DWF ICS

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Digital Print Workflow / Wide Format WG

Abstract

This Interoperability Conformance Specification (ICS) details the JDF Nodes, Resources, sub-elements and attributes used in Wide Format Printing. For supported attributes, where appropriate, this ICS also lists required values.

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1 Introduction

[JDF1.4a] is a very comprehensive job ticket format that allows for many different ways to specify a digital print job. To minimize complexity and to better guarantee interoperability between JDF producers and consumers, this IS identifies a relatively small subset of JDF for digital Wide Format printing.

A description of the Conformance Tables and other ICS notation can be found in the CIP4 [Base-ICS 1.4].

1.1 Scope

This ICS defines [JDF1.4a] process interface to the Combined Process for DPW Wide Format (DPW-WF). It is intended that this ICS can be used stand-alone, requiring only the Base ICS for the definition of values and limits. This ICS can be enhanced by simultaneously claiming adherence to one or both of the WFM2RIP and WFM2RDP Services ICSs used in the definition of the CDP (Commercial Digital Printing) ICS.

2 Glossary

This section defines terminology used throughout this document. References to other documents are indicated with square brackets, e.g. [JDF1.4a]. For most terms, see the Glossary section in [JDF1.4a] and [Base-ICS 1.4].

Table 1 defines terminology used throughout this document. References to other documents are indicated with square brackets, e.g. [JDF1.4a]. For most terms, see the Terminology section in [JDF1.4a] and [Base-ICS 1.4].

This table comes from [UsageCtr-AN].

For the meaning of color shading, see section 3 “Color Shading Conventions”.

Table 1: Glossary

Term	Definition
Category	A subset of UsageCounter/*@CounterTypes* values that are related.
Click	A Click is the basic unit that the machine vendor uses to charge for usage of the machine. The machine MAY increment a counter by a different number of clicks for different events – as determined by the machine vendor. Also its type is double (not integer) so that the Click increment MAY be greater than or less than 1.0. For example, a machine vendor MAY charge a click value greater than 1.0 for impressions that cost more (e.g., color), slow down the machine (e.g., large media), or cause more wear and tear (e.g., image to the edge of the media). As another example, a machine vendor MAY charge a click value of 1.0 for printing on one side of a simplex sheet and a click value of 0.75 for printing on each side of a duplex sheet to encourage duplex usage, so that duplex sheets would cost 1.5 clicks, instead of 2.0 clicks.
Click Counter	A counter that counts Clicks. A **Click Counter** is commonly used in the industry by digital printer vendors.
Countable Event	An event that can be counted by a **UsageCounter** resource and is either a ***Separation Countable Event*** or a ***Surface Countable Event***.
CounterTypes Value	A single value of UsageCounter/*@CounterTypes*. Each such value belongs to a ***Category***.
Impression	Either a ***Separation Impression*** or a ***Surface Impression***.

Term	Definition
Separation	A portion of a color image that will be printed in one basic color [Delmar97].
~~***Resource ICS***~~	~~An ICS designed to be referenced by or copied into other ICSs for conformance when using a particular resource, such as the **UsageCounter** resource, rather than being referenced by products for conformance. In addition, a Resource ICS isn't expected to have a separate Certification Test. In other words, a Resource ICS is a module to be used to produce other ICSs.~~
Separation Countable Event	A ***Countable Event*** that occurs for each ***Separation Impression***. For example, if a printer applies CMYK, four ***Separation Countable Events*** occur. The `Separation` and `Varnish` (overcoat) Colorant ***Category*** values describe ***Separation Countable Events***.
Separation Impression	The application of a single Colorant (ink, toner or varnish of any kind) to a sheet surface. For example, a process color primary, such as cyan, would be a single ***Separation Impression***.
Surface Countable Event	A ***Countable Event*** that occurs for each ***Surface Impression***. For example, if a printer applies CMYK, one ***Surface Countable Event*** occurs. The `Black`, `HighlightColor` and `Color` Colorant ***Category*** values each describe separate ***Surface Countable Events***.
Surface Impression	The passage of the entire side of a sheet through the printing system, regardless of the number of colorants (ink, toner, spot varnish, or overcoat varnish) that it applies to the sheet surface. Note: a blank ***Surface Impression*** (zero colorant) counts as a ***Surface Impression***.

3 Color Shading Conventions

Color shading is used to indicate whether the text and tables have been copied from another ICS or are new to this ICS. The table below describes the meaning of each of the 5 color shadings, using sample rows from tables within this ICS.

Table 2: Color Shading Conventions

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
DeviceStatus	r?			w			This shading is for an attribute or element defined in this ICS. Note if this shading appears in a table from another ICS, this item is new to this ICS.
Unknown	r?			w←			This shading is for a value defined in this ICS. Note if this shading appears in a table from another ICS, this value is new to this ICS.
Exact		w?			r		This shading is for an attribute or element in a table that is copied from some other ICS.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
false		w←			r		This shading is for a value in a table that is copied from some other ICS.
~~*Classes*~~		~~w~~			~~r~~		This shading is for an attribute or element that is in a table that is copied from some other ICS, but it is not in this ICS. Note: if the attribute specifies values in the other ICS, they are not shown in this ICS.

4 Conformance Levels

This ICS specifies one ***Conformance Levels*** of Conformance Requirements.

See Appendix A "*How to Read ICS Documents*" in [Base-ICS 1.4] for an explanation of Conformance Tables.

To be conformant to a level of this ICS specified in the first column of Table 3, an ***MIS*** SHALL conform to the Manager part and a Controller or Device SHALL conform to the Worker part of the ICSs and levels specified in Table 3 below.

Table 3: Conformance Levels

Level of this ICS	[Base-ICS]	[JMF-ICS]	[MIS-ICS]	Description
1	0	-	-	This combination of ICS levels includes: • Fire and Forget (whether using JMF or not); subset of DWF Level 1.
2	2	1	2	This combination of ICS levels adds: • Adds JMF used for Job Submission, Job return and Queue management.
3	2	1	3	This combination of ICS levels adds: • Adds Reliable channels for JMF. • More complex setup of wide format devices.

5 Conformance Tables – JDF Instances

The tables in this section pertain to a Combined Process for DPW Wide Format (DPW-WF),

5.1 JDF Node

Table 4: JDF Node
Root Node of: JDF Instance

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Category	w			r			See *Types*
DPW.WideFormat	w			r			SHALL be specified if *Category* is provided in JDF Combined node
DescriptiveName	w			r			SHALL occur in Root Node, indicating a single line Job Title; SHOULD occur in Subnodes with other values. If the Worker identifies the JDF Node to an operator, it SHOULD include the *DescriptiveName* in any such identification. **Note**: many Devices have limited possibilities to display the Job description. The string value SHOULD be as short as possible.
Type	w			r			See *Types*.
Combined	w←			r			*Combined* SHOULD be specified when targeting an individual device.
ProcessGroup	w←			r			*ProcessGroup* SHOULD be specified when targeting a Controller or Workflow system (Gray Box).
all remaining values	!w			r?			
Types	w←			r?			The respective values for *Category*, *Type* and *Types* in this Specification SHALL be correct for this ICS.
ColorSpaceConversion	w			r			SHALL be specified exactly once. See Table 5: DPW-WF – Input Resources. See Table 25: ColorSpaceConversionParams.
DieLayoutProduction			w←			r?	SHALL be specified at most once if DieLayoutProductionParams is in the ResourcePool. See Table 5: DPW-WF – Input Resources. See Table 30: DieLayoutProductionParams.
DigitalPrinting	w			r			SHALL be specified exactly once. See Table 5: DPW-WF – Input Resources. See Table 33: DigitalPrintingParams.
Folding			w?			r?	SHALL be specified at most once if FoldingParams is in the ResourcePool. See Table 5: DPW-WF – Input Resources.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							See Table 37: FoldingParams.
Imposition	w			r?			SHALL be specified at exactly once.
Tiling	w?			r?			SHALL be specified at most once if **Tile** is in the ResourcePool. See Table 5: DPW-WF – Input Resources. See Table 53: Tile.
Interpreting	w			r			SHALL be specified exactly once. See Table 5: DPW-WF – Input Resources. See Table 39: InterpretingParams.
Rendering	w			r			SHALL be specified exactly once. See Table 5: DPW-WF – Input Resources. See Table 46: RenderingParams.
Stitching			w?			r?	SHALL be specified at most once if **StitchingParams** is in the ResourcePool. See Table 5: DPW-WF – Input Resources. See Table 48: StitchingParams.
Stripping	w?			r?			SHALL be specified exactly once. See Table 5: DPW-WF – Input Resources. See Table 49: StrippingParams.
Varnishing	w?			r?			SHALL be specified if **VarnishingParams** is in the ResourcePool. See Table 5: DPW-WF – Input Resources. See **VarnishingParams** in [JDF1.4a].
Version	w			r			See *Types*.
1.4	w			r			
AuditPool	w? r?			r w			See Table 9: AuditPool.
Comment	w?			r			If Comment*[@Name*="*Instruction*"] is present the Worker SHOULD display instructions to the operator. See Table 19: Comment.
GeneralID	w?			r			See Section 5.5.2 “GeneralID (Preset)” with *DataType* = "*NamedFeature*".
ResourcePool	w			r			Container for all input and referenced resources. See Table 8: ResourcePool.
ResourceLinkPool	w			r			Container for all ResourceLink elements to input resources. See [JDF1.4a].

5.1.1 DPW-WF – Input Resources

Table 5: DPW-WF – Input Resources

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ColorSpaceConversionParams	w←			r			SHALL be present when defining Input/Output ICC profiles or rendering intents. See Table 25: ColorSpaceConversionParams
Device	w←			r			Description of the Device that SHALL execute this Node. See Table 28: Device.
DigitalPrintingParams	w			r			SHALL be specified. Details of Collation, Page Delivery Order, Sheet indexes or Output Bin destination are specified here. See Table 33: DigitalPrintingParams.
DieLayoutProductionParams			w←			r	SHALL be specified if using ***DieLayoutProduction*** for step & repeat. See Table 30: DieLayoutProductionParams.
FoldingParams			w←			r	See Table 37: FoldingParams.
Ink	w←			r			SHALL be present to associate specific inks with separations. See Table 38: Ink.
InterpretingParams	w←			r			SHALL be present if "*Interpreting*" is in *Types*. See Table 4: JDF Node: JDF/[@Types=" Interpreting "] for the condition in which this Resource is required. See Table 39: InterpretingParams.
Layout	w?			r?			Layout is used as an exchange resource and NEED NOT be explicitly specified. See [JDF1.4a].
Media	w			r			See Table 42: Media.
RenderingParams	w←			r			SHALL be present if *Rendering* is in *Types*.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							See Table 46: RenderingParams.
RunList	w			r			See Table 47: RunList
StitchingParams			w←			r	See Table 48: StitchingParams.
StrippingParams	w?			r?			See Table 49: StrippingParams.
Tile	w←			r			SHALL be present if Tiling is used. Structured list of imposed page contents or Byte Maps that are to be decomposed to produce the images for each tile. See Table 53: Tile.
UsageCounter			w← r			r w←	See Table 54: UsageCounter.

5.1.2 DPW-WF – Output Resources

Table 6: DPW-WF – Output Resources

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Component (Output)	w			r			See Table 27: Component (Output).
DieLayout			r?			w?	Produced by ***DieLayoutProduction*** Process See Table 29: DieLayout.

5.1.3 JDF Node (Worker Updated)

When a Worker returns a JDF Instance to its Manager, the Worker SHALL return the same JDF Instance that it received from the Manager except for certain parts of the JDF Instance that a Worker MAY modify. In particular, the Worker SHALL add information into the AuditPool of the Combined Process and each Process node that was executed. The Worker SHALL NOT return a portion of the JDF Instance that it received from the Manager.

Table 7: JDF Node (Worker Updated)

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AuditPool	w r?			r? w			The Worker SHALL add an AuditPool Element if the Combined Process for DPW Wide Format (DPW-WF) doesn't already have one. See [JDF1.4a] and Table 10: List of Audit Elements.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							See Table 9: AuditPool.

5.2 ResourcePool

From [Base-ICS 1.4].

Note that ***Conformance Requirements*** for the ResourcePool, while appearing in the same table, are not meant to imply that all Resources shown in the table appear in the local JDF ***Nodes*** ResourcePool, or even in the same ResourcePool. Resources appearing in ResourcePool ***Conformance Tables*** in any ***ICS*** are only stating that the Resources SHALL appear in some ResourcePool, and are linked to one or more JDF Nodes. See [JDF1.4a] Sections 3.8 “ResourcePool and its Resource Children” and 3.9 “ResourceLinkPool and ResourceLink”.

Table 8: ResourcePool

Referenced by: JDF Node

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Resource	w←			r←			For a list of possible Resources, see Section 6 “Conformance Tables – Resources”.

5.3 AuditPool

From [Base-ICS 1.4].

This section specifies the AuditPool. See other ICS s, such as the [MIS-ICS 1.4], for additional AuditPool requirements.

Table 9: AuditPool

Referenced by: JDF Node, JDF Node (Worker Updated)

Name or Value	*Manager*			*Worker*			Description
Level ➔	1	2	3	1	2	3	
Audit	w←			r?			See Table 10: List of Audit Elements.

5.4 List of Audit Elements

When a Worker returns a JDF Instance to its Manager, the Worker SHALL return the same JDF Instance that it received from the Manager except for certain parts of the JDF Instance that a Worker MAY modify. In particular, the Worker SHALL add information into the AuditPool of the Process Node that was executed.

Note: the abstract Audit attributes are in each Audit element listed in the table below.

Table 10: List of Audit Elements
Referenced by: AuditPool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Created		w			r?		See Table 11: Created
PhaseTime			r?			w	See Table 12: PhaseTime
ProcessRun		r?			w		See Table 15: ProcessRun
ResourceAudit		w			r		See Table 16: ResourceAudit. Ink and Media is the most relevant resource for this audit.

5.4.1 Created

Table 11: Created
Referenced by: List of Audit Elements

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AgentName		r?			w		SHALL be specified to indicate the audit authoring application.
AgentVersion		r?			w		SHALL be specified to indicate the audit authoring application version.
ID		r?			w		
TimeStamp		r?			w		Date/time when the audit element was added.

5.4.2 PhaseTime

Table 12: PhaseTime
Referenced by: List of Audit Elements

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AgentName			r?			w	SHALL be specified to indicate the audit authoring application.
AgentVersion			r?			w	SHALL be specified to indicate the audit authoring application version.
End			r?			w?	
ID			r?			w	

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Start			r?			w	
Status			r?			w	For values, see Table 13: PhaseTime/@*Status*
StatusDetails			r?			w?	
TimeStamp			r?			w	Date/time when the audit element was added.
MISDetails			r?			w?	See Table 43: MISDetails.
ModulePhase			r?			w+	If there are ModulePhase elements. See Table 14: ModulePhase.

5.4.2.1 PhaseTime/@Status

From [MIS-ICS 1.4].

Table 13: PhaseTime/@*Status*

Referenced by: PhaseTime

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Setup			r			w+	A Worker SHALL supply this value during the setup phase for a Device that has such a phase for each Job.
InProgress			r			w+	
Cleanup			r			w+	A Worker SHALL supply this value during the cleanup phase for a Device that has such a phase for each Job.
Stopped			r			w+	
~~*Completed*~~			~~r~~			~~w+~~	Not used for PhaseTime
~~*Aborted*~~			~~r~~			~~w+~~	Not used for PhaseTime
Suspended			r			w+	
all remaining values			r			w?	.

5.4.2.2 ModulePhase

Table 14: ModulePhase
Referenced by: PhaseTime

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
DeviceID			r?			w	
DeviceStatus			r?			w	
Unknown			r?			w←	
Idle			r?			w←	
Down			r?			w←	
Setup			r?			w←	
Running			r?			w←	
Cleanup			r?			w←	
Stopped			r?			w←	
ModuleID			r?			w?	
ModuleIndex			r?			w?	
ModuleType			r?			w	
StatusDetails			r?			w?	

5.4.3 ProcessRun

Table 15: ProcessRun
Referenced by: List of Audit Elements

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AgentName		r?			w		SHALL be specified to indicate the audit authoring application.
AgentVersion		r?			w		SHALL be specified to indicate the audit authoring application version.
End		r?			w		End time of the job.
EndStatus		r?			w		Status of the job.
Aborted		r?			w←		
Completed		r?			w←		

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ID		r?			w		
Start		r?			w		Start time of the job.
TimeStamp		r?			w		Date/time when the audit element was added.

5.4.4 ResourceAudit

Primarily used to accommodate usage data for *ProcessRun* activities to report on consumption of ink and media during a processing a job.

Table 16: ResourceAudit

Referenced by: List of Audit Elements

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AgentName		r?			w←		SHALL be specified to indicate the audit authoring application.
AgentVersion		r?			w←		SHALL be specified to indicate the audit authoring application version.
ID		r?			w←		
TimeStamp		r?			w←		Date/time when the audit element was added.
InkLink		r			w←		If Ink consumption is tracked, the *ActualAmount* attribute SHALL be updated. See Table 38: Ink and Table 57: InkLink.
MediaLink		r			w←		The *ActualAmount* attribute SHALL be updated. Note that Media will be measured in square meters (m2). See Table 42: Media and Table 58: MediaLink.

5.5 GeneralID

5.5.1 GeneralID (DeviceProductID)

Table 17: GeneralID (DeviceProductID)

Referenced by: Media

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
IDUsage	w			r			
DeviceProductID	w			r			
IDValue	w			r			The name of a **Media** as known by the Combined Process for DPW Wide Format (DPW-WF) if it is different from the *ProductID* known to an MIS.

5.5.2 GeneralID (Preset)

A GeneralID with an *IDUsage* of "*Preset*" describes a general set of features that are combined into one named preset.

Table 18: GeneralID (Preset)

Referenced by: JDF Node

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
DataType							
NamedFeature	w			r			The data type of NamedFeatures is always "*NamedFeature*". See ***NamedFeature*** in the [JDF1.4a] Glossary.
IDUsage	w			r			
Preset	w			r			
IDValue	w			r			The name of the preset.

5.6 Comment

From [JMF-ICS 1.4].

Table 19: Comment

Referenced by: JDF Node

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Name		w			r?		
Instruction		w←			r?		Additional information provided from the Manager to the Worker about the Queue entry being acted upon (e.g. explanation for why it is being aborted).
all remaining values		w?			r?		
<content of Element>		w			r?		

6 Conformance Tables – Resources

This section specifies Conformance Tables for many Resources. The Resources appear in alphabetical order.

Each subsection specifies one Resource with a few notes, Resource Properties, and one or more Conformance Tables.

6.1 AutomatedOverprintParams

Table 20: AutomatedOverprintParams

Referenced by: RenderingParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
TextBlackLevel	w←			r?			A value between 0.0 and 1.0 which indicates the minimum black level for the text stroke or fill colors that cause the text to be set to overprint.
TextSizeThreshold	w←			r?			Indicates the point size for text below which black text will be set to overprint. For asymmetrically scaled text, the minimum point size between both axes will be used. If not specified, all text is set to overprint.

6.2 BinderySignature

Table 21: BinderySignature
Referenced by: StrippingParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
BinderySignatureType	w			r			
Grid	w←			r			
Die			w←			r	
Fold			w←			r	
NumberUp	w←			r			Specifies a regular, multi-up grid of SignatureCell Elements into which content pages are mapped. The first value specifies the number of columns of SignatureCell Elements, and the second value specifies the number of rows of SignatureCell Elements in the multi-up grid (both numbers are integers). When the BinderySignature is Partitioned (e.g., by *WebName*), *NumberUp* MAY be different from leaf to leaf.
DieLayout			w←			r?	See Table 29: DieLayout.

6.3 ByteMap

Table 22: ByteMap
Referenced by: RunList

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
FileSpec	w			r			See Table 35: FileSpec.

6.4 ColorPool

Table 23: ColorPool
Referenced by: ColorantControl

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Color	w←			r?			Additional details of the color.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							Representations of colors used by the device SHOULD include all physical colorants that are to be reported back by the device. This may require **ColorantControl** and Process Colors like Light Cyan and Light Magenta. See Table 24: Color.

6.4.1 Color

From [MISPRE-ICS 1.4].

Table 24: Color

Referenced by: ColorPool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ColorBook	w?			r?			SHOULD specify if the color is part of a color book.
ColorBookEntry	w?			r?			SHOULD specify if the color is part of a color book.
CMYK	w←			r			SHALL be supplied if the color is a standard CMYK Process colorant regardless of the value of @Name. For example, a black text plate can be defined with (@Separation="Text" and @CMYK="0 0 0 1"). **r-Test:** the proof shows the specified *CMYK* value for a color that is not part of a color book.
Name	w			r			The value of *Name* SHALL be a real color name from the PDL. **r-Test:** the proof shows the specified color if the *Name* value is part of a color book that the Worker Supports.

6.5 ColorSpaceConversionParams

Table 25: ColorSpaceConversionParams
Member of: DPW-WF – Input Resources
Input to: ***ColorSpaceConversion***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ColorSpaceConversionOp	w←			r			See: Table 26: ColorSpaceConversionOp.
FileSpec	w?			r			The **FileSpec** element SHALL indicate ICC profile. See Table 35: FileSpec.

6.5.1 ColorSpaceConversionOp

Table 26: ColorSpaceConversionOp
Referenced by: ColorSpaceConversionParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
PreserveBlack	w←			r			If present will preserve black during source CS conversions.
True	w←			r			
RGBGrayToBlack	w?			r			
RGBGrayToBlackThreshold	w?			r			
SourceRenderingIntent	w?			r			See [JDF1.4a] for acceptable values.
SourceCS	w			r			
All	w←			r			
SourceObjects	w			r			
All	w←			r			
FileSpec	w?			r			Zero or more **FileSpec** elements to indicate ICC profiles. See Table 35: FileSpec.

6.6 Component (Output)

Table 27: Component (Output)

Member of: DPW-WF – Output Resources

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ComponentType	w			r?			
PartialProduct	w←			r			
Proof	w←			r			
Ribbon	w←			r			
Sheet	w←			r			
Web	w←			r			
ProductType	w			r?			
BackCover	w←			r			
Body	w←			r			
Cover	w←			r			
Flatwork	w←			r			
Folded	w←			r			
FrontCover	w←			r			
Poster	w←			r			

6.7 Device

From [Base-ICS 1.4].

This section defines general Conformance Requirements for the **Device** (Implementation) Resource, which a Manager MAY supply in any Combined, Process or Process Group Node.

Table 28: Device

Member of: DPW-WF – Input Resources

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
DeviceID	W?			r			**r-Test:** If the *DeviceID* specified does not match the Worker's *DeviceID*, the Worker SHALL NOT execute the Node.

6.8 DieLayout

Table 29: DieLayout
Member of: DPW-WF – Output Resources
Referenced by: BinderySignature

Name or Value	Manager			Worker			Description
FileSpec	1	2	3	1	2	3	
FileSpec			w			r?	See Table 35: FileSpec.

6.9 DieLayoutProductionParams

Table 30: DieLayoutProductionParams
Member of: DPW-WF – Input Resources
Input to: ***DieLayoutProduction***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ConvertingConfig			w			r?	See Table 31: ConvertingConfig.
RepeatDesc			w			r?	Table 32: RepeatDesc

6.9.1 ConvertingConfig

Table 31: ConvertingConfig
Referenced by: DieLayoutProductionParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
MarginBottom			w←			r?	
MarginLeft			w←			r?	
MarginRight			w←			r?	
MarginTop			w←			r?	
SheetHeight			w←			r?	Starting with JDF 1.5, *SheetHeight* is optional.
SheetWidth			w←			r?	Starting with JDF 1.5, *SheetWidth* is optional.

6.9.2 RepeatDesc

Table 32: RepeatDesc

Referenced by: DieLayoutProductionParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
LayoutStyle			w			r?	
GutterX			w←			r?	
GutterX2			w←			r?	
GutterY			w←			r?	
GutterY2			w←			r?	
StraightNest			w←			r?	
ReverseSecondRow			w←			r?	
ReverseSecondRowAligned			w←			r?	
ReverseSecondColumn			w←			r?	
ReverseSecondColumnAligned			w←			r?	

6.10 DigitalPrintingParams

Table 33: DigitalPrintingParams

Member of: DPW-WF – Input Resources

Input to: ***DigitalPrinting***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
OutputBin	w←			r?			
PageDelivery	w←			r?			
SameOrderFaceUp	w←			r?			First reader sheet is face-up and on the top
SameOrderFaceDown	w←			r?			First reader sheet is face-down and on the bottom. I.e., if the stack of sheets were to be turned over as a unit, the result would be the same as "*SameOrderFaceUp*".
ReverseOrderFaceUp	w←			r?			
ReverseOrderFaceDown	w←			r?			
Sides	w			r			Values from **LayoutPreparationParams**/ *@Sides*" (Table 7-261 in [JDF1.4a]).

6.11 ExternalImpositionTemplate

Table 34: ExternalImpositionTemplate
Referenced by: StrippingParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
FileSpec	w			r?			See Table 35: FileSpec.

6.12 FileSpec

Table 35: FileSpec
Referenced by: ByteMap, ColorSpaceConversionOp, ColorSpaceConversionParams, DieLayout, ExternalImpositionTemplate, LayoutElement

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Compression	!w			r			
MimeType	w			r			Device SHALL NOT process the file for any values that it does not support.
application/pdf	w↞			r↞			Also used for PDF/VT jobs
application/pdfc	w↞			r↞			
application/postscript	w↞			r↞			
application/vnd.iccprofile	w↞			r↞			
application/x-vnd.pdfc	w↞			r↞			
image/jpeg	w↞			r↞			
image/tiff	w↞			r↞			
all remaining values	w?			r?			
ResourceUsage	w↞			r			SHALL be specified if FileSpec is referenced from ByteMap
RasterFileLocation	w↞			r			
FinalTargetDevice	w↞			r			
SourceProfile	w↞			r?			
UID	w↞			r↞			If there is a cache and the *UID* attribute value is different from a previous FileSpec with the same *URL* attribute value, the file SHALL be replaced in the cache.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
URL	w←			r←			SHALL specify URL values that can be resolved by the ***Worker*** to obtain the files to be used.
file:	w←			r←			If the data is referenced by name rather than by explicit URL, *UserFileName* is used. At least one of *UserFileName* or *URL* SHALL be specified. If both are specified, the search sequence is implementation dependent. NOTE: Unless otherwise specified relative URLs are relative to the location of the JDF
all remaining values	w?			r?			
UserFileName	w←			r			If the data is referenced by name rather than by explicit URL, *UserFileName* is used. At least one of *UserFileName* or *URL* SHALL be specified. If both are specified, the search sequence is implementation dependent.

6.13 FitPolicy

Table 36: FitPolicy

Referenced by: InterpretingParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
SizePolicy	w←			r			
ClipToMaxPage	w←			r			
Abort	w←			r			
FitToPage	w←			r?			
Tile	w←			r?			
RotatePolicy	w?			r			
NoRotate	w?			r			
RotateOrthogonal	w?			r?			
RotateClockwise	w?			r?			
RotateCounterClockwise	w?			r?			

6.14 FoldingParams

Table 37: FoldingParams
Member of: DPW-WF – Input Resources
Input to: ***Folding***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
FoldCatalog			w			r?	Should be understood in the same way as GeneralID (Preset) for presets. The name here will imply a set of options. Values that are not predefined in [JDF1.4a] SHALL be interpreted as device dependent folds.

6.15 Ink

Table 38: Ink
Member of: DPW-WF – Input Resources
Input to: ***DigitalPrinting***, ***Interpreting***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Family	w			r?			
PANTONE	w?			r?			
HKS	w?			r?			
Toyo	w?			r?			
ISO	w?			r?			
InkJet	w?			r?			
Varnish	w?			r?			
Silicon	w?			r?			
Toner	w?			r?			
InkName	w			r			
PartIDKeys	w			r			SHALL be specified on the partition root.
Separation	w			r			Partition Ink by Separation
Separation	w			r			SHALL be specified on partition leaves to associate an ink with a separation. **Note:** additional separations that are not present in ColorantControl, e.g.., Light Cyan or Light Magenta, may be present in the returned JMF

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							messages for tracking.
Unit	w			r			
l	w			r			Ink SHALL be measured in liters.

6.16 InterpretingParams

Table 39: InterpretingParams
Member of: DPW-WF – Input Resources
Input to: ***Interpreting***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Polarity	W?			r			
Positive	w			r			This is the default.
Negative	w			r?			
PrintQuality	W?			r			
High	w←			r←			
Normal	w←			r			This is the default
Draft	w←			r←			
FitPolicy	w←			r			See Table 36: FitPolicy.

6.17 JobField

Table 40: JobField
Referenced by: StripMark

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ShowList	w←			r			All desired values below SHALL occur as a single space-separated string value of *ShowList*.
Barcode	w?			r←			
BarcodeText	w?			r←			

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
PrintingTime	w?			r←			
CustomerName	w?			r←			
Comment	w?			r←			
CurrentSheetOfTotalSheetsInJob	w?			r←			
CurrentSheetOfSheetsInCopyOfCopyNumber	w?			r←			
CurrentCopyOfTotalCopies	w?			r←			
ImpositionTemplate	w?			r←			
all remaining values	w?			r?			

6.18 LayoutElement

Table 41: LayoutElement

Referenced by: RunList

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
FileSpec	w			r			See Table 35: FileSpec.

6.19 Media

Table 42: Media

Member of: DPW-WF – Input Resources

Input to: ***DigitalPrinting***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
BackCoatings	w?			r←			The preprocess that has been applied to this media before printing on the back part of it. **Note:** This process may have occurred at the media factory or at the printing location.
None	w←			r			From [JDF1.4a]
Coated	w←			r			From [JDF1.4a]
Glossy	w←			r			From [JDF1.4a]
HighGloss	w←			r			From [JDF1.4a]
Matte Polymer	w←			r			From [JDF1.4a]

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Silver	w←			r			From [JDF1.4a]
Satin	w←			r			From [JDF1.4a]
SemiGloss	w←			r			From [JDF1.4a]
Brand		w r			r w		
DescriptiveName		w r			r w		
Dimension	w?			r			For landscape printing, define the X dimension greater than the Y. E.g., *Dimension*="*792 612*". For roll size media, specify Roll Dimension Y as 0, and Roll Dimension X as the roll width. E.g., *Dimension*="*792 0*".
FrontCoatings	w?			r←			The preprocess that has been applied to this media before printing on the front part of it. **Note:** This process may have occurred at the media factory or at the printing location.
None	w←			r			From [JDF1.4a]
Coated	w←			r			From [JDF1.4a]
Glossy	w←			r			From [JDF1.4a]
HighGloss	w←			r			From [JDF1.4a]
Matte Polymer	w←			r			From [JDF1.4a]
Silver	w←			r			From [JDF1.4a]
Satin	w←			r			From [JDF1.4a]
SemiGloss	w←			r			From [JDF1.4a]
MediaUnit	w			r			
Roll	w←			r			
Sheet	w←			r			
MediaType	w r			r w			
Paper	w← r←			r← w←			Only *MediaType* of *"Paper"* SHALL be supported for Synchronization
CorrugatedBoard	w← r←			r← w←			
Textile	w← r←			r← w←			
Vinyl	w←			r←			A type of plastic resin made from ethylene

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
	r←			w←			(found in crude oil) and chlorine (found in regular salt). Invented in 1920, Vinyl has become the second largest manufactured and sold plastic resin in the entire world.
Other	w← r←			r← w←			Printing on non-paper material such as bricks, wood or other non-paper materials SHOULD be specified as *Other*.
all remaining values	w? r?			r? w?			
MediaTypeDetails	w← r←			r← w←			
Backlit	w← r←			r← w←			May be used for any media type.
ScrimBanner	w← r←			r← w←			Details to Vinyl
WallPaper	w← r←			r← w←			Details to Paper
PrintingTechnology	w← r←			r← w←			Describes the printing technology that the media or coatings on the media are intended for or optimized for. **Note**: the first two values are new to this ICS.
UV	w← r←			r← w←			UV inks are cured by lighting the printed surface with a specific wave length light that triggers polymerization of the ink to stick to almost any material (wood, metal, plastic, etc). Does not need much drying.
Latex	w← r←			r← w←			Latex inks are cured by heating the ink up to a certain temperature. At that point, latex particles create a polymer layer that sticks to the surface and protects the colorant pigment particles from scratches. The ink is water based and needs drying to complete the printing process
all remaining values	w? r?			r? w?			See **Media**/@*PrintingTechnology* for other values [JDF1.4a].
ProductID	w?			r←			*ProductID* specifies the ID of the substrate in the context of the MIS.
Thickness	w? r			r w?			
Unit	w			r			For m2 consumption (ganging).
m2	w			r			
Weight	w			r			

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
	r			w			
GeneralID (DeviceProductID)	w?			r←			GeneralID [@IDUsage = "DeviceProductID"] is the first place checked to find a substrate. If supplied, this name SHALL be a well known string value in the context of the recipient device. SHALL be supplied by Worker that has a Paper Catalog with Worker specific IDs. See Table 17: GeneralID (DeviceProductID).

6.20 MISDetails

From [MIS-ICS 1.4].

Table 43: MISDetails

Referenced by: PhaseTime

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
CostType		r			w?		**r-Test:** Manager SHALL store the *CostType* against the actual hours.
all values		r			w←		
DeviceOperationMode		r			w←		The Worker SHALL supply this Attribute for an attended Device. The Worker MAY supply it for an unattended Device. **r-Test:** The Manager SHALL only create costing entries with *DeviceOperationMode* = *"Productive"*.
all values		r			w←		
WorkType		r			w?		**r-Test:** Manager SHALL store the *WorkType* against the actual hours.
all values		r			w←		

6.21 NodeInfo

Table 44: NodeInfo

Contained in: ResourcePool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
JobPriority	w←			r			SHALL be provided if setting priority for job.
0 ~ 100							SHALL be an integer value between 0 ~ 100. Mapping ranges for priority are: 0~25 – Priority= “Low” 26~50 – Priority= “Medium” 51~99 – Priority= “High” 100 – Priority= “Rush”

6.22 ObjectResolution

Table 45: ObjectResolution

Referenced by: RenderingParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
LineSmoothing	w			r?			SHALL be supplied to enable a device specific line-smoothing algorithm. Starting with JDF 1.5, *LineSmoothing* exists.
Resolution	w←			r?			If the agent supports resolution then output resolution specified in DPI.

6.23 RenderingParams

Table 46: RenderingParams

Member of: DPW-WF – Input Resources

Input to: ***Rendering***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AutomatedOverprintParams	w←			r			SHALL be specified for black overprint control. See Table 20: AutomatedOverprintParams
ObjectResolution	w←			r			SHALL be specified to select values.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							See Table 45: ObjectResolution.

6.24 RunList

Table 47: RunList

Member of: DPW-WF – Input Resources

Input to: ***ColorSpaceConversion***, ***DigitalPrinting***, ***Interpreting***, ***Rendering, Tiling***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
NPage	w←			r			SHALL be present if **DigitalPrintingParams** or **Media** is partitioned using relative, e.g., "*-1*" indexing.
PartIDKeys	w←			r			
Run	w			r			SHALL be present to partition **RunList**.
all remaining values	w?			r?			
Run	w←			r			SHALL be present in a leaf to partition **RunList**.
ByteMap	w←			r			Exactly one of **ByteMap** or **LayoutElement** SHALL be supplied. See Table 22: ByteMap.
LayoutElement	w←			r			Exactly one of **ByteMap** or **LayoutElement** SHALL be supplied. See Table 41: LayoutElement.

6.25 StitchingParams

Table 48: StitchingParams
Member of: DPW-WF – Input Resources
Input to: ***Stitching***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Angle			w←			r?	
StitchType			w←			r?	
Corner			w←			r?	
Side			w←			r?	

6.26 StrippingParams

StrippingParams is partitioned by **BinderySignature** only to place multiple products on one print.

Table 49: StrippingParams
Member of: DPW-WF – Input Resources
Input to: ***Stripping***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
BinderySignature	w←			r?			Either just **ExternalImpositionTemplate** or some (one to four) of **BinderySignature**, Position, StripCellParams and StripMark. See Table 21: BinderySignature.
ExternalImpositionTemplate	w←			r?			Either just **ExternalImpositionTemplate** or some (one to four) of **BinderySignature**, Position, StripCellParams and StripMark. See Table 34: ExternalImpositionTemplate.
Position	w←			r?			Either just **ExternalImpositionTemplate** or some (one to four) of **BinderySignature**, Position, StripCellParams and StripMark. See Table 50: Position.
StripCellParams	w←			r?			Either just **ExternalImpositionTemplate** or some (one to four) of **BinderySignature**, Position, StripCellParams and StripMark. See Table 51: StripCellParams.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
StripMark	w←			r?			Either just **ExternalImpositionTemplate** or some (one to four) of **BinderySignature**, Position, StripCellParams and StripMark. See Table 52: StripMark.

6.26.1 Position

Table 50: Position

Referenced by: **StrippingParams**

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AbsoluteBox	w←			r			
MarginBottom	w←			r?			
MarginLeft	w←			r			
MarginRight	w←			r			
MarginTop	w←			r?			
Orientation	w←			r			

6.26.2 StripCellParams

Table 51: StripCellParams

Referenced by: **StrippingParams**

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Sides	w?			r?			
OneSided	w←			r?			
TwoSidedHeadtoFoot	w←			r?			
TwoSidedHeadtoHead	w←			r?			

6.26.3 StripMark

Table 52: StripMark
Referenced by: StrippingParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Anchor	w			r			
MarkContext	w			r			
BinderySignature	w←			r?			
Tile	w←			r?			
MarkName	w			r			
CutMark	w←			r			
JobField	w←			r?			
TrimMark	w←			r?			
RegisterMark	w←			r?			
GrommetMark	w←			r?			An eyelet-like shape placed in a hole in a sheet or panel to protect or insulate a rope or cable or fixing element passed through it or to prevent the sheet, panel or tile from being torn. Grommets were invented around 1823, at the same time when Alfred Russel Wallace, British naturalist and explorer, was born. This is a new NMTOKEN defined by this ICS.
Flood	w←			r?			Layer of defined color to cover entire surface, e.g., in backlit printing to preserve transparency.
MarkSide	w			r?			
JobField	w←			r?			SHALL be provided if *MarkName* is "*JobField*". See Table 40: JobField.

6.27 Tile

Table 53: Tile
Member of: DPW-WF – Input Resources

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
TileID	w			r			Individual tiles are selected and matched by this

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							attribute, which is described in Table3-28, “Part Element” on page103. **Note:** If the media width varies, use *TileID* to partition.
CTM	w			r			Coordinate transformation matrix mapping the ClipBox for this Tile to the rectangle 0 0 X Y, where X and Y are the extents of the media that the Tile will be imaged onto.
ClipBox	w			r			This is the box that defines the content that is to be placed in the tile. Defined in the coordinate system of the surface.
TrimBox	w←			r			This is the box that defines how the tile will be trimmed. When the *ClipBox* is larger than the *TrimBox* is when you have the overlap that often is required in WideFormat to mount tiles. Defined in the coordinate system of the surface Proposal for JDF 1.5
MarkObject	w←			r?			List of marks that are placed on the tile. MarkObject/@CTM applies to the coordinate system of the Tile.

6.28 UsageCounter

From [UsageCtr-AN].

Table 54 defines the conformance requirements for **UsageCounter** instances supplied by Managers and Workers. The term "support" means support in *at least one* **UsageCounter** instance, while the term "supply" means to supply in *each* **UsageCounter** instance.

Table 54: UsageCounter

Member of: DPW-WF – Input Resources

Referenced by: ResourcePool
Input to: ***DigitalPrinting***

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
CounterID		w? r			r w←		The name of the **UsageCounter** instance as defined by the Worker. See [UsageCtr-AN] section 3.1.2 for additional conformance requirements.
CounterTypes		!w r			r? w←		This attribute indicates the ***Countable Event***s that this counter counts, whether or not these ***Countable Event***s actually occurred. Each value

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							of this attribute belongs to a ***Category***, which is shown below with its values: • **Media Sides:** *OneSided*, *TwoSided* • **Colorant:** *Black*, *Blank*, *Color*, *Separation*, *Varnish* • **Usage:** *User*, *Auxiliary* The Worker SHALL supply for this attribute: • At least one Colorant value. • At least one Media Sides value • Zero or more Media Size values • Zero or more Usage values • Zero or more values in each new extension ***Category*** See [UsageCtr-AN] section 3.1.2 for additional conformance requirements and [UsageCtr-AN] Appendix A: "Examples".
Auxiliary		r			w←		Describes a ***Countable Event*** that produces something not requested by the user, such as an automatically-supplied banner, confirmation, slip, separator, or error sheets.
Black		r			w←		Describes a ***Surface Countable Event*** where the Printer uses black colorant on a sheet surface that uses only black colorant. A Worker SHALL support this value if it supports ***Surface Countable Event***s. By contrast, a counter that counts ***Separation Countable Events*** SHALL use the *Separation* Colorant value to count the application of a black colorant.
Blank		r			w←		Describes a ***Countable Event*** where the Printer uses no colorant on blank or pre-printed media. A counter MAY support a Blank value as a ***Surface Countable Event*** or a ***Separation Countable*** Event, depending on implementation.
Color		r			w←		Describes a ***Surface Countable Event*** where the Printer prints with full color (such as CMYK). A color Printer SHALL support this value if it supports ***Surface Countable Event***s. By contrast, a counter that counts ***Separation Countable Events*** SHALL use the *Separation* Colorant value to count the application of each CMYK colorant. *Color* takes precedence over *Black* or *HighlightColor* on a given sheet surface (i.e., the most complex process SHALL be counted). See [PWG-Counter-Std].

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
~~*HighlightColor*~~		~~r~~			~~w~~		~~Describes a ***Surface Countable Event*** where the Printer prints with a highlight color, spot color, or spot varnish.~~ ~~This ***Countable Event*** typically occurs when a Printer uses a black colorant plus one other colorant, but this rule MAY vary by implementation. See *Black* and *Color* values.~~ ~~A Worker for any highlight color Printer SHALL support this value if it supports ***Surface Countable Event***s. By contrast, a counter that counts ***Separation Countable Events*** SHALL use the *Separation* Colorant value to count the application of each spot color or spot varnish colorant.~~
~~*Insert*~~		~~r~~			~~w~~		~~Describes a ***Countable Event*** where the Printer produces a post-fuser insert sheet. If *CounterTypes* contains only "*Insert*", "*Blank*" and some Units ***Category*** value, then the counter counts only post-fuser insert sheets.~~
~~*InsertPrefuser*~~		~~r~~			~~w~~		~~Describes a ***Countable Event*** where the Printer produces a pre-fuser insert sheet. If *CounterTypes* contains only "*InsertPrefuser*", "*Blank*" and some Units ***Category*** value, then the counter counts only pre-fuser insert sheets.~~ ~~This value is not defined in [JDF1.4a].~~
~~*LargeSize*~~		~~r~~			~~w~~		~~Describes a ***Countable Event*** where the Printer prints on a large size sheet.~~
~~*NormalSize*~~		~~r~~			~~w~~		~~Describes a ***Countable Event*** where the Printer prints on a normal size sheet.~~
OneSided		r			w		Describes a ***Countable Event*** where the Printer prints on one side of a sheet with the intention of printing on only one side of a sheet. The Worker SHALL NOT use this event to count one side of a duplexed sheet. All Printers SHALL support this value.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Separation		r			w←		Describes a ***Separation Countable Event*** where the Printer prints a layer of any color of toner, ink, spot color, or spot varnish. A Printer SHALL support this value if it supports ***Separation Countable Events***, regardless of whether it prints black only, spot color, spot varnish or CMYK. By contrast, a counter that counts ***Surface Countable Events*** SHALL use the *Black*, *HighlightColor*, or *Color* Colorant value to count the application of all colorants on a surface. This value is not defined in [JDF1.4a].
TwoSided		r			w←		Describes a ***Countable Event*** where the Printer prints on one side of a sheet with the intention of printing on both sides of a sheet. The Worker SHALL NOT use this event to count one side of a simplexed sheet. All duplex Printers SHALL support this value.
User		r			w←		Describes a ***Countable Event*** where the Printer prints pages of the document supplied by the user or special sheets requested by the user, such as inserts or Separator Sheets.
Varnish		r			w←		Describes a Separation Countable Event where the Printer prints an overcoating varnish layer. This value is not defined in [JDF1.4a].
~~*Waste*~~		~~r?~~			~~!w~~		~~*Waste* is deleted. Count *Waste* (and *Good*) for **Media** by partitioning it with *Condition*.~~
all remaining values		r			w?		A Worker MAY include other implementation-defined values for an existing ***Category*** or a new ***Category***. **r-Test:** A Manager SHALL ignore values that it doesn't support.
Scope		wr			r w		**r-Test**: This attribute SHALL have a "*Job*" value.
Job		wr			r w←		This ICS covers only Job counts. If the Worker supplies a **UsageCounter**, it SHALL supply this attribute with a "*Job*" value.

7 Conformance Tables – JDF ResourceLinks

7.1 Abstract ResourceLink

All JDF resource links derive from the Abstract ResourceLink.

From [Base-ICS 1.4]

Table 55: Abstract ResourceLink

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
MinStatus	w? r?			r w←			If a Worker adds a new ResourceLink, it SHALL write this value. **r-Test:** Worker SHALL NOT execute Nodes that have input Resources where the Resource's *Status* Attribute has a value "lower" than the value specified in *MinStatus*, as defined in [JDF1.4a] Table 3-10 in Section 3.8.3 "Abstract Resource".
ProcessUsage	w← r			r w←			If multiple Resources of the same type are used by a Process, *ProcessUsage* SHALL be used to distinguish them as defined in [JDF1.4a] Chapter 6 "Processes". **r-Test:** The Manager and Worker SHALL conform to read requirements for the linked Resource as specified in other ICS's.
rRef	w r			r w←			If a Worker adds a new ResourceLink, it SHALL write this value. This Attribute SHALL reference a Resource that is a direct child of a ResourcePool. **r-Test:** The Manager and Worker SHALL conform to read requirements for the linked Resource as specified in other ICS's.
Usage	w r			r w←			If a Worker adds a new ResourceLink, it SHALL write this value. **r-Test:** The Manager and Worker SHALL conform to read requirements for the linked Resources as specified in other ICS's, and SHALL update Output ResourceLink Elements as specified in other ICS's. See [JDF1.4a].
Input	w← r			r w←			SHALL be supplied for input resources. Not in [Base-ICS 1.4].
Output	w← r			r w←			SHALL be supplied for output resources. Not in [Base-ICS 1.4].

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Part	w?			r			A Worker SHALL read and Support ResourceLink Elements that reference one or more Partitions of a Resource. **r-Test:** The Worker SHALL conform to read requirements for the linked Resource as specified in other ICS's. See [JDF1.4a].

7.2 ComponentLink

7.2.1 ComponentLink (ResourceLinkPool)

Table 56: ComponentLink (ResourceLinkPool)

Derived from: Abstract ResourceLink

Contained in: ResourceLinkPool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ActualAmount		r			w←		
Amount	w←			r			Specifies the number of copies. Exactly one of *Amount* or AmountPool SHALL be specified.
Usage	w			r			
Output	w			r			
AmountPool	w←	r		r	w←		Exactly one of *Amount* or AmountPool SHALL be specified. See Table 59: AmountPool

7.3 InkLink

Table 57: InkLink

Derived from: Abstract ResourceLink

Referenced by: ResourceAudit

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Usage	r?			w			

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Input	r?			w			
AmountPool		r?			w		When describing ink, all units SHALL be in liters. See Table 59: AmountPool.

7.4 MediaLink

Table 58: MediaLink

Derived from: Abstract ResourceLink

Referenced by: ResourceAudit

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Usage	r?			w			
Input	r?			w			
AmountPool		r?			w		When describing media, all units SHALL be specified in square meters. See Table 59: AmountPool.

7.4.1 AmountPool

From [MIS-ICS 1.4].

Table 59: AmountPool

Referenced by: ComponentLink (ResourceLinkPool), InkLink, MediaLink

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
PartAmount	w	r		r	w		See Table 60 (as PartAmount).

7.5 PartAmount

From [MIS-ICS 1.4].

Table 60: PartAmount

Referenced by: AmountPool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ActualAmount		r			w		The Amount of the Resource that was produced or consumed during this PhaseTime. **r-Test:** The Manager SHALL create costing entries for quantity specified in this Attribute.
Amount	w			r			
Lot			r			w←	SHALL be specified if Resource is lot controlled. SHALL NOT be supplied if AmountPool exists. **r-Test:** The Manager SHALL create costing entries based on the specified Lot. See Table 61: Lot.

7.5.1 Lot

From [MIS-ICS 1.4].

Table 61: Lot

Referenced by: PartAmount

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ActualAmount			r			w	**r-Test:** see *ActualAmount* in Table 60.
LotID			r			w	**r-Test:** The Manager SHALL create costing entries based on the specified Lot.
Consumption			r?			w	
Full			r?			w←	
Partial			r?			w←	

8 Conformance Tables – JMF Instances

See [JMF-ICS 1.4] and JMF part of [MIS-ICS 1.4].

9 References

9.1 Normative References

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9.2 Informative References

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