Mapping of IPP Attributes to JDF and CUPS

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Abstract

This document maps IPP 1.1 Job Creation attributes and extensions to JDF 1.1 Product Intent, JDF 1.1 Digital Printing combined process, JDF 1.0 IDPrinting process, Job Ticket API (JTAPI), the Common Unix Printing System (CUPS), and the PODi PPML Job Ticket. A percentage of IPP covered by each of these other printing semantics is included. Finally, each IPP attribute is also described briefly with references to the detailed descriptions.

Status of this document:
This is an intermediate/rough working document, not a final edition.

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1   Mapping of IPP attributes

Table 1 lists all of the IPP Job attributes that a client can supply or a Printer can return in Job Creation operations. The following explains the columns in Table 1:

Column heading	Totals	% of IPP[1]	Description
IPP Attribute Name	195^2 = 156 + 39 (S)	100	The name of the IPP attribute or collection member attribute. • (S) - The IPP attribute that represents State that is Set by the System, such as the "job-state" and "number-of-intervening-jobs" attributes, and cannot be supplied by the client in a Job Creation request. • (M) - The attribute whose effect depends on the "multiple-document-handling" attribute to specify whether the Input Document in multi-document jobs are combined into a single Output Document or are kept as separate Output Documents. • (Mn) - The attribute in which "multiple-document-handlng" only affects whether the page numbers in the attribute are a single sequence 1:n for the concatenated documents or are separate sequences of 1:n, one for each document. If an IPP attribute does not exist for a certain feature/function then a brief description of the feature/function will
JDF 1.1 Product Intent	30	15%	The JDF 1.1 Product Intent Resource and JDF attribute using a subset of the XPath [xpath] notation. The following subset of the XPath expression notation is used to specify a JDF element or attribute: The JDF element or attribute usually occurs inside a JDF resource. Start the XPath expression at the resource level and show all the child relationships down to the element or attribute we are mapping to, qualified with predicates as needed. A parent-child relationship is represented with '/'. An element name is just the unadorned element name. An attribute name is prefixed with '@'. Example: RunList/LayoutElement/FileSpec/@URL is the URL attribute of the FileSpec resource element in the LayoutElement resource element in the RunList resource. A predicate is enclosed in '[]'. So the meaning of: IDPrintingParams/JobSheet/Comment[@Name="job-recipient-name"] is the text field of the Comment element in the JobSheet resource element in the IDPrintingParams resource element when the value of the Name attribute in the Comment element is "job-recipient-name". For example, ComponentLink[@ProcessUsage="Good"]/@Amount is the Amount attribute of the ComponentLink element whose ProcessUsage attribute is set to "Good". (ComponentLink is a ResourceLink, not a Resource, so it's one of the unusual cases where we are not mapping into a resource.) • Unknown - Indicates that it has not yet been determined if a JDF Intent resource/attribute currently exists for the feature/function. This will be the case for most of the features/functions with a Priority of Medium or Low. • N/A - It is not necessary that this feature/function be represented by a JDF Intent resource/attribute. This will be the case for the features/functions with a Priority of Never. • (P) Appears along with N/A. The feature/function will not be defined as Product Intent. In a future release if the feature/function is to be specified then a JDF Combined Process Node that contains the Process Resource will appear under the JDF Product Node. • (S) The feature/function has the same semantics in the JDF 1.1 Product Intent and JDF 1.1 Process Resource. • (N) The JDF for the feature/function is not currently defined in the JDF 1.1 spec and needs to be added.
JDF 1.1 Process Resource			The JDF 1.1 Process on the first line, followed by the Resource, and JDF attribute using XPath notation (see explanation of XPath subset in the explanation above. • Unknown - Indicates that it has not yet been determined if a JDF Process resource/attribute currently exists for the feature/function. This will be the case for most of the features/functions with a Priority of Medium or Low. • N/A - It is not necessary that this feature/function be represented by a JDF Process resource/attribute. This will be the case for the features/functions with a Priority of Never. • (S) The feature/function has the same semantics in the JDF 1.1 Product Intent and JDF 1.1 Process Resource. • (N) The JDF for the feature/function is not currently defined in the JDF 1.1 spec and needs to be added.
OSDP JDF Spec	69	38%	Whether or not the feature is in the "JDF Specification for Open Source Digital Printing" from Claudia Alimpich, version 1.2 [OSDP] and if it is what the feature/function is called in the JDF Spec for OSDP. • No - The feature/function is not currently in the JDF Spec for OSDP. • (X) - The feature/function is either currently included in the JDF Spec for OSDP or needs to be added.
JTAPI			The version of JTAPI that the feature/function will be included in and the name of the JTAPI attribute.

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[1] The % of IPP is the percent of the 195 IPP attributes, including collection member attributes, that can be supplied in a Job Creation operation request.
[2] The total of IPP attributes includes counting the member attributes of the collection attributes.

Column heading	Totals	% of IPP[1]	Description
			• 1.0 - The feature/function will be included in version 1.0 of the JTAPI.
			• x.x - The feature/function is to be included in a future (currently undefined) release of the JTAPI.
			• Never - The feature/function will never be included in the JTAPI.
CUPS	113 = 90 + 23 (S)	58%	The version of the Common Unix Printing System (CUPS) in which the IPP attribute is supported or No if the IPP attribute is not supported in any version of CUPS. See "(S)" explained above.
JDF APP F	89	46%	Whether or not the Appendix mapped the IPP attribute to JDF 1.0 IDPrinting combined process node
			• Yes - The IPP attribute was mapped from the IDPrinting process node in JDF 1.0.
			• No - The IPP attribute was not mapped from the IDPrinting process node in JDF 1.0.
PODi			Where the feature/function is included:
			• 1.1 - The feature/function is currently included in the PODi PPML Job Ticket Specification Version 1.1.
			• EFI - The feature/function is included in the "EFI Job Ticket Proposal" document.
Cat			The category that the feature/function belongs to. The possible categories are:
			• 1 - Customer and billing info
			• 2 - Delivery of finished product - due date and shipping instructions, proofing approvals
			• 3 - Files being submitted to the shop - whatever info is necessary for an automated system to do the job
			• 4 - What to print - how many, subset of files
			• 5 - Media to use
			• 6 - RIPping parameters - generating images
			• 7 - Assembling printable images from source-file pages onto a sheet
			• 8 - Assembling sets of sheets and finishing instructions
			• 9 - Equipment to use
			• 10 - General comments, instructions, messages, and information
			• 11 - Proofing
Priority			The priority in which to include the feature/function in the definition of a job tticket for digital printing:
			• High - It is imperative that the feature/function be included in the initial version of the job ticket for digital printing if the job ticket is to be useful.
			• Medium - The feature/function should be one of the first to be considered for the next version of the job
			• ticket for digital printing.
			• Low - The feature/function can be included in a later version of the job ticket for digital printing.
			• Never - The feature/function will not be included in any version of the job ticket for digital printing.
IPP Attribute Description			A brief description of the IPP attribute and what IPP document it is defined in (see References section 4). *WARNING: Do not attempt to implement from these brief descriptions. You MUST refer to each cited reference. For example,* the terms left, top, right, and bottom in attribute values and descriptions mean as if the document were portrait, i.e., left means the y-axis which is always the long edge and bottom means the x-axis which is always the short edge. **Legend for codes in square brackets:** **JD** - Job Description attribute - initial value supplied by the client (in a Operation attribute of a Job Creation operation). **JT** - Job Template[3] attribute - supplied by the client in a Job Creation operation. **DD** - Document Description attribute (see [doc-obj]) - initial value supplied by the client (in a Operation attribute of a Document Creation operation). **DT** - Document Template attribute - supplied by the client in a Document Creation operation.

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[3] In IPP, there are many attributes that are labeled as both Job Template (JT) and the new Document Template (DT). However, In the PWG Semantic Model [pwg-sm], an attribute is labeled either a Job Processing attribute or a Document Processing attribute, but is never labeled as both. Therefore, IPP attributes with just JT map to PWG Job Processing attributes and IPP attributes with either just DT or both JT and DT map to PWG Document Processing attributes.

Column heading	Totals	% of IPP[1]	Description
			PO - Page Override attribute - this attribute MAY also be supplied in a "page-overrides" attribute to affect ranges of pages.
			JS - Job Status attribute - set by the Printer, client cannot supply. Also indicated by "(S)" in the "IPP Attribute Name" column.
			DS - Document Status attribute - set by the Printer, client cannot supply Also indicated by "(S)" in the "IPP Attribute Name" column.
			- - indicates that there is no corresponding Job Status attribute or Document Status attribute.
			In attribute names **[job-]** indicates that the 'job-' prefix is kept for the IPP Job Status attribute name but is dropped for the corresponding IPP Document Status attribute name. A single description serves for both using "Job/Document" to indicate that the description applies to both the Job Status and the Document Status attribute. The entry in Table 1 uses the form of the name with the 'job-', since that form is the one in [RFC2911].

Table 1- IPP Attribute Mapping Table

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
Address and person to send the bill to	High		1	CustomerInfo/Contact (S)	CustomerInfo/Contact (S)					
Approvals for proof	High	EFI Approvals	2 11	ProofingIntent/ApprovalParams/ApprovalPerson/Contact /@... (N) (S)	Approval ApprovalParams/ApprovalPerson/Contact/@... (S)	No (X)				
attributes-charset	Never			N/A	N/A	No	1.0 jt-charset	1.1	No	**attribute-charset** (charset) [JT, DD] This attribute identifies the charset (coded character set and encoding method) used by used by any 'text' and 'name' attributes (1) that the client is supplying in this request and (2) that the Printer SHOULD return in any response.
attributes-natural-language	Never			N/A NodeInfo/ @NaturalLang	N/A	No	x.x	1.1	Yes	**attributes-natural-language** (naturalLanguage) [JD, DD] This attribute identifies the natural language used by any 'text' and 'name' attributes (1) that the client is supplying in this request and (2) that the Printer SHOULD return in any response.
black-overprint	High	1.1 Black Overprint	6	N/A (P)	Rendering RenderingParams/AutomatedOverprintParams/@OverPrintBlackText,@OverPrintBlackLineArt	Black Overprint (X)				

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
Comment or description of job	High		10	Comment/@Name=JobDescription (N) (S)	Comment/@Name=JobDescription (N) (S)	Comment/ Description of Job (X)	1.0 job-comment			
compression Note: This is document compression.	High [4]		3	RunList/FileSpec/@Compression (S)	LayoutPreparation RunList/FileSpec/@Compression (S)	No (X) Document Compression	1.0 job-compression x.x document-compression	1.1	Yes	**compression** (type2 keyword) [JD, DD] Compression algorithm used on the Document Data for this Job/Document, if any. (Keywords: none, deflate, gzip, compress) [RFC2911] §4.4.32
copies (M)	High	1.1 Number of Copies: Quantity EFI Finishing - Copies	4	ComponentLink/@Amount (S)	DigitalPrinting ComponentLink/@Amount (S)	Number of Copies (X)	1.0 job-copies x.x document-copies	1.1	Yes	**copies** (integer(1:MAX)) [JT[5], DT] The number of copies of the Output Document(s) to be printed. [RFC2911] §4.2.5

cover-back (M)
  media
  media-col
  cover-type
 	
  note: cover could be printed or preprinted/blank
	High	EFI Media - Back Cover	5	**Printed cover:** MediaIntent, LayoutIntent/@Sides,RunList/InsertSheet/@SheetType,@SheetUsage,@Pages (S)
				
				Preprinted/blank cover: RunList/@Pages, InsertSheet/@SheetUsage,@SheetType,Media (S)
				
				Note: Should there be a way to specify Covers as Product Description at a high level? (N)
					Printed cover: DigitalPrinting DigitalPrintingParams/Media,LayoutPreparationParams/@Sides,RunList/InsertSheet/@SheetType,@SheetUsage,@Pages (S)
					
					Preprinted/blank cover: LayoutPreparation RunList/@Pages, InsertSheet/@SheetUsage,@SheetType,Media (S)
						Covers (Media, Sides, Start First Page) (X)	1.0
							see xxx-media
							see xxx-sides
							see xxx-start-pages
							see po-pages
							see insert-sheet-media
							see insert-sheet-pages
							see insert-sheet-position
								1.2	Yes	**cover-back** (collection) [JT[6], DT] The back cover to apply to the Output Document. [prod-print] §3.1
										cover-type (type2 keyword) Indicates if covers are requested and which sides will contain print stream pages. (Keywords: no-cover, print-none, print-front, print-back, print-both) [prod-print] §3.1.2
										media (type3 keyword
											name(MAX)) / **media-col** (collection) Either the name or the characteristics of the media to use for the cover [prod-print] §3.1.1

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[4] At a minimum the "none" value for compression must be supported.

[5] The IPP "copies" attribute is an *extensive* attribute, so its effect when supplied at the job level is not always inherited by the documents in a multi-document job. Instead, its effect depends on the value of the "multiple-document-handling" Job Template attribute. The 'single-document' and 'single-document-new-sheet' values produce copies of the job as a whole with the multiple input documents concatenated into a single output document for each job copy. The 'separate-document-uncollated-copies' value produce N copies of the first input document followed by N copies of the second input document, etc. The 'separate-document-collated-copies' produce N successive job copies, each job copy consisting of 1 copy of the first document followed by 1 copy of the second document, etc. In the PWG Semantic Model [pwg-sm] there are two separate attributes: JobCopies and Copies which affect the job as a whole and individual documents, respectively, so that the MultipleDocumentHandling is no longer needed.

[6] The "cover-back" and "cover-front" Job Template attributes are affected by the value of "multiple-document-handling" which controls whether a multi-document job is producing a single Output Document or separate Output Documents.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
cover-front (M) media media-col cover-type note: cover could be printed or preprinted/blank	High	EFI Media – Front Cover	5	see cover-front	see cover-back	see cover-back	1.0 see cover-back	1.2	Yes	**cover-front** (collection) [JT, DT] The front cover to apply to the Output Document. [prod-print] §3.1 **cover-type** (type2 keyword) Indicates if covers are requested and which sides will contain print stream pages. (Keywords: no-cover, print-none, print-front, print-back, print-both) [prod-print] §3.1.2 **media** (type3 keyword | name(MAX)) / **media-col** (collection) Either the name or the characteristics of the media to use for the cover [prod-print] §3.1.1
current-page-order (S)	Never			N/A	N/A	No	x.x	1.2	No	**current-page-order** (type2 keyword) [JS, DS] Indicates the page order of the pages in the document data for this Job/Document. The Printer set this value set from the supplied "page-order-received" Template attribute and updates the value if the Printer reverses the pages of the Document. See also the "page-delivery" Template attribute. (Keywords: 1-to-n-order, n-to-1-order) [prod-print] §4.1
date-time-at-completed (S)	Never			N/A	N/A	No	x.x	1.1	No	**date-time-at-completed** (dateTime) [JS, DS] Indicates the date and time at which this Job/Document completed. (example: Fri, 03 May 2002 08:49:37 GMT) [RFC2911] §4.3.14.7
date-time-at-creation (S)	Low			Unknown	AuditPool/Created/@TimeStamp	Job Creation Date/Time	x.x job-created-on	1.1	No	**date-time-at-creation** (dateTime) [JS, DS] Indicates the date and time at which this Job/Document was created. (example: Fri, 03 May 2002 08:49:37 GMT) [RFC2911] §4.3.14.5
date-time-at-processing (S)	Never			N/A	N/A	No	x.x	1.1	No	**date-time-at-processing** (dateTime) [JS, DS] Indicates the date and time at which this Job/Document first began processing. (example: Fri, 03 May 2002 08:49:37 GMT) [RFC2911] §4.3.14.6
document-format	High		3	RunList/FileSpec/@MimeType (S)	LayputPreparation RunList/FileSpec/@MimeType (S)	Document File Format (X)	1.0 job-document-format x.x document-format	1.1	Yes	**document-format** (mimeMediaType) [JD, DD] The Document format (i.e., PDL) for this Document. The value "application/octet-stream" has a special meaning. This value is used to indicate that a Printer is capable of auto-sensing the format of the Document. (examples: application/octet-stream, application/postscript, application/vnd.hp-

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										PCL, "text/plain; charset=utf-8") [RFC2911] §3.2.1.1
document-name	Low		10	Unknown	Unknown	No (X)	x.x	1.1	Yes	**document-name** (name(MAX)) [JD, DD] Name for the this Document to be used in an implementation specific manner. [RFC2911] §3.2.1.1
document-natural-language	Never		3	N/A	N/A	No (X)	1.0 job-document-natural-language x.x document-document-natural-language	1.1	Yes	**document-natural language** (naturalLanguage) [JD, DD] Identifies the Natural Language of this Document [RFC2911] §3.2.1.1
document-number (S)	Low			Unknown	Unknown		x.x			**document-number** (integer(0:MAX)) [-, DS] The order of this Document within the Job starting at a base of 1. [doc-obj] §6.1
document-overrides (M) input-documents document-copies document-format document-name compression document-natural-language page-ranges finishings sides media media-col <any other document attr.> or output-documents document-copies finishings sides media media-col <any other document attr.>	High	See specific attributes for category.		Partition using DocIndex to specify document overrides. (S) See individual feature/function that is valid at the document level	Partition using DocIndex to specify document overrides. (S) See individual feature/function that is valid at the document level	(X) Yes?? No Yes No No No Yes Yes Yes Yes Yes Yes?? No Yes Yes Yes Yes Yes??	Never (use Document object) document- format document-output-pages see finishings see sides see media see media-col	No ??	Yes Yes Yes Yes No Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	**document-overrides** (collection) [JT] Provides for the overriding of processing instructions on a document basis. Applied to job, see PageOverrides for overrides supplied at the document level. [override] §5.1 **input-documents** (1setOf rangeOfInteger(MAX)) Specifies which range of Input Documents to apply document override processing. [override] §5.1.1 **output-documents** (1setOf rangeOfInteger(MAX)) Specifies which range of Output Documents to apply document override processing. [override] §5.1.2 **document-copies** (1setOf rangeOfInteger(MAX)) Specifies which copies of an Output Document to apply these document override attributes. (Example: {{document-copies=1:1, sides=single-sided, media=transparency}, document-copies=2:10, sides=two-sided-long, media=na-letter}} prints the first document copy on transparencies and the remaining copies on two-sided letter paper) [override] §5.1.3 **document-format** (mimeMediaType) Specifies the document format for the Input Document override processing. [override] §5.1.4 **document-name** (name (MAX)) Specifies the document name for the Input Document

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										override processing.. [override] §5.1.5 **compression** (type3 keyword) Specifies the compression for the Input Document override processing. [override] §5.1.6 **document-natural-language** (naturalLanguage) Specifies the natural language for the Input Document override processing [override] §5.1.7 **page-ranges** (1setOf rangeOfInteger (1:MAX)) Specifies the range of pages to be printed in the Document sets. [override] §5.1.8 ***any other Job Template attributes*** *that affect documents, such as "media" or "media-col"* ()

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
document-state (S)	Low			Unknown	Unknown		x.x			**document-state** (type1 enum) [-, DS] The current state of this Document. See also "document-state-reasons" attribute below. (Keywords: pending, processing, canceled, aborted, completed) [doc-obj] §6.3.2
document-state-message (S)	Low			Unknown	Unknown		x.x			**document-state-message** (text(MAX)) [-, DS] Specifies information about the "document-state" and "document-state-reasons" attributes of this Document in human readable text. The Printer localizes the text according to the natural language supplied in the client's query request. (example: "Document completed successfully with warnings" for an English request) [doc-obj] §6.7
document-state-reasons (S)	Low			Unknown	Unknown		x.x			**document-state-reasons** (1setOf type2 keyword) [-, DS] Provides additional information about this Document's current state. (Keywords: none, aborted-by-system, canceled-at-device, canceled-by-operator, canceled-by-user, completed-successfully, completed-with-errors, completed-with-warnings, compression-error, document-access-error, document-format-error, incoming, interpreting, outgoing, printing, queued, queued-for-marker, queued-in-device, resources-are-not-ready, resources-are-not-supported, spooling, streaming, submission-interrupted, transforming, unsupported-compression, unsupported-document-format, warnings-detected) [doc-obj] §6.5
document-uri	High	1.1 PPML file EFI Document List	3	RunList/FileSpec /@URL (S)	LayputPreparation RunList/FileSpec /@URL (S)	Document File Name (X)	1.0 document-file-name	1.1	Yes	**document-uri** (uri) [DD] Specifies the URI reference to the document data to be printed. The Printer fetches the data subsequent to the Document Creation operation (print-by-reference). [RFC2911] §3.2.2
feed-orientation	High		9	Unknown N/A	Unknown MediaLink/@Orientation	No (X)	x.x			**feed-orientation** (type3 keyword) [JT, DT] Specifies the media edge which is fed into the print engine from the paper tray. (Keywords: long-edge-first, short-edge-first). [prod-print2] §5.1
finishings bale	Never			N/A	N/A	No	Never	1.1	Yes	finishings = bale
finishings	High		8	BindingIntent/	Binding (N)	Binding (X)	1.0 job-binding	1.1	Yes	finishings = bind

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
bind				@BindingType= SystemSpecified (S)	BindingParams/ @BindingType= SystemSpecified (N) (S)					
finishings bind-left, bind-right, bind-bottom, bind-top	High	EFI Binding	8	BindingIntent/ @BindingType (S) Note: Add a BindingType=Sy stemSpecified. (N)	Binding (N) BindingParams/ @BindingType, @BindingSide (N) (S)	Binding (X)	1.0 job-binding x.x document- binding x.x po-binding 1.0 binding-side x.x binding-type	No	Yes	finishings = bind-left, bind-right, bind-bottom, bind-top
finishings booklet-maker	Medium	1.1 Bookletmaking	7 8	Same as above	Same as Product Intent	NumberUp (X) Stapling & Stitching (X) Folding (X)	1.0 see xxx- number-up 1.0 see xxx- stitching 1.0 see xxx-folding	No	Yes	finishings = booklet-maker, booklet-fold-staple[7]
finishings cover note: Use cover-front and cover-back	Never		5	see cover-back & cover-front	see cover-back & cover-front	Covers (X)	1.0 see cover-front & cover-back	1.1	Yes	See "cover-front" and "cover-back"
finishings fold	High [8]	1.1 Folding EFI Finishing - Folding	8	FoldingIntent/ @FoldingCatalog (S) Note: What FoldingCatalog values should be supported?	Folding FoldingParams/ @FoldCatalog, @DescriptionTyp e (S)	Folding (X)	1.0 job-folding x.x document- folding x.x po-folding 1.0 folding-type	1.1	Yes	finishings = fold, fold-c-short-in-thirds-sheet, fold-z-short-in-thirds-sheet, fold-z-short-sheet, booklet-fold
finishings jog-offset	High	1.1 Jogging	8	N/A	DigitalPrinting DigitalPrintingPar ams/Disjointing@ OffsetDirection	Jog Offset (X)	1.0 job-jog-offset x.x document-job- offset	No	Yes	finishings = jog-offset
finishings punch	High	1.1 HoleMaking	8	HoleMakingIntent without any attributes Note: HoleType needs to be optional or add SystemSpecifed.	HoleMaking HoleMakingPara ms without any attributes Note: HoleType needs to be optional or add	Punching & Hole Making (X)	1.0 job-hole-making x.x document-hole- making x.x po-hole-making	1.1	Yes	**finishings = punch,** punch-2-hole, punch-3-hole,

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[7] The "finishings" = 'booklet-fold-staple' is the same as 'booklet-maker', but without trimming.
[8] Only support specific folding catalogs (e.g z-fold, saddle-fold, etc.)

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
					SystemSpecified.					
finishings trim	High	1.1 Trimming	8	N/A	Trimming TrimmingParams /@TrimmingType =SystemSpecfiied	Trimming (X)	1.0 job-trimming x.x document-trimming	1.1	Yes	finishings = trim
finishings (M) staple, saddle-stitch, edge-stitch, staple-top-left, staple-bottom-left, staple-top-right, staple-bottom-right, edge-stitch-left, edge-stitch-right, edge-stitch-bottom, edge-stitch-top, staple-dual-left, staple-dual-right, staple-dual-bottom, staple-dual-top, none	High[9]	1.1 Stapling EFI Stapler Mode	8	BindingIntent/@BindingType, /SaddleStitching, /SideStitching, /CornerStitching, @NumberOfStitches,@ReferenceEdge (N) (S) Note: Propose to rename StitchNumber to NumberOfStitches. Note: Add a BindingType=Stitch (N)	Stitching StitchingParams/ @StitchType,@ReferenceEdge,@NumberOfStitches (S)	Stapling & Stitching (X)	1.0 job-stitching x.x document-stitching x.x po-stitching 1.0 stitching-count 1.0 stitching-reference-edge 1.0 stitching-stitch-type	1.1	Yes	**finishings** (1setOf type2 enum) [JT[9], DT, PO] Identifies the finishings that the Printer uses for each copy of the Output Document. The coordinate system (left, top, right, bottom) is relative to the edges as if the document were portrait, so left is the y-axis and bottom is the x-axis. (Enums: none, staple, punch, cover, bind, saddle-stitch, edge-stitch, staple-top-left, staple-bottom-left, staple-top-right, staple-bottom-right, edge-stitch-left, edge-stitch-top, edge-stitch-right, edge-stitch-bottom, staple-dual-left, staple-dual-top, staple-dual-right, staple-dual-bottom; fold, trim, bale, booklet-maker, jog-offset, bind-left, bind-top, bind-right, bind-bottom, punch-2-hole, punch-3-hole, punch-4-hole, fold-c-short-in-thirds-sheet, fold-z-short-in-thirds-sheet, fold-z-short-sheet, booklet-fold, booklet-fold-staple[10]) [RFC2911] §4.2.6, [finish] §2, [finish2] §3.

finishings-col (M)
   finishing-template
   stitching
      stitching-reference-edge
 	
      stitching-offset
      stitching-locations
	Low		8	Unknown	Stitiching StitchingParams/ @ReferenceEdge	No
						
						Yes Stitching (X)
						
						No (X)
						No (X)
							1.0 job-stitching
							1.0 stitching-reference-edge
							
							x.x stitching-offset
							x.x stitching-positions
								1.2	No
									Yes
										finishings-col (collection) [JT, DT, PO] Enables an end user to specify detailed finishing options not possible with the "finishings" attribute for the Output Document. [prod-print] §3.2
										finishing-template (name(MAX)) A string specifying some particular finishing operation for the Output Document. [prod-print] §3.2.1
										stitching (collection) Provides detailed stitching parameters. [prod-print] §3.2.2
										stitching-reference-edge (type2 keyword) Specifies the stitching reference edge of the output media. (keyword: bottom, top, left,

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										right) [prod-print] §3.2.2.1 **stitching-offset** (integer (0:MAX)) The perpendicular distance from the reference edge to the stitching axis in hundredths of a millimeter. [prod-print] §3.2.2.2 **stitching-locations** (1setOf integer(0:MAX)) The distance along the stitching axis where a stitch will be placed in hundredths of a millimeter. [prod-print] §3.2.2.3
Folding - complex (no IPP attribute exists)	Low		8	Unknown	Folding FoldingParams@DescriptionType, Fold@From,Fold@To,Fold@Travel	Folding (X)	x.x folding-amount-to-fold x.x folding-direction-to-fold x.x folding-edge-to-fold x.x folding-fold-type			
font-name-requested	Never	JT, DT, PO	36	N/A	N/A	No (X)	x.x			**font-name-requested** (name(MAX)) [JT, DT, PO] Specifies the font name if the document data is in a format that does not have inherent font information (e.g., 'text/plain'), otherwise, this attribute is ignored. [prod-print2] §5.2
font-size-requested	Never	JT, DT, PO	36	N/A	N/A	No (X)	x.x			**font-size-requested** (integer (1:MAX)) [JT, DT, PO] Specifies the font size in points (1/72 of an inch) if the document data is in a format that does not have inherent font information (e.g., 'text/plain'), otherwise, this attribute is ignored. [prod-print2] §5.3
force-front-side note: This is only for front side, need back side as well.	High	EFI Media – Chapter Starts	7	RunList/@Pages, InsertSheet/@SheetType,@SheetUsage (S)	LayoutPreparation RunList/@Pages, InsertSheet/@SheetType,@SheetUsage (S)	Start First Page (X)	1.0 job-force-pages x.x document-force-pages	1.2	Yes	**force-front-side** (1setOf integer(1:MAX)) [JT[11], DT, PO] Forces the specified pages to be printed on the front side of a sheet of media. The pages of the output document start at 1. [prod-print] §3.3
Hole making that allows specification of number of holes and reference edge	High	1.1 HoleMaking	8	HoleMakingIntent/@HoleType,@HoleReferenceEdge (S)	HoleMaking HoleMakingParams/@HoleType, @HoleReferenceEdge (S)	Punching & Hole Making (X)	1.0 job-hole-making x.x document-hole-making x.x po-hole-making 1.0 hole-making-count 1.0 hole-making-reference-edge			

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

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
imposition-template	Low		7	Unknown	Unknown	No ? (X)	Never	1.2	Yes	**imposition-template** (type3 keyword | name(MAX)) [JT, DT, PO] Specifies imposition method for laying out finished page images onto the surface of output media. (Keywords: none, signature) [prod-print] §3.4
impressions-completed-current-copy (S) (M)	Never			N/A	N/A	No	Never	No	No	**impressions-completed-current-copy** (integer(0:MAX)) [JS, DS] The number of impressions completed for the current copy of (1) the current Document of this Job or (2) this Document. The Printer sets this value to 0 at the beginning of each Document copy and each Document. The current Document is identified by the value of the "sheet-completed-document-number" Description attribute. The current copy is identified by the value of the "sheet-completed-copy-number" Description attribute. [job-prog] §4.4
insert-sheet insert-after-page-number (Mn) insert-count media media-col	 High Low High High	EFI Media – Inserts	5 8	 RunList/@Pages, InsertSheet/@SheetType,@SheetUsage (S) RunList/@PageCopies (S) N/A RunList/InsertSheet/Media (S)	LayoutPreparation RunList/@Pages, InsertSheet/@SheetType,@SheetUsage (S) RunList/@PageCopies (S) RunList/InsertSheet/Media/Location/@LocationName RunList/InsertSheet/Media (S) Note: It has been proposed for JDF 1.2 to move InsertSheet out of RunList.	Insert Sheet (X)	1.0 job-insert-sheets x.x document insert-sheets 1.0 insert-sheet-pages 1.0 insert-sheet-position 1.0 insert-sheet-count 1.0 insert-sheet-media 1.0 insert-sheet-media	1.2	Yes	**insert-sheet** (1setOf collection) [JT[12], DT, PO] Specifies how Insert Sheets are to be inserted into the sequence of media sheets that are produced for each copy of the documents. [prod-print] §3.5 **insert-after-page-number** (integer(0:MAX)) Specifies the input page after which the Insert Sheet will be placed. [prod-print] §3.5.1 **insert-count** (integer(0:MAX)) Specifies the number of Insert Sheet to insert. [prod-print] §3.5.2 **media** (type3 keyword | name(MAX)) The medium that the Printer uses for all impressions of the Job. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in. See [pwg5101.1]) [prod-print] §3.5.3 **media-col** (collection) Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used. [prod-print] §3.5.3

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

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
ipp-attribute-fidelity note: Use with job-mandatory-attributes	High [13]		10	@SettingsPolicy	@SettingsPolicy	No (X)	see jt-manatory-attributes	1.1	Yes	**ipp-attribute-fidelity** (boolean) [JT] Allows a user to control whether or not the Printer MUST honor *all* supplied Job Template and Document Template attributes in the Job Creation operation. For a 'true' value the Printer MUST reject the job submission if any of the supplied attribute values are unsupported. For a 'false' value the Printer MUST accept the job submission and do best effort. Default = 'false' [RFC2911] §15.1 See also "job-mandatory-attributes" attribute.
job-account-id	High	EFI General/ Account Info - Account/Project Information EFI Billing Info	1	CustomerInfo/ @BillingCode (S)	CustomerInfo/@ BillingCode (S)	Billing Code (X)	1.0 job-billing-code	1.2	Yes	**job-account-id** (name(MAX)) [JT[14]] Account associated with the job. [prod-print] §3.6 Note: Not sure if this is the same as BillingCode
job-accounting-sheets job-accounting-sheets-type media media-col job-accounting-output-bin	Low		1 5 8	Unknown	Unknown	No (X)	x.x	1.2	Yes Yes Yes No	**job-accounting-sheets** (collection) [JT] Specifies the accounting sheet for this Job. [prod-print] §3.8 **job-accounting-sheets-type** (type3 keyword	name(MAX)) Specifies the accounting sheet format for a job. (keywords: none, standard) [prod-print] §3.8.1 **media** (type3 keyword	name(MAX)) The medium that the Printer uses for all impressions of the Job. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in. See [pwg5101.1]) [prod-print] §3.5.3 **media-col** (collection) Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used. [prod-print] §3.5.3 **job-accounting-output-bin** (type3 keyword	name(MAX)) Specifies the output bin where the accounting sheet is to be placed. (Keywords: top, middle, bottom, side, left, right, center, rear, face-up, face-down large-capacity, my-mailbox, stacker-N, mailbox-N, tray-N *Note: N is replaced by a cardinal

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[13] Consider only supporting SettingsPolicy at the JDF Node level and not at the Resource level (which is contrary to the JDF 1.1 spec)
[14] The "job-account-id" is termed a Job Description attribute instead of a Job Processing attribute by the PWG Semantic Model [pwg-sm].

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										number, *Note: See [PWG5100.2 §2.1 for description of keywords) [prod-print] §3.8.3
job-accounting-user-id	Low	[JT[15]]	1	CustomerInfo/ @CustomerID	Unknown	No (X)	x.x	1.2	Yes	**job-accounting-user-id** (name(MAX)) [JT[15]] Specifies the User ID associated with the "job-account-id". [prod-print] §3.7
job-client-id note: This attribute does not currently exist in IPP.	Low		10	Unknown	JDF/@JobID	Job ID	x.x job-client-id			
job-collation-type (S) [16]	Never			N/A	N/A	No	Never	No	No	**job-collation-type** (type2 enum) [JS, -] Identifies the collation type of this Job. The Printer sets the value from the submitted "sheet-collate" and "multiple-document-handling" Job Template attributes. (Keywords: other, unknown, uncollated-sheets, uncollated-documents, collated-documents). [job-prog] §4.1
job-detailed-status-messages (S)	Never			N/A	N/A	No	Never	1.1	No	**[job-]detailed-status-message** (1setOf text (MAX)) [JS, DS] Specifies additional detailed and technical information about this Job/Document. Intended for use by the system administrator or other experienced technical persons and so is not localized by the Printer. (example: "PostScript error: stack overflow") [RFC2911] §4.3.10
job-document-access-errors (S)	Never			N/A	N/A	No	Never	1.1	No	**[job-]document-access-errors** (1setOf text(MAX)) [JS, DS] Information about each Document access error for this Job/Document encountered by the Printer. (example: "(404) http://www.company.com/pub/fileToPrint.pdf ") [RFC2911] §4.3.11
job-error-sheet job-error-sheet-type job-error-sheet-when media media-col	Low		1 5 8	Unknown	Unknown	No (X)	x.x	1.2	Yes	**job-error-sheet** (collection) [JT] Specifies the error sheet for a job. [prod-print] §3.9 **job-error-sheet-type** (type3 keyword | name(MAX)) Specifies the error sheet format for a job. (Keywords: none, standard) [prod-print] §3.9.1 **job-error-sheet-when** (type2 keyword) Specifies when the accounting sheet is produced for a job. (Keywords: on-error, always) [prod-print] §3.9.2

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[15] The "job-accounting-user-id" is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

[16] The IPP "job-collation-type" Job Description attribute has values of 'none', which the Printer sets from the two Job Template attributes: "multiple-document-handling" and "sheet-collate". For the FSG Job Ticket API, the "job-collation-type" should be both the input and the Description attribute, possibly with some additional values.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										media (type3 keyword | name(MAX)) The medium that the Printer uses for all impressions of the Job. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in. See [pwg5101.1]) [prod-print] §3.5.3 **media-col** (collection) Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used. [prod-print] §3.5.3
job-hold-until	High [17]		10	N/A	JDF/@Activation	HoldJob for indefinite (X) No, otherwise (X)	1.0 job-hold	1.1	Yes	**job-hold-until** (type3 keyword | name(MAX)) [JT] Specifies the named time period during which the Job must become a candidate for printing. (Keywords: no-hold, indefinite, day-time, evening, night, weekend, second-shift, third-shift) [RFC2911] §4.2.2
job-hold-until-time	Low		10	Unknown	Unknown	(X)	x.x	1.2?		**job-hold-until-time** (dateTime) [JT] Specifies the date and time after which the Job must become a candidate for printing. (example: Fri, 03 May 2002 08:49:37 GMT) [prod-print2] §5.4
job-id (S)	Low			Unknown	Unknown		x.x job-id	1.1	No	**job-id** (integer(1:MAX)) [JS, -[18]] The Printer generates and sets this attribute to the ID of this Job, which is unique for this Printer. [RFC2911] §4.3.2
job-impressions	Low		3 10	Unknown	Unknown	No ? (X)	Never	1.1	No	**[job-]impressions** (integer(0:MAX) [JD, DT] The total size of this Job/Document in number of impressions. [RFC2911] §4.3.17.2, [doc-obj] §6
job-impressions-completed (S)	Never			N/A	N/A	No	Never	No	No	**[job-]impressions-completed** (integer(0:MAX)) [JS, DS] The number of impressions completed for this Job/Document so far. [RFC2911] §4.3.18.2
job-k-octets	Never			N/A	N/A	No	Never	1.1	No	**[job-]k-octets** (integer(0:MAX) [JD, DT] The total size of this Job/Document in integral units of 1024 octets. [RFC2911] §4.3.17.1, [doc-obj] §6
job-k-octets-processed (S)	Never			N/A	N/A	No	Never	1.1	No	**[job-]k-octets-processed** (integer(0:MAX)) [JS, DS] The total number of octets processed in integral units of 1024 octets so

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[17] Only the "indefinite" value is supported.
[18] The IPP "job-id" Job Description attribute corresponds to the (new) "document-number" Document Description attribute.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										far for this Job/Document. [RFC2911] §4.3.18.1
job-mandatory-attributes	High		10	@SettingsPolicy	@SettingsPolicy Note: To conform to JDF spec, must support SettingsPolicy down to Resource level.	No (X)	1.0 jt-mandatory-attributes [19]	No	No	**job-mandatory-attributes** (1setOf type2 keyword) [JT] Allows a user to list which Job Template and Document Template attributes the Printer MUST honor. The Printer MUST reject the job submission if *any* of the listed attributes contain values that the Printer does not support. All of the remaining supplied attributes are best effort. This attribute is ignored if "attribute-fidelity" is supplied with a 'true' value. (See [RFC2911] §15.1) (Keywords: none and any Job and Document Template attribute names. Member attributes of collection attributes are named as *attr-name.member-name*. For example, 'job-sheets-col.media') NOTE: New attribute to align fidelity with FSG and PSI work. [doc-obj] §6.2.2
job-media-sheets	Low	[JD, DT]	3 10	Yes? LayoutIntent/ @Pages	Unknown	No ? (X)	x.x	1.1	No	**[job-]media-sheets** (integer(0:MAX) [JD, DT] The total size of this Job/Document in media sheets . [RFC2911] §4.3.17.3, [doc-obj] §6
job-media-sheets-completed (S)	Never			N/A	N/A	No	x.x	1.1	No	**[job-]media-sheets-completed** (integer(0:MAX)) [JS, DS] The media-sheets completed marking and stacking for this Job/Document so far. [RFC2911] §4.3.18.3
job-message-from-operator (S)	Never			N/A	N/A	No	Never	1.1	No	**job-message-from-operator** (text(MAX)) [JD] Message to the end user indicating the reasons for any management action taken on a this job. (Example: "Job canceled due to length", "Pick job up in mailbox") Note: The natural language is not localized by any recipient, since this message is generated by a human. [RFC2911] §4.3.16
job-message-to-operator	High	EFI General/ Account Info – Instructions	10	N/A	JDF/Comment/@ Name="Message ToOperator" (N)	No (X)	1.0 job-message-to-operator	1.2	Yes	**job-message-to-operator** (text(MAX)) [JT[20]] Message from the end user to indicate something about the processing of the job. Note: The natural language is not localized by any recipient, since this message is generated by a human. (example: "Call 555-1234 before running this job") [prod-print] §3.10

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[19] Values of jt-madatory-attributes supported for 1.0 will be None and All; x.x for the values that are specific attribute names.
[20] The "job-message-to-operator" is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
job-more-info (S)	Never			N/A	N/A	No	Never	1.1	No	**[job-]more-info** (uri) [JS, DS] URI used to obtain information intended for end user consumption about this specific Job/Document. (example: "http://www.company.com/printer/embededjob page") [RFC2911] §4.3.4
job-name	High		10	CustomerInfo/ @CustomerJobN ame (S)	CustomerInfo/@ CustomerJobNa me (S)	Job Name (X)	1.0 job-name	1.1	Yes	**job-name** (name(MAX)) [JD] The Printer sets this to the client-supplied end-user friendly name for the Job, else the Printer must generate a name from other information. (example: "license agreement memo") [RFC2911] §4.3.5
job-originating-user-name (S)	Never			N/A	N/A	No	Never	1.1	No	**job-originating-user-name** (name(MAX)) [JS, -] The Printer sets this attribute to the most authenticated printable name that it can obtain (example: "John Doe", \authDomain\John Doe") [RFC2911] §4.3.6
job-password	Low		10	Unknown	Unknown	No (X)	x.x			**job-password** (octetString (255)) [JD] Contains a password supplied by the client encrypted according to method specified by the client in the "job-password-encryption" attribute. The password provides a mechanism for the user to perform a Secure Print. The Printer places the Job in the 'pending-held' state with the 'job-password-wait' value in the Job's "job-state-reasons" attribute. Then the user enters the password locally at the Printer. If the password matches, the Printer removes the 'job-password-wait' value, moves the Job to the 'pending' state, and schedules the Job to run next. [prod-print2] §4.1
job-password-encryption	Low		10	Unknown	Unknown	No (X)	x.x			**job-password-encryption** (type3 keyword | name(MAX)) [JD] Specifies the type of encryption that the client is used for the supplied value of the JobPassword attribute. (Keywords: none, md2, md4, md5, sha) [prod-print2] §4.2
job-phone-number	High		1	CustomerInfo/Co ntact (S)	CustomerInfo/Co ntact (S)	No (X)	x.x			**job-phone-number** (text(127)) [JT[21]] Contains the contact telephone number for the job. [prod-print2] §5.5
job-printer-make-and-model (S)	Never			N/A	N/A	No	x.x	1.2?	No	**job-printer-make-and-model** (text(127)) [JS, -] Identifies the make and model of the output

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[21] The "job-phone-number" attribute is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
note: Works with job-save-disposition										device which saved this Job according to the "job-save-disposition" Job Template attribute. [prod-print2] §6.1
job-printer-uptime (S)	Never			N/A	N/A	No	Never	1.1?	No	**[job-]printer-up-time** (integer (1:MAX)) [JS, DS] The amount of time (in seconds) that the Printer has been up and running. These Job/Document State attributes are an alias for the "printer-up-time" Printer State attribute for use by the client in a Job/Document query response to compare with the TimeAtCreation, TimeAtProcessing, and TimeAtCompleted State attributes. [RFC2911] §4.3.14.4
job-printer-uri (S)	Never			N/A	N/A	No	x.x	1.1	No	
job-priority	Medium		10	NodeInfo/ @JobPriority	NodeInfo/@JobPriority	Job Priority (X)	1.0 job-priority	1.1	Yes	**job-priority** (integer(1:100) [JT] Priority for scheduling the Job. A higher value specifies a higher priority. [RFC2911] §4.2.1
job-recipient-name	Low	[JT]	10	Unknown	Unknown	No (X)	x.x	??	Yes	**job-recipient-name** (name(MAX)) [JT[22]] Contains the name of the person that is to receive the output of the job and is commonly printed on the job sheet. It may also be used to reference a data base containing delivery instructions for the recipient. [prod-print2] §5.6

job-save-disposition
    save-disposition-type
    (none, save-only, print-
    save)
    save-info
    save-location
    save-name
    save-document-format
	Low		10	Unknown	DigitalPrinting DigitalPrintingParams/@osdp:DeliveryMethod	Delivery Method (X)	x.x			**job-save-disposition** (collection) [JT] Specifies that the Printer is to save the job as a file that can be re-printed on demand anytime in the future using the Print-URI operation (see [RFC2911] section 3.2.2) [prod-print2] §5.7
										save-disposition (type3 keyword) Specifies whether the Printer MUST print and/or save the job. (Keywords: none, save-only, print-save). [prod-print2] §5.7.1.1
										save-info (1setOf collection) Contains sets of attributes that each tell the Printer how to create each copy of the saved job. [prod-print2] §5.7.1.2
										save-location (uri) Specifies the path to the directory as a URI where the Printer saves the Document Data and other Job information. Example: 'ftp://printhost.printco.com/var/spool/jobdir/' or

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[22] The "job-recipient-name" attribute is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										'file:///job-repository/jobdir/' [prod-print2] §5.7.1.2.3.1 **save-name** (name(MAX)) Specifies the name of the saved job in the directory specified by the "save-location" member attribute. The value may be a relative path. Example: if "save-location" is 'ftp://printhost.printco.com/var/spool/jobdir/' or 'ftp://printhost.printco.com/var/spool/jobdir/' and "save-name" is 'c/d', the resulting saved job URI is 'ftp://printhost.printco.com/var/spool/jobdir/c/d'. [prod-print2] §5.7.1.2.3.2 **save-document-format** (mimeMediaType) Indicates the document format in which the Printer is to save the job content (Document Data). Values are any document format that the Printer supports, except 'application/octet-stream'. See DocumentFormat Document Description attribute. [prod-print2] §5.7.1.2.3.3
job-sheet-message	High		10	N/A	LayoutPreparation LayoutPrepatationParams/InsertSheet/Sheet/Surface/MarkObject/JobField/ShowList=OperatorText/OperatorText	No (X)	1.0 job-separator-sheets 1.0 separator-sheet-message	1.2	Yes	**job-sheet-message** (text(MAX)) [JT] Conveys a message that is delivered with the job. [prod-print] §3.12
job-sheets note: Use job-sheets-col	Never		8	see job-sheet-col	see job-sheet-col	Start, Separator/Slip, End Sheets (X)	Never	1.1	Yes	**job-sheets** (type3 keyword	name(MAX)) [JT] Specifies which job start/end sheet(s), will be printed with a job. (Keywords: none, standard, job-start-sheet, job-end-sheet, job-both-sheets, first-print-stream-page) [RFC2911] §4.2.3, [PWG5100.3] §6.2
job-sheets-col job-sheets media media-col	High		5 8	LayoutIntent/InsertSheet/@SheetType,@SheetUsage (S) N/A	LayoutPreparation LayoutPreparationParams/InsertSheet/@SheetType,@SheetUsage (S) InsertSheet/Media/Location/@Loc	Yes Start, Separator/Slip, End Sheets (X)	1.0 job-separator-sheets 1.0 separator-sheet-type 1.0 separator-sheet-media	1.2	Yes	**job-sheets-col** (collection) [JT] Allows the client to specify the media for the JobSheet. [prod-print] §3.11 **job-sheets** (type3 keyword	name(MAX)) Specifies which job start/end sheet(s), will be printed with a job. (Keywords: none, standard) [prod-print] §3.11.1 **media** (type3 keyword	name(MAX)) The medium that the Printer uses for all

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
				InsertSheet/Medi aIntent (S) Note: Should there be a way to specify a banner sheet as a high level Product Description?	ationName InsertSheet/Medi a (S) Note: Should be a way to specify that isWaste is false for job-sheet and separator_sheet.		1.0 separator-sheet-media			impressions of the Job. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in. See [pwg5101.1]) [prod-print] §3.5.3 **media-col** (collection) Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used. [prod-print] §3.5.3
job-state (S)	Never			N/A	N/A	No	x.x	1.1	No	**job-state** (type1 enum) [JS, -[23]] The current state of this Job. See also JobStateReasons attribute below. (Keywords: pending, pending-held, processing, processing-stopped, canceled, aborted, completed) [RFC2911] §4.3.7
job-state-message (S)	Never			N/A	N/A	No	x.x	1.1	No	**[job-]state-message** (text(MAX)) [JS, [24]] Specifies information about the "job-state" and "job-state-reasons" attributes in human readable text localized by the Printer according to the natural language supplied in the client's query request. (example: "Job completed successfully with warnings" for an English request) [RFC2911] §4.3.9
job-state-reasons (S)	Never			N/A	N/A	No	x.x	1.1	No	**job-state-reasons** (1setOf type2 keyword) [JS, -[25]] Provides additional information about this Job's current state. (Keywords: none, aborted-by-system, canceled-at-device, canceled-by-operator, canceled-by-user, completed-successfully, completed-with-errors, completed-with-warnings, compression-error, document-access-error, document-format-error, incoming, interpreting, job-data-insufficient, job-hold-until-specified, job-password-wait, job-restartable, job-resuming, job-saved-successfully, job-save-error, job-saving, job-scheduling, job-suspended, job-suspended-by-operator, job-suspended-by-system, job-suspended-by-user, job-suspending, outgoing, printer-stopped, printer-stopped-partly, printing,

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[23] The IPP "job-state" Job Description attribute corresponds to the (new) "document-state" Document Description attribute.
[24] The IPP "job-state-message" Job Description attribute corresponds to the (new) "document-state-message" Document Description attribute.
[25] The IPP "job-state-reasons" Job Description attribute corresponds to the (new) "document-state-reasons" Document Description attribute.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										processing-to-stop-point, proof-print-wait, queued, queued-for-marker, queued-in-device, resources-are-not-ready, resources-are-not-supported, service-off-line, spooling, streaming, submission-interrupted, transforming, unsupported-compression, unsupported-document-format, warnings-detected) [RFC2911] §4.3.8, [adm-ops] §9.1, [override] §7.1, [prod-print] §6.1, [prod-print2] §8.3.1
Job ticket author name	Low		10	Unknown	Unknown	No (X)	x.x jt-author-name	No	No	No IPP attribute
job-uri (S)	Never			N/A	N/A	No	x.x	1.1	No	**job-uri** (uri) [JS, -[26]] The Printer generates and sets this attribute to a globally unique URI for this Job. (Example: ipp://www.company.com/printer/jobs/22). [RFC2911] §4.3.1
job-warnings-count (S)	Never	[JS, DS]		N/A	N/A	No	Never	No	No	**[job-]warnings-count** (integer(0:MAX)) [JS, DS] The total number of warnings that a Printer has generated while processing and printing this Job/Document. [override] §6.1
last-document	Low		10	Unknown	Unknown	No (X)	x.x			**last-document** (boolean) [DD] Has a 'true' value if this Document is the last Input Document for the Job. [RFC2911] §4.2.11
media	High	1.1 Media Source EFI Media Source Input Tray	5	N/A Note: Can't specify input tray name as a Product Description.	DigitalPrinting DigitalPrintingParams/Media/Location/@LocationName	Input Tray Name (X)	1.0 media-input-tray-name [27]	1.1	No	**media** (type3 keyword | name(MAX)) [JT, DT, PO] The name of the medium that the Printer uses for impressions of the Job, that is, the media that the Printer prints on. These values do *not* represent the media after folding or slitting. On some Printers the keyword names MAY include input tray names. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in, na-letter-white, iso-a4-white, top. See [pwg5101.1]) [RFC2911] §4.2.11
media-col	High	1.1 Media Selection	5	MediaIntent	DigitalPrintring Media	Media (X)	1.0 job-media x.x document-media x.x po-media	1.2	Yes	**media-col** (collection) [JT, DT, PO] Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used than the "media" attribute provides. See "media" description. [prod-print] §3.13

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[26] The IPP "job-uri" Job Description attribute does not have a corresponding Document Description attribute. The "job-uri" has proved problematic enough and not really needed.

[27] media-input-tray-name is mapped to IPP media attribute when no other media attributes are set.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
media-col media-back-coating	Medium		5	MediaIntent/ @BackCoatings	Media/@BackCo ating	Yes (X)	1.0 media-back-coating	1.2	Yes	**media-back-coating** (type3 keyword	name(MAX)) Indicates the pre-process coating applied to the back of the media. (Keywords: none, glossy, high-gloss, semi-gloss, satin, matte) [prod-print] §3.13.10
media-col media-color	High		5	MediaIntent/ @MediaColor (S)	Media/@MediaC olorName (S)	Yes (X)	1.0 media-color	1.2	Yes	**media-color** (type3 keyword	name(MAX)) Indicates the desired color of the media being specified. . (Keywords: no-color, white, pink, yellow, blue, green, buff, goldenrod, red, gray, ivory, orange) [prod-print] §3.13.4
media-col media-front-coating	Medium		5	MediaIntent/ @FrontCoatings	Media/@FrontCo rating	Yes (X)	1.0 media-front-coating	1.2	Yes	**media-front-coating** (type3 keyword	name(MAX)) Indicates the pre-process coating applied to the front of the media. (Keywords: none, glossy, high-gloss, semi-gloss, satin, matte) [prod-print] §3.13.10
media-col media-grain	Medium		5	Unknown	Unknown	No (X)	x.x			**media-grain** (type3 keyword	name(MAX)) Indicates the grain of the media. Note: grain affects the curl and the folding of the medium. (Keywords: x-direction, y-direction) [prod-print2] §8.4.2
media-col media-hole-count	High		5	MediaIntent/@Ho leType (S)	Media/@HoleTyp e (S)	Yes (X)	1.0 media-hole-count	1.2	Yes	**media-hole-count** (integer(0:MAX)) Indicates the number of pre-drilled holes in the desired media. [prod-print] §3.13.6
media-col media-info	High	EFI MediaName	5	Comment /@Name="Descri ption" (S)	Media/Comment /@Name="Descri ption" (S)	No (X)	x.x media-description	1.2	Yes	**media-info** (text(255)) Specifies information that helps describe the media instance. Intended for human consumption. [prod-print] §3.13.3
media-col media-key	High		5	MediaIntent/ @DescriptiveNa me (S)	Media/@Descript iveName (S) Note: CIP4 is considering adding Media Catalog.	Yes (X)	1.0 media-name	1.2	Yes	**media-key** (type3 keyword	name(MAX)) The name of the media represented as a keyword or name. Values are the same as the keyword and name values for the Media Document Processing attribute and represent the same media, except for media size and input tray keywords. [prod-print] §3.13.1
media-col media-material	Low		5	Unknown	Unknown	No (X)	x.x			**media-material** (type3 keyword	name(MAX)) The material of the media. (Keywords: aluminum, dry-film, paper, polyester, wet-film) [prod-print2] §8.4.3
media-col media-order-count	High	EFI Media – Tabs	5	MediaIntent/ @MediaSetCoun t (S)	Media/@SetCou nt (S)	Yes (X)	1.0 media-set-count	1.2	Yes	**media-order-count** (integer(1:MAX)) Indicates the number of sheets, within an ordered sequence of sheets; after which the sequence begins to repeat. [prod-print] §3.13.7
media-col	High		5	MediaIntent/	Media/@Preprint	Yes (X)	x.x	1.2	Yes	**media-preprinted** (type3 keyword	

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
media-pre-printed				@Preprinted (S)	ed (S)					name(MAX)) Indicates the pre-printed characteristics of the desired media. (Keywords: blank, pre-printed, letter-head) [prod-print] §3.13.5
media-col media-recycled	Medium		5	MediaIntent/ @Recycled	Media/@Recycled	Yes (X)	1.0 media-recycled	1.2	Yes	**media-recycled** (type3 keyword | name(MAX)) Indicates the recycled characteristics of the media. (Keywords: none, standard) [prod-print] §3.13.11
media-col media-size	High	EFI Media Dimensions EFI Media Landscape	5	MediaIntent/ @Dimensions (S) Note:LayoutIntent/@Dimensions, @FinishedDimensions (z-axis must always be set to 0). Note: @Dimensions is needed for spreads.	Media/@Dimensions (S)	Yes (X)	see below	1.2	Yes	**media-size** (collection) Explicitly specifies the numerical media width and height dimensions. [prod-print] §3.13.8
media-col media-size x-dimension	High		5	see media-size above	see media-size above	Yes (X)	1.0 media-x-dimension	1.2	Yes	**x-dimension** (integer(0:MAX)) Size of the media in hundredths of a millimeter along the y-axis of the medium, i.e., the short (=bottom) edge. [prod-print] §3.13.8.1
media-col media-size y-dimension	High		5	see media-size above	see media-size above	Yes (X)	1.0 media-y-dimension	1.2	Yes	**y-dimension** (integer(0:MAX)) Size of the media in hundredths of a millimeter along the y-axis of the medium, i.e., the long (=left) edge. [prod-print] §3.13.8.2
media-col media-type	High		5	MediaIntent/ @UserMediaType,@MediaType (S) Note: Reconsider renaming User MediaType to MediaTypeDetals. Note: Consider adding more of the values of Media/@MediaT	Media/@MediaTypeDetails/@MediaType (S)	Yes (X)	1.0 media-type	1.2	Yes	**media-type** (type3 keyword | name(MAX)) The medium type that the Printer uses for all impressions of the Job. (Keywords: stationery, transparency envelope, envelope-plain, envelope-window, continuous, continuous-long, continuous-short, tab-stock, pre-cut-tabs, full-cut-tabs, multi-part-forms, labels, multi-layer, screen, screen-paged, photographic, cardstock, other See also [pwg5101.1] §3) [prod-print] §3.13.2

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
				ypeDetails to UserMediaType.						
media-col media-weight-metric	High		5	MediaIntent/ @Weight (S)	Media/@Weight (S)	Yes (X)	1.0 media-weight	1.2	Yes	**media-weight-metric** (integer(0:MAX)) Indicates the weight of the desired media rounded to the nearest whole number of grams per square meter. [prod-print] §3.13.9
medi-col media-thickness	Medium		5	Unknown	Unknown	Yes (X)	x.x			**media-thickness** (integer(1:MAX) The thickness of the media in units of one hundredth of a millimeter. This unit is equivalent to 1/2540 th of an inch. [prod-print2] §8.4.4
media-col media-tooth	Medium		5	Unknown	Unknown	No (X)	x.x			**media-tooth** (type3 keyword | name(MAX)) The tooth (or roughness) of the media. Note: the tooth of a medium is particularly important for those marking engines that use pens (e.g. plotters) to mark the medium. (Keywords: fine, medium, coarse) [prod-print2] §8.4.1
media-input-tray-check	Medium			Unknown	Unknown	No (X)	1.0 media-input-tray-name[28]	1.2	No	**media-input-tray-check** (type3 keyword | name(MAX)) [JT, DT, PO] Indicates that the characteristics of the media in the identified input tray must match the characteristics of the media identified by the "media" or "media-col" attribute. (Keywords: none, top, middle, bottom, side, large-capacity, envelope, main, manual, bypass-tray, tray-*N*. See [RFC2911] Appendix C) [prod-print] §3.14 and §6.3
multiple-document-handling	High	See specific attributes for category.		Partition using DocIndex and DocRunIndex for separate document and RunIndex for single document. (S)	Partition using DocIndex and DocRunIndex for separate document and RunIndex for single document. (S)	Yes (is covered by the individual attributes) (X)	see document individual attributes	1.1	Yes	**multiple-document-handling** (type2 keyword) [JT] Controls whether Input Document in multi-document jobs are combined into a single Output Document or are kept as separate Output Document. Useful in combination with "cover-back", "cover-front", "finishings", "finishings-col", and "copies" Job Template attributes and for controlling the placement of one or more print-stream pages into impressions and onto media sheets for multi-document Jobs[29]. (Keywords: single-document, separate-document-uncollated-copies, separate-document-collated-copies, single-document-

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[28] media-input-tray-name is mapped to IPP media-input-tray-check when other media attributes are also set.

[29] The IPP "multiple-document-handling" attribute has been made unnecessary in the PWG Semantic Model by introducing the JobFinishings, JobFinishingsCol, and JobCopies Job Processing attributes to handle the cases of combining multiple Input Documents into a single Output Document. So Finishings, FinishingsCol, and Copies are Document Processing attributes that are intended to handle the separate Output Documents cases. Need to do the same for CoverFront and CoverBack.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										new-sheet) [RFC2911] §4.2.4
notify-xxx attributes: notify-recipient-uri notify-pull-method notify-events notify-attributes notify-user-data notify-charset notify-natural-language notify-time-interval notify-lease-duration notify-subscription-id (S) notify-sequence-number (S) notify-lease-expiration-time (S) notify-printer-up-time (S) notify-printer-uri (S) notify-job-id (S) notify-subscriber-name (S)	Low		2	Unknown	NodeInfo/Notifica tionFilter/@osdp: Locator,@osdp:C hannelType @Types Comment/@Nam e=Description Comment/@Lan guage	Notification (X) Yes No Yes No Yes? No Yes No No No No No No No No No	1.0 job-notifications 1.0 notification-send-to 1.0 notification-delivery-type 1.0 notification-events 1.0 notification-comment 1.0 notification-language This needs more work. Tom will provide descrip-tions for each nottify-xxx attribute. Which attributes are required by IPP? See IANA uri schemes.	1.2	No	notify-xxx [JD] Specifies one or more complete Event Notification Subscriptions. Each Subscription includes the Events of interest, the Delivery Method, the Notification Recipient, any additional attributes and/or user data to be delivery with the Event Notification.
number-of-documents (S)	Never			N/A	N/A	No	x.x	1.1	No	**number-of-documents** (integer(0:MAX)) [JS, -] The number of Documents in this Job. [RFC2911] §4.3.12
number-of-intervening-jobs (S)	Never			N/A	N/A	No	x.x	1.1	No	**number-of-intervening-jobs** (integer(0:MAX)) [JS, -] The number of jobs that are "ahead" of this Job assuming the current scheduled order. [RFC2911] §4.3.15
number-up	High	1.1 Bookletmaking	7	LayoutIntent/ @NumberUp/@.. . (N) Note: Description of LayoutIntent needs to be clarified in JDF spec and in doing so new	LayputPreparatio n LayoutPreparatio nParams/@Num berUp,/PageCell/ FitPolicy/@SizeP olicy=FitToPage	Number Up (X)	1.0 job-number-up x.x document-number-up x.x po-number-up	1.1	Yes	**number-up** (integer(1:MAX)) [JT, DT, PO] Indicates the number of Input pages that the Printer is to image on one finished page image. [RFC2911] §4.2.9

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
				attributes may be added (e.g. presentation direction).						
operation-id	Never			N/A	N/A	No	Never	1.1	No	**operation-id** (type2 enum) [ ] Indicates which operation this request is. [RFC2911] §3.1.2
orientation-requested	Low		7	Unknown	Unknown	No (X)	x.x	1.1	Yes	**orientation-requested** (type2 enum) [JT, DT, PO] The desired orientation for printed pages for document formats that don't have a built-in orientation. (Keywords: portrait, landscape, reverse-landscape, reverse-portrait) [RFC2911] §4.2.10
output-bin	Medium		8	Unknown	DigitalPrintring DigitalPrintingParams/@OutputBin	Output Bin Name (X)	1.0 job-output-bin-name x.x document-output-bin-name x.x po-output-bin-name	No	Yes	**output-bin** (type3 keyword | name(MAX)) [JT, DT] Specifies the output bin where the job is to be delivered. (Keywords: top, middle, bottom, side, left, right, center, rear, face-up, face-down large-capacity, my-mailbox, stacker-N*, mailbox-N*, tray-N*. *Note: N is replaced by a cardinal number) [output-bin] §2.1
output-device-assigned (S)	Never	[JS, -]		N/A	N/A	No	x.x	1.1	No	**output-device-assigned** (name(127)) [JS, -] Identifies the output device to which the Printer has assigned this Job (Example: "Pete's Printer") [RFC2911] §4.3.13
page-delivery	High	1.1 Sheet Order & Face Up/Down	8	Specify page order in RunList	DigitalPrinting DigitalPrintingParams/@PageDelivery	Page Delivery (X)	1.0 job-page-delivery	1.2	Yes	**page-delivery** (type2 keyword) [JT, DT] Indicates whether the pages of the job are to be delivered to the output bin or finisher in the same page order as the original document and face up or face down. See the "page-order-received" Job Template attribute and the "current-page-order" Document Description attributes. (Keywords: same-order-face-up, same-order-face-down, reverse-order-face-up, reverse-order-face-down, system-specified) [prod-print] §3.15
page-order-received	Low [30]		3	Unknown	Unknown	No (X)	x.x	1.2	Yes	**page-order-received** (type2 keyword) [JT[31], DT] Indicates the order of pages in the document data as supplied with the job. (Keywords: 1-to-n-order, n-to-1-order) [prod-print] §3.16

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[30] The default of page-order-received is 1 to n which is reader order.
[31] The IPP "page-order-received" Job Template attribute is mapped to the PageOrderReceived Document Description attribute in the PWG Semantic Model [pwg-sm].

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description

page-overrides (M)
 	
  input-documents
  document-copies
  pages (Mn)
  sides
  media
  <any other document attr.>
or
  output-documents
  document-copies
  pages (Mn)
  sides
  media
  <any other document attr.>
	High	See specific attributes for category.
		
		EFI Media - Pages
				Partition using DocIndex and DocRunIndex or RunIndex to specify page overrides. (S)
				
				See individual feature/function that is valid at the page level
					Partition using DocIndex and DocRunIndex or RunIndex to specify page overrides. (S)
					
					See individual feature/function that is valid at the page level
						Yes (X)
						
						Yes
						No
						Yes
						Yes
						Yes
						Yes??
						
						No
						No
						Yes
						Yes
						Yes
						Yes??
							x.x job-page-overrides
							x.x document-page-overrides
							
							x.x po-pages
							see sides
							see media
							Yes
								No??	Yes	**page-overrides** (1setOf collection) [JT, DT] Provides for the overriding of processing instructions on a page basis. [override] §5.2
										input-documents (1setOf rangeOfInteger(MAX)) Specifies the ranges of input documents for page override processing. [override] §5.2.1
										output-documents (1setOf rangeOfInteger(MAX)) Specifies the ranges of output documents for page override processing. [override] §5.2.2
										document-copies (1setOf rangeOfInteger(MAX)) Specifies the ranges of output document copies for page override processing. [override] §5.2.3
										pages (1setOf rangeOfInteger(MAX)) Specifies a range of pages in the document data to which the "page-overrides" are to be applied. Note: the "page-ranges" Document Template attribute may be supplied as one of the Template attributes to apply to the ranges of pages specified by "pages" in which case "page-ranges" indicates which pages are to be actually output. [override] §5.2.4
										any other Job Template attributes *that affect pages, such as "media" or "media-col" ()*

page-ranges (Mn)	High		4	RunListLink/@RunIndex,@DocIndex and @DocRunIndex (S)	LayoutPreparation RunListLink/@RunIndex.@DocIndex and @DocRunIndex (S)	Range of Pages to Process (X)	1.0 job-output-pages x.x document-output-pages	1.1	Yes	**page-ranges** (1setOf rangeOfInteger(1:MAX)) [JT, DT, PO] Specifies a range of pages in the document data to be output. The remaining pages may still need to be processed, but not output, depending on document format. [RFC2911] §4.2.7
page-rotation	High	EFI Media Lanscape	7	LayoutIntent/ @FinishedDimen sions	LayoutPreparation LayoutPreparationParams/@Rotate	Rotate Page (X)	1.0 job-page-rotation x.x document-page-rotation x.x po-page-rotation	??	Yes	page-rotation (type3 keyword | name(MAX)) [JT, DT, PO] Specifies a rotation transformation of input page images consisting of rotation and repositioning so that the lower left corner of the rotated image coincides with the lower left corner of the original image. No scaling is done. Rotation is done before any "number-up" or "imposition-template" transformations are applied. (Keywords: rotate-0, rotate-90, rotate-180, rotate-270). [color&img] §4.7

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
pages-per-subset (Mn)	Low		4	Unknown	Unknown	No (X)	x.x	No	Yes	**pages-per-subset** (1setOf integer(1:MAX)) [JT[32]] Combines all of the Input Pages of all of the Input Documents into a single stream of Input-Pages. Then the Printer partitions that single stream into contiguous subsets of Input-Pages according to the list of integers. If there are more Input Pages when the Printer reaches the end of the integer list, the Printer cycles through the integer list. Each subset is defined to be an Output-Document. [override] §5.3
pdl-init-file pdl-init-file-location pdl-init-file-name pdl-init-file-entry	Never		6	N/A	N/A Same as PDLResourceAlias?	No	Never		No	**pdl-init-file** (1setOf collection) [JT, DT] Controls initialization of the Printer's Page Description Language (PDL) interpreter. The Printer performs the initialization before processing each Input Document when "multiple-document-handling" is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copies' and before the first Input Document when "multiple-document-handling" is 'single-document' or 'single-document-new-sheet'. [prod-print2] §5.8 **pdl-init-file-location** (uri) [JT, DT] Contains an Absolute URI [RFC 2396] that specifies the path to the directory where the initialization file to be sent to the Printer's PDL interpreter will be found. Examples: 'ftp://printhost.printco.com/var/spool/jobinitfiledir/initfile1' or 'file:///jobinitfiledir/initfile1'. [prod-print2] §5.8.1.1 **pdl-init-file-name** (name(MAX)) [JT, DT] Specifies the name of the initialization file within the directory specified by the PdlInitFileLocation member attribute that the Printer is to send to its PDL interpreter prior to processing the document. For example, if the PdlInitFileLocation is 'file:///jobinitfiledir/initfile1' or 'file:///jobinitfiledir/initfile1/' and the PdlInitFileName is 'a/b', then the URL for the

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[32] The IPP "pages-per-subset" attribute can only be used when the "multiple-document-handling" Job Template attribute is 'separate-documents-collated-copies' or 'separate-documents-uncollated-copes', since the purpose of the "pages-per-subset" attribute is to produce separate output documents for each subset. Otherwise, the Printer MUST ignore the "pages-per-subset" attribute. Both the "pages-per-subset" and the "multiple-document-handling" are Job level only and cannot be Document Template attributes.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										saved job is 'file:///jobinitfiledir/initfile1/a/b' [prod-print2] §5.8.1.2 **pdl-init-file-entry** (name(MAX)) [JT, DT] Specifies an entry point within the init file at which the PDL interpreter starts. [prod-print2] §5.8.1.3
Person to contact in case of problems	High		1	CustomerInfo/Contact/@... (S)	CustomerInfo/Contact/@... (S)					
presentation-direction-number-up	Low		7	Unknown	Unknown	No (X)	x.x	1.2	Yes[33]	**presentation-direction-number-up** (type2 keyword) [JT, DT, PO] Specifies the placement order of the page images on a Finished-Page Image with the "number-up" attribute. (Keywords: toright-tobottom, tobottom-toright, toleft-tobottom, tobottom-toleft, toright-totop, totop-toright, toleft-totop) [prod-print] §3.17
printer-resolution	Low	PO	6	Unknown	Unknown	No (X)	x.x	1.1	Yes	**printer-resolution** (resolution) [JT, DT, PO] The resolution that Printer uses for the Job in cross-feed and feed direction in units of dpi or dpcm. [RFC2911] §4.2.12
printer-uri	High		9	N/A (P)	DigitalPrinting Device/@DeviceID	Destination or Physical Printer Requested (X)	1.0 job-destination-uri x.x document-destination-uri x.x po-destination-uri	1.1	No	**printer-uri** (uri) [JD] Specifies the URL of this Printer. The client supplies this attribute in every request. [RFC2911] §3.1.5
print-quality	Medium		6	Unknown	Unknown	No (X)	1.0 job-print-quality x.x document-print-quality	1.1	Yes	**print-quality** (type2 enum) [JT, DT, PO] The print quality that the Printer uses for the Job. (keyword: draft, normal, high) [RFC2911] §4.2.13
Proofing (other than simple "print a proof")	Low		2 11	Unknown	Unknown		x.x			
proof-print proof-print-copies media media-col	High[34] Low Low Low		2 11	ProofingIntent/ProofItem/@... (S)	Proofing ProofingParams/@... (S) note Origination and Prepress CIP WG is revamping ProofingParams,	No (X)	x.x			**proof-print** (collection) [JT] Specifies the attributes for zero or more proof prints of the job that are to be printed prior to the printing the full run of the job. (Includes Media/MediaCol and any other Job Processing attributes). [prod-print2] §5.9 **proof-print-copies** (integer (0:MAX)) [JT] Specifies the attributes for zero or more proof prints of the job that are to be printed prior to

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[33] The JDF/1.0 Appendix F incorrectly refers to "presentation-direction" which was renamed to "presentation-direction-number-up" in IEEE-ISTO 5100.3.
[34] Only need to be able to specify that a proof is to be printed and approved.

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
					check with them.					the printing the full run of the job. If the value is zero, no proof job is produced. After the proof job(s) are completed, the Printer sets ProofPrintCopies to zero. puts the Job in the 'pending-held' state, and adds the 'proof-print-wait' value to the Job's JobStateReasons. After examining the proof print job output, the user can print the full run of the job by using the Release-Job action (see [RFC2911] section 3.3.6). (Includes Media/MediaCol and any other Job Processing attributes). [prod-print2] §5.9.1.1 **media** (type3 keyword | name(MAX)) The medium that the Printer uses for all impressions of the Job. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in. See [pwg5101.1]) [prod-print] §3.5.3 **media-col** (collection) Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used. [prod-print] §3.5.3
Range of pages in job/document to include when generating the job ticket	Medium		4	Unknown	LayoutPreparation RunList/@Pages	Range of Pages (X)	1.0 job-include-pages x.x document-include-pages			No IPP attribute
request-id	Never		10	Unknown	Unknown	No	Never	No	No	**request-id** (integer(1:MAX)) [OP] Specifies an ID generated by the client to identify this request. The Printer returns this same ID in the response to each request. [RFC2911] §3.1.2
requesting-user-name	High		10	N/A	AuditPool/Created/@Author NodeInfo/Employee/Person/@FirstName/@FamilyName	Job Created By (X)	1.0 job-create-user-name	1.1	Yes	**requesting-user-name** (name(MAX)) [OP] Specifies the name of the requesting user. Used by the Printer in case there is no a more secure authentication mechanism. [RFC2911] §3.2.1.1

separator-sheets
 	
    separator-sheets-type
 	
    media
	High		5 8	LayoutIntent/InsertSheet/@SheetType,@SheetUsage (N) (S)	LayoutPreparation LayoutPreparationParams/InsertSheet/@SheetType,@SheetUsage (S)	Start, Separator/Slip, End Sheets (X)	1.0 job-separator-sheets 1.0 separator-sheet-type	1.2	Yes	**separator-sheets** (collection) [JT, DT, PO] Specifies the separator sheets to be printed with the Document. [prod-print] §3.18 **separator-sheets-type** (type3 keyword | name(MAX)) Specifies the separator sheets type. (Keywords: none, slip-sheets, start-sheet, end-sheet, both-sheets) [prod-print]

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
media-col				N/A InsertSheet/Medi aIntent (S)	InsertSheet/Medi a/Location/@Loc ationName InsertSheet/Medi a (S) Note: Should InsertSheet be an input to DP process and not under LayoutPreparatio nParams in LPP process. Note: Also need to consider allowing InsertSheets to be placed between chapters. Need to be able to define chapters.		1.0 separator-sheet-media 1.0 separtor-sheet-media			§3.18.1 **media** (type3 keyword | name(MAX)) The medium that the Printer uses for all impressions of the Job. (Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in. See [pwg5101.1]) [prod-print] §3.5.3 **media-col** (collection) Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used. [prod-print] §3.5.3
sheet-collate note: Only applies to sheets in a document . Works with multiple-document-handling.	High	1.1 Sorter Mode (Collate) EFI Finishing - Sorter Mode	8	Specify sheet order in RunList	DigitalPrinting DigitalPrintingPar ams/@Collate	Collate (X)	1.0 job-collate	1.2	Yes	**sheet-collate** (type2 keyword) [JT, DT] Specifies whether or not the media sheets of each copy of each printed document in a job are to be in sequence. (Keywords: uncollated, collated) [job-prog] §3.1
sheet-completed-copy-number (S) (M)	Never			N/A	N/A	No	Never	No	No	**sheet-completed-copy-number** (integer(0:MAX)) [JS, DS] The number of the copy being stacked (1) for the current Document in this Job or (2) for this Document. The copies are numbered 1, 2, 3. A 0 value means no Document is currently being stacked. The "impressions-completed-current-copy" counts the impressions as they are produced for the current copy of the current Document. [job-prog] §4.2
sheet-completed-document-number (S) (M)	Never			N/A	N/A	No	Never	No	No	**sheet-completed-document-number** (integer(0:MAX)) [JS, -] The DocumentNumber of the Document in this Job currently being stacked. The Documents in a Job are numbered 1, 2, 3. A 0 value means no Document is currently being

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										stacked. The "impressions-completed-current-copy" counts the impressions as they are produced for the current copy of the current Document. [job-prog] §4.3
sides	High	1.1 Duplex EFI Media – Plex Mode	7	LayoutIntent/ @Sides	LayoutPreparation LayoutPreparationParams/@Sides	Sides (X)	1.0 job-sides x.x document-sides x.x po-sides	1.1	Yes	**sides** (type2 keyword) [JT, DT, PO] Indicates how an impression is to be placed upon the side(s) of the media. (Keywords: one-sided, two-sided-long-edge, two-sided-short-edge) [RFC2911] §4.2.8
Stitching - complex	Low		8	Unknown	Stitching StitchingParams/ @Angle,@Stitch Positions	Stapling & Stitching (X)	x.x stitching-angle x.x stitching-positions			
time-at-completed (S)	Never			N/A	N/A	No	Never	1.1	No	**time-at-completed** (integer (MIN:MAX)) [JS, DS] The time at which the Job/Document completed in "printer-up-time" seconds, i.e., the value of the "printer-up-time" Printer State attribute when the Job was completed, aborted, or canceled. [RFC2911] §4.3.14.3
time-at-creation (S)	Never			N/A	N/A	No	Never	1.1	No	**time-at-creation** (integer (MIN:MAX)) [JS, DS] The time at which the Job/Document was created in "printer-up-time" seconds, i.e., the value of the "printer-up-time" Printer State attribute when the Job was created. [RFC2911] §4.3.14.1
time-at-processing (S)	Never			N/A	N/A	No	Never	1.1	No	**time-at-processing** (integer (MIN:MAX)) [JS, DS] The time at which the Job/Document first began processing in "printer-up-time" seconds, i.e., the value of the "printer-up-time" Printer State attribute when the Job first began processing. [RFC2911] §4.3.14.2
Turn binding off	Low		8	N/A	Binding (N) BindingParams/ @NoOp (N)	Binding (X)	x.x job-binding x.x document-binding x.x po-binding x.x binding-type=NONE			
Turn folding off	High	1.1 Folding	8	N/A	Folding FoldingParams/ @NoOp	Folding (X)	x.x folding-type=NONE			finishings = none
Turn hole making off	High	1.1 HoleMaking	8	N/A	HoleMaking HoleMakingParams/@NoOp	Punching & Hole Making (X)	x.x job-hole-making x.x document-hole-making x.x po-hole-making			finishing = none

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
							x.x hole-making-count=0			
Turn jog offset off	High	1.1 Jogging	8	N/A	DigitalPrinting Component/Disjointing/@OffsetDirection, DigitalPrintingParams/Disjointing/@OffsetDirection	Jog Offset (X)	x.x job-jog-offset=NONE x.x document-jog-offset			
Turn trimming off	High	1.1 Trimming	8	N/A	Trimming TrimmingParams/@NoOp	Trimming (X)	x.x job-trimming =NONE x.x document-trimming=NONE			
version-number	Never			NodeInfo/ @IPPVersion	NodeInfo/ @IPPVersion	No	Never	1.1	Yes	**version-number** (type2 keyword) [OP] Indicates the version number of the protocol that the client is using in the request. (Keywords: 1.0, 1.1). [RFC2911] §3.1.8
Where/who/how to deliver final product. Assume single drop point.	High	EFI Packaging/ Shipping Info	2	DeliveryIntent/Contact/@... (S)	Delivery DeliveryParams/ Contact/@... (S)	No (X)	x.x			
x-image-position	High		6 or 7?	N/A (P)	LayoutPreparation LayoutPreparationParams/ImageShift/@PositionX,/ FitPolicy/@SizePolicy	Fit Policy (X)	1.0 job-image-position-x x.x document-image-postion-x x.x po-image-position-x	1.2	Yes	**x-image-position** (type2 keyword) [JT, DT, PO] Causes the specified point of the Finished-Page Image to be positioned at a specified location. (Keywords: none, center, left, right) [prod-print] §3.19.2
x-image-shift	Never			N/A	N/A	No	Never	1.2	Yes	**x-image-shift** (integer(MIN:MAX)) [JT, DT, PO] Causes the Finished-Page Image to be shifted in position with respect to the x-axis of the media. The unit of measure for this attribute is hundredths of a millimeter. The sign of the value indicates the direction of the shift. [prod-print] §3.19.3
x-side1-image-shift	High		6 or 7?	N/A (P)	LayoutPreparation LayoutPreparationParams/ImageShift/@ShiftFront	Image Shift Front Side (X)	1.0 job-image-shift-front-x x.x document-image-shift-front-x x.x po-image-shift-front-x	1.2	Yes	**x-side1-image-shift** (integer(MIN:MAX)) [JT, DT, PO] Causes each Finished-Page Image that would be placed on the front side of a sheet to be shifted in position with respect to the x-axis of the media. The unit of measure for this attribute is hundredths of a millimeter. The sign of the value indicates the direction of the shift. [prod-print] §3.19.4
x-side2-image-shift	High		6 or	N/A (P)	LayoutPreparation	Image Shift Back Side (X)	1.0 job-image-shift-back-x			**x-side2-image-shift** (integer(MIN:MAX)) [JT, DT, PO] Causes each Finished-Page Image

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
			7?		LayoutPreparationParams/ImageShift/@ShiftBack		x.x document-image-shift-back-x x.x po-image-shift-back-x			that would be placed on the back side of a sheet to be shifted in position with respect to the x-axis of the media. The unit of measure for this attribute is hundredths of a millimeter. The sign of the value indicates the direction of the shift. [prod-print] §3.19.5
y-image-position	High		6 or 7?	N/A (P)	LayoutPreparation LayoutPreparationParams/ImageShift/@PositionY,/ FitPolicy/@SizePolicy	Fit Policy (X)	1.0 job-image-position-y x.x document-image-postion-y x.x po-image-position-y	1.2	Yes	**y-image-position** (type2 keyword) [JT, DT, PO] Causes the specified point of the Finished-Page Image to be positioned at a specified location. (Keywords: none, center, top, bottom) [prod-print] §3.19.6
y-image-shift	Never			N/A	N/A	No	Never	1.2	Yes	**y-image-shift** (integer(MIN:MAX)) [JT, DT, PO] Causes the Finished-Page Image to be shifted in position with respect to the y-axis of the media. The unit of measure for this attribute is hundredths of a millimeter. The sign of the value indicates the direction of the shift. [prod-print] §3.19.7
y-side1-image-shift	High		6 or 7?	N/A (P)	LayoutPreparation LayoutPreparationParams/ImageShift/@ShiftFront	Image Shift Front Side (X)	1.0 job-image-shift-front-y x.x document-image-shift-front-y x.x po-image-shift-front-y	1.2	Yes	**y-side1-image-shift** (integer(MIN:MAX)) [JT, DT, PO] Causes each Finished-Page Image that would be placed on the front side of a sheet to be shifted in position with respect to the y-axis of the media. The unit of measure for this attribute is hundredths of a millimeter. The sign of the value indicates the direction of the shift. [prod-print] §3.19.8
y-side2-image-shift	High		6 or 7?	N/A (P)	LayoutPreparation LayoutPreparationParams/ImageShift/@ShiftBack	Image Shift Back Side (X)	1.0 job-image-shift-back-y x.x document-image-shift-back-y x.x po-image-shift-back-y	1.2	Yes	**y-side2-image-shift** (integer(MIN:MAX)) [JT, DT, PO] Causes each Finished-Page Image that would be placed on the back side of a sheet to be shifted in position with respect to the y-axis of the media. The unit of measure for this attribute is hundredths of a millimeter. The sign of the value indicates the direction of the shift. [prod-print] §3.19.9
zz no IPP exists	High	1.1 Color Mode EFI Color – Color Mode	6	ColorIntent/@ColorStandard (S)	DigitalPrinting ColorantControl/ @ProcessColor Model (S)	Process Color Model (X)				
adjust-contrast										**adjust-contrast** (integer(-100:100)) [JT, DT, PO] Increase or decrease contrast after applying the Source Profile before output color rendering. [color&img] §3.2.2

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
adjust-{cyan-red | magenta-green | yellow-blue} (integer(-100:100))										**adjust-{cyan-red | magenta-green | yellow-blue}** (integer(-100:100)) [JT, DT, PO] Increase or decrease the color along the Cyan/Red, Magenta/Green/ or Yellow/Blue axes while maintaining lightness after applying the Source Profile before output color rendering. [color&img] §3.2.1
adjust-lightness		JT, DT,								**adjust-lightness** (integer(-100:100)) [JT, DT, PO] Increase or decrease color lightness after applying the Source Profile before output color rendering. [color&img] §3.2.3
adjust-saturation		JT								**adjust-saturation** (integer(-100:100)) [JT, DT, PO] Increase or decrease the color saturation after applying the Source Profile before output color rendering. [color&img] §3.2.4
black-overprint		JT, DT,								**black-overprint** (type2 keyword) [JT, DT, PO] Turn black overprint on color background on or off. For the 'black-overprint-on' value the Printer MUST place black toner on top of color toner. For the 'black-overprint-off' value the Printer MUST knock out the color background, so that the black toner is not placed on top of color toner. [color&img] §3.3
color-depth-yyy	JT	JT								**color-depth-yyy** (integer(2:MAX)) [JT, DT, PO] Specifies the color depth that the Printer MUST use for colorant "yyy" depending on the colorants supported by the Printer. Values of "yyy" include: black, cyan, magenta, yellow, red, green, blue, cardinal, royal, ruby, violet, and brown. [color&img] §3.4
color-destination-profile-back										**color-destination-profile-back** (type3 keyword | name(MAX)) [JT, DT, PO] Specifies the Destination Color Space Profile that the Printer is to use for the back side of the output media. [color&img] §3.5.1
color-destination-profile-front										**color-destination-profile-front** (type3 keyword | name(MAX)) [JT, DT, PO] Specifies the Destination Color Space Profile that the Printer is to use for the front side of the output media. [color&img] §3.5.2
color-effects-type		JT								**color-effects-type** (type2 keyword) [JT, DT, PO] Indicates whether the Printer is to render a color document in full color or using an

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										algorithm that maps the full range of colors to alternate values, such as gray scale or monochrome. Values are: color and monochrome-grayscale. [color&img] §3.6
color-emulation										**color-emulation** (type3 keyword	name (MAX)) [JT, DT, PO] Causes the Printer to emulate the output of a different color-printing device. Values are: none, swop [SWOP], euroscale, japan-color, enhanced-swop, euroscale-matte, and euroscale-uncoated. [color&img] §3.7
highlight-colorant										**highlight-colorant** (type3 keyword	name(MAX)) [JT, DT, PO] Specifies the color of the toner that the Printer MUST use as the highlight color when printing the document in highlight color mode. Values include: none, other, black, blue, brown, cardinal, cyan, green, magenta, red, royal, ruby, violet, and yellow. [color&img] §3.8
highlight-colorant-mismatch										**highlight-colorant-mismatch** (type3 keyword	name(MAX)) [JT, DT, PO] Specifies the action to be taken by the Printer if the desired highlight colorant is not currently loaded on the printer. Values are: abort, use-ready, hold, stop. [color&img] §3.9
highlight-map		MAX								**highlight-map** (type3 keyword	name(MAX)) [JT, DT, PO] Specifies the algorithm that the Printer MUST use for mapping colors defined in the full color space to a color in the highlight color space. Values are: pictorial, presentation, object-based, color-to-highlight, exact-color, and color-tables. [color&img] §3.10
highlight-map-color										**highlight-map-color** (type3 keyword	name(MAX)) [JT, DT, PO] Specifies the color in the source document that is to be mapped by the Printer to the highlight colorant when printing the document in highlight color mode. This value is used as an input parameter to the highlight mapping algorithm specified by the "highlight-map" attribute. [color&img] §3.11
rendering-intent-{graphics|images| text}										**rendering-intent-{graphics	images	text}** (type2 keyword) [JT, DT, PO] Specifies the rendering intent of a color document for text,

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										graphics, and images. Values are: saturation, perceptual, relative-colorimetric, absolute-colorimetric, pure-text, blended-pictorial-and-graphics, and automatic. [color&img] §3.12
source-{cmy | gray}-{graphics | images | text}					ColorSpaceConversion ColorSpaceConversionParams/ColorSpaceConversionOp[@Operation=?][@SourceCS={?|gray}][@SourceObjects={LineArt|ImagePhotographic|Text]@FileSpec					source-{cmy | gray}-{graphics | images | text} (name(MAX)) [JT, DT, PO] Identifies the name of the installed Source Color Space Profile that the Printer MUST use to map the content data to the Profile Connection Space (PCS) for graphics, images & text content in either CMY color space or for grayscale data, respectively. [color&img] §3.13
source-{cmyk | rgb}-{graphics | images | text} (type3 keyword | name(MAX))					ColorSpaceConversion ColorSpaceConversionParams/ColorSpaceConversionOp[@Operation=?][@SourceCS={?|gray}][@SourceObjects={LineArt|ImagePhotographic|Text]@FileSpec					source-{cmyk | rgb}-{graphics | images | text} (type3 keyword | name(MAX)) [JT, DT, PO] Identifies the name of the installed Source Color Space Profile that the Printer MUST use to map the content data to the Profile Connection Space (PCS) for graphics, images & text content in either CMYK or RGB color spaces, respectively. CMYK values: native-cmyk, swop [SWOP], euroscale, japan-color, enhanced-swop [SWOP], euroscale-matte, and euroscale-uncoated RGB values: srgb [IEC 61966-2.1], smpte-240m [SMPTE]. [color&img] §3.13
trapping	JT, DT,									trapping (type2 keyword) [JT, DT, PO] Turns the color trapping on or off. The 'all' values causes the Printer to eliminate or add pixels at all adjoining object boundaries (text, graphics, images, and sweeps) when the C, M, Y, and K color planes may be mis-registered. The 'off' value turns trapping off. [color&img] §3.14
trap-width-fast										trap-width-fast (integer(0:MAX)) [JT, DT, PO] Specified the number of pixels at each object boundary that will be within the trapping region in the "fast scan direction". [color&img] §3.15
trap-width-slow										trap-width-slow (integer(0:MAX)) [JT, DT, PO] Specified the number of pixels at each

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										object boundary that will be within the trapping region in the "slow scan direction". [color&img] §3.16
trc trc-type trc-name trc-cyan-data trc-magenta-data trc-yellow-data trc-black-data										**trc** (collection) [JT, DT, PO] Apply either named configured or user-supplied Tone Reproduction Curves (TRCs) to image data after it has been transformed to the output device's CMYK color space, thus modifying the printer's response to the rendered CMYK data. User supplied TRCs MUST contain all four color separation values. Type values are: no-user-trc (to eliminate system default TRC), public (find or save in public place for use by other jobs), private (for use by current job only). Data is 256 octets of curve data for a color separation. [color&img] §3.17
undefined-source-{cmy | gray}-{graphics | images | text}					ColorSpaceConversion ColorSpaceConversionParams/ColorSpaceConversionOp[@Operation=?][@SourceCS={?|gray}][@SourceObjects={LineArt|ImagePhotographic|Text]@FileSpec					**undefined-source-{cmy | gray}-{graphics | images | text}** (name(MAX)) [JT, DT, PO] Identifies the name of the installed Source Color Space Profile that the Printer MUST use to map the *untagged* content data to the Profile Connection Space (PCS) for graphics, images & text content in either CMY color space or for grayscale data, respectively. [color&img] §3.13
undefined-source-{cmyk | rgb}-{graphics | images | text} (type3 keyword | name(MAX))					ColorSpaceConversion ColorSpaceConversionParams/ColorSpaceConversionOp[@Operation=?][@SourceCS={?|gray}][@SourceObjects={LineArt|ImagePhotographic|Text]@FileSpec					**undefined-source-{cmyk | rgb}-{graphics | images | text}** (type3 keyword | name(MAX)) [JT, DT, PO] Identifies the name of the installed Source Color Space Profile that the Printer MUST use to map the *untagged* content data to the Profile Connection Space (PCS) for graphics, images & text content in either CMYK or RGB color spaces, respectively. CMYK values: native-cmyk, swop [SWOP], euroscale, japan-color, enhanced-swop [SWOP], euroscale-matte, and euroscale-uncoated RGB values: srgb [IEC 61966-2.1], smpte-240m [SMPTE]. [color&img] §3.13
anti-aliasing										**anti-aliasing** (type3 keyword) [JT, DT, PO] Indicates the anti-aliasing algorithm that the

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										Printer object MUST apply to the rendered output images. Values are: none, standard (meaning system specified). [color&img] §4.1
bleed-edge-printing										**bleed-edge-printing** (type2 keyword) [JT, DT, PO] Indicates whether or not the printer should allow page image data to be printed to all edges of the paper, and print beyond the edges of the normal printable area. Values are: none, all. [color&img] §4.2
halftone-{graphics | images | text}										**halftone-{graphics | images | text}** (type2 keyword | name(MAX)) [JT, DT, PO] Specify the halftone screens to be used by the Printer to render graphics, image, and text objects, respectively, within color or black and white documents. Screens are implementation-specific with different line frequencies, angles, and spot functions implied by each keyword value. Values include: none, low-frequency-dot, mid-frequency-dot, high-frequency-dot, highest-frequency-dot, low-frequency-line, mid-frequency-line, high-frequency-line, highest-frequency-line, stochastic, 150-dpi, 175-dpi, 200-dpi, 200-lpi, 300-lpi, 600-lpi. Other n-dpi and n-lpi values are possible. [color&img] §4.3, 4.4, 4.5.
opi-image-insertion		JT,								**opi-image-insertion** (type2 keyword) [JT, DT, PO] Indicates the type of high resolution Open Prepress Interface (OPI) [OPI] image insertion to be performed by the Printer at RIP time for PostScript [PostScript] and PDF [PDF] documents. Such high resolution images may be stored in the print system, on the client on a network server. Values: insert, do-not-insert. [color&img] §4.6.1
opi-image-pre-scan		JT,								**opi-image-pre-scan** (type2 keyword) [JT, DT, PO] Indicates whether or not the Printer is to pre-scan the document data in order to validate that OPI [OPI] images referenced within the document are accessible and, optionally, to pull them to the Printer, before processing the job, i.e., before RIPping or marking. Values: no-pre-scan, pre-scan, pre-scan-and-gather. [color&img] §4.6.2
resource-cleanup										**resource-cleanup** (type3 keyword | 1setOf name(MAX)) [JT, DT, PO] Identifies whether

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
										Printer is to delete or keep all files that had been explicitly transferred to the Printer *before* the job was submitted (not as part of the job submission) by any means outside the job submission protocol, such as FTP. Values: delete, keep. [color&img] §4.8
resource-pre-scan										**resource-pre-scan** (type2 keyword) [JT, DT, PO] Indicates whether or not the Printer is to pre-scan the document data in order to validate that resources referenced within the document(s) are accessible and, optionally, to pull them to the Printer, before processing the job, i.e., before RIPping or marking. This attribute MUST NOT affect OPI images (see "opi-image-pre-scan" attribute. Values: no-pre-scan, pre-scan, pre-scan-and-gather. [color&img] §4.9
zz no IPP exists	High	1.1 Screen EFI Image Quality – Screening	6	N/A (P)	Screening ScreeningParams/ScreenSelector/@ScreeningFamily	Screening (X) Family				
zz no IPP exists	High	1.1 Special (Spot) Color Handling	6	ColorIntent/ColorsUsed/SeparationSpec/@Name (S)	DigitalPrinting ColorantControl/ ColorantParams/ SeparationSpec/ @Name (S)	Spot Color (X)				
zz no IPP exists	Medium	1.1 Booketmaking	7 8	Note: Want to be able to specify an interoperable BookletMaking w/o breaking it out into individual resources. Possibly a BookletMaking catalog.	same as Product Intent	Folding, Number Up, Order Pages, Stapling & Stitching, Trimming (X)				
zz no IPP exists	High?[35]	EFI MediaSource Offset	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Catalog Imposition ContentArray	?	Unknown	Unknown	No (X)				

[35] Can this be accomplished by shifting the image using the image-shift attributes?

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
zz no IPP exists	Low?	EFI Media - Imageable Area	?	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI General/ Account Info-User Information	1	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Document List - File Merge specs	3	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Image Quality – Black Detection	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Image Quality – Brightness	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Image Quality – Contrast	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Image Quality – Trapping	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Image Quality – Sharpness	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Color – RGB Source	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Color – Rendering Style	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Color – CMYK Simulation	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Color – Spot Color Matching	6	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Layout Definition - n rows and columns	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Layout Definition - GuttersN and GuttersM	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Layout Definition - Scale	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Layout Definition -	7	Unknown	LayoutPreparation	Fit Policy (X)				

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description
		Type (scale to fit & user defined)			LayoutPreparatio nParams/FitPolic y/@SizePolicy					
zz no IPP exists	Low?	EFI Layout Definition - Bleeds	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Layout Definition - Creep	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Printer Marks - CropMarks HorizontalArray VerticalArray Enabled	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Printer Marks - SheetName Enabled Text Font CTM	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Printer Marks - FoldMarks Enabled	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Printer Marks - CalibrationBar Enabled Side CTM	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Printer Marks - ExposureBar Enabled Side CTM	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Layout Content - Side and PlacedObjects	7	Unknown	Unknown	No (X)				
zz no IPP exists	Low?	EFI Finishing - Page Order	8	Unknown	LayoutPreparatio n LayoutPreparatio nParams/@Page Order	Order Pages (X)				
zz no IPP exists	Low?	EFI Finishing - Binding	8	Unknown		No ? (X)				

IPP Attribute Name	Priority	PODi	Cat	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF App F	IPP Attribute Description

		Gangup
		  Unique
		Gangup
		  Collate and
		    cut
		Saddle
		Perfect
		Nested Saddle
					see Stitching
					see Binding
						No ? (X)
						Yes Stitching (X)
						Yes Binding (X)
						No (X)				

zz no IPP exists	Never	EFI Document List - File Edit Spec	3	N/A	N/A	No (X)				

zz no IPP exists	Never [36]	EFI Vendor
		specific
		  private
		  extensions
			10	N/A	N/A	No (X)				

zz no IPP exists	Never?	EFI MediaSource TrayAlignment	6	Unknown	Unknown	No (X)				

2   CUPS Job Template extensions to IPP

The following attributes are listed in the "CUPS Implementation of IPP" document as CUPS extension Job Template attributes:

Table 2 - CUPS Job Template extensions to IPP

CUPS Attribute	OSDP JDF Spec
blackplot	No
brightness	No
columns	No
cpi	No
fitplot	No
gamma	No
hue	No
job-billing	Yes
job-hold-until (like IPP 1.1 except add HH:MM and HH:MM:SS GMT of next time)	Yes Hold Job
job-sheets (IPP 1.1 is singled valued whereas CUPS is 1setOf)	Yes Start, Separator, End Sheets
job-originating-host-name	Yes Job Created By
lpi	No

---

[36] Describe in spec how vendor-specific extensions should be handled.

CUPS Attribute	OSDP JDF Spec
natural-scaling	No
page-bottom	No
page-label	No
page-left	No
page-right	No
page-set	No
page-top	No
penwidth	No
position	No
ppi	No
prettyprint	No
saturation	No
scaling	No
wrap	No

3   Attributes for the proposed PDC document

The following attributes are listed in the proposed PDC Document:

Table 3 Attributes for the proposed PDC document

PDC Attribute	IPP Attribute	OSDP JDF Spec
form	media-col?	Yes Forms
media	media-col attribute's media-key member attribute	Yes Media
tray	media	Yes Input Tray Name
resolution	printer-resolution	No
orientation	orientation-requested	Yes Rotate Page
color/monochrome	---	No
copies	copies	Yes Number of Copies

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5   Change Log

Summary of changes in reverse chronological order:

5.1   Changes to make version 0.4, September 28, 2002:

1. Added Brief Descriptions of all of the IPP attributes.

2. Added the IPP attributes in [prod-print2] and [doc-obj].

3. Re-calculated the percentages of IPP covered in the mappings by counting all collection member attributes as well as the top level attributes.

5.2   Changes to make version 0.3, September 24, 2002:

1. Added Product Intent mapping.

2. Added the percentages of IPP covered by the other mappings.

5.3   Changes to make version 0.5, October 5, 2002:

1. Added PODi column

2. Updated OSDP JDF Spec column to include (X) per PODi meeting

3. Started updating JTAPI column per 01Oct FSG Job Ticket working group meetings (updated up through cover-front)

4. Added JDF Process Resource column and updated per OSDP JDF Spec

5.4 Changes to make version 0.6 October 14, 2002:

1. Added (Mn) notation to indicate the attributes for which "multi-document-handling" only affects page numbering (job as a whole or each individual document).

2. Corrected the attributes flagged with (M).

3. Clarified that "media" and "media-col" are input media to the Printer, not output finished product media.

4. Started reviewing (X) in OSDP JDF Spec column during Digital Printing working group meeting at GraphExpo on 10/9 (reviewed up through last-document).

5.5 Changes to make version 0.7, October 16, 2002:

1. Instead of deprecating "**ipp-attribute-fidelity**", made it work with the new "**job-mandatory-attributes**".

2. In "**job-mandatory-attributes**", added way to specify the member attribute in a collection attribute ("attr-name.member-name").

3. Fixed "**pages-per-subset"** as Job level only. Clarified that it combines all Input Documents into a single contiguous Input-Pages stream and then subsetts the stream into Output Documents. Fixed the reference.

4. Finished reviewing (X) in OSDP JDF Spec column during 15Oct Digital Printing working group meeting.

5. Continued updating JTAPI column per 15Oct FSG Job Ticket working group meetings (updated up through jog-offset).

6. Moved descriptions of (S), (M), (Mn), (X) keys into Column heading Description table.

7. Added descriptions of categories to Column heading Description table for PODi column.

5.6 Changes to make version 0.8, October 18, 2002:

1. Added Cat column and assigned a category to each feature/function in table during combined 18Oct PODi/CIP4 Digital Printing working group meeting.

2. Removed IPP Spec column from table because the information is available in the Brief Description of IPP attributes section.

5.7 Changes to make version 0.9, October 28, 2002:

1. Continued updating JTAPI column per 22 Oct FSG Job Ticket working group meetings (updated up through job-k-octets).

2. Added Priority column and assigned a priority to each feature/function in table during combined 28Oct PODi/CIP4 Digital Printing working group meeting.

5.8 Changes to make version 0.90, November 01, 2002:

1. Added Medium Priority.

2. Added N/A and Unknown for JDF 1.1 Product Intent and JDF 1.1 Process Resouce columns.

3. Per 10/30 PODi meeting, changed Priority of job-priority, media-back-coating, media-front-coating, media-recycled, media-grain, media-tooth, media-thickness, output-bin, print-quality to Medium.

4. Continued updating JTAPI column per 29 Oct FSG Job Ticket working group meeting (updated up through number-up)

5. Added IPP Attribute Description column and moved descriptions from end of document to table.

6. Added some fold, bind, and punch enum values from [finish2].

7. Clarified that left, top, right, and bottom in attribute values and descriptions mean as if the document were portrait, i.e., left means the y-axis which is always the long edge and bottom means the x-axis which is always the short edge.

5.9 Changes to make version 0.91, November 08, 2002:

1. Filled in JDF Product Intent and JDF Process columns for High Priority features/functions per PODi JT meeting in SF on 04 and 05 Nov.

2. Added new (S), (P) and (N) keys for JDF Product Intent and JDF Process columns.

3. Continued updating JTAPI column per 07 Nov FSG Job Ticket working group meeting (updated up through sides)

5.10 Changes to make version 0.92, November 18, 2002:

1. Finished updating JTAPI column per 12 Nov FSG Job Ticket working group meeting

2. Added name of process that resource in JDF 1.1 Process Resource column is input to or output from.

3. Added the IPP Color and Imaging Job Template attributes and their descriptions.