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Internet Printing Protocol (IPP)~~/1.0 & 1.1~~: Override Attributes for Documents and Pages

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Abstract

This document specifies an extension to the Internet Printing Protocol/1.0 (IPP) [RFC2565, RFC2566] and IPP/1.1 [ipp-mod, ipp-pro]. This extension relaxes the restriction that each attribute value is the same for all pages, all documents and all document copies within a job. For example, with this extension, page 1 of a job could have a different media from the other pages in the job or document 2 of a job could be stapled while the other documents of the job are not. As another example, the first ten copies of a document could be printed on letter paper and stapled while the eleventh copy of the same document could be printed on transparencies with no staple.

This extension supports document overrides and page overrides by adding two new Job Template attributes: “document-overrides” and “page-overrides” -- both have a syntax type of “1setOf collection”. Each ‘collection’ value for “document-overrides” contains an attribute that identifies the overridden documents, namely “input-documents” or “output-documents”. The ‘collection’ value also contains one or more attributes that are overrides

32 for the identified documents, e.g. “document-format”, “finishings”, and “media”. Each ‘collection’ value for “page-
33 overrides” contains two attributes that identify the overridden pages, namely “input-documents” or “output-
34 documents” plus “pages”. The ‘collection’ value also contains one or more attributes that are overrides for the
35 identified pages, e.g. “sides” and “media”. When the overrides apply to some but not all document copies, the
36 ‘collection’ value for “document-overrides” or “page-overrides” contains the attribute of “document-copies”.

37

38 This extension also supports subset finishing by adding a new Job Template attribute “pages-per-subset”, which
39 specifies the number of pages per subset. The extension allows finishing and other document attributes to be
40 applied to such subsets of pages.

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42 provisions of the PWG Process (see <http://www.pwg.org/chair/pwg-process-990825.pdf>). PWG-Drafts are
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83
84
85 ~~The full set of IPP documents includes:~~

86 ~~-Design Goals for an Internet Printing Protocol [RFC2567]~~

87 ~~-Rationale for the Structure and Model and Protocol for the Internet Printing Protocol [RFC2568]~~

88 ~~-Internet Printing Protocol/1.1: Model and Semantics (this document)~~

89 ~~-Internet Printing Protocol/1.1: Encoding and Transport [IPP-PRO]~~

90 ~~-Internet Printing Protocol/1.1: Implementer's Guide [IPP-IIG]~~

91 ~~-Mapping between LPD and IPP Protocols [RFC2569]~~

92 ~~The "Design Goals for an Internet Printing Protocol" document takes a broad look at distributed printing~~
93 ~~functionality, and it enumerates real-life scenarios that help to clarify the features that need to be included in a~~
94 ~~printing protocol for the Internet. It identifies requirements for three types of users: end users, operators, and~~
95 ~~administrators. It calls out a subset of end-user requirements that are satisfied in IPP/1.0. A few OPTIONAL~~
96 ~~operator operations have been added to IPP/1.1.~~

97 ~~The "Rationale for the Structure and Model and Protocol for the Internet Printing Protocol" document describes~~
98 ~~IPP from a high level view, defines a roadmap for the various documents that form the suite of IPP specification~~
99 ~~documents, and gives background and rationale for the IETF working group's major decisions.~~

100 ~~The "Internet Printing Protocol/1.1: Encoding and Transport" document is a formal mapping of the abstract~~
101 ~~operations and attributes defined in the model document onto HTTP/1.1 [RFC2616]. It defines the encoding rules~~
102 ~~for a new Internet MIME media type called "application/ipp". This document also defines the rules for transporting~~
103 ~~over HTTP a message body whose Content-Type is "application/ipp". This document defines a new scheme~~
104 ~~named 'ipp' for identifying IPP printers and jobs.~~

105 ~~The "Internet Printing Protocol/1.1: Implementer's Guide" document gives insight and advice to implementers of~~
106 ~~IPP clients and IPP objects. It is intended to help them understand IPP/1.1 and some of the considerations that~~

107 ~~may assist them in the design of their client and/or IPP object implementations. For example, a typical order of~~
108 ~~processing requests is given, including error checking. Motivation for some of the specification decisions is also~~
109 ~~included.~~

110 ~~The "Mapping between LPD and IPP Protocols" document gives some advice to implementers of gateways~~
111 ~~between IPP and LPD (Line Printer Daemon) implementations.~~

112

112

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213 1. Introduction

214 The Internet Printing Protocol (IPP) is an application level protocol for distributed printing using Internet tools and
215 technologies. IPP version 1.1 (IPP/1.1) requires that each attribute value be the same for all all pages, all
216 documents and all document copies within a job. This document defines OPTIONAL extensions to the IPP/1.1
217 model which relax this restriction and allow pages, documents and document copies to have attributes that are
218 overrides. For example, with this extension, page 1 of a job could have a different media or different value of
219 “sides” from the other pages in the job, or document 2 of a job could be stapled while the other documents of the
220 job are not. As another example, the first ten copies of a document could be printed on letter paper and stapled
221 while the eleventh copy of the same document could be printed on transparencies with no staple. This document is
222 a proposal for an extension to IPP/1.0 and IPP/1.1.

223

224 This extension supports document overrides and page overrides by adding two new Job Template attributes:
225 “document-overrides” and “page-overrides” -- both have a syntax type of “1setOf collection”. Each ‘collection’
226 value for “document-overrides” contains

- 227 a) an attribute that identifies the overridden documents, namely “input-documents” or “output-
228 documents”.
- 229 b) an OPTIONAL attribute that identifies the document copies of the specified overridden documents, i.e.
230 “document-copies”. If this attribute is absent, the overrides apply to all document copies.
- 231 c) one or more attributes that are overrides for the identified documents, e.g. “document-format”,
232 “finishings”, and “media”.

233

234 Each ‘collection’ value for “page-overrides” contains

- 235 a) an attribute that identifies the documents containing the overridden pages, namely “input-documents”
236 or “output-documents”.
- 237 b) an attribute that identifies the overridden pages, namely “pages”.
- 238 c) an OPTIONAL attribute that identifies the document copies of the specified documents, i.e.
239 “document-copies”. If this attribute is absent, the overrides apply to all document copies.
- 240 d) The ‘collection’ value also contains one or more attributes that are overrides for the identified pages,
241 e.g. “sides” and “media”.

242

243 This extension also supports subset finishing with a new Job Template attribute “pages-per-subset”, which specifies
244 the number of pages per subset. The extension allows finishing and other document attributes to be applied to such
245 subsets of pages.

246 2. Terminology

247 This section defines the following additional terms that are used throughout this document:

248 2.1 REQUIRED

249 If an implementation supports the extensions described in this document, it MUST support a REQUIRED feature.

250 **2.2 OPTIONAL**

251 If an implementation supports the extensions described in this document, it MAY support an OPTIONAL feature.

252 **2.3 Override-Extension**

253 The Override-Extension is the extension proposed in this document that adds attribute overrides for documents and
254 pages. This extension supports Document-Overrides, Page-Overrides and Subset-Finishing, which are all defined
255 later in this section.

256 **2.4 Sheet**

257 A Sheet is the unit of media that a printer puts marks on. It is the most basic unit of output from a printer. A printer
258 may mark on one side or on both sides of a sheet.

259 **2.5 Output-Page**

260 An Output-Page is the set of all markings that the author intended to be placed on one side of a Sheet, including,
261 but not limited to, text, drawings, images, footers and headers.

262 **2.6 Impression:**

263 An impression is the set of all markings that the Job submitter intended to be placed on one side of a Sheet. Each
264 impression contains one or more Output-Pages. Generally a Job submitter prints each Output-Page as the author
265 intended, namely one Output-Page per Impression. Sometimes, a Job submitter prints several Output-Pages per
266 Impression, perhaps to save paper or money. The IPP attribute “number-up” specifies the number of Output-
267 Pages per impression. When “number-up” is greater than 1, an impression contains multiple Output-Pages.

268 **2.7 Input-Page**

269 An Input-Page is a sequence of bytes that describe how to mark a single Output-Page. IPP 1.1 [ipp-mod] uses the
270 term “print-stream-pages” to refer to both Input-Pages and Output-Pages. There is a one to one relationship
271 between Input-Pages and Output-Pages and they are in the same order. Both Input-Pages and Output-Pages are
272 numbered sequentially (see section 4.1) starting from 1 at the beginning of each Input-Document or Output-
273 Document, respectively. When the first Input-Page of an Input-Document coincides with the first Output-Page of
274 an Output-Document, the numbering of Input-Pages and Output-Pages coincides; otherwise it doesn't.

275 **2.8 Input-Document**

276 An Input-Document is the entire sequence of bytes transmitted as the Document Content in the Print-Job and
277 Send-Document operations or referenced by the "document-uri" operation attribute in the Print-URI and Send-
278 URI operations. This sequence of bytes consists of one or more Input-Pages.

2.9 Output-Document

An Output-Document is a set of one or more Sheets which either are permanently bound into a single unit, e.g. with a staple, or are intended to be treated by an end-user as a single unit, e.g. for a loose leaf binder. If an Output-Document is bound, it is uniformly bound; if it is not bound, no subset of sheets within it are bound. The Output-Pages that comprise an Output-Document may come from

- a) all the Input-Pages of an Input-Document or
- b) a proper subset of the Input-Pages of the Input-Document or
- c) all the Input-Pages of several Input-Documents.

An Output-Document is *not* a set of sheets that are bound temporarily for shipping, e.g. with banding.

2.10 Output-Document-Copy

When a Printer produces more than one or more copies of an Output-Document, each copy is called an Output-Document-Copy. Sometimes this specification uses the phrase “copy of Output-Document” to emphasize “copy”, but the phrase is equivalent to “Output-Document-Copy”.

2.11 Relationship between Input-Document and Output-Documents

Each relationship is named and defined below. The cases are derived from an analysis of possible tree structures (see section 4.2). A client selects the desired case with the number of submitted Input-Documents and the specific values of three attributes: the existing Job Template “multiple-document-handling” and two new attributes “pages-per-subset” and “documents-per-subset”. The latter two attributes describe how the stream of Input-Pages or Input-Documents and are partitioned into Output-Documents, respectively.

In this section, the number of copies produced for each Output-Document does not affect the discussion, so it is easiest to assume that the number is 1.

The table below summarizes the relationship of Input-Documents to Output-Document in the five cases:

Case	Number of	
	Input-Documents	Output-Documents
Degenerate	1	1
Separate-Documents	n	n
Single-Document	n	1
Page-Subset Documents	n	m (m > n)
Document-Subset Documents	n	m (m < n)

When $n = 1$ for the “Separate-Documents” and “Single-Document” become the “Degenerate” case.

309 The table below summarizes the attribute values that control the cases.

310

- 311 - The “separate” value means that “multiple-document-handling” is 'separate-documents-collated-copies' or
- 312 'separate-documents-uncollated-copies'.
- 313 - The “single” value means that “multiple-document-handling” is 'single-document' or 'single-document-new-
- 314 sheet'.
- 315 - The “ignored” value means that the attribute need not be present and is ignored if it is present,
- 316 - The “present” value means that the attribute must be present. A different case is implied if it is not present.
- 317 - The “not present” value means that the attribute must not be present. A different case is implied if it is present.

318

Case	“multiple-document-handling”	“pages-per-subset”	“documents-per-subset”
Separate-Documents	separate	not present	not present
Single-Document	single	ignored	ignored
Page-Subset Documents	separate	present	not present
Document-Subset Documents	separate	not present	present

319

320 The Degenerate row is omitted because it follows the rules for the “Separate-Documents” and “Single-Documents”
 321 rules when the number of Input-Documents is 1.

322

323 There is an error if both “pages-per-subset” and “document-per-subset” are present in the “separate” case.

324

2.11.1 Degenerate Case:

325

326 In the Degenerate Case, the Job consists of exactly one Output-Document and exactly one Input-
 327 Document. The single Input-Document produces the single Output-Document. This case represents the
 328 most common case of printing. For example, if a user is Printing a single MS Word file, the MS Word file
 329 is the Input-Document and the printed pages are the Output-Document. This case is the degenerate case of
 330 Separate-Documents and Single-Document. It occurs when the number of Input-Documents is 1 and either

331

a) “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-
 332 uncollated-copies' and neither “pages-per-subset” nor “documents-per-subset” are present or.

333

b) “multiple-document-handling” is 'single-document' or 'single-document-new-sheet', and both “pages-
 334 per-subset” and “documents-per-subset” are ignored if present

335

2.11.2 Separate Documents Case

336

337 In the Separate Documents Case, the Job consists of one or more Output-Documents where each Input-
 338 Document produces one Output-Document. For example, if a user prints 10 Java files in one Job and
 339 wants 10 separately stapled Output-Documents, each of the 10 Java files is an Input-Document, and the
 340 printed Output-Pages from each of the 10 Java files is a separate Output-Document that is stapled
 separately. This case occurs when “multiple-document-handling” is 'separate-documents-collated-copies'

341 or 'separate-documents-uncollated-copies' and the new attributes “pages-per-subset” and “documents-
342 per-subset” are not present.

343 **2.11.3 Single Document Case**

344 In the Single Document Case, the job consists of a single Output-Document produced from one or more
345 Input-Documents. For example, if a user prints 10 Java files in one Job and wants all Output-Pages of the
346 10 Java files to be produced as 1 stapled Output-Document, then each of the 10 Java files is an Input-
347 Document, and all printed Output-Pages from all of the 10 Java files is a single Output-Document that is
348 stapled. This case occurs when “multiple-document-handling” is 'single-document' or 'single-document-
349 new-sheet'; the value of “pages-per-subset” and “documents-per-subset” are both ignored if present.

350 **2.11.4 Page-Subset Document Case:**

351 In the Page-Subset Case, the Job consists of one or more Output-Documents and one or more Input-
352 Documents. The new attribute “pages-per-subset” contains a sequence of integers which specifies how to
353 partition the stream of Input-Pages into subsets, each of which produces an Output Document. For
354 example, if a user prints 1 PostScript file with 1000 pages, where each 4 Output-Pages represents an
355 insurance policy, then the PostScript file is the Input-Document and each group of 4 Output-Pages is an
356 Output-Document. The resulting Output-Documents would be the same if the same 1000 Input-Pages
357 were spread across 2 or more PostScript files. This case occurs when “multiple-document-handling” is
358 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies' and the new attribute
359 “pages-per-subset” contains 1 or more integer values. The new attribute “documents-per-subset” is not
360 present.

361 **2.11.5 Document-Subset Document Case:**

362 This case is defined here for completeness, but it is not supported by this extension.

363
364 In the Document-Subset Document Case, the Job consists of one or more Output-Documents and one or
365 more Input-Documents. The new attribute “documents-per-subset” contains a sequence of integers which
366 specifies how to partition Job’s Input-Documents into subsets, each of which produces an Output
367 Document. For example, if a user prints 25 Java files in one Job and wants 2 separately stapled Output-
368 Documents, one with 15 Java files and one with 10 Java files, then each of the Java files is an Input-
369 Document, and the printed Output-Pages from the first 15 Java files and next 10 Java files are two
370 separate Output-Documents that are stapled separately. This case occurs when “multiple-document-
371 handling” is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies' and
372 “documents-per-subset” contains 1 or more integer values. The new attribute “pages-per-subset” is not
373 present.
374

375 **2.12 Document-Overrides**

376 In IPP/1.1 each attribute value is the same for the entire Job. When an attribute is a “Document-Overrides”
377 attributes, it is different for identified Input-Documents or Output-Documents.

378 **2.13 Page-Overrides**

379 In IPP/1.1 each attribute value is the same for the entire Job. When an attribute is a “Page-Overrides” attributes, it
380 is different for identified Input-Pages or Output-Pages.

381 **2.14 Subset-Finishing**

382 Subset-Finishing is the ability to subdivide the stream of Input-Pages from one or more Input-Documents into
383 multiple Output-Documents and to apply the same or different finishing to each individual Output-Document.

384 **2.15 Affects**

385 Each attribute is said to ‘affect’ some part of a job. For example, “media” affects a sheet, “finishings” affects an
386 Output-Document, “page-ranges” affects an Input-Document and “job-priority” affects a job. This nuance must be
387 explicit in the Overrides-Extension because the parts of a job that an attribute affects limit the parts of a job that an
388 attribute can be associated with (see the next section for a definition of “associates”). For example, “job-priority”
389 affects a job; so it can be associated with a Job, but not an Input-Document or Input-Page. Likewise, “finishings”
390 affects an Output-Document; so it can be associated with a Job or an Output-Document, but not with an Output-
391 Page.

392 **2.16 Associates**

393 The word “associates” combines the meaning of the two terms in subsections of this section, namely “directly
394 associates” and “effectively associates”. When an attribute is either directly associated or effectively associated with
395 some part of a job, it is said to be “associated” with that part of a job.

396 **2.16.1 Directly Associates**

397 When an attribute is said to be ‘directly associated’ with some part of a job, it affects that part or some
398 other part. The part that it affects depends on the attribute and what the attribute is directly associated with.
399 For example if “media” is directly associated with a job, it affects all sheets in the job. If “media” is directly
400 associated with an Output-Document, it affects all sheets in that Output-Document. If “media” is directly
401 associated with an Output-Page, it affects the sheet containing that Output-Page.

402 **2.16.2 Effectively Associates**

403 When an attribute is said to be directly associated with some part of a job ‘A’ that is semantically
404 connected with another part ‘B’, the attribute is said to be “effectively associated” with ‘B’. For example,

405 in the Separate-Documents Case, when an attribute is directly associated with an Input-Document, it is
406 effectively associated with the corresponding Output-Document.

407 **2.17 Job-Submission Operations:**

408 The Job-Submission Operations are the IPP operations that create jobs and send document content, namely Print-
409 Job, Print-URI, Create-Job, Send-Document and Send-URI.

410 **3. Requirements**

411 The following is a list of requirements for the Overrides-Extension.

- 412
- 413 1. The Override-Extension **MUST** contain a mechanism for specifying Job attributes that are overrides for
414 particular Input-Documents or Output-Documents. A Printer and a client **OPTIONALLY** support this
415 mechanism.
- 416 2. There **MUST** be a mechanism for specifying Job attributes that are overrides for particular Input-Pages or
417 Output-Pages. A Printer and a client **OPTIONALLY** support this mechanism.
- 418 3. There **MUST** be a mechanism for specifying Job attributes that are overrides for particular document
419 copies of Output-Documents. A Printer and a client **OPTIONALLY** support this mechanism.
- 420 4. The mechanism for overrides **MUST** be supported by all Job-Submission operations and Validate-Job.
- 421 5. The extension **MUST** support the four relationships of Input-Documents and Output-Documents:
422 Degenerate Case, Separate-Documents Case, Single-Document Case and Page-Subset Document Case.
- 423 6. The extension **MUST** support Subset-Finishing.

424 **4. Overview**

425 In IPP 1.1 all attributes that a client includes with job creation operations affect the entire Job in a uniform way.
426 That is, there is no way for one Output-Document in a given Job to be stapled and another drilled. Also, there is no
427 way for the first sheet of each Output-Document to be on a different media or to have a different value of “sides”
428 from the other Sheets in the Output-Document. In addition, there is no way for one document copy to be printed
429 on paper and another on transparencies. An IPP/1.1 client can specify features, such as finishing, media and sides
430 only at the job level.

431

432 The Override Extension defined in this document allows some Output-Pages, some Output-Documents and some
433 Input-Documents to be affected by attribute values that are overrides to those specified for the Job as a whole. For
434 example, the first Output-Page of an Output-Document has a different media from the rest, or the second Output-
435 Document is stapled and the rest are not, or the page-ranges of the first Input-Document selects a few Input-Pages
436 and the rest of the Input-Documents are printed in full, or one copy of an Output-Document has a different media
437 from the rest.

4.1 Numbering of Components

The Override Extension defines a system for numbering of components.

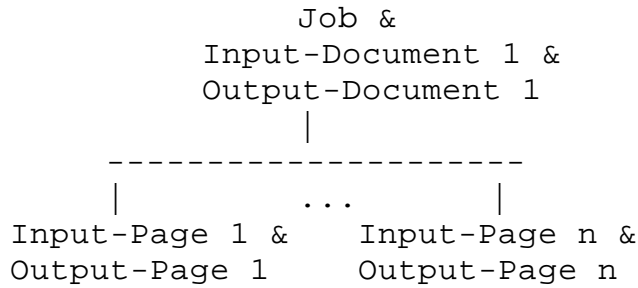
- Each Input-Document has a number. The single Input-Document that a client sends with Print-Job or Print-URI and the first Input-Document that a client sends with Send-Document or Send-URI has a number of 1. Each subsequent Input-Document that a clients sends has a number that is one higher than the previous.
- Each Input-Page in an Input-Document is numbered sequentially, starting at 1 for the first Input-Page. If a Job has several Input-Documents, the first Input-Page of each Input-Document has the number of 1, which is relative to that Input-Document.
- Each Output-Document has a number. The first Output-Document has a number of '1', and each subsequent Output-Document has a number that is one higher than the previous Output-Document. The Output-Documents are numbered as if the value of "copies" were 1, i.e. if an Input-Document produces multiple copies, each copy of a particular Output-Document has the same number.
- Each Output-Page in an Output-Document is numbered sequentially, starting at 1 for the first Output-Page. If a Job has several Output-Documents, the first Output-Page of each has the number of 1, which is relative to that Output-Document
- Each copy of an Output-Document has a number. The first copy of each Output-Document has a number of '1', and each subsequent copy has a number that is one higher than the previous copy. If a job has multiple Output-Documents, the first copy of each has a number of '1'.

4.2 Relationship of Numbered Components

The previous section described how to number Input-Documents, Output-Documents, Input-Pages and Output-Pages. This section describes the relationship between the number on each of these four components. The relationship differs for each of the five cases defined in section 2.10. The following diagrams of tree structure show each of the five cases and the relationship of the numbers in those cases.

These diagrams assume that the number of copies of Output-Documents is 1. When the number of copies exceeds 1, some parts of these diagrams would have further replication, but the numeric relationships of the four displayed components would not change.

467 **4.2.1 Degenerate Case:**



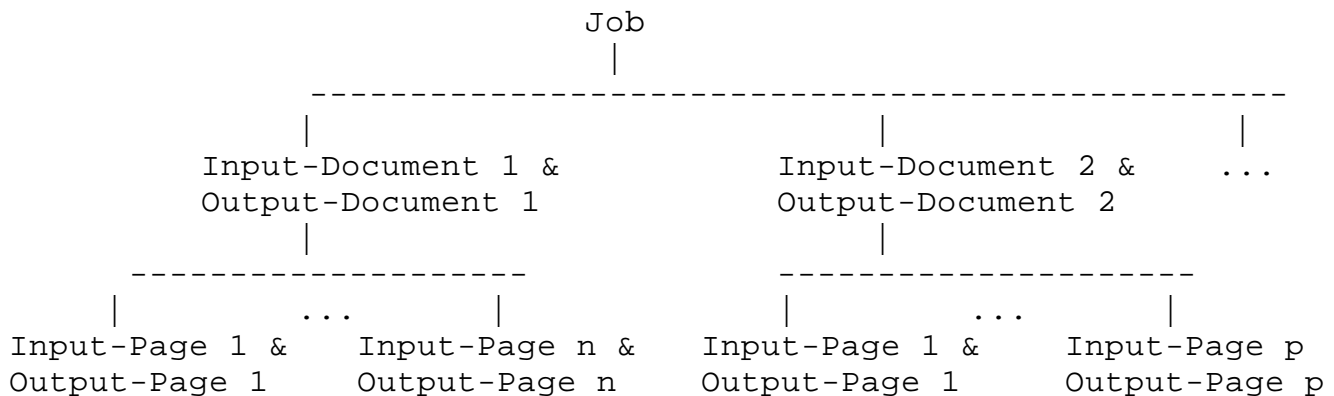
479 Conditions that define this case:

- 481 - Job contains exactly 1 Input-Document
- 482 - Either conditions for “Separate-Documents” or “Single-Documents” are met.

483 Observations about this case:

- 484 - Job coincides with Output-Document 1 and Input-Document 1
- 485 - Output-Page i coincides with Input-Page i

487 **4.2.2 Separate-Documents Case:**



501 Conditions that define this case:

- 502 - Job contains more than one or more Input-Documents, though one Input-Document is technically the Degenerate Case.

- 505 - “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-
- 506 uncollated-copies'
- 507 - “pages-per-subset” is not present
- 508 - “documents-per-subset” is not present

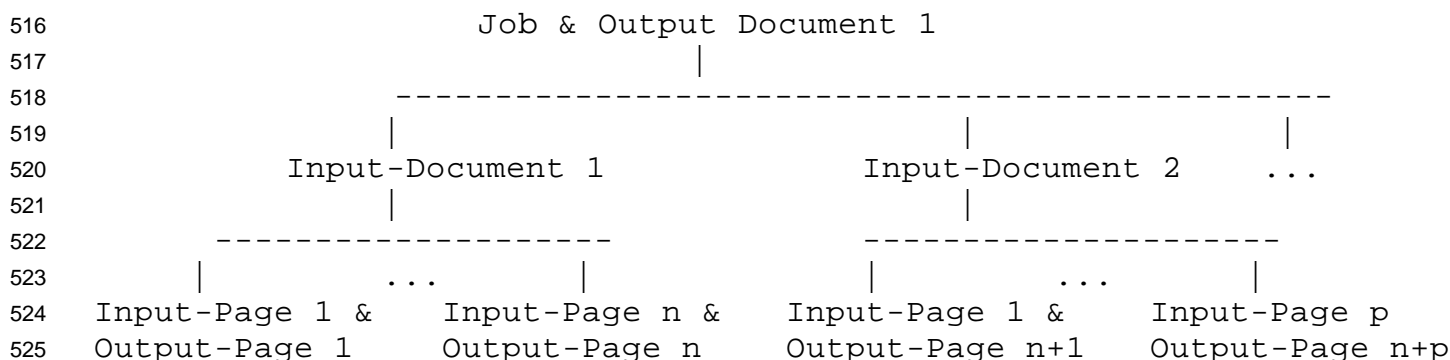
509 Observations about this case:

- 510
- 511 - Output-Document i coincides with Input-Document i
- 512 - Output-Page i coincides with Input-Page i

513

514 **4.2.3 Single-Document Case:**

515



526

527 Conditions that define this case:

528

- 529 - Job contains more than one or more Input-Documents, though one Input-Document is technically the
- 530 Degenerate Case.
- 531 - “multiple-document-handling” is 'single-document' or 'single-document-new-sheet';

532 Observations about this case:

533

- 534 - Output-Document 1 coincides with the Job
- 535 - The numbering of Output-Pages is continuous through all Input-Documents, but the numbering of Input-
- 536 Pages starts at 1 in each Input-Document. That is, Input-Page i in Input-Document m coincides with
- 537 Output-Page i + k, where k is the number of Input-Pages in all previous Input-Documents, i.e. Input-
- 538 Documents 1 through m-1.

- 539 - “pages-per-subset” is ignored if present
- 540 - “documents-per-subset” is ignored if present

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542 **4.2.4 Page-Subset Document Case:**

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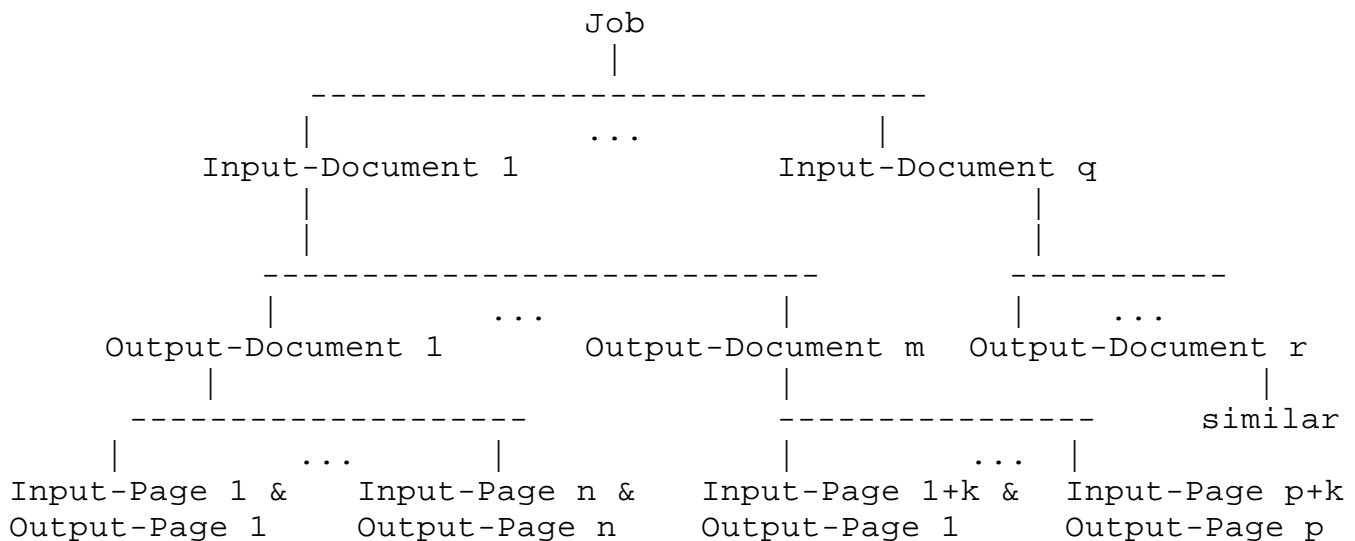
570

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Conditions that define this case:

- 561 - Job contains one or more Input-Documents
- 563 - “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies'
- 565 - “pages-per-subset” is present.
- 566 - “documents-per-subset” is not present

Observations about this case:

- 568 - The diagram shows that Output-Documents 1 through m are contained in Input-Document 1, and Output-Documents m+1 through t are contained in Input-Document 2 and so on. However, this diagram is not completely accurate. The Input-Pages from all Input-Documents are more accurately viewed as a continuous stream of Input-Pages that are partitioned into Output-Documents as specified by the attribute “pages-per-subset”. For example, an Output-Document could come from the last 3 Input-Pages of an Input-Document and the first 4 Input-Pages of the next Input-Document.

- 612
- 613 - Input-Documents 1-m are contained in Output-Document 1, and Input-Documents m+1 through t are
- 614 contained in Output-Document 2 and so on.
- 615 - Input-Page i in Input-Document m coincides with Output-Page i + k of Output-Document j, where k is the
- 616 number of Input-Pages in all previous Input-Documents of Output-Document j, e.g. Input-Documents 1
- 617 through m-1.
- 618 - “documents-per-subset” has the number of Input-Documents in each Output-Document.

619 4.3 Association of Attributes

620 The Override Extension allows attribute associations with Input-Pages, Output-Pages, Input-Documents and

621 Output-Documents, and it continues to allow associations with Jobs. The Override Extension specifies rules for

622 associations, and it categorizes attributes according to what they affect. The categories of attributes and the

623 members in the Overrides-Extension are:

- 624
- 625 - Input Documents: “page-ranges”, “document-format”, “document-name”, “compression” and “document-
- 626 natural-language”.
- 627 - Output-Documents: “finishings”
- 628 - Sheets: “media” and “sides”

629 The table below shows what each of the three categories of attributes can be associated with:

630

Associates with:	Category of attribute		
	Input-Document	Output-Document	Sheets
Input-Document	yes	yes	yes
Output-Document	no	yes	yes
Input-Page	no	no	yes
Output-Page	no	no	yes

631

632 The meaning of these associations and their limitation is specified in section 16.

633

634 The Override-Extension mechanism seems to be general enough to add new Document-Overrides and Page-

635 Overrides attributes without changing or extending the general mechanism. That is, an existing or new Job attribute

636 becomes a Document-Overrides or Page-Overrides attribute when a description of that attributes says so, but no

637 changes need be made to the ways overrides work. If the new attribute belongs to one of the three above

638 categories, it follows the rules of that category. If it belongs to a new categories, the rules of association must be

639 defined.

640 4.4 Effect of the “document-copies” attribute

641 The “document-copies” attribute causes some copies of a document to be printed differently from others. For
642 example, 10 copies are duplex printed on letter paper with a staple. One copy is simplex printed on transparencies
643 without a staple. As another example, the first page of 100 copies of a 3 page document are printed on letterhead
644 paper and the first page of the 101st copy of the document is printed on regular letter paper.

645
646 If an attribute can affect an Output-Document, it can affect particular Output-Document-Copies. If an attribute can
647 affect Sheets, it can affect Sheets of particular Output-Document-Copies.

648
649 Normally, when an attribute is associated with Input-Documents, Output-Documents, Input-Pages or Output-
650 Pages, that attribute is effectively associated with corresponding Input-Documents, Output-Documents or Sheets.
651 When an association includes the “document-copies” attribute, it has the following meaning for each effective
652 association. If the attribute effectively associates with:

- 653 - Input-Documents, the Printer ignores the “document-copies” attribute.
- 654 - Output-Documents, the attribute affects the specified copies of the Output-Documents.
- 655 - Sheets: the attribute affects the sheets of the specified copies of Output-Documents.

657 4.5 Subset Finishing

658 In IPP/1.1 a Printer applies the “finishings” attribute to all Output-Documents in a given job. This proposal
659 supports “Subset Finishing” which we define as the ability to partition the Input-Pages of an Input-Document into
660 one or more Output-Documents and to apply different types of finishing to each of the individual Output-
661 Documents contained within a single job.

662
663 This model supports subset finishing with the new attribute “pages-per-subset” which specifies the number of Input-
664 Pages per Output-Document. This model treats Subset-Finishing as a Job level sub-setting of the Input-Documents
665 into Output-Documents and as a Document Override attribute rather than a Page Override attribute for two
666 reasons.

- 667 - Page-Overrides, as their name suggests, are overrides for a few Input-Pages or Output-Pages that differ
668 from the rest of the Input-Pages or Output-Pages in the Job. With Subset-Finishing, all Input-Pages belong
669 to some subset. So, sub-setting is not an override; it encompasses the entire Job. Only the finishing part of
670 Subset-Finishing can have overrides and those overrides apply to a subset, much like they apply to Output-
671 Documents. Because subsets behave like Output-Documents, it is easiest to describe the sub-setting
672 operation as creating Output-Documents.
- 673 - If the attributes “media”, “sides” and “finishings” were all treated as Page-Override attributes, then there
674 would have to one rule for splitting and merging groups when “finishings” is associated with the group and
675

676 another rule when it is not associated with the group. If a Page-Override specifies “sides” is duplex for
 677 pages 1-10 and “media” is added to pages 5 and 6, there can be three Page-Override groups, one for
 678 pages 1-4 with “sides”, one for pages 5 and 6 with “sides” and “media” and one for pages 7-10 with sides.
 679 If “media” is removed, the groups can be merged back to the original single group. If “finishings = staple”
 680 had been present in the original group of pages 1-10, such a split would change finishing from one staple in
 681 pages 1-10 to 3 staples, one in pages 1-6, one in page 5-6 and one in pages 7-10.

682
 683 The remainder of this document describes the changes necessary to support the Overrides Extension.

684 5. New Job Template Attributes

685 The Override Extension adds three new Job Template attributes: “document-overrides”, “page-overrides” and
 686 “pages-per-subset”. The first two attributes support override attributes, and the third supports subset finishing.

Job Attribute	Printer: Default Value Attribute	Printer: Supported Values Attribute
document- overrides (1setOf collection)	none	document-overrides- supported (1setOf type2 keyword)
page-overrides (1setOf collection)	none	page-overrides- supported (1setOf type2 keyword)
pages-per-subset (1setOf integer)	none	pages-per-subset supported (B oolean)

706 5.1 document-overrides (1setOf collection)

707 This OPTIONAL Job Template attribute contains attributes that are associated with Input-Documents and Output-
 708 Documents and that are treated as document overrides. Such attributes are called “Document-Overrides”
 709 attributes. The remainder of this section describes features that an implementation MUST support or MAY support
 710 if an implementation supports this attribute.

711
 712 If this attribute is not present in a Job, there are no Document-Overrides within the Job. If it is present, the value
 713 consists of one or more ‘collection’ values, where each ‘collection’ value identifies one or more Input-Documents

714 or Output-Document and contains one or more Job Template attributes which act as overrides to the
715 corresponding Job Template attribute values for the specified Input-Documents or Output-Documents.

716

717 The first attribute of each ‘collection’ value MUST be either “input-documents” or “output-documents” and this
718 attribute identifies Input-Documents or Output-Documents, respectively. The second attribute of each ‘collection’
719 MAY be “document-copies” and this attribute identifies the Output-Document-Copies. The remaining attributes in
720 the ‘collection’ value are the one or more Job Template attributes that are overrides for the specified Input-
721 Documents or Output-Documents. The allowed attributes are listed in section 5.1.8

722 There may be more than one way for a client to arrange Document-Overrides attributes in ‘collection’ values. For
723 example, if a job contains 10 Output-Documents to be printed 1-sided on letter paper with no stapling and Output-
724 Document 1 is to be two sided with stapling and Document 2 is to be two sided with no stapling, there are two
725 possible ways to group the overrides. The client could specify the two overrides for Output-Document 1 in one
726 ‘collection’ value and the single override for Output-Document 2 in a second ‘collection’ value, or it could specify
727 “two-sided” for Output-Documents 1 and 2 in one ‘collection’ value and “stapled” for Output-Document 1 in
728 another ‘collection’ value.

729 If the “input-documents”, “output-documents” or “document-copies” identify Input-Documents, Output-
730 Documents or Output-Document-Copies that don’t exist, the Printer silently ignores them and associates the
731 Document-Overrides with those Input-Documents, Output-Documents or Output-Document-Copies that do exist.
732 A client MUST NOT allow two ‘collection’ values to be associated with the same Input-Document, Output-
733 Document or Output-Document-Copy and to contain the same Document-Overrides attribute with different values.
734 If the client violates the preceding rule, the Printer can use either value, and it MUST issue a warning. It does so by
735 adding ‘job-warnings-detected’ to the “job-state-reasons” and by increasing the value of the “job-warnings-
736 count” Job Description attribute by 1. If the Printer detects this conflict while it is processing a Job-Submission
737 operation, it MUST return the ignored values in the Unsupported attributes.

738 When a Client receives this attribute in a Get-Jobs or Get-Job-Attributes, the value MUST contain the same
739 ‘collection’ values received in Job-Submission operations, except for those ‘collection’ values the Printer returned
740 in the Unsupported Attributes.

741 Each ‘collection’ value of this attribute has either of the two forms as defined below. The ‘collection’ values NEED
742 NOT all be of the same form.:-

743 For the first form, the client MUST supply “input-documents” as the first attribute. If the client supplies the
744 “document-copies” attribute, it MUST be the second attribute. The client OPTIONALLY supplies the remaining
745 attributes in any order. If the Printer supports the Create-Job operation, then it MUST support the attribute labeled
746 with “CMUST” below; otherwise support is OPTIONAL.

<u>Attribute name</u>	<u>syntax</u>	<u>In request</u>	<u>Printer Support</u>
input-documents	<u>1setOf</u> rangeOfInteger(MAX)	MUST	MUST
document-copies	<u>1setOf</u> rangeOfInteger(MAX)	MAY	MAY
document-format	mimeMediaType	MAY	CMUST
document-name	name (MAX)	MAY	CMUST
compression	type3 keyword	MAY	CMUST
document-natural-language	naturalLanguage	MAY	MAY
page-ranges	1setOf rangeOfInteger (1:MAX)	MAY	MAY
finishings	1setOf type2 enum	MAY	MAY
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

747 For the second form, the client MUST supply “output-documents” as the first attribute. If the client supplies the
 748 “document-copies” attribute, it MUST be the second attribute. The client OPTIONALLY supplies the remaining
 749 attributes in any order.

<u>Attribute name</u>	<u>syntax</u>	<u>In request</u>	<u>Printer Support</u>
output-documents	<u>1setOf</u> rangeOfInteger(MAX)	MUST	MUST
document-copies	<u>1setOf</u> rangeOfInteger(MAX)	MAY	MAY
finishings	1setOf type2 enum	MAY	MAY
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

750 The following sections describe each member attribute in the above tables.

751 5.1.1 input-documents (1setOf rangeOfInteger (1:MAX))

752 This attribute identifies one or more Input-Documents by specifying a range of numbers (see section 4.1 for
 753 the rules on associating a number with each Input-Document). The Document-Overrides apply to the
 754 identified Input-Documents.

755
 756 A Printer MUST support this attribute. A client MUST supply this attribute in each ‘collection’ value and it
 757 MUST be the first attribute of each ‘collection’ value. If this attribute is present, then the client MUST
 758 NOT supply “output-documents”.

759
 760 When a client supplies this attribute in a “document-overrides” attribute of a Send-Document or Send-URI
 761 request, this attribute MUST NOT identify Input-Documents which were sent in an earlier operation. If a
 762 Printer receives such a value in a ‘collection’ value, it MUST treat all attribute values in such a ‘collection’
 763 value, but not other sibling ‘collection’ values, as unsupported values and return the entire collection value
 764 in the Unsupported Attributes group.
 765

766 Note: because the Printer silently ignores values that reference non-existent Input-Documents, a value of
767 'MAX' is equivalent to the number of Input-Documents.

768
769 See section 5 for details of usage of this attribute.

770
771 There is no "input-documents-supported" attribute, since the member attribute MUST be supported and
772 for the full range.

773

774 **5.1.2 output-documents (1setOf rangeOfInteger (1:MAX))**

775 This attribute identifies one or more Output-Documents by specifying a range of numbers (see section 4.1
776 for the rules on associating a number with each Output-Documents). The Document-Overrides apply to the
777 identified Output-Documents.

778 A Printer MUST support this attribute. A client MUST supply this attribute in each 'collection' value and it
779 MUST be the first attribute of each 'collection' value. If this attribute is present, then the client MUST
780 NOT supply "input-documents".

781

782 When a client supplies this attribute in a "document-overrides" attribute of a Send-Document or Send-URI
783 request, this attribute MUST NOT identify Output-Documents whose first Input-Page was sent in an
784 earlier operation. If a Printer receives such a value in a 'collection' value, it MUST treat all attribute values
785 in such a 'collection' value, but not other sibling 'collection' values, as unsupported values and return the
786 entire collection value in the Unsupported Attributes group.

787

788 Note: because the Printer silently ignores values that reference non-existent Output-Documents, a value of
789 'MAX' is equivalent to the number of Output-Documents.

790

791 There is no "output-documents-supported" attribute, since the member attribute MUST be supported and
792 for the full range.

793 **5.1.3 document-copies (1setOf rangeOfInteger (1:MAX))**

794 This attribute identifies one or more Output-Document-Copies by specifying a range of numbers. The
795 Document-Overrides apply to the identified Output-Document-Copies within Output-Documents specified
796 either directly by "output-documents" or indirectly by "input-documents" (see section 16 for further
797 details).

798 A Printer MAY support this attribute. A client MAY supply this attribute in each 'collection' value. If the
799 client supplies this attribute, it MUST be the second attribute of each 'collection' value. If this attribute is
800 present, then the client MUST also supply "input-documents" or "output-documents".

801 If the first member attribute is “input-documents”, this attribute applies only to the other member attributes
802 that affect Output-Documents and Sheets. The Printer MUST ignore this attribute for the other member
803 attributes that affect Input-Documents.

804 Note: because the Printer silently ignores values that reference non-existent copies, a value of ‘MAX’ is
805 equivalent to the number of copies.

806
807 There is no “document-copies-supported” attribute, since the full range MUST be supported, if the
808 “document-copies” member attribute is supported.

809 **5.1.4 document-format (mimeMediaType)**

810 This attribute has the same meaning as in IPP/1.1. It indicates the document-format for one or more
811 specified Input-Documents. The Printer MUST support this attribute. A client OPTIONALLY supplies it.

812 **5.1.5 document-name (name (MAX))**

813 This attribute has the same meaning as in IPP/1.1. It indicates the document-name for one or more
814 specified Input-Documents. The Printer MUST support this attribute. A client OPTIONALLY supplies it.

815 **5.1.6 compression (type3 keyword)**

816 This attribute has the same meaning as in IPP/1.1. It indicates the compression for one or more specified
817 Input-Documents. The Printer MUST support this attribute. A client OPTIONALLY supplies it.

818 **5.1.7 document-natural-language (naturalLanguage)**

819 This attribute has the same meaning as in IPP/1.1. It indicates the document-natural-language for one or
820 more specified Input-Documents. The Printer MAY support this attribute. A client OPTIONALLY
821 supplies it.

822 **5.1.8 page-ranges (1setOf rangeOfInteger (1:MAX))**

823 This attribute has the same meaning as in IPP/1.1. It redefines each Input-Document to contain only the
824 specified Input-Pages. See section 5.2.3 for how this attribute interacts with “pages”. The “multiple-
825 document-handling” attribute affects the algorithm for numbering Input-Pages when this attribute is a Job
826 attribute but when it is a Document-Override attribute. When this attribute is a Document-Override
827 attribute, the values of the “page-ranges” attribute specify the Input-Pages to select from each of the
828 identified Input-Documents separately. For example, if this attribute has the value “3:5” and is associated
829 with two Input-Documents A and B, Input-Document A redefined to contain just two pages: 3 and 5, and
830 Input-Document B also contains just pages 3 and 5. The Printer MAY support this attribute. A client
831 OPTIONALLY supplies it.

832
833 See section 5.2.4 for details of how this attribute affects number of pages with the “pages” attribute.

834 **5.1.9 finishings (1setOf type2 enum)**

835 This attribute has the same meaning as in IPP/1.1. It indicates the finishings for one or more specified
836 Output-Documents. As a Job Template attribute, it affects each Output-Document produced by the Job.
837 For example, all the sheets of each Output-Document are stapled together. As a Document-Overrides
838 attributes, it affects only the specified Output-Documents. The Printer MAY support this attribute. A client
839 OPTIONALLY supplies it.

840 The next section gives further information about this attribute, but this information is the same for all Output-
841 Document attributes that might be added later.

842 **5.1.9.1 Common Behavior for Output-Document Attributes**

843 This attribute is directly associated with an Input-Document or Output-Document. This means that it is
844 effectively associated with one or more Output-Documents according to the rules of section 16, and this
845 attribute affects those Output-Documents.

846
847 If the “document-copies” attribute is present, the attribute affects only the specified copies of the Output-
848 Documents.

849 **5.1.10 sides (type2 keyword)**

850 This attribute has the same meaning as in IPP/1.1. It indicates the sides for one or more specified Output-
851 Pages. As a Job Template attribute, it affects each Sheet produced by the Job. As a Document-Overrides
852 attributes, it affects only the specified Sheets. The Printer MAY support this attribute. A client
853 OPTIONALLY supplies it.

854 The next section gives further information about this attribute, but this information is the same for all Sheet
855 attributes, including “media” which is discussed in section 5.1.11

856 **5.1.10.1 Common Behavior for Sheet Attributes**

857 This attribute is directly associated with an Input-Document or Output-Document. This means that it is
858 effectively associated with one or more Output-Pages according to the rules of section 15, and this
859 attribute affects the Sheets containing the specified Output-Pages.

860 If the “document-copies” attribute is present, the attribute affects only the Output-Pages in the specified
861 copies of the Output-Documents.

862 Because this attribute affects a Sheet, but is effectively associated with an Output-Page, a Sheet that
863 contains two or more Output-Pages may have conflicting values of this attribute. This observation leads to
864 two rules, one for the first Output-Page that this attribute is effectively associated with and one for the last
865 Output-Page that this attribute is effectively associated with.

- 866 a) For the first Output-Page: if the value of this attribute is effectively associated with Output-Page i,
867 and if Output-Page i is not the first Output-Page contained on a Sheet and if the value of this
868 attribute differs from the value of this attribute for the preceding Output-Page i-1, then Output-
869 Page i MUST start a new Sheet and the Printer MUST issue a warning by adding 'job-warnings-
870 detected' to the "job-state-reasons" and by increasing the value of the "job-warnings-count" Job
871 Description attribute by 1.
- 872 b) For the last Output-Page: if the value of this attribute is effectively associated with Output-Page i,
873 and if Output-Page i is not the last Output-Page contained on a Sheet and if the value of this
874 attribute differs from the value of this attribute for the following Output-Page i+1, then Output-Page
875 i+1 MUST start a new Sheet and the Printer MUST issue a warning by adding 'job-warnings-
876 detected' to the "job-state-reasons" and by increasing the value of the "job-warnings-count" Job
877 Description attribute by 1.

878 **5.1.11 media (type3 keyword | name(MAX))**

879 This attribute has the same meaning as in IPP/1.1. It indicates the media for one or more specified Output-
880 Pages. As a Job Template attribute, it affects each Sheet produced by the Job. As a Document-Overrides
881 attributes, it affects only the specified Sheets. The Printer MAY support this attribute. A client
882 OPTIONALLY supplies it.

883 See section 5.1.10.1 for additional information. The section describes the common behavior of all Sheet
884 attributes.

885 **5.1.12 Handling of Error conditions**

886 If a client omits a required member attribute or includes two member attributes that should never both be
887 present (e.g. "input-document" and "output-document"), a Printer MUST reject all attributes in the
888 'collection' value and treat the 'collection' values, but not other sibling 'collection' values, as unsupported.

889 If a client puts a member attribute in some position other than its required position (e.g. "input-documents"
890 MUST be first), a Printer MUST either:

- 891 a) use the specified value of the member attribute and ignore its wrong position or
892 b) reject all attributes in the 'collection' value and treat the 'collection' values, but not other sibling
893 'collection' values, as unsupported.

894 **5.1.13 Why not "document-overrides-default"**

895 There is no "document-overrides-default" attribute because it adds complicated rules for a Printer to
896 implement. The problems are best illustrated with examples.

897 If there were a “document-overrides-default” and it contained a “sides” and “media” override for the first
 898 Output-Page, and if a client submitted a Job with no “sides” attribute and with “media” as a Job attribute
 899 with no overrides, a possible meaning is that the Printer uses the client’s requested media for the entire Job
 900 and the sides specified by the “sides-default” and the “sides” value in “document-overrides-default”. So in
 901 this example, the Printer ignores the “document-overrides-default” attribute for “media”, but uses it for
 902 “sides” because the Printer uses it for an attribute “xxx” only when it uses “xxx-default”.

903 **5.1.14 document-overrides-supported (1setOf type~~2~~ keyword)**

904 This attribute specifies the supported values of the “document-overrides” attribute. A client can use this
 905 attribute to determine what Document-Overrides attributes the Printer supports.

906 This attribute contains the name of each attribute that the Printer supports in a ‘collection’ value of the
 907 “document-overrides” attribute. This attribute MUST contain the keywords “input-documents” and
 908 “output-documents” because a Printer MUST support these attributes. This attribute MUST also contain
 909 the name of each attribute that can be a document-override. For example, this attribute contains the
 910 keyword “sides” if and only if the Printer supports “sides” in a ‘collection’ value of the “document-
 911 overrides” attribute.

912 There are no corresponding “input-documents-supported”, “output-documents-supported” and
 913 “document-copies-supported” Printer attributes. However, the supported values for all of the other
 914 member attributes are indicated by the corresponding “xxx-supported” Printer attributes which are the
 915 same values as for the corresponding “xxx” operation or Job Template attribute. For example, if
 916 “document-format” and “sides” are supported as member attributes of the “document-exceptions”
 917 collection, then the “document-format-supported” and the “sides-supported” Printer attribute indicates the
 918 values that are supported at the job level and as a Document Exception.

919 Standard keyword values are:

- 920 - 'none': no attributes are supported in the “document-overrides” attribute
- 921 - 'input-documents': the “input-document” member attribute is supported
- 922 - 'output-documents': the “output-document” member attribute is supported
- 923 - 'document-copies': the “document-copies” member attribute is supported
- 924 - 'document-format': The "document-format" member attribute is supported
- 925 - 'document-name': The "document-name" member attribute is supported
- 926 - 'compression': The "compression" member attribute is supported
- 927 - 'document-natural-language': The "document-natural-language" member attribute is supported
- 928 - 'document-natural-language': The "document-natural-language" member attribute is supported

- 929 - 'page-ranges': The "page-ranges" member attribute is supported
- 930 - 'finishings': The "finishing" member attribute is supported
- 931 - 'sides': The "sides" member attribute is supported
- 932 - 'media': The "media" member attribute is supported

933 5.2 page-overrides (1setOf collection)

934 This OPTIONAL Job Template attribute contains attributes that are associated with Input-Pages and Output-
935 Pages and that are treated as page overrides. Such attributes are called “Page-Overrides” attributes. The
936 remainder of this section describes features that an implementation MUST support or MAY support if an
937 implementation supports this attribute

938
939 If this attribute is not present in a Job, there are no Page-Overrides attributes within the Job. If it is present, the
940 value consists of one or more ‘collection’ values, where each ‘collection’ value identifies one or more Input-Pages
941 or Output-Pages and contains one or more Job Template attributes which act as overrides to the corresponding
942 Job Template attributes for the specified Input-Pages or Output-Pages.

943
944 The first attribute of each ‘collection’ value MUST be either “input-documents” or “output-documents”.

945
946 The second attribute MAY be “document-copies”. If present, this attributes identifies the copies of the Output-
947 Document. If this attribute is not present in a ‘collection’ value, then the ‘collection’ value applies to all Output-
948 Document-Copies.

949
950 If “document-copies” is present, the “pages” attribute MUST be the third attribute; otherwise, it MUST be the
951 second attribute. The “pages” attribute identifies either

- 952 - the Input-Pages relative to the Input-Document specified by “input-documents” or
- 953 - the Output-Pages relative to the Output-Document specified by “output-documents”.

954
955 The Page-Overrides attributes applies to the identified Input-Pages or Output-Pages, which need not be
956 contiguous.

957
958 The remaining attributes in the ‘collection’ value are the Job Template attributes that are overrides for the specified
959 Input-Pages or Output-Pages.

960 There may be more than one way for a client to arrange Page-Override attributes in ‘collection’ values. For
961 example, if an Output-Document contains 10 Output-Pages to be printed 1-sided on white letter paper and
962 Output-Page 1 is to be two sided with blue letter paper and Document 2 is to be two sided with white letter
963 paper, there are two possible ways to group the overrides. The client could specify the two overrides for Output-

964 Page 1 in one ‘collection’ value and the single override for Output-Page 2 in second ‘collection’ values, or it could
 965 specify “two-sided” for Output-Pages 1 and 2 in one ‘collection’ value and “blue letter paper” for Output-
 966 Document 1 in another ‘collection’ value.

967 If the “pages”, “document-copies” and the “input-documents” or “output-documents” identify Input-Pages,
 968 Output-Pages that either don’t exist or are within nonexistent Output-Document-Copies, Input-Documents or
 969 Output-Documents, the Printer silently ignores them and associates the Page-Overrides with those Input-Pages or
 970 Output-Pages that do exist. A client MUST not allow two ‘collection’ values to be associated with the same
 971 Input-Page or Output-Page and to contain the same Page-Override attribute with different values. If there is such a
 972 conflict, the Printer can use either value, and it MUST issue a warning. It does so by adding ‘job-warnings-
 973 detected’ to the “job-state-reasons” and by increasing the value of the “job-warnings-count” Job Description
 974 attribute by 1. If the Printer detects this conflict while it is processing a Job-Submission operation, it MUST return
 975 the ignored value in the Unsupported attributes.

976 When a Client receives this attribute in a Get-Jobs or Get-Job-Attributes, the value MUST contain the same
 977 ‘collection’ values received in Job-Submission operations, except for those ‘collection’ values the Printer returned
 978 in the Unsupported Attributes.

979 Each ‘collection’ value of this attribute has either of the two forms as defined below. The ‘collection’ values NEED
 980 NOT all be of the same form.

981 For the first form, the client MUST supply “input-documents” as the first attribute. If the client supplies the
 982 “document-copies” attribute, it MUST be the second attribute. The “pages” attribute MUST be the next attribute.
 983 The client OPTIONALLY supplies the remaining attributes in any order.

<u>Attribute name</u>	<u>syntax</u>	<u>In request</u>	<u>Printer Support</u>
input-documents	<u>1setOf</u> rangeOfInteger(MAX)	MUST	MUST
document-copies	<u>1setOf</u> rangeOfInteger(MAX)	MAY	MAY
pages	<u>1setOf</u> rangeOfInteger(MAX)	MUST	MUST
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

984 For the second form, the client MUST supply “output-documents” as the first attribute. If the client supplies the
 985 “document-copies” attribute, it MUST be the second attribute. The n the “pages” attribute MUST be the next
 986 attribute. The client OPTIONALLY supplies the remaining attributes in any order.

<u>Attribute name</u>	<u>syntax</u>	<u>In request</u>	<u>Printer Support</u>
output-documents	<u>1setOf</u> rangeOfInteger(MAX)	MUST	MUST
document-copies	<u>1setOf</u> rangeOfInteger(MAX)	MAY	MAY
pages	<u>1setOf</u> rangeOfInteger(MAX)	MUST	MUST
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

987 The following sections describe each member attribute in the above table.

988 **5.2.1 input-documents (1setOf rangeOfInteger (1:MAX))**

989 See section 5.1.1 for details of this attribute.

990 **5.2.2 output-documents (1setOf rangeOfInteger (1:MAX))**

991 See section 5.1.2 for details of this attribute.

992 **5.2.3 document-copies (1setOf rangeOfInteger (1:MAX))**

993 This attribute identifies one or more Output-Document-Copies by specifying a range of numbers. The
994 Page-Overrides apply to the Output-Pages within the identified Output-Documents-Copies within Output-
995 Documents specified either directly by “output-documents” or indirectly by “input-documents” (see section
996 16 for further details).

997 A Printer MAY support this attribute. A client MAY supply this attribute in each ‘collection’ value. It
998 MUST be the second attribute of each ‘collection’ value if the client supplies it. If this attribute is present,
999 then the client MUST also supply the “input-documents” or “output-documents” attribute.

000 Note: because the Printer silently ignores values that reference non-existent copies, a value of ‘MAX’ is
001 equivalent to the number of copies.

002 There is no “document-copies-supported” attribute, since the full range MUST be supported, if the
003 “document-copies” member attribute is supported.

004 **5.2.4 pages (1setOf rangeOfInteger(1:MAX))**

005 This attribute identifies one or more Input-Pages or Output-Pages by specifying one or more ranges of
006 numbers (see section 4.1 for the rules on associating a number with each Input-Page or Output-Page). The
007 “1setOf” allows noncontiguous Input-Page or Output-Pages. The Page-Overrides apply to the identified
008 Input-Pages or Output-Pages within the Output-Documents specified directly by “output-documents” or
009 indirectly by “input-documents”. The “document-copies” specifies particular copies of Output-Documents.

010 If the “page-ranges” attribute (see section 5.1.8) is associated with an Input-Document, the Input-Pages
011 identified by this attribute are the same as when “page-ranges” is not present. However, this attribute may
012 identify pages that are deselected for printing by the “page-ranges” attribute. For example, if the value of
013 “page-ranges” is “5:10” and this attribute identifies Input-Pages “3:6”, this attribute identifies two Input-
014 Pages (3 and 4) that are not printed and two that are (5 and 6)

015 If a Printer support the “page-overrides” attribute, it MUST support this attribute. A client MUST supply
016 this attribute in each ‘collection’ value of the “page-overrides” attribute and it MUST be the second
017 attribute of each ‘collection’ value.

018
019 When a client supplies this attribute in a Send-Document or Send-URI request, this attribute MUST NOT
020 identify Output-Pages sent in an earlier operation. If a Printer receives such a value in a ‘collection’ value,
021 it MUST treat all such values, but not other sibling ‘collection’ values, as unsupported values.

022
023 Note: because the Printer silently ignores values that reference non-existent pages, a value of ‘MAX’ is
024 equivalent to the number of pages in each specified Input-Document or Output-Document.-

025
026 There is no “pages-supported” attribute, since the member attribute MUST be supported and for the full
027 range.

028
029 See section 5 for details of usage of this attribute.

030 **5.2.5 sides (type2 keyword)**

031 This attribute has the same meaning as in IPP/1.1. It indicates the sides for one or more specified Output-
032 Pages. As a Job Template attribute, it affects each Sheet produced by the Job. As a Page-Overrides
033 attributes, it affects only the specified Sheets. The Printer MAY support this attribute. A client
034 OPTIONALLY supplies it.

035 See section 5.1.10.1 for additional information. The section describes the common behavior of all Sheet
036 attributes.

037 **5.2.6 media (type3 keyword | name(MAX))**

038 This attribute has the same meaning as in IPP/1.1. It indicates the media for one or more specified Output-
039 Pages. As a Job Template attribute, it affects each Sheet produced by the Job. As a Page-Overrides
040 attributes, it affects only the specified Sheets. The Printer MAY support this attribute. A client
041 OPTIONALLY supplies it.

042 See section 5.1.10.1 for additional information. The section describes the common behavior of all Sheet
043 attributes.

044 **5.2.7 Handling of Error conditions**

045 See section 5.1.12.

046 5.2.8 Why not “page-overrides-default”

047 There is no “page-overrides-default”. See section 5.1.12 for the reasons.

048 5.2.9 page-overrides-supported (1setOf type~~2~~1 keyword)

049 This attribute specifies the supported values of the “page-overrides” attribute. A client can use this attribute
050 to determine what override attributes the Printer supports.

051 This attribute contains the name of each attribute that the Printer supports in a ‘collection’ value of the
052 “page-overrides” attribute. This attribute MUST contain the keywords “input-documents”, “output-
053 documents” and “pages” because a Printer MUST support these attributes. This attribute MUST also
054 contain the name of each attribute that can be a page-override. For example, this attribute contains the
055 keyword “sides” if and only if the Printer supports “sides” in a ‘collection’ value of the “page-overrides”
056 attribute.

057 There are no corresponding “input-documents-supported”, “output-documents-supported”, “document-
058 copies-supported”, and “pages-supported” Printer attributes. However, the supported values for all of the
059 other member attributes are indicated by the corresponding “xxx-supported” Printer attributes which are
060 the same values as for the corresponding “xxx” operation or Job Template attribute. For example, if
061 “sides” is supported as a member attribute of the “page-exceptions” collection, then the “sides-supported”
062 Printer attribute indicates the values that are supported at the job level and as a Page Exception.

063
064 Standard keyword values are:

- 065 - 'none': no attributes are supported in the “page-overrides” attribute
- 066
- 067 - 'input-documents': the “input-document” member attribute is supported
- 068 - 'output-documents': the “output-document” member attribute is supported
- 069 - 'document-copies': the “document-copies” member attribute is supported
- 070 - 'pages': The "pages " member attribute is supported
- 071 - 'sides': The "sides" member attribute is supported
- 072 - 'media': The "media" member attribute is supported

073 5.3 pages-per-subset (1setOf integer)

074 A client OPTIONALLY supplies this attribute, and a Printer OPTIONALLY supports this attribute. If a Printer
075 supports the Page-Subset Document Case, it MUST support this attribute.

076

077 When this attribute is present, it effectively partitions one or more Input-Documents into contiguous subsets of
078 Input-Pages. Each subset is defined to be an Output-Document

079

080 The value of the attribute is a set of one or more integers, where each integer specifies the number of Input-Pages
081 in a subset, and the set is treated as a repeating sequence of integers. Thus, when the attribute contains a single
082 integer, the integer specifies the number of Input-Pages in each subset, as a repeating sequence of the single integer.
083 When the number of integers in this attribute exceeds 1, the first integer specifies the number of Input-Pages in the
084 first subset, the second integer specifies the number of Input-Pages in the second subset and so on. If numbers in
085 this attribute are exhausted before partitioning all of the Input-Pages, the Printer starts at the beginning of the
086 sequence again and continues until all Input-Pages are partitioned.

087

088 If the job contains more than one Input-Document, the Input-Pages are treated as a single stream of Input-Pages
089 which are partitioned into contiguous subsets with some subsets possibly belonging to more than one Input-
090 Document.

091

092 If the number of Input-Pages available for the last subset is less than the number specified by this attribute, the
093 Printer MUST treat the last subset as an Output-Document and MUST issue a warning by adding 'job-warnings-
094 detected' to the "job-state-reasons" and by increasing the value of the "job-warnings-count" Job Description
095 attribute by 1.

096

097 If the "multiple-document-handling" attribute is present and has the value 'separate-documents-collated-copies' or
098 'separate-documents-uncollated-copies', the Printer MUST use this attribute; otherwise (i.e. the value of the
099 "multiple-document-handling" attribute has the value 'single-document' or 'single-document-new-sheet'), the Printer
100 ignores this attribute.

101 **5.3.1 Why not "pages-per-subset-default"**

102 There is no "pages-per-subset-default" because there is no mechanism for a client to specify that there are no
103 Input-Page subsets except to omit this attribute, which would cause the Printer to use the "pages-per-subset-
104 default" attribute and create the default subsets. Without this attribute, a client can achieve subsets only by
105 including the "pages-per-subset" attribute in the Job and the default is no subsetting. Also, if there were a defaulting
106 mechanism, it isn't clear that customers would use the same partitioning over and over.

107 **5.3.2 pages-per-subset-supported (boolean)**

108 This attribute specifies whether the Printer supports the Page-Subset Document Case. If the attribute is present
109 and has a value of "true", the Printer supports the Page-Subset Document Case. Otherwise, the Printer doesn't
110 support the Page-Subset Document Case.

111 Note: if the value of this attribute is 'true', then the rules described elsewhere in this document imply that:

- 112 a) Any attribute that affects an Output-Document affects an Output Document created with the “pages-
113 per-subset” attribute.
- 114 b) Any attribute that affects an Output-Page affects the Output-Page of an Output-Document created
115 with the “pages-per-subset” attribute.

116 **6. New Job Description attributes**

117 **6.1 job-warnings-count (integer)**

118 This OPTIONAL attribute specifies the total number of warnings that a Printer has generated while processing and
119 printing the Job. At the beginning of a Job, the value MUST be 0. It MUST increase by 1, each time the Printer
120 generates a warning.

121 **7. New Job Description Values**

122 **7.1 job-warnings-detected value for job-state-reasons (1setOf type2 keyword)**

123 If the Printer supports the value ‘job-warnings-detected’, the Printer MUST add it to “job-state-reasons” when it
124 generates the first warning message. That is, a single occurrence of this value is present in the “job-state-reasons” if
125 the Printer has generated one or more warnings.

126 **8. Extended Role of Some Operation Attributes**

127 In IPP/1.1, the following attributes are operation attributes in all Job-Submission operations except Create-Job, but
128 the Printer doesn’t put their values into the Job object.

- 129 - document-format
- 131 - document-name
- 132 - compression
- 133 - document-natural-language

134
135 With the Override Extension, these attributes also become:
136

- 137 - Operation attributes in the Create-Job and Validate-Job operation when all or most Input-Documents have
138 the same attribute value.
- 139 - Job Template attributes, so their values are accessible to a client via the Get-Job-Attributes and Get-Jobs
140 operation.
- 141 - Job Description attributes, for legacy reasons so their values are accessible to a client via the Get-Job-
142 Attributes and Get-Jobs operation via the Job Description group name.
- 143 - Document-Overrides attributes, so the values are associated with one Input-Document (possible in
144 IPP/1.1) and a client can query the attributes via Get-Job-Attributes and Get-Jobs operation (not possible
145 in IPP/1.1).

146 If a Printer supports the Override Extension and if it supports an attribute in this section, it MUST support the
147 attribute in the three contexts above. In IPP/1.1, a Printer MUST support all attributes in this section except the
148 “document-natural-language” attribute. This effectively means that if a Printer supports this extension, it MUST
149 support all of the attributes in this section except “document-natural-language” in the three contexts described
150 above.

151

152 When one of the attributes in this section is an operation attribute in Print-Job, Print-URI or Create-Job, it
153 becomes a Job Template attribute in the newly created Job object. If one of these attributes is a Document-
154 Overrides attribute, that attribute overrides the Job level attribute for the specified Input-Document.

155

156 When one of the attributes in this section is an operation attribute in Validate-Job, it is validated as if it were an
157 operation attribute of Create-Job.

158

159 When one or more of the attributes in this section is an operation attribute in Send-Document or Send-URI
160 request, they are put into a ‘collection’ value that is added to the “document-overrides” attribute. See section 5.1
161 for a discussion of possible conflicts.

162 **9. Extensions to Printer Operations**

163 The sections below specify the extensions to the groups within IPP 1.1 operations. If an operation or a group
164 within an operation is not mentioned, this extension does not change that operation or group, respectively.

165

166 **9.1 Create-Job and Validate-Job Operation Requests**

167 Attributes are added to the operation attributes group.

168

169 Group 1: Operation Attributes

170

171 Add the attributes specified in section 6: “document-format”, “document-name”, “compression”
172 and “document-natural-language”, so that a client can specify these attributes, at the job level.

173 9.2 Send-Document and Send-URI Operation Requests

174 Attributes are added to the Operation Attributes group.

175

176 Group 1: Operation Attributes

177

178 "input-document-number" (integer):

179

180 The client OPTIONALLY supplies this attribute in order to inform the printer about the order
181 of documents when the printer is sending the Input-Documents asynchronously. The first Input-
182 Document is 1, and subsequent Input-Documents are numbered sequentially. If the value of
183 “last-document” is ‘true’, then the value of this attribute is also the total number of Input-
184 Documents in the Job. If a client supplies this attribute in one Send-Document or Send-URI
185 operation in a Job, it MUST send it in all such operations. A Printer deals with missing Input-
186 Documents in the same way as without this attribute except that a time-out can occur with
187 Input-Documents anywhere in the Job. For example, a Printer could receive Input-Documents
188 1 and 3 and not 2.

189

190 "document-overrides" (1setOf collection):

191

192 The client OPTIONALLY supplies this attribute. See section 5.1 for details. The Printer
193 MUST support this attribute if it supports the “document-overrides” Job Template attribute. If
194 the job doesn’t contain a “document-overrides” attribute, this attribute is added to the Job.
195 Otherwise, the ‘collection’ values from this attribute are appended to the existing “document-
196 overrides” attribute. See section 5.1 for rules of resolving conflicts. Also the “input-documents”
197 attribute is added to any ‘collection’ value that contains neither an “input-documents” nor
198 “output-documents” attribute.

199

200 "page-overrides" (1setOf collection):

201

202 The client OPTIONALLY supplies this attribute. See section 5.2 for details. The Printer
203 MUST support this attribute if it supports the “page-overrides” Job Template attribute. If the
204 job doesn’t contain a “page-overrides” attribute, this attribute is added to the Job. Otherwise,
205 the ‘collection’ values from this attribute are appended to the existing “page-overrides”
206 attribute. See section 5.2 for rules of resolving conflicts. Also the “input-documents” attribute is
207 added to any ‘collection’ value that contains neither an “input-documents” nor “output-
208 documents” attribute.

209 10. Examples

210 This section currently contains 3 examples for various relationships of Input-Documents and Output-Documents.
 211 The first example is for the Degenerate Case only. The second and third cases are for the Separate-Document
 212 Case, the Single-Documents Case and the Page-Subset Documents Case.

213
 214 Brackets are used to delimit the beginning and end of each Collection value.

215 10.1 First Page of Single Document is Letterhead

216 In the first example, the Printer produces 1 copy of a single Output-Document. It is printed on letter-paper
 217 using Print-Job. The first Output-Page of the Output-Document is letterhead paper.

218

219 10.1.1 Degenerate Case.

220 There is one Input-Document A which produces one Output-Document.

221

```

222 Print-Job
223     job attributes group
224         media: letter
225         page-overrides: {
226             output-documents: 1:1      (I could have used input-documents: 1:1 as well)
227             pages: 1:1
228             media: letterhead }
229     end-of-attributes
230     Input-Document A
  
```

231

232 10.2 First Page of Several Documents is Blue

233 In the second example, the Printer produces 3 copies of each Output-Document. Each is stapled and printed
 234 on letter-paper, two-sided using Create-Job. The first Output-Page of each Output-Document is blue-letter
 235 paper and one-sided. All Input-Documents are PostScript.

236

237 Attributes that differ between cases are in bold. The values for the attribute “input-documents” changes with
 238 each example, but could be “1:100” for all.

239 10.2.1 Separate-Documents Case.

240 There are two Input-Documents A and B which produce two Output-Documents.

241

```

242 Create-Job
243     operations attributes group
244         document-format: application/PostScript
245     job attributes group
246     * multiple-document-handling: separate-documents-collated-copies
  
```

```

247         sides: two-sided-long-edge
248         media: letter
249         copies: 3
250         finishings: stapling
251         page-overrides: {
252             output-documents: 1:2           (I could have used input-documents: 1:2 as well)
253             pages: 1:1
254             sides: one-sided
255             media: blue-letter }
256     end-of-attributes
257 Send-Document
258     end-of-attributes
259     Input-Document A
260 Send-Document
261     end-of-attributes
262     Input-Document B
263

```

264 10.2.2 Single-Documents Case

265 There are two Input-Documents A and B and only one Output-Document.

```

266
267 Create-Job
268     operations attributes group
269     document-format: application/PostScript
270     job attributes group
271         multiple-document-handling: single-document
272         sides: two-sided-long-edge
273         media: letter
274         copies: 3
275         finishings: stapling
276         page-overrides: {
277             output-documents: 1:1           (I could have used input-documents: 1:2)
278             pages: 1:1
279             sides: one-sided
280             media: blue-letter }
281     end-of-attributes
282 Send-Document
283     end-of-attributes
284     Input-Document A
285 Send-Document
286     end-of-attributes
287     Input-Document B
288

```

289 10.2.3 Page-Subset Documents Case

290 There are two Input-Documents A and B. . The first Input-Document contains 10 Pages and the second one
291 15 pages. There are 7 Output-Documents with 3 pages, 5 pages, 4 pages, 2 pages, 3 pages, 5 pages and 3
292 pages. The “ pages-per-subset” attributes wraps after the first four Output-Documents and starts with “3”

293 again. After consuming 22 Input-Pages, the next number is “4”, but only 3 pages remain. So the last Output-
 294 Document is short. These value show two boundary cases.

```

295
296 Create-Job
297     operations attributes group
298         document-format: application/PostScript
299     job attributes group
300         multiple-document-handling: separate-documents-collated-copies
301         pages-per-subset: 3, 5, 4, 2
302         sides: two-sided-long-edge
303         media: letter
304         copies: 3
305         finishings: stapling
306         page-overrides: {
307             output-documents: 1:7           (I could have used output-documents: 1:100 to be safe)
308             pages: 1:1
309             sides: one-sided
310             media: blue-letter }
311     end-of-attributes
312 Send-Document
313     end-of-attributes
314     Input-Document A
315 Send-Document
316     end-of-attributes
317     Input-Document B
  
```

318 **10.3 First Page is Blue and First Document is not stapled**

319 In the third example, the Printer produces 3 copies of each Output-Document. Each is stapled and printed on
 320 letter-paper, two-sided using Create-Job. The third and fourth Output-Pages of each Output-Document is
 321 blue-letter paper and one-sided. The second Output-Document is not stapled. All files are PostScript except
 322 the second which is html.

323
 324 Attributes that differ between cases are in bold. The values for the attribute “input-documents” changes with
 325 each example, but could be “1:100” for all.

326 **10.3.1 Separate-Documents Case**

327 There are two Input-Documents A and B which produce two Output-Documents.

328
 329 Here are three solutions presented here in order to show three different places to put the attributes associated
 330 with an Input-Document. The differences are in *bold-italic*.

331 **10.3.1.1 First solution:**

```

332 Create-Job
333     operations attributes group
334         document-format: application/PostScript
335     job attributes group
  
```

```

336     multiple-document-handling: separate-documents-collated-copies
337     sides: two-sided-long-edge
338     media: letter
339     copies: 3
340     finishings: stapling
341     document-format: application/PostScript
342     document-overrides: {
343         output-documents: 2:2           (I could have used input-documents: 2:2 & merged with next)
344         finishings: none }
345     {
346         input-documents: 2:2           next value of multi-value
347         document-format: text/html
348     page-overrides: {
349         output-documents: 1:2           (I could have used input-documents: 1:2 as well)
350         pages: 3:4
351         sides: one-sided
352         media: blue-letter }
353     end-of-attributes
354 Send-Document
355     end-of-attributes
356     Input-Document A
357 Send-Document
358     end-of-attributes
359     Input-Document B

```

360 10.3.1.2 Second solution:

```

361 Create-Job
362     operations attributes group
363     document-format: application/PostScript
364     job attributes group
365     multiple-document-handling: separate-documents-collated-copies
366     sides: two-sided-long-edge
367     media: letter
368     copies: 3
369     finishings: stapling
370     document-format: application/PostScript
371     document-overrides: {
372         output-documents: 2:2
373         finishings: none }
374     page-overrides: {
375         output-documents: 1:2           (I could have used input-documents: 1:2 as well)
376         pages: 3:4
377         sides: one-sided
378         media: blue-letter }
379     end-of-attributes
380 Send-Document
381     end-of-attributes
382     Input-Document A
383 Send-Document
384     Operation attributes group
385     document-format: text/html
386     end-of-attributes

```

387 Input-Document B

388 **10.3.1.3 Third solution:**

389 Create-Job

390 operations attributes group

391 document-format: application/PostScript

392 job attributes group

393 **multiple-document-handling: separate-documents-collated-copies**

394 sides: two-sided-long-edge

395 media: letter

396 copies: 3

397 finishings: stapling

398 document-format: application/PostScript

399 page-overrides: {

400 output-documents: 1:2 (I could have used input-documents: 1:2 as well)

401 pages: 3:4

402 sides: one-sided

403 media: blue-letter }

404 end-of-attributes

405 Send-Document

406 end-of-attributes

407 Input-Document A

408 Send-Document

409 *Operation attributes group*

410 *document-overrides: {*

411 *input-documents: 2:2*

412 *document-format: text/html*

413 *finishings: none }*

414 end-of-attributes

415 Input-Document B

416 **10.3.2 Single-Documents Case**

417 There are two Input-Documents A and B and only one Output-Document.

418

419 Here are three solutions. The Page-Override attributes are in Create-Job in the first solution and in Send-
 420 Document in the last two solutions. The Document-Override attribute is directly in the operation attributes of
 421 Send-Document in the first two solutions and in the document-overrides attributes of Send-Document in the
 422 third solution. The differences are in *bold-italic*.

423 **10.3.2.1 First solution:**

424 Create-Job

425 operations attributes group

426 document-format: application/PostScript

427 job attributes group

428 **multiple-document-handling: single-document**

429 sides: two-sided-long-edge

430 media: letter

431 copies: 3

432 finishings: stapling

```

433     document-overrides: {
434         output-documents: 2:2           (This is ignored because there is no 2nd document)
435         finishings: none }
436     page-overrides: {
437         input-documents: 1:1         (I could have used output-documents: 1:1)
438         pages: 3:4
439         sides: one-sided
440         media: blue-letter }
441     end-of-attributes
442 Send-Document
443     end-of-attributes
444     Input-Document A
445 Send-Document
446     Operation attributes group
447     document-format: text/html
448     end-of-attributes
449     Input-Document B

```

450 10.3.2.2 Second solution:

```

451 Create-Job
452     operations attributes group
453     document-format: application/PostScript
454     job attributes group
455     multiple-document-handling: single-document
456     sides: two-sided-long-edge
457     media: letter
458     copies: 3
459     finishings: stapling
460     document-overrides: {
461         output-documents: 2:2           (This is ignored because there is no 2nd document)
462         finishings: none }
463     end-of-attributes
464 Send-Document
465     Operation attributes group
466     page-overrides: {
467         input-documents: 1:1         (I could have used output-documents: 1:1)
468         pages: 3:4
469         sides: one-sided
470         media: blue-letter }
471     end-of-attributes
472     Input-Document A
473 Send-Document
474     Operation attributes group
475     document-format: text/html         (this can be here or in the document-overrides)
476     end-of-attributes
477     Input-Document B

```

478 10.3.2.3 Third solution:

```

479 Create-Job
480     operations attributes group
481     document-format: application/PostScript

```

```

482     job attributes group
483         multiple-document-handling: single-document
484         sides: two-sided-long-edge
485         media: letter
486         copies: 3
487         finishings: stapling
488         document-overrides: {
489             output-documents: 2:2           (This is ignored because there is no 2nd document)
490             finishings: none }
491     end-of-attributes
492 Send-Document
493     Operation attributes group
494     page-overrides: {
495         input-documents: 1:1           (I could have used output-documents: 1:1)
496         pages: 3:4
497         sides: one-sided
498         media: blue-letter }
499     end-of-attributes
500     Input-Document A
501 Send-Document
502     Operation attributes group
503     document-overrides: {
504         input-documents: 2:2
505         document-format: text/html }
506     end-of-attributes
507     Input-Document B

```

508 10.3.3 Page-Subset Documents Case

509 There are two Input-Documents A and B. . The first Input-Document contains 10 Pages and the second one
510 15 pages. There are 7 Output-Documents with 3 pages, 5 pages, 4 pages, 2 pages, 3 pages, 5 pages and 3
511 pages. The “pages-per-subset” attributes wraps after the first four Output-Documents and starts with “3”
512 again. After consuming 22 Input-Pages, the next number is “4”, but only 3 pages remain. So the last Output-
513 Document is short.

```

514
515 Create-Job
516     operations attributes group
517         document-format: application/PostScript
518     job attributes group
519         multiple-document-handling: separate-documents-collated-copies
520         pages-per-subset: 3, 5, 4, 2
521         sides: two-sided-long-edge
522         media: letter
523         copies: 3
524         finishings: stapling
525         document-overrides: {
526             output-documents: 2:2
527             finishings: none }
528         page-overrides: {
529             output-documents: 1:7           (I could have used input-documents: 1:100 to be safe)
530             pages: 3:4

```

```

531         sides: one-sided
532         media: blue-letter }
533     end-of-attributes
534 Send-Document
535     end-of-attributes
536     Input-Document A
537 Send-Document
538     Operation attributes group
539     document-format: text/html           (this can be here or in the document-overrides)
540     end-of-attributes
541     Input-Document B

```

542 10.4 One document with 100 copies for distribution and one on transparencies.

543 In the fourth example, the Printer produces 101 copies of the single Output-Document using Print-Job. The
544 first 100 are stapled and printed on letter-paper, two-sided, except the first page is on blue paper, one-sided.
545 The last copy (number 101) is printed on transparencies, one-sided and not stapled. The file is PostScript.

546
547 Here are three possible solutions. The first assumes that the job requests 101 letter-paper documents and that
548 the single transparency copy is the override. The second assumes that the job requests 101 transparency
549 documents and that the 100 letter-paper copies are the override. The third assumes that the job requests 101
550 documents with default characteristics and that both single transparency copy and the 100 letter-paper copies
551 are overrides. The differences are in *bold-italic*.

552 10.4.1 First solution.

```

553 Print-Job
554     operations attributes group
555     document-format: application/PostScript
556     job attributes group
557     sides: two-sided-long-edge
558     media: letter
559     copies: 101
560     finishings: stapling
561     document-format: application/PostScript
562     document-overrides: {
563         output-documents: 1:1           (I could have used input-documents: 1:1 as well)
564         document-copies: 101:101
565         sides: one-sided
566         media: transparency
567         finishings: none }
568     page-overrides: {
569         output-documents: 1:1           (I could have used input-documents: 1:1 as well)
570         document-copies: 1:100
571         pages: 1:1
572         sides: one-sided
573         media: blue-letter }
574     end-of-attributes
575     Input-Document A

```

576 **10.4.2 Second solution.**

577 Print-Job
578 operations attributes group
579 document-format: application/PostScript
580 job attributes group
581 *sides: one-sided*
582 *media: transparency*
583 copies: 101
584 *finishings: none*
585 document-format: application/PostScript
586 document-overrides: {
587 output-documents: 1:1 (I could have used input-documents: 1:1 as well)
588 *document-copies: 1:100*
589 *sides: two-sided-long-edge*
590 *media: letter*
591 *finishings: stapling* }
592 page-overrides: {
593 output-documents: 1:1 (I could have used input-documents: 1:1 as well)
594 document-copies: 1:100
595 pages: 1:1
596 sides: one-sided
597 media: blue-letter }
598 end-of-attributes
599 Input-Document A

600 **10.4.3 Third solution.**

601 Print-Job
602 operations attributes group
603 document-format: application/PostScript
604 job attributes group
605 copies: 101
606 document-format: application/PostScript
607 document-overrides: {
608 output-documents: 1:1 (I could have used input-documents: 1:1 as well)
609 *document-copies: 101:101*
610 *sides: one-sided*
611 *media: transparency*
612 *finishings: none* }
613 {
614 *output-documents: 1:1* (I could have used input-documents: 1:1 as well)
615 *document-copies: 1:100*
616 *sides: two-sided-long-edge*
617 *media: letter*
618 *finishings: stapling* }
619 page-overrides: {
620 output-documents: 1:1 (I could have used input-documents: 1:1 as well)
621 document-copies: 1:100
622 pages: 1:1
623 sides: one-sided
624 media: blue-letter }

625 end-of-attributes
626 Input-Document A

627 **11. IANA Considerations**

628
629 IANA will be called on to register the Job Template attributes defined in this document, using the procedures
630 outlined in [ipp-mod].

631 **12. Internationalization Considerations**

632 The IPP extensions defined in this document require the same internationalization considerations as any of the Job
633 Template attributes defined in IPP/1.1 [ipp-mod].

634 **13. Security Considerations**

635 The IPP extensions defined in this document require the same security considerations as any of the Job Template
636 attributes defined in IPP/1.1 [ipp-mod].

637 **14. References**

638 [ipp-mod]
639 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and
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641 [RFC2566]
642 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and
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661

16. Appendix A: Rules for Attribute Association

662

For each category of attribute, there is a rule:

663

1. Input-Documents: such an attribute

664

a) cannot be directly associated with Input-Pages, Output-Pages, Output-Documents

665

b) can be directly associated with an Input-Document, and it affects the Input-Document it is associated with.

666

667

c) can be associated with a Job and it affects all Input-Documents that don't have the attribute associated with it.

668

669

2. Output-Documents: such an attribute

670

a) can never be directly associated with an Input-Page or Output-Page.

671

b) can be directly associated with an Output-Document, and it affects the Output-Document it is associated with.

672

673

c) can be directly associated with an Input-Document. If that Input-Document produces a first Output-Page for one or more Output-Documents, the attribute is effectively associated with each such Output-Document that doesn't have the attribute directly associated with it. Now use rule 2b). If that Input-Document doesn't produce any first Output-Pages of an Output-Document, it is ignored and the Printer produces a warning message.

674

675

676

677

678

d) can be associated with a Job and it affects all Output-Documents that don't have the attribute associated with it.

679

680

3. Sheets: such attributes

681

a) can be directly associated with an Output-Page, and it affects the associated Output-Page .

682

b) can be directly associated with an Input-Page, and it is effectively associated with the Output-Page determined by the relationship described for the four cases in section 4.2 if that Output-Page doesn't have the attribute directly associated with it. Now use rule 3a)

683

684

685

c) can be directly associated with an Output-Document, and it affects all Output-Pages in the specified Output-Document that don't have the attribute associated directly with it or the corresponding Input-Page.

686

687

688

d) can be directly associated with an Input-Document, and it is effectively associated with all Input-Pages in the specified Input-Document that don't have the attribute associated directly with it. By transitivity, the attribute is effectively associated with all corresponding Output-Pages (see section 4.2) that don't

689

690

721 significant public support. ~~The PWG may issue a standard as a PWG standard and/or when appropriate submit the~~
722 ~~standard to other standards organizations, such as the IETF, ISO, ITU, IEEE, or ECMA.~~

723
724 For additional information regarding the Printer Working Group visit:

725
726 <http://www.pwg.org>

727