



The Printer Working Group

July 1, 2014  
Working Draft

## IPP Finishings 2.0 (FIN2)

Status: Prototype

**Abstract:** This document defines new "finishings" and "finishings-col" Job Template attribute values to specify additional finishing intent, including the placement of finishings with respect to the corners and edges of portrait and landscape documents.

This document is a PWG Working Draft. For a definition of a "PWG Working Draft", see: <http://ftp.pwg.org/pub/pwg/general/pwg-process30.pdf>

This document is available electronically at:

<http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfinishings20-20140701.docx>  
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61 Contact information:

62 The Printer Working Group  
63 c/o The IEEE Industry Standards and Technology Organization  
64 445 Hoes Lane  
65 Piscataway, NJ 08854  
66 USA  
67

**68 About the Internet Printing Protocol Workgroup**

69 The Internet Printing Protocol (IPP) workgroup has developed a modern, full-featured  
70 network printing protocol, which is now the industry standard. IPP allows a print client to  
71 query a printer for its supported capabilities, features, and parameters to allow the  
72 selection of an appropriate printer for each print job. IPP also provides job information prior  
73 to, during, and at the end of job processing.

74 For additional information regarding IPP visit:

75 <http://www.pwg.org/ipp/>

76 Implementers of this specification are encouraged to join the IPP mailing list in order to  
77 participate in any discussions of the specification. Suggested additions, changes, or  
78 clarification to this specification, should be sent to the IPP mailing list for consideration.  
79

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## 203 1. Introduction

204 The Internet Printing Protocol/1.1: Model and Semantics [RFC2911] and Internet Printing  
205 Protocol (IPP): Production Printing Attributes - Set 1 [PWG5100.3] specifications define the  
206 basic attributes and values needed to support advanced finishing operations on printed  
207 output. This specification, originally titled 'IPP: "finishings" attribute values extension',  
208 defines additional values and member attributes needed to support the full breadth of  
209 finishing options available in modern Printers. It also revisits the original definitions of the  
210 "finishings" and "finishings-col" attributes in order to provide a holistic view of the various  
211 finishing processes that are supported by Printers.

212 The "finishings" Job Template attribute [RFC2911] allows Clients to specify simple intent -  
213 staple, fold, trim, etc. This specification extends the original values to include positional  
214 characteristics, e.g., staple top-left, as well as common variations, e.g., Z fold.

215 The "finishings-col" Job Template attribute [PWG5100.3] allows Clients to specify detailed  
216 intent - staple at the following coordinates, fold at the following positions and directions,  
217 trim at the following positions and cut types, etc. This specification extends the original  
218 "finishing-template" member attribute to include standard names and adds member  
219 attributes for each type of finishing.

220 The coordinate system scheme used in this specification agrees with the Finisher MIB  
221 [RFC3806], which in turn follows the ISO DPA [ISO10175] approach of using a coordinate  
222 system as if the document were portrait. The approach for coordinate system being  
223 relative to the intended reading direction depends on the device being able to understand  
224 the orientation embedded in the PDL, which is too problematic for many PDLs. The  
225 approach for the coordinate system of being relative to the media feed direction is too  
226 dependent on the way the device is configured, i.e., pulling short edge first vs. long edge  
227 first, and can vary between different output bins in the same device.



## 228 **2. Terminology**

### 229 **2.1 Conformance Terminology**

230 Capitalized terms, such as MUST, MUST NOT, RECOMMENDED, REQUIRED, SHOULD,  
231 SHOULD NOT, MAY, and OPTIONAL, have special meaning relating to conformance as  
232 defined in Key words for use in RFCs to Indicate Requirement Levels [RFC2119]. The  
233 term CONDITIONALLY REQUIRED is additionally defined for a conformance requirement  
234 that applies to a particular capability or feature.

### 235 **2.2 Printing Terminology**

236 Normative definitions and semantics of printing terms are imported from the Printer MIB v2  
237 [RFC3805], Printer Finishings MIB [RFC3806], and Internet Printing Protocol/1.1: Model  
238 and Semantics [RFC2911]. This document also defines the following protocol roles in  
239 order to specify unambiguous conformance requirements:

240 *Client*: Initiator of outgoing IPP session requests and sender of outgoing IPP operation  
241 requests (Hypertext Transfer Protocol -- HTTP/1.1 [RFC2616] User Agent).

242 *Printer*: Listener for incoming IPP session requests and receiver of incoming IPP operation  
243 requests (Hypertext Transfer Protocol -- HTTP/1.1 [RFC2616] Server) that represents one  
244 or more Physical Devices or a Logical Device.

### 245 **2.3 Other Terminology**

246 *Finishing Location*: The distance along the Finishing Reference Edge as measured from  
247 the bottom or left of the media sheet.

248 *Finishing Offset*: The distance from the Finishing Reference Edge.

249 *Finishing Reference Edge*: The edge or side of the media sheets that is used for finishing  
250 operations. For example, when staples are placed along the left side of a set of sheets, the  
251 Finishing Reference Edge is 'left'.

### 252 **2.4 Acronyms and Organizations**

253 *IANA*: Internet Assigned Numbers Authority, <http://www.iana.org/>

254 *IETF*: Internet Engineering Task Force, <http://www.ietf.org/>

255 *ISO*: International Organization for Standardization, <http://www.iso.org/>

256 *PWG*: Printer Working Group, <http://www.pwg.org/>

## 257 **3. Requirements**

### 258 **3.1 Rationale for IPP Finishings 2.0**

259 Given the following existing specifications and the need for a standard method of  
260 specifying finishing intent without vendor-specific driver software, the IPP Finishings 2.0  
261 specification should:

- 262 1. Define Job Template attributes and values needed to clearly express finishing  
263 intent, and
- 264 2. Define Printer Description attributes and values needed to allow a Client to  
265 determine the type and extent of finishing options supported by the Printer.

266 The Internet Printing Protocol/1.1: Model and Semantics [RFC2911] defines the  
267 "finishings" Job Template attribute and basic values.

268 The Internet Printing Protocol (IPP): Production Printing Attributes - Set 1 [PWG5100.3]  
269 defines the "finishings-col" Job Template attribute for stapling.

### 270 **3.2 Use Cases**

271 The following use cases are derived in part from the list of finishing operations defined in  
272 section 2.2 of [RFC3806].

#### 273 **3.2.1 Band**

274 Jane needs to ship ten copies of a fifty page report. After initiating a print action on her  
275 Client device, she specifies a finishing intent that will band wrap each copy and submits  
276 the print request.

#### 277 **3.2.2 Bind**

278 Jane is self-publishing a book on lawn ornaments. After initiating a print action on her  
279 Client device, she specifies a finishing intent that will bind the long edge of each book and  
280 submits the print request.

#### 281 **3.2.3 Booklet Maker**

282 Jane is producing an orientation guide for new students. After initiating a print action on  
283 her Client device, she specifies a finishing intent that will impose the pages from her  
284 document onto folded sheets and submits the print request.

**285 3.2.4 Coat**

286 Jane needs to protect a photographic print from sunlight. After initiating a print action on  
287 her Client device, she specifies a finishing intent that coats the media sheet with an  
288 archival UV protectant and submits the print request.

**289 3.2.5 Cover**

290 Jane needs to print an investor report for an upcoming meeting with the company cover  
291 stock. After initiating a print action on her Client device, she specifies a finishing intent that  
292 will cover each copy and submits the print request.

**293 3.2.6 Edge Stitch**

294 Jane wants to print a multi-page checklist. After initiating a print action on her Client  
295 device, she specifies a finishing intent that will stitch the tops of the pages in the output  
296 and submits the print request.

**297 3.2.7 Fold**

298 Jane has a set of attendee cards she wants to print. After initiating a print action on her  
299 Client device, she specifies a finishing intent that will fold the cardstock in half after printing  
300 and submits the print request.

**301 3.2.8 Jog Offset**

302 Jane is printing several copies of a report and would like each copy separated. After  
303 initiating a print action on her Client device, she specifies a finishing intent that will offset  
304 each copy in the output bin and submits the print request.

**305 3.2.9 Laminate**

306 Jane is printing checklists that will be used many times. After initiating a print action on her  
307 Client device, she specifies a finishing intent that will laminate each checklist and submits  
308 the print request.

**309 3.2.10 Punch**

310 Jane is printing invoices that must be placed in a 3-ring binder. After initiating a print action  
311 on her Client device, she specifies a finishing intent that will punch three holes along the  
312 left side of each sheet and submits the print request.

**313 3.2.11 Saddle Stitch**

314 Jane is printing a short informational booklet. After initiating a print action on her Client  
315 device, she specifies a finishing intent that will place two staples along the midline of each  
316 copy and submits the print request.

**317 3.2.12 Staple**

318 Jane is printing an accounts-receivable report. After initiating a print action on her Client  
319 device, she specifies a finishing intent that will place a single staple at the top left corner of  
320 each copy and submits the print request.

**321 3.2.13 Trim**

322 Jane is printing a large photograph on her roll-fed printer. After initiating a print action on  
323 her Client device, she specifies a finishing intent that will cut the roll at the end of the  
324 printed photograph and submits the print request.

**325 3.2.14 Wrap**

326 Jane is printing documentation for a software product. After initiating a print action on her  
327 Client device, she specifies a finishing intent that will shrinkwrap each copy and submits  
328 the print request.

**329 3.2.15 Multiple Finishing Options**

330 Jane is printing an eight page brochure booklet. After initiating a print action on her Client  
331 device, she specifies finishing intent to first impose the pages from her document onto  
332 folded sheets, then staple the sheets along the midline, fold the sheets along the midline,  
333 and finally shrinkwrap each booklet. She then submits the print request.

**334 3.2.16 Finishing of Multiple Copies**

335 Jane is printing a seven page report to a Printer that only supports a raster format. After  
336 initiating a print action on her Client device, she specifies a copy count of 10 and finishing  
337 intent to stapled each copy. She then submits the print request. Her Client device  
338 generates and submits 70 pages of raster data to the Printer.

**339 3.3 Exceptions****340 3.3.1 Unsupported Media**

341 After submitting the orientation guide for printing (section 3.2.3), the printer returns an error  
342 indicating that the requested media cannot be used with the booklet maker.

**343 3.3.2 Unsupported Combinations of Finishing Options**

344 After submitting an eight page brochure booklet for printing (section 3.2.15), the printer  
345 returns an error indicating that the requested finishing intent cannot be combined as  
346 requested.

### 347 **3.4 Out of Scope**

348 The following are considered out of scope for this specification:

- 349 1. Explicitly specifying the order of finishing operations, i.e., processing instructions  
350 instead of intent,
- 351 2. Support for folds at angles other than 0, 90, 180, and 270 degrees
- 352 3. Support for cuts at angles other than 0, 90, 180, and 270 degrees
- 353 4. Support for cuts that do not extend the full width or length of the media

### 354 **3.5 Design Requirements**

355 The design requirements for this specification are:

- 356 5. Follow the naming conventions defined in the IPP/1.1 Model and Semantics  
357 [RFC2911], including keyword value (lowercase) and hyphenation requirements,
- 358 6. Optimize compatibility with existing IETF and PWG IPP operations when making  
359 design decisions in defining new operations and attributes,
- 360 7. Define values for the "finishings" Job Template attribute to support the full range  
361 of finishing options supported by modern Printers,
- 362 8. Define Printer Description and member attributes for the "finishings-col" Job  
363 Template attribute to support the full range of finishing options supported by  
364 modern Printers,
- 365 9. Update the definition of the "finishing-template" member attribute for all of the  
366 standard finishing options supported by modern Printers, and
- 367 10. Register all attributes and operations with IANA

## 368 **4. Overview of Finishing**

369 The finishing processes supported by Printers are identified in the Printer Finishing MIB  
370 [RFC3806]. Loosely stated, IPP finishing is any post-processing of the hardcopy output  
371 that is performed by any of the subunits of the Printer. Common finishing processes  
372 include baling, binding, booklet making, coating, covering, folding, jogging, laminating,  
373 punching, stapling, stitching, trimming, and wrapping. As in [RFC3806], all IPP finishing is  
374 specified with respect to portrait media orientation. The "multiple-document-handling" Job  
375 Template attribute [RFC2911] defines how multiple copies and documents are combined  
376 into sets for finishing.

377 A key concept with IPP Finishing operations is that the "finishings" and "finishings-col" Job  
378 Template attributes define the Client's intent and not the processing order of finishing  
379 operations. That is, a Client can specify the intent that a document be covered and bound  
380 or bound and covered and get the intended output – the Printer is responsible for  
381 determining the correct processing order for a sequence of finishing values.

382 The following subsections describe each of the finishing processes supported by this  
383 specification.

#### 384 **4.1 Bale (or Band) and Wrap**

385 Bale finishers bundle hardcopy output with string or straps. Wrap finishings completely  
386 enclose the output, such as with a shrink-wrap material.

#### 387 **4.2 Bind**

388 Bind finishers join hardcopy output along one edge. Binding can be performed by gluing  
389 the edge, joining using plastic or wire loops, padded, or taped.

#### 390 **4.3 Booklet Making**

391 Booklet making combines a half fold with signature imposition, placing and ordering input  
392 document pages so that the resulting output can be read as a booklet. Booklet making is  
393 often combined with a saddle stitch to hold the hardcopy output together.

#### 394 **4.4 Coat and Laminate**

395 Coating finishers apply a liquid or powdered material to the surface of the hardcopy output,  
396 e.g., a clear UV light and weather resistant paint over a sign, while laminator finishers  
397 combine a solid material with the hardcopy output using heat and/or adhesives.

#### 398 **4.5 Cover**

399 Cover finishers place cover media over the hardcopy output, either as two separate sheets  
400 or a single sheet that covers the binding edge.

#### 401 **4.6 Fold**

402 A fold finisher places folds in hardcopy output at certain positions and directions. Figure 1  
403 shows common fold styles that are supported by this specification.

#### 404 **4.7 Jog**

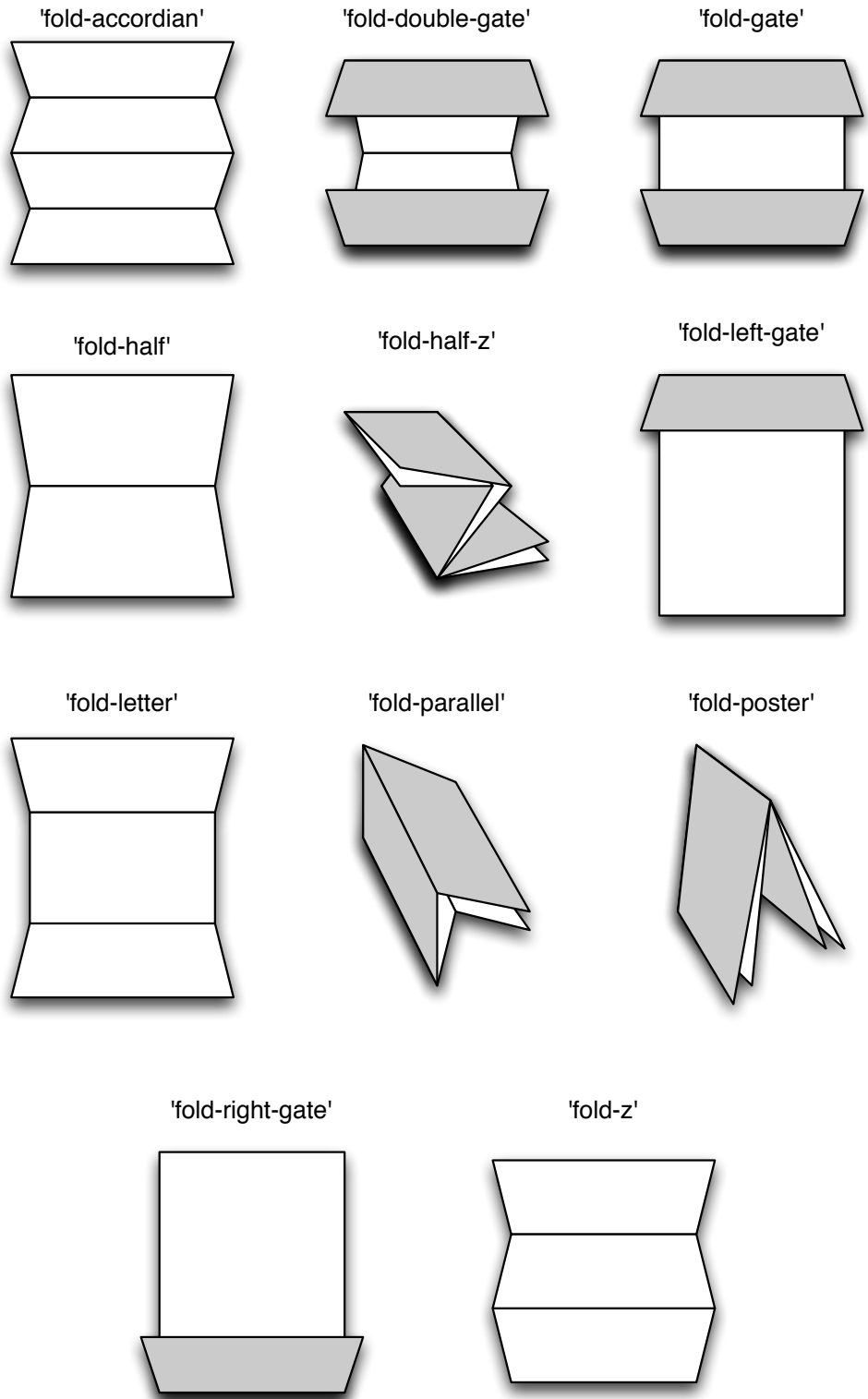
405 A jog finisher offsets each set by a fixed distance so that each set can be retrieved  
406 separately.

#### 407 **4.8 Punch**

408 A punch finisher creates holes in the hardcopy document set by drilling or punching with a  
409 die.

**410 4.9 Staple, Edge Stitch, and Saddle Stitch**

411 Staple and stitch finishers bind sets of hardcopy documents using 'U' shaped pieces of  
412 metal wire ("staples"). Staples are placed in a corner, along an edge, or along the middle  
413 fold (for saddle stitching). IPP uses the keyword 'edge-stitch' when multiple staples are  
414 used along an edge and 'saddle-stitch' when multiple staples are placed along the middle  
415 fold.



416

417

Figure 1 - Standard Folds



418 **4.10 Trim (Cut, Perforate, or Score)**

419 Trim finishers cut, perforate, or score hardcopy documents along a straight line - most only  
420 support trimming along lines parallel or perpendicular to the feed direction.

421

## 422 **5. Job Template Attributes**

### 423 **5.1 finishings (1setOf type2 enum)**

424 The "finishings" Job Template attribute [RFC2911] identifies the finishing operations that  
425 the Printer uses for each copy of each printed document in the Job. Printers that support  
426 any of the finishing processes listed in section 4 MUST support this attribute.

427 The order of values supplied in the "finishings" attribute is not significant. Printers MUST  
428 NOT require Clients to supply values in a particular order. If the Client supplies a value of  
429 'none' along with any other combination of values, it is the same as if only that other  
430 combination of values had been supplied, i.e., the 'none' value has no effect.

431 The positional values are specified with respect to the document as if the document were a  
432 portrait document. If the document is actually a landscape or a reverse-landscape  
433 document, the client supplies the appropriate transformed value. For example, to position  
434 a staple in the upper left hand corner of a landscape document when held for reading, the  
435 client supplies the 'staple-bottom-left' value since landscape is defined as an anti-  
436 clockwise rotation from portrait. On the other hand, to position a staple in the upper left  
437 hand corner of a reverse-landscape document when held for reading, the client supplies  
438 the 'staple-top-right' value since reverse-landscape is defined as a clockwise rotation from  
439 portrait.

440 Note: The effect of this attribute on Jobs with multiple copies and Documents is controlled  
441 by the "multiple-document-handling" Job Template attribute (section 4.2.4 [RFC2911]) and  
442 the relationship of this attribute and the other attributes that control document processing is  
443 described in section 15.3 [RFC2911].

#### 444 **5.1.1 RFC 2911 "finishings" Values**

445 The Internet Printing Protocol/1.1: Model and Semantics [RFC2911] defines the following  
446 standard enum values:

447 'none' (3): Perform no finishing

448 'staple' (4): Bind the document(s) with one or more staples. The exact number,  
449 placement, and orientation of the staples are implementation and/or site-defined.

450 'punch' (5): This value indicates that holes are required in the finished document.  
451 The exact number and placement of the holes are implementation and/or site-  
452 defined. The punch specification MAY be satisfied (in a site- and implementation-  
453 specific manner) either by drilling/punching, or by substituting pre-drilled media.

454 'cover' (6): This value is specified when it is desired to select a non-printed (or pre-  
455 printed) cover for the document. This does not supplant the specification of a  
456 printed cover (on cover stock medium) by the document itself.

- 457 'bind' (7): This value indicates that a binding is to be applied to the document; the  
458 type and placement of the binding are implementation and/or site-defined.
- 459 'saddle-stitch' (8): Bind the document(s) with one or more staples (wire stitches)  
460 along the middle fold. The exact number and placement of the staples and the  
461 middle fold are implementation and/or site-defined.
- 462 'edge-stitch' (9): Bind the document(s) with one or more staples (wire stitches)  
463 along one edge. The exact number and placement of the staples are  
464 implementation and/or site-defined.
- 465 'staple-top-left' (20): Bind the document(s) with one or more staples in the top left  
466 corner.
- 467 'staple-bottom-left' (21): Bind the document(s) with one or more staples in the  
468 bottom left corner.
- 469 'staple-top-right' (22): Bind the document(s) with one or more staples in the top  
470 right corner.
- 471 'staple-bottom-right' (23): Bind the document(s) with one or more staples in the  
472 bottom right corner.
- 473 'edge-stitch-left' (24): Bind the document(s) with one or more staples (wire stitches)  
474 along the left edge. The exact number and placement of the staples are  
475 implementation and/or site-defined.
- 476 'edge-stitch-top' (25): Bind the document(s) with one or more staples (wire stitches)  
477 along the top edge. The exact number and placement of the staples are  
478 implementation and/or site-defined.
- 479 'edge-stitch-right' (26): Bind the document(s) with one or more staples (wire  
480 stitches) along the right edge. The exact number and placement of the staples are  
481 implementation and/or site-defined.
- 482 'edge-stitch-bottom' (27): Bind the document(s) with one or more staples (wire  
483 stitches) along the bottom edge. The exact number and placement of the staples  
484 are implementation and/or site-defined.
- 485 'staple-dual-left' (28): Bind the document(s) with two staples (wire stitches) along  
486 the left edge assuming a portrait document (see section 4).
- 487 'staple-dual-top' (29): Bind the document(s) with two staples (wire stitches) along  
488 the top edge assuming a portrait document (see section 4).
- 489 'staple-dual-right' (30): Bind the document(s) with two staples (wire stitches) along  
490 the right edge assuming a portrait document (see section 4).

491 'staple-dual-bottom' (31): Bind the document(s) with two staples (wire stitches)  
492 along the bottom edge assuming a portrait document (see section 4).

### 493 **5.1.2 PWG 5100.1-2001 “finishings” Values**

494 The IPP “finishings” attribute values extension [PWG5100.1-2001] defines the following  
495 “finishings” enum values:

496 'fold' (10): Fold the document(s) with one or more folds. The exact number and  
497 orientations of the folds is implementation and/or site-defined.

498 'trim' (11): Trim the document(s) on one or more edges. The exact number of  
499 edges and the amount to be trimmed is implementation and/or site-defined.

500 'bale' (12): Bale the document(s). The type of baling is implementation and/or site-  
501 defined.

502 'booklet-maker' (13): Deliver the document(s) to the signature booklet maker. This  
503 value is a short cut for specifying a job that is to be folded, trimmed and then  
504 saddle-stitched.

505 'jog-offset' (14): Shift each copy of an output document from the previous copy by a  
506 small amount which is device dependent. This value has no effect on the “job-  
507 sheet”. This value SHOULD NOT have an effect if each copy of the job consists of  
508 one sheet.

509 'bind-left' (50): Bind the document(s) along the left edge; the type of the binding is  
510 implementation and/or site-defined.

511 'bind-top' (51): Bind the document(s) along the top edge; the type of the binding is  
512 implementation and/or site-defined.

513 'bind-right' (52): Bind the document(s) along the right edge; the type of the binding  
514 implementation and/or is site-defined.

515 'bind-bottom' (53): Bind the document(s) along the bottom edge; the type of the  
516 binding is implementation and/or site-defined.

### 517 **5.1.3 PWG 5100.1-YYYY “finishings” Values**

518 This specification defines the following “finishings” enum values:

519 'coat' (15); Apply a protective liquid or powdered coating to each sheet in an  
520 implementation and/or site-defined manner.

521 'laminates' (16); Apply a protective (solid) material to each sheet in an  
522 implementation and/or site-defined manner.

- 523 'staple-triple-left' (32); Bind the document(s) with three staples (wire stitches) along  
524 the left edge assuming a portrait document (see section 4).
- 525 'staple-triple-top' (33); Bind the document(s) with three staples (wire stitches) along  
526 the top edge assuming a portrait document (see section 4).
- 527 'staple-triple-right' (34); Bind the document(s) with three staples (wire stitches)  
528 along the right edge assuming a portrait document (see section 4).
- 529 'staple-triple-bottom' (35); Bind the document(s) with three staples (wire stitches)  
530 along the top edge assuming a portrait document (see section 4).
- 531 'punch-top-left' (70); Punch a single hole in the top left of the media
- 532 'punch-bottom-left' (71); Punch a single hole in the bottom left of the media
- 533 'punch-top-right' (72); Punch a single hole in the top right of the media
- 534 'punch-bottom-right' (73); Punch a single hole in the bottom right of the media
- 535 'punch-dual-left' (74); Punch two holes on the left side of the media
- 536 'punch-dual-top' (75); Punch two holes at the top of the media
- 537 'punch-dual-right' (76); Punch two holes on the right side of the media
- 538 'punch-dual-bottom' (77); Punch two holes at the bottom of the media
- 539 'punch-triple-left' (78); Punch three holes on the left side of the media
- 540 'punch-triple-top' (79); Punch three holes at the top of the media
- 541 'punch-triple-right' (80); Punch three holes on the right side of the media
- 542 'punch-triple-bottom' (81); Punch three holes at the bottom of the media
- 543 'punch-quad-left' (82); Punch four holes on the left side of the media
- 544 'punch-quad-top' (83); Punch four holes at the top of the media
- 545 'punch-quad-right' (84); Punch four holes on the right side of the media
- 546 'punch-quad-bottom' (85); Punch four holes at the bottom of the media
- 547 'fold-accordian' (90); Accordion-fold the paper vertically into four sections
- 548 'fold-double-gate' (91); Fold the top and bottom quarters of the paper towards the  
549 midline, then fold in half vertically

- 550 'fold-gate' (92); Fold the top and bottom quarters of the paper towards the midline
- 551 'fold-half' (93); Fold the paper in half vertically
- 552 'fold-half-z' (94); Fold the paper in half horizontally, then Z-fold the paper vertically  
553 into three sections
- 554 'fold-left-gate' (95); Fold the top quarter of the paper towards the midline
- 555 'fold-letter' (96); Fold the paper into three sections vertically; sometimes also known  
556 as a C fold
- 557 'fold-parallel' (97); Fold the paper in half vertically two times, yielding four sections
- 558 'fold-poster' (98); Fold the paper in half horizontally and vertically; sometimes also  
559 called a cross fold
- 560 'fold-right-gate' (99); Fold the bottom quarter of the paper towards the midline
- 561 'fold-z' (100); Fold the paper vertically into three sections, forming a Z

562 **5.1.4 PWG 5100.13 “finishings” Values**

563 The IPP Job and Printer Extensions - Set 3 (JPS3) [PWG5100.13] defines the following  
564 standard enum values:

- 565 'trim-after-pages' (60): Trim output after each page.
- 566 'trim-after-documents' (61): Trim output after each document.
- 567 'trim-after-copies' (62): Trim output after each copy.
- 568 'trim-after-job' (63): Trim output after job.  
569

## 570 5.2 finishings-col (noValue | 1setOf collection)

571 The "finishings-col" Job Template attribute (originally defined in section 3.2 of  
572 [PWG5100.3]) augments the "finishings" Job Template attribute (section 5.1) and allows  
573 the Client to specify detailed finishing instructions that cannot be specified using the simple  
574 enumerated values of the "finishings" attribute. Printers that support any of the finishing  
575 processes listed in section 4 SHOULD support this attribute and MUST support the  
576 "finishings" attribute.

577 Clients MUST NOT specify both the "finishings" and "finishings-col" attributes in a job  
578 creation request. Printers MUST reject job creation requests containing both the  
579 "finishings" and "finishings-col" attributes with the 'client-error-conflicting-attributes' status  
580 code.

581 The order of values supplied in the "finishings-col" attribute is not significant. Printers  
582 MUST NOT require Clients to supply values in a particular order. If the Client does not  
583 want any finishings applied it sends the 'noValue' out-of-band value.

584 **Table 1 - "finishings-col" Member Attributes**

<b>Member Attribute</b>	<b>Client Support</b>	<b>Printer Support</b>
finishing-template (type2 keyword   name(MAX))	MUST	MUST
baling (collection)	MAY	MUST (note 1)
binding (collection)	MAY	MUST (note 1)
coating (collection)	MAY	MUST (note 1)
covering (collection)	MAY	MUST (note 1)
folding (1setOf collection)	MAY	MUST (note 1)
laminating (collection)	MAY	MUST (note 1)
punching (collection)	MAY	MUST (note 1)
stitching (collection)	MAY	MUST (note 1)
trimming (1setOf collection)	MAY	MUST (note 1)

585 Note 1: MUST be supported when the corresponding finishing option is supported.

### 586 5.2.1 finishing-template (type2 keyword | name(MAX))

587 The REQUIRED "finishing-template" member attribute (originally defined in section 3.2.1  
588 of [PWG5100.3]) specifies the particular finishing operation using either one of the  
589 standard "finishings" keywords or an implementation or site defined name. Specifying only  
590 the "finishing-template" member attribute with no other member attributes results in the  
591 default values for those member attributes.  
592

**593 5.2.2 baling (collection)**

594 The "baling" member attribute specifies which baling to apply to the hardcopy output.  
595 Printers with a baling finisher MUST support this member attribute and all "baling-xxx"  
596 member attributes if they support the "finishings-col" attribute.

**597 5.2.2.1 baling-type (type2 keyword | name(MAX))**

598 The "baling-type" member attribute specifies the type of baling to apply. The following  
599 values are defined by this specification:

600 'band': each document, copy, or set is baled with a paper or plastic band.

601 'shrink-wrap': each document, copy, or set is shrink-wrapped in plastic.

602 'wrap': each document, copy, or set is wrapped in paper.

603 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

**604 5.2.2.2 baling-when (type2 keyword)**

605 The "baling-when" member attribute specified when baling is performed. The default value  
606 may be derived from the "finishing-template" value or, if a default value cannot be  
607 determined from that value, using an implementation or site defined value. The following  
608 values are defined by this specification:

609 'after-copies': Baling occurs after each copy or set (the typical default).

610 'after-documents': Baling occurs after each document.

611 'after-job': Baling occurs only after the entire Job is printed.

612 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

613



**614 5.2.3 binding (collection)**

615 The "binding" member attribute specifies the location and type of binding to apply to the  
616 hardcopy output. Printers with a binding finisher MUST support this member attribute and  
617 all "binding-xxx" member attributes if they support the "finishings-col" attribute.

**618 5.2.3.1 binding-reference-edge (type2 keyword)**

619 The "binding-reference-edge" member attribute specifies which edge ('bottom', 'left', 'right',  
620 or 'top') is bound. If not specified, the default value is either derived from the "finishing-  
621 template" keyword value ('bind-bottom', 'bind-left', 'bind-right', 'bind-top') or, if no edge is  
622 specified, is an implementation or site defined value.

**623 5.2.3.2 binding-type (type2 keyword | name(MAX))**

624 The "binding-type" member attribute specifies the type of binding to apply. If not specified,  
625 an implementation or site defined value is used. The following keyword values are defined  
626 by this specification:

627       'adhesive': sheets are bound using glue or adhesive.

628       'comb': sheets are bound by placing small rectangular holes along the binding edge  
629       and using a tube-shaped plastic binding strip with comb like fingers that fit through  
630       the holes.

631       'flat': sheets are bound so that they can lay flat when the document is opened.

632       'padding': sheets are bound by applying a non-penetrating adhesive to the edge of  
633       the stack of sheets so that the sheets can be easily peeled off one at a time.

634       'perfect': sheets are bound by roughing the binding edge and applying an adhesive.

635       'spiral': sheets are bound by placing small round holes along the binding edge and  
636       winding plastic or metal wire through the holes in a spiral pattern.

637       'tape': sheets are bound by placing tape along the binding edge, overlapping the top  
638       and bottom sheets of the stack.

639       'velo': sheets are bound by placing small holes along the binding edge and joining  
640       the sheets using plastic strips with pins that extend through those holes.

641 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

642

**643 5.2.4 coating (collection)**

644 The "coating" member attribute specifies which coating to apply to the hardcopy output.  
645 Typically the coating is applied to the entire page, although some Printers MAY only coat  
646 those areas that have been marked on. Printers with a coating finisher MUST support this  
647 member attribute and all "coating-xxx" member attributes if they support the "finishings-col"  
648 attribute.

**649 5.2.4.1 coating-sides (type2 keyword)**

650 The "coating-sides" member attribute specifies which sides of the sheets are coated:  
651 'front', 'back', or 'both', If not specified, an implementation or site defined default value is  
652 used.

**653 5.2.4.2 coating-type (type2 keyword | name(MAX))**

654 The "coating-type" member attribute specifies the type of coating to apply. The following  
655 values are defined by this specification:

656 'archival': each sheet is coated to preserve the output for an extended period of  
657 time, e.g., a UV protectant.

658 'archival-glossy': each sheet is coated to produce a glossy surface that preserves  
659 the output for an extended period of time, e.g., a UV protectant.

660 'archival-matte': each sheet is coated to produce a matte surface that preserves the  
661 output for an extended period of time, e.g., a UV protectant.

662 'archival-semi-gloss': each sheet is coated to produce a semi-gloss surface that  
663 preserves the output for an extended period of time, e.g., a UV protectant.

664 'glossy': each sheet is coated to produce a glossy surface.

665 'high-gloss': each sheet is coated to produce a high-gloss surface.

666 'matte': each sheet is coated to produce a matte surface.

667 'semi-gloss': each sheet is coated to produce a semi-gloss surface.

668 'silicone': each sheet is coated to produce a water resistant surface.

669 'translucent': each sheet is coated to produce a translucent surface.

670 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

**671 5.2.5 covering (collection)**

672 The "covering" member attribute specifies which cover to apply over the hardcopy output.  
673 Printers with a cover finisher MUST support this member attribute and all "covering-xxx"  
674 member attributes if they support the "finishings-col" attribute.

675 Note: Unlike the "cover-back" and "cover-front" Job Template attributes [PWG5100.3],  
676 finishing covers are applied over any binding, edge stitching, or staples and do not contain  
677 print-stream pages.

**678 5.2.5.1 covering-name (type2 keyword | name(MAX))**

679 The "covering-name" member attribute specifies which cover to apply. The default is  
680 implementation or site defined. The name typically represents a pre-printed, pre-cut, or  
681 generic cover that is available to the Printer. Clients MUST query the value of the  
682 "covering-name-supported" (section 6.7) Printer attribute for the list of supported values.  
683 The following values are defined by this specification:

684 'plain': a plain (blank) cover is applied.

685 'pre-cut': a pre-cut cover is applied.

686 'pre-printed': a pre-printed cover is applied.

687 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

688

## 689 **5.2.6 folding (1setOf collection)**

690 The "folding" member attribute specifies the location and direction of folds to apply to the  
691 hardcopy output. Printers with a folding finisher **MUST** support this member attribute and  
692 all "folding-xxx" member attributes if they support the "finishings-col" attribute.

693 Note: The order of "folding" values is significant and is part of the fold intent. Printers **MAY**  
694 re-order "folding" values so long as the final result matches the specified intent.

695 Note: This specification only defines folds parallel to the reference edge. Diagonal folds  
696 are explicitly not supported.

### 697 **5.2.6.1 folding-direction (type2 keyword)**

698 The "folding-direction" member attribute specifies whether the sheets are pushed outward  
699 ('outward') or pulled inward ('inward') for the current fold. The default value may be derived  
700 from the "finishing-template" value or, if a default value cannot be determined from that  
701 value, using an implementation or site defined value.

### 702 **5.2.6.2 folding-offset (integer(0:MAX))**

703 The "folding-offset" member attribute specifies where the fold is made. The value is the  
704 distance from the reference edge specified by the "folding-reference-edge" member  
705 attribute toward the center of the medium in hundredths of millimeters (1/2540th of an  
706 inch). The default value is generally derived from the "finishing-template" value and output  
707 media.

### 708 **5.2.6.3 folding-reference-edge (type2 keyword)**

709 The "folding-reference-edge" member attribute specifies which edge is used as the basis  
710 of the fold instructions: 'bottom', 'left', 'right', or 'top'. Folds are placed parallel to the  
711 reference edge at the offset specified by the "folding-location" member attribute. The  
712 default value is generally derived from the "finishing-template" value and output media.

### 713 **5.2.6.4 "folding" Examples**

714 The following examples show "folding" values for the standard folds in Figure 1 applied to  
715 A4 media sheets.

```
716     'fold-accordion'  
717     folding = { folding-direction='inward' folding-location=7425  
718               folding-reference-edge='top' },  
719               { folding-direction='inward' folding-location=22275  
720               folding-reference-edge='top' },  
721               { folding-direction='outward' folding-location=14850  
722               folding-reference-edge='top' }  
723
```

```
724 `fold-double-gate`
725 folding = { folding-direction='inward' folding-offset=7425
726             folding-reference-edge='top' },
727             { folding-direction='inward' folding-offset=22275
728             folding-reference-edge='top' },
729             { folding-direction='inward' folding-offset=14850
730             folding-reference-edge='top' }
731
732 `fold-gate`
733 folding = { folding-direction='inward' folding-offset=7425
734             folding-reference-edge='top' },
735             { folding-direction='inward' folding-offset=22275
736             folding-reference-edge='top' }
737
738 `fold-half`
739 folding = { folding-direction='inward' folding-offset=14850
740             folding-reference-edge='top' }
741
742 `fold-half-z`
743 folding = { folding-direction='inward' folding-offset=10500
744             folding-reference-edge='left' },
745             { folding-direction='inward' folding-offset=9900
746             folding-reference-edge='top' },
747             { folding-direction='outward' folding-offset=19800
748             folding-reference-edge='top' }
749
750 `fold-left-gate`
751 folding = { folding-direction='inward' folding-offset=7425
752             folding-reference-edge='top' }
753
754 `fold-letter`
755 folding = { folding-direction='inward' folding-offset=9900
756             folding-reference-edge='top' },
757             { folding-direction='inward' folding-offset=19800
758             folding-reference-edge='top' }
759
760 `fold-parallel`
761 folding = { folding-direction='inward' folding-offset=14850
762             folding-reference-edge='top' },
763             { folding-direction='inward' folding-offset=7425
764             folding-reference-edge='top' }
765
766 `fold-poster`
767 folding = { folding-direction='inward' folding-offset=10500
768             folding-reference-edge='left' },
769             { folding-direction='outward' folding-offset=14850
770             folding-reference-edge='top' }
771
772 `fold-right-gate`
773 folding = { folding-direction='inward' folding-offset=22275
774             folding-reference-edge='top' }
775
776 `fold-z`
777 folding = { folding-direction='inward' folding-offset=9900
778             folding-reference-edge='top' },
779             { folding-direction='outward' folding-offset=19800
780             folding-reference-edge='top' }
781
782
```

**783 5.2.7 laminating (collection)**

784 The "laminating" member attribute specifies which material to apply to the hardcopy  
785 output. Printers with a laminating finisher MUST support this member attribute and all  
786 "laminating-xxx" member attributes if they support the "finishings-col" attribute.

**787 5.2.7.1 laminating-sides (type2 keyword)**

788 The "laminating-sides" member attribute specifies which sides of the sheets are laminated:  
789 'front', 'back', or 'both', If not specified, an implementation or site defined default value is  
790 used.

**791 5.2.7.2 laminating-type (type2 keyword | name(MAX))**

792 The "laminating-type" member attribute specifies the type of coating to apply. The following  
793 values are defined by this specification:

794 'archival': each sheet is laminated to preserve the output for an extended period of  
795 time, e.g., a UV protectant.

796 'glossy': each sheet is laminated to produce a glossy surface.

797 'high-gloss': each sheet is laminated to produce a high-gloss surface.

798 'matte': each sheet is laminated to produce a matte surface.

799 'semi-gloss': each sheet is laminated to produce a semi-gloss surface.

800 'translucent': each sheet is laminated to produce a translucent surface.

801 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

**802 5.2.8 punching (collection)**

803 The "punching" member attribute specifies the locations of holes to make in the hardcopy  
804 output. Printers with a hole punching/drilling finisher MUST support this member attribute  
805 and all "punching-xxx" member attributes if they support the "finishings-col" attribute.

**806 5.2.8.1 punching-locations (1setOf integer(0:MAX))**

807 The "punching-locations" member attribute specifies the locations to be punched or drilled  
808 along the reference edge. Each value in the 1setOf MUST be in order of increasing  
809 distance.

810 If the "punching-reference-edge" is either 'top' or 'bottom', then each value in the  
811 "punching-locations" represents an offset in hundredths of millimeters (1/2540th of an inch)  
812 from the left edge toward the center of the medium. If the "punching-reference-edge" is  
813 either 'left' or 'right', then each value in the "punching-locations" represents an offset in  
814 hundredths of millimeters (1/2540th of an inch) from the bottom edge toward the center of  
815 the medium.

816 The default value may be derived from the "finishing-template" value or, if a default value  
817 cannot be determined from that value, using an implementation or site defined value.

**818 5.2.8.2 punching-offset (integer(0:MAX))**

819 The "punching-offset" member attribute specifies the distance of the holes from the  
820 reference edge specified by the "punching-reference-edge" member attribute in  
821 hundredths of millimeters (1/2540th of an inch). The default value may be derived from the  
822 "finishing-template" value or, if a default value cannot be determined from that value, using  
823 an implementation or site defined value.

**824 5.2.8.3 punching-reference-edge (type2 keyword)**

825 The "punching-reference-edge" member attribute specifies which edge of the sheets will  
826 be punched or drilled: 'bottom', 'left', 'right', or 'top'. The default value may be derived from  
827 the "finishing-template" value or, if a default value cannot be determined from that value,  
828 using an implementation or site defined value.  
829

**830 5.2.9 stitching (collection)**

831 The "stitching" member attribute (originally defined in section 3.2.2 of [PWG5100.3])  
832 specifies the locations of stitches or staples that are used to bind the hardcopy output.  
833 Printers with a stapler and/or stitching finisher MUST support this member attribute and all  
834 "stitching-xxx" member attributes if they support the "finishings-col" attribute.

835 A Client that chooses to request custom stitching using the "stitching" collection attribute  
836 MUST specify the "stitching-reference-edge", the "stitching-offset", and the "stitching-  
837 locations" member attributes. If the Client supplies a malformed request by not supplying  
838 all three member attributes, the Printer MUST (depending on implementation) either reject  
839 the request and return the 'client-error-bad-request' (see [RFC2911] section 13.1.4.1) or  
840 default the omitted member attributes, independent of the value of the "ipp-attribute-  
841 fidelity" attribute supplied by the Client.

**842 5.2.9.1 stitching-locations (1setOf integer(0:MAX))**

843 Each value of "stitching-locations" specifies an absolute offset along the Finishing  
844 Reference Edge at which a stitch MUST occur. Each value in the 1setOf MUST be in  
845 order of increasing distance.

846 If the "stitching-reference-edge" is either 'top' or 'bottom', then each value in the "stitching-  
847 locations" represents an offset in hundredths of millimeters from the left edge along the  
848 Finishing Reference Edge toward the center of the medium. If the "stitching-reference-  
849 edge" is either 'left' or 'right', then each value in the "stitching-locations" represents an  
850 offset in hundredths of millimeters from the bottom edge along the Finishing Reference  
851 Edge toward the center of the medium.

852 The unit of measure for the "stitching-locations" member attribute is one hundredth of a  
853 millimeter. This unit is equivalent to 1/2540th of an inch resolution.

**854 5.2.9.2 stitching-offset (integer (0:MAX))**

855 The "stitching-offset" member attribute specifies the perpendicular distance of the staples  
856 from the Finishing Reference Edge. Since the "stitching-offset" member attribute is  
857 positive or zero, the offset is always in the direction that is both away from the Finishing  
858 Reference Edge and toward the center of the media sheet.

859 The unit of measure for the "stitching-offset" member attribute is one hundredth of a  
860 millimeter. This unit is equivalent to 1/2540th of an inch resolution.

861 If the Client specifies a "stitching-offset" then the Printer MUST produce a stitch (or  
862 stitches) along a line that is the specified number of hundredths of millimeters specified by  
863 the "stitching-offset" attribute away from the "stitching-reference-edge".



**864 5.2.9.3 stitching-reference-edge (type2 keyword)**

865 The "stitching-reference-edge" member attribute specifies the Finishing Reference Edge of  
866 the output media relative to which the stapling or stitching MUST be applied. The individual  
867 staples or stitches are situated along a line or axis parallel to the Finishing Reference  
868 Edge.

869 Note: The "stitching-reference-edge" member attribute is single valued, e.g., top-left is not  
870 allowed.

871 The standard keyword values are:

872 'bottom': The bottom edge coincides with the x-axis of the coordinate system.

873 'top': The top edge is opposite and parallel to the bottom edge.

874 'left': The left edge coincides with the y-axis of the coordinate system.

875 'right': The right edge is opposite and parallel to the left edge.

876 A Printer MUST support this member attribute and at least the 'left' value.

877 Note: The 'left' value works with 'portrait' and 'landscape' documents since 'landscape'  
878 documents are rotated anti-clock-wise 90 degrees, i.e., plus 90 degrees, with respect to  
879 'portrait' documents. The left edge becomes the top edge when the human reader orients  
880 the landscape document for reading.  
881

**882 5.2.10 trimming (1setOf collection)**

883 The "trimming" member attribute specifies the locations of cuts to make in the hardcopy  
884 output. Printers with a trimming/cutting/perforation/scoring finisher MUST support this  
885 member attribute and all "trimming-xxx" member attributes if they support the "finishings-  
886 col" attribute.

**887 5.2.10.1 trimming-offset (1setOf integer(0:MAX))**

888 The "trimming-offset" member attribute specifies where the cut, perforation, or score is  
889 made. The value is the distance from the Finishing Reference Edge specified by the  
890 "trimming-reference-edge" member attribute toward the center of the medium in  
891 hundredths of millimeters (1/2540th of an inch). The default value is generally derived from  
892 the "finishing-template" value and output media.

**893 5.2.10.2 trimming-reference-edge (type2 keyword)**

894 The "trimming-reference-edge" member attribute specifies which edge is used as the basis  
895 of the cut, perforation, or score: 'bottom', 'left', 'right', or 'top'. Cuts, perforations, and scores  
896 are placed parallel to the reference edge at the offset specified by the "trimming-offset"  
897 member attribute. The default value is generally derived from the "finishing-template" value  
898 and output media.

**899 5.2.10.3 trimming-type (type2 keyword | name(MAX))**

900 The "trimming-type" member attribute specifies the type of trim that is to be performed.  
901 The default value is implementation and/or site defined. The following values are defined  
902 by this specification:

903       'full': Cuts the hardcopy output the full length parallel to the reference edge.

904       'partial': Partially cuts the hardcopy output along the length parallel to the reference  
905 edge.

906       'perforate': Perforates the hardcopy output the full length parallel to the reference  
907 edge.

908       'score': Scores the hardcopy output the full length parallel to the reference edge.

909       'tab': Cuts the hardcopy output along the length parallel to the reference edge  
910 leaving a hanging tab.

911 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

**912 5.2.10.4 trimming-when (type2 keyword)**

913 The "trimming-when" member attribute specified when trimming is performed. The default  
914 value may be derived from the "finishing-template" value or, if a default value cannot be

915 determined from that value, using an implementation or site defined value. The following  
916 values are defined by this specification:

917 'after-copies': Trimming occurs after each copy or set (the typical default).

918 'after-documents': Trimming occurs after each document.

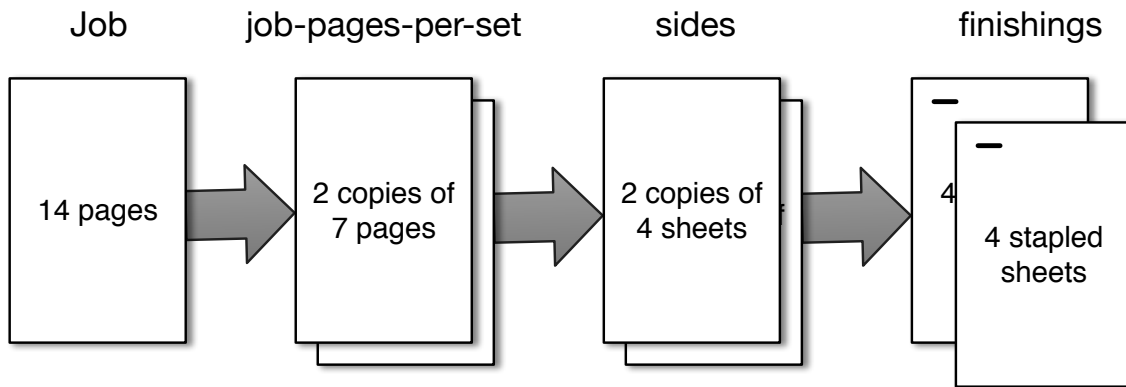
919 'after-job': Trimming occurs only after the entire Job is printed.

920 'after-pages': Trimming occurs after each page.

921 Additional values can be registered in the IANA IPP Registry of Keywords [IANA].

922 **5.3 job-pages-per-set (integer(1:MAX))**

923 The RECOMMENDED "job-pages-per-set" Job Template attribute specifies the number of  
924 input pages that constitute a set for finishing operations. For example, if a Client submits a  
925 14 page PWG Raster Format document for printing that actually contains two copies of  
926 four duplex pages each, the Client could specify a "job-pages-per-set" Job Template  
927 attribute with a value of 7, a "sides" attribute with a value of 'two-sided-long-edge', and a  
928 "finishings" attribute with a value of 4 (staple) to have the Printer staple two sets of four  
929 sheets. Figure 2 shows a graphical representation of this example.



930

931 **Figure 2 - Handling of "job-pages-per-set" Job Template Attribute**

932

## 933 **6. Printer Description Attributes**

### 934 **6.1 baling-type-supported (1setOf (type2 keyword | name(MAX)))**

935 The "baling-type-supported" Printer attribute lists the supported values for the "baling-type"  
936 (section 5.2.2.1) member attribute.

### 937 **6.2 baling-when-supported (1setOf type2 keyword)**

938 The "baling-when-supported" Printer attribute lists the supported values for the "baling-  
939 when" (section 5.2.2.2) member attribute.

### 940 **6.3 binding-reference-edge-supported (1setOf type2 keyword)**

941 The "binding-reference-edge-supported" Printer attribute lists the supported values for the  
942 "binding-reference-edge" (section 5.2.3.1) member attribute.

### 943 **6.4 binding-type-supported (1setOf type2 keyword)**

944 The "binding-type-supported" Printer attribute lists the supported values for the "binding-  
945 type" (section 5.2.3.2) member attribute.

### 946 **6.5 coating-sides-supported (1setOf type2 keyword)**

947 The "coating-sides-supported" Printer attribute lists the supported values for the "coating-  
948 sides" (section 5.2.4.1) member attribute.

### 949 **6.6 coating-type-supported (1setOf (type2 keyword | name(MAX)))**

950 The "coating-type-supported" Printer attribute lists the supported values for the "coating-  
951 type" (section 5.2.4.2) member attribute.

### 952 **6.7 covering-name-supported (1setOf (type2 keyword | name(MAX)))**

953 The "covering-name-supported" Printer attribute lists the supported values for the  
954 "covering-name" (section 5.2.5.1) member attribute.

### 955 **6.8 finishing-template-supported (1setOf (name(MAX) | type2 keyword))**

956 The "finishing-template-supported" Printer attribute lists the supported values for the  
957 "finishing-template" (section 5.2.1) member. Printers MUST list all "finishings-supported"  
958 keyword value equivalents in the list of "finishing-template-supported" values.

## 959 **6.9 finishings-col-database (1setOf collection)**

960 The RECOMMENDED "finishings-col-database" Printer attribute lists the "finishings-col"  
961 member attributes corresponding to each "finishing-template" value. For example, a Printer  
962 that supports the 'staple' value might report:

```
963     finishing-col-database={  
964         finishing-template='staple'  
965         stitching={  
966             stitching-locations=635  
967             stitching-offset=635  
968             stitching-reference-edge='left'  
969         }  
970     }
```

971 The same values SHOULD be reported in the "finishings-col-ready" Printer attribute for  
972 each finisher sub-unit that is available.

## 973 **6.10 folding-direction-supported (1setOf type2 keyword)**

974 The "folding-direction-supported" Printer attribute lists the supported values for the  
975 "folding-direction" (section 5.2.6.1) member attribute.

## 976 **6.11 folding-offset-supported (1setOf (integer(0:MAX) | 977 rangeOfInteger(0:MAX)))**

978 The "folding-offset-supported" Printer attribute lists the supported values for the "folding-  
979 offset" (section 5.2.6.2) member attribute.

## 980 **6.12 folding-reference-edge-supported (1setOf type2 keyword)**

981 The "folding-reference-edge-supported" Printer attribute lists the supported values for the  
982 "folding-reference-edge" (section 5.2.6.3) member attribute.

## 983 **6.13 laminating-sides-supported (1setOf type2 keyword)**

984 The "laminating-sides-supported" Printer attribute lists the supported values for the  
985 "laminating-sides" (section 5.2.7.1) member attribute.

## 986 **6.14 laminating-type-supported (1setOf (type2 keyword | name(MAX)))**

987 The "laminating-type-supported" Printer attribute lists the supported values for the  
988 "laminating-type" (section 5.2.7.2) member attribute.

**989 6.15 job-pages-per-set-supported (boolean)**

990 The "job-pages-per-set-supported" Printer Attribute specifies whether the "job-pages-per-  
991 set" Job Template attribute (section 5.3) is supported. This attribute MUST be supported if  
992 the "job-pages-per-set" attribute is supported.

**993 6.16 printer-finisher (1setOf octetString(MAX))**

994 The REQUIRED "printer-finisher" Printer attribute provides current finisher details mapped  
995 from the SNMP finDeviceTable defined in IETF Finishing MIB [RFC3806].

996 This attribute MUST be supported if the "printer-finisher-description" (section 0) Printer  
997 attribute is supported. If supported, this attribute MUST have the same cardinality (contain  
998 the same number of values) as the "printer-finisher-description" attribute. The  $i^{\text{th}}$  value in  
999 the "printer-finisher" attribute corresponds to the  $i^{\text{th}}$  value in the "printer-finisher-description"  
1000 attribute.

**1001 6.16.1 Keywords for printer-finisher**

1002 Table 2 defines the IPP datatypes and keywords for encoding "printer-finisher" from all of  
1003 the machine-readable (non-localized) columnar objects in finDeviceTable [RFC3806].

**1004 6.16.2 Encoding of printer-finisher**

1005 Values of "printer-finisher" MUST be encoded using a visible subset of the [US-ASCII]  
1006 charset. Control codes (0x00 to 0x1F and 0x7F) MUST NOT be used. The ABNF [STD68]  
1007 in

1008 Figure 3 defines the standard encoding in "printer-finisher" for all the machine-readable  
1009 (non-localized) columnar objects in finDeviceTable [RFC3806].

### 1010 **6.16.3 Examples of printer-finisher**

1011 The following example shows two rows of the machine-readable (non-localized) columnar  
1012 objects from finDeviceTable encoded into corresponding values of "printer-finisher".

1013 Note: Line breaks are shown below for readability of this example. Line breaks MUST NOT  
1014 be encoded into actual values of "printer-finisher".

```
1015     printer-finisher[1] =  
1016         type=stitcher;unit=sheets;maxcapacity=500;capacity=100;  
1017     printer-finisher[2] =  
1018         type=puncher;unit=sheets;maxcapacity=100;capacity=20;  
1019
```

1020

**Table 2 - Keywords for "printer-finisher"**

<b>Finishing MIB Object</b>	<b>IPP Data-type</b>	<b>IPP Keyword</b>	<b>PWG SM Keyword</b>	<b>Conformance</b>
finDevice...				
Index (note 1)	Integer	index	Id	OPTIONAL
Type	String	type	FinisherType	REQUIRED
CapacityUnit	String	unit	FinisherCapacity Unit	REQUIRED
MaxCapacity	Integer	maxcapacity	FinisherMax Capacity	REQUIRED
CurrentCapacity	Integer	capacity	FinisherCurrent Capacity	REQUIRED
PresentOnOff	String	presentonoff	FinisherPresent OnOff	OPTIONAL
AssociatedMediaPaths	---	---	FinisherAssociat edMediaPaths	---
AssociatedOutputs	---	---	FinisherAssociat edOutputs	---
Status	Integer	status	SubunitStates	OPTIONAL

1021

Notes:

1022

1023

1024

1. finDeviceIndex is OPTIONAL in "printer-finisher", because correlation with the original MIB order is considered unimportant.



**Figure 3 - ABNF for "printer-finisher" Values**

```

1025
1026 printer-finisher = *finisher-required *[finisher-optional]
1027     ; set of finisher elements encoded into one value
1028
1029 finisher-required = finisher-req ";"
1030 finisher-req = finisher-type / finisher-unit /
1031     finisher-max-capacity /
1032     finisher-capacity
1033 finisher-optional = finisher-opt ";"
1034 finisher-opt = finisher-index / finisher-presentonoff /
1035     finisher-status / finisher-ext
1036
1037 finisher-type = "type" "=" 1*ALPHA
1038     ; enumerated value as an alpha string (e.g.,
1039     ; 'stitcher') of finDeviceType in [RFC3806] mapped
1040     ; indirectly from the *label* in FinDeviceTypeTC
1041
1042 finisher-unit = "unit" "=" 1*ALPHA
1043     ; enumerated value as an alpha string (e.g., 'other') of
1044     ; finDeviceCapacityUnit in [RFC3806] mapped indirectly from
1045     ; the *label* in PrtCapacityUnitTC in [RFC3805]
1046
1047 finisher-max-capacity = "maxcapacity" "=" 1*[DIGIT / "-"]
1048     ; integer value as a numeric string mapped directly from
1049     ; finDeviceMaxCapacity in [RFC3806]
1050
1051 finisher-capacity = "capacity" "=" 1*[DIGIT / "-"]
1052     ; integer value as a numeric string mapped directly from
1053     ; finDeviceCurrentCapacity in [RFC3806]
1054
1055 finisher-index = "index" "=" 1*DIGIT
1056     ; integer value as a numeric string mapped directly from
1057     ; finDeviceIndex in [RFC3806]
1058
1059 finisher-presentonoff = "presentonoff" "=" 1*ALPHA
1060     ; string value as an alpha string mapped directly from
1061     ; PresentOnOff in [RFC3805]
1062
1063 finisher-status = "status" "=" 1*DIGIT
1064     ; integer value as a numeric string mapped directly from
1065     ; finDeviceStatus in [RFC3806]
1066
1067 finisher-ext = 1*ALPHA "=" 1*ALPHA
1068     ; extension point for other MIB values not mapped

```

**1069 6.17 printer-finisher-description (1setOf text(MAX))**

1070 The REQUIRED "printer-finisher-description" READ-ONLY Printer attribute provides  
 1071 current supply descriptions mapped from the SNMP finDeviceDescription object in the  
 1072 finDeviceTable defined in IETF Finishing MIB [RFC3806].

1073 This attribute MUST be supported if the "printer-finisher" (section 6.16) Printer attribute is  
 1074 supported. If supported, this attribute MUST have the same cardinality (contain the same

1075 number of values) as the "printer-finisher" attribute. The  $i^{\text{th}}$  value in the "printer-finisher-  
1076 description" attribute corresponds to the  $i^{\text{th}}$  value in the "printer-finisher" attribute.

### 1077 **6.17.1 Encoding of printer-finisher-description**

1078 Values of the "printer-finisher-description" attribute MUST be mapped from the  
1079 corresponding human-readable (localized) values of finDeviceDescription, exactly as  
1080 follows:

- 1081 1. Each value of finDeviceDescription MUST be converted from the character set  
1082 [RFC3808] specified by prtGeneralCurrentLocalization and  
1083 prtLocalizationCharacterSet into the charset specified by "charset-configured" and  
1084 then copied into a text value of "printer-finisher-description"; and
- 1085 2. Each value of "printer-finisher-description" MUST be tagged with the natural  
1086 language [RFC5646] specified by prtGeneralCurrentLocalization,  
1087 prtLocalizationLanguage, and prtLocalizationCountry.

### 1088 **6.17.2 Example of printer-finisher-description**

1089 The following example shows two instances of the human-readable (localized) columnar  
1090 object finDeviceDescription in the finDeviceTable encoded into corresponding values of  
1091 "printer-finisher-description":

```
1092 printer-finisher-description[1] = "Stapler S/N:EXAMPLE-12345"  
1093 printer-finisher-description[2] = "Hole Punch S/N:EXAMPLE-67890"
```

### 1094 **6.18 punching-locations-supported (1setOf (integer(0:MAX) | 1095 rangeOfInteger(0:MAX)))**

1096 The "punching-locations-supported" Printer attribute lists the supported values for the  
1097 "punching-locations" (section 5.2.8.1) member attribute.

### 1098 **6.19 punching-offset-supported (1setOf (integer(0:MAX) | 1099 rangeOfInteger(0:MAX)))**

1100 The "punching-offset-supported" Printer attribute lists the supported values for the  
1101 "punching-offset" (section 5.2.8.2) member attribute.

### 1102 **6.20 punching-reference-edge-supported (1setOf type2 keyword)**

1103 The "punching-reference-edge-supported" Printer attribute lists the supported values for  
1104 the "punching-reference-edge" (section 5.2.8.3) member attribute.

1105 **6.21 trimming-location-supported (1setOf (integer(0:MAX) |**  
1106 **rangeOfInteger(0:MAX)))**

1107 The "trimming-location-supported" Printer attribute lists the supported values for the  
1108 "trimming-location" (section 5.2.10.1) member attribute.

1109 **6.22 trimming-reference-edge-supported (1setOf type2 keyword)**

1110 The "trimming-reference-edge-supported" Printer attribute lists the supported values for  
1111 the "trimming-reference-edge" (section 5.2.10.2) member attribute.

1112 **6.23 trimming-type-supported (1setOf type2 keyword)**

1113 The "trimming-type-supported" Printer attribute lists the supported values for the "trimming-  
1114 type" (section 5.2.10.3) member attribute.

1115 **6.24 trimming-when-supported (1setOf type2 keyword)**

1116 The "trimming-when-supported" Printer attribute lists the supported values for the  
1117 "trimming-when" (section 5.2.10.4) member attribute.

1118

## 1119 **7. Conformance Requirements**

1120 This section summarizes the Conformance Requirements detailed in the definitions in this  
1121 document for Clients and Printers.

### 1122 **7.1 Conformance Requirements for Clients**

1123 In order for a Client to claim conformance to this specification, a Client **MUST** support:

- 1124 1. The IPP Printer attributes defined in section 0,
- 1125 2. The IPP Job Template attributes defined in section 5,
- 1126 3. The internationalization considerations in section 8, and
- 1127 4. The security considerations in section 9.

### 1128 **7.2 Conformance Requirements for Printers**

1129 In order for a Printer to claim conformance to this specification, a Printer **MUST** support:

- 1130 1. The IPP Printer attributes for any supported finishings defined in section 0,
- 1131 2. The IPP Job Template attributes for any supported finishings defined in section  
1132 5,
- 1133 3. The internationalization considerations in section 8, and
- 1134 4. The security considerations in section 9.

## 1135 **8. Internationalization Considerations**

1136 For interoperability and basic support for multiple languages, conforming implementations  
1137 **MUST** support the Universal Character Set (UCS) Transformation Format -- 8 bit (UTF-8)  
1138 [RFC3629] encoding of Unicode [UNICODE] [ISO10646] and the Unicode Format for  
1139 Network Interchange [RFC5198].

## 1140 **9. Security Considerations**

1141 This extension poses no additional security threats or burdens than those in IPP/1.0  
1142 [RFC2566, RFC2565] and IPP/1.1 [RFC2911, RFC2910]. However, implementations **MAY**  
1143 support different access control to various finishing features, depending on the identity of  
1144 the job submitting user.

1145

1146 **10. IANA Considerations**

1147 [Editor's note: Replace references to PWG5100.FIN2 with the actual standard number.]

1148 **10.1 Attribute Registrations**1149 The attributes defined in this document will be published by IANA according to the  
1150 procedures in IPP Model and Semantics [RFC2911] section 6.2 in the following file:1151 <http://www.iana.org/assignments/ipp-registrations>

1152 The registry entries will contain the following information:

1153 Job Template attributes:	Reference
1154 -----	-----
1155 finishings-col (noValue   1setOf octetString(MAX))	[PWG5100.FIN2]
1156    baling (collection)	[PWG5100.FIN2]
1157      baling-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1158      baling-when (type2 keyword)	[PWG5100.FIN2]
1159    binding (collection)	[PWG5100.FIN2]
1160      binding-reference-edge (type2 keyword)	[PWG5100.FIN2]
1161      binding-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1162    coating (collection)	[PWG5100.FIN2]
1163      coating-sides (type2 keyword)	[PWG5100.FIN2]
1164      coating-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1165    covering (collection)	[PWG5100.FIN2]
1166      covering-name (type2 keyword   name(MAX))	[PWG5100.FIN2]
1167    finishing-template (name(MAX)   type2 keyword)	[PWG5100.FIN2]
1168    folding (1setOf collection)	[PWG5100.FIN2]
1169      folding-direction (type2 keyword)	[PWG5100.FIN2]
1170      folding-offset (integer(0:MAX))	[PWG5100.FIN2]
1171      folding-reference-edge (type2 keyword)	[PWG5100.FIN2]
1172    laminating (collection)	[PWG5100.FIN2]
1173      laminating-sides (type2 keyword)	[PWG5100.FIN2]
1174      laminating-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1175    punching (collection)	[PWG5100.FIN2]
1176      punching-locations (1setOf integer(0:MAX))	[PWG5100.FIN2]
1177      punching-offset (integer(0:MAX))	[PWG5100.FIN2]
1178      punching-reference-edge (type2 keyword)	[PWG5100.FIN2]
1179    trimming (1setOf collection)	[PWG5100.FIN2]
1180      trimming-offset (integer(0:MAX))	[PWG5100.FIN2]
1181      trimming-reference-edge (type2 keyword)	[PWG5100.FIN2]
1182      trimming-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1183      trimming-when (type2 keyword)	[PWG5100.FIN2]
1184    job-pages-per-set (integer(1:MAX))	[PWG5100.FIN2]
1185	
1186 Printer Description attributes:	Reference
1187 -----	-----
1188    baling-type-supported (1setOf (type2 keyword   name(MAX)))	[PWG5100.FIN2]
1189    baling-when-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1190    binding-reference-edge-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1191    binding-type-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1192    coating-sides-supported (1setOf type2 keyword)	[PWG5100.FIN2]

1193 coating-type-supported (1setOf (type2 keyword | name(MAX))) [PWG5100.FIN2]  
 1194 covering-name-supported (1setOf (type2 keyword | name(MAX)))  
 1195 [PWG5100.FIN2]  
 1196 finishing-template-supported (1setOf (name(MAX) | type2 keyword))  
 1197 [PWG5100.FIN2]  
 1198 finishings-col-database (1setOf collection) [PWG5100.FIN2]  
 1199 < member attributes are the same as finishings-col > [PWG5100.FIN2]  
 1200 folding-direction-supported (1setOf type2 keyword) [PWG5100.FIN2]  
 1201 folding-offset-supported (1setOf (integer(0:MAX) | rangeOfInteger(0:MAX))  
 1202 [PWG5100.FIN2]  
 1203 folding-reference-edge-supported (1setOf type2 keyword) [PWG5100.FIN2]  
 1204 laminating-sides-supported (1setOf type2 keyword) [PWG5100.FIN2]  
 1205 laminating-type-supported (1setOf (type2 keyword | name(MAX)))  
 1206 [PWG5100.FIN2]  
 1207 job-pages-per-set-supported (boolean) [PWG5100.FIN2]  
 1208 printer-finisher (1setOf octetString(MAX)) [PWG5100.FIN2]  
 1209 printer-finisher-description (1setOf text(MAX)) [PWG5100.FIN2]  
 1210 punching-locations-supported (1setOf (integer(0:MAX) |  
 1211 rangeOfInteger(0:MAX))) [PWG5100.FIN2]  
 1212 punching-offset-supported (1setOf (integer(0:MAX) |  
 1213 rangeOfInteger(0:MAX))) [PWG5100.FIN2]  
 1214 punching-reference-edge-supported (1setOf type2 keyword) [PWG5100.FIN2]  
 1215 trimming-location-supported (1setOf (integer(0:MAX) |  
 1216 rangeOfInteger(0:MAX))) [PWG5100.FIN2]  
 1217 trimming-reference-edge-supported (1setOf type2 keyword) [PWG5100.FIN2]  
 1218 trimming-type-supported (1setOf type2 keyword) [PWG5100.FIN2]  
 1219 trimming-when-supported (1setOf type2 keyword) [PWG5100.FIN2]

## 1220 10.2 Attribute Value Registrations

1221 The keyword attribute values defined in this document will be published by IANA according  
 1222 to the procedures in the IPP Model and Semantics [RFC2911] section 6.1 in the following  
 1223 file:

1224 <http://www.iana.org/assignments/ipp-registrations>

1225 The registry entries will contain the following information:

1226	Attributes (attribute syntax)	Reference
1227	Keyword Attribute Value	Reference
1228	-----	-----
1229	baling-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1230	band	[PWG5100.FIN2]
1231	shrink-wrap	[PWG5100.FIN2]
1232	wrap	[PWG5100.FIN2]
1233	baling-type-supported (1setOf (type2 keyword   name(MAX)))	[PWG5100.FIN2]
1234	< all baling-type values >	
1235		
1236	baling-when (type2 keyword)	[PWG5100.FIN2]
1237	after-copies	[PWG5100.FIN2]
1238	after-documents	[PWG5100.FIN2]
1239	after-job	[PWG5100.FIN2]
1240	baling-when-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1241	< all baling-when values >	[PWG5100.FIN2]

1242		
1243	binding-reference-edge (type2 keyword)	[PWG5100.FIN2]
1244	bottom	[PWG5100.FIN2]
1245	left	[PWG5100.FIN2]
1246	right	[PWG5100.FIN2]
1247	top	[PWG5100.FIN2]
1248	binding-reference-edge-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1249	< all binding-reference-edge values >	[PWG5100.FIN2]
1250		
1251	binding-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1252	adhesive	[PWG5100.FIN2]
1253	comb	[PWG5100.FIN2]
1254	flat	[PWG5100.FIN2]
1255	padding	[PWG5100.FIN2]
1256	perfect	[PWG5100.FIN2]
1257	spiral	[PWG5100.FIN2]
1258	tape	[PWG5100.FIN2]
1259	velo	[PWG5100.FIN2]
1260	binding-type-supported ((1setOf type2 keyword   name(MAX)))	[PWG5100.FIN2]
1261		[PWG5100.FIN2]
1262	< all binding-type values >	[PWG5100.FIN2]
1263		
1264	coating-sides (type2 keyword)	[PWG5100.FIN2]
1265	back	[PWG5100.FIN2]
1266	both	[PWG5100.FIN2]
1267	front	[PWG5100.FIN2]
1268	coating-sides-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1269	< all coating-sides values >	[PWG5100.FIN2]
1270		
1271	coating-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1272	archival	[PWG5100.FIN2]
1273	archival-glossy	[PWG5100.FIN2]
1274	archival-matte	[PWG5100.FIN2]
1275	archival-semi-gloss	[PWG5100.FIN2]
1276	glossy	[PWG5100.FIN2]
1277	high-gloss	[PWG5100.FIN2]
1278	matte	[PWG5100.FIN2]
1279	semi-gloss	[PWG5100.FIN2]
1280	silicone	[PWG5100.FIN2]
1281	translucent	[PWG5100.FIN2]
1282	coating-type-supported ((1setOf type2 keyword   name(MAX)))	[PWG5100.FIN2]
1283		[PWG5100.FIN2]
1284	< all coating-type values >	[PWG5100.FIN2]
1285		
1286	covering-name (type2 keyword   name(MAX))	[PWG5100.FIN2]
1287	plain	[PWG5100.FIN2]
1288	pre-cut	[PWG5100.FIN2]
1289	pre-printed	[PWG5100.FIN2]
1290	covering-name-supported (1setOf (type2 keyword   name(MAX)))	[PWG5100.FIN2]
1291		[PWG5100.FIN2]
1292	< all covering-name values >	[PWG5100.FIN2]
1293		
1294	finishing-template (name(MAX)   type2 keyword)	[PWG5100.FIN2]
1295	bale	[PWG5100.FIN2]
1296	bind	[PWG5100.FIN2]
1297	bind-bottom	[PWG5100.FIN2]

1298	bind-left	[PWG5100.FIN2]
1299	bind-right	[PWG5100.FIN2]
1300	bind-top	[PWG5100.FIN2]
1301	booklet-maker	[PWG5100.FIN2]
1302	coat	[PWG5100.FIN2]
1303	cover	[PWG5100.FIN2]
1304	edge-stitch	[PWG5100.FIN2]
1305	edge-stitch-bottom	[PWG5100.FIN2]
1306	edge-stitch-left	[PWG5100.FIN2]
1307	edge-stitch-right	[PWG5100.FIN2]
1308	edge-stitch-top	[PWG5100.FIN2]
1309	fold	[PWG5100.FIN2]
1310	fold-accordion	[PWG5100.FIN2]
1311	fold-double-gate	[PWG5100.FIN2]
1312	fold-gate	[PWG5100.FIN2]
1313	fold-half	[PWG5100.FIN2]
1314	fold-half-z	[PWG5100.FIN2]
1315	fold-left-gate	[PWG5100.FIN2]
1316	fold-letter	[PWG5100.FIN2]
1317	fold-parallel	[PWG5100.FIN2]
1318	fold-poster	[PWG5100.FIN2]
1319	fold-right-gate	[PWG5100.FIN2]
1320	fold-z	[PWG5100.FIN2]
1321	jog-offset	[PWG5100.FIN2]
1322	laminate	[PWG5100.FIN2]
1323	punch	[PWG5100.FIN2]
1324	punch-bottom-left	[PWG5100.FIN2]
1325	punch-bottom-right	[PWG5100.FIN2]
1326	punch-dual-bottom	[PWG5100.FIN2]
1327	punch-dual-left	[PWG5100.FIN2]
1328	punch-dual-right	[PWG5100.FIN2]
1329	punch-dual-top	[PWG5100.FIN2]
1330	punch-quad-bottom	[PWG5100.FIN2]
1331	punch-quad-left	[PWG5100.FIN2]
1332	punch-quad-right	[PWG5100.FIN2]
1333	punch-quad-top	[PWG5100.FIN2]
1334	punch-top-left	[PWG5100.FIN2]
1335	punch-top-right	[PWG5100.FIN2]
1336	punch-triple-bottom	[PWG5100.FIN2]
1337	punch-triple-left	[PWG5100.FIN2]
1338	punch-triple-right	[PWG5100.FIN2]
1339	punch-triple-top	[PWG5100.FIN2]
1340	saddle-stitch	[PWG5100.FIN2]
1341	staple	[PWG5100.FIN2]
1342	staple-bottom-left	[PWG5100.FIN2]
1343	staple-bottom-right	[PWG5100.FIN2]
1344	staple-dual-bottom	[PWG5100.FIN2]
1345	staple-dual-left	[PWG5100.FIN2]
1346	staple-dual-right	[PWG5100.FIN2]
1347	staple-dual-top	[PWG5100.FIN2]
1348	staple-top-left	[PWG5100.FIN2]
1349	staple-top-right	[PWG5100.FIN2]
1350	staple-triple-bottom	[PWG5100.FIN2]
1351	staple-triple-left	[PWG5100.FIN2]
1352	staple-triple-right	[PWG5100.FIN2]
1353	staple-triple-top	[PWG5100.FIN2]



1354	trim	[PWG5100.FIN2]
1355	trim-after-copies	[PWG5100.FIN2]
1356	trim-after-documents	[PWG5100.FIN2]
1357	trim-after-job	[PWG5100.FIN2]
1358	trim-after-pages	[PWG5100.FIN2]
1359	finishing-template-supported (1setOf (type2 keyword   name(MAX)))	
1360		[PWG5200.FIN2]
1361	< any finishing-template value >	[PWG5100.FIN2]
1362		
1363	folding-direction (type2 keyword)	[PWG5100.FIN2]
1364	inward	[PWG5100.FIN2]
1365	outward	[PWG5100.FIN2]
1366	folding-direction-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1367	< all folding-direction values >	[PWG5100.FIN2]
1368		
1369	folding-reference-edge (type2 keyword)	[PWG5100.FIN2]
1370	bottom	[PWG5100.FIN2]
1371	left	[PWG5100.FIN2]
1372	right	[PWG5100.FIN2]
1373	top	[PWG5100.FIN2]
1374	folding-reference-edge-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1375	< all folding-reference-edge values >	[PWG5100.FIN2]
1376		
1377	laminating-sides (type2 keyword)	[PWG5100.FIN2]
1378	back	[PWG5100.FIN2]
1379	both	[PWG5100.FIN2]
1380	front	[PWG5100.FIN2]
1381	laminating-sides-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1382	< all laminating-sides values >	[PWG5100.FIN2]
1383		
1384	laminating-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1385	archival	[PWG5100.FIN2]
1386	glossy	[PWG5100.FIN2]
1387	high-gloss	[PWG5100.FIN2]
1388	matte	[PWG5100.FIN2]
1389	semi-gloss	[PWG5100.FIN2]
1390	translucent	[PWG5100.FIN2]
1391	laminating-type-supported ((1setOf type2 keyword   name(MAX)))	
1392		[PWG5100.FIN2]
1393	< all laminating-type values >	[PWG5100.FIN2]
1394		
1395	punching-reference-edge (type2 keyword)	[PWG5100.FIN2]
1396	bottom	[PWG5100.FIN2]
1397	left	[PWG5100.FIN2]
1398	right	[PWG5100.FIN2]
1399	top	[PWG5100.FIN2]
1400	punching-reference-edge-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1401	< all punching-reference-edge values >	[PWG5100.FIN2]
1402		
1403	trimming-reference-edge (type2 keyword)	[PWG5100.FIN2]
1404	bottom	[PWG5100.FIN2]
1405	left	[PWG5100.FIN2]
1406	right	[PWG5100.FIN2]
1407	top	[PWG5100.FIN2]
1408	trimming-reference-edge-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1409	< all trimming-reference-edge values >	[PWG5100.FIN2]

1410		
1411	trimming-type (type2 keyword   name(MAX))	[PWG5100.FIN2]
1412	full	[PWG5100.FIN2]
1413	partial	[PWG5100.FIN2]
1414	perforate	[PWG5100.FIN2]
1415	score	[PWG5100.FIN2]
1416	tab	[PWG5100.FIN2]
1417	trimming-type-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1418	< all trimming-type values >	[PWG5100.FIN2]
1419		
1420	trimming-when (type2 keyword)	[PWG5100.FIN2]
1421	after-copies	[PWG5100.FIN2]
1422	after-documents	[PWG5100.FIN2]
1423	after-job	[PWG5100.FIN2]
1424	after-pages	[PWG5100.FIN2]
1425	trimming-when-supported (1setOf type2 keyword)	[PWG5100.FIN2]
1426	< all trimming-when values >	[PWG5100.FIN2]

### 1427 10.3 Type2 enum Attribute Value Registrations

1428 The enumerations defined in this document will be published by IANA according to the  
1429 procedures in the IPP Model and Semantics [RFC2911] section 6.2 in the following file:

1430 <http://www.iana.org/assignments/ipp-registrations>

1431 The registry entries will contain the following information:

1432	Attributes (attribute syntax)		
1433	Enum Value	Enum Symbolic Name	Reference
1434	-----	-----	-----
1435	finishings (1setOf type2 enum)		[RFC2911]
1436	15	coat	[PWG5100.FIN2]
1437	16	laminare	[PWG5100.FIN2]
1438	32	staple-triple-left	[PWG5100.FIN2]
1439	33	staple-triple-top	[PWG5100.FIN2]
1440	34	staple-triple-right	[PWG5100.FIN2]
1441	35	staple-triple-bottom	[PWG5100.FIN2]
1442	70	punch-top-left	[PWG5100.FIN2]
1443	71	punch-bottom-left	[PWG5100.FIN2]
1444	72	punch-top-right	[PWG5100.FIN2]
1445	73	punch-bottom-right	[PWG5100.FIN2]
1446	74	punch-dual-left	[PWG5100.FIN2]
1447	75	punch-dual-top	[PWG5100.FIN2]
1448	76	punch-dual-right	[PWG5100.FIN2]
1449	77	punch-dual-bottom	[PWG5100.FIN2]
1450	78	punch-triple-left	[PWG5100.FIN2]
1451	79	punch-triple-top	[PWG5100.FIN2]
1452	80	punch-triple-right	[PWG5100.FIN2]
1453	81	punch-triple-bottom	[PWG5100.FIN2]
1454	82	punch-quad-left	[PWG5100.FIN2]
1455	83	punch-quad-top	[PWG5100.FIN2]
1456	84	punch-quad-right	[PWG5100.FIN2]
1457	85	punch-quad-bottom	[PWG5100.FIN2]
1458	90	fold-accordian	[PWG5100.FIN2]

1459	91	fold-double-gate	[PWG5100.FIN2]
1460	92	fold-gate	[PWG5100.FIN2]
1461	93	fold-half	[PWG5100.FIN2]
1462	94	fold-half-z	[PWG5100.FIN2]
1463	95	fold-left-gate	[PWG5100.FIN2]
1464	96	fold-letter	[PWG5100.FIN2]
1465	97	fold-parallel	[PWG5100.FIN2]
1466	98	fold-poster	[PWG5100.FIN2]
1467	99	fold-right-gate	[PWG5100.FIN2]
1468	100	fold-z	[PWG5100.FIN2]

## 1469 11. References

### 1470 11.1 Normative References

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### 1492 11.2 Informative References

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1498 **12. Author's Address**

1499 Michael Sweet  
1500 1 Infinite Loop  
1501 M/S 111-HOMC  
1502 Cupertino, CA 95014  
1503 msweet@apple.com

1504 The author would also like to thank the following individuals for their contributions to this  
1505 standard:

1506 Tom Hastings (original Author)  
1507 Don Fullman (original Author)  
1508

## 1509 **13. Change History**

### 1510 **13.1 July 1, 2014**

- 1511 1. Status: Stable
- 1512 2. Added use case for finishing by raster-only printers.
- 1513 3. Added job-pages-per-set and job-pages-per-set-supported attributes to allow
- 1514 clients to apply finishings to multi-copy PWG Raster documents.
- 1515 4. Fixed some typos for printer-finisher (had printer-input-tray instead of printer-
- 1516 finisher - cut/paste error)

### 1517 **13.2 June 20, 2014**

- 1518 1. Added finishings-col-database Printer attribute based on prototype experience
- 1519 from Apple
- 1520 2. Added printer-finisher and printer-finisher-description attributes to allow clients to
- 1521 learn the maximum capacities of each finisher.
- 1522 3. Added additional coating-type values from JDF 1.5
- 1523 4. Updated IANA registration information
- 1524 5. Updated normative references

### 1525 **13.3 May 9, 2014**

- 1526 1. Status: Prototype
- 1527 2. Minor typographical cleanup

### 1528 **13.4 January 16, 2014**

- 1529 1. Updated copyright notices (added 2001 and 2014)
- 1530 2. Abstract: Fix wording
- 1531 3. Section 1: Spelling fixes
- 1532 4. Section 2.3: Added finishing terms
- 1533 5. Section 3.2.x: Added Coat and Laminate use cases
- 1534 6. Section 3.4: Added out of scope items
- 1535 7. Section 4: Talk about intent vs. processing order
- 1536 8. Section 5.1: Add Note: on last paragraph, “the order /is/ not significant”
- 1537 9. Section 5.1.x: Broke out 5100.1-2001 values, moved 5100.13 values to end
- 1538 10. Section 5.2: ‘noValue’ instead of ‘none’, “the order /is/ not significant”
- 1539 11. Table 1: Added baling and laminating
- 1540 12. Section 5.2.x: Added baling and laminating collections
- 1541 13. Section 5.2.3 (coating): Clarified that coating applies to whole page, white ->
- 1542 translucent, mention UV protection for archival
- 1543 14. Section 5.2.6 (folding): Added examples, order is significant, location -> offset
- 1544 15. Section 5.2.7 (stitching): Stitching Reference Edge -> Finishing Reference Edge

- 1545 16. Section 6.8: folding-offset-supported
- 1546 17. Section 7: Updated to current format
- 1547 18. Section 10: Updated to match current attributes and values
- 1548 19. Section 11: Added informative reference to PWG 5100.1-2001.

1549 **13.5 August 14, 2013**

- 1550 1. Updated to use new PWG template
- 1551 2. New title: IPP Finishings 2.0 (FIN2)
- 1552 3. Status: Interim
- 1553 4. Added finishings-col and new finishings values
- 1554 5. Added new section 4 introducing finishings

1555 **13.6 February 5, 2001**

- 1556 Approved Candidate Standard PWG 5100.1-2001