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7 Internet Printing Protocol/1.0 & 1.1: Override Attributes for Documents and Pages
8 <pwg-ipp-override-attributes-000915.doc, .pdf>

9 Status of this Memo

10 This document is a PWG-Draft of an IEEE-ISTO PWG Proposed Standard and is in full conformance with all provisions of the
11 PWG Process (see <http://www.pwg.org/chair/pwg-process-990825.pdf>). PWG-Drafts are working documents of the IEEE-ISTO
12 PWG and its working groups.

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14 Abstract

15 This document specifies an extension to the Internet Printing Protocol/1.0 (IPP) [RFC2565, RFC2566] and IPP/1.1 [ipp-mod, ipp-
16 pro]. This extension relaxes the restriction that each attribute value is the same for all pages, all documents and all document
17 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
18 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
19 document could be printed on letter paper and stapled while the eleventh copy of the same document could be printed on
20 transparencies with no staple.

21
22 This extension supports document overrides and page overrides by adding two new Job Template attributes: “document-
23 overrides” and “page-overrides” -- both have a syntax type of “1setOf collection”. Each ‘collection’ value for “document-
24 overrides” contains an attribute that identifies the overridden documents, namely “input-documents” or “output-documents”.
25 The ‘collection’ value also contains one or more attributes that are overrides for the identified documents, e.g. “document-
26 format”, “finishings”, and “media”. Each ‘collection’ value for “page-overrides” contains two attributes that identify the
27 overridden pages, namely “input-documents” or “output-documents” plus “pages”. The ‘collection’ value also contains one or
28 more attributes that are overrides for the identified pages, e.g. “sides” and “media”. When the overrides apply to some but not all
29 document copies, the ‘collection’ value for “document-overrides” or “page-overrides” contains the attribute of “document-
30 copies”.

31
32 This extension also supports subset finishing by adding a new Job Template attribute “pages-per-subset”, which specifies the
33 number of pages per subset. The extension allows finishing and other document attributes to be applied to such subsets of
34 pages.

35
36 The full set of IPP documents includes:

- 37 - Design Goals for an Internet Printing Protocol [RFC2567]
- 38 - Rationale for the Structure and Model and Protocol for the Internet Printing Protocol [RFC2568]
- 39 - Internet Printing Protocol/1.1: Model and Semantics (this document)
- 40 - Internet Printing Protocol/1.1: Encoding and Transport [IPP-PRO]
- 41 - Internet Printing Protocol/1.1: Implementer's Guide [IPP-IIG]
- 42 - Mapping between LPD and IPP Protocols [RFC2569]

- 43 The "Design Goals for an Internet Printing Protocol" document takes a broad look at distributed printing functionality, and it
44 enumerates real-life scenarios that help to clarify the features that need to be included in a printing protocol for the Internet. It
45 identifies requirements for three types of users: end users, operators, and administrators. It calls out a subset of end user
46 requirements that are satisfied in IPP/1.0. A few OPTIONAL operator operations have been added to IPP/1.1.
- 47 The "Rationale for the Structure and Model and Protocol for the Internet Printing Protocol" document describes IPP from a high
48 level view, defines a roadmap for the various documents that form the suite of IPP specification documents, and gives
49 background and rationale for the IETF working group's major decisions.
- 50 The "Internet Printing Protocol/1.1: Encoding and Transport" document is a formal mapping of the abstract operations and
51 attributes defined in the model document onto HTTP/1.1 [RFC2616]. It defines the encoding rules for a new Internet MIME media
52 type called "application/ipp". This document also defines the rules for transporting over HTTP a message body whose Content-
53 Type is "application/ipp". This document defines a new scheme named 'ipp' for identifying IPP printers and jobs.
- 54 The "Internet Printing Protocol/1.1: Implementer's Guide" document gives insight and advice to implementers of IPP clients and
55 IPP objects. It is intended to help them understand IPP/1.1 and some of the considerations that may assist them in the design of
56 their client and/or IPP object implementations. For example, a typical order of processing requests is given, including error
57 checking. Motivation for some of the specification decisions is also included.
- 58 The "Mapping between LPD and IPP Protocols" document gives some advice to implementers of gateways between IPP and LPD
59 (Line Printer Daemon) implementations.
- 60

60

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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.

184

2. Terminology

185

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

186

2.1 REQUIRED

187

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

188

2.2 OPTIONAL

189

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

190

2.3 Override-Extension

191

192

193

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

194 2.4 Sheet

195 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 may
196 mark on one side or on both sides of a sheet.

197 2.5 Output-Page

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

200 2.6 Impression:

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

206 2.7 Input-Page

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

213 2.8 Input-Document

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

217 2.9 Output-Document

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

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

225
226
227 An Output-Document is *not* a set of sheets that are bound temporarily for shipping, e.g. with banding.

228 **2.10 Output-Document-Copy**

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

232 **2.11 Relationship between Input-Document and Output-Documents**

233 Each relationship is named and defined below. The cases are derived from an analysis of possible tree structures (see
 234 section 4.2). A client selects the desired case with the number of submitted Input-Documents and the specific values of
 235 three attributes: the existing Job Template “multiple-document-handling” and two new attributes “pages-per-subset” and
 236 “documents-per-subset”. The latter two attributes describe how the stream of Input-Pages or Input-Documents and are
 237 partitioned into Output-Documents, respectively.
 238

239 In this section, the number of copies produced for each Output-Document does not affect the discussion, so it is easiest
 240 to assume that the number is 1.
 241

242 The table below summarizes the relationship of Input-Documents to Output-Document in the five cases:
 243

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)

244
 245 When n = 1 for the “Separate-Documents” and “Single-Document” become the “Degenerate” case.
 246

247 The table below summarizes the attribute values that control the cases.
 248

- 249 - The “separate” value means that “multiple-document-handling” is 'separate-documents-collated-copies' or
 250 'separate-documents-uncollated-copies'.
- 251 - The “single” value means that “multiple-document-handling” is 'single-document' or 'single-document-new-sheet'.
- 252 - The “ignored” value means that the attribute need not be present and is ignored if it is present,
- 253 - The “present” value means that the attribute must be present. A different case is implied if it is not present.
- 254 - The “not present” value means that the attribute must not be present. A different case is implied if it is present.
 255

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

256
 257 The Degenerate row is omitted because it follows the rules for the “Separate-Documents” and “Single-Documents” rules
 258 when the number of Input-Documents is 1.
 259

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

260 **2.11.1 Degenerate Case:**

261 In the Degenerate Case, the Job consists of exactly one Output-Document and exactly one Input-Document.
262 The single Input-Document produces the single Output-Document. This case represents the most common case
263 of printing. For example, if a user is Printing a single MS Word file, the MS Word file is the Input-Document and
264 the printed pages are the Output-Document. This case is the degenerate case of Separate-Documents and
265 Single-Document. It occurs when the number of Input-Documents is 1 and either
266

- 267 a) “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-uncollated-
268 copies' and neither “pages-per-subset” nor “documents-per-subset” are present or.
269 b) “multiple-document-handling” is 'single-document' or 'single-document-new-sheet', and both “pages-per-
270 subset” and “documents-per-subset” are ignored if present

271 **2.11.2 Separate Documents Case**

272 In the Separate Documents Case, the Job consists of one or more Output-Documents where each Input-
273 Document produces one Output-Document. For example, if a user prints 10 Java files in one Job and wants 10
274 separately stapled Output-Documents, each of the 10 Java files is an Input-Document, and the printed Output-
275 Pages from each of the 10 Java files is a separate Output-Document that is stapled separately. This case occurs
276 when “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-
277 uncollated-copies' and the new attributes “pages-per-subset” and “documents-per-subset” are not present.

278 **2.11.3 Single Document Case**

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

285 **2.11.4 Page-Subset Document Case:**

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

295 **2.11.5 Document-Subset Document Case:**

296 This case is defined here for completeness, but it is not supported by this extension.
297

298 In the Document-Subset Document Case, the Job consists of one or more Output-Documents and one or more
299 Input-Documents. The new attribute “documents-per-subset” contains a sequence of integers which specifies
300 how to partition Job’s Input-Documents into subsets, each of which produces an Output Document. For
301 example, if a user prints 25 Java files in one Job and wants 2 separately stapled Output-Documents, one with 15
302 Java files and one with 10 Java files, then each of the Java files is an Input-Document, and the printed Output-
303 Pages from the first 15 Java files and next 10 Java files are two separate Output-Documents that are stapled
304 separately. This case occurs when “multiple-document-handling” is 'separate-documents-collated-copies' or

305 'separate-documents-uncollated-copies' and "documents-per-subset" contains 1 or more integer values. The
306 new attribute "pages-per-subset" is not present.
307

308 **2.12 Document-Overrides**

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

311 **2.13 Page-Overrides**

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

314 **2.14 Subset-Finishing**

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

317 **2.15 Affects**

318 Each attribute is said to 'affect' some part of a job. For example, "media" affects a sheet, "finishings" affects an Output-
319 Document, "page-ranges" affects an Input-Document and "job-priority" affects a job. This nuance must be explicit in the
320 Overrides-Extension because the parts of a job that an attribute affects limit the parts of a job that an attribute can be
321 associated with (see the next section for a definition of "associates"). For example, "job-priority" affects a job; so it can
322 be associated with a Job, but not an Input-Document or Input-Page. Likewise, "finishings" affects and Output-
323 Document; so it can be associated with a Job or an Output-Document, but not with an Output-Page.

324 **2.16 Associates**

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

328 **2.16.1 Directly Associates**

329 When an attribute is said to be 'directly associated' with some part of a job, it affects that part or some other
330 part. The part that it affects depends on the attribute and what the attribute is directly associated with. For
331 example if "media" is directly associated with a job, it affects all sheets in the job. If "media" is directly
332 associated with an Output-Document, it affects all sheets in that Output-Document. If "media" is directly
333 associated with an Output-Page, it affects the sheet containing that Output-Page.

334 **2.16.2 Effectively Associates**

335 When an attribute is said to be directly associated with some part of a job 'A' that is semantically connected
336 with another part 'B', the attribute is said to be "effectively associated" with 'B'. For example, in the Separate-
337 Documents Case, when an attribute is directly associated with an Input-Document, it is effectively associated
338 with the corresponding Output-Document.

339 2.17 Job-Submission Operations:

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

342 3. Requirements

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

- 344
- 345 1. The Override-Extension MUST contain a mechanism for specifying Job attributes that are overrides for particular Input-
346 Documents or Output-Documents. A Printer and a client OPTIONALLY support this mechanism.
- 347 2. There MUST be a mechanism for specifying Job attributes that are overrides for particular Input-Pages or Output-Pages.
348 A Printer and a client OPTIONALLY support this mechanism.
- 349 3. There MUST be a mechanism for specifying Job attributes that are overrides for particular document copies of Output-
350 Documents. A Printer and a client OPTIONALLY support this mechanism.
- 351 4. The mechanism for overrides MUST be supported by all Job-Submission operations and Validate-Job.
- 352 5. The extension MUST support the four relationships of Input-Documents and Output-Documents: Degenerate Case,
353 Separate-Documents Case, Single-Document Case and Page-Subset Document Case.
- 354 6. The extension MUST support Subset-Finishing.

355 4. Overview

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

361
362 The Override Extension defined in this document allows some Output-Pages, some Output-Documents and some Input-
363 Documents to be affected by attribute values that are overrides to those specified for the Job as a whole. For example, the first
364 Output-Page of an Output-Document has a different media from the rest, or the second Output-Document is stapled and the rest
365 are not, or the page-ranges of the first Input-Document selects a few Input-Pages and the rest of the Input-Documents are printed
366 in full, or one copy of an Output-Document has a different media from the rest.

367 4.1 Numbering of Components

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

- 369
- 370 - Each Input-Document has a number. The single Input-Document that a client sends with Print-Job or Print-URI and the
371 first Input-Document that a client sends with Send-Document or Send-URI has a number of 1. Each subsequent Input-
372 Document that a clients sends has a number that is one higher than the previous.
- 373 - Each Input-Page in an Input-Document is numbered sequentially, starting at 1 for the first Input-Page. If a Job has
374 several Input-Documents, the first Input-Page of each Input-Document has the number of 1, which is relative to that
375 Input-Document.
- 376 - Each Output-Document has a number. The first Output-Document has a number of ‘1’, and each subsequent Output-
377 Document has a number that is one higher than the previous Output-Document. The Output-Documents are numbered
378 as if the value of “copies” were 1, i.e. if an Input-Document produces multiple copies, each copy of a particular Output-
379 Document has the same number.

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

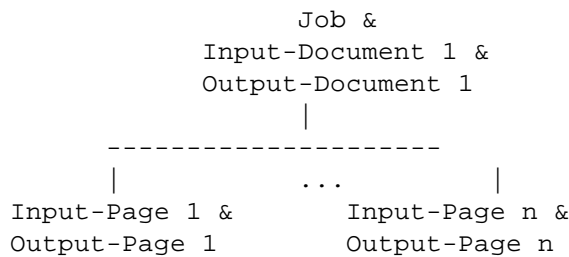
- 382 - Each copy of an Output-Document has a number. The first copy of each Output-Document has a number of '1', and each
- 383 subsequent copy has a number that is one higher than the previous copy. If a job has multiple Output-Documents, the
- 384 first copy of each has a number of '1'.

385 4.2 Relationship of Numbered Components

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

390
391 These diagrams assume that the number of copies of Output-Documents is 1. When the number of copies exceeds 1, some parts
392 of these diagrams would have further replication, but the numeric relationships of the four displayed components would not
393 change.

394
395 Degenerate Case:



407 Conditions that define this case:

- 408 - Job contains exactly 1 Input-Documents
- 410 - Either conditions for "Separate-Documents" or "Single-Documents" are met.

411 Observations about this case:

- 412 - Job coincides with Output-Documents 1 and Input-Documents 1
- 414 - Output-Page i coincides with Input-Page i

415 Separate-Documents Case:

416

417 Job

418 |

419 -----

420 | | |

421 Input-Document 1 & Input-Document 2 & ...

422 Output-Document 1 Output-Document 2

423 | |

424 ----- -----

425 | ... | | ... |

426 Input-Page 1 & Input-Page n & Input-Page 1 & Input-Page p

427 Output-Page 1 Output-Page n Output-Page 1 Output-Page p

428

429 Conditions that define this case:

430

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

432 - "multiple-document-handling" is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies'

433 - "pages-per-subset" is not present

434 - "documents-per-subset" is not present

435 Observations about this case:

436

437 - Output-Document i coincides with Input-Document i

438 - Output-Page i coincides with Input-Page i

439

440 Single-Document Case:

441

442 Job & Output Document 1

443 |

444 -----

445 | | |

446 Input-Document 1 Input-Document 2 ...

447 | |

448 ----- -----

449 | ... | | ... |

450 Input-Page 1 & Input-Page n & Input-Page 1 & Input-Page p

451 Output-Page 1 Output-Page n Output-Page n+1 Output-Page n+p

452

453 Conditions that define this case:

454

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

456 - "multiple-document-handling" is 'single-document' or 'single-document-new-sheet';

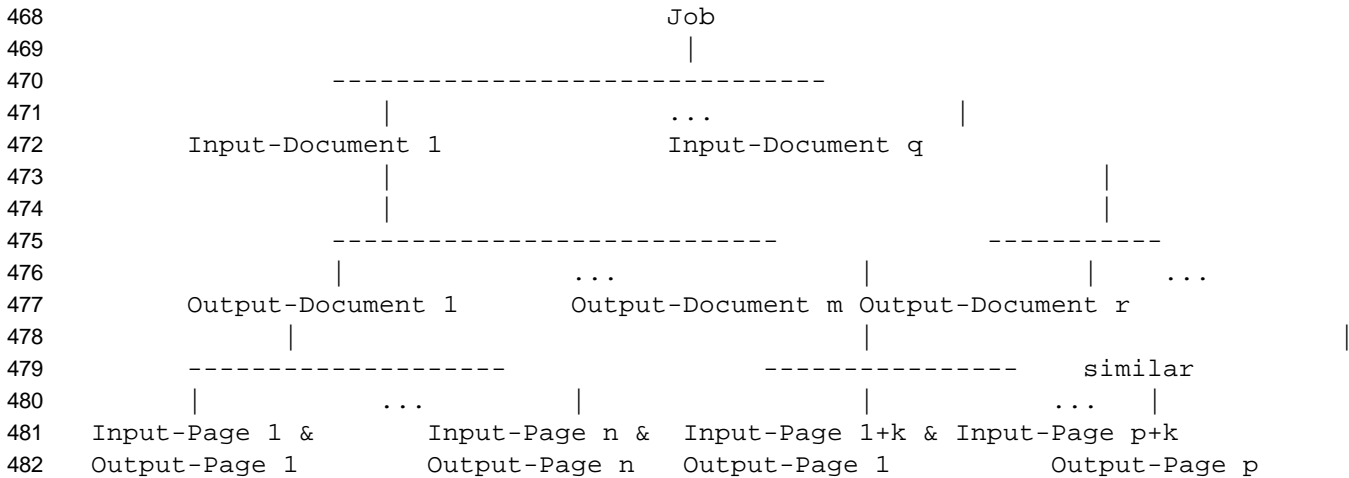
457 Observations about this case:

458

459 - Output-Document 1 coincides with the Job

- 460 - The numbering of Output-Pages is continuous through all Input-Documents, but the numbering of Input-Pages starts at
- 461 1 in each Input-Documents. That is, Input-Page i in Input-Document m coincides with Output-Page $i + k$, where k is the
- 462 number of Input-Pages in all previous Input-Documents, i.e. Input-Documents 1 through $m-1$.
- 463 - “pages-per-subset” is ignored if present
- 464 - “documents-per-subset” is ignored if present

465
 466 Page-Subset Document Case:



484 Conditions that define this case:

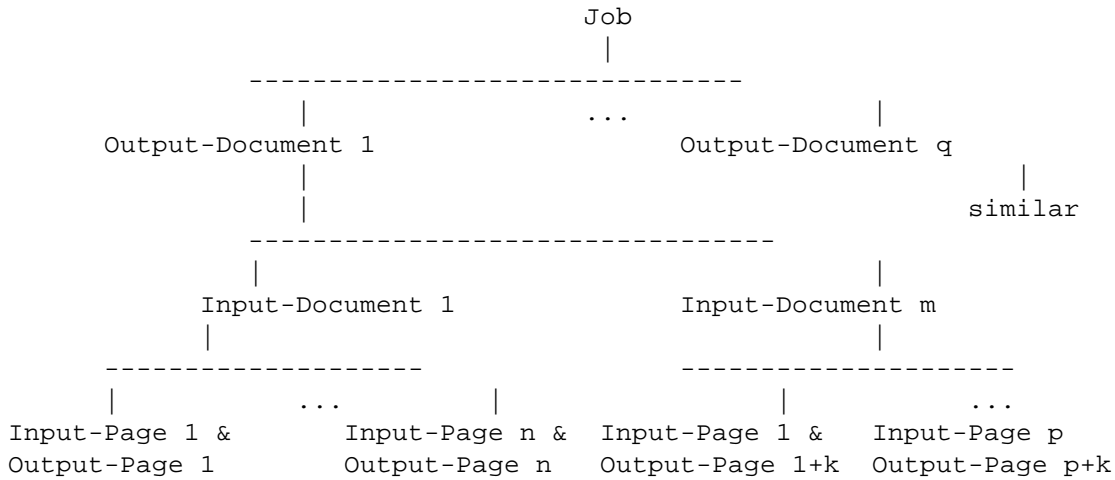
- 486 - Job contains one or more Input-Documents
- 487 - “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies'
- 488 - “pages-per-subset” is present.
- 489 - “documents-per-subset” is not present

490 Observations about this case:

- 492 - 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.
- 497 - The Input-Pages in each Input-Document are numbered sequentially starting from 1 and the Output-Pages in each Output-Document are numbered sequentially starting from 1. For the first Output-Document, the numbers of the Input-Pages and Output-Pages coincide. For subsequent Output-Documents, the numbers differ. For example, the first Output-Page of the second Output-Document coincides with Input-Page w , where w is the number of Output-Pages in the first Output-Document. To be specific, Output-Page i in Output-Document m coincides with Input-Page $i + k$ of the Job, where k is the number of Output-Pages in all previous Output-Documents of the job, e.g. Output-Documents 1 through $m-1$.
- 504 - “pages-per-subset” specifies the number of pages in each Output-Document.

505
506 Document-Subset Document Case:

507
508 NOTE: this case is here for completeness and is not supported by the Overrides-Extension.



525
526 Conditions that define this case:

- 527 - Job contains one or more Input-Documents
- 528
- 529 - “multiple-document-handling” is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies'
- 530 - “pages-per-subset” is not present.
- 531 - “documents-per-subset” is present

532 Observations about this case:

- 533 - Input-Documents 1-m are contained in Output-Documents 1, and Input-Documents m+1 through t are contained in Output-Documents 2 and so on.
- 534
- 535
- 536 - Input-Page i in Input-Document m coincides with Output-Page i + k of Output-Documents j, where k is the number of Input-Pages in all previous Input-Documents of Output-Documents j, e.g. Input-Documents 1 through m-1.
- 537
- 538 - “documents-per-subset” has the number of Input-Documents in each Output-Documents.

539 4.3 Association of Attributes

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

- 543 - Input Documents: “page-ranges”, “document-format”, “document-name”, “compression” and “document-natural-language”.
- 544
- 545
- 546 - Output-Documents: “finishings”

547 - Sheets: “media” and “sides”

548 The table below shows what each of the three categories of attributes can be associated with:
549

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

550
551 The meaning of these associations and their limitation is specified in section 16.
552

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

558 **4.4 Effect of the “document-copies” attribute**

559 The “document-copies” attribute causes some copies of a document to be printed differently from others. For example, 10 copies
560 are duplex printed on letter paper with a staple. One copy is simplex printed on transparencies without a staple. As another
561 example, the first page of 100 copies of a 3 page document are printed on letterhead paper and the first page of the 101st copy of
562 the document is printed on regular letter paper.
563

564 If an attribute can affect an Output-Document, it can affect particular Output-Document-Copies. If an attribute can affect Sheets, it
565 can affect Sheets of particular Output-Document-Copies.
566

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

- 571 - Input-Documents, the Printer ignores the “document-copies” attribute.
- 572
- 573 - Output-Documents, the attribute affects the specified copies of the Output-Documents.
- 574
- 574 - Sheets: the attribute affects the sheets of the specified copies of Output-Documents.

575 **4.5 Subset Finishing**

576 In IPP/1.1 a Printer applies the “finishings” attribute to all Output-Documents in a given job. This proposal supports “Subset
577 Finishing” which we define as the ability to partition the Input-Pages of an Input-Document into one or more Output-Documents
578 and to apply different types of finishing to each of the individual Output-Documents contained within a single job.
579

580 This model supports subset finishing with the new attribute “pages-per-subset” which specifies the number of Input-Pages per
581 Output-Document. This model treats Subset-Finishing as a Job level sub-setting of the Input-Documents into Output-Documents
582 and as a Document Override attribute rather than a Page Override attribute for two reasons.
583

- 584 - Page-Overrides, as their name suggests, are overrides for a few Input-Pages or Output-Pages that differ from the rest of
585 the Input-Pages or Output-Pages in the Job. With Subset-Finishing, all Input-Pages belong to some subset. So, sub-
586 setting is not an override; it encompasses the entire Job. Only the finishing part of Subset-Finishing can have overrides
587 and those overrides apply to a subset, much like they apply to Output-Documents. Because subsets behave like
588 Output-Documents, it is easiest to describe the sub-setting operation as creating Output-Documents.

- 589 - If the attributes “media”, “sides” and “finishings” were all treated as Page-Override attributes, then there would have to
590 one rule for splitting and merging groups when “finishings” is associated with the group and another rule when it is not
591 associated with the group. If a Page-Override specifies “sides” is duplex for pages 1-10 and “media” is added to pages 5
592 and 6, there can be three Page-Override groups, one for pages 1-4 with “sides”, one for pages 5 and 6 with “sides” and
593 “media” and one for pages 7-10 with sides. If “media” is removed, the groups can be merged back to the original single
594 group. If “finishings = staple” had been present in the original group of pages 1-10, such a split would change finishing
595 from one staple in pages 1-10 to 3 staples, one in pages 1-6, one in page 5-6 and one in pages 7-10.

596
597 The remainder of this document describes the changes necessary to support the Overrides Extension.

598 5. New Job Template Attributes

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

602	+	+	+
603	Job Attribute	Printer: Default Value	Printer: Supported
604		Attribute	Values Attribute
605	+	+	+
606	document-	none	document-overrides-
607	overrides		supported
608	(1setOf collection)		(1setOf type2 keyword)
609	+	+	+
610	page-overrides	none	page-overrides-
611			supported
612	(1setOf collection)		(1setOf type2 keyword)
613	+	+	+
614	pages-per-subset	none	pages-per-subset
615			supported
616	(1setOf integer)		(Boolean)
617	+	+	+

619 5.1 document-overrides (1setOf collection)

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

623
624 If this attribute is not present in a Job, there are no Document-Overrides within the Job. If it is present, the value consists of one
625 or more ‘collection’ values, where each ‘collection’ value identifies one or more Input-Documents or Output-Documents and
626 contains one or more Job Template attributes which act as overrides to the corresponding Job Template attribute values for the
627 specified Input-Documents or Output-Documents.
628

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

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

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

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

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

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

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

656 For the second form, the client MUST supply “output-documents” as the first attribute. If the client supplies the “document-
 657 copies” attribute, it MUST be the second 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	rangeOfInteger(MAX)	MUST	MUST
document-copies	rangeOfInteger(MAX)	MAY	MAY
finishings	1 setOf type2 enum	MAY	MAY

<u>Attribute name</u>	<u>syntax</u>	<u>In request</u>	<u>Printer Support</u>
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

658 The following sections describe each attribute in the above table.

659 **5.1.1 input-documents (rangeOfInteger (1:MAX))**

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

662
663 A Printer **MUST** support this attribute. A client **MUST** supply this attribute in each ‘collection’ value and it **MUST** be
664 the first attribute of each ‘collection’ value. If this attribute is present, then the client **MUST NOT** supply “output-
665 documents”.

666
667 When a client supplies this attribute in a “document-overrides” attribute of a Send-Document or Send-URI request, this
668 attribute **MUST NOT** identify Input-Documents which were sent in an earlier operation. If a Printer receives such a value
669 in a ‘collection’ value, it **MUST** treat all attribute values in such a ‘collection’ value, but not other sibling ‘collection’
670 values, as unsupported values and return the entire collection value in the Unsupported Attributes group.

671
672 Note: because the Printer silently ignores values that reference non-existent Input-Documents, a value of ‘MAX’ is
673 equivalent to the number of Input-Documents.

674
675 See section 5 for details of usage of this attribute.
676

677 **5.1.2 output-documents (rangeOfInteger (1:MAX))**

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

681 A Printer **MUST** support this attribute. A client **MUST** supply this attribute in each ‘collection’ value and it **MUST** be
682 the first attribute of each ‘collection’ value. If this attribute is present, then the client **MUST NOT** supply “input-
683 documents”.

684
685 When a client supplies this attribute in a “document-overrides” attribute of a Send-Document or Send-URI request, this
686 attribute **MUST NOT** identify Output-Documents whose first Input-Page was sent in an earlier operation. If a Printer
687 receives such a value in a ‘collection’ value, it **MUST** treat all attribute values in such a ‘collection’ value, but not other
688 sibling ‘collection’ values, as unsupported values and return the entire collection value in the Unsupported Attributes
689 group.

690 **5.1.3 Note: because the Printer silently ignores values that reference non-existent** 691 **Output-Documents, a value of ‘MAX’ is equivalent to the number of Output-** 692 **Documents.document-copies (rangeOfInteger (1:MAX))**

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

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

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

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

704 **5.1.4 document-format (mimeMediaType)**

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

707 **5.1.5 document-name (name (MAX))**

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

710 **5.1.6 compression (type3 keyword)**

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

713 **5.1.7 document-natural-language (naturalLanguage)**

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

716 **5.1.8 page-ranges (1setOf rangeOfInteger (1:MAX))**

717 This attribute has the same meaning as in IPP/1.1. It redefines each Input-Document to contain only the specified Input-
718 Pages. See section 5.2.3 for how this attribute interacts with “pages”.. The “multiple-document-handling” attribute
719 affects the algorithm for numbering Input-Pages when this attribute is a Job attribute but when it is a Document-Override
720 attribute. When this attribute is a Document-Override attribute, the values of the “page-ranges” attribute specify the
721 Input-Pages to select from each of the identified Input-Documents separately, For example, if this attribute has the value
722 “3:5” and is associated with two Input-Documents A and B, Input-Document A redefined to contain just two pages: 3
723 and 5, and Input-Document B also contains just pages 3 and 5. The Printer MAY support this attribute. A client
724 OPTIONALLY supplies it.

725
726 See section 5.2.4 for details of how this attribute affects number of pages with the “pages” attribute.

727 **5.1.9 finishings (1setOf type2 enum)**

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

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

734 **5.1.9.1 Common Behavior for Output-Document Attributes**

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

738
739 If the “document-copies” attribute is present, the attribute affects only the specified copies of the Output-Documents.

740 **5.1.10 sides (type2 keyword)**

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

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

746 **5.1.10.1 Common Behavior for Sheet Attributes**

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

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

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

756 a) For the first Output-Page: if the value of this attribute is effectively associated with Output-Page i, and if
757 Output-Page i is not the first Output-Page contained on a Sheet and if the value of this attribute differs from the
758 value of this attribute for the preceding Output-Page i-1, then Output-Page i MUST start a new Sheet and the
759 Printer MUST issue a warning by adding ‘job-warnings-detected’ to the “job-state-reasons” and by increasing
760 the value of the “job-warnings-count” Job Description attribute by 1.

761 b) For the last Output-Page: if the value of this attribute is effectively associated with Output-Page i, and if
762 Output-Page i is not the last Output-Page contained on a Sheet and if the value of this attribute differs from the
763 value of this attribute for the following Output-Page i+1, then Output-Page i+1 MUST start a new Sheet and the
764 Printer MUST issue a warning by adding ‘job-warnings-detected’ to the “job-state-reasons” and by increasing
765 the value of the “job-warnings-count” Job Description attribute by 1.

766 **5.1.11 media (type3 keyword | name(MAX))**

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

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

771 **5.1.12 Handling of Error conditions**

772 If a client omits a required member attribute or includes two member attributes that should never both be present (e.g.
773 “input-document” and “output-document”), a Printer MUST reject all attributes in the ‘collection’ value and treat the
774 ‘collection’ values, but not other sibling ‘collection’ values, as unsupported.

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

- 777 a) use the specified value of the member attribute and ignore its wrong position or
- 778 b) reject all attributes in the ‘collection’ value and treat the ‘collection’ values, but not other sibling ‘collection’
779 values, as unsupported.

780 **5.1.13 Why not “document-overrides-default”**

781 There is no “document-overrides-default” attribute because it adds complicated rules for a Printer to implement. The
782 problems are best illustrated with examples.

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

789 **5.1.14 document-overrides-supported (1setOf type1 keyword)**

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

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

797 Standard keyword values are:

- 798 - 'none': no attributes are supported in the “document-overrides” attribute
- 799
- 800 - 'input-documents': the “input-document” attribute is supported
- 801 - 'output-documents': the “output-document” attribute is supported
- 802 - 'document-copies': the “document-copies” attribute is supported
- 803 - 'document-format': The "document-format" attribute is supported
- 804 - 'document-name': The "document-name" attribute is supported
- 805 - 'compression': The "compression" attribute is supported
- 806 - 'document-natural-language': The "document-natural-language" attribute is supported

- 807 - 'page-ranges': The "page-ranges" attribute is supported
- 808 - 'finishings': The "finishing" attribute is supported
- 809 - 'sides': The "sides" attribute is supported
- 810 - 'media': The "media" attribute is supported

811 **5.2 page-overrides (1setOf collection)**

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

815
816 If this attribute is not present in a Job, there are no Page-Overrides attributes within the Job. If it is present, the value consists of
817 one or more 'collection' values, where each 'collection' value identifies one or more Input-Pages or Output-Pages and contains
818 one or more Job Template attributes which act as overrides to the corresponding Job Template attributes for the specified Input-
819 Pages or Output-Pages.

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

821
822 The second attribute MAY be "document-copies". If present, this attribute identifies the copies of the Output-Document. If this
823 attribute is not present in a 'collection' value, then the 'collection' value applies to all Output-Document-Copies.

824
825 If "document-copies" is present, the "pages" attribute MUST be the third attribute; otherwise, it MUST be the second attribute.
826 The "pages" attribute identifies either

- 827 - the Input-Pages relative to the Input-Document specified by "input-documents" or
- 828
- 829 - the Output-Pages relative to the Output-Document specified by "output-documents".
- 830

831 The Page-Overrides attribute applies to the identified Input-Pages or Output-Pages, which need not be contiguous.

832
833 The remaining attributes in the 'collection' value are the Job Template attributes that are overrides for the specified Input-Pages
834 or Output-Pages.

835 There may be more than one way for a client to arrange Page-Override attributes in 'collection' values. For example, if an Output-
836 Document contains 10 Output-Pages to be printed 1-sided on white letter paper and Output-Page 1 is to be two sided with blue
837 letter paper and Document 2 is to be two sided with white letter paper, there are two possible ways to group the overrides. The
838 client could specify the two overrides for Output-Page 1 in one 'collection' value and the single override for Output-Page 2 in
839 second 'collection' values, or it could specify "two-sided" for Output-Pages 1 and 2 in one 'collection' value and "blue letter
840 paper" for Output-Document 1 in another 'collection' value.

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

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

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

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

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

856 For the second form, the client MUST supply “output-documents” as the first attribute. If the client supplies the “document-
 857 copies” attribute, it MUST be the second attribute. The the “pages” attribute MUST be the next attribute. The client
 858 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	rangeOfInteger(MAX)	MUST	MUST
document-copies	rangeOfInteger(MAX)	MAY	MAY
pages	rangeOfInteger(MAX)	MUST	MUST
sides	type2 keyword	MAY	MAY
media	type3 keyword name(MAX)	MAY	MAY

859 The following sections describe each attribute in the above table.

860 **5.2.1 input-documents (rangeOfInteger (1:MAX))**

861 See section 5.1.1 for details of this attribute.

862 **5.2.2 output-documents (rangeOfInteger (1:MAX))**

863 See section 5.1.2 for details of this attribute.

864 **5.2.3 document-copies (rangeOfInteger (1:MAX))**

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

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

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

873 **5.2.4 pages (1setOf rangeOfInteger(1:MAX))**

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

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

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

886
887 When a client supplies this attribute in a Send-Document or Send-URI request, this attribute MUST NOT identify
888 Output-Pages sent in an earlier operation. If a Printer receives such a value in a ‘collection’ value, it MUST treat all such
889 values, but not other sibling ‘collection’ values, as unsupported values.

890
891 Note: because the Printer silently ignores values that reference non-existent pages, a value of ‘MAX’ is equivalent to the
892 number of pages in each specified Input-Document or Output-Document..

893
894 See section 5 for details of usage of this attribute.

895 **5.2.5 sides (type2 keyword)**

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

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

900 **5.2.6 media (type3 keyword | name(MAX))**

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

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

905 **5.2.7 Handling of Error conditions**

906 See section 5.1.12.

907 **5.2.8 Why not “page-overrides-default”**

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

909 **5.2.9 page-overrides-supported (1setOf type1 keyword)**

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

912 This attribute contains the name of each attribute that the Printer supports in a ‘collection’ value of the “page-overrides”
913 attribute. This attribute **MUST** contain the keywords “input-documents”, “output-documents” and “pages” because a
914 Printer **MUST** support these attributes. This attribute **MUST** also contain the name of each attribute that can be a page-
915 override. For example, this attribute contains the keyword “sides” if and only if the Printer supports “sides” in a
916 ‘collection’ value of the “page-overrides” attribute.

917 Standard keyword values are:

- 918
- 919 - 'none': no attributes are supported in the “page-overrides” attribute
- 920 - 'input-documents': the “input-document” attribute is supported
- 921 - 'output-documents': the “output-document” attribute is supported
- 922 - 'document-copies': the “document-copies” attribute is supported
- 923 - 'pages': The "pages" attribute is supported
- 924 - 'sides': The "sides" attribute is supported
- 925 - 'media': The "media" attribute is supported

926 **5.3 pages-per-subset (1setOf integer)**

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

929
930 When this attribute is present, it effectively partitions one or more Input-Documents into contiguous subsets of Input-
931 Pages. Each subset is defined to be an Output-Document

932
933 The value of the attribute is a set of one or more integers, where each integer specifies the number of Input-Pages in a
934 subset, and the set is treated as a repeating sequence of integers. Thus, when the attribute contains a single integer, the
935 integer specifies the number of Input-Pages in each subset, as a repeating sequence of the single integer. When the
936 number of integers in this attribute exceeds 1, the first integer specifies the number of Input-Pages in the first subset, the
937 second integer specifies the number of Input-Pages in the second subset and so on. If numbers in this attribute are
938 exhausted before partitioning all of the Input-Pages, the Printer starts at the beginning of the sequence again and
939 continues until all Input-Pages are partitioned.

940
941 If the job contains more than one Input-Document, the Input-Pages are treated as a single stream of Input-Pages which
942 are partitioned into contiguous subsets with some subsets possibly belonging to more than one Input-Document.

943
944 If the number of Input-Pages available for the last subset is less than the number specified by this attribute, the Printer
945 **MUST** treat the last subset as an Output-Document and **MUST** issue a warning by adding ‘job-warnings-detected’ to
946 the “job-state-reasons” and by increasing the value of the “job-warnings-count” Job Description attribute by 1.

947
948 If the “multiple-document-handling” attribute is present and has the value ‘separate-documents-collated-copies’ or
949 ‘separate-documents-uncollated-copies’, the Printer **MUST** use this attribute; otherwise (i.e. the value of the “multiple-

950 document-handling” attribute has the value 'single-document' or 'single-document-new-sheet'), the Printer ignores this
951 attribute.

952 **5.3.1 Why not “pages-per-subset-default”**

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

958 **5.3.2 pages-per-subset-supported (boolean)**

959 This attribute specifies whether the Printer supports the Page-Subset Document Case. If the attribute is present and has
960 a value of “true”, the Printer supports the Page-Subset Document Case. Otherwise, the Printer doesn't support the Page-
961 Subset Document Case.

962 Note: if the value of this attribute is ‘true’, then the rules described elsewhere in this document imply that:

- 963 a) Any attribute that affects an Output-Document affects an Output Document created with the “pages-per-
964 subset” attribute.
- 965 b) Any attribute that affects an Output-Page affects the Output-Page of an Output-Document created with the
966 “pages-per-subset” attribute.

967 **6. New Job Description attributes**

968 **6.1.1 job-warnings-count (integer)**

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

972 **7. New Job Description Values**

973 **7.1.1 job-warnings-detected value for job-state-reasons (1setOf type2 keyword)**

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

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

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

- 980 - document-format
- 981 - document-name
- 982 - compression
- 983 - document-natural-language

984
985 With the Override Extension, these attributes also become:

- 986 - Operation attributes in the Create-Job and Validate-Job operation when all or most Input-Documents have the same
987 attribute value.
- 988 - Job Template attributes, so their values are accessible to a client via the Get-Job-Attributes and Get-Jobs operation.
- 989 - Job Description attributes, for legacy reasons so their values are accessible to a client via the Get-Job-Attributes and
990 Get-Jobs operation via the Job Description group name.
- 991 - Document-Overrides attributes, so the values are associated with one Input-Document (possible in IPP/1.1) and a client
992 can query the attributes via Get-Job-Attributes and Get-Jobs operation (not possible in IPP/1.1).

993
994 If a Printer supports the Override Extension and if it supports an attribute in this section, it MUST support the attribute in the
995 three contexts above. In IPP/1.1, a Printer MUST support all attributes in this section except the "document-natural-language"
996 attribute. This effectively means that if a Printer supports this extension, it MUST support all of the attributes in this section
997 except "document-natural-language" in the three contexts described above.

998
999 When one of the attributes in this section is an operation attribute in Print-Job, Print-URI or Create-Job, it becomes a Job
000 Template attribute in the newly created Job object. If one of these attributes is a Document-Overrides attribute, that attribute
001 overrides the Job level attribute for the specified Input-Document.

002
003 When one of the attributes in this section is an operation attribute in Validate-Job, it is validated as if it were an operation
004 attribute of Create-Job.

005
006 When one or more of the attributes in this section is an operation attribute in Send-Document or Send-URI request, they are put
007 into a 'collection' value that is added to the "document-overrides" attribute. See section 5.1 for a discussion of possible conflicts.
008

009 **9. Extensions to Printer Operations**

010 The sections below specify the extensions to the groups within IPP 1.1 operations. If an operation or a group within an operation
011 is not mentioned, this extension does not change that operation or group, respectively.
012

013 **9.1 Create-Job and Validate-Job Operation Requests**

014 Attributes are added to the operation attributes group.

015
016
017
018
019

Group 1: Operation Attributes

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

020 **9.2 Send-Document and Send-URI Operation Requests**

021
022
023
024

Attributes are added to the Operation Attributes group.

Group 1: Operation Attributes

025
026
027
028
029
030
031
032
033
034
035

"input-document-number" (integer):

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

036
037
038
039
040
041
042
043
044

"document-overrides" (1setOf collection):

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

045
046
047
048
049
050
051
052

"page-overrides" (1setOf collection):

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

053 **10. Examples**

054
055
056
057
058

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

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

059 **10.1 First Page of Single Document is Letterhead**

060 In the first example, the Printer produces 1 copy of a single Output-Document. It is printed on letter-paper
061 using Print-Job. The first Output-Page of the Output-Document is letterhead paper.
062

063 **10.1.1 Degenerate Case.**

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

```
065 Print-Job
066     job attributes group
067         media: letter
068         page-overrides: {
069             output-documents: 1:1      (I could have used input-documents: 1:1 as well)
070             pages: 1:1
071             media: letterhead }
072     end-of-attributes
073     Input-Document A
074
075
```

076 **10.2 First Page of Several Documents is Blue**

077 In the second example, the Printer produces 3 copies of each Output-Document. Each is stapled and printed
078 on letter-paper, two-sided using Create-Job. The first Output-Page of each Output-Document is blue-letter
079 paper and one-sided. All Input-Documents are PostScript.
080

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

083 **10.2.1 Separate-Documents Case.**

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

```
085 Create-Job
086     operations attributes group
087         document-format: application/PostScript
088     job attributes group
089 *     multiple-document-handling: separate-documents-collated-copies
090         sides: two-sided-long-edge
091         media: letter
092         copies: 3
093         finishings: stapling
094         page-overrides: {
095             output-documents: 1:2      (I could have used input-documents: 1:2 as well)
096             pages: 1:1
097             sides: one-sided
098             media: blue-letter }
099     end-of-attributes
100     Send-Document
101
```

102 end-of-attributes
 103 Input-Document A
 104 Send-Document
 105 end-of-attributes
 106 Input-Document B
 107

108 **10.2.2 Single-Documents Case**

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

110
 111 Create-Job
 112 operations attributes group
 113 document-format: application/PostScript
 114 job attributes group
 115 **multiple-document-handling: single-document**
 116 sides: two-sided-long-edge
 117 media: letter
 118 copies: 3
 119 finishings: stapling
 120 page-overrides: {
 121 output-documents: 1:1 (I could have used input-documents: 1:2)
 122 pages: 1:1
 123 sides: one-sided
 124 media: blue-letter }
 125 end-of-attributes
 126 Send-Document
 127 end-of-attributes
 128 Input-Document A
 129 Send-Document
 130 end-of-attributes
 131 Input-Document B
 132

133 **10.2.3 Page-Subset Documents Case**

134 There are two Input-Documents A and B. . The first Input-Document contains 10 Pages and the second one
 135 15 pages. There are 7 Output-Documents with 3 pages, 5 pages, 4 pages, 2 pages, 3 pages, 5 pages and 3
 136 pages. The “ pages-per-subset” attributes wraps after the first four Output-Documents and starts with “3”
 137 again. After consuming 22 Input-Pages, the next number is “4”, but only 3 pages remain. So the last Output-
 138 Document is short. These value show two boundary cases.

139
 140 Create-Job
 141 operations attributes group
 142 document-format: application/PostScript
 143 job attributes group
 144 **multiple-document-handling: separate-documents-collated-copies**
 145 **pages-per-subset: 3, 5, 4, 2**
 146 sides: two-sided-long-edge
 147 media: letter
 148 copies: 3
 149 finishings: stapling

```

150         page-overrides: {
151             output-documents: 1:7           (I could have used output-documents: 1:100 to be safe)
152             pages: 1:1
153             sides: one-sided
154             media: blue-letter }
155     end-of-attributes
156 Send-Document
157     end-of-attributes
158     Input-Document A
159 Send-Document
160     end-of-attributes
161     Input-Document B

```

10.3 First Page is Blue and First Document is not stapled

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

167
 168 Attributes that differ between cases are in bold. The values for the attribute “input-documents” changes with
 169 each example, but could be “1:100” for all.

10.3.1 Separate-Documents Case

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

172
 173 Here are three solutions presented here in order to show three different places to put the attributes associated
 174 with an Input-Document. The differences are in *bold-italic*.

10.3.1.1 First solution:

```

176 Create-Job
177     operations attributes group
178         document-format: application/PostScript
179     job attributes group
180         multiple-document-handling: separate-documents-collated-copies
181         sides: two-sided-long-edge
182         media: letter
183         copies: 3
184         finishings: stapling
185         document-format: application/PostScript
186         document-overrides: {
187             output-documents: 2:2           (I could have used input-documents: 2:2 & merged with next)
188             finishings: none }
189             {
190                 input-documents: 2:2           next value of multi-value
191                 document-format: text/html
192         page-overrides: {
193             output-documents: 1:2           (I could have used input-documents: 1:2 as well)
194             pages: 3:4

```


195 sides: one-sided
 196 media: blue-letter }
 197 end-of-attributes
 198 Send-Document
 199 end-of-attributes
 200 Input-Document A
 201 Send-Document
 202 end-of-attributes
 203 Input-Document B

204 **10.3.1.2 Second solution:**

205 Create-Job
 206 operations attributes group
 207 document-format: application/PostScript
 208 job attributes group
 209 **multiple-document-handling: separate-documents-collated-copies**
 210 sides: two-sided-long-edge
 211 media: letter
 212 copies: 3
 213 finishings: stapling
 214 document-format: application/PostScript
 215 document-overrides: {
 216 output-documents: 2:2
 217 finishings: none }
 218 page-overrides: {
 219 output-documents: 1:2 (I could have used input-documents: 1:2 as well)
 220 pages: 3:4
 221 sides: one-sided
 222 media: blue-letter }
 223 end-of-attributes
 224 Send-Document
 225 end-of-attributes
 226 Input-Document A
 227 Send-Document
 228 *Operation attributes group*
 229 *document-format: text/html*
 230 end-of-attributes
 231 Input-Document B

232 **10.3.1.3 Third solution:**

233 Create-Job
 234 operations attributes group
 235 document-format: application/PostScript
 236 job attributes group
 237 **multiple-document-handling: separate-documents-collated-copies**
 238 sides: two-sided-long-edge
 239 media: letter
 240 copies: 3
 241 finishings: stapling
 242 document-format: application/PostScript
 243 page-overrides: {
 244 output-documents: 1:2 (I could have used input-documents: 1:2 as well)

```

245         pages: 3:4
246         sides: one-sided
247         media: blue-letter }
248     end-of-attributes
249 Send-Document
250     end-of-attributes
251     Input-Document A
252 Send-Document
253     Operation attributes group
254     document-overrides: {
255         input-documents: 2:2
256         document-format: text/html
257         finishings: none }
258     end-of-attributes
259     Input-Document B

```

260 10.3.2 Single-Documents Case

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

262

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

267 10.3.2.1 First solution:

```

268 Create-Job
269     operations attributes group
270     document-format: application/PostScript
271     job attributes group
272     multiple-document-handling: single-document
273     sides: two-sided-long-edge
274     media: letter
275     copies: 3
276     finishings: stapling
277     document-overrides: {
278         output-documents: 2:2           (This is ignored because there is no 2nd document)
279         finishings: none }
280     page-overrides: {
281         input-documents: 1:1           (I could have used output-documents: 1:1)
282         pages: 3:4
283         sides: one-sided
284         media: blue-letter }
285     end-of-attributes
286 Send-Document
287     end-of-attributes
288     Input-Document A
289 Send-Document
290     Operation attributes group
291     document-format: text/html
292     end-of-attributes

```

293 Input-Document B

294 **10.3.2.2 Second solution:**

295 Create-Job

296 operations attributes group

297 document-format: application/PostScript

298 job attributes group

299 **multiple-document-handling: single-document**

300 sides: two-sided-long-edge

301 media: letter

302 copies: 3

303 finishings: stapling

304 document-overrides: {

305 output-documents: 2:2 (This is ignored because there is no 2nd document)

306 finishings: none }

307 end-of-attributes

308 Send-Document

309 Operation attributes group

310 **page-overrides: {**

311 I could have used output-documents: 1:1)

312 pages: 3:4

313 sides: one-sided

314 media: blue-letter }

315 end-of-attributes

316 Input-Document A

317 Send-Document

318 Operation attributes group

319 **document-format: text/html** (this can be here or in the document-overrides)

320 end-of-attributes

321 Input-Document B

322 **10.3.2.3 Third solution:**

323 Create-Job

324 operations attributes group

325 document-format: application/PostScript

326 job attributes group

327 **multiple-document-handling: single-document**

328 sides: two-sided-long-edge

329 media: letter

330 copies: 3

331 finishings: stapling

332 document-overrides: {

333 output-documents: 2:2 (This is ignored because there is no 2nd document)

334 finishings: none }

335 end-of-attributes

336 Send-Document

337 Operation attributes group

338 **page-overrides: {**

339 I could have used output-documents: 1:1)

340 pages: 3:4

341 sides: one-sided

342 media: blue-letter }

```

343     end-of-attributes
344     Input-Document A
345 Send-Document
346     Operation attributes group
347     document-overrides: {
348         input-documents: 2:2
349         document-format: text/html }
350     end-of-attributes
351     Input-Document B

```

352 10.3.3 Page-Subset Documents Case

353 There are two Input-Documents A and B. . The first Input-Document contains 10 Pages and the second one
354 15 pages. There are 7 Output-Documents with 3 pages, 5 pages, 4 pages, 2 pages, 3 pages, 5 pages and 3
355 pages. The “pages-per-subset” attributes wraps after the first four Output-Documents and starts with “3”
356 again. After consuming 22 Input-Pages, the next number is “4”, but only 3 pages remain. So the last Output-
357 Document is short.

```

358
359 Create-Job
360     operations attributes group
361     document-format: application/PostScript
362     job attributes group
363     multiple-document-handling: separate-documents-collated-copies
364     pages-per-subset: 3, 5, 4, 2
365     sides: two-sided-long-edge
366     media: letter
367     copies: 3
368     finishings: stapling
369     document-overrides: {
370         output-documents: 2:2
371         finishings: none }
372     page-overrides: {
373         output-documents: 1:7           (I could have used input-documents: 1:100 to be safe)
374         pages: 3:4
375         sides: one-sided
376         media: blue-letter }
377     end-of-attributes
378 Send-Document
379     end-of-attributes
380     Input-Document A
381 Send-Document
382     Operation attributes group
383     document-format: text/html           (this can be here or in the document-overrides)
384     end-of-attributes
385     Input-Document B

```

386 10.4 One document with 100 copies for distribution and one on transparencies.

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

390

391 Here are three possible solutions. The first assumes that the job requests 101 letter-paper documents and that
 392 the single transparency copy is the override. The second assumes that the job requests 101 transparency
 393 documents and that the 100 letter-paper copies are the override. The third assumes that the job requests 101
 394 documents with default characteristics and that both single transparency copy and the 100 letter-paper copies
 395 are overrides. The differences are in *bold-italic*.

396

10.4.1.1 First solution.

397

Print-Job

398

operations attributes group

399

document-format: application/PostScript

400

job attributes group

401

sides: two-sided-long-edge

402

media: letter

403

copies: 101

404

finishings: stapling

405

document-format: application/PostScript

406

document-overrides: {

407

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

408

document-copies: 101:101

409

sides: one-sided

410

media: transparency

411

finishings: none }

412

page-overrides: {

413

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

414

document-copies: 1:100

415

pages: 1:1

416

sides: one-sided

417

media: blue-letter }

418

end-of-attributes

419

Input-Document A

420

10.4.1.2 Second solution.

421

Print-Job

422

operations attributes group

423

document-format: application/PostScript

424

job attributes group

425

sides: one-sided

426

media: transparency

427

copies: 101

428

finishings: none

429

document-format: application/PostScript

430

document-overrides: {

431

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

432

document-copies: 1:100

433

sides: two-sided-long-edge

434

media: letter

435

finishings: stapling }

436

page-overrides: {

437

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

438 document-copies: 1:100
 439 pages: 1:1
 440 sides: one-sided
 441 media: blue-letter }
 442 end-of-attributes
 443 Input-Document A

444 10.4.1.3 Third solution.

445 Print-Job
 446 operations attributes group
 447 document-format: application/PostScript
 448 job attributes group
 449 copies: 101
 450 document-format: application/PostScript
 451 document-overrides: {
 452 output-documents: 1:1 (I could have used input-documents: 1:1 as well)
 453 *document-copies: 101:101*
 454 *sides: one-sided*
 455 *media: transparency*
 456 *finishings: none* }
 457 {
 458 *output-documents: 1:1* (I could have used input-documents: 1:1 as well)
 459 *document-copies: 1:100*
 460 *sides: two-sided-long-edge*
 461 *media: letter*
 462 *finishings: stapling* }
 463 page-overrides: {
 464 output-documents: 1:1 (I could have used input-documents: 1:1 as well)
 465 document-copies: 1:100
 466 pages: 1:1
 467 sides: one-sided
 468 media: blue-letter }
 469 end-of-attributes
 470 Input-Document A

471 11. IANA Considerations

472
 473 IANA will be called on to register the Job Template attributes defined in this document, using the procedures outlined in [ipp-
 474 mod].

475 12. Internationalization Considerations

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

478 **13. Security Considerations**

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

481 **14. References**

482 [ipp-mod]

483 R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.0: Model and Semantics", <draft-
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488 **15. Author's Addresses**

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

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

- 507 1. Input-Documents: such an attribute
 - 508 a) cannot be directly associated with Input-Pages, Output-Pages, Output-Documents
 - 509 b) can be directly associated with an Input-Documents, and it affects the Input-Documents it is associated with.
 - 510 c) can be associated with a Job and it affects all Input-Documents that don't have the attribute associated with it.
- 511 2. Output-Documents: such an attribute
 - 512 a) can never be directly associated with an Input-Page or Output-Page.
 - 513 b) can be directly associated with an Output-Documents, and it affects the Output-Documents it is associated with.
 - 514 c) can be directly associated with an Input-Documents. If that Input-Documents produces a first Output-Page for one or
515 more Output-Documents, the attribute is effectively associated with each such Output-Documents that doesn't have

- 516 the attribute directly associated with it. Now use rule 2b). If that Input-Document doesn't produce any first Output-
 517 Pages of an Output-Document, it is ignored and the Printer produces a warning message.
- 518 d) can be associated with a Job and it affects all Output-Documents that don't have the attribute associated with it.
- 519 3. Sheets: such attributes
- 520 a) can be directly associated with an Output-Page, and it affects the associated Output-Page .
- 521 b) can be directly associated with an Input-Page, and it is effectively associated with the Output-Page determined by
 522 the relationship described for the four cases in section 4.2 if that Output-Page doesn't have the attribute directly
 523 associated with it. Now use rule 3a)
- 524 c) can be directly associated with an Output-Document, and it affects all Output-Pages in the specified Output-
 525 Document that don't have the attribute associated directly with it or the corresponding Input-Page.
- 526 d) can be directly associated with an Input-Document, and it is effectively associated with all Input-Pages in the
 527 specified Input-Document that don't have the attribute associated directly with it. By transitivity, the attribute is
 528 effectively associated with all corresponding Output-Pages (see section 4.2) that don't have the attribute associated
 529 directly with the them or the containing Output-Document. Now use rule 3a)
- 530 e) can be associated with a Job and it affects all Output-Pages that don't have the attribute associated with it.

531

532 When an association includes the "document-copies" attribute, it modifies the meaning of the above rules slightly for each
 533 effective association. If the attribute effectively associates with:

534

535

- Input-Documents, the Printer ignores the "document-copies" attribute.

536

- Output-Documents, the attribute affects the specified copies of the Output-Documents (See Item 2b))

537

- Sheets: the attribute affects the sheets of the specified copies of Output-Documents (See Items 3a) and 3c)).

538 **17. Appendix B: Change History**

539 This section summarizes the changes to the document. Each sub-section is in reverse chronological order. Adding or removing
 540 ISSUES that don't change the document are not listed here.

541 **17.1 Changes to the January 3, 2000 version to make the January 31, 2000 version**

542 The following changes to the January 3, 2000 version to make the January 31, 2000 version:

- 543 1. Changed the format to be a PWG-DRAFT. No technical content changed.

544 **18. Appendix C: Description of the IEEE-ISTO PWG**

545 The Printer Working Group (or PWG) is a Program of the IEEE Industry Standards and Technology Organization (ISTO) and is an
 546 alliance among printer manufacturers, print server developers, operating system providers, network operating systems providers,
 547 network connectivity vendors, and print management application developers chartered to make printers and the applications and
 548 operating systems supporting them work together better. All references to the PWG in this document implicitly mean "The Printer
 549 Working Group, a Program of the IEEE ISTO." In order to meet this objective, the PWG will document the results of their work as
 550 open standards that define print related protocols, interfaces, procedures and conventions. Printer manufacturers and vendors of
 551 printer related software will benefit from the interoperability provided by voluntary conformance to these standards.
 552 In general, a PWG standard is a specification that is stable, well understood and is technically competent, has multiple,
 553 independent and interoperable implementations with substantial operational experience, and enjoys significant public support.

554 The PWG may issue a standard as a PWG standard and/or when appropriate submit the standard to other standards
555 organizations, such as the IETF, ISO, ITU, IEEE, or ECMA.

556

557