 | document-format-version-supported (lsetOf text(127))                   | [this spec]            | 8.9             |
| 1160 | <del>document-format-version-target-default (text(127))</del>          | <del>[this spec]</del> | <del>8.12</del> |
| 1161 | <del>document-format-version-target-supported (lsetOf text(127))</del> | <del>[this spec]</del> | <del>8.13</del> |
| 1162 |  |                        |                 |
| 1163 | document-natural-language-default (naturalLanguage)                    | [this spec]            | 8.10            |
| 1164 | document-natural-language-supported (lsetOf naturalLanguage)           |                        |                 |
| 1165 |  | [this spec]            | 8.11            |
| 1166 | output-device-requested-supported (lsetOf name(127))                   | [this spec]            | 8.12            |
| 1167 |  |                        |                 |
| 1168 |  |                        |                 |

|      |   |                        |                  |
|------|---|------------------------|------------------|
| 1169 | Operation attributes:                                 |                        |                  |
| 1170 | document-charset (charset)                            | [this spec]            | 4.2.1            |
| 1171 | document-digital-signature (type2 keyword)            | [this spec]            | 4.2.2            |
| 1172 | document-format-details (lsetOf collection)           | [this spec]            | 4.2.4            |
| 1173 | document-source-application-name (name(MAX))          | [this spec]            | 4.2.4.1          |
| 1174 | document-source-application-version (text(127))       |                        |                  |
| 1175 |   | [this spec]            | 4.2.4.2          |
| 1176 | document-source-os-name (name(40))                    | [this spec]            | 4.2.4.3          |
| 1177 | document-source-os-version (text(40))                 | [this spec]            | 4.2.4.4          |
| 1178 | document-format (mimeMediaType)                       | [this spec]            | 4.2.4.5          |
| 1179 | document-format-device-id (text(127))                 | [this spec]            | 4.2.4.6          |
| 1180 | document-format-version (text(127))                   | [this spec]            | 4.2.4.7          |
| 1181 | document-natural-language (lsetOf naturalLanguage)    |                        |                  |
| 1182 |   | [this spec]            | 4.2.4.8          |
| 1183 | <del>document-format-target (mimeMediaType)</del>     | <del>[this spec]</del> | <del>4.2.5</del> |
| 1184 | document-format-version (text(127))                   | [this spec]            | 4.2.5            |
| 1185 | <del>document-format-version-target (text(127))</del> | <del>[this spec]</del> | <del>4.2.7</del> |
| 1186 | document-natural-language (naturalLanguage)           | [this spec]            | 4.2.6            |
| 1187 | job-mandatory-attributes (lsetOf type2 keyword)       | [this spec]            | 4.1.2            |
| 1188 | output-device-requested (name(127))                   | [this spec]            | 4.1.3            |

### 1189 13.2 Keyword attribute values

|      |  |             |       |
|------|--|-------------|-------|
| 1190 | job-state-reasons (lsetOf type2 keyword) | [rfc2911]   | 4.3.8 |
| 1191 | digital-signature-did-not-verify         | [this spec] | 7.1   |
| 1192 | digital-signature-type-not-supported     | [this spec] | 7.1   |
| 1193 | job-digital-signature-wait               | [this spec] | 7.1   |

1194

### 1195 13.3 Enum Attribute Values

1196 The following table lists all the new enum attribute values defined in this document as additional type2 enum values.  
 1197 These are to be registered according to the procedures in RFC 2911 [rfc2911] section 6.1.

1198

|      |  |             |       |
|------|--|-------------|-------|
| 1199 | job-finishings (lsetOf type2 enum)         | [this spec] | 5.1.4 |
| 1200 | <enum values are the same as "finishings"> |             |       |

1201

|      |                                   |             |        |
|------|-----------------------------------|-------------|--------|
| 1202 | operations-supported (type2 enum) | [rfc2911]   | 4.4.15 |
| 1203 | 0x000F Close-Job                  | [this spec] | 3.1    |

1204

### 1205 13.4 Operations

1206 The following table lists all of the operations defined in this document. These are to be registered according to the  
 1207 procedures in RFC 2911 [rfc2911] section 6.4.

1208

| 1209 | Operations | Reference   | Section |
|------|------------|-------------|---------|
| 1210 | -----      | -----       | -----   |
| 1211 | Close-Job  | [this spec] | 3.1     |



## 1212 **14 Internationalization Considerations**

1213 The internationalization considerations for the extensions defined in this specification are the same as for handling  
1214 the Job object in [rfc2911].

## 1215 **15 Security Considerations**

1216 Printer implementations MUST ensure that the Close-Job operation is being performed by a client with proper  
1217 authorization. Otherwise, a malicious user could close other people's jobs, thereby denying the rightful owner from  
1218 adding additional documents to his/her Job. See section 3.1.

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## 1243 **19 Annex B: Change Log (informative)**

1244 The following summaries of the changes in reverse chronological order:

1245 Version 0.1, 18 May 2003:  
1246 1. Split document out of Document Object specification.

- 1247 2. Moved "document-format-target" and "document-format-version-target" from the Job Template section to the  
1248 Operation Attributes section so that it can be supplied with Document Creation operations and so that it  
1249 MUST be honored, even if "job-attribute-fidelity" is 'false' or omitted.  
1250 3. Removed all Document Description attributes and the concept of Job Level and Document Level. That  
1251 terminology is introduced in the Document Object spec [ippdoc]. Now [ippdoc] is only an Informative  
1252 Reference, not a Normative Reference.  
1253

1254 Version 0.2, 19 May 2003:

- 1255 1. Did *not* include the document-format-target and document-format-version-target attributes. PSI has their own  
1256 definitions and we can avoid the discussion as to whether they should be Document Template attributes or  
1257 Operation attributes on Document Creation operations and whether there should be a "document-format-  
1258 target-default" and a "document-format-version-target-default".  
1259