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

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

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1. Introduction

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The Internet Printing Protocol (IPP) is an application level protocol for distributed printing using Internet tools and technologies. IPP version 1.1 (IPP/1.1) requires that each attribute value be the same for all all pages, all documents and all document copies within a job. This document defines OPTIONAL extensions to the IPP/1.1 model which relax this restriction and allow pages, documents and document copies to have attributes that are overrides. For example, with this extension, page 1 of a job could have a different media or different value of “sides” 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 document is a proposal for an extension to IPP/1.0 and IPP/1.1.

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

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

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

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

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

207

2. Terminology

208

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

209

2.1 REQUIRED

210

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

211 **2.2 OPTIONAL**

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

213 **2.3 Override-Extension**

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

217 **2.4 Sheet**

218 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
219 may mark on one side or on both sides of a sheet.

220 **2.5 Output-Page**

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

223 **2.6 Impression**

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

229 **2.7 Input-Page**

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

236 **2.8 Input-Document**

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

240 2.9 Output-Document

241 An Output-Document is a set of one or more Sheets which either are permanently bound into a single unit, e.g. with
 242 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-
 243 Document is bound, it is uniformly bound; if it is not bound, no subset of sheets within it are bound. The Output-
 244 Pages that comprise an Output-Document may come from

- 245
- 246 a) all the Input-Pages of an Input-Document or
 - 247 b) a proper subset of the Input-Pages of the Input-Document or
 - 248 c) all the Input-Pages of several Input-Documents.

249

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

251 2.10 Output-Document-Copy

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

255 2.11 Relationship between Input-Document and Output-Documents

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

261

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

264

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

266

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)

267

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

269

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

271

- 272 - The “separate” value means that “multiple-document-handling” is 'separate-documents-collated-copies' or
- 273 'separate-documents-uncollated-copies'.
- 274 - The “single” value means that “multiple-document-handling” is 'single-document' or 'single-document-new-
- 275 sheet'.
- 276 - The “ignored” value means that the attribute need not be present and is ignored if it is present,
- 277 - The “present” value means that the attribute must be present. A different case is implied if it is not present.
- 278 - The “not present” value means that the attribute must not be present. A different case is implied if it is present.

279

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

280

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

283

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

285

2.11.1 Degenerate Case

286

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

292

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

294

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

296

2.11.2 Separate Documents Case

297

298 In the Separate Documents Case, the Job consists of one or more Output-Documents where each Input-
 299 Document produces one Output-Document. For example, if a user prints 10 Java files in one Job and
 300 wants 10 separately stapled Output-Documents, each of the 10 Java files is an Input-Document, and the
 301 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'

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

304 **2.11.3 Single Document Case**

305 In the Single Document Case, the job consists of a single Output-Document produced from one or more
306 Input-Documents. For example, if a user prints 10 Java files in one Job and wants all Output-Pages of the
307 10 Java files to be produced as 1 stapled Output-Document, then each of the 10 Java files is an Input-
308 Document, and all printed Output-Pages from all of the 10 Java files is a single Output-Document that is
309 stapled. This case occurs when “multiple-document-handling” is 'single-document' or 'single-document-
310 new-sheet'; the value of “pages-per-subset” and “documents-per-subset” are both ignored if present.

311 **2.11.4 Page-Subset Document Case**

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

322 **2.11.5 Document-Subset Document Case**

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

324
325 In the Document-Subset Document Case, the Job consists of one or more Output-Documents and one or
326 more Input-Documents. The new attribute “documents-per-subset” contains a sequence of integers which
327 specifies how to partition Job’s Input-Documents into subsets, each of which produces an Output
328 Document. For example, if a user prints 25 Java files in one Job and wants 2 separately stapled Output-
329 Documents, one with 15 Java files and one with 10 Java files, then each of the Java files is an Input-
330 Document, and the printed Output-Pages from the first 15 Java files and next 10 Java files are two
331 separate Output-Documents that are stapled separately. This case occurs when “multiple-document-
332 handling” is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies' and
333 “documents-per-subset” contains 1 or more integer values. The new attribute “pages-per-subset” is not
334 present.
335

336 **2.12 Document-Overrides**

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

339 **2.13 Page-Overrides**

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

342 **2.14 Subset-Finishing**

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

345 **2.15 Affects**

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

353 **2.16 Associates**

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

357 **2.16.1 Directly Associates**

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

363 **2.16.2 Effectively Associates**

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

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

368 **2.17 Job-Submission Operations**

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

371 **3. Requirements**

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

373

- 374 1. The Override-Extension **MUST** contain a mechanism for specifying Job attributes that are overrides for
375 particular Input-Documents or Output-Documents. A Printer and a client **OPTIONALLY** support this
376 mechanism.
- 377 2. There **MUST** be a mechanism for specifying Job attributes that are overrides for particular Input-Pages or
378 Output-Pages. A Printer and a client **OPTIONALLY** support this mechanism.
- 379 3. There **MUST** be a mechanism for specifying Job attributes that are overrides for particular document
380 copies of Output-Documents. A Printer and a client **OPTIONALLY** support this mechanism.
- 381 4. The mechanism for overrides **MUST** be supported by all Job-Submission operations and Validate-Job.
- 382 5. The extension **MUST** support the four relationships of Input-Documents and Output-Documents:
383 Degenerate Case, Separate-Documents Case, Single-Document Case and Page-Subset Document Case.
- 384 6. The extension **MUST** support Subset-Finishing.

385 **4. Overview**

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

392

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

399 4.1 Numbering of Components

400 The Override Extension defines a system for numbering of components.

401

402 - Each Input-Document has a number. The single Input-Document that a client sends with Print-Job or Print-
403 URI and the first Input-Document that a client sends with Send-Document or Send-URI has a number of
404 1. Each subsequent Input-Document that a clients sends has a number that is one higher than the previous.

405 - Each Input-Page in an Input-Document is numbered sequentially, starting at 1 for the first Input-Page. If a
406 Job has several Input-Documents, the first Input-Page of each Input-Document has the number of 1, which
407 is relative to that Input-Document.

408 - Each Output-Document has a number. The first Output-Document has a number of '1', and each
409 subsequent Output-Document has a number that is one higher than the previous Output-Document. The
410 Output-Documents are numbered as if the value of "copies" were 1, i.e. if an Input-Document produces
411 multiple copies, each copy of a particular Output-Document has the same number.

412 - Each Output-Page in an Output-Document is numbered sequentially, starting at 1 for the first Output-Page.
413 If a Job has several Output-Documents, the first Output-Page of each has the number of 1, which is
414 relative to that Output-Document

415 - Each copy of an Output-Document has a number. The first copy of each Output-Document has a number
416 of '1', and each subsequent copy has a number that is one higher than the previous copy. If a job has
417 multiple Output-Documents, the first copy of each has a number of '1'.

418 4.2 Relationship of Numbered Components

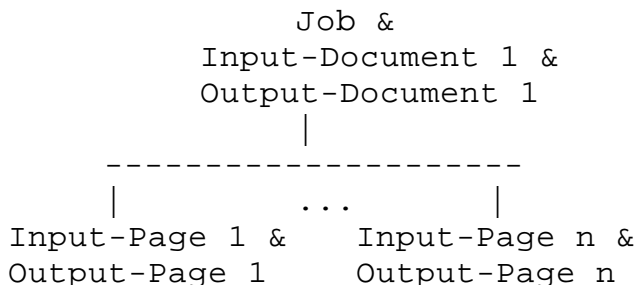
419 The previous section described how to number Input-Documents, Output-Documents, Input-Pages and Output-
420 Pages. This section describes the relationship between the number on each of these four components. The
421 relationship differs for each of the five cases defined in section 2.10. The following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

423

424 These diagrams assume that the number of copies of Output-Documents is 1. When the number of copies exceeds
425 1, some parts of these diagrams would have further replication, but the numeric relationships of the four displayed
426 components would not change.

427

428 **4.2.1 Degenerate Case:**



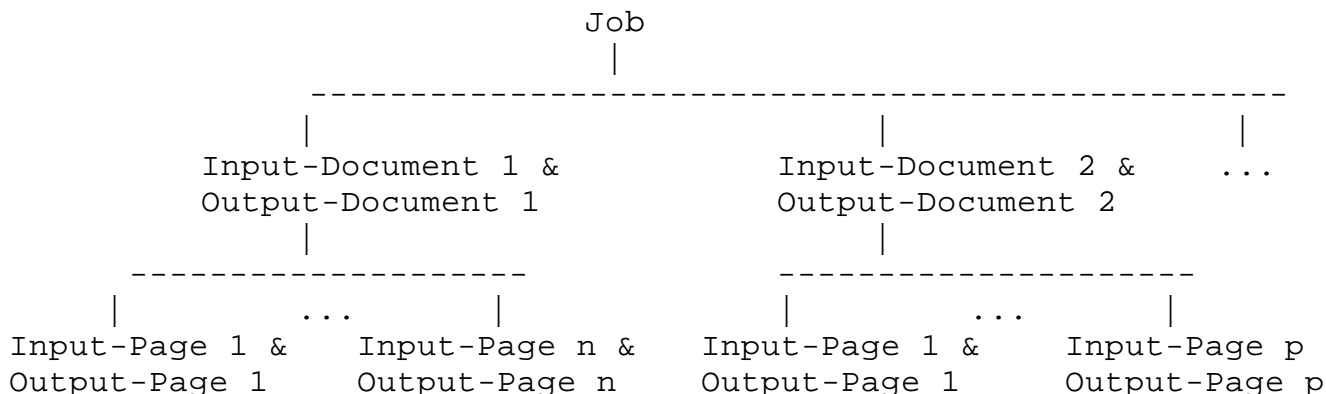
439 Conditions that define this case:

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

443 Observations about this case:

- 444 - Job coincides with Output-Document 1 and Input-Document 1
- 445 - Output-Page i coincides with Input-Page i

448 **4.2.2 Separate-Documents Case:**



461 Conditions that define this case:

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

- 466 - “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-
- 467 uncollated-copies'
- 468 - “pages-per-subset” is not present
- 469 - “documents-per-subset” is not present

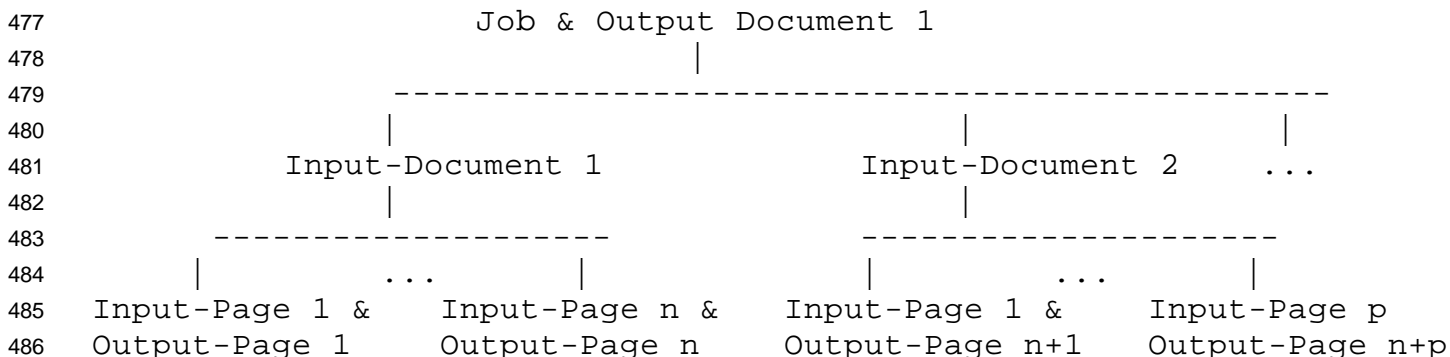
470 Observations about this case:

- 471
- 472 - Output-Document i coincides with Input-Document i
- 473 - Output-Page i coincides with Input-Page i

474

475 4.2.3 Single-Document Case:

476



487

488 Conditions that define this case:

489

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

493 Observations about this case:

494

- 495 - Output-Document 1 coincides with the Job
- 496 - The numbering of Output-Pages is continuous through all Input-Documents, but the numbering of Input-
- 497 Pages starts at 1 in each Input-Document. That is, Input-Page i in Input-Document m coincides with
- 498 Output-Page i + k, where k is the number of Input-Pages in all previous Input-Documents, i.e. Input-
- 499 Documents 1 through m-1.

- 500 - “pages-per-subset” is ignored if present
- 501 - “documents-per-subset” is ignored if present

502

503 **4.2.4 Page-Subset Document Case:**

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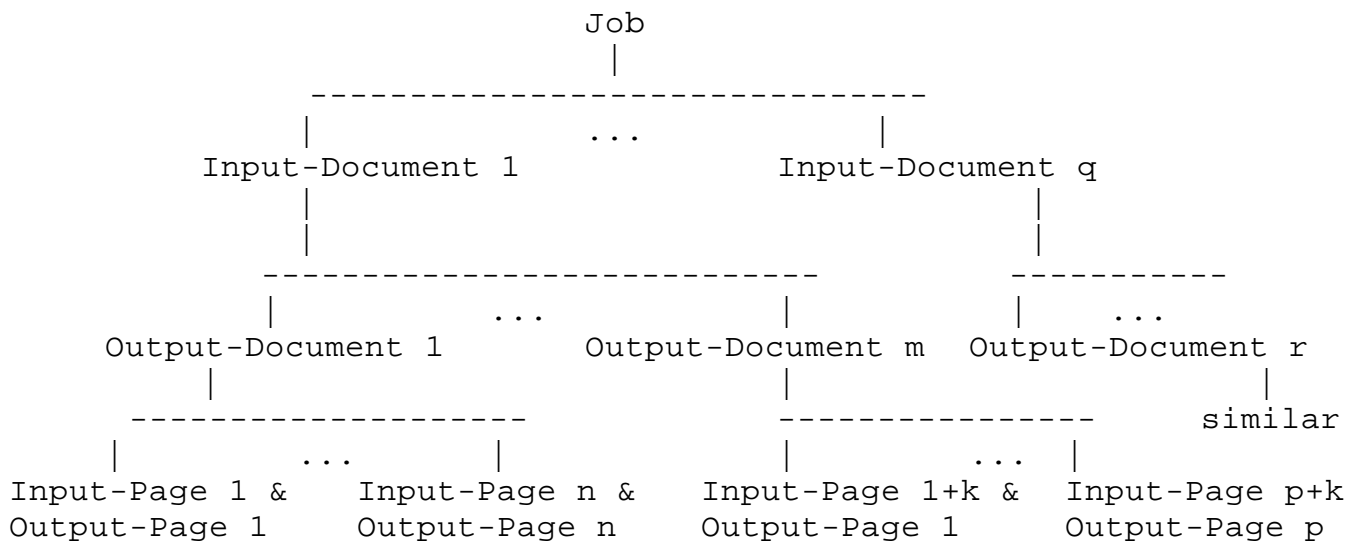
516

517

518

519

520



521 Conditions that define this case:

522

523

524

525

526

527

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

528

529

530

531

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534

535

Observations about this case:

- 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.

- 536 - The Input-Pages in each Input-Document are numbered sequentially starting from 1 and the Output-Pages
- 537 in each Output-Document are numbered sequentially starting from 1. For the first Output-Document, the
- 538 numbers of the Input-Pages and Output-Pages coincide. For subsequent Output-Documents, the numbers
- 539 differ. For example, the first Output-Page of the second Output-Document coincides with Input-Page w ,
- 540 where w is the number of Output-Pages in the first Output-Document. To be specific, Output-Page i in
- 541 Output-Document m coincides with Input-Page $i + k$ of the Job, where k is the number of Output-Pages in
- 542 all previous Output-Documents of the job, e.g. Output-Documents 1 through $m-1$.

- 543 - “pages-per-subset” specifies the number of pages in each Output-Document.

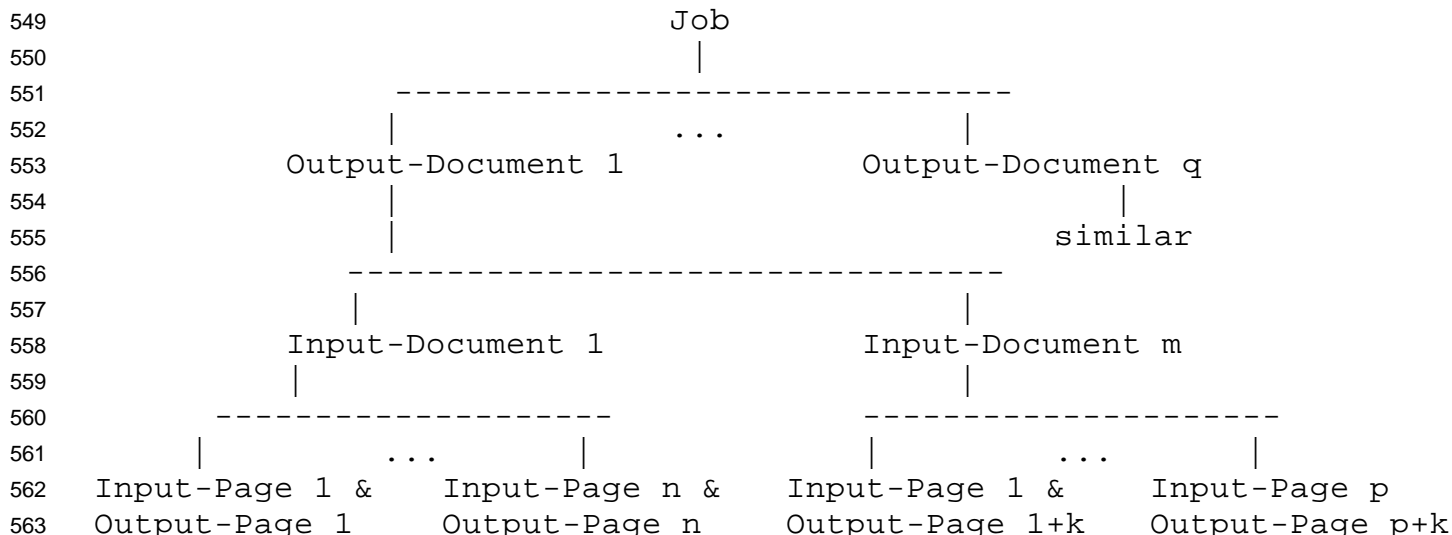
544

545 4.2.5 Document-Subset Document Case:

546

547 NOTE: this case is here for completeness and is not supported by the Overrides-Extension.

548



564

565 Conditions that define this case:

566

- 567 - Job contains one or more Input-Documents

- 568 - “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-
- 569 uncollated-copies'

- 570 - “pages-per-subset” is not present.

- 571 - “documents-per-subset” is present

572 Observations about this case:

573

574 - Input-Documents 1-m are contained in Output-Documents 1, and Input-Documents m+1 through t are
575 contained in Output-Documents 2 and so on.

576 - Input-Page i in Input-Documents m coincides with Output-Page i + k of Output-Documents j, where k is the
577 number of Input-Pages in all previous Input-Documents of Output-Documents j, e.g. Input-Documents 1
578 through m-1.

579 - “documents-per-subset” has the number of Input-Documents in each Output-Documents.

580 4.3 Association of Attributes

581 The Override Extension allows attribute associations with Input-Pages, Output-Pages, Input-Documents and
582 Output-Documents, and it continues to allow associations with Jobs. The Override Extension specifies rules for
583 associations, and it categorizes attributes according to what they affect. The categories of attributes and the
584 members in the Overrides-Extension are:

585

586 - Input Documents: “page-ranges”, “document-format”, “document-name”, “compression” and “document-
587 natural-language”.

588 - Output-Documents: “finishings”

589 - Sheets: “media” and “sides”

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

591

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

592

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

594

595 The Override-Extension mechanism seems to be general enough to add new Document-Overrides and Page-
596 Overrides attributes without changing or extending the general mechanism. That is, an existing or new Job attribute
597 becomes a Document-Overrides or Page-Overrides attribute when a description of that attributes says so, but no
598 changes need be made to the ways overrides work. If the new attribute belongs to one of the three above
599 categories, it follows the rules of that category. If it belongs to a new categories, the rules of association must be
600 defined.

601 **4.4 Effect of the “document-copies” attribute**

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

606
607 If an attribute can affect an Output-Document, it can affect particular Output-Document-Copies. If an attribute can
608 affect Sheets, it can affect Sheets of particular Output-Document-Copies.

609
610 Normally, when an attribute is associated with Input-Documents, Output-Documents, Input-Pages or Output-
611 Pages, that attribute is effectively associated with corresponding Input-Documents, Output-Documents or Sheets.
612 When an association includes the “document-copies” attribute, it has the following meaning for each effective
613 association. If the attribute effectively associates with:

- 614 - Input-Documents, the Printer ignores the “document-copies” attribute.
- 615 - Output-Documents, the attribute affects the specified copies of the Output-Documents.
- 616 - Sheets: the attribute affects the sheets of the specified copies of Output-Documents.

618 **4.5 Subset Finishing**

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

623
624 This model supports subset finishing with the new attribute “pages-per-subset” which specifies the number of Input-
625 Pages per Output-Document. This model treats Subset-Finishing as a Job level sub-setting of the Input-Documents
626 into Output-Documents and as a Document Override attribute rather than a Page Override attribute for two
627 reasons.

- 628 - Page-Overrides, as their name suggests, are overrides for a few Input-Pages or Output-Pages that differ
629 from the rest of the Input-Pages or Output-Pages in the Job. With Subset-Finishing, all Input-Pages belong
630 to some subset. So, sub-setting is not an override; it encompasses the entire Job. Only the finishing part of
631 Subset-Finishing can have overrides and those overrides apply to a subset, much like they apply to Output-
632 Documents. Because subsets behave like Output-Documents, it is easiest to describe the sub-setting
633 operation as creating Output-Documents.
- 634 - If the attributes “media”, “sides” and “finishings” were all treated as Page-Override attributes, then there
635 would have to one rule for splitting and merging groups when “finishings” is associated with the group and
636

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

643
 644 The remainder of this document describes the changes necessary to support the Overrides Extension.

645 5. New Job Template Attributes

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

649 Job Attribute	Printer: Default Value	Printer: Supported
650	Attribute	Values Attribute
651 document- 652 overrides 653 (1setOf collection)	654 none	655 document-overrides- 656 supported 657 (1setOf type2 keyword)
658 page-overrides 659 (1setOf collection)	660 none	661 page-overrides- 662 supported 663 (1setOf type2 keyword)
664 pages-per-subset 665 (1setOf integer)	666 none	667 pages-per-subset 668 supported 669 (boolean)

666 5.1 document-overrides (1setOf collection)

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

671
 672 If this attribute is not present in a Job, there are no Document-Overrides within the Job. If it is present, the value
 673 consists of one or more ‘collection’ values, where each ‘collection’ value identifies one or more Input-Documents
 674 or Output-Documents and contains one or more Job Template attributes which act as overrides to the
 675 corresponding Job Template attribute values for the specified Input-Documents or Output-Documents.

676

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

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

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

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

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

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

<u>Attribute name</u>	<u>syntax</u>	<u>In request</u>	<u>Printer Support</u>
input-documents	1setOf rangeOfInteger(MAX)	MUST	MUST
document-copies	1setOf 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

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

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

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

711 **5.1.1 input-documents ([1setOf](#) rangeOfInteger (1:MAX))**

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

715
 716 A Printer MUST support this attribute. A client MUST supply this attribute in each ‘collection’ value and it
 717 MUST be the first attribute of each ‘collection’ value. If this attribute is present, then the client MUST
 718 NOT supply “output-documents”.

719
 720 When a client supplies this attribute in a “document-overrides” attribute of a Send-Document or Send-URI
 721 request, this attribute MUST NOT identify Input-Documents which were sent in an earlier operation. If a
 722 Printer receives such a value in a ‘collection’ value, it MUST treat all attribute values in such a ‘collection’
 723 value, but not other sibling ‘collection’ values, as unsupported values and return the entire collection value
 724 in the Unsupported Attributes group.

725

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

728
729 See section 5 for details of usage of this attribute.

730
731 There is no "input-documents-supported" attribute, since the member attribute MUST be supported and
732 for the full range.

733

734 **5.1.2 output-documents (1setOf rangeOfInteger (1:MAX))**

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

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

741

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

747

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

750

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

753 **5.1.3 document-copies (1setOf rangeOfInteger (1:MAX))**

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

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

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

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

766
767 There is no “document-copies-supported” attribute, since the full range MUST be supported, if the
768 “document-copies” member attribute is supported.

769 **5.1.4 document-format (mimeMediaType)**

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

772 **5.1.5 document-name (name (MAX))**

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

775 **5.1.6 compression (type3 keyword)**

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

778 **5.1.7 document-natural-language (naturalLanguage)**

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

782 **5.1.8 page-ranges (1setOf rangeOfInteger (1:MAX))**

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

792
793 See section 5.2.4 for details of how this attribute affects number of pages with the “pages” attribute.

794 **5.1.9 finishings (1setOf type2 enum)**

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

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

802 **5.1.9.1 Common Behavior for Output-Document Attributes**

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

806
807 If the “document-copies” attribute is present, the attribute affects only the specified copies of the Output-
808 Documents.

809 **5.1.10 sides (type2 keyword)**

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

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

816 **5.1.10.1 Common Behavior for Sheet Attributes**

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

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

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

- 826 a) For the first Output-Page: if the value of this attribute is effectively associated with Output-Page i,
827 and if Output-Page i is not the first Output-Page contained on a Sheet and if the value of this
828 attribute differs from the value of this attribute for the preceding Output-Page i-1, then Output-
829 Page i MUST start a new Sheet and the Printer MUST issue a warning by adding 'job-warnings-
830 detected' to the "job-state-reasons" and by increasing the value of the "job-warnings-count" Job
831 Description attribute by 1.
- 832 b) For the last Output-Page: if the value of this attribute is effectively associated with Output-Page i,
833 and if Output-Page i is not the last Output-Page contained on a Sheet and if the value of this
834 attribute differs from the value of this attribute for the following Output-Page i+1, then Output-Page
835 i+1 MUST start a new Sheet and the Printer MUST issue a warning by adding 'job-warnings-
836 detected' to the "job-state-reasons" and by increasing the value of the "job-warnings-count" Job
837 Description attribute by 1.

838 **5.1.11 media (type3 keyword | name(MAX))**

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

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

845 **5.1.12 Handling of Error conditions**

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

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

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

854 **5.1.13 Why not "document-overrides-default"**

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

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

863 **5.1.14 document-overrides-supported (1setOf type2 keyword)**

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

866 This attribute contains the name of each attribute that the Printer supports in a ‘collection’ value of the
867 “document-overrides” attribute. This attribute MUST contain the keywords “input-documents” and
868 “output-documents” because a Printer MUST support these attributes. This attribute MUST also contain
869 the name of each attribute that can be a document-override. For example, this attribute contains the
870 keyword “sides” if and only if the Printer supports “sides” in a ‘collection’ value of the “document-
871 overrides” attribute.

872 There are no corresponding “input-documents-supported”, “output-documents-supported” and
873 “document-copies-supported” Printer attributes. However, the supported values for all of the other
874 member attributes are indicated by the corresponding “xxx-supported” Printer attributes which are the
875 same values as for the corresponding “xxx” operation or Job Template attribute. For example, if
876 “document-format” and “sides” are supported as member attributes of the “document-exceptions”
877 collection, then the “document-format-supported” and the “sides-supported” Printer attribute indicates the
878 values that are supported at the job level and as a Document Exception.

879 Standard keyword values are:

- 880
- 881 - 'none': no attributes are supported in the “document-overrides” attribute
- 882 - 'input-documents': the “input-document” member attribute is supported
- 883 - 'output-documents': the “output-document” member attribute is supported
- 884 - 'document-copies': the “document-copies” member attribute is supported
- 885 - 'document-format': The "document-format" member attribute is supported
- 886 - 'document-name': The "document-name" member attribute is supported
- 887 - 'compression': The "compression" member attribute is supported
- 888 - 'document-natural-language': The "document-natural-language" member attribute is supported

- 889 - 'page-ranges': The "page-ranges" member attribute is supported
- 890 - 'finishings': The "finishing" member attribute is supported
- 891 - 'sides': The "sides" member attribute is supported
- 892 - 'media': The "media" member attribute is supported

893 **5.2 page-overrides (1setOf collection)**

894 This OPTIONAL Job Template attribute contains attributes that are associated with Input-Pages and Output-
895 Pages and that are treated as page overrides. Such attributes are called "Page-Overrides" attributes. The
896 remainder of this section describes features that an implementation MUST support or MAY support if an
897 implementation supports this attribute

898
899 If this attribute is not present in a Job, there are no Page-Overrides attributes within the Job. If it is present, the
900 value consists of one or more 'collection' values, where each 'collection' value identifies one or more Input-Pages
901 or Output-Pages and contains one or more Job Template attributes which act as overrides to the corresponding
902 Job Template attributes for the specified Input-Pages or Output-Pages.

903
904 The first attribute of each 'collection' value MUST be either "input-documents" or "output-documents".

905
906 The second attribute MAY be "document-copies". If present, this attributes identifies the copies of the Output-
907 Document. If this attribute is not present in a 'collection' value, then the 'collection' value applies to all Output-
908 Document-Copies.

909
910 If "document-copies" is present, the "pages" attribute MUST be the third attribute; otherwise, it MUST be the
911 second attribute. The "pages" attribute identifies either

- 912 - the Input-Pages relative to the Input-Document specified by "input-documents" or
- 913 - the Output-Pages relative to the Output-Document specified by "output-documents".

914
915 The Page-Overrides attributes applies to the identified Input-Pages or Output-Pages, which need not be
916 contiguous.

917
918 The remaining attributes in the 'collection' value are the Job Template attributes that are overrides for the specified
919 Input-Pages or Output-Pages.

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

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

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

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

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

941 For the first form, the client MUST supply “input-documents” as the first attribute. If the client supplies the
 942 “document-copies” attribute, it MUST be the second attribute. The “pages” attribute MUST be the next attribute.
 943 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	1setOf rangeOfInteger(MAX)	MUST	MUST
document-copies	1setOf rangeOfInteger(MAX)	MAY	MAY
pages	1setOf rangeOfInteger(MAX)	MUST	MUST
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

944 For the second form, the client MUST supply “output-documents” as the first attribute. If the client supplies the
 945 “document-copies” attribute, it MUST be the second attribute. Then the “pages” attribute MUST be the next
 946 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	1setOf rangeOfInteger(MAX)	MUST	MUST
document-copies	1setOf rangeOfInteger(MAX)	MAY	MAY
pages	1setOf rangeOfInteger(MAX)	MUST	MUST
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

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

948 **5.2.1 input-documents ([1setOf rangeOfInteger \(1:MAX\)](#))**

949 See section 5.1.1 for details of this attribute.

950 **5.2.2 output-documents ([1setOf rangeOfInteger \(1:MAX\)](#))**

951 See section 5.1.2 for details of this attribute.

952 **5.2.3 document-copies ([1setOf rangeOfInteger \(1:MAX\)](#))**

953 This attribute identifies one or more Output-Document-Copies by specifying a range of numbers. The
954 Page-Overrides apply to the Output-Pages within the identified Output-Documents-Copies within Output-
955 Documents specified either directly by “output-documents” or indirectly by “input-documents” (see section
956 16 for further details).

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

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

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

964 **5.2.4 pages ([1setOf rangeOfInteger\(1:MAX\)](#))**

965 This attribute identifies one or more Input-Pages or Output-Pages by specifying one or more ranges of
966 numbers (see section 4.1 for the rules on associating a number with each Input-Page or Output-Page). The
967 “1setOf” allows noncontiguous Input-Page or Output-Pages. The Page-Overrides apply to the identified
968 Input-Pages or Output-Pages within the Output-Documents specified directly by “output-documents” or
969 indirectly by “input-documents”. The “document-copies” specifies particular copies of Output-Documents.

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

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

978
979 When a client supplies this attribute in a Send-Document or Send-URI request, this attribute MUST NOT
980 identify Output-Pages sent in an earlier operation. If a Printer receives such a value in a ‘collection’ value,
981 it MUST treat all such values, but not other sibling ‘collection’ values, as unsupported values.

982
983 Note: because the Printer silently ignores values that reference non-existent pages, a value of ‘MAX’ is
984 equivalent to the number of pages in each specified Input-Document or Output-Document.

985
986 There is no “pages-supported” attribute, since the member attribute MUST be supported and for the full
987 range.

988
989 See section 5 for details of usage of this attribute.

990 **5.2.5 sides (type2 keyword)**

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

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

997 **5.2.6 media (type3 keyword | name(MAX))**

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

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

004 **5.2.7 Handling of Error conditions**

005 See section 5.1.12.

006 **5.2.8 Why not “page-overrides-default”**

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

008 **5.2.9 page-overrides-supported (1setOf type2 keyword)**

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

011 This attribute contains the name of each attribute that the Printer supports in a ‘collection’ value of the
012 “page-overrides” attribute. This attribute MUST contain the keywords “input-documents”, “output-
013 documents” and “pages” because a Printer MUST support these attributes. This attribute MUST also
014 contain the name of each attribute that can be a page-override. For example, this attribute contains the
015 keyword “sides” if and only if the Printer supports “sides” in a ‘collection’ value of the “page-overrides”
016 attribute.

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

023
024 Standard keyword values are:

- 025 - 'none': no attributes are supported in the “page-overrides” attribute
- 026
- 027 - 'input-documents': the “input-document” member attribute is supported
- 028 - 'output-documents': the “output-document” member attribute is supported
- 029 - 'document-copies': the “document-copies” member attribute is supported
- 030 - 'pages': The "pages " member attribute is supported
- 031 - 'sides': The "sides" member attribute is supported
- 032 - 'media': The "media" member attribute is supported

033 **5.3 pages-per-subset (1setOf integer)**

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

036

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

039

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

047

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

051

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

056

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

061 **5.3.1 Why not "pages-per-subset-default"**

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

067 **5.3.2 pages-per-subset-supported (boolean)**

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

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

- 072 a) Any attribute that affects an Output-Document affects an Output Document created with the “pages-
073 per-subset” attribute.
- 074 b) Any attribute that affects an Output-Page affects the Output-Page of an Output-Document created
075 with the “pages-per-subset” attribute.

076 **6. New Job Description attributes**

077 **6.1 job-warnings-count (integer)**

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

081 **7. New Job Description Values**

082 **7.1 job-warnings-detected value for job-state-reasons (1setOf type2 keyword)**

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

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

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

- 089 - document-format
- 091 - document-name
- 092 - compression
- 093 - document-natural-language

094
095 With the Override Extension, these attributes also become:
096

- 097 - Operation attributes in the Create-Job and Validate-Job operation when all or most Input-Documents have
098 the same attribute value.
- 099 - Job Template attributes, so their values are accessible to a client via the Get-Job-Attributes and Get-Jobs
100 operation.
- 101 - Job Description attributes, for legacy reasons so their values are accessible to a client via the Get-Job-
102 Attributes and Get-Jobs operation via the Job Description group name.
- 103 - Document-Overrides attributes, so the values are associated with one Input-Document (possible in
104 IPP/1.1) and a client can query the attributes via Get-Job-Attributes and Get-Jobs operation (not possible
105 in IPP/1.1).

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

111
112 When one of the attributes in this section is an operation attribute in Print-Job, Print-URI or Create-Job, it
113 becomes a Job Template attribute in the newly created Job object. If one of these attributes is a Document-
114 Overrides attribute, that attribute overrides the Job level attribute for the specified Input-Document.

115
116 When one of the attributes in this section is an operation attribute in Validate-Job, it is validated as if it were an
117 operation attribute of Create-Job.

118
119 When one or more of the attributes in this section is an operation attribute in Send-Document or Send-URI
120 request, they are put into a ‘collection’ value that is added to the “document-overrides” attribute. See section 5.1
121 for a discussion of possible conflicts.

122 **9. Extensions to Printer Operations**

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

125

126 **9.1 Create-Job and Validate-Job Operation Requests**

127 Attributes are added to the operation attributes group.

128

129 Group 1: Operation Attributes

130

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

133 9.2 Send-Document and Send-URI Operation Requests

134 Attributes are added to the Operation Attributes group.

135

136 Group 1: Operation Attributes

137

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

139

140 The client OPTIONALLY supplies this attribute in order to inform the printer about the order
141 of documents when the printer is sending the Input-Documents asynchronously. The first Input-
142 Document is 1, and subsequent Input-Documents are numbered sequentially. If the value of
143 “last-document” is ‘true’, then the value of this attribute is also the total number of Input-
144 Documents in the Job. If a client supplies this attribute in one Send-Document or Send-URI
145 operation in a Job, it MUST send it in all such operations. A Printer deals with missing Input-
146 Documents in the same way as without this attribute except that a time-out can occur with
147 Input-Documents anywhere in the Job. For example, a Printer could receive Input-Documents
148 1 and 3 and not 2.

149

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

151

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

159

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

161

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

169 **10. Examples**

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

173
 174 Brackets are used to delimit the beginning and end of each Collection value.

175 **10.1 First Page of Single Document is Letterhead**

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

178

179 **10.1.1 Degenerate Case.**

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

181

```

182 Print-Job
183     job attributes group
184         media: letter
185         page-overrides: {
186             output-documents: 1:1      (I could have used input-documents: 1:1 as well)
187             pages: 1:1
188             media: letterhead }
189     end-of-attributes
190     Input-Document A
  
```

191

192 **10.2 First Page of Several Documents is Blue**

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

196

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

199 **10.2.1 Separate-Documents Case.**

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

201

```

202 Create-Job
203     operations attributes group
204         document-format: application/PostScript
205     job attributes group
206     * multiple-document-handling: separate-documents-collated-copies
  
```

```

207         sides: two-sided-long-edge
208         media: letter
209         copies: 3
210         finishings: stapling
211         page-overrides: {
212             output-documents: 1:2           (I could have used input-documents: 1:2 as well)
213             pages: 1:1
214             sides: one-sided
215             media: blue-letter }
216     end-of-attributes
217 Send-Document
218     end-of-attributes
219     Input-Document A
220 Send-Document
221     end-of-attributes
222     Input-Document B
223

```

224 10.2.2 Single-Documents Case

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

```

226
227 Create-Job
228     operations attributes group
229     document-format: application/PostScript
230     job attributes group
231     multiple-document-handling: single-document
232     sides: two-sided-long-edge
233     media: letter
234     copies: 3
235     finishings: stapling
236     page-overrides: {
237         output-documents: 1:1           (I could have used input-documents: 1:2)
238         pages: 1:1
239         sides: one-sided
240         media: blue-letter }
241     end-of-attributes
242 Send-Document
243     end-of-attributes
244     Input-Document A
245 Send-Document
246     end-of-attributes
247     Input-Document B
248

```

249 10.2.3 Page-Subset Documents Case

250 There are two Input-Documents A and B. . The first Input-Document contains 10 Pages and the second one
251 15 pages. There are 7 Output-Documents with 3 pages, 5 pages, 4 pages, 2 pages, 3 pages, 5 pages and 3
252 pages. The “ pages-per-subset” attributes wraps after the first four Output-Documents and starts with “3”

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

```
255
256 Create-Job
257     operations attributes group
258         document-format: application/PostScript
259     job attributes group
260         multiple-document-handling: separate-documents-collated-copies
261         pages-per-subset: 3, 5, 4, 2
262         sides: two-sided-long-edge
263         media: letter
264         copies: 3
265         finishings: stapling
266         page-overrides: {
267             output-documents: 1:7           (I could have used output-documents: 1:100 to be safe)
268             pages: 1:1
269             sides: one-sided
270             media: blue-letter }
271     end-of-attributes
272 Send-Document
273     end-of-attributes
274     Input-Document A
275 Send-Document
276     end-of-attributes
277     Input-Document B
```

278 **10.3 First Page is Blue and First Document is not stapled**

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

283
284 Attributes that differ between cases are in bold. The values for the attribute “input-documents” changes with
285 each example, but could be “1:100” for all.

286 **10.3.1 Separate-Documents Case**

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

288
289 Here are three solutions presented here in order to show three different places to put the attributes associated
290 with an Input-Document. The differences are in *bold-italic*.

291 **10.3.1.1 First solution:**

```
292 Create-Job
293     operations attributes group
294         document-format: application/PostScript
295     job attributes group
```

296 **multiple-document-handling: separate-documents-collated-copies**
 297 sides: two-sided-long-edge
 298 media: letter
 299 copies: 3
 300 finishings: stapling
 301 document-format: application/PostScript
 302 document-overrides: {
 303 output-documents: 2:2 (I could have used input-documents: 2:2 & merged with next)
 304 finishings: none }
 305 {
 306 **input-documents: 2:2** *next value of multi-value*
 307 **document-format: text/html**}
 308 page-overrides: {
 309 output-documents: 1:2 (I could have used input-documents: 1:2 as well)
 310 pages: 3:4
 311 sides: one-sided
 312 media: blue-letter }
 313 end-of-attributes
 314 Send-Document
 315 end-of-attributes
 316 Input-Document A
 317 Send-Document
 318 end-of-attributes
 319 Input-Document B

320 **10.3.1.2 Second solution:**

321 Create-Job
 322 operations attributes group
 323 document-format: application/PostScript
 324 job attributes group
 325 **multiple-document-handling: separate-documents-collated-copies**
 326 sides: two-sided-long-edge
 327 media: letter
 328 copies: 3
 329 finishings: stapling
 330 document-format: application/PostScript
 331 document-overrides: {
 332 output-documents: 2:2
 333 finishings: none }
 334 page-overrides: {
 335 output-documents: 1:2 (I could have used input-documents: 1:2 as well)
 336 pages: 3:4
 337 sides: one-sided
 338 media: blue-letter }
 339 end-of-attributes
 340 Send-Document
 341 end-of-attributes
 342 Input-Document A
 343 Send-Document
 344 **Operation attributes group**
 345 **document-format: text/html**
 346 end-of-attributes

347

Input-Document B

348 **10.3.1.3 Third solution:**

349

Create-Job

350

operations attributes group

351

document-format: application/PostScript

352

job attributes group

353

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

354

sides: two-sided-long-edge

355

media: letter

356

copies: 3

357

finishings: stapling

358

document-format: application/PostScript

359

page-overrides: {

360

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

361

pages: 3:4

362

sides: one-sided

363

media: blue-letter }

364

end-of-attributes

365

Send-Document

366

end-of-attributes

367

Input-Document A

368

Send-Document

369

Operation attributes group

370

document-overrides: {

371

input-documents: 2:2

372

document-format: text/html

373

finishings: none }

374

end-of-attributes

375

Input-Document B

376 **10.3.2 Single-Documents Case**

377

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

378

379

Here are three solutions. The Page-Override attributes are in Create-Job in the first solution and in Send-

380

Document in the last two solutions. The Document-Override attribute is directly in the operation attributes of

381

Send-Document in the first two solutions and in the document-overrides attributes of Send-Document in the

382

third solution. The differences are in ***bold-italic***.383 **10.3.2.1 First solution:**

384

Create-Job

385

operations attributes group

386

document-format: application/PostScript

387

job attributes group

388

multiple-document-handling: single-document

389

sides: two-sided-long-edge

390

media: letter

391

copies: 3

392

finishings: stapling

```

393     document-overrides: {
394         output-documents: 2:2           (This is ignored because there is no 2nd document)
395         finishings: none }
396     page-overrides: {
397         input-documents: 1:1         (I could have used output-documents: 1:1)
398         pages: 3:4
399         sides: one-sided
400         media: blue-letter }
401     end-of-attributes
402 Send-Document
403     end-of-attributes
404     Input-Document A
405 Send-Document
406     Operation attributes group
407     document-format: text/html
408     end-of-attributes
409     Input-Document B

```

410 10.3.2.2 Second solution:

```

411 Create-Job
412     operations attributes group
413     document-format: application/PostScript
414     job attributes group
415     multiple-document-handling: single-document
416     sides: two-sided-long-edge
417     media: letter
418     copies: 3
419     finishings: stapling
420     document-overrides: {
421         output-documents: 2:2           (This is ignored because there is no 2nd document)
422         finishings: none }
423     end-of-attributes
424 Send-Document
425     Operation attributes group
426     page-overrides: {
427         input-documents: 1:1         (I could have used output-documents: 1:1)
428         pages: 3:4
429         sides: one-sided
430         media: blue-letter }
431     end-of-attributes
432     Input-Document A
433 Send-Document
434     Operation attributes group
435     document-format: text/html         (this can be here or in the document-overrides)
436     end-of-attributes
437     Input-Document B

```

438 10.3.2.3 Third solution:

```

439 Create-Job
440     operations attributes group
441     document-format: application/PostScript

```

```

442     job attributes group
443         multiple-document-handling: single-document
444         sides: two-sided-long-edge
445         media: letter
446         copies: 3
447         finishings: stapling
448         document-overrides: {
449             output-documents: 2:2           (This is ignored because there is no 2nd document)
450             finishings: none }
451     end-of-attributes
452 Send-Document
453     Operation attributes group
454         page-overrides: {
455             input-documents: 1:1           (I could have used output-documents: 1:1)
456             pages: 3:4
457             sides: one-sided
458             media: blue-letter }
459     end-of-attributes
460     Input-Document A
461 Send-Document
462     Operation attributes group
463         document-overrides: {
464             input-documents: 2:2
465             document-format: text/html }
466     end-of-attributes
467     Input-Document B

```

468 10.3.3 Page-Subset Documents Case

469 There are two Input-Documents A and B. . The first Input-Document contains 10 Pages and the second one
470 15 pages. There are 7 Output-Documents with 3 pages, 5 pages, 4 pages, 2 pages, 3 pages, 5 pages and 3
471 pages. The “pages-per-subset” attributes wraps after the first four Output-Documents and starts with “3”
472 again. After consuming 22 Input-Pages, the next number is “4”, but only 3 pages remain. So the last Output-
473 Document is short.

```

474
475 Create-Job
476     operations attributes group
477         document-format: application/PostScript
478     job attributes group
479         multiple-document-handling: separate-documents-collated-copies
480         pages-per-subset: 3, 5, 4, 2
481         sides: two-sided-long-edge
482         media: letter
483         copies: 3
484         finishings: stapling
485         document-overrides: {
486             output-documents: 2:2
487             finishings: none }
488         page-overrides: {
489             output-documents: 1:7           (I could have used input-documents: 1:100 to be safe)
490             pages: 3:4

```

```

491         sides: one-sided
492         media: blue-letter }
493     end-of-attributes
494 Send-Document
495     end-of-attributes
496     Input-Document A
497 Send-Document
498     Operation attributes group
499     document-format: text/html           (this can be here or in the document-overrides)
500     end-of-attributes
501     Input-Document B

```

502 10.4 One document with 100 copies for distribution and one on transparencies.

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

506
507 Here are three possible solutions. The first assumes that the job requests 101 letter-paper documents and that
508 the single transparency copy is the override. The second assumes that the job requests 101 transparency
509 documents and that the 100 letter-paper copies are the override. The third assumes that the job requests 101
510 documents with default characteristics and that both single transparency copy and the 100 letter-paper copies
511 are overrides. The differences are in *bold-italic*.

512 10.4.1 First solution.

```

513 Print-Job
514     operations attributes group
515     document-format: application/PostScript
516     job attributes group
517     sides: two-sided-long-edge
518     media: letter
519     copies: 101
520     finishings: stapling
521     document-format: application/PostScript
522     document-overrides: {
523         output-documents: 1:1           (I could have used input-documents: 1:1 as well)
524         document-copies: 101:101
525         sides: one-sided
526         media: transparency
527         finishings: none }
528     page-overrides: {
529         output-documents: 1:1           (I could have used input-documents: 1:1 as well)
530         document-copies: 1:100
531         pages: 1:1
532         sides: one-sided
533         media: blue-letter }
534     end-of-attributes
535     Input-Document A

```

536

10.4.2 Second solution.

537

Print-Job

538

operations attributes group

539

document-format: application/PostScript

540

job attributes group

541

sides: one-sided

542

media: transparency

543

copies: 101

544

finishings: none

545

document-format: application/PostScript

546

document-overrides: {

547

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

548

document-copies: 1:100

549

sides: two-sided-long-edge

550

media: letter

551

finishings: stapling }

552

page-overrides: {

553

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

554

document-copies: 1:100

555

pages: 1:1

556

sides: one-sided

557

media: blue-letter }

558

end-of-attributes

559

Input-Document A

560

10.4.3 Third solution.

561

Print-Job

562

operations attributes group

563

document-format: application/PostScript

564

job attributes group

565

copies: 101

566

document-format: application/PostScript

567

document-overrides: {

568

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

569

document-copies: 101:101

570

sides: one-sided

571

media: transparency

572

finishings: none }

573

{

574

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

575

document-copies: 1:100

576

sides: two-sided-long-edge

577

media: letter

578

finishings: stapling }

579

page-overrides: {

580

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

581

document-copies: 1:100

582

pages: 1:1

583

sides: one-sided

584

media: blue-letter }

585 end-of-attributes
586 Input-Document A

587 **11. IANA Considerations**

588
589 IANA will be called on to register the Job Template attributes defined in this document, using the procedures
590 outlined in [ipp-mod].

591 **12. Internationalization Considerations**

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

594 **13. Security Considerations**

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

597 **14. References**

598 [ipp-mod]
599 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and
600 Semantics", <draft-ietf-ipp-model-v11-04.txt>, June 23, 1999.

601 [RFC2566]
602 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and
603 Semantics", RFC 2566, April 1999.

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621 **16. Appendix A: Rules for Attribute Association**

622 For each category of attribute, there is a rule:

623

1. Input-Documents: such an attribute

624

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

625

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

626

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

628

629 2. Output-Documents: such an attribute

630

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

631

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

632

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

638

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

639

640 3. Sheets: such attributes

641

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

642

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)

643

644 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.

645

646 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

647

648
649
650

682
683 For additional information regarding the Printer Working Group visit:
684
685 <http://www.pwg.org>
686