

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 combined 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. The (X) in the "OSDP" and "PODi" columns indicate a general sense of the types of information we want job submitters to be able to express. The individual items have not been micro-analyzed at this time - this is just a general sense. The same is true for the JTAPI column, it is work in progress, so is not complete or necessarily correct. The JDF 1.1 Process Resource column only contains the resources and attributes for the features/functions that are in the OSDP JDF Spec.

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1 Mapping of IPP attributes to JDF

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	195 ² = 156 + 39 (S)	100	The name of the IPP attribute or collection member attribute. "(S)" indicates an 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.
IPP Spec	11	-	The IPP specification in which the semantics are defined. See the references section at the end of this document.
JDF 1.1 Product Intent	30	15%	The JDF 1.1 Product Intent Resource and JDF attribute using XPath notation. A blank indicates that there is no corresponding JDF 1.1 Product Intent attribute.
JDF 1.1 Process Resource			The JDF 1.1 Process Resource and JDF attribute using XPath notation. A blank will eventually indicate that there is no corresponding JDF 1.1 Process Resource, but currently only the features/functions that are in the OSDP JDF Spec have this column filled in.
OSDP JDF Spec	69	38%	Whether or not the feature is in the "Open Source Digital Printing Job Ticket spec from Claudia Alimpich, version 1.2 [OSDP] and if it is what the feature is.
JTAPI			Whether or not the feature is in the JTAPI and if so the version of JTAPI and the corresponding JTAPI attribute. x.x is a future release fo the JTAPI that is not yet defined.
CUPS	113 = 90 + 23 (S)	58%	The version of the Common Unix Printing System (CUPS) in which the IPP attribute is supported. See "(S)" explained above.
JDF 1.0 APP F	89	46%	Whether or not the Appendix mapped the IPP attribute to JDF/1.0 IDPrinting combined process node
PODi			Whether or not the feature is currently included in the PODi PPML Job Ticket Specification Version 1.1 (denoted by "1.1") or is included in the "EFI Job Ticket Proposal" document (denoted by "EFI").

(S) - An attribute that only printers can generate and is not generated by the submitter.

(M) - An 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) - An (M) attribute in which "multiple-document-handling" 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.

(X) - A feature/function that is either currently included in the OSDP JDF Spec or needs to be added.

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.

Table 1- IPP Attribute Mapping Table

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
attributes-charset	RFC 2911			No	1.0 jt-charset	1.1	No	
attributes-natural-language	RFC 2911	NodeInfo/ @NaturalLang		No	x.x	1.1	Yes	
compression	RFC 2911			No (X)	1.0 job-compression 1.0 document-compression	1.1	Yes	
copies (M)	RFC 2911		ComponentLink/ @Amount	Number of Copies (X)	1.0 job-copies 1.0 document-copies	1.1	Yes	1.1 Number of Copies: Quantity EFI Finishing - Copies
cover-back (M) media media-col cover-type note: cover could be printed or preprinted/blank	IEEE-ISTO 5100.3		Printed cover: DigitalPrintingParams/Media,LayoutPreparationParams/@Sides,RunList/InsertSheet/@SheetType,@SheetUsage Preprinted/blank cover: RunList/@Pages,InsertSheet/@SheetUsage,@SheetType,Media	Covers (Media, Sides, Start First Page) (X)	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	EFI Media - Back Cover
cover-front (M) media media-col cover-type note: cover could be printed or preprinted/blank	IEEE-ISTO 5100.3		see cover-back	see cover-back	see cover-back	1.2	Yes	EFI Media – Front Cover
current-page-order (S)	IEEE-ISTO 5100.3			No		1.2	No	
date-time-at-completed (S)	RFC 2911			No		1.1	No	
date-time-at-creation (S)	RFC 2911		AuditPool/Create d/@TimeStamp	Job Creation Date/Time	1.0 job-created-on	1.1	No	
date-time-at-processing	RFC 2911			No		1.1	No	

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
(S)								
document-format	RFC 2911		FileSpec/@Mime Type	Document File Format (X)	1.0 job-document-format x.x document-format	1.1	Yes	
document-name	RFC 2911			No (X)		1.1	Yes	
document-natural-language	RFC 2911			No (X)		1.1	Yes	
document-number (S)	doc-obj							
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.>	IEEE-ISTO 5100.4		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??	x.x document-format x.x 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	
document-state (S)	doc-obj							
document-state-message (S)	doc-obj							
document-state-reasons (S)	doc-obj							
document-uri	RFC 2911		FileSpec/@URL	Document File Name (X)	1.0 document-file-name	1.1	Yes	1.1 PPML file EFI Document List

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
feed-orientation	prod-print2			(X)				
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	RFC 2911	BindingIntent/ @SaddleStitching, @SideStitching	StitchingParams/ @StitchType,@ReferenceEdge, @NumberOfStitches	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	1.1 Stapling EFI Stapler Mode
punch	RFC 2911	HoleMakingIntent / @HoleReferenceEdge, @HoleType	HoleMakingParams without any attributes	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	1.1	Yes	1.1 HoleMaking
cover	RFC 2911		see cover-back & cover-front	Covers (X)	see cover-front & cover-back	1.1	Yes	
bind	RFC 2911	BindingIntent/ @BindingType (for 2 values)	BindingIntent without any attributes	Binding (X)	1.0 job-binding	1.1	Yes	
fold	IEEE-ISTO 5100.1	FoldingIntent/ @FoldingCatalog	FoldingParams/ @FoldCatalog	Folding (X)	1.0 job-folding x.x document-folding x.x po-folding	1.1	Yes	1.1 Folding EFI Finishing - Folding
trim	IEEE-ISTO 5100.1		TrimmingParams without any attributes	Trimming (X)		1.1	Yes	1.1 Trimming
bale	IEEE-ISTO 5100.1			No		1.1	Yes	
booklet-maker	IEEE-ISTO 5100.1	LayoutIntent/ @NumberUp BindingIntent/ @SaddleStitching FoldingIntent/ @FoldingCatalog	see number-up see finishings staple & stitch see finishings fold	NumberUp (X) Stapling & Stitching (X) Folding (X)	see xxx-number-up see xxx-stitching see xxx-folding	No	Yes	1.1 Bookletmaking

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
jog-offset	IEEE-ISTO 5100.1		Component/Disjoining@OffsetDirection,DigitalPrintingParams/Disjoining@OffsetDirection	Jog Offset (X)	1.0 job-jog-offset	No	Yes	1.1 Jogging
bind-left, bind-right, bind-bottom, bind-top	IEEE-ISTO 5100.1	BindingIntent/@BindingType (for 2 values)	BindingIntent/@BindingType,@BindingSide	Binding (X)	1.0 job-binding x.x document-binding x.x po-binding x.x binding-side x.x binding-type	No	Yes	EFI Binding
finishings-col (M) finishing-template stitching stitching-reference-edge stitching-offset stitching-locations	IEEE-ISTO 5100.3		StitchingParams/@ReferenceEdge	No Yes Stitching (X) No (X) No (X)	1.0 job-stitching 1.0 stitching-reference-edge	1.2	No Yes	
font-name-requested	prod-print2			(X)				
font-size-requested	prod-print2			(X)				
force-front-side note: only front side	IEEE-ISTO 5100.3		RunList/@Pages, InsertSheet/@SheetType,@SheetUsage	Start First Page (X)	1.0 job-start-pages x.x document-start-pages	1.2	Yes	EFI Media – Chapter Starts
image-rotation	See Note 1 below		LayoutPreparationParams/@Rotate	Rotate Page (X)	1.0 job-rotation x.x document-rotation x.x po-rotation	??	Yes	
imposition-template	IEEE-ISTO 5100.3			No ? (X)		1.2	Yes	
impressions-completed-current-copy (S) (M)	IPP: Job Progress Attributes			No		No	No	
insert-sheet insert-after-page-number (Mn)	IEEE-ISTO 5100.3	Yes ? InsertSheet/@Folio, et. Al. ? ?	RunList/@Pages, InsertSheet/@SheetType,@Sheet	Insert Sheet (X)	1.0 job-insert-sheets x.x document insert-sheets 1.0 insert-sheet-pages 1.0 insert-sheet-	1.2	Yes	EFI Media – Inserts

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
insert-count media media-col			Usage RunList/@PageCopies RunList/InsertSheet/Media/Location/@LocationName RunList/InsertSheet/Media		position 1.0 insert-sheet-copies 1.0 insert-sheet-media 1.0 insert-sheet-media			
ipp-attribute-fidelity	RFC 2911	<any JDF node>/@SettingsPolicy		No (X)	see jt-manatory-attributes	1.1	Yes	
job-account-id	IEEE-ISTO 5100.3	CustomerInfo/@BillingCode	CustomerInfo/@BillingCode	Billing Code (X)	1.0 job-billing-code	1.2	Yes	EFI General/Account Info - Account/Project Information EFI Billing Info
job-accounting-sheets job-accounting-sheets-type media media-col job-accounting-output-bin	IEEE-ISTO 5100.3			No (X)		1.2	Yes Yes Yes No	
job-accounting-user-id	IEEE-ISTO 5100.3	CustomerInfo/@CustomerID		No (X)		1.2	Yes	
job-collation-type (S) ³	IPP: Job Progress Attributes			No		No	No	
job-detailed-status-messages (S)	RFC 2911			No		1.1	No	
job-document-access-errors (S)	RFC 2911			No		1.1	No	
job-error-sheet job-error-sheet-type job-error-sheet-when media media-col	IEEE-ISTO 5100.3			No (X)		1.2	Yes	

³ 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	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
job-hold-until	RFC 2911	NodeInfo/ @FirstStart, and NodeInfo/ @LastStart	JDF/@Activation	HoldJob for indefinite (X) No, otherwise (X)	1.0 job-hold	1.1	Yes	
job-hold-until-time	prod-print2			(X)		1.2?		
job-id (S)	RFC 2911		JDF/@JobID	Job ID	x.x job-id	1.1	No	
job-impressions	RFC 2911			No ? (X)		1.1	No	
job-impressions-completed (S)	RFC 2911			No		No	No	
job-k-octets	RFC 2911			No		1.1	No	
job-k-octets-processed (S)	RFC 2911			No		1.1	No	
job-media-sheets	RFC 2911	Yes? LayoutIntent/ @Pages		No ? (X)		1.1	No	
job-mandatory-attributes	section 2	JDFResource: <i>SettingsPolicy</i>		No (X)	1.0 jt-mandatory-attributes	No	No	
job-media-sheets-completed (S)	RFC 2911			No		1.1	No	
job-message-from-operator (S)	RFC 2911			No		1.1	No	
job-message-to-operator	IEEE-ISTO 5100.3			No (X)		1.2	Yes	EFI General/Account Info – Instructions
job-more-info (S)	RFC 2911			No		1.1	No	
job-name	RFC 2911	<any JDF node>/ CustomerInfo/ @CustomerJobName	CustomerInfo/@ CustomerJobName	Job Name (X)	1.0 job-name	1.1	Yes	
job-originating-user-name (S)	RFC 2911		AuditPool/Create d/@Author	Job Created By	1.0 job-created-by	1.1	No	
job-password	prod-print2			(X)				
job-password-encryption	prod-print2			(X)				
job-phone-number	prod-print2			(X)				
job-printer-make-and-model (S)	prod-print2			No		1.2?	No	
job-printer-uptime (S)	RFC 2911			No		1.1?	No	
job-printer-uri (S)	RFC 2911			No		1.1	No	
job-priority	RFC 2911	NodeInfo/ @JobPriority	NodeInfo/@JobPriority	Job Priority (X)	1.0 job-priority	1.1	Yes	
job-recipient-name	prod-print2			No (X)		??	Yes	

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
job-save-disposition save-disposition-type (none, save-only, print-save) save-info save-location save-name save-document-format	prod-print2		DigitalPrintingParams/@osdp:DeliveryMethod	Delivery Method (X)				
job-sheets	RFC 2911		LayoutPreparationParams/InsertSheet/@SheetType,@SheetUsage	Start, Separator/Slip, End Sheets (X)		1.1	Yes	
job-sheets-col job-sheets media media-col	IEEE-ISTO 5100.3		LayoutPreparationParams/InsertSheet/@SheetType,@SheetUsage InsertSheet/Media/Location/@LocationName InsertSheet/Media	Yes Start, Separator/Slip, End Sheets (X)	1.0 job-separator-sheets 1.0 separator-sheet-type 1.0 separator-sheet-media 1.0 separator-sheet-media	1.2	Yes	
job-sheet-message	IEEE-ISTO 5100.3			No (X)		1.2	Yes	
job-state (S)	RFC 2911			No		1.1	No	
job-state-message (S)	RFC 2911			No		1.1	No	
job-state-reasons (S)	RFC 2911			No		1.1	No	
job-uri (S)	RFC 2911			No		1.1	No	
job-warnings-count (S)	IEEE-ISTO 5100.4			No		No	No	
last-document	RFC 2911			(X)				
media	RFC 2911	MediaIntent/ @ID	DigitalPrintingParams/Media/Location/@LocationName	Input Tray Name (X)	1.0 media-input-tray-name	1.1	No	1.1 Media Source EFI Media Source Input Tray
media-col	IEEE-ISTO 5100.3			Media (X)	1.0 job-media x.x document-media x.x po-media	1.2	Yes	1.1 Media Selection
media-key	IEEE-ISTO 5100.3	MediaIntent/ @ID??	Media/@DescriptiveName	Yes (X)	1.0 media-name	1.2	Yes	
media-type	IEEE-ISTO	MediaIntent/	Media/@MediaTy	Yes (X)	1.0 media-type	1.2	Yes	

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
	5100.3	@UserMediaType, @MediaType ??, @MediaUnit ??, or @StockType??	peDetails					
media-info	IEEE-ISTO 5100.3	MediaIntent/ @DescriptiveName (?)		No (X)		1.2	Yes	EFI MediaName
media-color	IEEE-ISTO 5100.3	MediaIntent/ @MediaColor	Media/@MediaColorName	Yes (X)	1.0 media-color	1.2	Yes	
media-pre-printed	IEEE-ISTO 5100.3	MediaIntent/ @Preprinted	Media/@Preprinted	Yes (X)		1.2	Yes	
media-hole-count	IEEE-ISTO 5100.3	[MediaIntent/ @HoleCount – Deprecated!]	Media/@HoleType	Yes (X)	1.0 media-hole-count	1.2	Yes	
media-order-count	IEEE-ISTO 5100.3	MediaIntent/ @MediaSetCount	Media/@SetCount	Yes (X)	1.0 media-set-count	1.2	Yes	EFI Media – Tabs
media-size	IEEE-ISTO 5100.3	MediaIntent/ @Dimensions	Media/@Dimension	Yes (X)		1.2	Yes	EFI Media Dimensions EFI Media Landscape
x-dimension	IEEE-ISTO 5100.3		see above	Yes (X)	1.0 media-x-dimension	1.2	Yes	
y-dimension	IEEE-ISTO 5100.3		see above	Yes (X)	1.0 media-y-dimension	1.2	Yes	
media-weight-metric	IEEE-ISTO 5100.3	MediaIntent/ @Weight	Media/@Weight	Yes (X)	1.0 media-weight	1.2	Yes	
media-back-coating	IEEE-ISTO 5100.3	MediaIntent/ @BackCoatings	Media/@BackCoating	Yes (X)		1.2	Yes	
media-front-coating	IEEE-ISTO 5100.3	MediaIntent/ @FrontCoatings	Media/@FrontCoating	Yes (X)		1.2	Yes	
media-recycled	IEEE-ISTO 5100.3	MediaIntent/ @Recycled	Media/@Recycled	Yes (X)		1.2	Yes	
media-grain	prod_print2			No				
media-material	prod_print2			No				
media-tooth	prod_print2			No				
media-thickness	prod_print2			No				
media-input-tray-check	IEEE-ISTO 5100.3			No		1.2	No	
multiple-document-handling	RFC 2911		see individual features/functions	Yes (is covered by the individual	see document individual attributes	1.1	Yes	

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
			that are valid at the document level	attributes)				
number-of-documents (S)	RFC 2911			No (X)		1.1	No	
number-of-intervening-jobs (S)	RFC 2911			No		1.1	No	
number-up	RFC 2911	LayoutIntent/ @NumberUp	LayoutPreparationParams/ @NumberUp	Number Up (X)	1.0 job-number-up x.x document-number-up x.x po-number-up	1.1	Yes	1.1 Bookletmaking
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)	IPP Event Notifications and Subscriptions		NodeInfo/NotificationFilter/ @Types Comment/@Name=Description Comment/@Language	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-events 1.0 notification-comment 1.0 notification-language	No	No	
operation-id	RFC 2911			No		1.1	No	
orientation-requested	RFC 2911	[LayoutIntent/ @FinishedPageOrientation -- Deprecated]	LayoutPreparationParams/ @Rotate	Rotate Page (X)	1.0 job-rotation x.x document-rotation x.x po-rotation	1.1	Yes	EFI Media Landscape
output-bin	IEEE-ISTO 5100.2		DigitalPrintingParams/ @OutputBin	Output Bin Name (X)	1.0 job-output-bin-name x.x document-	No	Yes	

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
					output-bin-name x.x po-output-bin-name			
output-device-assigned (S)	RFC 2911			No		1.1	No	
page-delivery	IEEE-ISTO 5100.3		DigitalPrintingParams/@PageDelivery	Page Delivery (X)	1.0 job-page-delivery	1.2	Yes	1.1 Sheet Order & Face Up/Down
page-order-received	IEEE-ISTO 5100.3			No (X)		1.2	Yes	
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.>	IEEE-ISTO 5100.4		see individual features/functions that are valid the at 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	EFI Media - Pages
page-ranges (Mn)	RFC 2911		RunList/@odsp:ProcessPageRange	Range of Pages to Process (X)	1.0 job-output-pages x.x document-output-pages	1.1	Yes	
pages-per-subset (Mn)	IEEE-ISTO 5100.4			No (X)		No	Yes	
pdl-init-file pdl-init-file-location pdl-init-file-name	prod-print2							

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
pdl-init-file-entry								
presentation-direction-number-up	IEEE-ISTO 5100.3			No (X)		1.2	Yes ⁴	
printer-resolution	RFC 2911			No (X)		1.1	Yes	
proof-print proof-print-copies media media-col	prod-print2							
printer-uri	RFC 2911	<any JDF node>/ NodeInfo/ @Route	Device/@DeviceID	Destination or Physical Printer Requested (X)	1.0 job-destination-name x.x document-destination-name x.x po-destination-name	1.1	No	
print-quality	RFC 2911			No (X)		1.1	Yes	
request-id	RFC 2910			No (X)	1.0 job-submit-id	No	No	
requesting-user-name	RFC 2911		AuditPool/Create d/@Author	Job Created By (X)		1.1	Yes	
separator-sheets separator-sheets-type media media-col	IEEE-ISTO 5100.3		LayoutPreparationParams/InsertSheet/@SheetType, @SheetUsage InsertSheet/Media/Location/@LocationName InsertSheet/Media	Start, Separator/Slip, End Sheets (X)	1.0 job-separator-sheets 1.0 separator-sheet-type 1.0 separator-sheet-media 1.0 separator-sheet-media	1.2	Yes	
sheet-collate	IPP: Job Progress Attributes		DigitalPrintingParams/@Collate	Collate (X)	1.0 job-collate	No	Yes	1.1 Sorter Mode (Collate) EFI Finishing - Sorter Mode
sheet-completed-copy-number (S) (M)	IPP: Job Progress Attributes			No		No	No	
sheet-completed-document-number (S) (M)	IPP: Job Progress Attributes			No		No	No	
sides	RFC 2911	LayoutIntent/	LayoutPreparation	Sides (X)	1.0 job-sides	1.1	Yes	1.1 Duplex

⁴ The JDF/1.0 Appendix F incorrectly refers to “presentation-direction” which was renamed to “presentation-direction-number-up” in IEEE-ISTO 5100.3.

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
		@Sides (Note: Differences in coordinate systems between JDF and IPP come into play for the two-sided values.)	nParams/@Sides		x.x document-sides x.x po-sides			EFI Media – Plex Mode
time-at-completed (S)	RFC 2911			No		1.1	No	
time-at-creation (S)	RFC 2911			No		1.1	No	
time-at-processing (S)	RFC 2911			No		1.1	No	
version-number	RFC 2910	NodeInfo/ @IPPVersion		No		1.1	Yes	
x-image-position	IEEE-ISTO 5100.3		LayoutPreparationParams/ImageShift/@PositionX	Fit Policy (X)		1.2	Yes	
x-image-shift	IEEE-ISTO 5100.3			No		1.2	Yes	
x-side1-image-shift	IEEE-ISTO 5100.3		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-side2-image-shift	IEEE-ISTO 5100.3		LayoutPreparationParams/ImageShift/@ShiftBack	Image Shift Back Side (X)	1.0 job-image-shift-back-x x.x document-image-shift-back-x x.x po-image-shift-back-x	1.2	Yes	
y-image-position	IEEE-ISTO 5100.3		LayoutPreparationParams/ImageShift/@PositionY	Fit Policy (X)		1.2	Yes	
y-image-shift	IEEE-ISTO 5100.3			No		1.2	Yes	
y-side1-image-shift	IEEE-ISTO 5100.3		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-side2-image-shift	IEEE-ISTO		LayoutPreparation	Image Shift Back	1.0 job-image-shift-	1.2	Yes	

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
	5100.3		nParams/ImageShift/@ShiftBack	Side (X)	back-y x.x document-image-shift-back-y x.x po-image-shift-back-y			
			RunList/Comment/@Name=Description	Comment/Description of Job (X)	1.0 job-comment			
			NodeInfo/NotificationFilter/@osdp:Locator,@osdp:ChannelType	Notification (where and how to deliver events) (X)	1.0 notification-delivery-type			
			RunList/@Pages	Range of Pages (X)	1.0 job-include-pages x.x document-include-pages			
			FoldingParams/@NoOp,@DescriptionType,@FoldCatalog,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			
			StitchingParams/@NoOp,@Angle	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 1.0 stitching-angle			
			HoleMakingParams/@NoOp,@HoleType,@HoleReferenceEdge	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			

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
			TrimmingParams/ @NoOp,@TrimmingType	Trimming (X)				
				Black Overprint (X)				1.1 Black Overprint
			see individual features/functions	Folding, Number Up, Order Pages, Stapling & Stitching, Trimming (X)				1.1 Booketmaking
			ColorantControl/ @ProcessColorModel	Process Color Model (X)				1.1 Color Mode EFI Color – Color Mode
			ScreeningParams/ ScreenSelector/ @ScreeningFamily	Screening (X) Family				1.1 Screen EFI Image Quality – Screening
			ColorantControl/ SeparationSpec/ @Name	Spot Color (X)				1.1 Special (Spot) Color Handling
				(X)				EFI General/Account Info- User Information
				(X)				EFI Image Quality – Black Detection
				(X)				EFI Image Quality – Brightness
				(X)				EFI Image Quality – Contrast
				(X)				EFI Image Quality – Trapping
				(X)				EFI Image Quality – Sharpness
				(X)				EFI Color – RGB Source
				(X)				EFI Color – Rendering Style
				(X)				EFI Color – CMYK Simulation
				(X)				EFI Color – Spot Color Matching

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
			LayoutPreparationParams/@PageOrder	Order Pages (X)				EFI Finishing - Page Order
			see Stitching see Binding	No ? (X) No ? (X) Yes Stitching (X) Yes Binding (X) No (X)				EFI Finishing - Binding Gangup Unique Gangup Collate and cut Saddle Perfect Nested Saddle
				(X)				EFI Document List - File Merge specs
				(X)				EFI Document List - File Edit Spec
				(X)				EFI Packaging/Shipping Info
				(X)				EFI Approvals
				(X)				EFI Vendor specific private extensions
				(X)				EFI Catalog Imposition ContentArray
				(X)				EFI Media - Imageable Area
				(X)				EFI MediaSource TrayAlignment
				(X)				EFI MediaSource Offset
				(X)				EFI Layout Definition - n rows and columns
				(X)				EFI Layout Definition - GuttersN and GuttersM
				(X)				EFI Layout Definition - Scale
			LayoutPreparationParams/FitPolicy	Fit Policy (X)				EFI Layout Definition - Type

IPP Attribute	IPP Spec	JDF 1.1 Product Intent	JDF 1.1 Process Resource	OSDP JDF Spec	JTAPI	CUPS	JDF 1.0 App F	PODi
			y/@SizePolicy					(scale to fit & user defined)
				(X)				EFI Layout Definition - Bleeds
				(X)				EFI Layout Definition - Creep
				(X)				EFI Printer Marks - CropMarks HorizontalArray VerticalArray Enabled
				(X)				EFI Printer Marks - SheetName Enabled Text Font CTM
				(X)				EFI Printer Marks - FoldMarks Enabled
				(X)				EFI Printer Marks - CalibrationBar Enabled Side CTM
				(X)				EFI Printer Marks - ExposureBar Enabled Side CTM
				(X)				EFI Layout Content - Side and PlacedObjects

Notes:

These attributes could not be found in any of the IPP documents, but they are referred to in the JDF 1.0 Spec Appendix F. They are included in a new "Production Printing Attributes Set 2" specification being developed by the PWG IPP WG. See ftp://ftp.pwg.org/pub/pwg/ipp/new_PPE/pwg-ipp-prod-print-set2-draft-v0_1-020821.pdf.

2 Brief Description of IPP attributes that clients can supply

This section lists the IPP attributes from Table 1 that clients can supply in Job Creation and Document Creation operations and gives a *brief* description. See section 3 for the brief descriptions of the attributes that only Printers can generate (labeled with (S) in Table 1.

WARNING: Do not attempt to implement from these brief descriptions. You MUST refer to each cited reference.

Legend:

JD - Job Description attribute - initial value supplied by the client (in a Operation attribute of a Job Creation operation).

JT - Job Template⁵ 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.

PO - Page Override - this attribute MAY also be supplied in a “page-overrides” attribute to affect ranges of pages.

Here are the IPP Attributes that clients can supply in Job Creation and Document Creation operations and their *brief* descriptions:**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 (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.

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 (integer(1:MAX)) [JT⁶, DT] The number of copies of the Output Document(s) to be printed. [RFC2911] §4.2.5

cover-back (collection) [JT⁷, 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

⁵ 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.

⁶ 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.

⁷ 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.

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

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-PCL, “text/plain; charset=utf-8”) [RFC2911] §3.2.1.1

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 (naturalLanguage) [JD, DD] Identifies the Natural Language of this Document [RFC2911] §3.2.1.1

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 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”()

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 (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 (1setOf type2 enum) [JT⁸, DT, PO] Identifies the finishings that the Printer uses for each copy of the Output Document. (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) [RFC2911] §4.2.6, [finish] §2

⁸ The IPP “finishings” and “finishings-col” attributes are *extensive* attributes, so their effect when supplied at the job level is not always inherited by the documents in a multi-document job. Instead, their effect depends on the value of the “multiple-document-handling” Job Template attribute. The ‘single-document’ and ‘single-document-new-sheet’ cause the finishing to be applied to each job copy as a whole. The ‘separate-documents-collated-copies’ and ‘separate-document-uncollated-copies’ values cause the finishing to be applied to each document. In the PWG Semantic Model [pwg-sm] there are two separate attributes: JobFinishings and

- 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, 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
- 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** (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** (1setOf integer(1:MAX)) [JT⁹, 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
- 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
- insert-sheet** (1setOf collection) [JT¹⁰, 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
- ipp-attribute-fidelity** (boolean) [JT] Allows a user to control whether or not the Printer MUST honor *all* supplied attributes in the Job Creation operation. For a ‘true’ value the Printer MUST reject the job submission if any of the attribute values are unsupported. For a ‘false’ value the Printer MUST accept the job submission and do best effort. Default = ‘false’ See also “mandatory-job-attributes” attribute. [RFC2911] §15.1

Finishings and also JobFinishingsCol and FinishingsCol which affect the job as a whole and individual documents, respectively, so that the MultipleDocumentHandling attribute is no longer needed.

⁹ 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.

¹⁰ 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.

job-account-id (name(MAX)) [JT¹¹] Account associated with the job. [prod-print] §3.6

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 number, *Note: See [PWG5100.2 §2.1 for description of keywords) [prod-print] §3.8.3

job-accounting-user-id (name(MAX)) [JT¹²] Specifies the User ID associated with the “job-account-id”. [prod-print] §3.7

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

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 (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 (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-]jimpresions (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-]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-mandatory-attributes (1setOf type2 keyword) [JT] Allows a user to list which 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. (See [RFC2911] §15.1) (Keywords: none and any Job and Document Template attribute names) NOTE: New attribute to align fidelity with FSG work. [pwg-sm] §6.1

[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-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

¹¹ The “job-account-id” is termed a Job Description attribute instead of a Job Processing attribute by the PWG Semantic Model [pwg-sm].

¹² The “job-accounting-user-id” is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

- job-message-to-operator** (text(MAX)) [JT¹³] 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
- 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-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** (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** (text(127)) [JT¹⁴] Contains the contact telephone number for the job. [prod-print2] §5.5
- 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** (name(MAX)) [JT¹⁵] 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** (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 ‘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** (text(MAX)) [JT] Conveys a message that is delivered with the job. [prod-print] §3.12
- 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** (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

¹³ The “job-message-to-operator” is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

¹⁴ The “job-phone-number” attribute is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

¹⁵ The “job-recipient-name” attribute is termed a Job Description attribute, instead of a Job Processing attribute, by the PWG Semantic Model [pwg-sm].

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

last-document (boolean) [DD] Has a 'true' value if this Document is the last Input Document for the Job. [RFC2911] §4.2.11

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 (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

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-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-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-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-hole-count (integer(0:MAX)) Indicates the number of pre-drilled holes in the desired media. [prod-print] §3.13.6

media-info (text(255)) Specifies information that helps describe the media instance. Intended for human consumption. [prod-print] §3.13.3

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-material (type3 keyword | name(MAX)) The material of the media. (Keywords: aluminum, dry-film, paper, polyester, wet-film) [prod-print2] §8.4.3

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-preprinted (type3 keyword | name(MAX)) Indicates the pre-printed characteristics of the desired media. (Keywords: blank, pre-printed, letter-head) [prod-print] §3.13.5

media-recycled (type3 keyword | name(MAX)) Indicates the recycled characteristics of the media. (Keywords: none, standard) [prod-print] §3.13.11

media-size (collection) Explicitly specifies the numerical media width and height dimensions. [prod-print] §3.13.8

x-dimension (integer(0:MAX)) Size of the media in hundredths of a millimeter along the bottom edge. [prod-print] §3.13.8.1

y-dimension (integer(0:MAX)) Size of the media in hundredths of a millimeter along the left edge. [prod-print] §3.13.8.2

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-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-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

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

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 (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 Jobs¹⁶. (Keywords: single-document, separate-document-uncollated-copies, separate-document-collated-copies, single-document-new-sheet) [RFC2911] §4.2.4

number-up (integer(1:MAX)) [JT, DT, PO] Indicates the number of Input pages that the Printer is to image on one impression. [RFC2911] §4.2.9

operation-id (type2 enum) [] Indicates which operation this request is. [RFC2911] §3.1.2

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 (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

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 (type2 keyword) [JT¹⁷, 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

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

¹⁶ 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.

¹⁷ The IPP "page-order-received" Job Template attribute is mapped to the PageOrderReceived Document Description attribute in the PWG Semantic Model [pwg-sm].

any other Job Template attributes that affect pages, such as “media” or “media-col” ()

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

pages-per-subset (1setOf integer(1:MAX)) [JT¹⁸, DT] Partitions one or more Input-Documents into contiguous subsets of Input-Pages. Each subset is defined to be an Output-Document. [prod-print] §5.3

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://prinhost.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 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

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

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

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 (uri) [JD] Specifies the URL of this Printer. The client supplies this attribute in every request. [RFC2911] §3.1.5

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 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

¹⁸ 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.

- 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** (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** (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] §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** (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
- 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
- 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
- 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** (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** (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** (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 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** (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** (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** (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** (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

3 Brief Description of IPP attributes that only Printers can generate (S)

This section lists the IPP attributes from Table 1 that only Printers can generate for the Job and Document objects and gives a *brief* description. Printers return these attributes in Job and Document query operations. Furthermore, for those attributes that have both a Job State and a Document State attribute, there is only one entry in Table 1 that represents both of them.

WARNING: Do not attempt to implement from these brief descriptions. You MUST refer to each cited reference.

Legend:

JS - Job State attribute - set by the Printer, client cannot supply. Indicated by "(S) in Table 1.

DS - Document State attribute - set by the Printer, client cannot supply. Indicated by "(S) in Table 1.

- - indicates that there is no corresponding Job State attribute or Document State attribute.

The **[job-]** indicates that the 'job-' prefix is kept for the IPP Job State attribute but is dropped for the corresponding IPP Document Description attribute. A single description serves for both using "Job/Document" to indicate that the description applies to both the Job State and the Document State attribute. The entry in Table 1 uses the form of the name with the 'job-', since that form is the one in [RFC2911].

Here are the IPP Attributes that only Printers can generate for the Job and Document objects and gives a *brief* description:

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 (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 (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 (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-number (integer(0:MAX)) [-, DS] The order of this Document within the Job starting at a base of 1. [doc-obj] §6.1

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 (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 (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

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

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-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 (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-id (integer(1:MAX)) [JS, -¹⁹] 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-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-processed (integer(0:MAX)) [JS, DS] The total number of octets processed in integral units of 1024 octets so far for this Job/Document. [RFC2911] §4.3.18.1

[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-]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/embeddedjobpage”) [RFC2911] §4.3.4

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-printer-make-and-model (text(127)) [JS, -] Identifies the make and model of the output device which saved this Job according to the “job-save-disposition” Job Template attribute. [prod-print2] §6.1

[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-state (type1 enum) [JS, -²⁰] 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 (text(MAX)) [JS, ²¹] 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

¹⁹ The IPP “job-id” Job Description attribute corresponds to the (new) “document-number” Document Description attribute.

²⁰ The IPP “job-state” Job Description attribute corresponds to the (new) “document-state” Document Description attribute.

²¹ The IPP “job-state-message” Job Description attribute corresponds to the (new) “document-state-message” Document Description attribute.

job-state-reasons (1setOf type2 keyword) [JS, -²²] 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, 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-uri (uri) [JS, -²³] 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 (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

number-of-documents (integer(0:MAX)) [JS, -] The number of Documents in this Job. [RFC2911] §4.3.12

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

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

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 (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 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

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 (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 (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

4 CUPS Job Template extensions to IPP

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

²² The IPP "job-state-reasons" Job Description attribute corresponds to the (new) "document-state-reasons" Document Description attribute.

²³ 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.

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
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

5 Attributes for the proposed PDC document

The following attributes are listed in 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

PDC Attribute	IPP Attribute	OSDP JDF Spec
		Input Tray Name
resolution	printer-resolution	No
orientation	orientation-requested	Yes Rotate Page
color/monochrome	---	No
copies	copies	Yes Number of Copies

6 References

- [adm-ops]
Kugler, C, Hastings, T., Lewis, H., "Internet Printing Protocol (IPP): Job and Printer Administrative Operations", <draft-ietf-ipp-adm-ops-03.txt>, July 17, 2001.
- CUPS
Common UNIX Printing System, <http://www.cups.org/>.
- [doc-obj]
Hastings, T., and P. Zehler, "Internet Printing Protocol (IPP): Document Object", September 27, 2002, ftp://ftp.pwg.org/pub/pwg/ipp/new_DOC/IPP-Document-Object.doc, .pdf, .rtf work in progress to become IEEE-ISTO 5100.5-2001.
- [EFI]
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- IEEE-ISTO 5100.1-2001 [finishing]
"Internet Printing Protocol (IPP): "finishings" attribute values extension", Hastings, T., and D. Fullman, February 5, 2001, <ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.1.pdf>
- IEEE-ISTO 5100.2-2001 [output-bin]
"Internet Printing Protocol (IPP): output-bin attribute extension", Hastings, T., and R. Bergman, February 7, 2001, <ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.2.pdf>
- IEEE-ISTO 5100.3-2001 [prod-print]
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"Internet Printing Protocol (IPP): Override Attributes for Documents and Pages", Herriot, R., and K. Ocke, February 7, 2001, <ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.4.pdf>
- [JTAPI]
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“Open Source Digital Printing Job Ticket”, Claudia Alimpich, version 1.2.

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Hastings, T., and D. Fullman, “Internet Printing Protocol (IPP): Production Printing Attributes - Set 2”, to become a PWG IEEE-ISTO standard, work in progress, August 21, 2002, ftp://ftp.pwg.org/pub/pwg/ipp/new_PPE/pwg-ipp-prod-print-set2-draft-v0_1-020821.pdf.

RFC 2910 [mod]

Herriot, R., Butler, S., Moore, P., Tuner, R., "Internet Printing Protocol/1.1: Encoding and Transport", RFC 2910, September 2000.

RFC 2911 [pro]

R. deBry, T. Hastings, R. Herriot, S. Isaacson, P. Powell, "Internet Printing Protocol/1.1: Model and Semantics", RFC 2911, September 2000.

RFC 3380 [set-ops]

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RFC 3381 [job-prog]

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RFC 3382 [coll]

deBry, R., Hastings, T., Herriot, R., Ocke, K., and P. Zehler, "Internet Printing Protocol (IPP): The ‘collection’ attribute syntax", RFC 3382, September 2002.

7 Change Log

Summary of changes in reverse chronological order:

7.1 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.

7.2 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.

7.3 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 adding updates to JTAPI column per FSG Job Ticket working group meetings
4. Added JDF Process Resource column and updated per OSDP JDF Spec

7.4 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).