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## 3

## 4 The Printer Working Group (PWG)

## 5 Proposed Standard for

## 6 The Internet Printing Protocol (IPP):

## 7 Document Object

## 8

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20 ~~content data or a document reference, respectively.~~

21 This specification also defines five new operations for Document objects once they have been created:

22 1 REQUIRED Job operation: Close-Job

23 3 REQUIRED Document operations: Cancel-Document, Get-Document-Attributes, Get-Documents

24 2 OPTIONAL Document operations: Delete-Document, Set-Document-Attributes.

25 This specification also lists all of the attributes defined in other IPP specifications to show their relationship to  
26 corresponding attributes defined in this IPP specification for use with the Document object. ~~The full semantics of the~~  
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28 ~~given along side of the corresponding [rfc2911] "job-state", "job-state-reasons", and "job-state-message" Job~~  
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35



~~Version 0.6, January 13, 2003~~

36

37

Working Draft, 16 March 2003

# The Printer Working Group (PWG) ~~Proposed~~ Standard for The Internet Printing Protocol (IPP): Document Object

~~Version 0.6, January 13, 2003~~

~~**Abstract:** This IPP specification extends the IPP Model and Semantics [rfc2911] object model by defining a Document object. The [rfc2911] Job object is extended to contain one or more Document objects which are passive objects operated on by the Job. The Document object is created by the REQUIRED [rfc2911] Send Document and OPTIONAL Send URI operations and represents an Input Document to the Job. This specification also adds a Document Attributes group (and tag) to these Send Document and Send URI requests. The Document Attributes group contains any Document Template attributes to be applied to this Document object being created, overriding any corresponding Job Template attribute supplied at the job level (including the "document overrides" operation attributes at the Job or Document level). A new REQUIRED Create Document operation allows a client to supply the Document Attributes without the data (like Create Job does for a Job object). Then the client sends the data content to that Document object using the new REQUIRED Send Data operation. The client can also supply Document Attributes with the existing Send Document and Send URI operations to create Document objects with content data or a document reference, respectively.~~

~~This specification also defines five new operations for Document objects once they have been created:~~

- ~~3 REQUIRED: Cancel Document, Get Document Attributes, Get Documents~~
- ~~2 OPTIONAL: Delete Document, Set Document Attributes.~~

~~This specification also lists all of the attributes defined in other IPP specifications to show their relationship to corresponding attributes defined in this IPP specification for use with the Document object. The full semantics of the "document state", "document state reasons", and "document state message" Document Description attributes are given along side of the corresponding [rfc2911] "job state", "job state reasons", and "job state message" Job Description attributes. A number of Job Description attributes, such as "time-at-completed" and "time-at-creation", have corresponding Document Description attributes defined. A number of Document Creation operation attributes, such as "attributes-charset" and "document-format", have corresponding Document Description attributes defined.~~

~~The purpose for specifying the Document object is so that the print industry can have a common semantic specification for use in IPP, the PWG Semantic Model, the PWG Print Service Interface (PSI) project, and the Free Standards Group Job Ticket API which all have a Document object.~~

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

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124 (ISTO) with member organizations including printer manufacturers, print server developers, operating system  
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126 developers. The group is chartered to make printers and the applications and operating systems supporting them  
127 work together better. All references to the PWG in this document implicitly mean "The Printer Working Group, a  
128 Program of the IEEE ISTO." In order to meet this objective, the PWG will document the results of their work as open  
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130 vendors of printer related software will benefit from the interoperability provided by voluntary conformance to these  
131 standards.

132 In general, a PWG standard is a specification that is stable, well understood, and is technically competent, has  
133 multiple, independent and interoperable implementations with substantial operational experience, and enjoys  
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135 For additional information regarding the Printer Working Group visit: <http://www.pwg.org>

136

137

138 **Contact information:**

139 IPP Web Page: <http://www.pwg.org/ipp/>

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146 end

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152

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334

335 **1 Introduction and Summary**

336 This IPP specification extends the IPP Model and Semantics [rfc2911] object model by defining a Document object.  
 337 The [rfc2911] Job object is extended to contain one or more Document objects which are passive objects operated  
 338 on by the Job. The Job object is created by the REQUIRED<sup>1</sup> Create-Job (see [rfc2911] section 3.2.4) operation and  
 339 is closed by the Close-Job operation (see section 4.3). The Document object is created by the REQUIRED<sup>2</sup> [rfc2911]  
 340 Send-Document (see [rfc2911] section 3.3.1) and OPTIONAL Send-URI (see [rfc2911] section 3.3.2) operations and  
 341 represents an Input Document to the Job. This specification also adds a Document Attributes group (and tag) to  
 342 these Send-Document and Send-URI requests. The Document Attributes group contains any Document Template  
 343 attributes to be applied to this Document object being created, overriding any corresponding Job Template attribute  
 344 supplied at the job level ~~(including the “document overrides” operation attributes [override] at the Job or Document~~  
 345 ~~level).~~ A new REQUIRED Create-Document operation allows a client to supply the Document Attributes without the  
 346 data (like Create-Job does for a Job object). Then the client ~~can send~~s the data content ~~to~~ for that Document object  
 347 using the new REQUIRED Send-Document-Data operation.

348 This specification ~~also~~ defines one new operation for Job objects and seven five new operations for Document  
 349 objects once they have been created:

- 350 1 REQUIRED Job operation: Close-Job
- 351 3 REQUIRED Document operations: Cancel-Document, Get-Document-Attributes, Get-Documents
- 352 2 OPTIONAL Document operations: Delete-Document, Set-Document-Attributes.
- 353 ~~Cancel-Document, Get-Document-Attributes, Get-Documents, Delete-Document, Set-Document-Attributes.~~

354 This specification also lists all of the attributes defined in other IPP specifications<sup>3</sup> to show their relationship to  
 355 corresponding attributes defined in this IPP specification for use with the Document object. The full semantics of the  
 356 “document-state”, “document-state-reasons”, and “document-state-message” Document Description attributes are  
 357 given along side of the corresponding [rfc2911] “job-state”, “job-state-reasons”, and “job-state-message” Job  
 358 Description attributes.

359 The intent is to propose this specification as an IPP extension and which will be referenced as part of the PWG  
 360 Semantic Model. The purpose for specifying the Document object is so that the print industry can have a common  
 361 semantic specification for use in IPP, the PWG Semantic Model [pwg-sm], the PWG Print Service Interface (PSI)  
 362 project [pwg-psi], and the Free Standards Group Job Ticket API [fsg-jt] which all have a Document object.

363 This specification also defines “media-size-name” and “media-type” as Job Template and Document Template  
 364 attributes to provide a detailed specification for reference from the PWG Semantic Model.

365 **1.1 Scope**

366 Part of the extension is to allow the client to supply printing instructions, called Document Template attributes, when  
 367 creating each Document object. An IPP Printer object implementation MAY support most of the existing Job  
 368 Template attributes as Document Template attributes as well. (The PWG Semantic Model [pwg-sm] currently calls  
 369 the Job Template attributes and Document Template attributes simply “Job Processing” and “Document Processing”

<sup>1</sup> The Create-Job operation is OPTIONAL in [rfc2911], but is REQUIRED in order to support the Document object defined in this specification.

<sup>2</sup> The Send-Document is OPTIONAL in [rfc2911], but is REQUIRED in order to support the Document object defined in this specification.

<sup>3</sup> This specification lists all attributes defined in other IPP specifications at the time of publication of this specification. No attempt will be made to keep this specification up to date after publication.

370 attributes). Note: There are a number of footnotes which relate this IPP specification to the PWG Semantic model  
 371 and other PWG projects, such as the Print Service Interface (PSI) [pwg-psi].

372 The Document object is a passive object<sup>4</sup> and is operated upon by the Job. The client uses the new Create-  
 373 Document operation or either of the existing Send-Document and Send-URI operations to create a Document object.  
 374 In addition there are 8 new operations that affect the Document object after it has been created as summarized in  
 375 Table 1.

376 **Table 1 - List of Document operations**

Operation Name	Printer support	Brief Description
<u>Close-Job</u>	<b>REQUIRED</b>	<u>Closes the Job object that was created with Document objects.</u>
Create-Document <sup>5</sup>	<b>REQUIRED</b>	Creates a Document object with Document attributes, but no data.
Send- <u>Document</u> -Data	<b>REQUIRED</b>	Sends data to the Document object created by Create-Document.
Send-Document *	<b>REQUIRED</b>	Creates a Document object with Document attributes and data.
Send-URI *	<b>OPTIONAL</b>	Creates a Document object with Document attributes and a URL reference to the data (print-by-reference).
Get-Document-Attributes	<b>REQUIRED</b>	Get requested attributes of specified Document in the specified Job.
Get-Documents	<b>REQUIRED</b>	Get requested attributes of all of the Documents in the specified Job.
Set-Document-Attributes	<b>OPTIONAL</b>	Set the supplied Document attributes on the specified Document.
Cancel-Document	<b>REQUIRED</b>	Cancel the specified Document in the specified Job, but don't remove it.
Delete-Document	<b>OPTIONAL</b>	Remove the specified Document object and its data from the Job.

377 \* The existing IPP/1.1 operations defined in [rfc2911] with an extension so the client can supply Document Template  
 378 attributes in a new attribute Group in the request.

379 This specification also specifies the life cycle of the Document object by defining the “document-state”, “document-  
 380 state-reasons”, and “document-state-message” attributes. Finally, the analogous Document Descriptions attributes  
 381 that correspond to the Job Description attributes are defined.

## 382 2 Terminology

383 This section defines terminology used throughout this document.

### 384 2.1 Conformance Terminology

385 Capitalized terms, such as **MUST**, **MUST NOT**, **REQUIRED**, **SHOULD**, **SHOULD NOT**, **MAY**, **NEED NOT**, and  
 386 **OPTIONAL**, have special meaning relating to conformance as defined in RFC 2119 [rfc2119] and [rfc2911] section  
 387 12.1. If an implementation supports the extension defined in this document, then these terms apply; otherwise, they  
 388 do not. These terms define conformance to *this document (and [rfc2911]) only*; they do not affect conformance to  
 389 other documents, unless explicitly stated otherwise. To be more specific:

390 **REQUIRED** - an adjective used to indicate that a conforming IPP Printer implementation **MUST** support the indicated  
 391 operation, object, attribute, attribute value, status code, or out-of-band value in requests and responses. See  
 392 [rfc2911] “Appendix A - Terminology for a definition of “support”. *Since support of this entire Document Object*

<sup>4</sup> The Document object is *not* a sub-job. If Job trees are desired where sub-jobs can be on different network nodes, such as in JDF, then a separate specification should be generated for Job trees.

<sup>5</sup> The Create-Document operation maps to the PWG PSI Send-Document-By-Post operation and the Send-  
Document-Data maps to the HTTP Post operation.

393 *specification is OPTIONAL for conformance to IPP/1.1, the use of the term REQUIRED in this document means*  
394 *“REQUIRED if this OPTIONAL Document Object specification is implemented”.*

395 **RECOMMENDED** - an adjective used to indicate that a conforming IPP Printer implementation is recommended to  
396 support the indicated operation, object, attribute, attribute value, status code, or out-of-band value in requests and  
397 responses. *Since support of this entire Document Object specification is OPTIONAL for conformance to IPP/1.1, the*  
398 *use of the term RECOMMENDED in this document means “RECOMMENDED if this OPTIONAL Document Object*  
399 *specification is implemented”.*

400 **OPTIONAL** - an adjective used to indicate that a conforming IPP Printer implementation MAY, but is NOT  
401 REQUIRED to, support the indicated operation, object, attribute, attribute value, status code, or out-of-band value in  
402 requests and responses.

## 403 2.2 Other Terminology

404 This document uses the same terminology as [rfc2911], such as “client”, “Printer”, “attribute”, “attribute value”,  
405 “keyword”, “Job Template attribute”, “Operation attribute”, “operation”, “request”, “response”, and “support”  
406 with the same meaning. In addition, the following terms are defined for use in this document:

407 **Document object** - the object to represent the logical concept of a document in a Job. A **Job object** can contain  
408 one or more **Document objects**.

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

411 **Document Creation operation** - operations that create Document objects. Specifically: Create-Document, Print-  
412 Job, Print-URI, Send-Document and Send-URI. Note: the Print-Job and Print-URI are both **Job Creation** and  
413 **Document Creation** operations, since they create both Job and a **Document object** at the same time. Also this  
414 specification does not extend the Print-Job and Print-URI operations. However, this specification does extend the  
415 Send-Document and Send-URI operations to allow the client to supply **Document Template** attributes in each  
416 request.

417 **Job Level** - attributes supplied in the Print-Job, Print-URI, and Create-Job are referred to as being supplied at the  
418 **Job Level**. Attributes supplied at the **Job Level** are a mixture of **Job attributes** and **Document attributes**. **Job**  
419 **attributes** apply to the Job as a whole, while **Document attributes** provide defaults for the **Document objects** in  
420 case the client does not supply a **Document attribute** at the **Document Level** for a **Document object**. Put another  
421 way, **Document objects** *inherit* **Document attributes** from the **Job object** which are used if the client didn't supply  
422 a corresponding attribute for the **Document object**.

423 **Document Level** - attribute supplied in the Send-Document, Send-URI, and Create-Document operations are  
424 referred to as being supplied at the **Document Level**. Note: attribute supplied in the Print-Job and Print-URI  
425 requests are considered as being supplied at the **Job Level** only, *not* also at the **Document Level**, even though  
426 Print-Job and Print-URI also create **Document objects**.

427 **Attribute Precedence** - the precedence rules which dictate which attribute value takes precedence when the same  
428 attribute is supplied at different points in the work flow with different values, such as at both the **Job Level** and the  
429 **Document Level**. See section 5.

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

432 **Document Template attribute** - an attribute that the client supplies in a Create-Document, Send-Document, or  
433 Send-URI operation request in the Document Attributes group. For example, “media”.

434 **Document attribute** - an **Operation attribute** or a **Document Template attribute** that applies to a **Document**  
 435 **object** as a whole. For example, “document-format” is an Operation attribute and “media” is a Document Template  
 436 attribute.

437 Table 2 shows this terminology as applied to the six operations. Note that Print-Job and Print-URI are both Job  
 438 Creation operations and Document Creation operations, though they only create single Document jobs. In other  
 439 words, for Print-Job and Print-URI, there is only one document per job, so whether the attributes are considered to be  
 440 submitted at the Job Level and then inherited by the Document object, is moot, since these operations do not have a  
 441 separate Document group in which the client can supply Document attributes. Note also that for the “Level” concept,  
 442 no operation supplies attributes at more than one level.<sup>6</sup>

443 **Table 2 - Job Creation and Document Creation operations**

Job Creation operation	Document Creation operation	Operation	Attribute Group in Request		Level
			Job	Document	
yes		<b>Create-Job</b>	Job attributes and Document attributes		Job Level
yes	yes	<b>Print-Job</b>	Job attributes and Document attributes		
yes	yes	<b>Print-URI</b>	Job attributes and Document attributes		
	yes	<b>Create-Document</b>		Document attributes	Document Level
	yes	<b>Send-Document</b>		Document attributes	
	yes	<b>Send-URI</b>		Document attributes	

444

445 **Document Overrides**—a way for a client to specify attributes to apply to specified documents in a multi document  
 446 job. Specifically, as member attributes of the “document overrides” **Job Template attribute** in a **Job Creation**  
 447 **operation** or the “document overrides” **operation attribute** in a **Document Creation operation** as defined in  
 448 [override]. Note: The **Document Template attributes** supplied in a Create Document, Send Document, or Send-  
 449 URI operation also “override” any Document Template attributes supplied in the Job Creation operation.

### 450 3 Document Operations

451 The Document object semantics are as parallel to the Job object semantics as possible. Therefore, most of the Job  
 452 operations have analogous Document operations as shown in Table 16 in section “Appendix A: Document operations  
 453 compared to Job operations”. Operations that can apply only to an entire job, have no analogous document  
 454 operation as indicated. This extension adds 8 new Document operations that operate on the Document object once

<sup>6</sup> The PWG Semantic Model [pwg-sm] calls the Operation attributes supplied by the client: Job Description attributes or Document Description attributes for the Job Creation and Document Creation operations, respectively. The [pwg-sm] also calls Job Template attributes and Document Template attributes: Job Processing and Document Processing attributes, respectively. Each Processing attribute is defined to be a Job Processing or a Document Processing attribute, but is not both. The client can supply both Job Processing and Document Processing attributes in a Job Creation operation, in which case the Document Processing attributes server as defaults for the Document objects. The Printer copies all of these client’s supplied attributes to the Job or Document object. Read-only Job and Document attributes that the system sets are called Job **State-Status** and Document **State-Status** attributes (instead of Description attributes).

455 it is created by the new Create-Document operation or either of the existing two operations: Send-Document and  
 456 Send-URI operations.

457 Note: By Document object we mean the object once it become a contained part of a Job object, not before or after.  
 458 So in this specification a Document object does not represent data in a repository.

459 The signatures of the operation requests that create and/or validate Document objects are very similar as shown in  
 460 Table 3 and defined in section 3.1 through section 3.4. The entries in the table show what a client MUST, MAY, or  
 461 MUST NOT supply in the indicated operation requests.

462 **Table 3 - Client-supplied Document Creation and Validation Request Signatures**

	Create-Document	Send- <u>Document</u> -Data	Send-Document	Send-URI
Target job	MUST	MUST	MUST	MUST
“document-uri”	MUST NOT	MUST NOT	MUST NOT	MUST
Document Template attributes	MAY	MUST NOT	MAY	MAY
Data	MUST NOT	MUST	MUST	MUST NOT

463

464 The entries in Table 4 show what a Printer MUST, MAY, or MUST not support and return in the indicated operations  
 465 responses.

466 **Table 4 - Printer-returned Document Creation and Validation Response Signatures**

	Create-Document	Send- <u>Document</u> -Data	Send-Document	Send-URI
Status code/message	MUST	MUST	MUST	MUST
Unsupported Attributes	MUST, if any	MUST, if any	MUST, if any	MUST, if any
Job status attributes	MUST	MUST	MUST	MUST
Document status attributes:				
“document-number”	MUST	MUST	MUST	MUST
“document-id-uri”	MUST	MUST	MUST	MUST
“document-state”	MUST	MUST	MUST	MUST
“document-state-reasons	MUST	MUST	MUST	MUST
“document-state-message	MAY	MAY	MAY	MAY

467

468 **3.1 Create-Document Operation**

469 This REQUIRED operation allows a client to create a Document object, supply Document attributes, and have the  
 470 Printer validate those attributes without sending any document content data. If the Printer rejects the request, the  
 471 client won't have sent the possibly time-consuming data. The client MUST perform the operations in the following  
 472 order: (1) Create-Job to create the Job object, (2) Create-Document to create the Document object, (3) Send-  
 473 Document-Data (see section 3.2) to send the content data for the Document object.

474 The client can supply multiple documents for a single Job using pairs of Create-Document and Send-Document-Data  
 475 operations. The order of the corresponding Send-Document-Data operations is not important, so that the client can  
 476 send pairs of Create-Document and Send-Document-Data operations or can send a number of Create-Document

477 operations followed by the corresponding Send-Document-Data operations. The latter approach is useful if the client  
 478 wants to make sure that all Documents will be accepted by the Printer before sending any of the Document data to  
 479 the Printer.

480 If a Printer supports the Document object, the Printer:

- 481 1. MUST also support the Create-Document and Send-Document-Data operations
- 482 2. MUST support the "multiple-operation-time-out" Printer Description attribute (see [rfc2911] section 4.4.31).
- 483 3. MUST support the "multiple-document-jobs-supported" Printer Description attribute (see [rfc2911] section  
 484 4.4.16) with a 'true' value, that is the Printer MUST support multiple document jobs.
- 485 4. MUST support the "multiple-document-handling" Job Template job attribute with at least one value (see  
 486 [rfc2911] section 4.2.4) and the associated "multiple-document-handling-default" and "multiple-document-  
 487 handling-supported" Job Template Printer attributes (see [rfc2911] section 4.2).
- 488 5. MUST support the Attribute Precedence semantics specified in section 5 for the levels that the Printer  
 489 supports.

490 The Printer sets the value of the Document's "document-state" Document Description attribute to 'pending', if the  
 491 Printer accepts the Create-Document request. A Printer MAY set the 'job-data-insufficient' value of the Document's  
 492 "document-state-reason" Document Description attribute to indicate that processing cannot begin until sufficient data  
 493 has arrived and set the "document-state" to 'pending'. A non-spooling printer that doesn't implement the 'pending'  
 494 document state may even set the "document-state" to 'processing', even though there is not yet any data to process.  
 495 See sections 8.2.25 and 8.2.27.

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

### 500 3.1.1 Create-Document Request

501 The client supplies the following groups as part of the Create-Document Request:

#### 502 Group 1: Operation Attributes

##### 503 Natural Language and Character Set:

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

##### 507 Target:

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

##### 511 Requesting User Name:

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

**514 3.1.1.1 input-document-number (integer(1:MAX)) DEPRECATED**

515 **ISSUE 00: Or should we just delete "input-document-number" when we republish pwg5100.4 without**  
516 **"document-overrides?"**

517 The "input-document-number" operation attribute ([[overridepwg5100.4](#)] section 9.2.1) is DEPRECATED. A  
518 client MUST NOT supply the "input-document-number" operation attribute. Clients that want to submit  
519 multiple (large) document data in parallel MUST create each Document object separately in the order  
520 desired. Then the client MAY send the data in parallel with separate Send-Document operations (see  
521 section 3.2). If the client does supply the DEPRECATED "input-document-number" operation attribute, the  
522 Printer MUST ignore the value and assign the "document-number" Document Description attribute  
523 monotonically increasing starting with 1 for each job (see below).

**524 3.1.1.2 last-document (boolean)**

525 The client MUST supply this attribute (as in the Send-Document and Send-URI operation requests). The  
526 Printer object MUST support this attribute. This attribute is a boolean flag that the client supplies with a 'true'  
527 value if this is the last document for the Job, 'false' otherwise. **Note: The client MAY indicate the last**  
528 **document using the Close-Job operation (see section ).**

**529 3.1.1.3 document-message (text(MAX))**

530 The client MAY supply this operation attribute. If the Printer supports this attribute, the Printer MUST also  
531 support the corresponding "document-message" (text(MAX)) Document Description attribute (see section  
532 8.2.21) and copy this value to the "document-message" Document Description attribute. The end user can  
533 use this Document Description attribute as a message to the operator and the operator can use it as a  
534 message to the user. The Printer MAY print this message on a document start sheet for this document, if  
535 any.

**536 3.1.1.4 Additional Operation attributes:**

537 Any of the other Operation attributes indicated in the "Level Supplied" column labeled with a "y" in the "Doc"  
538 column in Table 6, such as "document-name" and "document-format". These operation attributes are said to  
539 be supplied at the Document Level and apply to the Document object, overriding any operation attributes  
540 supplied at the Job Level. For example, if "document-format" = 'application/postscript' at the Job Level and  
541 "document-format" = 'text/plain' in this Create-Document request, this Document will be 'text/plain'. If the  
542 next Create-Document request for this Job omits the "document-format" operation attribute, that Document  
543 will be 'application/postscript'.

**544 3.1.1.5 Ignoring unsupported or improper operation attributes:**

545 The Printer MUST ignore any operation attributes which are unsupported or are not defined for use with the  
546 Create-Document operation, such as "ipp-attribute-fidelity" (see section 4.4.1) and "job-mandatory-attributes"  
547 (see section 4.4.2) which are defined for use in Job Creation operations only.

**548 Group 2: Document Template Attributes****549 Any Document Template attributes in any order:**

550 The client OPTIONALLY supplies a set of Document Template attributes, that is any attributes indicated in  
551 Table 8 in the "Defined for use" column labeled with a "y" in the "D" column. These Document Template  
552 attributes are said to be supplied at the Document Level and apply to the Document object, overriding any  
553 Document Template attributes supplied at the Job Level. For example, if "media" = 'na-letter-white' at the  
554 Job Level and "media" = 'na-letter-transparency' in this Create-Document request, this Document will be 'na-  
555 letter-transparency'. If the next Create-Document operation for this Job omits the "media" operation attribute,  
556 that Document will be 'na-letter-white' which it inherits from the Job.

557 If the client is not supplying any Document Template attributes in the request, the client SHOULD omit Group  
558 2 rather than sending an empty group. However, a Printer object MUST be able to accept an empty group.

559 The client MUST NOT supply the document data in this operation request. See Send-Document-Data  
560 operation (section 3.2).

561 **Group 3: Subscription Attributes (see [ntfy] section 11.1.3.1): *MUST NOT be present. Notification is only at***  
562 ***the Job Level.***

563 In addition to the MANDATORY parameters required for every operation request (see [rfc2911]), the simplest Create-  
564 Document request consists of just the "attributes-charset" and "attributes-natural-language" operation attributes;  
565 either (1) the "printer-uri" target operation attribute and the "job-id" or (2) the "job-uri" and nothing else. In this simple  
566 case, the Printer object:

567 - creates a new Document object and adds it to the specified Job object,

568 - assigns the lowest document number not yet used by this Job, starting a 1. Copy the document number  
569 assigned to the Document object's "document-number" Document Description attribute.

570 - stores a generated Document name in the "document-name" Document Description attribute in the natural  
571 language and charset requested (see [rfc2911] section 3.1.4.1) (if those are supported, otherwise using the  
572 Printer object's default natural language and charset), and

573 - at job processing time, uses its corresponding default value attributes for the supported Document Template  
574 attributes that were (1) not supplied by the client as IPP attributes and (2) not embedded instructions in the  
575 document data.

### 576 3.1.2 Create-Document Response

577 The Printer object MUST return the following sets of attributes to the client as part of the Create-Document response:

#### 578 Group 1: Operation Attributes

##### 579 Status Message:

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

583 The Printer MUST reject the operation if the client had supplied in the original Job Creation operation, either:

584 the "ipp-attribute-fidelity" operation attribute (see section 4.4.1) with a 'true' value and the client  
585 supplies any unsupported and/or conflicting Job Template or Document Template attributes in this  
586 Document Creation request OR

587 the "ipp-attribute-fidelity" operation attribute (section 4.4.1) with a 'false' value or had omitted it and  
588 had supplied keyword values of the "job-mandatory-attributes" operation attribute (in the original Job  
589 Creation operation) that identify attributes supplied in this request that are unsupported and/or  
590 conflicting.

591 Otherwise, the Printer MUST accept the operation and ignore or substitute unsupported and/or conflicting  
592 attribute values supplied by the client. See the Implementer's Guide [rfc3196] for a complete description of  
593 the suggested steps for processing the attributes in a create request.

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

## 596 **Group 2: Unsupported Attributes**

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

598 The value of the "ipp-attribute-fidelity" and the "job-mandatory-attributes" operation attributes supplied by the  
599 client in the original Job Creation request does not affect what attributes the Printer object returns in this  
600 group. The value of these two operation attributes in the original Job Creation request only affects whether  
601 the Create-Document operation is accepted or rejected. If the request is accepted, the client may query the  
602 Document object using the Get-Document-Attributes operation (see section 3.5) requesting the unsupported  
603 attributes that were returned in the create response to see which attributes were ignored (not stored on the  
604 Document object) and which attributes were stored with other (substituted) values.

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

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

609 "job-uri" (uri) - see [rfc2911] section 4.3.1  
610 "job-id" (integer(1:MAX)) - see [rfc2911] section 4.3.2  
611 "job-state" (type1 enum) - see [rfc2911] section 4.3.7  
612 "job-state-reasons" (1setOf type2 keyword) - see [rfc2911] section 4.3.8

613 The Printer MAY return:

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

## 618 **Group 4: Document Object Attributes**

### 619 **3.1.2.1 document-number (integer(1:MAX))**

620 The Printer MUST return the document number of this Document object that was either assigned by the  
621 Printer (see section 3.1.1) or supplied by the client (see section 3.1.1.1).

### 622 **3.1.2.2 document-id-uri (uri)**

623 The Printer MUST return the document id of this Document object as a URI as assigned by the Printer (see  
624 section 8.2.17).

### 625 **3.1.2.3 document-state (type1 enum)**

626 The Printer MUST return the state of this Document object (see section 8.2.25).

### 627 **3.1.2.4 document-state-reasons (1setOf type2 keyword)**

628 The Printer MUST return the associated state reasons for this Document (see section 8.2.27).

629 **3.1.2.5 document-state-message (text(MAX))**

630 The Printer MAY return the localized description of the "document-state" and "document-state-reasons"  
631 values for this Document (see section 8.2.26).

632 **3.2 Send-Document-Data Operation**

633 **ISSUE 01: OK: OK to rename Send-Data to Send-Document-Data to reflect the object on which it operates?**

634 This REQUIRED operation allows the client to create a Document object using the Create-Document operation (see  
635 section 3.1) that the Printer validates before the client sends any document content data. Then the client can skip  
636 sending the data to the Printer, if the Printer rejects the Document Creation operation.

637 Since the Create-Document and the Send-Document-Data operation that follows could occur over an arbitrarily long  
638 period of time for a particular Document, a client MUST send the Send-Document-Data operation within an IPP  
639 Printer defined minimum time interval after the receipt of the previous request for the job. If a Printer object supports  
640 the Document object, the Printer object MUST support the "multiple-operation-time-out" attribute (see [rfc2911]  
641 section 4.4.31). This attribute indicates the minimum number of seconds the Printer object will wait for the next send  
642 operation before taking some recovery action. See the description under Send-Document in [rfc2911] section 3.3.1,  
643 for the possible Printer actions, if the client does not supply a Send-Document-Data request in time.

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

648 **3.2.1 Send-Document-Data request**

649 The following attribute sets are part of the Send-Document-Data Request:

650 **Group 1: Operation Attributes**651 **Natural Language and Character Set:**

652 The "attributes-charset" and "attributes-natural-language" attributes as described in section [rfc2911] 3.1.4.1.

653 **Target:**

654 The "document-number" (integer(1:MAX)) operation attribute MUST be supplied immediately after either (1)  
655 the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri" (uri) and "operation attribute(s)" which  
656 define the target Document object for this operation as described in section [rfc2911] 3.1.5. If the client omits  
657 the "document-number" operation attribute, the Printer MUST reject the request and return the 'client-error-  
658 bad-request' status code.

659 **Requesting User Name:**

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

662 **Group 2: Document Content**

663 The client MUST supply the document data in-line to be processed for this Document, just like supplying  
664 data in the Send-Document and Print-Job requests.

665 **3.2.2 Send-Document-Data Response**

666 The following sets of attributes are part of the Send-Document-Data Response:

**667 Group 1: Operation Attributes****668 Status Message:**

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

**672 Natural Language and Character Set:**

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

**674 Group 2: Unsupported Attributes**

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

**676 Group 3: Job Object Attributes**

677 The Printer MUST return the same set of Job status attributes as for the Print-Job, Send-Document, and  
678 Create-Document responses (see section 3.1.2).

**679 Group 4: Document Object Attributes**

680 The Printer MUST return the same set of Document status attributes as for the Create-Document operation  
681 response (see section 3.1.2)

**682 3.3 Send-Document Operation**

683 This REQUIRED<sup>7</sup> operation allows a client to submit multiple documents in a single Job by making a Send-Document  
684 request for each Document. In this specification, the Send-Document creates a Document object ([rfc2911] did not  
685 have a Document object). A Printer MUST support this operation with the semantics specified in [rfc2911] and with  
686 the extension defined in this specification, since this specification REQUIRES the Printer to support multiple  
687 document jobs.

688 See [rfc2911] section 3.3.1 for the semantics of the Send-Document operation not reproduced here.

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

**693 3.3.1 Send-Document Request**

694 The following attribute sets are part of the Send-Document Request:

**695 Group 1: Operation Attributes (as in [rfc2911])**

696 As specified in [rfc2911] section 3.3.1 Send-Document request, plus any extensions indicated in Table 6.  
697 For example, "compression", "document-format", and "document-name". So this group is the same as for  
698 Create-Document (see section 3.1.1).

---

<sup>7</sup> The Send-Document operation is REQUIRED in this specification while it was OPTIONAL in [rfc2911]. This difference is because this specification REQUIRES Printer support of multiple document jobs, while [rfc2911] did not.

**699 Group 2: Document Attributes (new - not in [rfc2911])**

700 The client OPTIONALLY supplies a set of Document Template attributes as listed in Table 8. For example,  
 701 "media" and "number-up". If the client is not supplying any Document Template attributes in the request, the  
 702 client SHOULD omit Group 2 rather than sending an empty group. However, a Printer object MUST be able  
 703 to accept an empty group.

**704 Group 3: Document Content (as in [rfc2911] Group 2)**

705 The client MUST supply the document data in-line to be processed for this Document if the "last-document"  
 706 flag is set to 'false'. However, since a client might not know that the previous Document object created with a  
 707 Create-Job, Send-Document, or Send-URI operation was the last document (i.e., the "last-document"  
 708 attribute was set to 'false'), it is legal to send a Send-Document request with no document data where the  
 709 "last-document" flag is set to 'true'. For this case, the Printer MUST NOT increment the value of the Job  
 710 object's "number-of-documents" attribute, since no Document object was added to the job. In addition, it is  
 711 not an error for a client to submit a job with no actual document data, i.e., only a single Create-Job and  
 712 Send-Document request with a "last-document" operation attribute set to 'true' with no document data; it is  
 713 only an empty job which is scheduled and processed normally.

**714 3.3.2 Send-Document Response**

715 The following sets of attributes are part of the Send-Document Response:

**716 Group 1: Operation Attributes (as in [rfc2911] Group 1)****717 Status Message:**

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

**721 Natural Language and Character Set:**

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

**723 Group 2: Unsupported Attributes (as in [rfc2911] Group 2)**

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

**725 Group 3: Job Object Attributes (as in [rfc2911] Group 3)**

726 The Printer MUST return the same set of Job status attributes as for the Print-Job, Send-Document, and  
 727 Create-Document responses (see section 3.1.2).

**728 Group 4: Document Object Attributes (new - as in Create-Document Group 3 - see section 3.1.2)**

729 The Printer MUST return the same set of Document status attributes as for the Create-Document operation  
 730 response (see section 3.1.2).

**731 3.4 Send-URI Operation**

732 This OPTIONAL operation has the same request and response semantics as the Send-Document operation (see  
 733 section 3.3) except that a client MUST supply a URI reference ("document-uri" operation attribute) rather than the  
 734 document data itself. If a Printer object supports this operation, clients can use both Send-URI or Send-Document  
 735 operations to add new documents to an existing multi-document Job object. However, if a client needs to indicate

736 that the previous Send-URI or Send-Document was the last document, the client MUST use the Send-Document  
737 operation with no document data and the "last-document" flag set to 'true' (rather than using a Send-URI operation  
738 with no "document-uri" operation attribute).

739 If a Printer object supports this operation, it MUST also support the Print-URI operation (see [rfc2911] section 3.2.2).

740 The Printer object MUST validate the syntax and URI scheme of the supplied URI before returning a response, just  
741 as in the Print-URI operation. The IPP Printer MAY validate the accessibility of the document as part of the operation  
742 or subsequently (see [rfc2911] section 3.2.2).

### 743 3.5 Get-Document-Attributes Operation

744 This REQUIRED operation allows a client to request the values of selected attributes of a Document object. This  
745 operation is almost identical to the Get-Job-Attributes operation (see [rfc2911] section 3.3.4). The only differences  
746 are that the operation is directed at a Document object rather than a Job object and the returned attribute group is a  
747 set of Document object attributes rather than a set of Job object attributes.

748 The Printer MUST return the attributes that a client supplied in the Create-Document, Send-Document, or Send-URI  
749 operations, plus any Document Description attributes that the Printer has generated. The Printer MUST NOT return  
750 any Job Level attributes that the Document object inherits, including "document overrides" (1 set of collection  
751 member attributes (see [override]), and MUST NOT factor out common Document object attributes and return them  
752 as Job object attributes. Thus the Get-Document-Attributes returns to clients the attributes that clients submitted with  
753 the Job object and with the Document object.

754 The client MAY display to the user any Document attributes inherited from the Job object. However, such a client  
755 MUST query both the Job object using Get-Job-Attributes and the Document object using Get-Document-Attributes  
756 in order to be able to merge the inherited attributes with the explicitly-supplied Document attributes. Furthermore, the  
757 client MAY factor out common explicitly-supplied Document object attributes and display them once as Job object  
758 attributes, instead of with each Document object. However, any such regularization of the display for users is the  
759 policy of the client and is outside the scope of this client-Printer protocol specification. Note: specify any such  
760 regularization or canonicalization policy in the Printer response would have been impossible to agree to.

761 For Document objects, the possible names of attribute groups are:

762 - 'document-template': the subset of the Document Template attributes that apply to a Document object (the "D"  
763 column in Table 8) that the implementation supports for Document objects.

764 - 'document-description': the subset of the Document Description attributes specified in the "Doc" column of  
765 Table 9 that the implementation supports for Document objects.

766 - 'all': the special group 'all' that includes all attributes that the implementation supports for Document objects.

767 Since a client MAY request specific attributes or named groups, there is a potential that there is some overlap. For  
768 example, if a client requests, 'document-name' and 'document-description', the client is actually requesting the  
769 "document-name" attribute once by naming it explicitly, and once by inclusion in the 'document-description' group. In  
770 such cases, the Printer object NEED NOT return the attribute only once in the response even if it is requested  
771 multiple times. The client SHOULD NOT request the same attribute in multiple ways.

772 It is NOT REQUIRED that a Document object to support all attributes belonging to a group (since some attributes are  
773 OPTIONAL). However, it is REQUIRED that the Printer support all these group names for the Document object.

### 774 3.5.1 Get-Document-Attributes Request

775 The following groups of attributes are part of the Get-Document-Attributes Request when the request is directed at a  
776 Document object:

#### 777 Group 1: Operation Attributes

##### 778 Natural Language and Character Set:

779 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.1.

##### 780 Target:

781 The "document-number" (integer(1:MAX)) operation attribute MUST be supplied immediately after either (1)  
782 the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri" (uri) operation attribute(s) which define  
783 the target Document object for this operation as described in [rfc2911] section 3.1.5. If the client omits the  
784 "document-number" operation attribute, the Printer MUST reject the request and return the 'client-error-bad-  
785 request' status code.

##### 786 Requesting User Name:

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

#### 789 3.5.1.1 "requested-attributes" (1setOf keyword):

790 The client OPTIONALLY supplies this attribute. The Printer MUST support this attribute. It is a set of  
791 attribute names and/or attribute group names in whose values the requester is interested. If the client omits  
792 this attribute, the Printer MUST respond as if this attribute had been supplied with a value of 'all'.

### 793 3.5.2 Get-Document-Attributes Response

794 The Printer object returns the following sets of attributes as part of the Get-Document-Attributes Response:

#### 795 Group 1: Operation Attributes

##### 796 Status Message:

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

##### 800 Natural Language and Character Set:

801 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.2.  
802 The "attributes-natural-language" MAY be the natural language of the Document object, rather than the one  
803 requested.

#### 804 Group 2: Unsupported Attributes

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

806 The response NEED NOT contain the "requested-attributes" operation attribute with any supplied values  
807 (attribute keywords) that were requested by the client but are not supported by the Printer. If the Printer  
808 object does return unsupported attributes referenced in the "requested-attributes" operation attribute and that  
809 attribute included group names, such as 'all', the unsupported attributes MUST NOT include attributes  
810 described in the standard but not supported by the implementation.

### 811 Group 3: Document Object Attributes

812 This is the set of requested attributes and their current values. The Printer ignores (does not respond with)  
813 any requested attribute or value which is not supported. Furthermore, the Printer MUST NOT return  
814 Document Template attributes that were not supplied by a client in a Create-Document, Send-Document, or  
815 Send-URI request or set by a Set-Document-Attributes request. So the response reflects what was  
816 submitted. The Printer MAY omit returning attributes that are restricted by the Printer's security policy in  
817 force, including whether the requesting user is the user that submitted the job (job originating user) or not  
818 (see [rfc2911] section 8). However, the Printer MUST respond with the 'unknown' value for any supported  
819 attribute (including all REQUIRED attributes) for which the Printer does not know the value, unless it would  
820 violate the security policy. See the description of the "out-of-band" values in the beginning of [rfc2911]  
821 Section 4.1.

## 822 3.6 Get-Documents Operation

823 This REQUIRED operation allows a client to retrieve the list of Document objects belonging to the target Job object.  
824 The client MAY also supply a list of Document attribute names and/or attribute group names. A group of Document  
825 object attributes will be returned for each Document object in the Job.

826 This operation is similar to the Get-Document-Attributes operation (see section 3.5), except that this Get-Documents  
827 operation returns attributes from all Document objects contained in the Job object, instead of from a single selected  
828 Document object in the Job object. As with the Get-Document-Attributes operation the Printer MUST only return  
829 attributes that were submitted by a client when the Document object was created by the Create-Document, Send-  
830 Document, or Send-URI operations and possibly modified by the Set-Document-Attributes operation (see section  
831 3.7).

### 832 3.6.1 Get-Documents Request

833 The client submits the Get-Documents request to a Printer object. The Get-Documents is similar to the Get-Jobs  
834 operations (see [rfc2911] section 3.2.6) except that there are no equivalents to the "which-jobs" and "my-jobs"  
835 operation attributes.

836 The following groups of attributes are part of the Get-Documents Request:

#### 837 Group 1: Operation Attributes

##### 838 Natural Language and Character Set:

839 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.1.

##### 840 Target:

841 Either (1) the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri" (uri) operation attribute(s)  
842 which define the target Job object for this operation as described in [rfc2911] section 3.1.5.

##### 843 Requesting User Name:

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

#### 846 3.6.1.1 "limit" (integer(1:MAX)):

847 The client OPTIONALLY supplies this attribute. The Printer object MUST support this attribute. It is an  
848 integer value that determines the maximum number of Documents that a client will receive from the Printer.  
849 The limit is a "stateless limit" in that if the value supplied by the client is 'N', then only the first 'N' Documents  
850 are returned in the Get-Documents Response. There is no mechanism to allow for the next 'M' Documents

851 after the first 'N' Documents. If the client does not supply this attribute, the Printer object responds with all  
852 Documents.

### 853 **3.6.1.2 "requested-attributes" (1setOf type2 keyword):**

854 The client OPTIONALLY supplies this attribute. The Printer object MUST support this attribute. It is a set of  
855 Document attribute names and/or attribute groups names in whose values the requester is interested. This  
856 set of attributes is returned for each Document object that is returned. The allowed attribute group names  
857 are the same as those defined in the Get-Document-Attributes operation in section 3.5.1.

858 If the client does not supply this attribute, the Printer MUST respond as if the client had supplied this attribute  
859 with the two values:

860 'document-number' (see section 8.2.24)

861 'document-id-uri' (see section 8.2.17).

862

### 863 **3.6.2 Get-Documents Response**

864 The Printer object returns all of the Document objects up to the number specified by the "limit" attribute that match  
865 the criteria as defined by the attribute values supplied by the client in the request. If the client requests any  
866 Document attributes at all, there is a set of Document Object Attributes returned for each Document object.

867 It is not an error for the Printer to return 0 Documents. If the response returns 0 Documents because there are no  
868 Documents in the Job, then the status code for 0 Documents MUST be 'successful-ok'.

#### 869 **Group 1: Operation Attributes**

##### 870 **Status Message:**

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

##### 874 **Natural Language and Character Set:**

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

#### 876 **Group 2: Unsupported Attributes**

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

878 The response NEED NOT contain the "requested-attributes" operation attribute with any supplied values  
879 (attribute keywords) that were requested by the client but are not supported by the Printer. If the Printer  
880 object does return unsupported attributes referenced in the "requested-attributes" operation attribute and that  
881 attribute included group names, such as 'all', the unsupported attributes MUST NOT include attributes  
882 described in the standard but not supported by the implementation.

#### 883 **Groups 3 to N: Document Object Attributes**

884 The Printer object responds with one set of Document Object Attributes for each returned Document object.  
885 The Printer object ignores (does not respond with) any requested attribute or value which is not supported or  
886 which is restricted by the security policy in force, including whether the requesting user is the user that  
887 submitted the job (job originating user) or not (see [rfc2911] section 8). However, the Printer object MUST  
888 respond with the 'unknown' value for any supported attribute (including all REQUIRED attributes) for which  
889 the Printer object does not know the value, unless it would violate the security policy. See the description of  
890 the "out-of-band" values in the beginning of [rfc2911] section 4.1.

891 The Printer MUST return the Groups for the requested Job in order of increasing "document-number"  
892 Document Description attribute value.

### 893 3.7 Set-Document-Attributes Operation

894 This OPTIONAL operation allows a client to set the values of the attributes of a Document object after the Document  
895 object was submitted to the Printer. In the request, the client supplies the set of Document keyword attribute names  
896 and values that are to be set. In the response, the Printer returns success or rejects the entire request with  
897 indications of which attribute or attributes could not be set.

898 This operation is almost identical to the Set-Job-Attributes operation and follows the same rules for validation (see  
899 [\[set-opsrfc3380\]](#) section 4.2). The only differences are that the Set-Document-Attributes operation is directed at a  
900 Document object rather than a Job object. As with the Set-Job-Attributes operation, The Set-Document-Attributes  
901 operation can add an attribute to the Target object, accepts the 'delete-attributes' out-of-band value to remove an  
902 attribute from the Target object. In addition the validation is the same as the Create-Document, Send-Document,  
903 and Send-URI operations that create Document objects, i.e., the Printer validation depends on the "xxx-supported"  
904 Printer Description attributes (see [\[rfc2911\]](#) section 3.1).

905 If a client supplies a document attribute in a Set-Document-Attributes request that the Printer supports, and the  
906 document was originally submitted without supplying that attribute, the Printer adds the attribute to the Document  
907 object.

908 If the client supplies a document attribute with the "out-of-band" value 'delete-attribute' (see [\[set-opsrfc3380\]](#) section  
909 8.2), then the Printer MUST remove the attribute and all of its values from the Document object, if present. The  
910 semantic effect of the client supplying the 'delete-attribute' value in a Set-Document-Attributes operation MUST be  
911 the same as if the attribute had not been supplied with the Document object in the Document Creation operation, i.e.,  
912 the Printer applies its default attribute or behavior with lower precedence than the PDL (see the beginning of [\[rfc2911\]](#)  
913 section 4.2 and [\[rfc2911\]](#) 3.2.1.1). Any subsequent query of the Document object using Get-Document-Attributes or  
914 Get-Documents MUST NOT return any attribute that has been deleted using the 'delete-attribute' out-of-band value.  
915 However, a client can re-establish such a deleted Document attribute with any supported value(s) using a  
916 subsequent Set-Document-Attributes operation.

917 If the client supplies an attribute in a Set-Document-Attributes request with the 'delete-attribute' value and that  
918 attribute is not present on the Document object, the Printer ignores that supplied attribute in the request, does not  
919 return the attribute in the Unsupported Attributes group, and returns the 'successful-ok' status code, if there are no  
920 other problems with the request.

921 The validation of the Set-Document-Attributes request is performed by the Printer as if the document had been  
922 submitted originally with the new attribute values (and the deleted attributes removed) and with "ipp-attribute-fidelity"  
923 set to 'true', i.e., all modified attributes Document attributes and values MUST be supported in combination with the  
924 Document attributes not modified. If such a Document Creation operation would have been accepted, then the Set-  
925 Document-Attributes MUST be accepted. If such a Document Creation operation would have been rejected, then the  
926 Set-Document-Attributes MUST be rejected and the Document MUST be unchanged. In addition, if any of the  
927 supplied attributes are not supported, are not settable, or the values are not supported, the Printer object MUST  
928 reject the entire operation; the Printer object MUST NOT partially set some of the supplied attributes. In other words,  
929 after the operation, all the supplied attributes MUST be set or none of them MUST be set, thus making the Set-  
930 Document-Attributes an atomic operation.

931 The Printer MUST accept or reject this operations when the Document's READ-ONLY "document-state" attribute has  
932 the values shown in Table 5. The document's current state MUST affect whether the Printer accepts or rejects the  
933 request. However, the Set-Document-Attributes operation MUST NOT change the state of the Document object  
934 (since the Document is a passive object and the Document state is a subset of the Job State). For example, in the  
935 case where the operation creates a request for unavailable resources, the Job (but not the Document) transitions to a  
936 new state. Table 5 shows the allowed behaviors in each document state.

937

**Table 5 - Document State Table for the Set-Documents-Attributes operation**

Current "document-state"	New "document-state" (no change)	Printer's response status code and "action":
'pending'	'pending'	'successful-ok'
'pending'	'pending'	'successful-ok' - needed resources are not ready (the Job MAY change state, but the Document MUST NOT).
'processing'	'processing'	'successful-ok' or 'client-error-not-possible' depending on implementation, including the attributes being set, whether the document has started marking media, etc.
'completed'	'completed'	'client-error-not-possible'
'canceled'	'canceled'	'client-error-not-possible'
'aborted'	'aborted'	'client-error-not-possible'

938

939 This operation MUST NOT change the value of attributes not specified in the operation unless the definition of the  
 940 attribute explicitly specifies such side-effects. In general, Document attribute definitions that are settable will not  
 941 define side-effects on other attributes that are settable, only side effects on READ-ONLY attributes, if any.

942 **3.7.1 Settable and READ-ONLY Document Description attributes**

943 If the Printer supports the Set-Documents-Attributes operation, then it SHOULD support setting of:  
 944 all Document Template document ("xxx") attributes  
 945 that the implementation supports (see the column labeled "D" in Table 8).

946 Almost all Document Description attributes (see [rfc2911] section 4.3) MUST NOT be settable, i.e., they are defined  
 947 to be READ-ONLY. Only Document Description attributes marked with "(r/w)" in Table 8 MAY be settable using Set-  
 948 Documents-Attributes. The Printer MUST reject a Set-Documents-Attributes request that attempts to set any attributes  
 949 in Table 8 that is not marked "(r/w)".

950 Note: From now on, all extensions that define new object attributes will indicate whether or not the attributes are  
 951 READ-ONLY, by including the "READ-ONLY" adjective in their descriptions and/or explicitly stating whether they  
 952 MAY be settable.

953 *Access Rights:* The authenticated user (see [rfc2911] section 8.3) performing this operation must either be the job  
 954 owner (as determined in the Job Creation operation) or an operator or administrator of the Printer object (see  
 955 [rfc2911] Sections 1 and 8.5).

956 **3.7.2 Set-Documents-Attributes Request**

957 The following sets of attributes are part of the Set-Documents-Attributes Request:

958 **Group 1: Operation Attributes**

959 **Natural Language and Character Set:**

960 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.1.

961 **Target:**

962 The client MUST supply the "document-number" (integer(1:MAX)) operation attribute immediately after either  
 963 (1) the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri" (uri) operation attribute(s) which  
 964 define the target Document object for this operation as described in [rfc2911] section 3.1.5. If the client omits

965 the "document-number" operation attribute, the Printer MUST reject the request and return the 'client-error-  
966 bad-request' status code.

967 Note: There is no way in a single operation for the client to set all of a Job's Document objects to the same  
968 attribute value. Either (1) the client sets the corresponding attribute in each Document object in the Job with  
969 separate Set-Document-Attributes requests, or (2) the client sets the corresponding attribute at the Job Level  
970 using the Set-Job-Attributes operation. Setting the corresponding attribute at the Job Level (or supplying that  
971 attribute initially in the Job Creation operation) causes each Document object to inherit the Job Level  
972 attribute value, if the Document object doesn't have a corresponding explicit attribute supplied at the  
973 Document Level. In other words, supplying an attribute at the Job Levels will affect all the Job's Document  
974 objects that don't have that attribute also explicitly supplied at the Document Level.

975 **Requesting User Name:**

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

978 **Group 2: Document Attributes**

979 The client MUST supply a set of Document Template attributes with one or more values (including explicitly  
980 allowed out-of-band values) as listed in column labeled "D" in Table 8 - Job Template and Document  
981 Template attributes and Document Description attributes flagged with "(r/w)" and listed in the column labeled  
982 "Doc" in Table 9 - Job and Document Description attributes, and any attribute extensions supported by the  
983 Printer. The value(s) of each Document attribute supplied in Group 2 replaces the value(s) of the  
984 corresponding Document attribute on the target Document object. For attributes that can have multiple  
985 values (1setOf), all values supplied by the client replace all values of the corresponding Document object  
986 attribute.

987 In order to set the Document's "document-message" Document Description attribute (see section 8.2.21), the  
988 client MUST supply the attribute in Group 2, rather than supplying a "document-message" operation attribute  
989 in Group 1.

990 If the client supplies an "xxx" attribute with the 'delete-attribute' out-of-band value (see [set-opsrfc3380]  
991 section 8.2), the Printer MUST remove the "xxx" attribute from the Document object, if present.

992 **3.7.3 Set-Document-Attributes Response**

993 The Printer returns the following sets of attributes as part of the Set-Document-Attributes Response:

994 **Group 1: Operation Attributes**

995 **Status Message:**

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

999 **Natural Language and Character Set:**

1000 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.2.

1001 **Group 2: Unsupported Attributes**

1002 See [rfc2911] section 3.1.7 for details on returning Unsupported Attributes.

1003 If some of the attributes in the operation fail to validate, the Printer MUST reject the operation, MUST NOT  
1004 change any Document attributes, and MUST return the indicated status code below. In this group, the

Printer MUST also return all attributes that fail to validate. The following are the reasons that an attribute fails to validate and the value returned for the attribute, along with the indicated status code and order of detection:

1. The number of attributes supplied by the client exceeds the maximum number that the Printer supports in a Set-Printer-Attributes request: return the 'client-error-request-entity-too-large' (see [rfc2911] section 13.1.4.9).
2. The Printer doesn't support the attribute: return the attribute with the 'unsupported' out-of-band attribute value (see [rfc2911] section 3.1.7 and [rfc2910]) and the 'client-error-attributes-or-values-not-supported' (see [rfc2911] section 13.1.4.12).
3. The attribute is READ-ONLY (in its definition) or is not-settable in this implementation: return the attribute with the 'not-settable' out-of-band attribute value (see [set-opsrfc3380] section 8.1) and the 'client-error-attributes-not-settable' status code (see [set-opsrfc3380] section 7.1).
4. The Printer doesn't support the value: if the attribute in the operation has a single value return it. If the attribute in the operation is multi-valued, return only those values in a 1setOf that are not supported. Return the 'client-error-attributes-or-values-not-supported' status code (see [rfc2911] section 13.1.4.12).
5. The values of some of the supplied attributes conflict with one another and/or other Document attribute values not being set: if the conflicting attribute in the operation has a single value return the attribute and the value. If the attribute in the operation is multi-valued, return only the attribute and those values in a 1setOf that are conflicting with other attributes. Return the 'client-error-conflicting-attributes' status code (see [rfc2911] section 13.1.4.15).

### 3.8 Cancel-Document Operation

This REQUIRED operation allows a client to cancel a specified Document in a specified Print Job from the time the Document is created up to, but not including, the time it is completed, canceled, or aborted. Since a Document might already be printing by the time a Cancel-Document is received, some media sheet pages might be printed before the document processing is actually terminated.

The Cancel-Document operation does not remove the Document from the Job and Printer, but only sets the specified Document's "document-state" Document Description attribute to 'canceled' and the Document's "document-state-reasons" Document Description attribute to 'canceled-by-user' or 'cancel-by-operator'. If the Job object is printed again using operations such as the Reprocess-Job operation (see [adm-ops] section 4.1) or the Restart-Job operation (see [rfc2911] section 3.3.7), any canceled Documents are also printed again. Thus Cancel-Document has the same semantics as Cancel-Job (see [rfc2911] section 3.3.3), which only cancels the processing of the job, and doesn't delete the Job object itself. See the Delete-Document operation (section 3.9) to remove the Document object itself immediately from the Job and Printer.

The Cancel-Document operation does not affect the states of any of the other Document objects in the job. If the Job was processing and there are more Documents to be processed, the Printer does so. If there are no further Documents to process, the Job moves to the 'completed' state as usual whenever there is no more processing to be done.

The Printer MUST accept or reject the request based on the document's current state and transition the document to the indicated new state as follows:

Current "document-state"	New "document-state"	Printer object's response status code and action:
'pending'	'canceled'	'successful-ok'
'processing'	'canceled'	'successful-ok'
'processing'	'processing'	'successful-ok' See Rule 1
'processing'	'processing'	'client-error-not-possible' See Rule 2
'completed'	'completed'	'client-error-not-possible'
'canceled'	'canceled'	'client-error-not-possible'
'aborted'	'aborted'	'client-error-not-possible'

1045 Rule 1: If the implementation requires some measurable time to cancel the document in the 'processing' document  
 1046 states, the Printer object MUST add the 'processing-to-stop-point' value to the document's "document-state-reasons"  
 1047 attribute and then transition the document to the 'canceled' state when the processing ceases (see [rfc2911] section  
 1048 4.3.8).

1049 Rule 2: If the Document object already has the 'processing-to-stop-point' value in its "document-state-reasons"  
 1050 attribute, then the Printer object MUST reject a Cancel-Document operation.

1051 *Access Rights:* The authenticated user (see [rfc2911] section 8.3) performing this operation must either be the job  
 1052 owner or an operator or administrator of the Printer object (see [rfc2911] sections 1 and 8.5). Otherwise, the Printer  
 1053 MUST reject the operation and return: 'client-error-forbidden', 'client-error-not-authenticated', or 'client-error-not-  
 1054 authorized' as appropriate.

### 1055 3.8.1 Cancel-Document Request

1056 The following groups of attributes are part of the Cancel-Document Request:

#### 1057 Group 1: Operation Attributes

##### 1058 Natural Language and Character Set:

1059 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.1.

##### 1060 Target:

1061 The client MUST supply the "document-number" (integer(1:MAX)) operation attribute immediately after either  
 1062 (1) the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri" (uri) operation attribute(s) which  
 1063 define the target Document object for this operation as described in section [rfc2911] 3.1.5. If the client omits  
 1064 the "document-number" operation attribute, the Printer MUST reject the request and return the 'client-error-  
 1065 bad-request' status code.

##### 1066 Requesting User Name:

1067 The "requesting-user-name" (name(MAX)) attribute SHOULD be supplied by the client as described in  
 1068 [rfc2911] section 8.3.

#### 1069 3.8.1.1 document-message (text(MAX))

**operation attribute**

1070 The client MAY supply this operation attribute. If the Printer supports this attribute, the Printer MUST also  
 1071 support the corresponding "document-message" (text(MAX)) Document Description attribute (see section  
 1072 8.2.21) and copy this value to the "document-message" Document Description attribute. The end user can  
 1073 use this Document Description attribute as a message to the operator and the operator can use it as a  
 1074 message to the user. The Printer MAY print this message on a document start sheet for this document, if  
 1075 any.

1076 The Printer MUST ignore the new "job-message-from-operator" operation attribute (see [adm-ops] section 6)  
1077 for this operation, since that is a job only attribute and Cancel-Document is a Document operation.

### 1078 3.8.2 Cancel-Document Response

1079 The following sets of attributes are part of the Cancel-Document Response:

#### 1080 Group 1: Operation Attributes

##### 1081 Status Message:

1082 In addition to the REQUIRED status code returned in every response, the response OPTIONALLY includes a  
1083 "status-message" (text(255)) and/or a "detailed-status-message" (text(MAX)) operation attribute as described  
1084 in [rfc2911] sections 13 and 3.1.6.

##### 1085 Natural Language and Character Set:

1086 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.2.

#### 1087 Group 2: Unsupported Attributes

1088 See [rfc2911] section 3.1.7 for details on returning Unsupported Attributes.

1089 Once a successful response has been sent, the implementation guarantees that the Document will eventually end up  
1090 in the 'canceled' state. Between the time of the Cancel-Document operation is accepted and when the document  
1091 enters the 'canceled' document-state (see section 8.2.25), the "document-state-reasons" attribute (see section  
1092 8.2.27) SHOULD contain the 'processing-to-stop-point' value which indicates to later queries that although the  
1093 Document might still be 'processing', it will eventually end up in the 'canceled' state, not the 'completed' state.

### 1094 3.9 Delete-Document Operation

1095 This OPTIONAL operation removes the specified Document object and its data immediately from the specified Job.  
1096 The Printer MUST reject the request if the Document is in any state, but 'pending' (there is no 'pending-held' state for  
1097 Documents). The Printer does not reassign the "document-number" Document Description attribute values of the  
1098 remaining Document objects in the Job, so that the deleted Document object leaves a gap in the document  
1099 numbering space for the Job. The Printer MUST return a 'client-error-not-found' status code, in a subsequent Get-  
1100 Document-Attributes operation for this Document object specifying its former "document-number". This operation is  
1101 similar to the Purge-Jobs operation which immediately deletes all jobs from the Printer. However, the Delete-  
1102 Document operation only deletes a single Document from the specified Job.

1103 *Access Rights:* The authenticated user (see [rfc2911] section 8.3) performing this operation MUST be an operator or  
1104 administrator of the Printer object (see [rfc2911] sections 1 and 8.5). Otherwise, the Printer MUST reject the  
1105 operation and return: 'client-error-forbidden', 'client-error-not-authenticated', or 'client-error-not-authorized' as  
1106 appropriate. This operation requires operator/administrator privileges, otherwise a rogue client could submit, then  
1107 delete, at will using up valuable spooling space. Instead of using this operation, unprivileged users use Cancel-  
1108 Document which goes through the normal accounting, if any.

1109 The Delete-Document request and Delete-Document response have the same attribute groups and attributes as the  
1110 Cancel-Document operation (see section 3.8).

## 1111 4 Semantic extensions to Job operations

1112 This section defines the new Close-Job operation and the effects that Job operations have on the Document object.  
1113 Printer and Subscription object (Event Notification [ntfy]) operations MUST have no effect on the Document object

1114 and the Document object has no effect on the semantics of the Printer and Subscription operations. The Job  
 1115 operations that MUST NOT have any effect on the Document object because they are defined to affect the Job  
 1116 object as a whole are: **Get-Job-Attributes**<sup>8</sup> ([rfc2911] section 3.3.4), **Get-Jobs**<sup>9</sup> ([rfc2911] section 3.2.6), **Hold-Job**  
 1117 ([rfc2911] section 3.3.5), **Promote-Job** ([adm-ops] section 4.4.1), **Release-Held-New-Jobs** ([adm-ops] section  
 1118 3.3.2), **Resume-Job** ([adm-ops] section 4.3.2), **Schedule-Job-After** ([adm-ops] section 4.4.2), **Set-Job-Attributes**  
 1119 ([set-ops:rfc3380] section 4.2), and **Validate-Job** ([rfc2911] section 3.2.3).

1120 The Job operations that affect Document objects or that Document objects affect the semantics of the Job operations  
 1121 are, in alphabetical order:

1122 **4.1 Cancel-Current-Job** ([adm-ops] section 4.2)

1123 The Printer sets the “document-state” Document Description attribute to ‘canceled’ and the “document-state-reasons”  
 1124 Document Description attribute to ‘canceled-by-xxx’ for any documents in the current Job that have not yet reached a  
 1125 terminal state (‘completed’, ‘canceled’, or ‘aborted’), where “xxx” is ‘user’ or ‘operator’. See [adm-ops] section 4.2.

1126 **4.2 Cancel-Job** ([rfc2911] section 3.3.3)

1127 The Printer sets “document-state” Document Description attribute to ‘canceled’ and the “document-state-reasons”  
 1128 Document Description attribute to ‘canceled-by-user’ or ‘canceled-by-operator’ for *all* Document objects in the  
 1129 identified Job that have not yet reached a terminal state (‘completed’, ‘canceled’, or ‘aborted’).

1130 **4.3 Close-Job (new)**

1131 **ISSUE 02: OK to add Close-Job and to REQUIRE a Printer to support it, since PSI is using it?**

1132 This REQUIRED operation closes the Job. The Printer MUST support this operation. The client MAY issue this  
 1133 operation to close the job, instead of supplying the “last-document” operation attribute (see section 3.1.1.2) with a  
 1134 ‘true’ value in a Document Creation operation (or a Send-Document operation - see [RFC2911] section 3.3.1).

1135 Access Rights: The authenticated user (see [rfc2911] section 8.3) performing this operation must either be the job  
 1136 owner (as determined in the Create-Job operation) or an operator or administrator of the Printer object (see [rfc2911]  
 1137 sections 1 and 8.5). Otherwise, the Printer MUST reject the operation and return: ‘client-error-forbidden’, ‘client-error-  
 1138 not-authenticated’, or ‘client-error-not-authorized’ as appropriate.

1139 **4.3.1 Close-Job Request**

1140 The client supplies the following groups as part of the Close-Job Request:

1141 **Group 1: Operation Attributes**

1142 **Natural Language and Character Set:**  
 1143 First, the client MUST supply the “attributes-charset” and “attributes-natural-language” Operation attributes  
 1144 as described in [rfc2911] section 3.1.4.1. The Printer object MUST copy these values to the corresponding  
 1145 Job Description attributes described in [rfc2911] sections 4.3.19 and 4.3.20.

<sup>8</sup> The Printer MUST NOT copy up to the Job object any Document attributes supplied at the Document Level in Create-Document, Send-Document, or Send-URI to the Job object as observable by the client in any Get-Job-Attributes operation responses.

<sup>9</sup> The Printer MUST NOT copy up to the Job object any Document attributes supplied at the Document Level in Create-Document, Send-Document, or Send-URI to the Job object as observable by the client in any Get-Job-Attributes operation responses.

1146 **Target:**

1147 Next, the client MUST supply either (1) the "printer-uri" (uri) plus "job-id" (integer(1:MAX)) or (2) the "job-uri"  
1148 (uri) operation attribute(s) which define the target Job object for this operation as described in [rfc2911]  
1149 section 3.1.5. The client MAY supply the remaining Operation attributes in any order following:

1150 **Requesting User Name:**

1151 The "requesting-user-name" (name(MAX)) attribute SHOULD be supplied by the client as described in  
1152 [rfc2911] section 8.3.

1153 **Group 2: Document Template Attributes:** **MUST NOT be present.**

1154 **Group 3: Subscription Attributes (see [ntfy] section 11.1.3.1):** **MUST NOT be present.**

1155 **4.3.2 Close-Job Response**

1156 The Printer object MUST return the following sets of attributes to the client as part of the Close-Job response:

1157 **Group 1: Operation Attributes**

1158 **Status Message:**

1159 In addition to the REQUIRED status code returned in every response, the response OPTIONALLY includes a  
1160 "status-message" (text(255)) and/or a "detailed-status-message" (text(MAX)) operation attribute as described  
1161 in [rfc2911] sections 13 and 3.1.6.

1162 **Natural Language and Character Set:**

1163 The "attributes-charset" and "attributes-natural-language" attributes as described in [rfc2911] section 3.1.4.2.

1164 **Group 2: Unsupported Attributes**

1165 See [rfc2911] section 3.1.7 for details on returning Unsupported Attributes.

1166 **Group 3: Job Object Attributes**

1167 In addition, the Printer MUST return the same Job status attributes that [rfc2911] REQUIRES for the Send-  
1168 Document and Send-URI operation responses (which are the same as for the Print-Job response - [rfc2911]  
1169 section 3.2.1.2):

1170 "job-uri" (uri) - see [rfc2911] section 4.3.1

1171 "job-id" (integer(1:MAX)) - see [rfc2911] section 4.3.2

1172 "job-state" (type1 enum) - see [rfc2911] section 4.3.7

1173 "job-state-reasons" (1setOf type2 keyword) - see [rfc2911] section 4.3.8

1174 The Printer MAY return:

1176 "job-state-message" (text(MAX)) - see [rfc2911] section 4.3.9

1177 "number-of-intervening-jobs" (integer(0:MAX)) - see [rfc2911] section 4.3.15

1179 **4.4 Job Creation operations**

1180 This section defines the extensions to Job Creation operations.

1181 The following operation attribute extensions are defined for use in all the Job Creation operations and Validate-Job:

#### 1182 4.4.1 ipp-attribute-fidelity (boolean) ([rfc2911] section 3.2.1 and 15)

1183 This REQUIRED operation attribute specifies the policy for the Printer to use (see [rfc2911] §3.2.1.1)\_when the client  
1184 supplies an unsupported attribute or value in a Job Creation operation or a subsequent Document Creation operation  
1185 for this job. The value 'true' indicates that total fidelity to client supplied Job Template and Document Template  
1186 attributes and values is required for this Job Creation operation and all subsequent Document Creation operations for  
1187 this job. If the client supplies the value 'false' or omits the attribute, then the Printer MUST accept the Job Creation  
1188 operation and all subsequent Document Creation operations even if the client supplies unsupported attributes or  
1189 values in them.

1190 The Printer MUST copy this attribute to the corresponding (new) Job Description attribute (see section 8.1.1) and use  
1191 its value for validating subsequent Document Creation operations for this job.

1192 Note: The inheritance of the effect of the "ipp-attribute-fidelity" operation attribute by subsequent Document Creation  
1193 operations is like the inheritance of other operation attributes.

#### 1194 4.4.2 job-mandatory-attributes (1setOf type2 keyword) operation attribute

1195 **ISSUE 03: Should we make "job-mandatory-attributes" a REQUIRED attribute for a Printer to support (if it supports**  
1196 **the Document object)? Otherwise, clients won't support it and will be stuck with the "ipp-attribute-fidelity" attribute?**

1197 This OPTIONAL operation attribute identifies which Job Template and Document Template attributes the Printer  
1198 MUST honor in this Job Creation request and all subsequent Document Creation requests for this job. The Printer  
1199 MUST reject this Job Creation operation or any subsequent Document Creation operations for this job, if the client  
1200 supplies an unsupported Job Template or Document Template attribute or value in the request that is also identified  
1201 in this list. The client MAY supply this attribute in a Job Creation operation. If the Printer supports this operation  
1202 attribute, the Printer MUST support this attribute in Job Creation operations and Validate-Job with any values and  
1203 MUST NOT support this attribute in any other operations.

1204 The values of the "job-mandatory-attributes" attribute are the keyword attribute names that identify Job Template  
1205 and/or Document Template attributes, for example, 'job-hold-until', 'job-finishing' (see section 7.1.4), 'copies' and  
1206 'media'. In order to identify a member attribute of a collection attribute, the keyword names of both the collection  
1207 attribute and the member attribute are given separated by a period (.) character. For example, to make the "media"  
1208 attribute of the "cover-front" collection attribute mandatory, supply the keyword value: 'cover-front.media'.

1209 The Printer MUST ignore this attribute if the client supplies the "ipp-attribute-fidelity" operation attribute (see section  
1210 4.4.1) with a 'true' value in this operation, since a 'true' value indicates that the Printer MUST honor all supplied Job  
1211 Template and Document Template attributes.

1212 The Printer MUST copy this attribute to the corresponding "job-mandatory-attributes" Job Description attribute (see  
1213 section 4.4.2) for auditing and trouble shooting purposes and use its value for validating subsequent Document  
1214 Creation operations for this job.

1215 If a client supplies this operation attribute in a Document Creation operation, the Printer MUST ignore it; only the Job  
1216 level attribute MUST have effect. Note: The inheritance of the effect of "job-mandatory-attributes" operation attribute  
1217 supplied at the Job Level by subsequent Document Creation operations is like the inheritance of other operation and  
1218 Job Template attributes.

#### 1219 4.4.3 Create-Job ([rfc2911] section 3.2.4)

1220 The Printer creates the Job object with all of the mixture of Job and Document attributes supplied in the Create-Job  
1221 operation. The Document objects that are subsequently created for the specified Job inherit the Document attributes  
1222 from the Job object. However, the Printer MUST NOT copy down any Job Level attributes, including "document-  
1223 overrides" ([override]) to the Document object as observable by a client in any Get-Documents or Get-Documents

Attributes operation responses. ~~The only exceptions to this no copy down rule are the four “compression”, “document-format”, “document-name”, and “document-natural-language” operation attributes which do not have any corresponding Job-Description attributes to hold them. Therefore, the Printer MUST copy down these attributes to the Document object which does have Document-Description attributes defined (see section 8.2).~~

~~ISSUE 01: It is the [override] specification the allowed these four “compression”, “document-format”, “document-name”, and “document-natural-language” operation attributes to be supplied in the Create-Job request. There needs to be a way for a client to query to see what was submitted. Possible solutions:~~

~~a. OK to have the exception to the no copy down rule for these four which do not have any corresponding Job-Description attributes to hold them? Otherwise, there would be no queriable record of what the client had supplied when the client only supplies them in the Create-Job operation.~~

~~b. Or would it be better, simpler, and more consistent to define the four corresponding Job-Description attributes and have the Printer just copy the operation attributes to them, like most other operation attributes?~~

~~c. Or should we forget the [override] extension and go back to the RFC2911 Create-Job definition (see [rfc2911] section 3.2.4) which does not allow these four operation attributes to be submitted in the Create-Job, but requires that the client supply them each time in each Send-Document and Sent-URI operation, if the client wants to submit them at all. Then the Printer just copies them to the corresponding Document-Description attributes and there is no inheritance problem between the Job and Document level for these four attributes.~~

A Printer that supports the Document object MUST support the Create-Job operation<sup>10</sup> since the Create-Job operation is the only operation that creates a Job object ~~and allows so that~~ subsequent Document objects ~~to be can be created~~ in the Job object.

#### 4.4.4 Print-Job ([rfc2911] section 3.2.1)

The Printer creates one Document object as a side effect of the Print-Job operation. All of the attributes supplied by the client MUST remain at the Job Level as part of the Job object. Any Document attributes supplied have affect on the Document object because the Document object inherits them from the Job object. The Printer MUST populate the single Document object’s “document-state”, “document-state-reasons”, and “document-number” Document Description attributes with appropriate values. Thus a Get-Documents or Get-Documents-Attributes for a Job created by Print-Job will return no attributes supplied by the client, but will return the populated Document Description attributes.

#### 4.4.5 Print-URI ([rfc2911] section 3.2.2)

The Printer creates one Document object as a side effect of the Print-URI operation. All of the attributes supplied by the client MUST remain at the Job Level as part of the Job object. Any Document attributes supplied have affect on the Document object because the Document object inherits them from the Job object. The Printer MUST populate the Document object’s “document-state”, “document-state-reasons”, and “document-number” Document Description attributes with appropriate values. Thus a Get-Documents or Get-Documents-Attributes for a Job created by Print-Job will return no attributes supplied by the client, but will return the populated Document Description attributes.

### 4.5 Purge-Jobs ([rfc2911] section 3.2.9)

The Printer removes all Job and all of their contained Document objects.

<sup>10</sup> In [rfc2911] the Create-Job operation is OPTIONAL for a Printer to support.

#### 1261 **4.6 Release-Job ([rfc2911] section 3.3.6)**

1262 The Printer moves the job to the 'pending' state, if there are no other "job-state-reasons" to hold the job. The values  
1263 of the "document-state-reasons" attributes MUST NOT affect job scheduling (see Table 13), only the Job's "job-state-  
1264 reasons" values.

#### 1265 **4.7 Reprocess-Job ([adm-ops] section 4.1)**

1266 The Printer processes the Job again by processing *all* Documents in the Job, including ones that have been  
1267 canceled by a previous Cancel-Document operation. Therefore, the Printer removes any 'canceled-by-xxx' values  
1268 from any of the "document-state-reasons" attributes and the Job's "job-state-reasons" attributes.

#### 1269 **4.8 Restart-Job ([rfc2911] section 3.3.7)**

1270 The Printer starts the Job over again by processing *all* Documents in the Job, including ones that have been  
1271 canceled by a previous Cancel-Document operation. Therefore, the Printer removes any 'canceled-by-xxx' values  
1272 from any of the "document-state-reasons" attributes and the Job's "job-state-reasons" attributes and

#### 1273 **4.9 Send-Document ([rfc2911] section 3.3.1)**

1274 The Printer accepts a new Document Attributes group (Group 4) that the client can supply Document Template  
1275 attribute and creates a Document object (see section 3.3).

#### 1276 **4.10 Send-URI ([rfc2911] section 3.3.2)**

1277 The Printer accepts a new Document Attributes group (Group 4) that the client can supply Document Template  
1278 attribute and creates a Document object (see section 3.4).

#### 1279 **4.11 Suspend-Current-Job ([adm-ops] section 4.3.1)**

1280 The Printer suspends the current job and sets the Job's "job-state" Job Description attribute to 'processing-stopped'  
1281 and "job-state-reasons" to 'job-suspended-by-xxx', where 'xxx' is 'user' or 'operator'. The Documents' "document-  
1282 state" and "document-state-reasons" Document Description attributes are unaffected (but the Documents are not  
1283 processed any further, since the Job is stopped).

### 1284 **5 Attribute Precedence during job processing**

1285 This section defines the Attribute Precedence rules that the Printer MUST follow when processing jobs, including  
1286 instructions in the PDL data. These rules cover Queue Override attributes, Page Override attributes, Document  
1287 Object attributes, Document Override attributes, Job Object attributes, PDL instructions, PDL Interpreter initialization  
1288 files, and Printer object defaults. Since each attribute can be specified for all of these levels, it is important to define  
1289 which level takes precedence when the same attribute occurs at different levels with differing values.

1290 The attribute precedence model has the following features:

1291 1) In principle, each defined attribute can occur at each of the precedence levels.

1292 2) Attributes can be introduced and modified at different points in the job workflow, e.g., in the application, print  
1293 driver, submission client, protocol, and Printer:

- 1294 • Attributes are supplied by different agents in the system: application, user, print driver, administrator,  
1295 operator, Printer object, and the output device hardware.
- 1296 • Attributes are supplied at different points in time: PDL generation, job submission, job acceptance, job  
1297 pending, job processing.

1298 3) Attributes can be introduced and modified at different points in the job workflow, e.g., in the application, print  
1299 driver, submission client, protocol, and Printer.

1300 4) The later that an attribute is introduced into the work flow or the closer the specified scope of the attribute is to  
1301 the affected object, the higher the precedence is assigned to that attribute, since precedence is intended to  
1302 reflect the user's wishes.

1303 The following levels of Attribute Precedence are defined in order of decreasing priority:

- 1304 1. **queue override** - The value that the Printer enforces for any job submitted to it (see [[prod-print2jppsave](#)]  
1305 section 3.1). Set by the administrator when configuring the Printer by setting an "xxx-supported" Printer  
1306 attribute to contain a single value, i.e., the override value. Example: the administrator sets the Printer's  
1307 "sides" = 'two-sided-long' so that all jobs submitted to that (logical) Printer are printed two-sided flipped  
1308 along the long edge.

1309 Note: The **queue override** level is only available for Printers that support the 'guaranteed' value for  
1310 its "pdl-override-supported" attribute (see [[prod-print2jppsave](#)] section 8.1). All other levels are  
1311 available for all Printers independent of the "pdl-override-supported" value.

- 1312 2. **Document Level - page override programming** - The special "page-overrides" collection Document  
1313 Template attribute (see [[overridepwg5100.4](#)]) supplied at the Document Level, that is, in a Create-  
1314 Document, Send-Document, or Send-URI operation, that contains the attributes that are to have the  
1315 page override status for the specified ranges of pages in the Input-Document or the Output-Document.  
1316 Supplied by the client when submitting a Document object, or set by the user or operator after the  
1317 Document has been accepted either using the Set-Document-Attributes operation, or by the operator  
1318 using means local to the Printer. Example: "page-overrides" = {"input-documents" = '1:1'; "pages" =  
1319 '1:1'; "media" = 'letterhead'}

- 1320 3. **Job Level - page override programming** - The special "page-overrides" collection Job Template  
1321 attribute (see [[overridepwg5100.4](#)]) supplied at the Job Level, that is, in a Job Creation operation, that  
1322 contains the attributes that are to have the page override status for the specified ranges of pages in the  
1323 Input-Document or the Output-Document. Supplied by the client when submitting a job either in the  
1324 protocol, or set by the user or operator after the job has been accepted either using the Set-Job-  
1325 Attributes operation, or by the operator using means local to the Printer. Example: "page-overrides" =  
1326 {"input-documents" = '1:1'; "pages" = '1:1'; "media" = 'letterhead'}

- 1327 4. **Document Level - Document object attributes** - The Document attributes supplied at the Document  
1328 Level, that is, in a Create-Document, Send-Document, or Send-URI operation to apply to the Input  
1329 Document. Supplied by the client when submitting a Document object, or set by the user or operator  
1330 after the Document has been accepted either using the Set-Job-Attributes operation, or by the operator  
1331 using means local to the Printer. Examples: "media" = 'na-letter' and "copies" = '2'.

- 1332 5. **Document Level - document override programming** - The special "document-overrides" collection  
1333 operation attribute (see [[overridepwg5100.4](#)]) supplied by the client in the Send-Document or Send-URI  
1334 request. The collection contains the member attributes that are to override attributes specified at lower

- 1335 precedence for the specified range of documents, including the current Document and subsequently  
 1336 created Documents. Clients that support the Document object SHOULD supply the attributes as  
 1337 Document Template attributes directly when creating the Document, instead of using the operation  
 1338 attribute mechanism. Example: "document-overrides" = {"input-documents" = '5:5'; "media" =  
 1339 'transparency'}
- 1340 6. **Job Level - document override programming** - The special "document-overrides" collection Job  
 1341 Template attribute (see [overridepwg5100.4](#)) that contains the attributes that are to have the document  
 1342 override status for the specified Input-Documents or Output-Documents. Supplied by the client when  
 1343 submitting a job either in the protocol, or set by the user or operator after the job has been accepted  
 1344 either using the Set-Job-Attributes operation, or by the operator using means local to the Printer.  
 1345 Example: "document-overrides" = {"input-documents" = '5:5'; "media" = 'transparency'}
- 1346 7. **Job Level - Job object and Document object attributes** - The Job attributes and Document attributes  
 1347 supplied at the Job Level, i.e., with a Create-Job, Print-Job, or Print-URI operation. Supplied by the  
 1348 client when submitting a Job in the protocol, or set by the user or operator after the job has been  
 1349 accepted either using the Set-Job-Attributes operation, or by the operator using means local to the  
 1350 Printer. Examples: "media" = 'na-letter' and "copies" = '2'.
- 1351 8. **PDL document data** - an instruction in the PDL document data. Supplied by the application or print  
 1352 driver that created the PDL. Example: PostScript setPageDevice specifying na-letter media. Whether  
 1353 PDL document data is actually lower precedence than the preceding levels depends on the  
 1354 implementation as expressed in the "pdl-override-supported" Printer Description attribute (see [rfc2911]  
 1355 section 4.4.28 and [prod-print2ippsave](#) section 8.1).  
 1356  
 1357 Job Template and Document Template attributes of the form "xxx-requested", such as "orientation-  
 1358 requested" (see [rfc2911] section 4.2.10) have a lower priority than the PDL. If the PDL contains a  
 1359 corresponding instruction, that PDL instruction will be used instead of the supplied "xxx-requested"  
 1360 attribute. For example, PostScript PDL data always has a well-defined orientation, so that "orientation-  
 1361 requested" never affects the result. On the other hand, PDLs such as text/plain never has orientation  
 1362 and PCL NEED NOT have orientation, in which case, "orientation-requested" takes affect.
- 1363 9. **PDL Init File data** - a file that the Printer uses to initialize the PDL Interpreter before it starts interpreting  
 1364 each document in a Job. See description of "pdl-init-file" Job Template attribute in [prod-print2ippsave](#)  
 1365 Section 5.8. It is immaterial how this file is specified, whether it be by a queue override, job object  
 1366 attribute or printer default – the precedence of the contents of this file is at this level.
- 1367 10. **printer default** - a Printer "xxx-default" attribute that is applied by the Printer provided that none of the  
 1368 higher levels have supplied a value. The Printer implementation MUST supply values for all of the  
 1369 Printer's "xxx-default" attributes that reflect the out-of-the-box action by the output device. For example,  
 1370 if the output device will use media from the large-capacity input tray if not directed otherwise, the  
 1371 implementation MUST supply the Printer's "media-default" attribute with the 'large-capacity' keyword  
 1372 value without requiring the administrator to configure that value. The implementation MUST allow the  
 1373 administrator to configure the Printer's "xxx-default" attributes to other values, if other value are  
 1374 supported by the implementation. Example: The administrator changes the Printer's "media-default"  
 1375 from 'large-capacity' to 'na-letter'.
- 1376 Note: Because of the requirement that the implementation supply pre-configured values for the  
 1377 Printer's "xxx-default" attributes, there is no need for a lower "hardware default" precedence  
 1378 level.

1379 **6 Operation Attributes for the Job and Document Creation operations**

1380 This section lists *all* the Operation attributes that have been defined in other IPP specifications that are used in Job  
 1381 Creation operations and extends their use to the Document Creation operations defined in the IPP specification.  
 1382 Operation attributes relate to the operation and do not depend on the printing capabilities of the Printer.

1383 **6.1 Operation Attributes supplied at the Job and Document Levels for Creation**

1384 Table 6 lists the Operation attributes that clients supply at the Job Level and/or the Document Level.

1385 The “Level Supplied” column indicates whether the Operation attribute can be supplied at the Job Level (Print-Job,  
 1386 Print-URI, and Create-Job) and at the Document Level (Create-Document, Send-Document, and Send-URI) . The  
 1387 Conformance column indicates the conformance requirements for what the client supplies in a request and the  
 1388 Printer supports in a request. The Reference and Section columns list the IETF or IEEE-ISTO specification which  
 1389 defines the semantics of the attribute.

1390 Legend:

1391 **[job-]** indicates an attribute that shouldn’t have had a “job-” prefix in its name in [rfc2911], so that the same attribute  
 1392 name could also be used for the Document object as a Document Description attribute. Note: For the PWG  
 1393 Semantic Model, the “job-” prefix is dropped.

1394 “-” indicates that the Job or Document operation attribute is *not* defined.

1395 \* For most of these operation attributes the Printer **MUST** copy these operation attributes to the corresponding  
 1396 Job Description or Document Description attributes. The \* in the Job and Doc column indicate that there is  
 1397 *no* corresponding Job Description or Document Description attribute, respectively. See Table 9 for the  
 1398 corresponding Job and Document Description attributes.

1399 **\*\*** these operation attributes are defined for *all* operations, not just Job Creation and Document Creation  
 1400 operations

1401 **Table 6 - Operation Attributes supplied at the Job and Document Levels in Creation Requests**

Operation attribute name for Job and Document Creation requests	Attribute Syntax	Level Supplied		Conformance		Reference
		Job	Doc	Client supply	Printer support	
<b>attributes-charset</b> **	charset	y	y	MUST	MUST	[rfc2911] §3.1.4
<b>attributes-natural-language</b> **	naturalLanguage	y	y	MUST	MUST	[rfc2911] §3.1.4
<b>compression</b>	type3 keyword	y *	y	MAY	MUST	[rfc2911] §3.2.1.1
<b>document-container-summary*</b>	<u>1setOf collection</u>	=	<u>y</u>	<u>MAY</u>	<u>MAY</u> <sup>11</sup>	§8.2.8
<b>document-creator-application-name*</b>	<u>name(MAX)</u>	=	<u>y</u>	<u>MAY</u>	<u>MAY</u>	§8.2.9
<b>document-creator-application-version*</b>	<u>text(127)</u>	=	<u>y</u>	<u>MAY</u>	<u>MAY</u>	§8.2.10
<b>document-creator-os-name*</b>	<u>name(40)</u>	=	<u>y</u>	<u>MAY</u>	<u>MAY</u>	§8.2.11
<b>document-creator-os-version*</b>	<u>text(40)</u>	=	<u>y</u>	<u>MAY</u>	<u>MAY</u>	§8.2.12
<b>document-format</b>	mimeMediaType	y *	y	MAY	MUST	[rfc2911] §3.2.1.1
<b>document-format-device-id*</b>	<u>text(127)</u>	=	<u>y</u>	<u>MAY</u>	<u>MAY</u>	§8.2.15

<sup>11</sup> The “document-container-summary” Document Description attribute **MUST** be supported by a Printer that supports a container MIME type document format, such as ‘application/zip’ or ‘multipart/related’.

Operation attribute name for Job and Document Creation requests	Attribute Syntax	Level Supplied		Conformance		Reference
		Job	Doc	Client supply	Printer support	
<b>document-format-version*</b>	text(127)	-	y	SHOULD	MUST	§8.2.16
<b>document-message**</b>	text(MAX)	-	y	MAY	MAY	§8.2.21
<b>document-name</b>	name(MAX)	y*	y	MAY	MUST	[rfc2911] §3.2.1.1
<b>document-natural-language</b>	naturalLanguage	y*	y	MAY	MAY	[rfc2911] §3.2.1.1
<b>document-overrides<sup>12</sup></b>	1setOf collection	-	y <sup>13</sup>	MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.1, §9.2.2
<i>See "document-overrides" in Table 8 for the list of member attributes</i>						
<b>document-uri</b>	uri	y*	y	CMUST <sup>14</sup>	MAY	[rfc2911] §3.2.2
<b>input-document-number</b> <b>DEPRECATED</b>	integer(1:MAX)	-	y	MAY	MAY	§3.1.1.1, [ <a href="#">overridepwg5100.4</a> ] §9.2
<b>ipp-attribute-fidelity</b>	boolean	y	-	MAY	MUST	§4.4.1, [rfc2911] §3.2.1.1
<b>[job-]impressions</b>	integer(0:MAX)	y	y	MAY	MAY	[rfc2911] §3.2.1.1
<b>[job-]k-octets</b>	integer(0:MAX)	y	y	MAY	MAY	[rfc2911] §3.2.1.1
<b>job-mandatory-attributes</b>	1setOf type2 keyword	y	-	MAY	<b>MAY<sup>15</sup></b>	§4.4.2
<b>[job-]media-sheets</b>	integer(0:MAX)	y	y	MAY	MAY	[rfc2911] §3.2.1.1
<b>job-name</b>	name(MAX)	y	-	MAY	MUST	[rfc2911] §4.3.5
<b>job-password</b>	octetString(255)	y	-	MAY	MAY	[ <a href="#">pred-print2</a> ] <a href="#">ippsave</a> §4.1
<b>job-password-encryption</b>	type3 keyword   name(MAX)	y	-	MAY	MAY	[ <a href="#">pred-print2</a> ] <a href="#">ippsave</a> §4.2
<b>last-document</b>	boolean	-	y	MUST	MUST	[rfc2911] §3.3.1.1
<b>operation-id**</b>	integer(1:0x8FFF)	y*	y*	MUST	MUST	[rfc2911] §3.1.2
<b>original-requesting-user-name</b>	name(MAX)	y	y	MAY	MAY	[adm-ops] §11.7.2.2
<b>page-overrides</b>	1setOf collection	-	y <sup>16</sup>	MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.2, §9.2.3
<i>See "page-overrides" in Table 8 for the list of member attributes</i>						
<b>printer-uri**</b>	uri	y <sup>17</sup>	y*	MUST	MUST	[rfc2911] §3.1.5
<b>request-id**</b>	integer(1:MAX)	y*	y*	MUST	MUST	[rfc2911] §3.1.2
<b>requesting-user-name**</b>	name(MAX)	y*	y*	SHOULD	MUST	[rfc2911] §3.2.1.1
<b>version-number**</b>	X.Y	y*	y*	MUST	MUST	[rfc2911] §3.1.8

<sup>12</sup> The "document-overrides" operation attribute is proposed to be removed from the next version of the PWG 5100.4 Candidate Standard in Send-Document and Send-URI operations.

<sup>13</sup> See section 6.2 for an ISSUE about DEPRECATING "document-overrides" as an operation attribute in Send-Document and Send-URI.

<sup>14</sup> The "document-uri" operation attribute MUST be supplied in the Print-URI Job Creation operation and the Send-URI Document Creation operation, and MUST NOT be supplied in other operations.

<sup>15</sup> ISSUE 03 (repeat): Should we make "job-mandatory-attributes" a REQUIRED attribute for a Printer to support (if it supports the Document object)? Otherwise, clients won't support it and will be stuck with the "ipp-attribute-fidelity" attribute?

<sup>16</sup> See section 6.2 for an ISSUE about DEPRECATING "page-overrides" as an operation attribute.

<sup>17</sup> The Printer copies the "printer-uri" operation attribute to the Job's "job-printer-uri" Job Description attribute and Document's "job-printer-uri" Document Description attribute.

1402 \* and \*\*. See Legend at the beginning of the Table.

1403 **6.2 Override operation attributes in Send-Document and Send-URI**

1404 ~~With the introduction of the Document Object, there is no longer a need for the “document-overrides” (1setOf~~  
 1405 ~~collection) attribute [pwg5100.4] as an operation attribute or a Document Template attribute. Also we are unaware of~~  
 1406 ~~any implementations of the “document-overrides” attribute. Therefore, the intent is to republish the Overrides~~  
 1407 ~~document with only the “page-overrides” attribute. According to [override], the “document-overrides” (collection)~~  
 1408 ~~attribute MAY be supplied by the client in a Send-Document or Send-URI request as an Operation attribute to apply~~  
 1409 ~~document overrides to this and/or subsequent documents in the job. See the “document-overrides” Job Template~~  
 1410 ~~attribute in Table 8 for the listing of the member attributes. However, with the introduction of the Document object,~~  
 1411 ~~the “document-overrides” (collection) attribute SHOULD NOT be used (either as a Job Template attribute or an~~  
 1412 ~~Operation attribute). Instead~~With the introduction of the Document object, the client simply supplies the Document  
 1413 Template attributes (see Table 8) for each Document Creation request (in a new Document Template attribute group)  
 1414 without needing a collection ~~(and the “document-overrides” attribute). A Printer MAY support “document-overrides”~~  
 1415 ~~as specified in [override] for backward compatibility with clients that don’t support the Document object.~~

1416 ~~ISSUE 02: Should we DEPRECATE the use of the “document-overrides” operation attribute in Send-Document and~~  
 1417 ~~Send-URI when supporting this specification? Or forbid?~~

1418 The “document-overrides” attribute is also useful in combination with the “pages-per-subset” attribute (see  
 1419 ~~[overridepwg5100.4s]~~ [overridepwg5100.4s]) which divides up the Input Page stream concatenated across the Input Documents into  
 1420 separate Output Documents. For example, making every 10 Input Pages be a separate Output Document but the  
 1421 client only wants to staple the first Output Document. ~~ISSUE 04: But what about Subset Finishing? Can we it be~~  
 1422 ~~done without “document-overrides”?~~ ISSUE 04: But what about Subset Finishing? Can we it be

1423 Similarly, according to ~~[overridepwg5100.4]~~ [overridepwg5100.4], the “page-overrides” (collection) attribute MAY be supplied by the client  
 1424 in a Send-Document or Send-URI request as an Operation attribute to apply page overrides to this and/or  
 1425 subsequent documents in the job. See the “page-overrides” Job Template attribute in Table 8 for the listing of the  
 1426 member attributes. However, with the introduction of the Document object, the “page-overrides” (collection) attribute  
 1427 SHOULD be more simply supplied as one of the Document Template attributes for the document being created only.  
 1428 However, a Printer ~~MAY~~ MUST also support the “page-overrides” attribute as an operation attribute for backward  
 1429 compatibility with clients that do not support the Document object.

1430 ~~ISSUE 0503: OK that when a Printer supports Page Overrides, that we REQUIRE the Printer to continue to support~~  
 1431 ~~the “page-overrides” as an operation attribute in Send-Document and Send-URI as well as a Document Template~~  
 1432 ~~attribute? Should we DEPRECATE the use of the “pages-overrides” operation attribute in Send-Document and Send-~~  
 1433 ~~URI when supporting this specification? Or forbid?~~ ISSUE 0503: OK that when a Printer supports Page Overrides, that we REQUIRE the Printer to continue to support  
the “page-overrides” as an operation attribute in Send-Document and Send-URI as well as a Document Template  
attribute? Should we DEPRECATE the use of the “pages-overrides” operation attribute in Send-Document and Send-  
URI when supporting this specification? Or forbid?

1434 **6.3 Operation Attributes returned in Job and Document Creation responses**

1435 Table 7 lists the Operation attributes that Printers return in Job Creation operation *responses*: Print-Job, Print-URI,  
 1436 and Create-Job and in Document Creation operation *responses*: Send-Document and Send-URI. The column  
 1437 labeled “Conformance” indicates the conformance for what the Printer returns and what the Printer supports. The  
 1438 Reference and Section columns list the IETF or IEEE-ISTO specification which defines the semantics of the attribute.

1439 **Table 7 - Operation attributes returned in Job and Document Creation operation responses**

Operation attribute name	Attribute Syntax Values	Conformance		References
		Printer return	Printer support	
attributes-charset *	charset	MUST	MUST	[rfc2911] §3.1.4
	‘utf-8’	MAY	MUST	[rfc2911] §4.1.7

Operation attribute name	Attribute Syntax Values	Conformance		References
		Printer return	Printer support	
	'us-ascii'	MAY	MAY	[rfc2911] §4.1.7
	'iso-8859-1'	MAY	MAY	[rfc2911] §4.1.7
	'iso-10646-ucs-2'	MAY	MAY	[rfc2911] §4.1.7
attributes-natural-language *	naturalLanguage	MUST	MUST	[rfc2911] §3.1.4
	'en-US'	MAY	MAY	[rfc2911] §4.1.8
detailed-status-message *	text	MAY	MAY	[rfc2911] §3.1.6.3
document-access-error	text	MAY	MAY	[rfc2911] §3.1.6.4
document-id-uri	uri	MUST	MUST	§8.2.17
document-number	integer(1:MAX)	MUST	MUST	§8.2.24
job-id	integer(1:MAX)	MUST	MUST	[rfc2911] §4.3.2
job-uri	uri	MUST	MUST	[rfc2911] §4.3.1
redirect-uri (uri) <sup>18</sup>	uri	MAY	MAY	[not-srv] §5.2
request-id *	integer(1:32767)	MUST	MUST	[rfc2911] §3.1.2
status-code *	integer(0:32767)	MUST	MUST	[rfc2911] §3.1.6.1
status-message *	text(255)	MAY	MAY	[rfc2911] §3.1.6.2
version-number *	integer(1:255), integer(0:255)	MUST	MUST	[rfc2911] §3.1.8

\* - indicates attributes that are defined for *all* operations, not just Job Creation operations

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## 7 Job Template and Document Template attributes

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Table 8 lists *all* of the Job Template attributes defined in other IPP specifications and lists their corresponding Document Template attributes defined in this IPP specification. The Job Template attributes can be supplied in the Job Creation operations: Print-Job, Print-URI, and Create-Job operations.

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1444  
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A subset of these Job Template attributes (e.g., “document-format” and “media”, but not “job-priority”) are also defined to apply to Documents and are called Document Template attributes when supplied at the Document Level. Document Template attribute can be supplied in the Create-Document, Send-Document, and Send-URI operations.

1446  
1447  
1448

These Document Template attributes can also be supplied as Document Overrides using the “document-overrides” Job Template attribute (see [\[overridepwg5100.4s\]](#)).

1449  
1450

A subset of the Document Template attributes that apply to pages (e.g., “media”, but not “document-format” or “job-priority”) can also be supplied as Page Overrides using the “page-overrides” Job Template collection attribute (see [\[overridepwg5100.4\]](#)) or as a Document Template attribute.

1451  
1452  
1453

“\*\*” - Most Job Template and Document Template attributes correspond to the PWG Semantic Model Job Processing and Document Processing attributes, respectively. However, [a few 4](#) of the IPP Job Template attributes are represented in the PWG Semantic Model as Job Description attributes, instead of Job Processing attributes. These are indicated in the first column with “\*\*”(JD).

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1456  
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<sup>18</sup> The Printer or Notification Server returns the “redirect-uri” operation attribute in order to redirect the Get-Notification operation to a Notification Server or back to the original Printer.

1458 The “Defined for use” column indicates whether the client MAY supply and the Printer support the attribute at the  
 1459 Job, Document, or Page Level with the following semantics:

Supplied	Description
J=y:	Job Level: The attributes MAY be supplied as Job Template attributes at the Job Level in a Job Creation request (Print-Job, Print-URI, Create-Job) in which case each Document inherits the Job Template attribute as a default which is used unless an attribute at the document level is also supplied. Note: The “multiple-document-handling” attribute controls whether extensive attributes, such as “finishing”, “copies”, affect the entire job as a whole (‘single-xxx’ values) or affect each document separately (‘separate-xxx’ values).
D=y:	Document Level: The attribute MAY be supplied at the Document Level as Document Template attributes in a Document Creation operation (Send-Document, Send-URI), in which case the supplied Document Templates override any Job Template attributes supplied at the Job Level and any “document-overrides” supplied at the Job or Document level.
P=y:	Page Level: The attribute MAY be supplied as a member of the (1) “page-ranges” Job Template attribute at the Job Level in a Job Creation operation or (2) “page-ranges” Document Template attribute at the Document Level to affect the specified range of pages.

1460 Job Template and Document Template attributes are OPTIONAL for a Printer to support and for a client to supply in  
 1461 a Job Creation or Document Creation request or a Document Overrides or Page Overrides. If a Printer supports a  
 1462 Job Template or Document Template attribute, then it MUST copy the supplied attribute to the Job or Document  
 1463 object, respectively so that a client MAY query the attributes in subsequent Get-Job-Attributes/Get-Jobs and Get-  
 1464 Document-Attributes/Get-Documents operations, respectively. The effect of Job Template Attributes supplied in Job  
 1465 Creation requests are inherited by the Document objects, unless the Document Creation operation supplies the  
 1466 attribute with a different value.  
 1467

1468 If a Job Template collection attribute is supported (see [coll]), then there are conformance requirements for which  
 1469 member attributes MUST be supported and which member attributes a client MUST supply as indicated in the  
 1470 Conformance column for each collection member attribute in Table 8.

1471 **Table 8 - Job Template and Document Template attributes**

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>copies</b>	integer(1:MAX)	y <sup>19</sup>	y	n	MAY	MAY	[rfc2911] §4.2.5

<sup>19</sup> The IPP “copies” attribute is an *extensive* attribute, so its effect when supplied at the job level is not always inherited by the documents in a multi-document job. Instead, its effect depends on the value of the “multiple-document-handling” Job Template attribute. The ‘single-document’ and ‘single-document-new-sheet’ values produce copies of the job as a whole with the multiple input documents concatenated into a single output document for each job copy. The ‘separate-document-uncollated-copies’ value produce N copies of the first input document followed by N copies of the second input document, etc. The ‘separate-document-collated-copies’ produce N successive job copies, each job copy consisting of 1 copy of the first document followed by 1 copy of the second document, etc.

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>cover-back</b>	collection	y	y	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.1
<b>cover-type</b>	type2 keyword				MUST	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.1.2
<b>media</b>	type3 keyword   name(MAX)				MAY be neither or one of, but NOT both	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.1.1
<b>media-col</b>	collection					MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.1.1
<b>cover-front</b>	collection	y	y	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.1
<b>cover-type</b>	type2 keyword				MUST	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.1.2
<b>media</b>	type3 keyword   name(MAX)				MAY be neither or one of, but NOT both	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.1.1
<b>media-col</b>	collection					MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.1.1
<b>document-overrides</b> <b>To be removed from the next version of [pwg5100.4]</b>	<b>collection</b>	<b>y</b>	<b>y-<sup>20</sup></b>	<b>n</b>	<b>MAY</b>	<b>MAY</b>	[ <a href="#">overridepwg5100.4</a> ] §5.1
<b>input-documents</b> <sup>21</sup>	1setOf rangeOfInteger(MAX)				MUST be one or the other, but NOT both	MUST	[ <a href="#">overridepwg5100.4</a> ] §5.1.1
<b>output-documents</b>	1setOf rangeOfInteger(MAX)					MUST	[ <a href="#">overridepwg5100.4</a> ] §5.1.2
<b>document-copies</b>	1setOf rangeOfInteger(MAX)				MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.1.3
<b>document-format</b>	mimeMediaType				MAY	MUST	[ <a href="#">overridepwg5100.4</a> ] §5.1.4
<b>document-name</b>	name (MAX)				MAY	MUST	[ <a href="#">overridepwg5100.4</a> ] §5.1.5
<b>compression</b>	type3 keyword				MAY	MUST	[ <a href="#">overridepwg5100.4</a> ] §5.1.6
<b>document-natural-language</b>	naturalLanguage				MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.1.7
<b>page-ranges</b>	1setOf rangeOfInteger (1:MAX)				MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.1.8
<b>any other Job Template attributes that affect documents, such as "media" or "media-col"</b>					MAY	MAY	
<b>feed-orientation</b>	type3 keyword	y	y	n	MAY	MAY	[ <a href="#">pred-print2ippsave</a> ] §5.1

<sup>20</sup> See section 6.2 for an ISSUE about DEPRECATING "document-overrides" as an operation attribute.

<sup>21</sup> The Printer MUST support "document-format", "document-name", "compression", "document-natural-language", and "page-ranges" with the "input-documents" member attribute, but not with the "output-documents" member attribute.

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>finishings</b>	1setOf type2 enum	y <sup>22</sup>	y	y	MAY be neither or one of, but NOT both	MAY, MUST if "finishing-col" is supported	[rfc2911] §4.2.6 [ <a href="#">pwg5100.1finish</a> ] §2
<b>finishings-col</b>	collection	y <sup>23</sup>	y	y		MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.2
<b>finishing-template</b>	name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.2.1
<b>stitching</b>	collection				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.2.2
<b>stitching-reference-edge</b>	type2 keyword				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.2.2.1
<b>stitching-offset</b>	integer (0:MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.2.2.2
<b>stitching-locations</b>	1setOf integer(0:MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.2.2.3
<b>font-name-requested</b>	name(MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.2
<b>font-size-requested</b>	integer (1:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.3
<b>force-front-side</b>	1setOf integer(1:MAX)	y <sup>24</sup>	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.3
<b>imposition-template</b>	type2 keyword   name(MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.4

<sup>22</sup> The IPP "finishings" and "finishings-col" attributes are *extensive* attributes, so their effect when supplied at the Job Level is not always inherited by the documents in a multi-document job. Instead, their effect depends on the value of the "multiple-document-handling" Job Template attribute. The 'single-document' and 'single-document-new-sheet' cause the finishing to be applied to each job copy as a whole. The 'separate-documents-collated-copies' and 'separate-document-uncollated-copies' values cause the finishing to be applied to each document.

<sup>23</sup> See the footnote on the "finishings" attribute.

<sup>24</sup> The effect of the IPP "force-front-side" and "insert-sheet" attributes when supplied at the job level of a multi-document job depends on the value of the "multiple-document-handling" Job Template attribute. For the 'single-document' and 'single-document-new-sheet' values, the pages are numbered as a single set from 1 to n for the job as a whole. For the 'separate-documents-collated-copies' and 'separate-document-uncollated-copies' values, the pages are numbered from 1 to n for each document separately.

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>insert-sheet</b>	1setOf collection	y <sup>25</sup>	y	y	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.5
<b>insert-after-page-number</b>	integer(0:MAX)				MUST	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.5.1
<b>insert-count</b>	integer(0:MAX)				MAY	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.5.2
<b>media</b>	type3 keyword   name(MAX)				MUST be one or the other, but NOT both	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.5.3
<b>media-col</b>	collection					MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.5.3
<b>job-account-id**<u>(JD)</u></b>	name(MAX)	y	n	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.6
<b>job-accounting-sheets</b>	collection	y	n	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.8
job-accounting-sheets-type	type3 keyword   name(MAX)				MUST	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.8.1
media	type3 keyword   name(MAX)				MAY be neither or one of, but NOT both	MUST	[ <a href="#">pred-printpwg5100.3</a> ] §3.8.2
media-col	collection					MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.8.2
job-accounting-output-bin	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.8.3
<b>job-accounting-user-id**<u>(JD)</u></b>	name(MAX)	y	n	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.7
<b>job-copies</b>	integer(1:MAX)	y	n <sup>26</sup>	n	MAY	MAY	§7.1.1

<sup>25</sup> See the footnote on “force-front-side”.

<sup>26</sup> The “job-copies” Job Template attribute **makes copies of the entire job and** MUST NOT be supplied at the Document or Page Level. The “job-copies” Job Template attribute ~~was introduced for use in clients or Printers that don't support~~ **is equivalent to “copies” with** “multiple-document-handling” = ‘single-document’ or ‘single-document-new-sheet’.

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>job-cover-back</b> <i>same as cover-back</i>	collection <i>see cover-back</i>	y	n <sup>27</sup>	n	MAY	MAY	§7.1.2
<b>job-cover-front</b> <i>same as cover-front</i>	collection <i>see cover-front</i>	y	n <sup>28</sup>	n	MAY	MAY	§7.1.3
<b>job-error-sheet</b>	collection	y	n	n	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.9
<b>job-error-sheet-type</b>	type3 keyword   name(MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.9.1
<b>job-error-sheet-when</b>	type2 keyword				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.9.2
<b>media</b>	type3 keyword   name(MAX)				MAY be neither or one of, but NOT both	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.9.3
<b>media-col</b>	collection					MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.9.3
<b>job-finishings</b>	1setOf type2 enum	y	n <sup>29</sup>	n	MAY	MAY	§7.1.4
<b>job-finishings-col</b> <i>same as finishings-col</i>	collection <i>see finishings-col</i>	y	n <sup>30</sup>	n	MAY	MAY	§7.1.5
<b>job-hold-until</b>	type3 keyword   name(MAX)	y	n	n	MAY	MAY	[rfc2911] §4.2.2
<b>job-hold-until-time</b>	dateTime	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.4
<b>job-message-to-operator</b>	text(MAX)	y	n <sup>31</sup>	n	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.10
<b>job-phone-number</b>	text(127)	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.5
<b>job-priority</b>	integer(1:100)	y	n	n	MAY	MAY	[rfc2911] §4.2.1
<b>job-recipient-name</b> <u>** (JD)</u>	name(MAX)	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.6

<sup>27</sup> The “job-cover-back” Job Template attribute makes a single back cover for each job copy and MUST NOT be supplied at the Document or Page Level. The “job-cover-back” Job Template attribute was introduced for use in clients or Printers that don’t support is equivalent to “cover-back” with “multiple-document-handling” = ‘single-document’ or ‘single-document-new-sheet’.

<sup>28</sup> The “job-cover-front” Job Template attribute makes a single front cover for each job copy and MUST NOT be supplied at the Document or Page Level. The “job-cover-front” Job Template attribute is equivalent to “cover-front” with was introduced for use with clients or Printers that don’t support “multiple-document-handling” = ‘single-document’ or ‘single-document-new-sheet’.

<sup>29</sup> The “job-finishing” Job Template attribute finishes each job copy as a whole and MUST NOT be supplied at the Document or Page Level. The “job-finishings” Job Template attribute is equivalent to “finishings” with was introduced for use with clients or Printers that don’t support “multiple-document-handling” = ‘single-document’ or ‘single-document-new-sheet’.

<sup>30</sup> The “job-finishing-col” Job Template attribute finishes each job copy as a whole and MUST NOT be supplied at the Document or Page Level. The “job-finishings-col” Job Template attribute is equivalent to “finishings-col” with was introduced for use with clients or Printers that don’t support “multiple-document-handling” = ‘single-document’ or ‘single-document-new-sheet’.

<sup>31</sup> The “job-message-to-operator” Job Template attribute has no corresponding Document Template attribute. Instead, the user and operator communicate with each other using the same “document-message” operation attribute which the Printer copies to the “document-message” Document Description attribute.

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>job-save-disposition</b>	collection	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.7
<b>save-disposition</b>	type3 keyword	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.7.1.1
<b>save-info</b>	1setOf collection	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.7.1.2
<b>save-location</b>	uri	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.7.1.2.3.1
<b>save-name</b>	name(MAX)	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.7.1.2.3.2
<b>save-document-format</b>	mimeMediaType	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.7.1.2.3.3
<b>job-sheet-message</b>	text(MAX)	y	n	n	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.12

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>job-sheets</b>	type3 keyword   name(MAX)	y	n	n	MAY be neither or one of, but NOT both	MAY, MUST if "job-sheets-col" supported	[rfc2911] §4.2.3
<b>job-sheets-col</b>	collection	y	n	n		MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.11
<b>job-sheets</b>	type3 keyword   name(MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.11.1
<b>media</b>	type3 keyword   name(MAX)				MUST be one or the other, but NOT both	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.11.2
<b>media-col</b>	collection					MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.11.2
<b>media</b>	type3 keyword   name(MAX)	y	y	y	MAY be neither or one of, but NOT both	MAY, MUST if "media-col" supported	[rfc2911] §4.2.11
<b>media-col</b>	collection	y	y	y		MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13
<b>media-back-coating</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.10
<b>media-color</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.4
<b>media-front-coating</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.10
<b>media-grain</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §8.4.2
<b>media-hole-count</b>	integer(0:MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.6
<b>media-info</b>	text(255)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.3
<b>media-key</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.1
<b>media-material</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §8.4.3
<b>media-order-count</b>	integer(1:MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.7
<b>media-preprinted</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.5
<b>media-recycled</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.11
<b>media-size</b>	collection				MAY	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.8
<b>x-dimension</b>	integer(0:MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.8.1
<b>y-dimension</b>	integer(0:MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.8.2
<b>media-size-name</b>	type3 keyword   name(MAX)				MAY	MAY	§7.1.6
<b>media-thickness</b>	integer(1:MAX)				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §8.4.4
<b>media-tooth</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §8.4.1
<b>media-type</b>	type3 keyword   name(MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.2
<b>media-weight-metric</b>	integer(0:MAX)				MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.9

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>media-input-tray-check</b>	type3 keyword   name(MAX)	y	y	y	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.14
<b>media-size-name</b> <sup>32</sup>	type3 keyword   name(MAX)	y	y	y	MAY	MAY	§7.1.6, [upnp]
<b>media-type</b> <sup>33</sup>	type3 keyword   name(MAX)	y	y	y	MAY	MAY	[upnp], [ <a href="#">pred-printpwg5100.3</a> ] §3.13.2
<b>multiple-document-handling</b>	type2 keyword	y	n	n	MAY	MUST if multiple document jobs supported	[rfc2911] §4.2.4
<b>number-up</b>	integer(1:MAX)	y	y	y	MAY	MAY	[rfc2911] §4.2.9
<b>orientation-requested</b>	type2 enum	y	y	y	MAY	MAY	[rfc2911] §4.2.10
<b>output-bin</b>	type2 keyword   name(MAX)	y	n	n	MAY	MAY	[ <a href="#">output-binpwg5100.2</a> ] §2.1
<b>page-delivery</b>	type2 keyword	y	y	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.15
<b>page-order-received</b> <sup>**</sup> ( <del>JD</del> )	type2 keyword	y	y	n	MAY	MAY	[ <a href="#">pred-printpwg5100.3</a> ] §3.16
<b>page-overrides</b>	1setOf collection	y <sup>34</sup>	y	n	MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.2
<b>input-documents</b>	1setOf rangeOfInteger(1:MAX)				MUST be one or the other, but NOT both	MUST	[ <a href="#">overridepwg5100.4</a> ] §5.2.1
<b>output-documents</b>	1setOf rangeOfInteger(1:MAX)					MUST	[ <a href="#">overridepwg5100.4</a> ] §5.2.2
<b>document-copies</b>	1setOf rangeOfInteger(1:MAX)				MAY	MAY	[ <a href="#">overridepwg5100.4</a> ] §5.2.3
<b>pages</b>	1setOf rangeOfInteger(1:MAX)				MUST	MUST	[ <a href="#">overridepwg5100.4</a> ] §5.2.4
<i>any other Job Template attributes that affect pages, such as "media" or "media-col"</i>					MAY	MAY	
<b>page-ranges</b>	1setOf rangeOfInteger(1:MAX)	y <sup>35</sup>	y	n	MAY	MAY	[rfc2911] §4.2.7

<sup>32</sup> UPnPv1 and UPnPv2 define a separate MediaSizeName Job Template attribute with values from PWG 5101.1.

<sup>33</sup> UPnPv1 and UPnPv2 define a separate MediaType Job Template attribute with the same values as the "media-type" member attribute of "media-col".

<sup>34</sup> The effect of the IPP "page-overrides" Job Template attribute when supplied at the job level of a multi-document job depends on the value of the "multiple-document-handling" Job Template attribute. For the 'single-document' and 'single-document-new-sheet' values, the pages are numbered as a single set from 1 to n for the job as a whole. For the 'separate-documents-collated-copies' and 'separate-document-uncollated-copies' values, the pages are numbered from 1 to n for each document separately. ~~ISSUE 06: This is a change from [override], OK?~~

<sup>35</sup> ~~The effect of the IPP "page-ranges" Job Template attribute when supplied at the job level of a multi-document job depends on the value of the "multiple-document-handling" Job Template attribute. For the 'single-document' and 'single-document-new-sheet' values, the pages are numbered as a single set from 1 to n for the job as a whole. For the 'separate-documents-collated-copies' and 'separate-document-uncollated-copies' values, the pages are numbered from 1 to n for each document separately. ISSUE 07: This is a change from [override], OK?~~

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>pages-per-subset</b>	1setOf integer(1:MAX)	y <sup>36</sup>	n	n	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §5.3
<b>pdl-init-file</b>	1setOf collection	y	y	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.8
<b>pdl-init-file-location</b>	uri				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.8.1.1
<b>pdl-init-file-name</b>	name(MAX)				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.8.1.2
<b>pdl-init-file-entry</b>	name(MAX)				MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.8.1.3
<b>presentation-direction-number-up</b>	type2 keyword	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.17
<b>print-quality</b>	type2 enum	y	y	y	MAY	MAY	[rfc2911] §4.2.13
<b>printer-resolution</b>	resolution	y	y	y	MAY	MAY	[rfc2911] §4.2.12
<b>proof-print</b>	collection	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.9
<b>proof-print-copies</b>	integer (0:MAX)	y	n	n	MAY	MAY	[ <a href="#">prod-print2ippsave</a> ] §5.9.1.1
<b>media</b>	type3 keyword   name(MAX)				MAY be neither or one of, but NOT both	MUST	[ <a href="#">prod-print2ippsave</a> ] §5.8.1.2
<b>media-col</b>	collection					MAY	[ <a href="#">prod-print2ippsave</a> ] §5.8.1.2
<b>separator-sheets</b>	collection	y	y	n	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.18
<b>separator-sheets-type</b>	type3 keyword   name(MAX)				MUST	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.18.1
<b>media</b>	type3 keyword   name(MAX)				MAY be neither or one of, but NOT both	MUST	[ <a href="#">prod-printpwg5100.3</a> ] §3.18.2
<b>media-col</b>	collection					MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.18.2
<b>sheet-collate</b>	type2 keyword	y	y	n	MAY	MAY	[rfc3381] §3.1
<b>sides</b>	type2 keyword	y	y	y	MAY	MAY	[rfc2911] §4.2.8
<b>x-image-position</b>	type2 keyword	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.2
<b>x-image-shift</b>	integer(MIN:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.3
<b>x-side1-image-shift</b>	integer(MIN:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.4
<b>x-side2-image-shift</b>	integer(MIN:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.5

<sup>36</sup> The IPP “pages-per-subset” Job Template attribute MUST be supplied at the Job Level and can only be used when the “multiple-document-handling” Job Template attribute is ‘separate-documents-collated-copies’ or ‘separate-documents-uncollated-copes’, since the purpose of the “pages-per-subset” attribute is to produce separate output documents for each subset. Otherwise, the Printer MUST ignore the “pages-per-subset” attribute.

Job Template / Document Template attribute name	Attribute Syntax	Defined for use			Conformance		Reference
		J	D	P	Client supply	Printer support	
<b>y-image-position</b>	type2 keyword	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.6
<b>y-image-shift</b>	integer(MIN:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.7
<b>y-side1-image-shift</b>	integer(MIN:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.8
<b>y-side2-image-shift</b>	integer(MIN:MAX)	y	y	y	MAY	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.19.9

1472 **\*\*\*** - These 4 attributes are Job Description attributes, not Job Processing attributes in the PWG Semantic Model -  
 1473 see Legend before the Table.

1474 **7.1 Job Template attributes defined for use with multi-document jobs**

1475 This section defines additional Job Template attributes for use with the Document object.

1476 **7.1.1 job-copies (integer(1:MAX))**

1477 This attribute specifies the number of job copies, i.e., with all of the Document objects taken together. Its  
 1478 interpretation is independent of the value of the “multiple-document-handling” Job Template attribute. See the  
 1479 “copies” Job Template attribute defined in [rfc2911] section 4.2.5 which switches between job copies and document  
 1480 copies depending on the value of the “multiple-document-handling” Job Template attribute.

1481 **7.1.2 job-cover-back (collection)**

1482 This attribute specifies the cover for the back of the job, i.e., with all of the Document objects taken together and is  
 1483 independent of the value of the “multiple-document-handling” Job Template attribute. The member attributes are the  
 1484 same as “cover-back” (see [[prod-printpwg5100.3](#)] section 3.1). However, the “cover-back” Job Template attribute  
 1485 switches between a job back cover and a document back cover depending on the value of the “multiple-document-  
 1486 handling” Job Template attribute.

1487 **7.1.3 job-cover-front (collection)**

1488 This attribute specifies the cover for the front of the job, i.e., with all of the Document objects taken together and is  
 1489 independent of the value of the “multiple-document-handling” Job Template attribute. The member attributes are the  
 1490 same as the “cover-front” Job Template attribute (see [[prod-printpwg5100.3](#)] section 3.2). However, the “cover-front”  
 1491 Job Template attribute switches between a job front cover and a document front cover depending on the value of the  
 1492 “multiple-document-handling” Job Template attribute.

1493 **7.1.4 job-finishings (1setOf type2 enum)**

1494 This attribute specifies the job finishings, i.e., with all of the Document objects taken together. Its interpretation is  
 1495 independent of the value of the “multiple-document-handling” Job Template attribute. See the “finishings” Job  
 1496 Template attribute defined in [rfc2911] section 4.2.6 which switches between job finishings and document finishings  
 1497 depending on the value of the “multiple-document-handling” Job Template attribute.

### 7.1.5 job-finishings-col (1setOf collection)

This attribute specifies the job finishings collection, i.e., with all of the Document objects taken together. Its interpretation is independent of the value of the “multiple-document-handling” Job Template attribute. See the “finishings” Job Template attribute defined in [rfc2911] section 4.2.6 which switches between job finishings collection and document finishings collection depending on the value of the “multiple-document-handling” Job Template attribute.

### 7.1.6 media-size-name (type3 keyword | name(MAX))

This Job Template and Document Template attribute specifies the name of a size of media. The values are defined in [pwg5101.1]. The attribute is used in [upnp] as a Job Template attribute.

The “media-size-name” attribute is also defined as a member attribute of the “media-col” Job Template (see [pgw5100.3] section 3.13) and Document Template attribute. Examples:

‘na\_letter\_8.5x11in’ - The letter size (8.5 inches by 11 inches) used in North America.

‘iso\_a4\_210x297mm’ - The iso A4 size (210 mm by 297 mm) used in metric countries.

### 7.1.7 media-type (type3 keyword | name(MAX))

This Job Template and Document Template attribute specifies the type of media. The values are defined in [pwg5101.1] and [pwg5100.3] section 3.13.2. The attribute is used in [upnp] as a Job Template attribute.

The “media-type” attribute is also defined as a member attribute of the “media-col” Job Template (see [pgw5100.3] section 3.13.2) and Document Template attribute. Examples:

‘stationery’ - Separately cut sheets of an opaque material.

‘transparency’ - Separately cut sheets of a transparent material

## 7.2 Document Template attributes

Most Job Template attributes can be used as Document Template attributes for use in Document Creation operations to apply to the Document object. However, the Job Template attributes that have the “job-“ prefix MUST NOT be used as Document Template attributes, since they are defined to apply to the job as a whole. Table 8 shows lists all of the Document Template attributes for use with the Document Creation operations and the Document object. All of the definitions of the Document Template attributes are done by reference to the corresponding Job Template attributes in other specifications. However, the semantics of each Document Template attribute only applies to the Document object with which the attribute is associated either by being supplied by the client in the Document Creation operation or supplied by the Printer as a default because the client did not (and the PDL did not have any corresponding instruction). See section 5 for defaulting semantics.

## 8 Job Description and Document Description attributes

Table 9 lists all the Job Description defined in other IPP specifications and the corresponding Document Description attributes defined in this IPP specification. Job Description and Document Description attributes are Job object and Document object attributes, respectively, that are filled in by the Printer. Some Job/Document Description attribute values are supplied by the client in the Job/Document Creation operation using corresponding Operation attributes as flagged with “”. Unless specified otherwise herein, the Printer MUST NOT support modification of Job Description and Document Descriptions attributes.

The column labeled “attribute syntax” indicates the attribute syntax (see [rfc2911] section 4.1). The Printer conformance is indicated along with the reference to the specification in which the attribute is defined. The

1538 conformance for Document Description attributes (if the Printer supports the Document object) is the same as the  
 1539 corresponding Job Description attributes.

1540 Each of the Document Description attributes have a sub-section in section 8.2. The column labeled References  
 1541 column contains references to the sub-section in this document if there is significant information there. Those  
 1542 subsections that are only references to other specifications contain only that reference in the Reference column.  
 1543 Those attributes that are only Job Description attributes with no subsection in this specification have a "n/a" in the  
 1544 "Doc Desc" column.

1545 Note: There are no corresponding Page Range (or Page Override) Description attributes. The Page Range is not an  
 1546 object with a state and it cannot be queried.

1547 Legend:

- 1548 **[job-]** indicates an attribute that shouldn't have had a "job-" prefix in its name in [rfc2911], so that the same attribute  
 1549 name could also be used for the Document object as a Document Description attribute. Note: For the PWG  
 1550 Semantic Model, the "job-" prefix is dropped.
- 1551 **"\_"** indicates that the Job or Document attribute is *not* defined.
- 1552 **\*\*** indicates a Job and/or Document Description attribute that the client MAY supply the values for in a  
 1553 corresponding Operation attribute<sup>37</sup> in a Job or Document Creation operation. See Table 6 for the  
 1554 corresponding operation attribute.
- 1555 (r/w) indicates that the Job Description or Document Description attribute is read/write, so that the client can  
 1556 changes its value using the Set-Job-Attributes or Set-Document-Attributes operation (see section 3.7).

**Table 9 - Job and Document Description attributes**

IPP Job Description / Document Description attribute name	IPP Attribute Syntax	Job	Doc	Printer conformance	Reference	
					Job Description Attr	Doc Desc.
<b>attributes-charset *</b>	charset	y	y	MUST	[rfc2911] §4.3.19	§8.2.1
<b>attributes-natural-language *</b>	naturalLanguage	y	y	MUST	[rfc2911] §4.3.20	§8.2.2
<b>compression *</b>	type3 keyword	-	y	MUST	[rfc2911] §3.2.1.1	§8.2.3
<b>current-page-order</b>	type2 keyword	y	y	MAY	[ <del>prod-print</del> pwg5100.3] §4.1	§8.2.4
<b>date-time-at-completed</b>	dateTime	y	y	MAY	[rfc2911] §4.3.14.7	§8.2.5
<b>date-time-at-creation</b>	dateTime	y	y	MAY	[rfc2911] §4.3.14.5	§8.2.6
<b>date-time-at-processing</b>	dateTime	y	y	MAY	[rfc2911] §4.3.14.6	§8.2.7
<b><u>document-container-summary *</u></b>	<u>1setOf collection</u>	-	<u>y</u>	<u>MAY</u> <sup>38</sup>	<u>(new)</u>	§8.2.8
<b><u>document-creator-application-name *</u></b>	<u>name(MAX)</u>	-	<u>y</u>	<u>MAY</u>	<u>(new)</u>	§8.2.9
<b><u>document-creator-application-version *</u></b>	<u>text(127)</u>	-	<u>y</u>	<u>MAY</u>	<u>(new)</u>	§8.2.10
<b><u>document-creator-os-name *</u></b>	<u>name(40)</u>	-	<u>y</u>	<u>MAY</u>	<u>(new)</u>	§8.2.11
<b><u>document-creator-os-version *</u></b>	<u>text(40)</u>	-	<u>y</u>	<u>MAY</u>	<u>(new)</u>	§8.2.12
<b>document-format *</b>	mimeMediaType	-	y	MUST	[rfc2911] §3.2.1.1	§8.2.13
<b>document-format-detail</b>	collection	-	y	<del>MAY</del>		§0
<b>document-format-detected</b>	mimeMediaType	-	y	MAY	<u>(new)</u>	§8.2.14

<sup>37</sup> Document Description attributes that the client can supply in a Job or Document operation as operation attributes (indicated with \*\*) comprise all of the Document Description attributes in the PWG Semantic Model ([pwgsm]). Those Document Description attributes that clients cannot supply values correspond to Document Status attributes in the PWG Semantic Model.

<sup>38</sup> The "document-container-summary" Document Description attribute MUST be supported by a Printer that supports a container MIME type document format, such as 'application/zip' or 'multipart/related'.

IPP Job Description / Document Description attribute name	IPP Attribute Syntax	Job	Doc	Printer conformance	Reference	
					Job Description Attr	Doc Desc.
<a href="#">document-format-device-id *</a>	<a href="#">text(127)</a>	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.15</a>
<a href="#">document-format-version *</a>	<a href="#">text(127)</a>	-	y	<b>MAY</b>	<a href="#">(new)</a>	<a href="#">§8.2.16</a>
<a href="#">document-id-uri</a>	uri	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.17</a>
<a href="#">document-job-id</a>	<a href="#">integer(1:MAX)</a>	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.18</a>
<a href="#">document-job-printer-uri</a>	uri	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.19</a>
<a href="#">document-job-uri</a>	uri	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.20</a>
<a href="#">document-message *(r/w)</a>	text(MAX)	- <sup>39</sup>	y	<b>MAY</b>	<a href="#">(new)</a>	<a href="#">§8.2.21</a>
<a href="#">document-name *(r/w)</a>	name(MAX)	-	y	<b>MUST</b>	[rfc2911] <a href="#">§3.2.1.1</a>	<a href="#">§8.2.22</a>
<a href="#">document-natural-language *</a>	naturalLanguage	-	y	<b>MAY</b>	[rfc2911] <a href="#">§3.2.1.1</a>	<a href="#">§8.2.23</a>
<a href="#">document-number</a>	integer(0:MAX)	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.24</a>
<a href="#">document-state</a>	type1 enum	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.25</a>
<a href="#">document-state-message</a>	text(MAX)	-	y	<b>MAY</b>	<a href="#">(new)</a>	<a href="#">§8.2.26</a>
<a href="#">document-state-reasons</a>	1setOf type2 keyword	-	y	<b>MUST</b>	<a href="#">(new)</a>	<a href="#">§8.2.27</a>
<a href="#">document-uri *</a>	uri	-	y	<b>MAY</b>	<a href="#">(new)</a>	<a href="#">§8.2.28</a>
<a href="#">impressions-completed-current-copy</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc3381] <a href="#">§4.4</a>	<a href="#">§8.2.29</a>
<a href="#">ipp-attribute-fidelity *</a>	boolean	y	-	<b>MUST</b>	[rfc2911] <a href="#">§3.2.1.1</a>	<a href="#">§8.1.1</a>
<a href="#">job-collation-type</a>	type2 enum	y	-	<b>MAY</b>	[rfc3381] <a href="#">§4.1</a>	<a href="#">n/a</a>
<a href="#">[job-]detailed-status-message</a>	1setOf text (MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.10</a>	<a href="#">§8.2.30</a>
<a href="#">[job-]document-access-errors</a>	1setOf text(MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.11</a>	<a href="#">§8.2.31</a>
<a href="#">job-id</a>	<a href="#">integer(1:MAX)</a>	y	y	<b>MUST</b>	[rfc2911] <a href="#">§4.3.2</a>	<a href="#">§8.2.29</a>
<a href="#">[job-]impressions *</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.17.2</a>	<a href="#">§8.2.32</a>
<a href="#">[job-]impressions-completed</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.18.2</a>	<a href="#">§8.2.33</a>
<a href="#">[job-]k-octets *</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.17.1</a>	<a href="#">§8.2.34</a>
<a href="#">[job-]k-octets-processed</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.18.1</a>	<a href="#">§8.2.35</a>
<a href="#">job-mandatory-attributes *</a>	1setOf type2 keyword	y	-	<b>MAY</b> <sup>40</sup>	<a href="#">(new)</a>	<a href="#">§8.1.2</a>
<a href="#">[job-]media-sheets *</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.17.3</a>	<a href="#">§8.2.36</a>
<a href="#">[job-]media-sheets-completed</a>	integer(0:MAX)	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.18.3</a>	<a href="#">§8.2.37</a>
<a href="#">job-message-from-operator</a>	text(127)	y	- <sup>41</sup>	<b>MAY</b>	[rfc2911] <a href="#">§4.3.16</a>	<a href="#">n/a</a>
<a href="#">[job-]more-info</a>	uri	y	y	<b>MAY</b>	[rfc2911] <a href="#">§4.3.4</a>	<a href="#">§8.2.38</a>
<a href="#">job-name *(r/w)</a>	name(MAX)	y	- <sup>42</sup>	<b>MUST</b>	[rfc2911] <a href="#">§4.3.5</a>	<a href="#">n/a</a>
<a href="#">job-originating-user-name</a>	name (MAX)	y	-	<b>MUST</b>	[rfc2911] <a href="#">§4.3.6</a>	<a href="#">n/a</a>
<a href="#">job-password *</a>	octetString(255)	y <sup>43</sup>	-	<b>MAY</b>	[ <a href="#">prod-print2</a> ; <a href="#">ippsave</a> ] <a href="#">§4.1</a>	<a href="#">n/a</a>

<sup>39</sup> The “document-message” (text(127)) Document Description attribute has a corresponding “job-message-from-operator” (text(127)) Job Description attribute (see [rfc2911] section 4.3.16) which handles operator to user communication only and a “job-message-to-operator” (text(MAX)) Job Template attribute (see [[prod-print](#);[pwg5100.3](#)] section 3.10) for user to operator communication.

<sup>40</sup> **ISSUE 03 (repeat): Should we make “job-mandatory-attributes” a REQUIRED attribute for a Printer to support (if it supports the Document object)? Otherwise, clients won’t support it and will be stuck with the “ipp-attribute-fidelity” attribute?**

<sup>41</sup> The “job-message-from-operator” Job Description attribute has no corresponding “document-message-from-operator” (text(127)) Document Description attribute. Instead, both the user and the operator use the “document-message” (text(127)) operation/Document Description attribute (see section 8.2.218-19) to communicate with each other.

<sup>42</sup> The Document Description attribute that corresponds to the “job-name” Job Description attribute is the (existing) “document-name” attribute defined in [rfc2911].

IPP Job Description / Document Description attribute name	IPP Attribute Syntax	Job	Doc	Printer conformance	Reference	
					Job Description Attr	Doc Desc.
<b>job-password-encryption</b> *	type3 keyword   name(MAX)	y <sup>-44</sup>	-	MAY	[ <a href="#">prod-print2ippsave</a> ] §4.2	<a href="#">n/a</a>
<b>job-printer-make-and-model</b>	text(127)	y	-	CMUST <sup>45</sup>	[ <a href="#">rfc2911</a> ] §4.3.14.4	<a href="#">n/a</a>
<b>[job-]printer-up-time</b>	integer (1:MAX)	y	y	MUST	[ <a href="#">rfc2911</a> ] §4.3.14.4	§8.2.39
<b>job-printer-uri</b>	uri	y	y	MUST	[ <a href="#">rfc2911</a> ] §4.3.3	§9
<b>job-state</b>	type1 enum	y	- <sup>46</sup>	MUST	[ <a href="#">rfc2911</a> ] §4.3.7	§8.2.25
<b>job-state-message</b>	text(MAX)	y	- <sup>47</sup>	MAY	[ <a href="#">rfc2911</a> ] §4.3.9	§8.2.26
<b>job-state-reasons</b>	1setOf type2 keyword	y	- <sup>48</sup>	MUST	[ <a href="#">rfc2911</a> ] §4.3.8	§8.2.27
<b>job-uri</b>	uri	y	y <sup>49</sup>	MUST	[ <a href="#">rfc2911</a> ] §4.3.1	§8.2.39
<b>[job-]warnings-count</b>	integer(0:MAX)	y	y	MAY	[ <a href="#">overridepwg5100.4</a> ] §6.1	§8.2.40
<b>last-document</b> *	boolean	-	y	MAY	[ <a href="#">rfc2911</a> ] §4.3.12	§8.2.41
<b>number-of-documents</b>	integer(0:MAX)	y	-	MAY	[ <a href="#">rfc2911</a> ] §4.3.15	<a href="#">n/a</a>
<b>number-of-intervening-jobs</b>	integer(0:MAX)	y	-	MAY	[ <a href="#">rfc2911</a> ] §4.3.13	<a href="#">n/a</a>
<b>output-device-assigned</b>	name(127)	y	y	MAY	[ <a href="#">rfc2911</a> ] §4.3.7.2	§8.2.42
<b>sheet-completed-copy-number</b>	integer(0:MAX)	y	y	MAY	[ <a href="#">rfc3381</a> ] §4.2	§8.2.43
<b>sheet-completed-document-number</b>	integer(0:MAX)	y	-	MAY	[ <a href="#">rfc3381</a> ] §4.3	<a href="#">n/a</a>
<b>time-at-completed</b>	integer (MIN:MAX)	y	y	MUST	[ <a href="#">rfc2911</a> ] §4.3.14.3	§8.2.44
<b>time-at-creation</b>	integer (MIN:MAX)	y	y	MUST	[ <a href="#">rfc2911</a> ] §4.3.14.1	§8.2.45
<b>time-at-processing</b>	integer (MIN:MAX)	y	y	MUST	[ <a href="#">rfc2911</a> ] §4.3.14.2	§8.2.46

1558 "" See the description in the Legend before the table.

1559 Most of the existing “job-state” and “job-state-reasons” Job Description attribute values apply equally well to  
 1560 individual documents in a multi-document job (with removal of the ‘job-’ prefix for those that apply to both Job and  
 1561 Document). Furthermore, the job states are completely service-type neutral, so they can apply to scanning, faxing,  
 1562 formatting processes as well. The job state reasons have a number of reasons that are print service specific, but  
 1563 most can apply to other types of service as well. The reason for separating state from reasons, is so that the states  
 1564 can be the fundamental states that most implementations have, while the state reasons can vary depending on the  
 1565 sophistication of the system. The states are the ones that clients are most likely to base actions upon, and the state  
 1566 reasons are more information, both for programs and people.  
 1567

<sup>43</sup> ~~ISSUE 08: Need to add “job-password” to [[prod-print2ippsave](#)] as a Job Description attribute to go along with the Operation attribute with suitable security in Get Job Attributes response in order to align with the PWG Semantic Model, OK?~~

<sup>44</sup> ~~ISSUE 09: Need to add “job-password-encryption” to [[prod-print2ippsave](#)] as a Job Description attribute to go along with the Operation attribute with suitable security in Get Job Attributes response in order to align with the PWG Semantic Model, OK?~~

<sup>45</sup> The “job-printer-make-and-model” Job Description attribute MUST be supported if the “job-save-disposition” Job Template attribute is supported.

<sup>46</sup> The Document Description attribute that corresponds to the “job-state” Job Description attribute is the (new) “document-state” attribute.

<sup>47</sup> The Document Description attribute that corresponds to the “job-state-message” Job Description attribute is the (new) “document-state-message” attribute.

<sup>48</sup> The Document Description attribute that corresponds to the “job-state-reasons” Job Description attribute is the (new) “document-state-reasons” attribute.

<sup>49</sup> The “job-uri” Document Description attribute is a copy of the “job-uri” Job Description attribute of the job that contains this Document.

1568 The descriptions of the new “document-state” and “document-state-reasons” attributes are merged in with the  
 1569 existing “job-state” and “job-state-reasons”. Such merging shows the parallelism in the description to aid  
 1570 understanding and implementation and so that future maintenance will continue this strong parallelism. The “/”  
 1571 character separates the words: Job from Document so that the same description can serve for both Job and  
 1572 Document objects.

## 1573 8.1 Job Description attributes

1574 This section contains *only* the Job Description attributes that are defined in this specification and are not defined in  
 1575 any other specification.

### 1576 8.1.1 ipp-attribute-fidelity (boolean)

1577 This REQUIRED Job Description attribute indicates the value of the corresponding “ipp-attribute-fidelity” operation  
 1578 attribute ([rfc2911] section 3.2.1.1)<sup>50</sup> that the client supplied in the Job Creation operation. This Job Description  
 1579 attribute has no effect on the processing of the job once the Job Creation and Document Creation operations have  
 1580 been accepted. However, this attribute does provide an audit capability to the user and service desk for comparing  
 1581 unexpected printed results with what was submitted.

### 1582 8.1.2 job-mandatory-attributes (1setOf type2 keyword)

1583 **ISSUE 03 repeat: Should we make “job-mandatory-attributes” a REQUIRED attribute for a Printer to support (if it**  
 1584 **supports the Document object)? Otherwise, clients won't support it and will be stuck with the “ipp-attribute-fidelity”**  
 1585 **attribute?**

1586 This **OPTIONAL** Job Description attribute indicates which Job Template and Document Template attributes the client  
 1587 required that the Printer honor in order to accept the Job Creation and subsequent Document Creation requests.  
 1588 The Printer populates this attribute with the value of the corresponding “job-mandatory-attributes” operation attribute  
 1589 (see section 4.4.2) supplied by the client in the Job Creation operation. This Job Description attribute has no effect  
 1590 on the processing of the job once the Job Creation and Document Creation operations have been accepted.  
 1591 However, this attribute does provide an audit capability to the user and service desk for comparing unexpected  
 1592 printed results with what was submitted.

## 1593 8.2 Document Description attributes

1594 This section contains *all* of the Document Description attributes for use with the Document object. Most of these  
 1595 definitions refer to the corresponding Job Template attribute semantics in other specifications. However, the  
 1596 semantics of each Document Description attribute only applies to the Document object containing the Document  
 1597 Description attribute.

*Important Implementer's note: The brief descriptions in this section are not a substitute for the detailed specification in the referenced specifications. You need to read the referenced specifications when implementing!*

### 1598 8.2.1 attributes-charset (charset)

1599 This REQUIRED Document Description attribute has the same semantics as the corresponding Job Description  
 1600 attribute (see [rfc2911] §4.3.19) applied to the Document object. The Printer sets this Document Description

<sup>50</sup> The “ipp-attribute-fidelity” attribute is defined as an operation attribute only in [RFC2911]. This specification is defining it as a Document Description attribute which the Printer **MUST** support.

1601 attribute from the corresponding operation attribute supplied by the client in the Document Creation operation (see  
1602 section 3.1).

1603 **8.2.2 attributes-natural-language (naturalLanguage)**

1604 This REQUIRED Document Description attribute has the same semantics as the corresponding Job Description  
1605 attribute (see [rfc2911] §4.3.20) applied to the Document object. The Printer sets this Document Description  
1606 attribute from the corresponding operation attribute supplied by the client in the Document Creation operation (see  
1607 section 3.1).

1608 **8.2.3 compression (type3 keyword)**

1609 This REQUIRED Document Description attribute specifies the compression used to represent this document (see  
1610 [rfc2911] §3.2.1.1). The Printer sets this Document Description attribute from the corresponding operation attribute  
1611 supplied by the client in the Document Creation operation (see section 3.1).

1612 **8.2.4 current-page-order (type2 keyword)**

1613 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
1614 attribute (see [~~prod-print~~[pwg5100.3](#)] §4.1) applied to the Document object.

1615 **8.2.5 date-time-at-completed (dateTime)**

1616 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
1617 attribute (see [rfc2911] §4.3.14.7) applied to the Document object.

1618 **8.2.6 date-time-at-creation (dateTime)**

1619 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
1620 attribute (see [rfc2911] §4.3.14.5) applied to the Document object.

1621 **8.2.7 date-time-at-processing (dateTime)**

1622 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
1623 attribute (see [rfc2911] §4.3.14.6) applied to the Document object.

1624 **8.2.8 document-~~container-summary~~format-details (1setOf collection)**

1625 **ISSUE:** ~~Is there a better name that “document format details” since this attribute now only works with container~~  
1626 ~~document formats, such as ‘multipart/related’ and ‘application/zip’.~~

1627 This **OPTIONAL Document Description** attribute ~~identifies~~ summarizes the document format ~~details~~ content of the  
1628 body parts, if the ~~top-level document’s~~ document format is a container types, such as ‘multipart/related’ or  
1629 ‘application/zip’. ~~If a Printer supports such a container MIME type, the Printer MUST support this member~~  
1630 ~~“document-container-summary” Document Description attribute if it supports a container MIME type and all the~~  
1631 ~~member attributes in Table 10 that the Printer supports as top level Document Description attributes. The purpose of~~  
1632 ~~the “document-container-summary” attribute is to allow a receiving Printer to determine whether or not it supports all~~  
1633 ~~of the document formats in the supplied instance of the container. However, the “document-container-summary”~~  
1634 ~~attribute does not provide means to associate each collection value with particular document in the archive file, so it~~  
1635 ~~does not provide a “manifest” of the container.~~

1636 The member attributes defined for this collection are listed in Table 10 and are the same as those defined for  
1637 ~~“document-format-detail”~~ the corresponding Document Description attributes themselves itself, i.e., a recursive

1638 definition. But there MUST NOT be any duplicate collection values ~~at the same level, that is no collection values with~~  
 1639 ~~all the same member attribute values~~; its a set, not a sequence. So 100 PostScript files with the same details in a  
 1640 .zip file would have 'application/zip' as the ~~top level~~-MIME type ~~for the top level "document-format" Document~~  
 1641 ~~Description attribute for the Document object with its details~~ and a "document-container-summary" Document  
 1642 ~~Description collection attribute with only one collection value containing a "document-format" member attribute with~~  
 1643 ~~the 'application/postscript' MIME type value of the "document-format-details" member attribute with PostScript~~  
 1644 ~~details.~~

1645 ~~If a file in a container file is itself a container file, the single "document-container-summary" (1setOf collection)~~  
 1646 ~~Document Description attribute SHOULD contain the flattened distinct collection values for all files at all nested~~  
 1647 ~~levels. The "document-container-summary" attribute is not recursively defined to contain "document-format-details".~~  
 1648 **ISSUE 06: OK that "document-container-summary" is only one level deep?**

1649 **ISSUE 07: Is the description of "document-container-summary" attribute OK?**

1650 ~~ISSUE: Instead of "document format details", elevate the new member attributes to Job Level operation attributes,~~  
 1651 ~~i.e., make "document-format-version" (text(127)), "operating-system-name" (type3 keyword | name(MAX)), and~~  
 1652 ~~"document-format-device-id" (text(127)) to operation attributes in Print Job, Print URI, Send Document, Send URI,~~  
 1653 ~~and Create Document operations and make them be corresponding Job and Document Description attributes.~~

1654 **Table 10 - "document-container-summary~~format-detail~~" member attributes**

Member Attribute Name	Attribute Syntax	Present	Printer Support	Section
<del>document-creator-application-</del> <del>name</del>	<del>name(MAX)</del>	<del>MAY</del>	<del>MAY</del>	8.2.11
<del>document-creator-application-</del> <del>version</del>	<del>text(127)</del>	<del>MAY</del>	<del>MAY</del>	
<del>document-creator-os-name</del> <del>platform</del>	<del>type3 keyword  </del> <del>name(MAX<del>40</del>)</del>	<del>MAY</del>	<del>MUSTMAY</del>	8.2.11
<del>document-creator-os-version</del>	<del>text(40)</del>	<del>MAY</del>	<del>MAY</del>	
document-format	mimeMediaType	MUST	MUST	8.2.13
<del>document-format-device-id</del>	<del>text(127)</del>	<del>MAY</del>	<del>MUSTMAY</del>	8.2.15
document-format-version	text(127)	<del>MAY</del> <del>SHO</del> <del>ULD</del>	MUST	8.2.16
<del>document-format</del> natural- languages	<del>1setOf</del> naturalLanguage	<del>MAY</del>	<del>MUSTMAY</del>	8.2.23
<del>document-format</del> details	<del>1setOf</del> collection	<del>MAY</del>	<del>MUST</del> If the Printer support a format that contains other document formats	

1655 **ISSUE 08: Are the conformance requirements for the "document-container-summary" attributes OK?**

1656 **ISSUE: 09: How can a Printer indicate which combinations of document-creator-application-name (name(MAX)),**  
 1657 **document-creator-application-version (text(127)), document-creator-os-name (name(40)), document-creator-os-**  
 1658 **version (text(40)), document-format-device-id (text(127)), document-format-version (text(127), document-format**  
 1659 **(mimeMediaType) and "document-natural-language (naturalLanguage) are supported?**

1660 **8.2.9 document-creator-application-name (name(MAX))**

1661 This OPTIONAL Document Description identifies the application that created the document. The version number  
 1662 MUST NOT be included (see the "document-creator-application-version" attribute). Examples: "Photoshop",  
 1663 "Microsoft Word".

1664 **8.2.10 document-creator-application-version (text(127))**

1665 The OPTIONAL Document Description attribute identifies the version number of the application that created the  
 1666 document. The version number MUST NOT include the application name. See "document-creator-application-  
 1667 name" attribute. Examples: 'V3.0.', 'V6.0'

1668 **8.2.11 document-creator-os-name platform (type3 keyword | name(MAX40))**

1669 ~~ISSUE 05: Should we call this member attribute "os-type", instead of "platform", in order to agree with the PWG~~  
 1670 ~~Printer Installation Extension (see draft ietf-ipp-install-04.txt)?~~

1671 ~~This REQUIRED member OPTIONAL Document Description attribute identifies the name of the operating system~~  
 1672 ~~type the of platform on which the document was generated. Valid values are the operating system names defined in~~  
 1673 ~~the IANA document Operating System name registry [os-names] and the special keyword value: 'unknown', with the~~  
 1674 ~~version number portion removed (see the "document-creator-os-version" attribute). IANA Operating System Names~~  
 1675 ~~are consist of up to 40 uppercase US-ASCII letters, hyphen ("-"), period ("."), and slash ("/") characters. The zero~~  
 1676 ~~length string represents unknown (rather than the UNKNOWN value in the IANA OS Registry, since clients are not~~  
 1677 ~~expected to localize names).~~

1678 ~~Although the IANA registry requires that the names be all upper case, the values MUST be all lower case in this field~~  
 1679 ~~since they are IPP keywords (plus hyphen minus (-), period (.), and slash (/)). Example IANA OS Registry values:~~  
 1680 ~~'AIX', 'DOS', 'LINUX', 'MACOS', 'MSDOS', 'MVS', 'NETWARE', 'OS/2', 'SUN', 'SUN-OS', 'UNIX', 'VMS',~~  
 1681 ~~'WINDOWS', 'linux', 'linux-2.2', 'os/2', 'mac', 'mac-x', 'sun-os-4.0', 'unix', 'unix-bsd', 'win32', 'windows-95', 'windows-~~  
 1682 ~~98', 'windows-ce', 'windows-nt', 'windows-nt-4', 'windows-nt-5', 'windows-2000', and 'unknown'.~~

1683 **8.2.12 document-creator-os-version (text(40))**

1684 This OPTIONAL Document Description attribute identifies the version of the operating system on which the  
 1685 document was generated. Valid values include the version portion of any of the operating system names defined in  
 1686 the IANA Registry [os-names]. The value MUST NOT include the name portion of the registered OS name (see  
 1687 "document-creator-os-name" attribute). The zero length string represents unknown (rather than the UNKNOWN  
 1688 value in the IANA OS Registry, since clients are not expected to localize names).

1689 Example values for the indicated "document-creator-os-name" value:

- 1690 For 'AIX': '370', 'PS/2'
- 1691 For 'LINUX': '1.0', '1.2', '2.0', '2.2', '2.4'
- 1692 For 'MVS': 'SP'
- 1693 For 'NETWARE': '3', '3.11', '4.0', '4.1', '5.0'
- 1694 For 'SUN-OS': '3.5', '4.0'
- 1695 For 'UNIX': 'BSD', 'V', 'V.1', 'V.2', 'V.3', 'PC'
- 1696 For 'WINDOWS': '95', '98', 'CE', 'NT', 'NT-2', 'NT-3', 'NT-3.5', 'NT-3.51', 'NT-4', 'NT-5', '2000', 'XP' [not  
 1697 registered yet]

1698 **8.2.13 document-format (mimeMediaType)**

1699 This REQUIRED Document Description attribute specifies the document format (see [rfc2911] §3.2.1.1) for the  
 1700 Document object. The standard values for this attribute are Internet Media types (sometimes called MIME types).  
 1701 For further details see the description of the 'mimeMediaType' attribute syntax in [rfc2911] section 4.1.9. If it is a  
 1702 MIME Media Type, such as 'multipart/related' or 'application/zip', that is a container format that contains document  
 1703 parts, the "document-container-summary" attribute summarizes the content (see section 8.2.8). The Printer sets this

1704 Document Description attribute from the corresponding operation attribute supplied by the client in the Document  
 1705 Creation operation (see section 3.1).

1706 ~~document-format-detail (collection)~~  
 1707 ~~ISSUE 04: Is the definition of "document-format-detail" OK?~~

1708 ~~This OPTIONAL Document Description attribute provides additional information about the document format or~~  
 1709 ~~document formats in the Document object. The member attributes of the "document-format-detail" attribute are:~~

1710 **Table 10—"document-format-detail" member attributes**

Member Attribute Name	Attribute Syntax	Present	Printer Support
document-format	mimeMediaType	MUST	MUST
document-format-version	text(127)	MAY	MUST
document-format-natural-languages	1setOf naturalLanguage	MAY	MUST
platform	type3 keyword   name(MAX)	MAY	MUST
device-id	text(127)	MAY	MUST
document-format-details	1setOf collection	MAY	MUST—If the Printer support a format that contains other document formats

1711

1712 **8.2.14 document-format-detected (mimeMediaType)**

1713 This OPTIONAL Document Description attribute is generated by the Printer to indicate the actual document format of  
 1714 the Document object. This value will differ from the value submitted by the client or defaulted by the Printer, if the  
 1715 Printer automatically senses the document format by examining the document content, such as when the "document-  
 1716 format" attribute has the value: 'application/octet-stream' (see [rfc2911] section 4.1.9.1). Before the document format  
 1717 is known, the Printer populates this attribute with a zero length string.

1718 **8.2.15 document-format-device-id (text(127))**

1719 This ~~REQUIRED-OPTIONAL member~~ Document Description attribute identifies the type of device for which the  
 1720 document was formatted, including manufacturer and model. This attribute is intended to identify document formats  
 1721 that are not portable, e.g., PDLs that are device dependent. The value of this variable MUST exactly match the IEEE  
 1722 1284-2000 Device ID string (see [IEEE1284] clause 6), except the length field MUST not be specified. See the  
 1723 Microsoft Universal Plug and Play [upnp] section 2.2.6 DeviceId parameter for details and examples. Here is an  
 1724 example showing only the required fields for a PostScript document:  
 1725 MANUFACTURER:ACME Co.;COMMAND SET:PS;MODEL:LaserBeam 9;

1726 **8.2.16 document-format-version (text(127))**

1727 This **REQUIRED** Document Description ~~REQUIRED member~~ attribute contains the level or version of the document  
 1728 format. Possible values are the same as the Printer MIB [rfc1759] prtInterpreterLangLevel (not  
 1729 prtInterpreterLangVersion). For example, the value for PostScript level 3 would be: "3" and for PCL 5e would be  
 1730 '5e'.For those document formats that are defined in standards, the "document-format-version" may contain the official  
 1731 designation of that standard.

1732 **ISSUE 10: OK that "document-format-version" is REQUIRED for a Printer to support?**

1733 **ISSUE: 11:** The problem with separating “document-format” and “document-format-version” is how can a Printer  
1734 describe what versions are supported, since the versions have to be associated with the document format.

1735 **Standard text values are:**

1736 ‘3’: For Postscript level 3 [rfc1759].

1737 ‘5e’: For PCL 5e [rfc1759].

1738 ‘PDF/X-1:2001’: From the ISO standard that specifies PDF/X. **ISSUE 12:** Or should the official ISO standard  
1739 number, part number and date, be used instead, e.g., “ISO nnnnn.n-2001”?

1740 ‘ISO 12639-1:1996’: From the ISO standard that specified TIFF/IT Profile 1.

### 1741 **8.2.17 document-id-uri (uri)**

1742 This REQUIRED Document Description attribute is generated by the Printer as a unique URI to identify a Document  
1743 object, in the same way that the “job-uri” (uri) Job Description attribute uniquely identifies a Job object. Unlike the  
1744 “job-uri” (uri) (see [rfc2911] section 4.3.1) attribute and “document-job-uri” (uri) (see §8.2.20), the client cannot supply  
1745 this attribute as a target of any operation. Example: <ipp://www.company.com/printers/myprinter/jobs/22/doc3>.

### 1746 **8.2.18 document-job-id (integer(1:MAX))**

1747 This REQUIRED Document Description attribute is a copy of the Job’s “job-id” Job Description attribute (see  
1748 [rfc2911] §4.3.2), i.e., the “job-id” of the Job containing this Document.

### 1749 **8.2.19 document-job-printer-uri (uri)**

1750 This REQUIRED Document Description attribute is a copy of the Job’s “job-printer-uri” Job Description attribute (see  
1751 [rfc2911] §4.3.3), i.e., the URI of the Printer containing the Job which contains this Document. Example:  
1752 <ipp://www.company.com/printers/myprinter>.

### 1753 **8.2.20 document-job-uri (uri)**

1754 This REQUIRED Document Description attribute is a copy of the Job’s “job-uri” Job Description attribute (see  
1755 [rfc2911] §4.3.1), i.e., the URI of the Job that contains this Document. Example:  
1756 <ipp://www.company.com/printers/myprinter/jobs/22>

### 1757 **8.2.21 document-message (text(MAX))**

1758 This OPTIONAL Document Description contains a message from either (1) the user to the operator about the  
1759 Document or a message (2) from the operator, or administrator-system administrator, or “intelligent” process to  
1760 indicate to the end user the reasons for modification or other management action taken on the Document. The  
1761 Printer populates this Document Description attribute from the “document-message” (text(MAX) operation attribute  
1762 value supplied by the client in any of the Document Creation operations (see section 3.1.1) or in a Cancel-Document  
1763 operation (see section 3.8).

1764 In addition, the user and the operator can set the value of this Document Description attribute explicitly using the Set-  
1765 Document-Attributes operation (see section 3.7).

### 1766 **8.2.22 document-name (name(MAX))**

1767 This REQUIRED Document Description attribute specifies the name of the document (see [rfc2911] §3.2.1.1). The  
1768 Printer sets this Document Description attribute from the corresponding operation attribute supplied by the client in  
1769 the Document Creation operation (see section 3.1).

1770 This attribute may be modified by a client using the Set-Documents-Attributes operation (see section 3.7).

1771 **8.2.23 document-natural-language (naturalLanguage)**

1772 This OPTIONAL Document Description attribute specified the natural language of the document (see [rfc2911]  
 1773 §3.2.1.1 and [pwg5100.4] §5.1.7). The Printer sets this Document Description attribute from the corresponding  
 1774 operation attribute supplied by the client in the Document Creation operation (see section 3.1). The Printer MAY use  
 1775 this value to select fonts or other Globalization processing.

1776 **ISSUE 13:** The definition in [rfc2911] §3.2.1.1 and [pwg5100.4] §5.1.7 is single-valued. OK that this document  
 1777 attribute isn't 1setOf? Or should we extend "document-natural-language" to 1setOf naturalLanguage) and keep the  
 1778 same name? Or change the name to "document-natural-languages"?

1779 ~~**8.2.18 document-format-natural-languages (1setOf naturalLanguage)**~~

1780 ~~This REQUIRED member attribute contains the natural language(s) of the document. The Printer MAY use this~~  
 1781 ~~value to select fonts or other Globalization processing.~~

1782 **8.2.24 document-number (integer(1:MAX))**

1783 This REQUIRED Document Description attribute is the ordinal number of the document within the job which  
 1784 determines its order of being printed in a multi-document job. The Printer MUST generate the values monotonically  
 1785 increasing from 1 for each job.

1786 **8.2.25 document-state (type1 enum) and job-state (type1 enum)**

1787 The REQUIRED "job-state" and the REQUIRED "document-state" Document Description attributes identify the  
 1788 current state of the job and document, respectively. Even though IPP defines seven values for job/document states  
 1789 (plus the out-of-band 'unknown' value - see [rfc2911] section 4.1), implementations only need to support those states  
 1790 which are appropriate for the particular implementation. In other words, an IPP Printer object implementation  
 1791 supports only those job/document states implemented by the output device and available to the IPP Printer object  
 1792 implementation.

1793 Table 12 lists the "job-state" and "document-state" attribute values.

1794 **Table 12 - "job-state" and "document-state" attribute values**

Values	"job-state"	"document-state"
3 pending	y	y
4 pending-held	y	n/a
5 processing	y	y
6 processing-stopped	y	n/a
7 canceled	y	y
8 aborted	y	y
9 completed	y	y

1795  
 1796 The (JD) and (J) notation below indicates whether the keyword is defined for the "job-state" and "document-state"  
 1797 attributes or just the "job-state" attribute as indicated in Table 12. Standard enum values are:

Value	Symbolic Name and Description
'3'	<b>'pending'</b> (JD): The job is a candidate to start processing, but is not yet processing. The document has not started to be processed at all.
'4'	<b>'pending-held'</b> (J): The job is not a candidate for processing for any number of reasons

Value	Symbolic Name and Description
'5'	<p>but will return to the 'pending' state as soon as the reasons are no longer present. The job's "job-state-reason" attribute MUST indicate why the job is no longer a candidate for processing. The 'pending-held' state does not apply to the Document object's "document-state" attribute.</p> <p><b>'processing'</b> (JD): One or more of:</p> <ol style="list-style-type: none"> <li>1. The job is using, or is attempting to use, one or more purely software processes that are analyzing, creating, or interpreting a PDL, etc.,</li> <li>2. The job is using, or is attempting to use, one or more hardware devices that are interpreting a PDL, making marks on a medium, and/or performing finishing, such as stapling, etc.,</li> <li>3. The Printer object has made the job ready for printing, but the output device is not yet printing it, either because the job hasn't reached the output device or because the job is queued in the output device or some other spooler, awaiting the output device to print it.</li> </ol> <p>When the job is in the 'processing' state, the entire job/document state includes the detailed status represented in the Printer object's "printer-state", "printer-state-reasons", and "printer-state-message" attributes.</p> <p>On the other hand, the 'processing' state for the Document indicates that the Document has begun to be processed. Even if the job stops being processed, the Document remains in the 'processing' state until it moves to one of the three terminal states.</p> <p>Implementations MAY, though they NEED NOT, include additional values in the job's/document's "job-state-reasons"/"document-state-reasons" attribute to indicate the progress of the job/document, such as adding the 'job-printing'/'printing' value to indicate when the output device is actually making marks on paper and/or the 'processing-to-stop-point' value to indicate that the Printer is in the process of canceling or aborting the job/document. Most implementations won't bother with this nuance.</p>
'6'	<p><b>'processing-stopped'</b> (J): The job has stopped while processing for any number of reasons and will return to the 'processing' state as soon as the reasons are no longer present.</p> <p>The job's "job-state-reason" attribute MAY indicate why the job has stopped processing. For example, if the output device is stopped, the 'printer-stopped' value MAY be included in the job's "job-state-reasons" attribute.</p> <p>Note: When an output device is stopped, the device usually indicates its condition in human readable form locally at the device. A client can obtain more complete device status remotely by querying the Printer object's "printer-state", "printer-state-reasons" and "printer-state-message" attributes.</p> <p>The 'processing-stopped' state does not apply to the Document object's "document-state" attribute.</p>
'7'	<p><b>'canceled'</b> (JD): The job/document has been canceled by a Cancel-Job/Cancel-Document operation and the Printer object has completed canceling the job/document and all job/document status attributes have reached their final values for the job/document. While the Printer object is canceling the job/document, the job/document remains in its current state, but the job's/document's "job-state-reasons"/"document-state-reasons" attribute SHOULD contain the 'processing-to-stop-point' value and one of the 'canceled-by-user', 'canceled-by-operator', or 'canceled-at-device' value. When the job/document moves to the 'canceled' state, the 'processing-to-stop-point' value, if present, MUST be removed, but the</p>

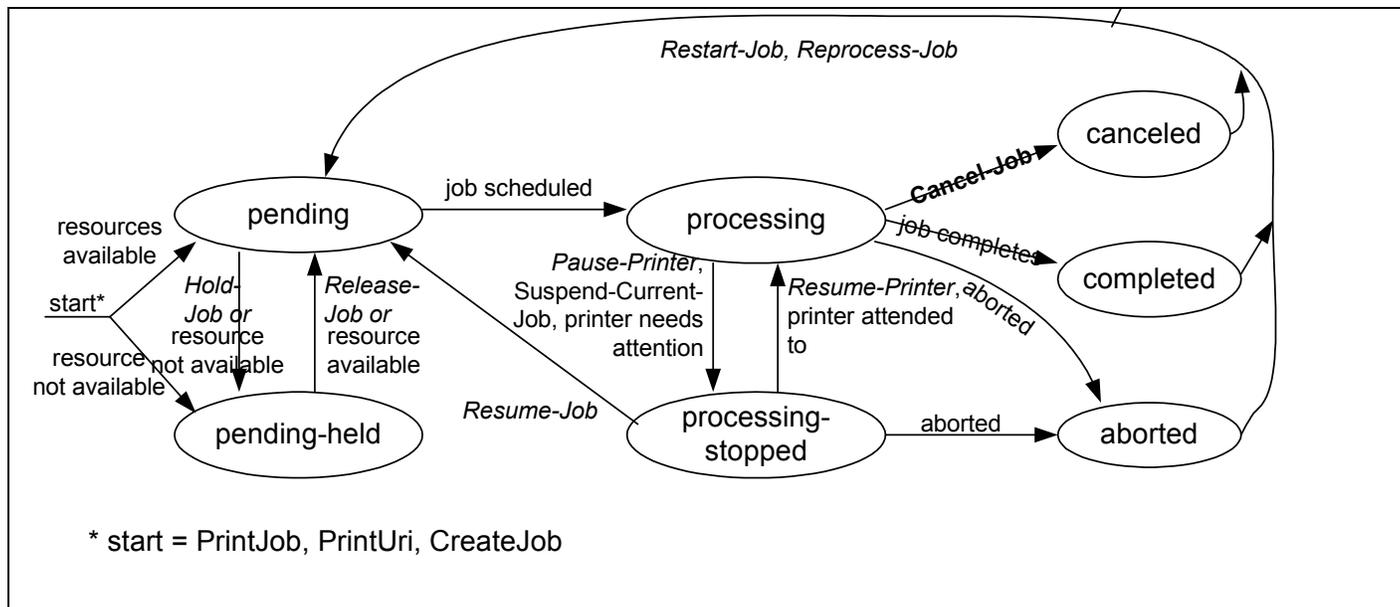
Value	Symbolic Name and Description
'8'	'canceled-by-xxx', if present, MUST remain. <b>'aborted'</b> (JD): The job/document has been aborted by the system, usually while the job/document was in the 'processing' or 'processing-stopped' state and the Printer has completed aborting the job/document and all job/document status attributes have reached their final values for the job/document. While the Printer object is aborting the job/document, the job/document remains in its current state, but the job's/document's "job-state-reasons"/"document-state-reasons" attribute SHOULD contain the 'processing-to-stop-point' and 'aborted-by-system' values. When the job/document moves to the 'aborted' state, the 'processing-to-stop-point' value, if present, MUST be removed, but the 'aborted-by-system' value, if present, MUST remain.
'9'	<b>'completed'</b> (JD): The job/document has completed successfully or with warnings or errors after processing and all of the job/document media sheets have been successfully stacked in the appropriate output bin(s) and all job/document status attributes have reached their final values for the job/document. The job's/document's "job-state-reasons"/"document-state-reasons" attribute SHOULD contain one of: 'completed-successfully', 'completed-with-warnings', or 'completed-with-errors' values.

1798 The final value for this attribute MUST be one of: 'completed', 'canceled', or 'aborted' before the Printer removes the  
 1799 job/document altogether. The length of time that jobs/document remain in the 'canceled', 'aborted', and 'completed'  
 1800 states depends on implementation.

1801 Jobs/documents reach one of the three terminal states: 'completed', 'canceled', or 'aborted', after the jobs/documents  
 1802 have completed all activity, including stacking output media, after the jobs/documents have completed all activity,  
 1803 and all job/document status attributes have reached their final values for the job/document.

1804 **8.2.25.1 The “job-state” Job Description attribute and the Job Life Cycle**

1805 The “job-state” attribute is one of the most important Job Description attributes. Figure 1 shows the values of the  
 1806 “job-state” attribute and the Job object life cycle as affected by actions on the Job, Printer, and job processing.



**Figure 1 - The “job-state” Job Description attribute and the Job object life cycle**

Normally a job progresses from left to right. Other state transitions are unlikely, but are not forbidden. Not shown are the transitions to the 'canceled' state from the 'pending', 'pending-held', and 'processing-stopped' states.

**8.2.25.2 The “document-state” Document Description attribute and the Document object life Cycle**

The “document-state” attribute is one of the most important Document Description attributes. Figure 2 shows the values of the “document-state” attribute and the Document object life cycle as affected by actions on the Job, Document, Printer, and job processing. Documents are not active objects and their life cycle is closely tied to the lifecycle of a Job<sup>51</sup>. Documents basically have three states. The first is waiting to be processed by a Job (i.e. pending). The second state is from the time the Job first starts processing the Document (i.e., processing) and until it reaches one of its terminal states. The third state for a Document is one of its terminal states (i.e., completed, canceled, or aborted).

<sup>51</sup> The Document object is not really a sub-job. If the Document object were its own independent active object, i.e., were a sub-job, then the Document state would affect the job state and there would be complex and debatable roll-up rules for how the various “document-state” values of all of the Job’s document are rolled up to give a single value for the Job’s “job-state” attribute. Instead, the Job state reflects the overall processing of the job and is the same whether or not the Document object is supported.

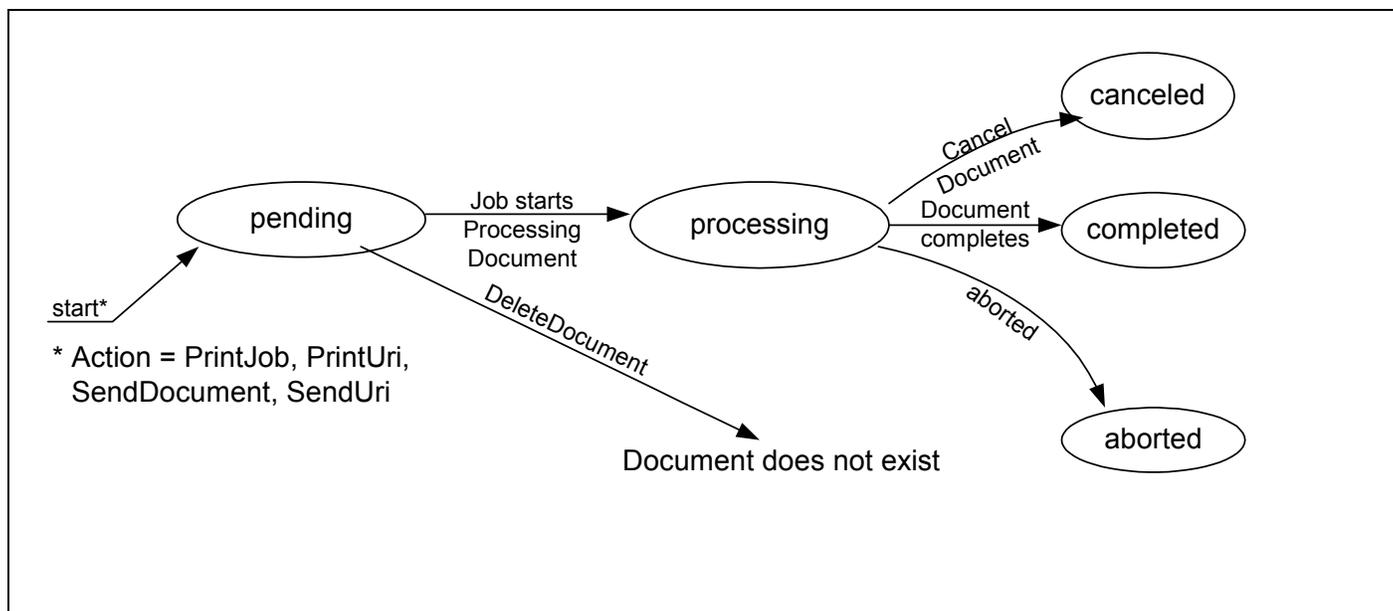


Figure 2 - The “document-state” Document Description attribute and the Document object life Cycle

A Document object has a much simpler life cycle than a Job object. A Document always progresses from left to right in the state diagram. No other state transitions are defined.

### 8.2.25.3 Forwarding Servers

As with all other IPP attributes, if the implementation can not determine the correct value for this attribute, it SHOULD respond with the out-of-band value 'unknown' (see [rfc2911] Section 4.1) rather than try to guess at some possibly incorrect value and give the end user the wrong impression about the state of the Job/Document object. For example, if the implementation is just a gateway into some printing system from which it can normally get status, but temporarily is unable, then the implementation should return the 'unknown' value. However, if the implementation is a gateway to a printing system that never provides detailed status about the print job/document, the implementation MAY set the IPP Job/Document object's state to 'completed', provided that it also sets the 'queued-in-device' value in the job's/document's "job-state-reasons"/"document-state-reasons" attribute (see "job-state-reasons"/"document-state-reasons" attribute below).

### 8.2.25.4 Partitioning of Job/Document States

This section partitions the job/document states into phases: Job/Document Not Completed, Job/Document Retention, Job/Document History, and Job/Document Removal. This section also explains the 'job-restartable' value of the "job-state-reasons" Job Description attribute for use with the Restart-Job operation.

**Job/Document Not Completed:** When a job is in the 'pending', 'pending-held', 'processing', or 'processing-stopped' states, the job is not completed. When a Document is in the 'pending' or 'processing' state, it is not completed.

**Job Retention:** When a job enters one of the three terminal job states: 'completed', 'canceled', or 'aborted', the IPP Printer object MAY "retain" the job in a restartable condition for an implementation-defined time period. This time period MAY be zero seconds and MAY depend on the terminal job state. This phase is called Job Retention. While in the Job Retention phase, the job's document data is retained and a client may restart the job using the Restart-Job operation. If the Printer supports the Restart-Job operation, then it SHOULD indicate that the job is restartable by adding the 'job-restartable' value to the job's "job-state-reasons" attribute (see section 8.2.27) during the Job Retention phase. If the Printer supports the Document object, then the Get-Document-Attributes and Get-Documents operations MUST be supported while the job is in the Job Retention phase.

1849 **Job History:** After the Job Retention phase expires for a job, the Printer object deletes the document data for the  
1850 job and the job becomes part of the Job History. The Printer object MAY also delete any number of the job and  
1851 document attributes. Since the job is no longer restartable, the Printer object MUST remove the 'job-restartable'  
1852 value from the job's "job-state-reasons" attribute, if present. If the implementation supports the Document object, it  
1853 SHOULD retain at least the "document-state" and "document-state-reasons" attributes on the Document object  
1854 during the Job History phase which can be queried using the Get-Document-Attributes and Get-Documents  
1855 operations.

1856 **Job Removal:** After the job has remained in the Job History for an implementation-defined time, such as when the  
1857 number of jobs exceeds a fixed number or after a fixed time period (which MAY be zero seconds), the IPP Printer  
1858 removes the Job and Document objects from the system.

1859 Using the Get-Jobs/Get-Documents operation and supplying the 'not-completed' value for the "which-jobs" operation  
1860 attribute, a client is requesting jobs/documents in the Job/Document Not Completed phase. Using the Get-Jobs/Get-  
1861 Documents operation and supplying the 'completed' value for the "which-jobs" operation attribute, a client is  
1862 requesting jobs/documents in the Job Retention and Job History phases. Using the Get-Job-Attributes/Get-  
1863 Document-Attributes operation, a client is requesting a job/documents in any phase except Job Removal. After Job  
1864 Removal, the Get-Job-Attributes/Get-Documents-Attributes and Get-Jobs/Get-Documents operations no longer are  
1865 capable of returning any information about a job/document.

1866 NOTE: The semantics of this attribute or the set of valid values may be different for different document formats.

### 1867 **8.2.26 document-state-message (text(MAX)) and job-state-message (text(MAX))**

1868 This OPTIONAL Document Description attribute specifies information about the "job-state"/"document-state" and  
1869 "job-state-reasons"/"document-state-reasons" attributes in human readable text. If the Printer object supports this  
1870 attribute, the Printer object MUST be able to generate this message in any of the natural languages identified by the  
1871 Printer's "generated-natural-language-supported" attribute (see the "attributes-natural-language" operation attribute  
1872 specified in [rfc2911] Section 3.1.4.1).

1873 The value SHOULD NOT contain additional information not contained in the values of the "job-state" and "job-states-  
1874 reasons" attributes, such as interpreter error information. Otherwise, application programs might attempt to parse the  
1875 (localized text). For such additional information such as interpreter errors for application program consumption or  
1876 specific document access errors, new attributes with keyword values, needs to be developed and registered.

### 1877 **8.2.27 document-state-reasons (1setOf type2 keyword) and job-state-reasons(1setOf type2 1878 keyword)**

1879 The REQUIRED "job-state-reasons" and the REQUIRED "document-state-reasons" Document Description attributes  
1880 provide additional information about the job's and each document's current state, i.e., information that augments the  
1881 value of the job's "job-state" attribute and each Document's "document-state" attribute, respectively. The Printer  
1882 SHOULD support the same values for both the "job-state-reasons" and the "document-state-reasons" attribute for  
1883 those attributes that are defined for both as indicated in the "Job" and "Doc" columns in Table 13.

1884 These values MAY be used with any job or document state or states for which the reason makes sense. Some of  
1885 these value definitions indicate conformance requirements; the rest are OPTIONAL. Furthermore, when  
1886 implemented, the Printer MUST return these values when the reason applies and MUST NOT return them when the  
1887 reason no longer applies whether the value of the Job's "job-state" attribute or the Document's "document-state"  
1888 attribute changed or not. When the Job or Document does not have any reasons for being in its current state, the  
1889 value of the Job's "job-state-reasons" attribute or Document's "document-state-reasons" attribute MUST be 'none'.

1890 Some of the Job's "job-state-reasons" values affect job scheduling, such as 'resources-are-not-ready' and 'job-hold-  
1891 until-specified'. However, "document-state-reasons" values MUST NOT affect job scheduling, since Document  
1892 objects are passive objects operated on by the containing Job object.

1893 Note: While values cannot be added to the "job-state" or "document-state" attributes without impacting deployed  
 1894 clients that take actions upon receiving "job-state" or "document-state" values, it is the intent that additional "job-  
 1895 state-reasons" and "document-state-reasons" values can be defined and registered without impacting such deployed  
 1896 clients. In other words, the "job-state-reasons" and the "document-state-reasons" attributes are intended to be  
 1897 extensible.

1898 Table 13 lists the standard keyword values for the "job-state-reasons" and/or "document-state-reasons" attributes  
 1899 defined in this and other IPP specifications as indicated in the References column. In Table 13 the keywords are  
 1900 listed in alphabetic order (observing the "[job-]" prefix), while in their descriptions following Table 13, they are listed in  
 1901 the most likely order of occurrence to help understanding.

1902 When the Document object is supported, the Printer implementation SHOULD still support the corresponding Job  
 1903 level "job-state-reasons", so that clients that do not support the Document object will receive the same information.  
 1904 Also it is usually more convenient for the client to obtain just the Job level status. However, the client SHOULD  
 1905 query both Job and Document attributes and convert them to some canonical form for display to the user, so that all  
 1906 Jobs and their Documents are displayed in a uniform manner, no matter from which clients they were submitted.

**Notation:**

1907 [job-] indicates a state reason keyword value that has the 'job-' prefix when it is a value of the "job-state-reasons"  
 1908 attribute, but does not have the 'job-' prefix when it is a value of the "document-state-reasons" attribute<sup>52</sup>.  
 1909 For purposes of sorting in Table 13, the "[job-]" prefix is observed, since this is an IPP specification.  
 1910 "-" indicates that the Job or Document value is *not* defined.

**Table 13 - "job-state-reasons" and "document-state-reasons" attribute values**

IPP Job Description / Document Description attribute name	IPP Attribute Syntax plus Values	Job	Doc	Printer conformance	Reference
<b>job-state-reasons</b>	1setOf type2 keyword	y	- <sup>53</sup>	MUST	[rfc2911] §4.3.8
<b>document-state-reasons</b>	1setOf type2 keyword	-	y	MUST	8.2.27
	aborted-by-system	y	y	MAY	[rfc2911] §4.3.8
	compression-error	y	y	MAY	[rfc2911] §4.3.8
	document-access-error	y	y	MAY	[rfc2911] §4.3.8
	document-format-error	y	y	MAY	[rfc2911] §4.3.8
	[job-] canceled-at-device	y	y	MAY	[rfc2911] §4.3.8
	[job-] canceled-by-operator	y	y	MAY	[rfc2911] §4.3.8
	[job-] canceled-by-user	y	y	MAY	[rfc2911] §4.3.8
	[job-] completed-successfully	y	y	MAY	[rfc2911] §4.3.8
	[job-] completed-with-errors	y	y	MAY	[rfc2911] §4.3.8
	[job-] completed-with-warnings	y	y	MAY	[rfc2911] §4.3.8
	job-data-insufficient	y	-	MAY	[rfc2911] §4.3.8
	job-hold-until-specified	y	-	MAY	[rfc2911] §4.3.8
	[job-] incoming	y	y	MAY	[rfc2911] §4.3.8
	[job-] interpreting	y	y	MAY	[rfc2911] §4.3.8
	[job-] outgoing	y	y	MAY	[rfc2911] §4.3.8
	job-password-wait	y	-	MAY	[prod-print2] [ippsave] §8.3.1
	[job-] printing	y	y	MAY	[rfc2911] §4.3.8
	[job-] queued	y	y	MAY	[rfc2911] §4.3.8

<sup>52</sup> For the PWG Semantic Model [pwg-sm], the "job-" prefix is being dropped altogether so that the same values can be used for both the JobStateReasons and DocumentStateReasons attributes.

<sup>53</sup> The Document Description attribute that corresponds to the "job-state-reasons" Job Description attribute is the (new) "document-state-reasons" attribute.

IPP Job Description / Document Description attribute name	IPP Attribute Syntax plus Values	Job	Doc	Printer conformance	Reference
	[job-]queued-for-marker	y	y	MAY	[rfc2911] §4.3.8
	job-restartable	y	-	MAY	[rfc2911] §4.3.8
	job-resuming	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-saved-successfully	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-save-error	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-saving	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-scheduling	y	-	MAY	[prod-print2ippsave] §8.3.1
	[job-]spooling	y	y	MAY	[prod-print2ippsave] §8.3.1
	[job-]streaming	y	y	MAY	[prod-print2ippsave] §8.3.1
	job-suspended	y	-	MAY	[adm-ops] §9.1
	job-suspended-by-operator	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-suspended-by-system	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-suspended-by-user	y	-	MAY	[prod-print2ippsave] §8.3.1
	job-suspending	y	-	MAY	[prod-print2ippsave] §8.3.1
	[job-]transforming	y	y	MAY	[rfc2911] §4.3.8
	[job-]warnings-detected	y	y	MAY	[overridepwg5100.4] §7.1
	none	y	y	MUST	[rfc2911] §4.3.8
	printer-stopped	y	-	MAY	[rfc2911] §4.3.8
	printer-stopped-partly	y	-	MAY	[rfc2911] §4.3.8
	processing-to-stop-point	y	-	MAY	[rfc2911] §4.3.8
	proof-print-wait	y	-	MAY	[prod-print2ippsave] §8.3.1
	queued-in-device	y	y	MAY	[rfc2911] §4.3.8
	resources-are-not-ready	y	-	MAY	[rfc2911] §4.3.8
	resources-are-not-supported	y	y	MAY	[prod-printpwg5100.3] §6.1
	service-off-line	y	-	MAY	[rfc2911] §4.3.8
	submission-interrupted	y	y	MAY	[rfc2911] §4.3.8
	unsupported-compression	y	y	MUST	[rfc2911] §4.3.8
	unsupported-document-format	y	y	MUST	[rfc2911] §4.3.8

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For ease of understanding, the following value descriptions are presented in the order in which the reasons are likely to occur (if implemented), starting with the 'none' value. Note: The order is improved over that in [rfc2911]. The (JD), (J), and (D) notation is identical to the "Job" and "Doc" columns in Table 13 indicating whether the keyword is defined for the "job-state-reasons" and/or "document-state-reasons" attributes:

- 1918 **'none' (JD):** There are no reasons for the job's or document's current state. This state reason is  
 1919 semantically equivalent to "job-state-reasons" or "document-state-reasons" attribute without any  
 1920 value and MUST be used when there is no other value, since the 1setOf attribute syntax requires at  
 1921 least one value.
- 1922 **'job-hold-until-specified' (J):** The value of the job's "job-hold-until" attribute was specified with a time  
 1923 period that is still in the future. The job MUST NOT be a candidate for processing until this reason is  
 1924 removed and there are no other reasons to hold the job. This value SHOULD be supported if the  
 1925 "job-hold-until" Job Template attribute is supported.
- 1926 **'job-password-wait' (J):** The Job is currently being held until the correct password is entered at the device.  
 1927 If the "job-password" (octetString(255)) Operation attribute (See [[prod-print2ippsave](#)] section 4.1) is  
 1928 supported, this value MUST be supported.
- 1929 **'proof-print-wait' (J):** The job is currently being held until the operator verifies the output of the proof print  
 1930 and performs a Release-Job operation. If the "proof-print" (collection) Job Template attribute (See  
 1931 [[prod-print2ippsave](#)] section 5.9) is supported, this value MUST be supported.
- 1932 **'resources-are-not-supported' (JD):** At least one of the resources needed by the job/document, such as  
 1933 media, fonts, resource objects, etc., is not supported on any of the physical printers for which the  
 1934 job/document is a candidate. This condition MAY be detected when the job/document is accepted,  
 1935 or subsequently while the job/document is pending or processing, depending on implementation.  
 1936 The job/document may (1) remain in its current state, (2) be moved to the 'pending-held' state,  
 1937 depending on implementation and/or job scheduling policy, or (3) scheduled normally, but the Printer  
 1938 is put into the 'stopped' state when the job/document is attempted to be processed on the Printer.  
 1939 This value is intended for use with an implementation that supports the "user-defined-values-  
 1940 supported" Printer attribute (see [[prod-printpwg5100.3](#)] section 6.1) which allows a job to be  
 1941 accepted with an unsupported 'name' value.
- 1942 **'resources-are-not-ready' (JD):** At least one of the resources needed by the job/document, such as media,  
 1943 fonts, resource objects, etc., is not ready on any of the physical printer's for which the job/document  
 1944 is a candidate. This condition MAY be detected when the job/document is accepted, or  
 1945 subsequently while the job/document is pending or processing, depending on implementation. The  
 1946 job/document may remain in its current state or be moved to the 'pending-held' state, depending on  
 1947 implementation and/or job/document scheduling policy.
- 1948 **'[job-]incoming' (JD):** Either (1) the Printer has accepted the Create-Job operation and is expecting  
 1949 additional Send-Document and/or Send-URI operations or (2) the Printer is retrieving/accepting  
 1950 document data as a result of a Print-Job, Print-URI, Send-Document or Send-URI operation.
- 1951 **'[job-]spooling' (JD):** Same as 'job-incoming' with the specialization that the Printer is spooling the  
 1952 Job/Document data before processing it. This value corresponds to the 'spool' or 'automatic' value of  
 1953 the "job-spooling-supported" Printer Description attribute.
- 1954 **'[job-]streaming' (JD):** Same as 'job-incoming' with the specialization that the Printer is processing the  
 1955 Job/Document data as it is being received (that is, the document is not being spooled, but rather is  
 1956 being processed in chunks by the output device and is being imaged during reception). This value  
 1957 corresponds to the 'stream' or 'automatic' value of the "job-spooling-supported" Printer Description  
 1958 attribute.
- 1959 **'job-data-insufficient' (J):** The Create-Job operation has been accepted by the Printer, but the Printer is  
 1960 expecting additional document data before it can move the job into the 'processing' state. If a Printer  
 1961 starts processing before it has received all data, the Printer removes the 'job-data-insufficient'  
 1962 reason, but the 'job-incoming' remains. If a Printer starts processing after it has received all data, the  
 1963 Printer removes the 'job-data-insufficient' reason and the 'job-incoming' at the same time.
- 1964 **'unsupported-compression' (JD):** The job/document was aborted by the system because the Printer  
 1965 determined while attempting to decompress the document-data's that the compression is actually not  
 1966 among those supported by the Printer. This value MUST be supported, since "compressions is a  
 1967 REQUIRED operation attribute.

- 1968 **'compression-error' (JD):** The job/document was aborted by the system because the Printer encountered  
1969 an error in the document-data while decompressing it. If the Printer posts this reason, the document-  
1970 data has already passed any tests that would have led to the 'unsupported-compression' job-state-  
1971 reason/document-state-reason.
- 1972 **'document-access-error' (JD):** After accepting a Print-URI or Send-URI request, the Printer could not  
1973 access one or more documents passed by reference. This reason is intended to cover any file  
1974 access problem, including file does not exist and access denied because of an access control  
1975 problem. The Printer MAY also indicate the document access error using the "job-document-access-  
1976 errors" Job Description attribute (see the description of "job-document-access-errors" above).  
1977 Whether the Printer aborts the job/document and moves the job/document to the 'aborted' job state  
1978 or prints all documents that are accessible and moves the job/document to the 'completed'  
1979 job/document state and adds the 'completed-with-errors' value in the job's "job-state-reasons" or  
1980 document's "document-state-reasons" attribute depends on implementation and/or site policy. This  
1981 value SHOULD be supported if the Print-URI or Send-URI operations are supported.
- 1982 **'unsupported-document-format' (JD):** The job/document was aborted by the system because the  
1983 document-data's document-format is not among those supported by the Printer. If the client  
1984 specifies the document-format as 'application/octet-stream', the printer MAY abort the job/document  
1985 and post this reason even though the format is a member of the "document-format-supported" printer  
1986 attribute, but not among the auto-sensed document-formats. This value MUST be supported, since  
1987 "document-format" is a REQUIRED operation attribute.
- 1988 **'document-format-error' (JD):** The job/document was aborted by the system because the Printer  
1989 encountered an error in the document-data while processing it. If the Printer posts this reason, the  
1990 document-data has already passed any tests that would have led to the 'unsupported-document-  
1991 format' job-state-reason/document-state-reason.
- 1992 **'submission-interrupted' (JD):** The job or document was not completely submitted for some unforeseen  
1993 reason, such as: (1) the Printer has crashed before the job was closed by the client, (2) the Printer or  
1994 the document transfer method has crashed in some non-recoverable way before the document data  
1995 was entirely transferred to the Printer, (3) the client crashed or failed to close the job before the time-  
1996 out period. See the description of the "multiple-operation-time-out" Printer attribute in [rfc2911]  
1997 Section 4.4.31.
- 1998 **'[job-]outgoing' (JD):** The Printer is transmitting the job/document to the output device.
- 1999 **'job-scheduling' (J):** The printer is in the process of scheduling the processing for the Job.
- 2000 **'[job-]queued' (JD):** Job is in the 'processing' state, but more specifically, the Printer has queued the  
2001 Document data.
- 2002 **'[job-]transforming' (JD):** Job/document is in the 'processing' state, but more specifically, the Printer is  
2003 interpreting document data and producing another electronic representation.
- 2004 **'[job-]interpreting' (JD):** Job/document is in the 'processing' state, but more specifically, the Printer is  
2005 interpreting the document data.
- 2006 **'[job-]queued-for-marker' (JD):** Job/document is in any of the 'pending-held', 'pending', or 'processing'  
2007 states, but more specifically, the Printer has completed enough processing of the document to be  
2008 able to start marking and the job/document is waiting for the marker. Systems that require human  
2009 intervention to release jobs using the Release-Job operation, put the job into the 'pending-held' job  
2010 state. Systems that automatically select a job to use the marker put the job into the 'pending' job  
2011 state or keep the job in the 'processing' job state while waiting for the marker, depending on  
2012 implementation. All implementations put the job/document into (or back into) the 'processing' state  
2013 when marking does begin.
- 2014 **'[job-]printing' (JD):** The output device is marking media. This value is useful for Printers which spend a  
2015 great deal of time processing (1) when no marking is happening and then want to show that marking  
2016 is now happening or (2) when the job/document is in the process of being canceled or aborted while

- 2017 the job/document remains in the 'processing' state, but the marking has not yet stopped so that  
2018 impression or sheet counts are still increasing for the job/document.
- 2019 **'printer-stopped-partly' (J)**: The value of the Printer's "printer-state-reasons" attribute contains the value  
2020 'stopped-partly'.
- 2021 **'printer-stopped' (J)**: The value of the Printer's "printer-state" attribute is 'stopped'.
- 2022 **'job-suspending' (J)**: The printer is in the process of moving the Job from a processing condition to a  
2023 suspended condition where other jobs can be processed.
- 2024 **'job-suspended' (J)**: The job has been suspended while processing using the Suspend-Current-Job  
2025 operation and other jobs can be processed on the Printer. The Job can be resumed using the  
2026 Resume-Job operation which removes this value. Note: Documents cannot be suspended and there  
2027 is no Suspend-Current-Job operation.
- 2028 **'job-suspended-by-operator' (J)**: The Job has been indefinitely suspended by the printer operator.
- 2029 **'job-suspended-by-user' (J)**: The Job has been indefinitely suspended by the user.
- 2030 **'job-suspended-by-system' (J)**: The Job has been indefinitely suspended by the Printer's system software  
2031 during normal processing of the job.
- 2032 **'job-resuming' (J)**: The printer is in the process of moving the Job from a suspended condition to become a  
2033 candidate for processing.
- 2034 **'[job-]canceled-by-user' (JD)**: The job/document was canceled by the owner of the job using the Cancel-  
2035 Job/Cancel-Document request, i.e., by a user whose authenticated identity is the same as the value  
2036 of the originating user that created the Job object, or by some other authorized end-user, such as a  
2037 member of the job owner's security group. This 'job-canceled' value SHOULD be supported. The  
2038 'canceled-by-user' value SHOULD be supported for the "document-state-reasons" attributes for use  
2039 with the Cancel-Document.
- 2040 **'[job-]canceled-by-operator' (JD)**: The job/document was canceled by the operator using the Cancel-  
2041 Job/Cancel-Document request, i.e., by a user who has been authenticated as having operator  
2042 privileges (whether local or remote). If the security policy is to allow anyone to cancel anyone's  
2043 job/document, then these values may be used when the job/document is canceled by other than the  
2044 owner of the job. For such a security policy, in effect, everyone is an operator as far as canceling  
2045 jobs/documents is concerned. These values SHOULD be supported if the implementation permits  
2046 canceling by other than the owner of the job.
- 2047 **'[job-]canceled-at-device' (JD)**: The job/document was canceled by an unidentified local user, i.e., a user  
2048 at a console at the device. This value SHOULD be supported if the implementation supports  
2049 canceling jobs/documents at the console.
- 2050 **'aborted-by-system' (JD)**: The job/document (1) is in the process of being aborted, (2) has been aborted by  
2051 the system and placed in the 'aborted' state, or (3) has been aborted by the system and placed in the  
2052 'pending-held' state, so that a user or operator can manually try the job/document again. This value  
2053 SHOULD be supported.
- 2054 **'processing-to-stop-point' (J)**: The requester has issued a Cancel-Job/Cancel-Document operation or the  
2055 Printer object has aborted the job/document, but is still performing some actions on the job/document  
2056 until a specified stop point occurs or job/document termination/cleanup is completed.  
2057 If the implementation requires some measurable time to cancel the job/document in the 'processing'  
2058 or 'processing-stopped' job/document states, the Printer MUST use this value to indicate that the  
2059 Printer object is still performing some actions on the job/document while the job/document remains in  
2060 the 'processing' or 'processing-stopped' state. After all the job's/document's job/document  
2061 description attributes have stopped incrementing, the Printer object moves the job/document from  
2062 the 'processing' state to the 'canceled' or 'aborted' job/document states.

- 2063 'service-off-line' (J): The Printer is off-line and accepting no jobs. All 'pending' jobs are put into the  
 2064 'pending-held' state. This situation could be true if the service's or document transform's input is  
 2065 impaired or broken.
- 2066 '[job-]warnings-detected' (JD): If the Printer supports these values, the Printer MUST add the value to "job-  
 2067 state-reasons" / "document-state-reasons" when it generates the first warning message. That is, a  
 2068 single occurrence of this value is present in the "job-state-reasons" / "document-state-reasons" if the  
 2069 Printer has generated one or more warnings.
- 2070 '[job-]completed-successfully' (JD): The job/document completed successfully. There were no warnings  
 2071 or errors in printing. This value SHOULD be supported.
- 2072 '[job-]completed-with-warnings' (JD): The print part of the job/document completed with warnings  
 2073 (whether or not there were save errors). This value SHOULD be supported if the implementation  
 2074 detects warnings. [rfc2911]
- 2075 '[job-]completed-with-errors' (JD): The print part of the job/document completed with errors (and possibly  
 2076 warnings too) (whether or not there were save errors). This value SHOULD be supported if the  
 2077 implementation detects errors. [rfc2911]
- 2078 'job-saving' (J): The Printer is transmitting the Job to the save location. This is similar to the 'job-printing'  
 2079 value.
- 2080 'job-saved-successfully' (J): The Printer saved the Job successfully.
- 2081 'job-save-error' (J): The Printer did not save the Job successfully (whether or not it was printed successfully,  
 2082 printed with warnings, printed with errors, or not printed). The Printer MUST ensure that none of the  
 2083 saved job is accessible, if it was unable to successfully save all of the job.
- 2084 'job-restartable' (J): This job is retained (see the description of "job-state" above, specifically "Partitioning of  
 2085 Job States") and is currently able to be restarted using the Restart-Job operation (see [rfc2911]  
 2086 Section 3.3.7). If 'job-restartable' is a value of the job's "job-state-reasons" attribute, then the Printer  
 2087 MUST accept a Restart-Job operation for that job. This value SHOULD be supported if the Restart-  
 2088 Job operation is supported.
- 2089 'queued-in-device' (JD): The job/document has been forwarded to a device or print system that is unable to  
 2090 send back status. The Printer sets the job's/document's "job-state" / "document-state" attribute to  
 2091 'completed' and adds the 'queued-in-device' value to the job's/document's "job-state-reasons" /  
 2092 "document-state-reasons" attribute to indicate that the Printer has no additional information about the  
 2093 job/document and never will have any better information. See the description of the "job-state" /  
 2094 "document-state" attribute above, specifically the portion on "Forwarding Servers".
- 2095 NOTE: The semantics of this attribute or the set of valid values may be different for different document formats.

2096 **8.2.28 document-uri (uri)**

2097 This Document Description attribute is the URI that the client supplied in the corresponding operation attribute in a  
 2098 Send-URI operation (see [rfc2911] section 3.3.2). The Printer MUST support this attribute if the Printer supports the  
 2099 Send-URI operation (see section 3.4).

2100 **8.2.29 impressions-completed-current-copy (integer(0:MAX))**

2101 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
 2102 attribute (see [rfc3381] §4.4) applied to the Document object.

2103 **8.2.30 [job-]detailed-status-message (1setOf text(MAX))**

2104 This OPTIONAL “detailed-status-message” Document Description attribute has the same semantics as the  
 2105 corresponding “job-detailed-status-message” Job Description attribute (see [rfc2911] §4.3.10) applied to the  
 2106 Document object.

2107 **8.2.31 [job-]document-access-errors (1setOf text(MAX))**

2108 This OPTIONAL “document-access-errors” Document Description attribute has the same semantics as the  
 2109 corresponding “job-detailed-status-message” Job Description attribute (see [rfc2911] §4.3.11) applied to the  
 2110 Document object.

2111 **job-id (integer(1:MAX))**

2112 ~~This REQUIRED document description attribute is a copy of the “job-id” Job Description attribute (See [rfc2911]~~  
 2113 ~~§4.3.2) of the job that contains this Document.~~

2114 **8.2.32 [job-]impressions (integer(0:MAX))**

2115 This OPTIONAL “impressions” Document Description attribute has the same semantics as the corresponding “job-  
 2116 impressions” Job Description attribute (see [rfc2911] §4.3.17.2) applied to the Document object. The Printer sets  
 2117 this Document Description attribute from the corresponding operation attribute supplied by the client in the Document  
 2118 Creation operation (see section 3.1).

2119 **8.2.33 [job-]impressions-completed (integer(0:MAX))**

2120 This OPTIONAL “impressions-completed” Document Description attribute has the same semantics as the  
 2121 corresponding “job-impressions-completed” Job Description attribute (see [rfc2911] §4.3.18.2) applied to the  
 2122 Document object.

2123 **8.2.34 [job-]k-octets (integer(0:MAX))**

2124 This OPTIONAL “k-octets” Document Description attribute has the same semantics as the corresponding “job-k-  
 2125 octets” Job Description attribute (see [rfc2911] §4.3.17.1) applied to the Document object. The Printer sets this  
 2126 Document Description attribute from the corresponding operation attribute supplied by the client in the Document  
 2127 Creation operation (see section 3.1).

2128 **8.2.35 [job-]k-octets-processed (integer(0:MAX))**

2129 This OPTIONAL “k-octets-processed” Document Description attribute has the same semantics as the corresponding  
 2130 “job-k-octets-processed” Job Description attribute (see [rfc2911] §4.3.18.1) applied to the Document object.

2131 **8.2.36 [job-]media-sheets (integer(0:MAX))**

2132 This OPTIONAL “media-sheets” Document Description attribute has the same semantics as the corresponding “job-  
 2133 media-sheets” Job Description attribute (see [rfc2911] §4.3.17.3) applied to the Document object. The Printer sets  
 2134 this Document Description attribute from the corresponding operation attribute supplied by the client in the Document  
 2135 Creation operation (see section 3.1).

2136 **8.2.37 [job-]media-sheets-completed (integer(0:MAX))**

2137 This OPTIONAL “media-sheets” Document Description attribute has the same semantics as the corresponding “job-  
 2138 media-sheets-completed” Job Description attribute (see [rfc2911] 4.3.18.3) applied to the Document object.

2139 **8.2.38 [job-]more-info (uri)**

2140 This OPTIONAL “more-info” Document Description attribute has the same semantics as the corresponding “job-  
2141 more-info” Job Description attribute (see [rfc2911] §4.3.4) applied to the Document object.

2142 **8.2.39 [job-]printer-up-time (integer (1:MAX))**

2143 This REQUIRED “printer-up-time” Document Description attribute indicates the amount of time (in seconds) that the  
2144 Printer implementation has been up and running. This attribute is an alias for the “printer-up-time” Printer Description  
2145 attribute (see [rfc2911] section 4.4.29).

2146 A client MAY request this attribute in a Get-Document-Attributes or Get-Documents request and use the value  
2147 returned in combination with other requested Event Time Job Description Attributes in order to display time attributes  
2148 to a user. The difference between this attribute and the ‘integer’ value of a “time-at-xxx” attribute is the number of  
2149 seconds ago that the “time-at-xxx” event occurred. A client can compute the wall-clock time at which the “time-at-  
2150 xxx” event occurred by subtracting this difference from the client’s wall-clock time.

2151 **job-printer-uri (uri)**

2152 ~~This REQUIRED Document Description attribute has the same semantics as the corresponding Job Description  
2153 attribute (see [rfc2911] §4.3.3) applied to the Document object.~~

2154 **job-uri (uri)**

2155 ~~This REQUIRED document description attribute is a copy of the “job-uri” Job Description attribute (see [rfc2911]  
2156 §4.3.1.) of the job that contains this Document.~~

2157 **8.2.40 [job-]warnings-count (integer(0:MAX))**

2158 This OPTIONAL “warnings-count” Document Description attribute has the same semantics as the corresponding  
2159 “job-warnings-count” Job Description attribute (see [overridepwg5100.4] §6.1.) applied to the Document object. See  
2160 [overridepwg5100.4] §6.1.

2161 **8.2.41 last-document (boolean)**

2162 This OPTIONAL Document Description attribute indicates whether or not this Document is the last Document in the  
2163 Job. See [rfc2911] §4.3.12. The Printer sets this Document Description attribute from the corresponding operation  
2164 attribute supplied by the client in the Document Creation operation (see section 3.1). If the client issues the Close-  
2165 Job operation (see section 4.3.1), the Printer sets the value of the “last-document” Document Description attribute of  
2166 the last document in the Job to ‘true’.

2167 **8.2.42 output-device-assigned (name(127))**

2168 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
2169 attribute (see [rfc2911] §4.3.7.2) applied to the Document object.

2170 **8.2.43 sheet-completed-copy-number (integer(0:MAX))**

2171 This OPTIONAL Document Description attribute has the same semantics as the corresponding Job Description  
2172 attribute (see [rfc3381] §4.2) applied to the Document object.

2173 **8.2.44 time-at-completed (integer (MIN:MAX))**

2174 This REQUIRED Document Description attribute has the same semantics as the corresponding Job Description  
2175 attribute (see [rfc2911] §4.3.14.3) applied to the Document object.

2176 **8.2.45 time-at-creation (integer (MIN:MAX))**

2177 This REQUIRED Document Description attribute has the same semantics as the corresponding Job Description  
2178 attribute (see [rfc2911] §4.3.14.1) applied to the Document object.

2179 **8.2.46 time-at-processing (integer (MIN:MAX))**

2180 This REQUIRED Document Description attribute has the same semantics as the corresponding Job Description  
2181 attribute (see [rfc2911] §4.3.14.2) applied to the Document object.

2182 **9 Printer attributes**

2183 This section lists *all* of the Printer attributes defined in other IPP documents. Printer attributes are divided into three  
2184 disjoint groups:  
2185

Job Template attributes (JT)	<p>These Printer attributes are related directly to the “xxx” Job Template attributes that a client can supply in a Job Creation request as follows:</p> <ol style="list-style-type: none"> <li>1. “xxx-supported” indicate the supported values</li> <li>2. “xxx-default” indicate the values that will be used if the client and the PDL omit the attribute.</li> <li>3. “xxx-ready” indicate the supported values that are available without human intervention, for those few attributes that require human intervention, such as “media” and possibly “<u>job-finishing</u>”.</li> </ol> <p><u>These Printer attributes are also returned in a Get-Printer-Attributes response when the client supplies: “requested-attributes” = ‘job-template’.</u></p>
<u>Document Template attributes (DT)</u>	<p><u>These Printer attributes are related directly to the “xxx” Document Template attributes that a client can supply in a Document Creation request as follows:</u></p> <ol style="list-style-type: none"> <li><u>1. “xxx-supported” indicate the supported values</u></li> <li><u>2. “xxx-default” indicate the values that will be used if the client and the PDL omit the attribute.</u></li> <li><u>3. “xxx-ready” indicate the supported values that are available without human intervention, for those few attributes that require human intervention, such as “media” and possibly “finishing”.</u></li> </ol> <p><u>These Printer attributes are also returned in a Get-Printer-Attributes response when the client supplies: “requested-attributes” = ‘document-template’.</u></p>
Printer Description attributes (PD)	<p>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.</p>
neither (-)	<p>These Printer attributes describe supported and defaults for member attributes of collection Job Template attributes.</p>

2186  
2187 In a Get-Printer-Attributes request, a client can request all of the Printer attributes in the Job Template (JT) or Printer  
2188 Description (PD) groups by supplying the ‘job-template’ or ‘printer-description’ group name, respectively. The client  
2189 can also request “all”. The column labels are:

2190 **“Attribute Syntax”** - indicates the attribute syntax (see [rfc2911] section 4.1). Many “xxx-default” and “xxx-  
2191 supported” attributes have the ‘collection’ syntax which consists of a number of member attributes.  
2192 These member attributes are not listed in this table when they are the same as the corresponding

2193 “xxx” attribute in Table 8. Only those few Printer attribute collection attributes that do not have a  
 2194 corresponding Job Template attributes show the member attributes in this table.

2195 “Grp” - indicates to which group the attribute belongs. **“PD” = Printer Description; “JT” = Job Template as**  
 2196 **explained above.**

2197 “Printer Conf.” - indicates the IPP/1.1 Printer conformance requirements for supporting the attribute. Those  
 2198 attributes labeled as “MAY” may have conditional requirements that require their support, if the  
 2199 Printer supports a related attribute, operation, or feature. For example, all Job Template attributes  
 2200 are OPTIONAL for a Printer to support. However, if a Printer supports Job Template attribute “xxx”,  
 2201 then it MUST also support the corresponding “xxx-default” and “xxx-supported” attributes. Similarly,  
 2202 if Event Notification is supported, then some of the attributes indicated as “MAY” in this table become  
 2203 MUST.

2204 “Reference” - lists the IETF or IEEE-ISTO specification which defines the semantics of the attribute.

2205 **ISSUE 14: TBD - Need to add the “xxx-default” and “xxx-supported” to Table 14 that go with the Document Template**  
 2206 **attributes.**

2207 **Table 14 - Printer attributes (Job Template and Printer Description)**

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
<b>charset-configured</b>	charset	PD	MUST	[rfc2911] §4.4.17
<b>charset-supported</b>	1setOf charset	PD	MUST	[rfc2911] §4.4.18
<b>color-supported</b>	boolean	PD	MAY	[rfc2911] §4.4.26
<b>compression-supported</b>	type3 keyword	PD	MUST	[rfc2911] §4.4.32
<b>copies-default</b>	integer(1:MAX)	JT	MAY	[rfc2911] §4.2.5
<b>copies-supported</b>	rangeOfInteger(1:MAX)	JT	MAY	[rfc2911] §4.2.5
<b>cover-back-default</b>	collection	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.1.3
<b>cover-back-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.1.4
<b>cover-front-default</b>	collection	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.1.3
<b>cover-front-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.1.4
<b>cover-type-supported</b>	1setOf type2 keyword	-	MAY	[ <del>prod-print</del> pwg5100.3] §3.1.2.1
<b>document-creation-attributes-supported</b>	1setOf type2 keyword	PD	MAY	[this-spec] §9.1
<b>document-format-default</b>	mimeMediaType	PD	MUST	[rfc2911] §4.4.21
<b>document-format-supported</b>	1setOf mimeMediaType	PD	MUST	[rfc2911] §4.4.22
<b>document-format-varying-attributes</b>	1setOf type2 keyword	PD	MAY	[ <del>set-ops</del> rfc3380] §6.3
<b>document-overrides-supported</b>	1setOf type2 keyword		MAY	[ <del>override</del> pwg5100.4] §5.1.14
<b>finishings-col-default</b>	collection	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.2.3
<b>finishings-col-ready</b>	1setOf collection	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.2.4
<b>finishings-col-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.2.5
<b>finishings-default</b>	1setOf type2 enum	JT	MAY	[rfc2911] §4.2.6
<b>finishings-ready</b>	1setOf type2 enum	JT	MAY	[rfc2911] §4.2.6
<b>finishings-supported</b>	1setOf type2 enum	JT	MAY	[rfc2911] §4.2.6

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
<b>finishing-template-supported</b>	1setOf name(MAX)	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.2.1.1
<b>force-front-side-default</b>	1setOf integer(1:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.3
<b>force-front-side-supported</b>	rangeOfInteger(1:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.3
<b>generated-natural-language-supported</b>	1setOf naturalLanguage	PD	MUST	[rfc2911] §4.4.20
<b>imposition-template-default</b>	type3 keyword   name(MAX)	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.4
<b>imposition-template-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.4
<b>insert-after-page-number-supported</b>	rangeOfInteger(0:MAX)	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.5.1.1
<b>insert-count-supported</b>	rangeOfInteger(0:MAX)	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.5.2.1
<b>insert-sheet-default</b>	1setOf collection	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.5.4
<b>insert-sheet-supported</b>	1setOf type2 keyword	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.5.5
<b>ippget-event-life</b>	integer(15:MAX)	PD	MAY	[get-method] §8.1
<b>ipp-versions-supported</b>	1setOf type2 keyword	PD	MUST	[rfc2911] §4.4.20
<b>job-account-id-default</b>	name(MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.6
<b>job-account-id-supported</b>	boolean	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.6
<b>job-accounting-output-bin-default</b>	type3 keyword   name(MAX)	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.8.3.1
<b>job-accounting-output-bin-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.8.3.2
<b>job-accounting-sheets-default</b>	collection	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.8.4
<b>job-accounting-sheets-supported</b>	1setOf type2 keyword	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.8.5
<b>job-accounting-sheets-type-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.8.1.1
<b>job-accounting-user-id-default</b>	name(MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.7
<b>job-accounting-user-id-supported</b>	boolean	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.7
<b>job-creation-attributes-supported</b>	1setOf type2 keyword	PD	MAY	<a href="#">[prod-print2ippsave]</a> §7.1
<b>job-error-sheet-default</b>	collection	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.7
<b>job-error-sheet-supported</b>	1setOf type2 keyword	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.9.5
<b>job-error-sheet-type-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.9.1.1
<b>job-error-sheet-when-supported</b>	1setOf type2 keyword	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.9.2.1
<b>job-hold-until-default</b>	type3 keyword   name(MAX)	JT	MAY	[rfc2911] §4.2.2

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
<b>job-hold-until-supported</b>	1setOf (type3 keyword   name(MAX))	JT	MAY	[rfc2911] §4.2.2
<b>job-impressions-supported</b>	rangeOfInteger(0:MAX)	PD	MAY	[rfc2911] §4.4.34
<b>job-k-octets-supported</b>	rangeOfInteger(0:MAX)	PD	MAY	[rfc2911] §4.4.33
<b>job-media-sheets-supported</b>	rangeOfInteger(0:MAX)	PD	MAY	[rfc2911] §4.4.35
<b>job-message-to-operator-default</b>	text(MAX)	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.12
<b>job-message-to-operator-supported</b>	boolean	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.12
<b>job-password-supported</b>	integer(0:127)	PD	MAY	[ <a href="#">prod-print2ippsave</a> ] §7.2
<b>job-password-encryption-supported</b>	1setOf (type3 keyword   name(MAX))	PD	MAY	[ <a href="#">prod-print2ippsave</a> ] §7.3
<b>job-priority-default</b>	integer(1:100)	JT	MAY	[rfc2911] §4.2.1
<b>job-priority-supported</b>	1setOf integer(1:100)	JT	MAY	[rfc2911] §4.2.1
<b>job-settable-attributes-supported</b>	1setOf type2 keyword	PD	MAY	[ <a href="#">set-opsrfc3380</a> ] §6.2
<b>job-sheet-message-default</b>	text(MAX)		MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.12
<b>job-sheet-message-supported</b>	boolean		MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.12
<b>job-sheets-col-default</b>	collection	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.11.3
<b>job-sheets-col-supported</b>	1setOf type2 keyword	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.11.4
<b>job-sheets-default</b>	type3 keyword   name(MAX)	JT	MAY	[rfc2911] §4.2.3
<b>job-sheets-supported</b>	1setOf (type3 keyword   name(MAX))	JT	MAY	[rfc2911] §4.2.3
<b>job-spooling-supported</b>	type2 keyword	PD	MAY	[ <a href="#">prod-print2ippsave</a> ] §7.4
<b>max-save-info-supported</b>	integer(1:MAX)	PD	MAY	[ <a href="#">prod-print2ippsave</a> ] §7.5
<b>max-stitching-locations-supported</b>	integer(1:MAX)	PD	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §5.2
<b>media-back-coating-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.10.2
<b>media-col-database</b>	1setOf collection	- <sup>54</sup>	MAY	[ <a href="#">prod-print2ippsave</a> ] §7.6
<i>any "media-col" member attribute</i>				
<b>media-col-default</b>	collection	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.12
<i>any "media-col" member attribute</i>				
<b>media-color-supported</b>	1setOf type2 keyword	-	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.4.1
<b>media-col-ready</b>	1setOf collection	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.13
<i>any "media-col" member attribute</i>				
<b>media-col-supported</b>	1setOf type2 keyword	JT	MAY	[ <a href="#">prod-printpwg5100.3</a> ] §3.13.13

<sup>54</sup> The "media-col-database" attribute is not returned when the client requests 'all' or 'printer-description' attribute group because there MAY be a large number of values. Instead the client MUST query "media-col-database" explicitly in a Get-Printer-Attributes request.

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
				§3.13.14
<b>media-default</b>	type3 keyword   name(MAX)	JT	MAY	[rfc2911] §4.2.11
<b>media-front-coating-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.10.1
<b>media-hole-count-supported</b>	1setOf rangeOfInteger(0:MAX)	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.6.1
<b>media-info-supported</b>	boolean	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.3.1
<b>media-input-tray-check-default</b>	type3 keyword   name(MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.14
<b>media-input-tray-check-supported</b>	1setOf (type3 keyword   name(MAX))	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.14
<b>media-key-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.1.1
<b>media-order-count-supported</b>	1setOf rangeOfInteger(1:MAX)	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.7.1
<b>media-pre-printed-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.5.1
<b>media-ready</b>	1setOf (type3 keyword   name(MAX))	JT	MAY	[rfc2911] §4.2.11
<b>media-recycled-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.11.1
<b>media-size-supported</b>	1setOf collection	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.8.3
<b>media-supported</b>	1setOf (type3 keyword   name(MAX))	JT	MAY	[rfc2911] §4.2.11
<b>media-type-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.2.1
<b>media-weight-metric-supported</b>	1setOf rangeOfInteger(1:MAX)	-	MAY	[ <del>prod-printpwg5100.3</del> ] §3.13.9.1
<b>multiple-document-handling-default</b>	type2 keyword	JT	MAY	[rfc2911] §4.2.4
<b>multiple-document-handling-supported</b>	1setOf type2 keyword	JT	MAY	[rfc2911] §4.2.4
<b>multiple-document-jobs-supported</b>	boolean	PD	MAY	[rfc2911] §4.4.16
<b>multiple-operation-time-out</b>	integer(1:MAX)	PD	MAY	[rfc2911] §4.4.31
<b>natural-language-configured</b>	naturalLanguage	PD	MUST	[rfc2911] §4.4.19
<b>notify-attributes-supported</b>	1setOf type2 keyword	PD	MAY	[ntfy] §5.3.4
<b>notify-events-default</b>	1setOf type2 keyword	PD	MAY	[ntfy] §5.3.3
<b>notify-events-supported</b>	1setOf type2 keyword	PD	MAY	[ntfy] §5.3.3
<b>notify-lease-duration-default</b>	integer(0:67108863)	PD	MAY	[ntfy] §5.3.8
<b>notify-lease-duration-supported</b>	1setOf (integer(0: 67108863)   rangeOfInteger(0:67108863))	PD	MAY	[ntfy] §5.3.8
<b>notify-lease-expiration-time</b>	integer(0:MAX)	PD	MAY	[ntfy] §5.4.3
<b>notify-max-events-supported</b>	integer(2:MAX)	PD	MAY	[ntfy] §5.3.3
<b>notify-pull-method-supported</b>	1setOf type2 keyword	PD	MAY	[ntfy] §5.3.2
<b>notify-schemes-supported</b>	1setOf uriScheme	PD	MAY	[ntfy] §5.3.1
<b>number-up-default</b>	integer(1:MAX)	JT	MAY	[rfc2911] §4.2.9
<b>number-up-supported</b>	1setOf (integer(1:MAX)   rangeOfInteger(1:MAX))	JT	MAY	[rfc2911] §4.2.9
<b>operations-supported</b>	1setOf type2 enum	PD	MUST	[rfc2911] §4.4.15

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
<b>orientation-requested-default</b>	type2 enum	JT	MAY	[rfc2911] §4.2.10
<b>orientation-requested-supported</b>	1setOf type2 enum	JT	MAY	[rfc2911] §4.2.10
<b>output-bin-default</b>	type2 keyword   name(MAX)	JT	MAY	[ <del>output-bin</del> pwg5100.2] §2.1
<b>output-bin-supported</b>	1setOf (type2 keyword   name(MAX))	JT	MAY	[ <del>output-bin</del> pwg5100.2] §2.1
<b>page-delivery-default</b>	type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.15
<b>page-delivery-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.15
<b>page-order-received-default</b>	type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.16
<b>page-order-received-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.16
<b>page-overrides-supported</b>	1setOf type2 keyword	PD	MAY	[ <del>override</del> pwg5100.4] §5.2.9
<b>page-ranges-supported</b>	boolean	JT	MAY	[rfc2911] §4.2.7
<b>pages-per-minute</b>	integer(0:MAX)	PD	MAY	[rfc2911] §4.4.36
<b>pages-per-minute-color</b>	integer(0:MAX)	PD	MAY	[rfc2911] §4.4.37
<b>pages-per-subset-supported</b>	boolean	PD	MAY	[ <del>override</del> pwg5100.4] §5.3.2
<b>parent-printers-supported</b>	1setOf uri	PD	MAY	[adm-ops] §7.2
<b>pdl-override-supported</b>	type2 keyword	PD	MUST	[rfc2911] §4.4.28 [ <del>prod-print2</del> ippsave] §8.1
<b>presentation-direction-number-up-default</b>	type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.17
<b>presentation-direction-number-up-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-print</del> pwg5100.3] §3.17
<b>printer-current-time</b>	dateTime	PD	MAY	[rfc2911] §4.4.30
<b>printer-detailed-status-messages</b>	1setOf text(MAX)	PD	MAY	[ <del>prod-print2</del> ippsave] §7.7
<b>printer-driver-installer</b>	uri	PD	MAY	[rfc2911] §4.4.8
<b>printer-info</b>	text(127)	PD	MAY	[rfc2911] §4.4.6
<b>printer-is-accepting-jobs</b>	boolean	PD	MUST	[rfc2911] §4.4.23
<b>printer-location</b>	text(127)	PD	MAY	[rfc2911] §4.4.5
<b>printer-make-and-model</b>	text(127)	PD	MAY	[rfc2911] §4.4.9
<b>printer-message-date-time</b>	dateTime	PD	MAY	[ <del>set-ops</del> rfc3380] §6.5
<b>printer-message-from-operator</b>	text(127)	PD	MAY	[rfc2911] §4.4.25
<b>printer-message-time</b>	integer(MIN:MAX)	PD	MAY	[ <del>set-ops</del> rfc3380] §6.4
<b>printer-more-info</b>	uri	PD	MAY	[rfc2911] §4.4.7
<b>printer-more-info-manufacturer</b>	uri	PD	MAY	[rfc2911] §4.4.10
<b>printer-name</b>	name(127)	PD	MUST	[rfc2911] §4.4.4
<b>printer-notify-server-uri</b>	uri	PD	MAY	[not-srv] §4.1
<b>printer-resolution-default</b>	resolution	JT	MAY	[rfc2911] §4.2.12
<b>printer-resolution-supported</b>	1setOf resolution	JT	MAY	[rfc2911] §4.2.12
<b>printer-settable-attributes-supported</b>	1setOf type2 keyword	PD	MAY	[ <del>set-ops</del> rfc3380] §6.1
<b>printer-state</b>	type1 enum	PD	MUST	[rfc2911] §4.4.11
<b>printer-state-change-date-time</b>	dateTime	PD	MAY	[ntfy] §6.2
<b>printer-state-change-time</b>	integer(1:MAX)	PD	MAY	[ntfy] §6.1

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
<b>printer-state-message</b>	text(MAX)	PD	MAY	[rfc2911] §4.4.13
<b>printer-state-reasons</b>	1setOf type2 keyword	PD	MUST	[rfc2911] §4.4.12
<b>printer-up-time</b>	integer(1:MAX))	PD	MUST	[rfc2911] §4.4.29
<b>printer-uri-supported</b>	1setOf uri	PD	MUST	[rfc2911] §4.4.1
<b>printer-xri-supported</b>	1setOf collection	PD	MAY	<a href="#">[set-opsrfc3380]</a> §6.6
<b>xri-uri</b>	uri	PD	MUST	<a href="#">[set-opsrfc3380]</a> §6.6
<b>xri-authentication</b>	1setOf type2 keyword	PD	MUST	<a href="#">[set-opsrfc3380]</a> §6.6
<b>xri-security</b>	1setOf type2 keyword	PD	MUST	<a href="#">[set-opsrfc3380]</a> §6.6
<b>print-quality-default</b>	type2 enum	JT	MAY	[rfc2911] §4.2.13
<b>print-quality-supported</b>	1setOf type2 enum	JT	MAY	[rfc2911] §4.2.13
<b>queued-job-count</b>	integer(0:MAX)	PD	MUST	[rfc2911] §4.4.24
<b>reference-uri-schemes-supported</b>	1setOf uriScheme	PD	MAY	[rfc2911] §4.4.27
<b>separator-sheets-default</b>	collection	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.18.3
<b>separator-sheets-supported</b>	1setOf type2 keyword	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.18.4
<b>separator-sheets-type-supported</b>	1setOf (type3 keyword   name(MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.18.1.1
<b>sheet-collate-default</b>	type2 keyword	JT	MAY	[rfc3381] §3.1
<b>sheet-collate-supported</b>	1setOf type2 keyword	JT	MAY	[rfc3381] §3.1
<b>sides-default</b>	type2 keyword	JT	MAY	[rfc2911] §4.2.8
<b>sides-supported</b>	1setOf type2 keyword	JT	MAY	[rfc2911] §4.2.8
<b>stitching-locations-supported</b>	1setOf (integer(0:MAX)   rangeOfInteger(0:MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.2.2.3.1
<b>stitching-offset-supported</b>	1setOf (integer(0:MAX)   rangeOfInteger(0:MAX))	-	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.2.2.2.1
<b>stitching-reference-edge-supported</b>	1setOf type2 keyword		MAY	<a href="#">[prod-printpwg5100.3]</a> §3.2.2.1.1
<b>subordinate-printers-supported</b>	1setOf uri	PD	MAY	[adm-ops] §7.1
<b>uri-authentication-supported</b>	1setOf type2 keyword	PD	MUST	[rfc2911] §4.4.2
<b>uri-security-supported</b>	1setOf type2 keyword	PD	MUST	[rfc2911] §4.4.3
<b>user-defined-values-supported</b>	1setOf type2 keyword	PD	MAY	<a href="#">[prod-printpwg5100.3]</a> §5.1
<b>which-jobs-supported</b>	1setOf type2 keyword	PD	MAY	<a href="#">[prod-print2ippsave]</a> §7.8
<b>x-image-position-default</b>	type2 keyword	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.19.2
<b>x-image-position-supported</b>	1setOf type2 keyword	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.19.2
<b>x-image-shift-default</b>	integer(MIN:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.19.3
<b>x-image-shift-supported</b>	rangeOfInteger(MIN:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.19.3
<b>xri-authentication-supported</b>	1setOf type2 keyword	PD	MAY	<a href="#">[set-opsrfc3380]</a> §6.8
<b>xri-security-supported</b>	1setOf type2 keyword	PD	MAY	<a href="#">[set-opsrfc3380]</a> §6.9
<b>xri-uri-scheme-supported</b>	1setOf uriScheme	PD	MAY	<a href="#">[set-opsrfc3380]</a> §6.7
<b>x-side1-image-shift-default</b>	integer(MIN:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.19.4
<b>x-side1-image-shift-supported</b>	rangeOfInteger(MIN:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a> §3.19.4
<b>x-side2-image-shift-default</b>	integer(MIN:MAX)	JT	MAY	<a href="#">[prod-printpwg5100.3]</a>

Printer attribute name (Job Template & Printer Description)	Attribute Syntax	Grp	Printer Conf.	Reference
				§3.19.5
<b>x-side2-image-shift-supported</b>	rangeOfInteger(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.5
<b>y-image-position-default</b>	type2 keyword	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.6
<b>y-image-position-supported</b>	1setOf type2 keyword	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.6
<b>y-image-shift-default</b>	integer(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.7
<b>y-image-shift-supported</b>	rangeOfInteger(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.7
<b>y-side1-image-shift-default</b>	integer(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.8
<b>y-side1-image-shift-supported</b>	rangeOfInteger(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.8
<b>y-side2-image-shift-default</b>	integer(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.9
<b>y-side2-image-shift-supported</b>	rangeOfInteger(MIN:MAX)	JT	MAY	[ <del>prod-printpwg5100.3</del> ] §3.19.9

2208

2209 **9.1 document-creation-attributes-supported (1setOf type2 keyword)**

2210 This Printer Description attribute lists the keyword names of the Document Template and Operation attributes that  
2211 the Printer will accept in the Create-Document, Send-Document, and Send-URI Document Creation operations.

2212 **9.2 printer-state-reasons (1setOf type2 keyword)**

IPP Printer Description attribute name	IPP Attribute Syntax plus Values	Printer conformance	Reference
<b>printer-state-reasons</b>	1setOf type2 keyword	MUST	[rfc2911] §4.4.12
	other	MAY	[rfc2911] §4.4.12
	none	MUST	[rfc2911] §4.4.12
	connecting-to-device	MAY	[rfc2911] §4.4.12
	cover-open	MAY	[rfc2911] §4.4.12
	deactivated	MAY	[adm-ops] §8.2
	developer-empty	MAY	[rfc2911] §4.4.12
	developer-low	MAY	[rfc2911] §4.4.12
	door-open	MAY	[rfc2911] §4.4.12
	fuser-over-temp	MAY	[rfc2911] §4.4.12
	fuser-under-temp	MAY	[rfc2911] §4.4.12
	hold-new-jobs	MAY	[adm-ops] §8.1
	input-tray-missing	MAY	[rfc2911] §4.4.12
	interlock-open	MAY	[rfc2911] §4.4.12
	interpreter-resource-unavailable	MAY	[rfc2911] §4.4.12
	marker-supply-empty	MAY	[rfc2911] §4.4.12
	marker-supply-low	MAY	[rfc2911] §4.4.12

IPP Printer Description attribute name	IPP Attribute Syntax plus Values	Printer conformance	Reference
	marker-waste-almost-full	MAY	[rfc2911] §4.4.12
	marker-waste-full	MAY	[rfc2911] §4.4.12
	media-empty	MAY	[rfc2911] §4.4.12
	media-jam	MAY	[rfc2911] §4.4.12
	media-low	MAY	[rfc2911] §4.4.12
	media-needed	MAY	[rfc2911] §4.4.12
	moving-to-paused	CMUST <sup>55</sup>	[rfc2911] §4.4.12
	opc-life-over	MAY	[rfc2911] §4.4.12
	opc-near-eol	MAY	[rfc2911] §4.4.12
	output-area-almost-full	MAY	[rfc2911] §4.4.12
	output-area-full	MAY	[rfc2911] §4.4.12
	output-tray-missing	MAY	[rfc2911] §4.4.12
	paused	CMUST <sup>56</sup>	[rfc2911] §4.4.12
	shutdown	MAY	[rfc2911] §4.4.12
	spool-area-full	SHOULD	[rfc2911] §4.4.12
	stopped-partly	MAY	[rfc2911] §4.4.12
	stopping	MAY	[rfc2911] §4.4.12
	timed-out	MAY	[rfc2911] §4.4.12
	toner-empty	MAY	[rfc2911] §4.4.12
	toner-low	MAY	[rfc2911] §4.4.12

2213

2214 This description is taken from [rfc2911] with additions from other IPP extension documents:

2215 This REQUIRED Printer attribute supplies additional detail about the device's state. Some of these value  
 2216 definitions indicate conformance requirements; the rest are OPTIONAL.

2217 Each keyword value MAY have a suffix to indicate its level of severity. The three levels are: report (least severe),  
 2218 warning, and error (most severe).

2219 **'-report'**: This suffix indicates that the reason is a "report". An implementation may choose to omit some or  
 2220 all reports. Some reports specify finer granularity about the printer state; others serve as a precursor  
 2221 to a warning. A report MUST contain nothing that could affect the printed output.

2222 **'-warning'**: This suffix indicates that the reason is a "warning". An implementation may choose to omit some  
 2223 or all warnings. Warnings serve as a precursor to an error. A warning MUST contain nothing that  
 2224 prevents a job from completing, though in some cases the output may be of lower quality.

2225 **'-error'**: This suffix indicates that the reason is an "error". An implementation MUST include all errors. If this  
 2226 attribute contains one or more errors, printer MUST be in the stopped state.

2227 If the implementation does not add any one of the three suffixes, all parties MUST assume that the reason is an  
 2228 "error".

2229 If a Printer object controls more than one output device, each value of this attribute MAY apply to one or more of the  
 2230 output devices. An error on one output device that does not stop the Printer object as a whole MAY appear as a

<sup>55</sup> The 'moving-to-paused' value MUST be supported if the Pause-Printer operation is supported and it takes significant time to move to paused.

<sup>56</sup> The 'paused' value MUST be supported if the Pause-Printer operation is supported.

- 2231 warning in the Printer's "printer-state-reasons attribute". If the "printer-state" for such a Printer has a value of  
2232 'stopped', then there MUST be an error reason among the values in the "printer-state-reasons" attribute.
- 2233 The following standard keyword values are defined (in alphabetical order):
- 2234 **'other'**: The device has detected an error other than one listed in this document.
- 2235 **'none'**: There are not reasons. This state reason is semantically equivalent to "printer-state-reasons" without  
2236 any value and MUST be used, since the 1setOf attribute syntax requires at least one value.
- 2237 **'connecting-to-device'**: The Printer object has scheduled a job on the output device and is in the process of  
2238 connecting to a shared network output device (and might not be able to actually start printing the job  
2239 for an arbitrarily long time depending on the usage of the output device by other servers on the  
2240 network).
- 2241 **'cover-open'**: One or more covers on the device are open.
- 2242 **'deactivated'**: A client has issued a Deactivate-Printer operation for the Printer object (see [adm-ops]  
2243 section 3.4.1) and the Printer is in the process of becoming deactivated or has become deactivated.  
2244 The Printer MUST reject all requests except Activate-Printer, queries (Get-Printer-Attributes, Get-  
2245 Job-Attributes, Get-Jobs, etc.), Send-Document, and Send-URI (so that partial job submission can  
2246 be completed - see [adm-ops] section 3.1.1) and return the 'server-error-service-unavailable' status  
2247 code.
- 2248 **'developer-empty'**: The device is out of developer.
- 2249 **'developer-low'**: The device is low on developer.
- 2250 **'door-open'**: One or more doors on the device are open.
- 2251 **'fuser-over-temp'**: The fuser temperature is above normal.
- 2252 **'fuser-under-temp'**: The fuser temperature is below normal.
- 2253 **'hold-new-jobs'**: The operator has issued the Hold-New-Jobs operation (see [adm-ops] section 3.3.1) or  
2254 other means, but the output-device(s) are taking an appreciable time to stop. Later, when all output  
2255 has stopped, the "printer-state" becomes 'stopped', and the 'paused' value replaces the 'moving-to-  
2256 paused' value in the "printer-state-reasons" attribute. This value MUST be supported, if the Hold-  
2257 New-Jobs operation is supported and the implementation takes significant time to pause a device in  
2258 certain circumstances.
- 2259 **'input-tray-missing'**: One or more input trays are not in the device.
- 2260 **'interlock-open'**: One or more interlock devices on the printer are unlocked.
- 2261 **'interpreter-resource-unavailable'**: An interpreter resource is unavailable (i.e. font, form)
- 2262 **'marker-supply-empty'**: The device is out of at least one marker supply. (e.g. toner, ink, ribbon)
- 2263 **'marker-supply-low'**: The device is low on at least one marker supply. (e.g. toner, ink, ribbon)
- 2264 **'marker-waste-almost-full'**: The device marker supply waste receptacle is almost full.
- 2265 **'marker-waste-full'**: The device marker supply waste receptacle is full.
- 2266 **'media-empty'**: At least one input tray is empty.
- 2267 **'media-jam'**: The device has a media jam.
- 2268 **'media-low'**: At least one input tray is low on media.
- 2269 **'media-needed'**: A tray has run out of media.
- 2270 **'moving-to-paused'**: Someone has paused the Printer object using the Pause-Printer operation (see  
2271 [rfc2911] section 3.2.7) or other means, but the device(s) are taking an appreciable time to stop.

- 2272 Later, when all output has stopped, the "printer-state" becomes 'stopped', and the 'paused' value  
 2273 replaces the 'moving-to-paused' value in the "printer-state-reasons" attribute. This value MUST be  
 2274 supported, if the Pause-Printer operation is supported and the implementation takes significant time  
 2275 to pause a device in certain circumstances.
- 2276 **'opc-life-over'**: The optical photo conductor is no longer functioning.
- 2277 **'opc-near-eol'**: The optical photo conductor is near end of life.
- 2278 **'output-area-almost-full'**: One or more output area is almost full (e.g. tray, stacker, collator).
- 2279 **'output-area-full'**: One or more output area is full. (e.g. tray, stacker, collator)
- 2280 **'output-tray-missing'**: One or more output trays are not in the device
- 2281 **'paused'**: Someone has paused the Printer object using the Pause-Printer operation (see [rfc2911] section  
 2282 3.2.7) or other means and the Printer object's "printer-state" is 'stopped'. In this state, a Printer  
 2283 MUST NOT produce printed output, but it MUST perform other operations requested by a client. If a  
 2284 Printer had been printing a job when the Printer was paused, the Printer MUST resume printing that  
 2285 job when the Printer is no longer paused and leave no evidence in the printed output of such a  
 2286 pause. This value MUST be supported, if the Pause-Printer operation is supported.
- 2287 **'shutdown'**: Someone has removed a Printer object from service, and the device may be powered down or  
 2288 physically removed. In this state, a Printer object MUST NOT produce printed output, and unless the  
 2289 Printer object is realized by a print server that is still active, the Printer object MUST perform no other  
 2290 operations requested by a client, including returning this value. If a Printer object had been printing a  
 2291 job when it was shutdown, the Printer NEED NOT resume printing that job when the Printer is no  
 2292 longer shutdown. If the Printer resumes printing such a job, it may leave evidence in the printed  
 2293 output of such a shutdown, e.g. the part printed before the shutdown may be printed a second time  
 2294 after the shutdown.
- 2295 **'spool-area-full'**: The limit of persistent storage allocated for spooling has been reached. The Printer is  
 2296 temporarily unable to accept more jobs. The Printer will remove this value when it is able to accept  
 2297 more jobs. This value SHOULD be used by a non-spooling Printer that only accepts one or a small  
 2298 number jobs at a time or a spooling Printer that has filled the spool space.
- 2299 **'stopped-partly'**: When a Printer object controls more than one output device, this reason indicates that one  
 2300 or more output devices are stopped. If the reason is a report, fewer than half of the output devices  
 2301 are stopped. If the reason is a warning, fewer than all of the output devices are stopped.
- 2302 **'stopping'**: The Printer object is in the process of stopping the device and will be stopped in a while. When  
 2303 the device is stopped, the Printer object will change the Printer object's state to 'stopped'. The  
 2304 'stopping-warning' reason is never an error, even for a Printer with a single output device. When an  
 2305 output-device ceases accepting jobs, the Printer will have this reason while the output device  
 2306 completes printing.
- 2307 **'timed-out'**: The server was able to connect to the output device (or is always connected), but was unable to  
 2308 get a response from the output device.
- 2309 **'toner-empty'**: The device is out of toner.
- 2310 **'toner-low'**: The device is low on toner.

## 2311 10 New Values for Existing Printer Description Attributes

2312 This section contains those attributes for which additional values are added.

### 2313 10.1 operations-supported (1setOf type2 enum)

2314 The following "operation-id" values are added in order to support the new operations defined in this document:

2315

**Table 15 – Operation-id assignments**

Value	Operation Name	Reference
<u>0x000F</u>	<u>Close-Job</u>	<u>[this-spec] §4.3</u>
0x0033	Cancel-Documents	[this-spec] §3.8
0x0034	Get-Documents-Attributes	[this-spec] §3.5
0x0035	Get-Documents	[this-spec] §3.6
0x0036	Delete-Documents	[this-spec] §3.9
0x0037	Set-Documents-Attributes	[this-spec] §3.7
0x0039	Create-Documents	[this-spec] §3.1
0x003A	Send-Document-Data	[this-spec] §3.2

2316

2317 **11 Encodings of Additional Attribute Tags**

2318 This section assigns values to an attributes tags as an extension to the encoding defined in [rfc2910].

2319 The “document-attributes-tag” delimits Document Template Attributes Groups in requests and Document Attributes  
 2320 Groups in responses.

2321 The following table specifies the values for the delimiter tag:

<u>Tag Value (Hex)</u>	<u>Meaning</u>
<u>0x09</u>	<u>“document-attributes-tag”</u>

2322

2323 **12 Conformance Requirements**

2324 This section specifies the conformance requirements for Printers and clients.

2325 **12.1 Printer conformance requirements**

2326 In order to conform to this specification, a Printer:

- 2327 1. MUST meet the conformance requirements for Printers specified in [rfc2911].
- 2328 2. MUST support the Create-Job operation as specified in [rfc2911], even though a Printer NEED NOT support
- 2329 the Create-Job operation in order to conform to [rfc2911].
- 2330 3. MUST support the Document operations that section 3 REQUIRES a Printer to support.
- 2331 4. MUST support the Close-Job Job operation as defined in section 4.3.
- 2332 5. MUST support the operation attributes in the Send-Documents operation and, if supported, the Send-URI
- 2333 operation that section 6 REQUIRES a Printer to support.
- 2334 6. MAY support any of the Document Template attributes in Document Creation operations as indicated in
- 2335 section 7 and MUST NOT support them for contexts for where they are not defined as indicated in the Table
- 2336 9 with an “n”.

- 2337 7. MUST support the Document Description attributes that section 8 REQUIRES a Printer to support.
- 2338 8. MUST support the Printer attributes that section 8.2.1 REQUIRES a Printer to support.
- 2339 9. MUST support the values of Printer Descriptions attribute that section 10 REQUIRES a Printer to support.

## 2340 12.2 Client conformance requirements

2341 In order to conform to this specification, a client:

- 2342 1. MUST meet the conformance requirements for clients specified in [rfc2911]
- 2343 2. MAY support any of the Document operations defined in section 3.
- 2344 3. MUST supply the operation attributes that section 6 REQUIRES a client to supply in operation requests.
- 2345 4. MUST supply any Document Template attributes in the format that section 7 REQUIRES a client to supply in  
2346 Document Creation operations and MUST NOT support them for contexts for where they are not defined as  
2347 indicated in the Table 9 with an "n".
- 2348 5. SHOULD support any of the Document Description attributes that section 8 REQUIRES a Printer to support.
- 2349 6. MAY support any of the Printer attributes listed in section 8.2.1.
- 2350 7. MAY support any of the values of the Printer Descriptions attributes in section 10.

## 2351 13 Normative References

2352 Note: The references in the body of this IEEE-ISTO document use the more reader-friendly mnemonic symbols  
2353 below, rather than the RFC number (except for [rfc2910] and [rfc2911]). IETF RFCs and IANA registrations require  
2354 using the RFC numbers in the body of the document for references.

2355 [adm-ops]

2356 Kugler, C, Hastings, T., Lewis, H., "Internet Printing Protocol (IPP): Job and Printer Administrative  
2357 Operations", <draft-ietf-ipp-ops-set2-03.txt>, July 17, 2001.

2358 [coll]

2359 deBry, R., Hastings, T., Herriot, R., Ocke, K., and P. Zehler, "Internet Printing Protocol (IPP): The 'collection'  
2360 attribute syntax", <draft-ietf-ipp-collection-05.txt>, work in progress, July 17, 2001.

2361 [~~finish~~ [pwg5100.1](#)]

2362 Hastings, T., Fullman, D., "Internet Printing Protocol (IPP): "finishings" attribute values extension", IEEE-ISTO  
2363 5100.1-2001, February 5, 2001, ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.1.pdf

2364 [get-method]

2365 Herriot, R., and T. Hastings, "Internet Printing Protocol (IPP): The 'ippget' Delivery Method for Event  
2366 Notifications", <draft-ietf-ipp-notify-get-08.txt>, September 5, 2002.

- 2367 [rfc3381]  
2368 Hastings, T., Lewis, H., and R. Bergman, "Internet Printing Protocol (IPP): Job Progress Attributes",  
2369 RFC3381, September 2002.
- 2370 [pwg5101.1]  
2371 IEEE-ISTO PWG 5101.1-2002, "The Printer Working Group Standard for Media Standardized Names", 26  
2372 February 2002, ftp://ftp.pwg.org/pub/pwg/standards/pwg5101.1.pdf, .doc, .rtf
- 2373 [not-srv]  
2374 Hastings, T., Lewis, H., and Ira McDonald, "Distributed Notification Server", September 26, 2002, work in  
2375 progress to become IEEE-ISTO 5100.6-2002, ftp://ftp.pwg.org/pub/pwg/ipp/new\_NOT/ipp-dist-not-service-  
2376 020926.doc
- 2377 [ntfy]  
2378 Herriot, R., Hastings, T., Shepherd, M., deBry, R., Isaacson, S., Martin, J., and R. Bergman, "Internet Printing  
2379 Protocol/1.1: Event Notifications and Subscriptions", <draft-ietf-ipp-not-spec-08.txt>, November 19, 2001.
- 2380 [output-binpwg5100.2]  
2381 Hastings, T., and R. Bergman, "Internet Printing Protocol (IPP): output-bin attribute extension", IEEE-ISTO  
2382 5100.2-2001, February 7, 2001, ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.2.pdf.
- 2383 [overridepwg5100.4]  
2384 Herriot, R., Ocke, K., "Internet Printing Protocol (IPP): Override Attributes for Documents and Pages", IEEE-  
2385 ISTO 5100.4-2001, February 7, 2001, ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.4.pdf.
- 2386 [prod-printpwg5100.3]  
2387 Ocke, K., Hastings, T., "Internet Printing Protocol (IPP): Production Printing Attributes - Set1", IEEE-ISTO  
2388 5100.3-2001, February 12, 2001, ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.3.pdf.
- 2389 [prod-print2ippsave] Hastings, T., and D. Fullman, "Internet Printing Protocol (IPP): Production Printing Attributes -  
2390 Set 2", to become a PWG IEEE-ISTO standard, work in progress, August 21, 2002,  
2391 ftp://ftp.pwg.org/pub/pwg/ipp/new\_PPE/pwg-ipp-prod-printpwg5100.3-set2-draft-v0\_1-020821.pdf.
- 2392 [rfc2911]  
2393 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.1: Model and  
2394 Semantics", RFC 2911, September 2000.
- 2395 [set-opsrfc3380]  
2396 Hastings, T., Herriot, R., Kugler, C., and H. Lewis, "Internet Printing Protocol (IPP): Job and Printer Set  
2397 Operations", RFC 3380, September 2002.
- 2398 [upnp]  
2399 Microsoft, "Basic *PrintBasic:1.0* Service Template Version 1.01 For Universal Plug and Play Version 1.0"

## 2400 14 Informative References

- 2401 [fsg-jt]  
2402 Free Software Group, Open Printing Job Ticket API, Visit: <http://www.freestandards.org/openprinting/>

- 2403 [pwg-psi]  
2404 "Print Service Interface (PSI)", work in progress to become a PWG IEEE-ISTO standard. Visit  
2405 <http://www.pwg.org/>.
- 2406 [pwg-sm]  
2407 Zehler, P., and S. Albright, "PWG Semantic Model", work in progress to become a PWG IEEE-ISTO standard,  
2408 version 0.11, September 27, 2002. <ftp://ftp.pwg.org/pub/pwg/Semantic-Model/PWG-Semantic-Model.pdf>
- 2409 [rfc2565]  
2410 Herriot, R., Butler, S., Moore, P., and R. Turner, "Internet Printing Protocol/1.0: Encoding and Transport",  
2411 RFC 2565, April 1999.
- 2412 [rfc2566]  
2413 R. deBry, T. Hastings, R. Herriot, S. Isaacson, and P. Powell, "Internet Printing Protocol/1.0: Model and  
2414 Semantics", RFC 2566, April 1999.
- 2415 [rfc2567]  
2416 Wright, D., "Design Goals for an Internet Printing Protocol", RFC 2567, April 1999.
- 2417 [rfc2568]  
2418 Zilles, S., "Rationale for the Structure and Model and Protocol for the Internet Printing Protocol", RFC 2568,  
2419 April 1999.
- 2420 [rfc2569]  
2421 Herriot, R., Hastings, T., Jacobs, N., Martin, J., "Mapping between LPD and IPP Protocols", RFC 2569, April  
2422 1999.
- 2423 [rfc2616]  
2424 R. Fielding, J. Gettys, J. Mogul, H. Frystyk, L. Masinter, P. Leach, T. Berners-Lee, "Hypertext Transfer  
2425 Protocol - HTTP/1.1", RFC 2616, June 1999.
- 2426 [rfc3196]  
2427 Hastings, T., Manros, C., Zehler, P., Kugler, C., and H. Holst, "Internet Printing Protocol/1.1: Implementer's  
2428 Guide", RFC 3196, November 2001.
- 2429 [rfc3239]  
2430 Kugler, C., Lewis, H. and T. Hastings, "Internet Printing Protocol (IPP): Requirements for Job, Printer, and  
2431 Device Administrative Operations", RFC 3239, February 2002.

## 2432 15 IANA Considerations

2433 This section contains the registration information for IANA to add to the various IPP Registries according to the  
2434 procedures defined in RFC 2911 [rfc2911] section 6 to cover the definitions in this document. The resulting  
2435 registrations will be published in the <http://www.iana.org/assignments/ipp-registrations-registry>.

2436 | *Note to the RFC Editor: Replace the References below to [\[this spec\]](#) with the RFC number for the appropriate*  
2437 *document, so that it accurately reflects the content of the information for the IANA Registry.*

2438 **15.1 Attribute Registrations**

2439 The following table lists all the attributes defined in this document specification. These are to be registered according  
 2440 to the procedures in RFC 2911 [rfc2911] section 6.2. If the attribute has a separate sub-section definition in this  
 2441 specification, that sub-section is listed as the Reference. This specification lists most Job Template attributes as also  
 2442 being Document Template attributes. However, the definitions of these Document Template attributes are not  
 2443 duplicated in this specification. Instead, the Reference column in this sub-section indicates Section 7 which contains  
 2444 a table of all Job Template and corresponding Document Template attributes (including dropping the "job-" prefix).  
 2445 This table contains the reference in another specification that completely defines each attribute. These Document  
 2446 Template attributes will also be added to the IANA IPP Registry under the Document Template attributes with a  
 2447 reference to this specification and Section 7.  
 2448

2449	Attribute Name (attribute syntax)	Reference	Section
2450	-----	-----	-----
2451	Document Description attributes:	<u>Reference:</u>	<u>Section:</u>
2452	attributes-charset (charset)	[this spec]	8.2.1
2453	attributes-natural-language (naturalLanguage)	[this spec]	8.2.2
2454	compression (type3 keyword)	[this spec]	8.2.3
2455	current-page-order (type2 keyword)	[this spec]	8.2.4
2456	date-time-at-completed (dateTime)	[this spec]	8.2.5
2457	date-time-at-creation (dateTime)	[this spec]	8.2.6
2458	date-time-at-processing (dateTime)	[this spec]	8.2.7
2459	detailed-status-message (1setOf text (MAX))	[this spec]	8.2.30
2460	document-access-errors (1setOf text (MAX))	[this spec]	8.2.31
2461	<del>document-format-detail</del> <u>container-summary</u> (collection)		<u>[this</u>
2462	<u>spec]</u> 8.2.8		
2463	<u>document-creator-application-name (name (MAX))</u>	<u>[this spec]</u>	8.2.9
2464	<u>document-creator-application-version (text (127))</u>		
2465		<u>[this spec]</u>	8.2.10
2466	<del>----- (1setOf naturalLanguage)</del>		
2467	<u>document-creator-os-name</u> <del>platform</del> (name ( <del>MAX</del> 40))		<u>[this spec]</u>
2468	8.2.11		
2469	<u>document-creator-os-version (text (40))</u>	<u>[this spec]</u>	8.2.12
2470	document-format (mimeType)	[this spec]	8.2.13
2471	<u>document-format-device-id (text (127))</u>	[this spec]	8.2.15
2472	document-format-version (text (127))	[this spec]	8.2.16
2473	document- <del>format</del> -natural-languages (naturalLanguage)		[this spec]
2474	8.2.23		
2475	<u>document-creator-application-name (name (MAX))</u>	<u>[this spec]</u>	8.2.9
2476	<u>document-creator-application-version (text (127))</u>	<u>[this spec]</u>	8.2.10
2477	<u>document-creator-os-name (name (40))</u>	<u>[this spec]</u>	8.2.11
2478	<u>document-creator-os-version (text (40))</u>	<u>[this spec]</u>	8.2.12
2479	document-format (mimeType)	[this spec]	8.2.13
2480	<del>document-format-details (1setOf collection)</del>	<del>[this spec]</del>	<del>8.2.9.6</del>
2481	document-format-detected (mimeType)	[this spec]	8.2.14
2482	<u>document-format-device-id (text (127))</u>	<u>[this spec]</u>	8.2.15
2483	<u>document-format-version (text (127))</u>	<u>[this spec]</u>	8.2.16
2484	document-id-uri (uri)	[this spec]	8.2.17

2485	document-job-id (integer(1:MAX))	[this spec]	8.2.18
2486	document-job-printer-uri (uri)	[this spec]	8.2.19
2487	document-job-uri (uri)	[this spec]	8.2.20
2488	document-message (text(MAX))	[this spec]	8.2.21
2489	document-name (name(MAX))	[this spec]	8.2.22
2490	document-natural-language (naturalLanguage)	[this spec]	8.2.23
2491	document-number (integer(0:MAX))	[this spec]	8.2.24
2492	document-state (type1 enum)	[this spec]	8.2.25
2493	document-state-message (text(MAX))	[this spec]	8.2.26
2494	document-state-reasons (1setOf type2 keyword)	[this spec]	8.2.27
2495	document-uri (uri)	[this spec]	8.2.28
2496	impressions (integer(0:MAX))	[this spec]	8.2.32
2497	impressions-completed (integer(0:MAX))	[this spec]	8.2.33
2498	impressions-completed-current-copy (integer(0:MAX))		
2499		[this spec]	8.2.29
2500	<del>job-printer-uri (uri)</del>	<del>[this spec]</del>	<del>0</del>
2501	k-octets (integer(0:MAX))	[this spec]	8.2.34
2502	k-octets-processed (integer(0:MAX))	[this spec]	8.2.35
2503	last-document (boolean)	[this spec]	8.2.41
2504	media-sheets (integer(0:MAX))	[this spec]	8.2.36
2505	media-sheets-completed (integer(0:MAX))	[this spec]	8.2.37
2506	more-info (uri)	[this spec]	8.2.38
2507	output-device-assigned (name(127))	[this spec]	8.2.42
2508	printer-up-time (integer (1:MAX))	[this spec]	8.2.39
2509	sheet-completed-copy-number (integer(0:MAX))	[this spec]	8.2.43
2510	time-at-completed (integer (MIN:MAX))	[this spec]	8.2.44
2511	time-at-creation (integer (MIN:MAX))	[this spec]	8.2.45
2512	time-at-processing (integer (MIN:MAX))	[this spec]	8.2.46
2513	warnings-count (integer(0:MAX))	[this spec]	8.2.40
2514			
2515			
2516	Document Templates attributes:	<del>Reference:</del>	<del>Section:</del>
2517	<b>ISSUE 15:</b> TBD - Need to add the xxx-default and xxx-supported for each.		
2518	copies (integer(1:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2519	cover-back (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2520	cover-type (type2 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2521	media (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2522	media-col (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2523	cover-front (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2524	cover-type (type2 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2525	media (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2526	media-col (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2527	feed-orientation (type3 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2528	finishings (1setOf type2 enum)	[ <a href="#">this spec</a> ]	<u>7</u>
2529	finishings-col (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2530	finishing-template (name(MAX))	[ <a href="#">this spec</a> ]	<u>7</u>

2531	stitching (collection)	[ <a href="#">this spec</a> ]	7
2532	stitching-locations (1setOf integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2533	stitching-offset (integer (0:MAX))	[ <a href="#">this spec</a> ]	7
2534	stitching-reference-edge (type2 keyword)	[ <a href="#">this spec</a> ]	7
2535	font-name-requested (name(MAX))	[ <a href="#">this spec</a> ]	7
2536	font-size-requested (integer(1:MAX))	[ <a href="#">this spec</a> ]	7
2537	force-front-side (1setOf integer(1:MAX))	[ <a href="#">this spec</a> ]	7
2538	imposition-template (type2 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2539	insert-sheet (1setOf collection)	[ <a href="#">this spec</a> ]	7
2540	insert-after-page-number (integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2541	insert-count (integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2542	media (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2543	media-col (collection)	[ <a href="#">this spec</a> ]	7
2544	media (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2545	media-col (collection)	[ <a href="#">this spec</a> ]	7
2546	media-back-coating (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2547	media-color (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2548	media-front-coating (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2549	media-hole-count (integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2550	media-info (text(255))	[ <a href="#">this spec</a> ]	7
2551	media-key (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2552	media-order-count (integer(1:MAX))	[ <a href="#">this spec</a> ]	7
2553	media-preprinted (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2554	media-recycled (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2555	media-size (collection)	[ <a href="#">this spec</a> ]	7
2556	x-dimension (integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2557	y-dimension (integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2558	media-type (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2559	media-weight-metric (integer(0:MAX))	[ <a href="#">this spec</a> ]	7
2560	media-input-tray-check (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2561		[ <a href="#">this spec</a> ]	7
2562	number-up (integer(1:MAX))	[ <a href="#">this spec</a> ]	7
2563	orientation-requested (type2 enum)	[ <a href="#">this spec</a> ]	7
2564	output-bin (type2 keyword   name(MAX))	[ <a href="#">this spec</a> ]	7
2565	page-delivery (type2 keyword)	[ <a href="#">this spec</a> ]	7
2566	page-order-received (type2 keyword)	[ <a href="#">this spec</a> ]	7
2567	page-overrides (1setOf collection)	[ <a href="#">this spec</a> ]	7
2568	document-copies (1setOf rangeOfInteger(MAX))	[ <a href="#">this spec</a> ]	7
2569	input-documents (1setOf rangeOfInteger(MAX))	[ <a href="#">this spec</a> ]	7
2570	output-documents (1setOf rangeOfInteger(MAX))	[ <a href="#">this spec</a> ]	7
2571	pages (1setOf rangeOfInteger(MAX))	[ <a href="#">this spec</a> ]	7
2572	<any other Job Template attributes that affect pages,		
2573	such as media or media-col>		
2574	page-ranges (1setOf rangeOfInteger(1:MAX))	[ <a href="#">this spec</a> ]	7
2575	pages-per-subset (1setOf integer(1:MAX))	[ <a href="#">this spec</a> ]	7
2576	presentation-direction-number-up (type2 keyword)	[ <a href="#">this spec</a> ]	7

2577	print-quality (type2 enum)	[ <a href="#">this spec</a> ]	<u>7</u>
2578	printer-resolution (resolution)	[ <a href="#">this spec</a> ]	<u>7</u>
2579	separator-sheets (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2580	media (type3 keyword   name(MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2581	media-col (collection)	[ <a href="#">this spec</a> ]	<u>7</u>
2582	separator-sheets-type (type3 keyword   name(MAX))		
2583		[ <a href="#">this spec</a> ]	<u>7</u>
2584	sheet-collate (type2 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2585	sides (type2 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2586	x-image-position (type2 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2587	x-image-shift (integer(MIN:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2588	x-side1-image-shift (integer(MIN:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2589	x-side2-image-shift (integer(MIN:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2590	y-image-position (type2 keyword)	[ <a href="#">this spec</a> ]	<u>7</u>
2591	y-image-shift (integer(MIN:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2592	y-side1-image-shift (integer(MIN:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>
2593	y-side2-image-shift (integer(MIN:MAX))	[ <a href="#">this spec</a> ]	<u>7</u>

2594  
2595

2596 Job Template attributes:

2597 **ISSUE 16:** TBD - Need to add the xxx-default and xxx-supported.  
2598 ~~Reference: Section:~~

2599	job-copies (integer(1:MAX))	[this spec]	7.1.1
2600	job-cover-back (collection)	[this spec]	7.1.2
2601	<member attributes are the same as "cover-back">		
2602	job-cover-front (collection)	[this spec]	7.1.3
2603	<member attributes are the same as "cover-front">		
2604	job-finishings (1setOf type2 enum)	[this spec]	7.1.4
2605	job-finishings-col (1setOf collection)	[this spec]	7.1.5
2606	<member attributes are the same as "finishings-col">		
2607	<u>media-size-name (type3 keyword   name(MAX))</u>	[ <a href="#">this spec</a> ]	<u>7.1.6</u>
2608	<u>media-type (type3 keyword   name(MAX))</u>	[ <a href="#">this spec</a> ]	<u>7.1.7</u>

2609  
2610

2611 Printer Description attributes: ~~Reference:~~  
2612 ~~Section:~~

2613	document-creation-attributes-supported (1setOf type2 keyword)		
2614		[this spec]	9.1

2615  
2616

2617	Operation attributes: <del>Reference:</del> <del>Section:</del>		
2618	document-message (text(MAX))	[this spec]	3.8.1.1
2619	job-mandatory-attributes (1setOf type2 keyword)	[this spec]	4.4.2
2620	last-document (boolean)	[this spec]	0

2621

2622 **15.2 Keyword attribute values**

2623 **ISSUE 17: TBD - Need to list the keyword attribute values. Do so by reference to the values registered for**  
 2624 **corresponding attributes.**

2625 **15.3 Additional Enum Attribute Value Registrations**

2626 The following table lists all the new enum attribute values defined in this document as additional type2 enum values.  
 2627 These are to be registered according to the procedures in RFC 2911 [rfc2911] section 6.1.

Value	Name	Reference	Section:
-----	-----	-----	-----
document-state	(type1 enum)	[this spec]	8.2.25
3	pending	[this spec]	8.2.25
5	processing	[this spec]	8.2.25
7	canceled	[this spec]	8.2.25
8	aborted	[this spec]	8.2.25
9	completed	[this spec]	8.2.25
job-finishings	(1setOf type2 enum)	[this spec]	7.1.4
<enum values are the same as "finishings">			
operations-supported	(type2 enum)	[rfc2911]	4.4.15
<u>0x000F</u>	<u>Close-Job</u>	<u>[this spec]</u>	<u>4.3</u>
0x0033	Cancel-Document	[this spec]	3.8
0x0034	Get-Document-Attributes	[this spec]	3.5
0x0035	Get-Documents	[this spec]	3.6
0x0036	Delete-Document	[this spec]	3.9
0x0037	Set-Document-Attributes	[this spec]	3.7
0x0039	Create-Document	[this spec]	3.1
0x003A	Send- <u>Document</u> -Data	[this spec]	3.2

2651 **15.4 Operation Registrations**

2652 The following table lists all of the operations defined in this document. These are to be registered according to the  
 2653 procedures in RFC 2911 [rfc2911] section 6.4.

Operations	Reference	Section
-----	-----	-----
Cancel-Document	[this spec]	3.8
<u>Close-Job</u>	<u>[this spec]</u>	<u>4.3</u>
<u>Create-Document</u>	<u>[this spec]</u>	<u>3.1</u>
<u>Delete-Document</u>	<u>[this spec]</u>	<u>3.9</u>
Get-Document-Attributes	[this spec]	3.5
Get-Documents	[this spec]	3.6
<del>Delete-Document</del>	<del>[this spec]</del>	<del>3.9</del>
<u>Send-Document-Data</u>	<u>[this spec]</u>	<u>3.2</u>



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2705 **21 Appendix A: Document operations compared to Job operations**

2706 This appendix compares the Document operations with the existing Job operations to show the parallelism.

2707 Table 16 compares the Job and Document operations. The two Conf. columns indicate the conformance  
 2708 requirements (REQUIRED = REQ, OPTIONAL = OPT) for the Job and Document operations respectively. A “REQ”  
 2709 in the Document Conformance column means if the Document object is supported. Whether a Document operation  
 2710 is a method on the Job object or the Document object depends on the modeling regime and is not an essential part  
 2711 of the semantics described here, since these semantics are intended to apply to both to object-oriented and object-  
 2712 based protocols, APIs, and implementations.

2713 **Table 16 - Document operations compared to Job operations**

Job operations	Job Conf.	Document operations	Doc Conf
<b>Cancel-Current-Job</b>	OPT	<i>N/A, can only cancel a document explicitly by document number and explicit job id.</i>	OPT
<b>Cancel-Job</b>	REQ	<b>Cancel-Document</b>	REQ
<b>Create-Job</b>	OPT	<b>Create-Document</b>	REQ
<b>Get-Job-Attributes</b>	REQ	<b>Get-Document-Attributes</b>	REQ
<b>Get-Jobs</b>	REQ	<b>Get-Documents</b>	REQ
<b>Hold-Job</b>		<i>N/A, can only hold an entire job.</i>	
<b>Print-Job</b>	REQ	<b>Send-Document</b> (existing operation - see [rfc2911] with an additional Document attributes group defined in section 3.3)	REQ <sup>57</sup>
<b>Print-URI</b>	OPT	<b>Send-URI</b> (existing operation - see [rfc2911] with an additional Document attributes group defined in section 3.4)	OPT
<i>N/A</i>		<b>Send-Document-Data</b>	REQ
<b>Promote-Job</b>	OPT	<i>N/A, can only promote an entire job</i>	
<b>Purge-Jobs</b>	OPT	<b>Delete-Document</b>	OPT
<b>Release-Held-New-Jobs</b>	OPT	<i>N/A, can only release entire jobs</i>	
<b>Release-Job</b>	OPT	<i>N/A, can only release an entire job</i>	
<b>Reprocess-Job</b>	OPT	<i>N/A, can only reprocess an entire job</i>	
<b>Restart-Job</b>	OPT	<i>N/A, can only restart an entire job</i>	
<b>Resume-Job</b>	OPT	<i>N/A, can only resume an entire job</i>	
<b>Schedule-Job-After</b>	OPT	<i>N/A, can only schedule an entire job</i>	
<b>Set-Job-Attributes</b>	OPT	<b>Set-Document-Attributes</b>	OPT
<b>Suspend-Current-Job</b>	OPT	<i>N/A, can only suspend an entire job in order to run another one</i>	
<b>Validate-Job</b>	REQ	<i>N/A, use Validate-Job to validate a single document or use Create-Job with “ipp-attribute-fidelity” = ‘true’ and Create-Document request to validate a multi-document job.</i>	REQ

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<sup>57</sup> The Send-Document operation is OPTIONAL for a Printer to conform to [rfc2911], but is REQUIRED for a Printer to conform to this Document object specification.

## 22 Annex B: Change Log (informative)

The following summaries of the changes in chronological order:

Version 0.3, 9 September 2002:

1. Reformatted as an IEEE-ISTO standard and added the usual sections for a standard.
2. Added "original-requesting-user-name" Operation attribute to Table 6.
3. Added "y" to "output-bin" in Table 8 so it MAY be a Document Template attribute.
4. Clarified the \* and in Table 9 - Job and Document Description attributes.
5. Added section 8.2.1 all of the Printer attributes defined In any IPP standard.
6. Allocated operation-id enums in section 10 to the 7 Document operations.
7. Added the conformance section 12
8. Completed the IANA Considerations section 15.

Version 0.4, 14 October 2002:

1. Added the operation specifications.
2. Added the Create-Document and Send-Data to be more parallel with Jobs and support PWG PSI.
3. Resolved the 15 issues in version 0.3 as discussed on the mailing list.
4. Added the Attribute Precedence section 5.
5. Added [~~prod-print2~~ippsave] attributes.
6. Added job-mandatory-attributes, job-cover-back, job-cover-front, job-copies, job-finishings, job-finishings-col, document-id-uri, and redirect-uri.

Version 0.5, 25 October 2002, as a result of the PWG Semantic Model telecon, October 24, 2002:

1. Fixed the title to say "Proposed Standard" and removed the 5100.n number until the document is approved by the PWG Last Call to progress as a Draft Standard.
2. Changed Cancel-Document from OPTIONAL to REQUIRED.
3. Added Table 3 and Table 4 to show the request and response signatures of the Document Creation and Validation operations.
4. Renamed the "document-number" operation attribute to "input-document-number", to agree with [~~overridepwg5100.4~~] and because the Document object is really the Input Document (as opposed to the Output Document). The Printer copies this value to the Document's "document-number" Document Description attribute.
5. Clarified that the Printer MUST reject a Create-Document request if the "document-number" already exists.
6. Clarified that the client cannot supply Subscription attributes in any Document Creation requests.
7. Added "document-message" (text(127)) operation attribute to the Document Creation requests to go with the "document-message" agreement (see point #15 ).
8. Fixed Create-Document response to return Job status attributes in Group 3 and Document status attributes in Group 4.
9. Required the Printer to return just the "document-number" and "document-id-uri" (uri) Document Description attribute in a Document Creation response.
10. Added the "document-mandatory-attributes" operation attribute.
11. Separated the returned Job status attributes and the Document status attributes into two groups, one Job Attributes and the other Document attributes.
12. Allowed the client to supply or omit the "document-uri" operation attribute in a Validate-Job request.
13. Clarified that the "document-number" operation attribute MUST follow the Printer and Job Target in Group 1.
14. Changed the Get-Documents response when there is no "requested-attributes" to simply "document-number" and "document-id-uri" to be parallel with the Get-Jobs operation.
15. Changed the "message" operation attribute in Cancel-Document and Cancel-Current-Document to "document-message" operation attribute which the Printer copies to the "document-message" Document Description attribute for use both by the user and the operator.
16. Clarified that the "document-state-reasons" values never affect Job scheduling.
17. Made Job Level - page override programming higher precedence than Document level Document object attributes.

- 2768 18. Clarified PDL document data precedence and its relationship to Job Template attributes ending with “-  
2769 requested”.
- 2770 19. In Table 6, flagged the operation attributes that the Printer copies to the corresponding Job and Document  
2771 Description attributes in Document Creations operations.
- 2772 20. Fixed “job-mandatory-attributes” operation attribute so its only supplied at Job level, now that we have  
2773 “document-mandatory-attributes” operation attribute.
- 2774 21. Clarified that “ipp-attribute-fidelity” can be supplied at both the Job and Document Levels and how it interacts  
2775 with “job-mandatory-attributes” and “document-mandatory-attributes” operation attributes.
- 2776 22. Disallowed “output-bin” at the Document Level (and Page Level). It subsets the single stream of Input-Pages  
2777 across Input-Documents.
- 2778 23. Disallowed “page-ranges” at the Page Level.
- 2779 24. Disallowed “pages-per-subset” at the Document level (and Page Level).
- 2780 25. Disallowed “separator-sheets” at the Page Level.
- 2781 26. Added “document-printer-up-time” Document Description attribute for Get-Documents and Get-Documents-  
2782 Attributes responses that the Printer MUST support, just like “job-printer-up-time” operation attribute for Get-  
2783 Jobs and Get-Job-Attributes.

2784  
2785 Version 0.6, 13 January 2003, agreements from New Orleans October PWG meeting and subsequent telecons:

- 2786 1. Deleted the Cancel-Current-Documents and Validate-Documents operations.
- 2787 2. Deprecated the “input-document-number” operation attribute from the Document Creation operations.
- 2788 3. Deleted the “document-mandatory-attributes” operation attribute to align with the PWG Semantic model. So  
2789 both specifications have only the “job-mandatory-attributes” operation attribute. The client can only supply at  
2790 the Job Level. The Document Level inherits from the Job Level.
- 2791 4. Increased “document-message” operation attribute length from 127 to MAX (1023) octets.
- 2792 5. Clarified that “ipp-attribute-fidelity” and “job-mandatory-attributes” can only be supplied at the Job Level; the  
2793 Document level inherits their values.
- 2794 6. Added “ipp-attribute-fidelity” and “job-mandatory-attributes” Job Description attributes.
- 2795 7. Added the “media-size-name” as a member attribute of “media-col” and as a separate Job Template attribute  
2796 as used by UPnPv1 and UPnPv2.
- 2797 8. Added the “media-type” as a Job and Document Template attribute on its own as used by UPnPv1 and  
2798 UPnPv2 (as well as leaving it as a member attribute of the “media-col” Job and Document Template  
2799 attributes).
- 2800 9. Renamed “document-printer-up-time” Document Description attribute to simply “printer-up-time”.
- 2801 10. Added the following Job Description attributes: “ipp-attribute-fidelity”, and “job-mandatory-attributes”.
- 2802 11. Removed the following Document Description attributes: “ipp-attribute-fidelity”.
- 2803 12. Added the following Document Description attributes: “document-format-detail”, “document-format-detected”,  
2804 “job-id”, “job-printer-uri”, “job-uri”, “output-device-assigned”.
- 2805 13. Defined all of the Document Description attributes, often with references to other specifications, so that they  
2806 appear in the table of contents.

2807  
2808 Version 0.6, 14 March 2003, agreements from the Maui January PWG meeting and subsequent telecons:

- 2809 1. Fixed up the file naming and numbering to agree with the latest PWG process agreements.
- 2810 2. Updated the Abstract and Introduction to reflect the additions.
- 2811 3. Fixed cross references to use the standard numbers as agreed, rather than mnemonic references.
- 2812 4. Deprecated the “input-document-number” operation attribute ([pwg5100.4] section 9.2.1 in the Create-  
2813 Document Requests
- 2814 5. Renamed Send-Data to Send-Document-Data to more clearly reflect the scope of the operation.
- 2815 6. Added the REQUIRED Close-Job operation to close a job that contains Document objects. Using “last-  
2816 document” still works too and the Printer MUST support both ways.
- 2817 7. Retained the idea that the Printer MUST NOT copy down any attributes supplied in the Job Creation  
2818 operation to the Document object as observable in Document object query responses. Document objects  
2819 inherit that effect from the Job object.
- 2820 8. Added the following operation and Document Description attributes: document-container-summary  
2821 (collection), document-creator-application-name (name(MAX)), document-creator-application-version  
2822 (text(127)), document-creator-os-name (name(40)), document-creator-os-version (text(40)), document-

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- format-device-id (text(127)), document-format-version (text(127)). The “document-container-summary” collection attribute may contain them, plus “document-format” and “document-natural-language”.
9. REQUIRED Printers to support “document-format-version” Document Description.
  10. Deprecated “document-overrides” and indicated that the agreement is to re-issue [pwg5100.4] without “document-overrides”.
  11. Prefixed the following three Document Description attributes that are copies of Job Description attributes with “document-“ so that no Document attribute has a “job-“ prefix: “job-printer-uri” becomes “document-job-printer-uri”, “job-uri” becomes “document-job-uri”, and “job-id” becomes “document-job-id”.
  12. Added the encoding for the “document-attributes-tag” as 0x09.
  13. Updated the IANA Registration section, but still needs more work.