Integrated Digital Printing (IDP) ICS

Version 1.5

Date: 2017-12-11

File: ICS-IDP-1.5.doc, .pdf

Digital Printing WG

Abstract

This CIP4 JDF Interoperability Conformance Specification (ICS) specifies three levels of Conformance Requirements (levels 1 to 3) for a subset of JDF defined for Integrated Digital Printing (IDP). Black and white, Highlight Color, or color simplex and duplexing digital printing systems are assumed with OPTIONAL in-line finishing capabilities. It encompasses quick print and production printing IPP semantics [IPP-std].

This ICS contains the contents of the Digital Printing Job **UsageCounter** Resource (DPJUCR) ICS [DPJUCR-ICS] indicated with Light Green fill and is the Master Copy for the DPJUCR ICS. If another ICS uses the DPJUCR ICS, then the Light Green fill sections will be copied into it.

This version applies to interactions using JDF version 1.5.

CIP4 THANKS ITS PARTNER LEVEL MEMBERS

Table of Contents

Tables

1   Introduction

JDF 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 ICS identifies a relatively small subset of JDF for Digital Printing.

A companion Integrated Digital Printing Application Note [IDP-AN] explains this ICS in more detail, but does not contain any normative material, i.e., does not contain any material that defines conformance to this ICS.

1.1   Scope

This ICS defines a subset of JDF that is useful for duplexing black and white, Highlight Color, and color integrated digital printing systems with OPTIONAL in-line finishing capabilities. It encompasses the quick print and production printing IPP semantics [IPP-std]. where an operator is involved. Office printing features are outside the scope of this ICS (see [IPP-ODP]).

This ICS applies to Black and White, Highlight Color, and Color Sheet fed Printers.

This ICS defines the conformance requirements for counting each *Countable Event* performed by an Integrated Digital Printer. These counts can be used by the Worker to indicate work performed on a particular Job. The Manager can then use the counts directly for a Job to determine work performed on a particular Job and can apply different cost multipliers to each count to determine the total cost of the Job.

1.2   History

Compared to IDP ICS version 1.0, version 1.3 divides Level 1 of IDP ICS 1.0 into Levels 0, 1, and 2 and adds the **UsageCounter** Resource for counting *Impressions*. See Changes from JDF 1.2 IDP ICS for more details.

Compared to IDP ICS version 1.3, version 1.5 simplifies the Levels and adds the support of exchanging Media Catalog resources. See Changes from IDP ICS 1.3 for more details.

2   Glossary

This section defines terminology used throughout this document. References to other documents are indicated with square brackets, e.g. JDF1.5]. For most terms, see the Terminology section in [JDF1.5] and [Base-ICS].

This section contains terms that pertain to this ICS:

Table 1: Glossary

Term	Definition
Category	A subset of UsageCounter/@CounterTypes values that are related.
Characteristic Attribute	A **Media** Attribute that is used to select **Media** by its characteristics rather than by Media/@ProductID or Media/GeneralID.

Term	Definition
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, and 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.
Combined Digital Printing Node	A JDF Combined Node (value of the *Type* Attribute is "`Combined`") that contains a **DigitalPrinting** Process and that conforms to the requirements of this ICS.
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*.
Device	As defined in the JDF Specification JDF1.5] interprets JDF and executes instructions representing a Job.
Highlight Color	A color that is used with black in a two-color printing Process. Highlight colors are typically used for emphasis rather than for precise color rendering, and hence are often named by generic color names (e.g., red) rather than precise color names (e.g., Pantone 1234).
Highlight Color Printer	A printer that uses a two-color printing Process, typically consisting of a black and a highlight color colorant. The highlight color colorant may be changeable by the operator.
Impression	Either a *Separation Impression* or a *Surface Impression*.
Integrated Digital Printer	A *Device* that Supports the **DigitalPrinting** Process along with some Prepress Processes and perhaps some Postpress Processes. The term **Worker** refers to the Integrated Digital Printer in this ICS.
Integrated Digital Printing Controller	A Controller that sends a JDF Instance to an *Integrated Digital Printer*. The term *Manager* refers to the *Integrated Digital Printing Controller* in this ICS.
Overcoat Varnish	A varnish that is applied to the entire Surface.
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	A portion of a color image that will be printed in one basic color [Delmar97].

Term	Definition
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`" (see *Overcoat Varnish*) **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 JDF Impression*. Note: a blank *Separation Impression* (zero colorant) counts as a *Separation Impression* or a *Surface Impression* depending on implementation.
Spot Color	A special color (e.g., Acme yellow) that is usually intended to be produced by means of a special colorant in order to provide more consistent results than are available through the use of process colorants. *Spot Colors* are usually precisely specified (e.g., Pantone 1234) and are not intended to be combined with process colors to extend the gamut, e.g., not included as one of the DeviceN colors. When the Job is color separated, each spot color has its own image. A printing process that is unable to render a spot color using a special colorant with a dedicated *Separation* may emulate the spot color using process colorants. In this case, special color management is often used for spot colors to optimize the accuracy of match to the intended color. Compare and contrast with *Highlight Color*.
Spot Varnish	A *Spot Color* that consists of a varnish.
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* or a *Separation Impression* depending on implementation.
Units	A *Category* for values of `UsageCounter/@CounterTypes` that specify the formula for computing a count. This ICS (and not JDF1.5]) specifies the **Units** *Category* as an NMTOKEN whose values are specified in the Description of the *CounterTypes* Attribute in Table 56: UsageCounter.

3 Conformance Levels

This ICS defines three Conformance Levels of Conformance Requirements, namely Levels 1, 2, and 3, for defining an Integrated Digital Printing Node in a JDF Instance. Table 2 briefly describes the levels of conformance defined by this ICS.

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

In order to be conformant to a level of this ICS specified in the first column of Table 2, a Manager (in an MIS or *Integrated Digital Printing Controller*) MUST conform to the Manager part or a Worker (in an *Integrated Digital Printer*) MUST conform to the Worker part of this ICS and the ICSs and levels specified by the other ICSs in Table 2 below.

Table 2: IDP ICS Conformance Levels

Level of this ICS	[Base-ICS]	[JMF-ICS]	[MIS-ICS]	Description
1	2	2	-	• Hot folder and JMF submission • Basic printing functionality
2	2	2	-	This combination of ICS levels adds: • Advanced imposition (mandatory for the worker, optional for the manager); • In-line Finishing, but is OPTIONAL to Support;
3	2	2	2 or higher	This combination of ICS levels adds: • multi-file support; • **UsageCounter** Resource for counting *Impressions*; • MIS ICS support

3.1 Physical Resource Conformance Requirements for IDP Workers

3.1.1 Physical Resources

A Worker MUST Support the Physical Resources indicated in Table 3 at the indicated IDP ICS Level.

Table 3: Physical Resource Conformance Requirements for IDP Worker

Resource	IDP Level 1	IDP Level 2	IDP Level 3	Reference
Component (Cover)		MUST		See Table 24: Component – Cover.
Component (Input)	MUST			See Table 26: Component – Input.
Component (Output)	MUST			See Table 27: Component – Output.
Ink (Input)	MAY			See Table 36: Ink.
Media (Input)	MUST			See Table 47: Media.
UsageCounter (Input)			MUST	See Table 56: UsageCounter.

3.1.2 Resources from MIS ICS Level 2

If the Worker Supports the [MIS-ICS] Level 2, it MUST Support the Resources listed in Table 3 according to the [MIS-ICS] Tables indicated in Table 4.

Table 4: [MIS-ICS] Tables for IDP Workers

[MIS-ICS] Sections and Tables	Reference
Section 4.5.2 Phase Time and Table 9: PhaseTime/ResourceLink.	See Table 9: PhaseTime.
Section 4.5.4 ResourceAudit and Table 11: ResourceAudit/ResourceLink.	
Section 13 and Table 13: Abstract ResourceLink and ResourceLink/AmountPool/PartAmount.	
Table 40: ResourceInfo/Resource.	See Table 58: ResourceInfo.

3.1.3 Resources from MIS ICS Level 3

If a Worker Supports [MIS-ICS] Level 3, the Worker MUST Support Lot Control for the **Media** Resource according to [MIS-ICS] Table 15: Lot. See also Table 47: Media.

3.2   OPTIONAL Features for a Worker

Table 5 lists some of the more important OPTIONAL Features that this ICS defines for a Worker for the indicated IDP Levels. For example, Covers are OPTIONAL for a Level 2 Worker to Support, while Disjointing is OPTIONAL for a Level 1 (or Level 2) Worker to Support:

Table 5: OPTIONAL Features for a Worker

Feature	Level	Reference
Soft Covers	2	See section 7.7 CoverApplicationParams.
Disjointing	1	See section 7.9 Disjointing.
Highlight Color	1	See Table 19: Color, Table 20: ColorantControl, Table 22: ColorPool, Table 21: ColorantParams, Table 36: Ink, and Table 52: SeparationSpec.
various Finishing Features	2	See sections 7.12 FoldingParams, 7.14 HoleMakingParams, 7.25 SpineTapingParams, 7.26 StitchingParams, and 7.27 TrimmingParams.
Overcoat Varnish	1	See Table 36: Ink.
Selection by **Media** Characteristics	1	See section 7.20 Media.
Screening	1	See section 7.23 ScreeningParams.
Spot Color	1	See Table 19: Color, Table 20: ColorantControl, Table 22: ColorPool, Table 21: ColorantParams, Table 36: Ink, and Table 52: SeparationSpec.
Spot Varnish	1	See Table 19: Color, Table 20: ColorantControl, Table 22: ColorPool, Table 21: ColorantParams, Table 36: Ink, and Table 52: SeparationSpec.
Read media catalog	2	See section 8.3 Media Resource Query/Command

3.3   Certification

A Manager or Worker implementation is certified against one of the following Levels as specified by the submitter: 1, 2 or 3 (see Table 2). Certification against the ICS for the Worker role is performed with three types of data:

- The physical printed output or an equivalent electronic representation.
- The JMF Messages or returned JDF file.
- Operator Interface on the Device.

Appendix A **UsageCounter r-Test** Examples contains example of **UsageCounter** values for different types of Jobs and Worker implementations. Appendix B **r-Test** Conformance Drawings contains Use Cases consisting of the specification of the JDF Instances and the resulting printed output. Appendix C StatusDetails Values specifies rules for *StatusDetails* value in Job and Device contexts.

Appendix B **r-Test** Conformance Drawings contains many of the **r-Test** Use Cases for Certification. For Use Cases that have Attributes with only the JDF default values, the default value is assumed to be implemented by the Worker for purposes of the certification of the printed output. For Attributes that are not included in a Use Case and do not have a JDF default, the Worker is expected to be configured for these Attributes such that the **r-Tests** succeed during the Certification process (see Appendix B **r-Test** Conformance Drawings (Normative).

4 Conformance Tables – JDF Instances

The tables in this section specify the ***Conformance Requirements*** for *Attributes* and *Elements* for a JDF Node, whether it is a ***Root Node*** or a ***Subnode***. A Worker MUST search the JDF Instance to find IDP executable Nodes that match the criteria specified in this ICS, the [Base-ICS], and [JDF1.5] section 4.2.1 "Determining Executable Nodes". The Worker MUST Support either the *ExecutionPolicy* = "`FirstFound`" or "`AllFound`", but MUST NOT Support "`RootNode`" (see [JDF1.5] **Table 11-1:** DeviceCap Element). If none are found, the Worker MUST return an appropriate error condition:

- For [JMF-ICS] Level 1 submission, the Worker MUST follow [JDF1.5] section 4.2.1 step 4.

- For [JMF-ICS] Level 2 submission, the Worker MUST return the SubmitQueueEntry Response or Acknowledge Message with Response/@ReturnCode = "*102*", "No executable Node exists in the JDF").

Note: The [Base-ICS] requires *ExecutionPolicy* = "`AllFound`". However, for this ICS, the IDP Worker requirements are less strong, since many Digital Printing implementations submit the Job directly to the Machine, so that handling multiple executable Nodes as a single "digital printing Job" would be too difficult.

4.1 JDF Node

Table 6: JDF Node

Referenced by: JobPhase

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Category	w			r?			
IDP.DigitalPrinting	w			r?			
ICSVersions	w			r?			
IDP_L1-1.5	w			r?			Specifies that the JDF Node conforms to [IDP-ICS] level 1.
IDP_L2-1.5		w		r?			Specifies that the JDF Node conforms to [IDP-ICS] level 2.
IDP_L3-1.5			w	r?			Specifies that the JDF Node conforms to [IDP-ICS] level 3.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Status	w r?			r w			**r-Test:** As in the [JDF1.5] and [Base-ICS]. See Table 3-4 "*JDF Node*" in [JDF1.5]. For values, see Table 103: Status and StatusDetails Attribute Value Pairs.
StatusDetails	w? r?			r? w←			This ICS defines additional values to be used with each *Status* value, so that *StatusDetails* MUST NOT be omitted, except when the details are unknown. For values, see Table 103: Status and StatusDetails Attribute Value Pairs.
all values from Table 103	r			r? w←			If the Worker writes values, the Worker SHOULD use *StatusDetails* values from Table 103: Status and StatusDetails Attribute Value Pairs. **r-Test:** See Table 103 for equivalencies.
Type	w			r			
Combined	w			r			**r-Test:** A Worker MUST process a Node that is Combined and satisfies the **r-Test** for the *Types* Attribute.
Types	w			r			**r-Test:** A Worker MUST process a Node which contains all the required ("r") *Types* values. For the order of the values, see Table 11: DigitalPrinting Combined Node – Sequencing of Types Attribute Values.
ColorSpaceConversion	w			r			Exactly one MUST be present. Worker MUST Support one *ColorSpaceConversion*. **Note:** supplying a PDF with a Reference Printing Condition or Supporting Color Retargeting using multiple **ColorSpaceConversion** Processes are outside the scope of this ICS. See Table 20: ColorantControl and see Table 23: ColorSpaceConversionParams.
CoverApplication		w←			r?		MUST be present if cover application is requested. Multiple MAY be present. See Table 24: Component – Cover; see Table 15: ComponentLink – Cover; see Table 25: Component – Exchange; see Table 16: ComponentLink – Exchange and see Table 28: CoverApplicationParams.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
DigitalPrinting	w			r			Exactly one MUST be present. **r-Test:** See **r-Test** for *Types*. See Table 20: ColorantControl; see Table 26: Component – Input; see Table 29: DigitalPrintingParams; see Table 36: Ink; see Table 47: Media and see Table 56: UsageCounter.
Folding		w←			r?		MUST be present if folding is requested. Multiple MAY be present. See Table 25: Component – Exchange; see Table 16: ComponentLink – Exchange and see Table 33: FoldingParams.
HoleMaking		w←			r?		MUST be present if hole-making is requested. Multiple MAY be present. See Table 25: Component – Exchange; see Table 16: ComponentLink – Exchange and see Table 35: HoleMakingParams.
Imposition	w			r			Exactly one MUST be present. **r-Test:** See **r-Test** for *Types*. See Table 49: RunList.
Interpreting	w			r			Exactly one MUST be present. **r-Test:** See **r-Test** for *Types*. See Table 20: ColorantControl.
LayoutPreparation	w			r			Exactly one MUST be present. **r-Test:** See **r-Test** for *Types*. See Table 44: LayoutPreparationParams and see Table 49: RunList.
Rendering	w			r			Exactly one MUST be present. **r-Test:** See **r-Test** for *Types*. See Table 48: RenderingParams.
Screening	w←			r?			Exactly one MUST be present if screening is requested. See Table 50: ScreeningParams.
SpineTaping		w←			r?		MUST be present if spine taping is requested. Multiple MAY be present. See Table 25: Component – Exchange; see Table 16: ComponentLink – Exchange and see Table 53: SpineTapingParams.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Stitching		w←			r?		MUST be present if stitching is requested. Multiple MAY be present. See Table 25: Component – Exchange; see Table 16: ComponentLink – Exchange and see Table 54: StitchingParams.
Trimming		w←			r?		MUST be present if trimming is requested. Multiple MAY be present. See Table 25: Component – Exchange; see Table 16: ComponentLink – Exchange and see Table 55: TrimmingParams.
all remaining values	w?			r?			The Manager SHOULD NOT write additional Processes that are not recognized by the Worker. A Worker NEED NOT process a Node that contains values that it does not Support.
Comment	w←			r			See Table 7: Comment – Manager Created and see [MIS-ICS].
Comment	r?			w?			The Worker MAY supply a human readable string that provides details beyond the token value of JDF/@StatusDetails. See Table 8: Comment – Worker Created and see [MIS-ICS].

4.2 Comment – Manager Created

This ICS inherits the conformance requirements from the "Comment - Manager Created" Table in the [MIS-ICS] and Table 7 adds additional conformance requirements.

Table 7: Comment – Manager Created

Referenced by: JDF Node

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Name			w			r	
Instruction			w←			r←	If the Worker displays instructions to the operator, the Worker MUST display the content of each Comment Element having this value to the operator, regardless of the number of such Comment Elements in a JDF Node, except the Worker MAY filter out Comment instances based on Comment/@Language as specified by the operator.
<content of Element>			w			r	**r-Test:** if exists(Comment[@Name ="Instruction"]), the Worker MUST display

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
							the "content of Element" of this Comment to the operator.

4.3 Comment – Worker Created

This ICS inherits the conformance requirements from the "Comment - Worker Created" Table in the [MIS-ICS] and Table 8 adds additional conformance requirements.

Table 8: Comment – Worker Created

Referenced by: JDF Node, PhaseTime, ModulePhase, DeviceInfo, JobPhase, ModuleStatus

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Name			r			w	**r-Test:** See [MIS-ICS].
DeviceText			r?			w←	If the Device generates a human readable description that provides details beyond the token value of the *StatusDetails* Attribute, the Worker MUST supply this Comment. This NMTOKEN value is defined by this ICS.
<content of Element>			r			w	**r-Test:** See [MIS-ICS].

4.4 Audit Elements

This section and section 3.1 Physical Resource Conformance Requirements for IDP Workers specify the **Worker** requirements for Audit Elements in the AuditPool. See the [Base-ICS] for additional AuditPool requirements for the [IDP-ICS] Manager and Worker. See [MIS-ICS] for additional Audit Element and AuditPool requirements, if also conforming to the [MIS-ICS] Level 2.

4.4.1 PhaseTime

Table 9: PhaseTime

Referenced externally by: AuditPool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Status	r?		r	w			Same as *Status* in Table 6: JDF Node.
StatusDetails	r?			w←			Same as *StatusDetails* in Table 6: JDF Node. For values, see Table 103: Status and StatusDetails Attribute Value Pairs.
Comment	r?			w?			The Worker MAY supply a human readable string that provides details beyond the token value of PhaseTime/@StatusDetails. See Table 8: Comment – Worker Created and see [MIS-ICS].
ModulePhase	r?			w←			See [MIS-ICS]. See Table 10: ModulePhase.

4.4.2 ModulePhase

Table 10: ModulePhase

Referenced by: PhaseTime

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
DeviceStatus	r?		r←	w←			For values, see Table 105: DeviceStatus and StatusDetails Attribute Value Pairs.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ModuleType	r?			w			Identifies type of module. The values are defined by this ICS here for ModulePhase and ModuleStatus (see Table 72: ModuleStatus). See Table 103 "*Status and StatusDetails Attribute Value Pairs*" and Table 105 "*DeviceStatus and StatusDetails Attribute Value Pairs*" for relationship of *ModuleType* values with PhaseTime/@Status and PhaseTime/@StatusDetails values.
MimeUnpacker	r?			w←			Module that receives and unpacks the MIME package and fetches the JDF if it is referenced from the JMF.
ReferencedDataCollector	r?			w←			Module that fetches data referenced from the JDF and MAY include data referenced from the PDL. Does not include accepting MIME, unpacking MIME, or fetching the JDF itself.
RIP	r?			w←			RIP module.
Marker	r?			w←			Marker module, including in-line finishing.
StatusDetails	r?			w←			This ICS defines additional values to be used with each *DeviceStatus* value, so that *StatusDetails* MUST NOT be omitted, except when the details are unknown. See Table 105 "*DeviceStatus and StatusDetails Attribute Value Pairs*". **r-Test:** See Table 105 for equivalencies. For values, see Table 105: DeviceStatus and StatusDetails Attribute Value Pairs.
all values from Table 105	r?		r	r? w←			If the Worker writes values, the Worker SHOULD use the values in Table 105: DeviceStatus and StatusDetails Attribute Value Pairs. **r-Test:** See Appendix C.2 DeviceStatus and StatusDetails for equivalencies.
Comment	r?			w?			The Worker MAY supply a human readable string that provides details beyond the token value of ModulePhase/@StatusDetails. See Table 8: Comment – Worker Created.

5   Conformance Tables – Processes

In defining conformance for *Integrated Digital Printer*, this ICS specifies the required and optional JDF that the *Integrated Digital Printer* Supports in a *Combined Digital Printing Node*.

A conforming *Integrated Digital Printer* MUST execute a *Combined Digital Printing Node*. This Node MAY be the Root Node or a child Node in a **JDF Instance**.

5.1   DigitalPrinting Combined Node

The following 4 tables specify the sequencing of *Types* Attribute Values, as well as input, exchange and output Resources.

Table 11: DigitalPrinting Combined Node – Sequencing of Types Attribute Values

Process Name	Cardinality	Description
LayoutPreparation	REQUIRED	
Imposition	OPTIONAL	*Imposition* MUST occur exactly once among the 2 possible positions.
ColorSpaceConversion	OPTIONAL	*ColorSpaceConversion* MUST occur exactly once among the 3 possible positions.
Interpreting	REQUIRED	MUST appear exactly once.
ColorSpaceConversion	OPTIONAL	*ColorSpaceConversion* MUST occur exactly once among the 3 possible positions.
Rendering	REQUIRED	
ColorSpaceConversion	OPTIONAL	*ColorSpaceConversion* MUST occur exactly once among the 3 possible positions.
Screening	OPTIONAL	
Imposition	OPTIONAL	*Imposition* MUST occur exactly once among the 2 possible positions.
DigitalPrinting	REQUIRED	
Stitching	OPTIONAL	Each of the 6 finishing Process names in this row and following rows MUST appear either zero times or one time, and these finishing Process names MAY appear in any order.
Folding	OPTIONAL	See Description in *Stitching* row.
Trimming	OPTIONAL	See Description in *Stitching* row.
HoleMaking	OPTIONAL	See Description in *Stitching* row.
CoverApplication	OPTIONAL	See Description in *Stitching* row.
SpineTaping	OPTIONAL	See Description in *Stitching* row.

Table 12: DigitalPrinting Combined Node – Input Resources

Name	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ColorantControl	w←			r			MUST NOT appear more than once. See Table 20: ColorantControl.
ColorSpaceConversionParams	w			r			MUST appear exactly once. See Table 23: ColorSpaceConversionParams.
Component – Input	w←			r			**Component** produced by an upstream Node that is input to this Node. MAY appear more than once. At least one of **Component** or **Media** MUST be supplied. See Table 26: Component – Input.
Component – Cover		w←			r?		MUST be present if JDF/@Types includes "*CoverApplication*" and an external cover is supplied. **Note:** in **Component** – Cover becomes an OPTIONAL input to the *CoverApplication* Process. Soft cover produced by an upstream Node or pre-printed that is input to this Node. See Table 24: Component – Cover and see Table 15: ComponentLink – Cover.
CoverApplicationParams		w←			r?		MUST NOT appear more than once. MUST be present if JDF/@Types includes "*CoverApplication*". See Table 28: CoverApplicationParams.
Device	w←			r			This ICS strongly recommends that at most one **Device** Input Resource be specified as Input Resource to the Combined Process Node. See [Base-ICS].
DigitalPrintingParams	w			r			MUST appear once. See Table 29: DigitalPrintingParams.
FoldingParams		w←			r?		MUST NOT appear more than once. MUST be present if JDF/@Types includes "*Folding*". See Table 33: FoldingParams.
HoleMakingParams		w←			r?		MUST NOT appear more than once. MUST be present if JDF/@Types includes "*HoleMaking*". See Table 35: HoleMakingParams.

Name	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Ink	w←			r←			The Manager MUST supply when specifying inks beyond the default Device process colorants, e.g., for *Highlight Color*, *Spot Color*, *Spot Varnish*, and *Overcoat Varnish*. The Worker MUST Support if the Device Supports multiple ink setup options. See Table 36: Ink.
InterpretingParams	w			r			MUST appear once. For this ICS, all **InterpretingParams** Attributes and Elements are optional. See [JDF1.5].
Layout	!w			r?			**Layout** MUST NOT be an input to any Process. **Layout** MUST only be referenced from **Component** (see Table 26: Component – Input) and **InsertSheet** (see Table 38: InsertSheet – Disjointing and Table 40: InsertSheet – RunList) to specify the **Media**. See [JDF1.5].
LayoutPreparationParams	w			r			MUST appear once. See Table 44: LayoutPreparationParams.
Media	w←			r			MAY appear more than once. At least one of **Component** or **Media** MUST be supplied. See Table 47: Media.
RenderingParams	w			r			MUST appear once. See Table 48: RenderingParams.
RunList	w			r			MUST appear once. See Table 49: RunList.
ScreeningParams	w←			r			MUST NOT appear more than once. MUST be present if JDF/@Types includes "*Screening*". See Table 50: ScreeningParams.
SpineTapingParams		w←			r?		MUST NOT appear more than once. MUST be present if JDF/@Types includes "*SpineTaping*". See Table 53: SpineTapingParams.
StitchingParams		w←			r?		MUST NOT appear more than once. MUST be present if JDF/@Types includes "*Stitching*". See Table 54: StitchingParams.

Name	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
TrimmingParams		w←			r?		MUST NOT appear more than once. MUST be present if JDF/@Types includes "*Trimming*". See Table 55: TrimmingParams.
UsageCounter		w← r			r w←		The Manager MUST be able to supply one or more skeleton **UsageCounter** Resources so that the Worker will update them. The Worker MUST supply *all* **UsageCounter** instances that it Supports to represent the **UsageCounter** counts consumed by the *DigitalPrinting* Combined Process, if and only if the Manager supplies at least one skeleton **UsageCounter** Resource. **r-Test:** The Worker returns all of its Supported **UsageCounter** instances when Manager supplies one, and returns none, if the Manager supplied none. The Manager MUST manifest the values in some way, such as the User Interface, log files, or passing up stream. See Table 56: UsageCounter.

Table 13: DigitalPrinting Combined Node – Exchange Resources

Name	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Component	w←			r			An intermediate **Component** MAY be specified by including the appropriate ComponentLink Resources as both input and output of a Process identified using *CombinedProcessIndex* and *PipeProtocol* = "*Internal*". See [JDF1.5] section 3.2.3 Combined Process Nodes. See Table 25: Component – Exchange and see Table 16: ComponentLink – Exchange.

Table 14: DigitalPrinting Combined Node – Output Resources

Name	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Component	w			r			MUST appear once for one of: *DigitalPrinting*, *Stitching*, *Folding*, *Trimming*, *HoleMaking*, *CoverApplication*, *SpineTaping*, in accordance with the [JDF1.5]. See Table 27: Component – Output.

6 Conformance Tables – ResourceLinks

This section contains additional ResourceLink conformance requirements above those specified in section 3.1 Physical Resource Conformance Requirements for IDP Workers that are not covered in other pertinent ICSs.

6.1 ComponentLink

6.1.1 ComponentLink – Cover

Table 15: ComponentLink – Cover
Referenced externally by: ResourceAudit
Input to: *DigitalPrinting Combined Node*
Input to Processes: *CoverApplication*
Links to: Component – Cover

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Orientation		w←			r		Rotate the soft cover to put spine on the specified edge. The Intermediate Component Output from *DigitalPrinting* Process which is input to the *CoverApplication* Process MUST also be rotated with the same value. **r-Test:** See Appendix B.
Rotate0		w←			r		**Note:** this is Left edge.
Rotate90		w←			r←		**Note:** this is Top edge.
Rotate180		w←			r←		**Note:** this is Right edge.
Rotate270		w←			r?		**Note:** this is Bottom edge.
ProcessUsage		w			r		**r-Test:** See Appendix B.
Cover		w			r		

6.1.2 ComponentLink – Exchange

Table 16: ComponentLink – Exchange
Exchanged within: *DigitalPrinting Combined Node*
Input to Processes: *Stitching*, *Folding*, *Trimming*, *HoleMaking*,
CoverApplication, *SpineTaping*
Links to: Component – Exchange

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Orientation		w←			r←		MUST supply in order to change the default coordinate system of the intermediate exchange Resource coming into finishing Processes. Worker MUST Support ComponentLink – Exchange and @*Orientation* if the Worker Supports any finishing Processes. **Note:** *Orientation* specifies the logical orientation of the exchange **Component** in relation to the Process coordinate system for that Process step only. **r-Test:** See Appendix B.
`Rotate0`		w←			r		**Note:** this is Left edge or Top Left corner.
`Rotate90`		w←			r←		**Note:** this is Top edge or Top Right corner.
`Rotate180`		w←			r←		**Note:** this is Right edge or Bottom Right corner.
`Rotate270`		w←			r?		**Note:** this is Bottom edge or Bottom Left corner.

6.1.3 Part

Table 17: Part
Referenced externally by: MediaLink

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Condition		w← r?			r? w?		See Part Table in [Base-ICS].
`AuxiliarySheet`		w? r?			r? w?		This Partition identifies **Media** that was consumed as specified by InsertSheet/@SheetType = "`AccountingSheet`", "`ErrorSheet`", "`JobSheet`" or "`SeparatorSheet`", since it isn't "`Good`", "`Waste`", or "`Reusable`". This value of *Condition* is defined in this ICS.

7 Conformance Tables – Resources

7.1 AutomatedOverPrintParams

Table 18: AutomatedOverPrintParams
Referenced by: RenderingParams

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
OverPrintBlackText	w←			r			**r-Test:** If "`true`" is supplied, MUST apply black text to the printed output. A Worker MAY apply black line art as well, if the Worker does not control overprint of black text and black line art independently. See *OverPrintBlackLineArt* in [JDF1.5].

7.2 Color

Table 19: Color
Referenced by: ColorPool

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ActualColorName	w←			r			The name used in the Separation color space definition in the PDL file, defaults to @Name. It MUST be supplied, if known. Also if *ActualColorName* is equal to @Name, the Manager MUST provide this Attribute to indicate to the Worker that the Manager has confirmed the actual color name. **Note:** for *Overcoat Varnish* this Attribute is not applicable. **Note:** that this Attribute was added in [JDF1.5]. **r-Test:** the printer output shows the specified color.
ColorName	w←			r?			MUST be supplied for *Highlight Color* only.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Name	w			r			The Manager MUST supply for a *Highlight Color*, each *Spot Color*, and each *Spot Varnish*. MUST match SeparationSpec/@Name and Ink/@Separation, if Ink is supplied (see Table 36: Ink). A real color name is preferable, e.g., "*Pantone 47 C*". However, **Name** MAY be a generic placeholder like "*Spot*", "*Spot1*", "Spot02", "*Metalic01*", "*HighlightColor01*", "*Varnish*", etc, when not known when this Attribute was supplied. **r-Test:** the printed output shows the specified color.

7.3   ColorantControl

Table 20: ColorantControl

Input to: *DigitalPrinting Combined Node*

Input to Processes: *ColorSpaceConversion*, *DigitalPrinting*, *Interpreting*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ProcessColorModel	w			r			
DeviceCMYK	w←			r←			Color Devices MUST Support *DeviceCMYK*. **r-Test:** The printed output MUST be in color on a Color Device for a color input document.
DeviceGray	w←			r			Manager MUST supply in order to specify a *Highlight Color*. **r-Test:** The printed output MUST be a monochrome gray scale output for a color input document.
ColorantParams	w←			r?			Manager MUST supply in order to specify a *Spot Color* or a *Highlight Color*. See Table 21: ColorantParams.
ColorPool	w←			r			Manager MUST supply in order to specify a *Spot Color*, *Spot Varnish*, or a *Highlight Color*. See Table 22: ColorPool.

7.3.1 ColorantParams

Table 21: ColorantParams

Referenced by: ColorantControl

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
SeparationSpec	w			r			See Table 52: SeparationSpec.

7.4 ColorPool

Table 22: ColorPool

Referenced by: ColorantControl

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Color	w			r			The Manager MUST supply for a *Highlight Color*, each *Spot Colors*, and each *Spot Varnish*. See Table 19: Color.

7.5 ColorSpaceConversionParams

Table 23: ColorSpaceConversionParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *ColorSpaceConversion*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
NoOp	w←			r			**r-Test:** The output has been processed or not according to the value.

7.6 Component

7.6.1 Component – Cover

Table 24: Component – Cover

Referenced by: ResourceInfo

Input to: *DigitalPrinting Combined Node*

Input to Processes: *CoverApplication*

Linked from: ComponentLink – Cover

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ComponentType		w			r		**r-Test:** The output contains the supplied soft cover that is wrapped around the book block body.
Sheet PartialProduct		w			r?		Value has two enumeration values.

7.6.2 Component – Exchange

Table 25: Component – Exchange

Referenced by: ResourceInfo

Exchanged within: *DigitalPrinting Combined Node*

Input to Processes: *Stitching*, *Folding*, *Trimming*, *HoleMaking*, *CoverApplication*, *SpineTaping*

Linked from: ComponentLink – Exchange

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							See [JDF1.5], [Base-ICS] and [MIS-ICS].

7.6.3 Component – Input

Table 26: Component – Input

Referenced by: **DigitalPrintingParams**, ResourceInfo

Input to: *DigitalPrinting Combined Node*

Input to Processes: *DigitalPrinting*

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Layout – Component	w←			r			The Manager MUST supply if this input **Component** will be printed on (so that the

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
							Worker will know the **Media**). See Table 41: Layout – Component.

7.6.4 Component – Output

Table 27: Component – Output
Referenced by: ResourceInfo
Output from: *DigitalPrinting Combined Node*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
							See [JDF1.5], [Base-ICS] and [MIS-ICS].

7.7 CoverApplicationParams

Table 28: CoverApplicationParams
Input to: *DigitalPrinting Combined Node*
Input to Processes: *CoverApplication*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
NoOp		w←			r		**r-Test:** The output has been processed or not according to the value.

7.8 DigitalPrintingParams

Table 29: DigitalPrintingParams
Input to: *DigitalPrinting Combined Node*
Input to Processes: *DigitalPrinting*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Collate	w←			r			MUST NOT occur in a Partition. **r-Test:** See [JDF1.5] *Collate* examples.
None	w←			r			
Sheet	w←			r			

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
SheetAndSet	!w			r			Interpreted as "*Sheet*".
SheetSetAndJob	!w			r			Interpreted as "*Sheet*".
OutputBin	w←			r←			Worker MUST Support if Device has multiple output bins. **r-Test:** the output is placed in the identified bin.
AutoSelect	w←			r			
all remaining values	w←			r			Manager MUST supply values that the Worker Supports. Values Supported are Device dependent.
PageDelivery	w←			r←			If the Worker Supports both face up and face down output, the Worker MUST Support this Attribute. When not supplied, the Worker MAY deliver the output stack in "*SameOrderFaceUp*" or "*SameOrderFaceDown*" order and the order MAY depend on other Attributes in the JDF Instance, such as finishing Attributes or *OutputBin*. **Note:** Most implementations finish from the top down. However, some implementations finish from the bottom up. Leaving out *PageDelivery* improves the interoperability with both kinds of inline finishing and also allows the Worker to choose the *PageDelivery* so that it can stream the output (i.e., deliver output Sheets before the Worker finishes RIPing the entire input stream). **r-Test:** See Appendix B.
SameOrderFaceDown	w←			r			The Worker MAY stream the output.
SameOrderFaceUp	w←			r			The Manager NEED NOT pad the input stream with blank Pages so that there are an even number of input Pages for duplex printing. Instead, for duplex printing, the Worker MUST allow for an odd number of Pages to be produced by examining the PDL in combination with the JDF to determine whether any blank Pages are needed *before* delivering any output Sheets. See Appendix B **r-Test** Conformance Drawings. **r-Test:** See Appendix B.
PartIDKeys	w←			r			

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
RunIndex	w←			r			*RunIndex* Page range MUST only include one or more of the Explicit or Implicit *RunIndex* Page ranges as defined by **LayoutPreparationParams**, i.e., each **DigitalPrintingParams** Page range MUST include all Pages in any (Explicit or Implicit) **LayoutPreparationParams** Page range, if it includes any Page. In other words, the granularity of each **DigitalPrintingParams**. Partition MUST be the same or be less granular than **LayoutPreparationParams** Partitions. MUST NOT be present if either of *DocIndex* or *DocRunIndex* is present in *PartIDKeys*. **r-Test:** MUST apply **DigitalPrintingParams** according to the logical Page ranges specified by *RunIndex*.
Sides	!w			r?			See LayoutPreparationParams/@Sides.
Component	w←			r			MUST be supplied if ComponentLink is supplied as an input to **DigitalPrinting**. See Table 26: Component – Input.
Disjointing	w←			r?			MUST NOT occur in a Partition. See Table 30: Disjointing.
Ink	w←			r?			MUST be supplied if *Overcoat Varnish* is requested. Instructs the Worker to apply *Overcoat Varnish*. The varnish used as an *Overcoat Varnish*. MUST be identified by an **Ink** Partition. Partitioned by *Separation* with Ink [@Family="Varnish"]. See Table 36: Ink and see Table 37: InkRef.
Media	w←			r			MUST be supplied if MediaLink is supplied as an input to **DigitalPrinting**. See Table 47: Media.

7.9 Disjointing

Table 30: Disjointing
Referenced by: DigitalPrintingParams

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Number	!w			r?			

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
OffsetDirection	w⬅			r			
Alternate	w⬅			r⬅			The Worker MUST Support if the Device is able to jog the output stack. **r-Test:** Case 1: If uncollated (i.e., DigitalPrintingParams/@Collate = "*None*") and Disjointing/@OffsetAmount is NOT present, then each stack of Sheet 1 MUST be offset from each stack of Sheet 2, etc., in the printed output, as if *OffsetAmount* = ComponentLink/@Amount. **r-Test:** Case 2: If collated (i.e., DigitalPrintingParams/@Collate = "*Sheet*") and Disjointing/@OffsetAmount is NOT present, then each collated copy MUST be offset from the next copy, in the printed output, as if *OffsetAmount* = "*1*".
None	w⬅			r			**r-Test:** The printed output MUST NOT contain any Sheets that are offset from one another.
InsertSheet	w⬅			r			**r-Test:** Case 1: If uncollated (i.e., DigitalPrintingParams/@Collate = "*None*") and Disjointing/@OffsetAmount is NOT present, then the **InsertSheet** MUST be output between each stack of Sheet 1 and each stack of Sheet 2, etc., in the printed output, as if *OffsetAmount* = ComponentLink/@Amount. **r-Test:** Case 2: If collated (i.e., DigitalPrintingParams/@Collate = "*Sheet*") and Disjointing/@OffsetAmount is NOT present, then the **InsertSheet** MUST be output between each collated copy and the next copy, in the printed output, as if *OffsetAmount* = "*1*". See Table 38: InsertSheet – Disjointing.

7.10 FileSpec

Table 31: FileSpec
Referenced by: LayoutElement

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
MimeType	w			r			Worker MUST NOT process the file for any values that it does not Support. **r-Test:** There MUST NOT be any printed output for any values that the Worker does not Support.
`application/pdf`	w←			r			
URL	w			r			See [Base-ICS] for values. **Note:** involves RunList/@Directory, if supplied. **r-Test:** See that the file is fetched from the specified location.

7.11 FitPolicy

Table 32: FitPolicy
Referenced by: PageCell

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
RotatePolicy		w←			r		If the document contains mixed orientation or the Manager does not know whether it does or not, the Manager MUST supply *RotatePolicy*. See Appendix B for Mixed Orientation Use Cases.
`NoRotate`		w←			r		**r-Test:** Output MUST NOT be rotated.
`RotateClockwise`		w←			r		**r-Test:** See Appendix B.
`RotateCounterClockwise`		w←			r		**r-Test:** See Appendix B.
SizePolicy		w←			r		Manager MUST supply if input-stream Page size is different from PageCell size in Page Grid.
`ClipToMaxPage`		w←			r		**r-Test:** The printed output MUST be clipped if input stream Page size is bigger than the PageCell. MUST NOT be scaled.
`FitToPage`		w←			r		**r-Test:** The printed output MUST expand or reduce to fit the PageCell. See Appendix B for Page Scaling Use Cases.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ReduceToFit		w←			r		**r-Test:** The printed output MUST be reduced (but not expanded) to fit the PageCell.

7.12 FoldingParams

In order to support folding single sheets and multiple sheets together (for the corresponding FoldGather and GatherFold in LayoutPreparationParams),

i.e. distinguish   from   .
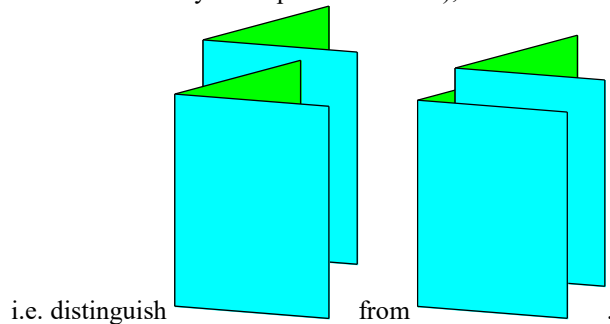
- For the first case, a *Gathering* process CAN added after *Folding* process if the individual folded sheets need to be stacked.
- For the second case a *Gathering* process MUST be inserted before *Folding* processes. If several groups are needed, the **GatheringParams** resource MUST be partitioned. Another *Gathering* process CAN also added after *Folding* process if the groups need to be stacked.
- For the case a consistent imposition must be done, the parameter **LayoutPreparationParams**/@*FinishingOrder* must be set accordingly (its default is *GatherFold*, i.e. second case)
- In the case there is no *Gathering* process (situation in IPD ICS <= 1.3), a best effort mechanism SHOULD take place, i.e. the result could be determined by the type of folding, the partitions and the presence or not of other finishing like Saddle Stitching.

To distinguish   from   , an intermediate Component MUST be declared and used as output of the process before Folding (f.i. DigitalPrinting) input to the Folding process with ComponentLink/@Orientation set to "FlipXXX".
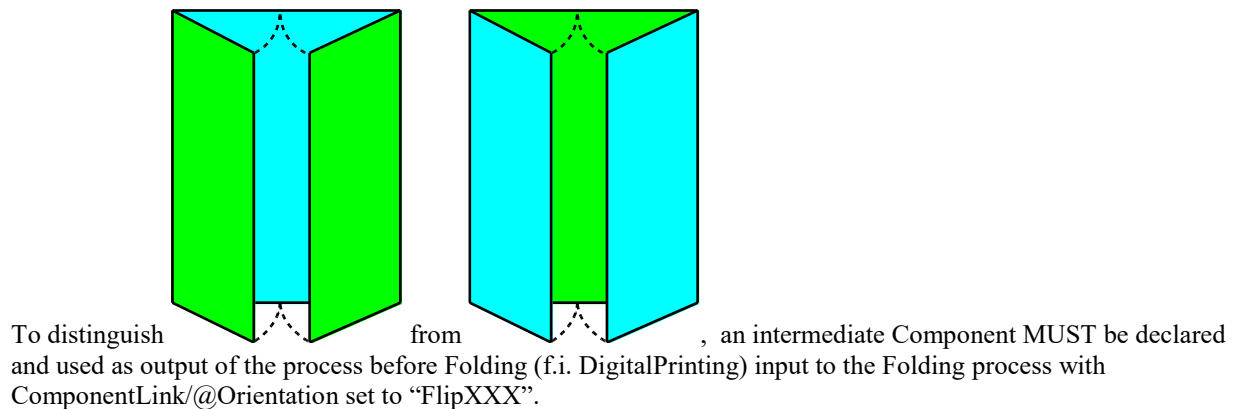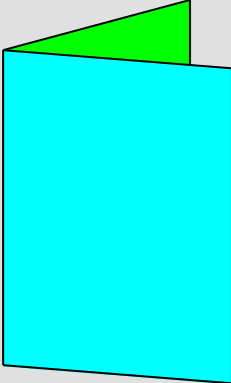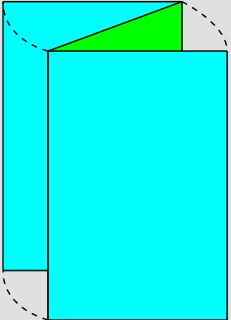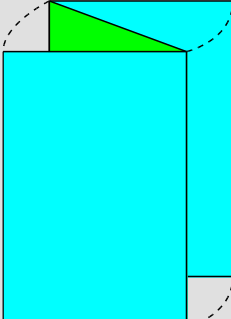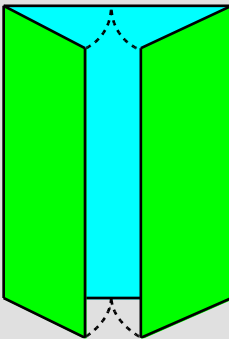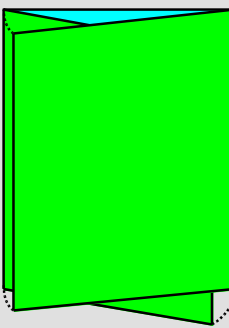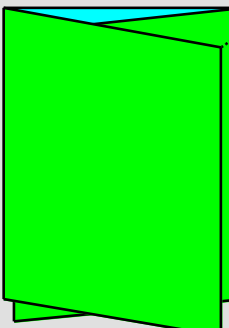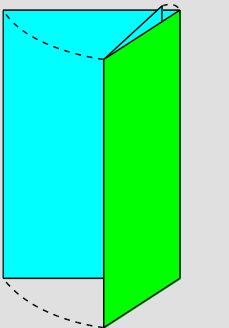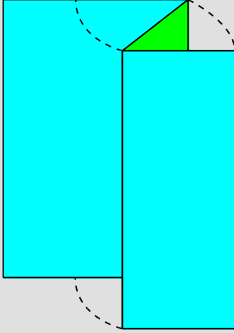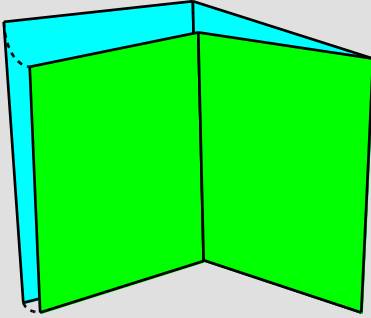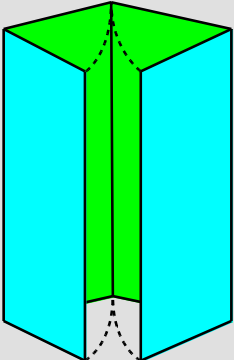
Table 33: FoldingParams
Input to: *DigitalPrinting Combined Node*
Input to Processes: *Folding*

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
FoldCatalog		w←			r?		
F4-1		w←			r?		Booklets
F6-1		w←			r?		Brochures
F6-2		w←			r?		brochures (flipped the other way).

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
F6-3		w←			r?		
F6-4		w←			r?		c-fold.
F6-5		w←			r?		c-fold
F6-6		w←			r?		z-fold

Name or Value		Manager			Worker			Description
Level ➜	1	2	3	1	2	3		
F6−7		w←				r?		Engineering fold
F8−2		w←				r?		Parallel fold
F8−4		w←				r?		Gate fold
NoOp		w←				r		**r-Test:** The output has been processed or not according to the value

7.13 GeneralID

Table 34: GeneralID

Referenced by: Media

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
IDUsage	w			r			
DeviceProductID	w←			r			NMTOKEN defined by this ICS to indicate Worker-assigned **Media** IDs. Worker MUST use *IDValue* to select Worker-assigned **Media** IDs.
IDValue	w			r			The ID assigned by the Worker. **r-Test:** See Media/GeneralID.

7.14 HoleMakingParams

Table 35: HoleMakingParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *HoleMaking*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
HoleType		w			r?		
S-generic		w←			r?		
S1-generic		w←			r?		
R2-generic		w←			r?		
R3-generic		w←			r?		
R4-generic		w←			r?		
R5-generic		w←			r?		
NoOp		w←			r		**r-Test:** The output has been processed or not according to the value.

7.15 Ink

Table 36 specifies all the inks in the Process, including Process Colorants, *Highlight Colors*, *Spot Colors*, *Spot Varnishes*, and *Overcoat Varnishes*.

Table 36: Ink
Referenced by: DigitalPrintingParams, ResourceInfo
Input to: *DigitalPrinting Combined Node*
Input to Processes: *DigitalPrinting*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ColorName	!w			r?			Partition using *Separation*, instead of supplying *ColorName*.
Family	w←			r←			Manager MUST supply if supplying *InkName*. **r-Test:** The Worker MUST use this supplied value: (1) to include in the display to the operator if the Worker identifies this **Ink** to the operator and (2) to select the requested **Ink** automatically from amongst the loaded **Ink** Resources.
HighlightColor	w←			r			MUST be supplied for *Highlight Color*. Value defined by this ICS.
Varnish	w←			r			MUST be supplied for *Spot Varnish* and ***Overcoat Varnish***. Value defined by this ICS.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
InkName	w?			r←			The fully qualified name of the ink, i.e., include Ink/@Family in the value, for example: ”*Pantone 47 C*” ”*HighlightColor Red*” ”*Varnish glossy*”. For a *Highlight Color*, the Manager MUST supply the *Highlight Color* token followed by the values in [JDF1.5] Appendix A.3.3.2 “*NamedColor*”. The Manager MUST NOT fill this Attribute with guessed values like "*Spot 01*" or any other non-describing texts. **r-Test:** The Worker MUST use this supplied value: (1) to include in the display to the operator if the Worker identifies this **Ink** to the operator and (2) to select the requested **Ink** automatically from amongst the loaded **Ink** Resources.
PartIDKeys	w←			r?			Manager MUST supply for *Highlight Color*, *Spot Color*, *Spot Varnish*, and *Overcoat Varnish* in order to specify **Ink** Resources other than the default process color inks.
Separation	w			r			For *Highlight Color*, *Spot Color*, *Spot Varnish*, and *Overcoat Varnish* depending on the value of Ink/@Separation Attribute. **r-Test:** The output MUST show the **Ink** specified by *Separation* Attribute.
Separation	w←			r?			MUST be supplied if *PartIDKeys* is supplied. For *Highlight Color*, *Spot Color*, or *Spot Varnish*, the value MUST match ColorantControl/ColorPool/Color/ @Name and ColorantControl/ ColorantParams/SeparationSpec/ @Name which MUST also be supplied. For *Overcoat Varnish*, the value MUST be "*Varnish*". Process colorants NEED NOT be specified, i.e., explicit or implicit Partitions. **r-Test:** The requested color is printed.
Varnish	w←			r?			MUST be supplied for *Spot Varnish* and *Overcoat Varnish*.
all remaining values	w←			r←			Specify *Spot Colors* or a *Highlight Color*. A real color name is preferable, such as "*Pantone 47 C*". However, the value MAY be a generic placeholder like "*Spot*", "*Spot1*", "*Spot02*", "*Metalic01*" “*HighlightColor01*”, etc., if the color is unknown.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
SpecialInk	w←			r←			MUST be present in order to select a *Spot Varnish* or an *Overcoat Varnish* type, if multiple varnish types are Supported by the Worker. **r-Test:** If the Worker Supports multiple varnish types, the Worker MUST use this supplied value: (1) to include in the display to the operator if the Worker identifies this value to the operator and (2) to select the requested **Ink** of this type automatically from amongst the loaded **Ink** Resources.

7.15.1 InkRef

Table 37: InkRef

Referenced by: DigitalPrintingParams

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Part	w←			r?			MUST be supplied for DigitalPrintingParams/InkRef for *Overcoat Varnish*. See [Base-ICS].

7.16 InsertSheet

This sub-section defines three distinct usages for the **InsertSheet** Resource.

7.16.1 InsertSheet – Disjointing

Table 38: InsertSheet – Disjointing

Referenced by: Disjointing

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
SheetType	w			r			
SeparatorSheet	w←			r			MUST be specified in the root. **r-Test:** See *SheetUsage* **r-Test** Descriptions.
SheetUsage	w			r			
Header	w←			r			**r-Test:** If *SheetType* = "*SeparatorSheet*", the printed output MUST include a separator Sheet *before* each disjointed set.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Trailer	w←			r			**r-Test:** If *SheetType* = "*SeparatorSheet*", the printed output MUST include a separator Sheet *after* each disjointed set.
SlipCopy	w←			r			**r-Test:** If *SheetType* = "*SeparatorSheet*", the printed output MUST include a separator Sheet *between* each disjointed set.
Layout	w←			r			See Table 42: Layout – InsertSheet.

7.16.2 InsertSheet – LayoutPreparationParams

Table 39: InsertSheet – LayoutPreparationParams

Referenced by: LayoutPreparationParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
SheetType		w			r		**r-Test:** See values.
InsertSheet		w←			r		**Note:** This value is typically used to insert preprinted media in-line with product Sheets. In order to image on this Insert Sheet an InsertSheet/RunList would need to be supplied. However, this ICS does not require that an InsertSheet/RunList be Supported. **r-Test:** A Sheet of **Media** positioned according to *SheetUsage* MUST be inserted into the printed output.
JobSheet		w←			r		MUST be specified in the root. **r-Test:** See *SheetUsage* values.
SheetUsage		w			r		**r-Test:** See values.
Header		w←			r		**r-Test:** If *SheetType* = "*InsertSheet*", the printed output MUST include an Insert Sheet *before* the Sheets generated by this Partition of **LayoutPreparationParams**. If *SheetType* = "*JobSheet*", the printed output MUST include a Job Sheet *before* the Job.
Trailer		w←			r		**r-Test:** If *SheetType* = "*InsertSheet*", the printed output MUST include an Insert Sheet *after* the Sheets generated by this Partition of **LayoutPreparationParams**. If **LayoutPreparationParams** is Partitioned on *RunIndex* and the next Page is in the middle of a Sheet, the printed output MUST end with the current Sheet (unless no current Sheet) and the Insert Sheet MUST be inserted. If *SheetType* = "*JobSheet*", the printed output MUST include a Job Sheet *after* the Job.

7.16.3 InsertSheet – RunList

Table 40: InsertSheet – RunList
Referenced by: RunList

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
SheetType		w			r		
FillSheet		w←			r		MAY be specified in a Partition. **r-Test:** See *SheetUsage* values.
InsertSheet		w←			r		**Note:** This value is typically used to insert preprinted or blank media in-line with product Sheets. In order to image on this Insert Sheet an InsertSheet/RunList would need to be supplied. However, this ICS does not require that an InsertSheet/RunList be Supported. **r-Test:** The printed output MUST include a Sheet of media positioned according to *SheetUsage*.
SheetUsage		w			r		**r-Test:** The printed output MUST contain a media Sheet that was inserted and positioned according to *SheetUsage*.
FillForceBack		w←			r		
FillForceFront		w←			r		**Note:** A typical use is to start a chapter on the front side of the finished Page.
Header		w←			r		
Trailer		w←			r		
Layout		w←			r		See Table 42: Layout – InsertSheet.

7.17 Layout

Layout MUST NOT be an input to any Process.

7.17.1 Layout – Component

Table 41: Layout – Component

Referenced by: Component – Input

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Media	w			r			**Media** MUST be the media from which the input **Component** was produced by some Node. **r-Test:** The printed output is on the input **Component**. See Table 47: Media.

7.17.2 Layout – InsertSheet

Table 42: Layout – InsertSheet

Referenced by: InsertSheet – Disjointing, **InsertSheet** – RunList

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
PartIDKeys	!w			r?			Manager MUST NOT Partition **Layout,** since the only use for **Layout** is to get to **Media**.
Media	w			r			**Media** MUST be linked as input to the Process in the ResourceLinkPool. At least one **Media** MUST be specified in the Partitioned **Layout** tree starting with [JDF1.5]. **r-Test:** The inserted blank Sheet MUST be the specified **Media**. See Table 47: Media.

7.18 LayoutElement

Table 43: LayoutElement

Referenced by: RunList

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
FileSpec	w			r			See Table 31: FileSpec.

7.19 LayoutPreparationParams

LayoutPreparationParams/@PageOrder (with [JDF1.5] Spec default = "*Reader*") is meta data and MUST have no effect on the output; hence, it is NOT included in the IDP ICS.

The following **LayoutPreparationParams** Attributes have a JDF default value defined by [JDF1.5] and that value is the only value REQUIRED by the IDP ICS for a Worker to Support: *FinishingOrder* = "*GatherFold*", *FoldCatalogOrientation* = "*Rotate0*", *PageOrder* = "*Sequential*", *Rotate* = "*Rotate0*", and PageCell/@Rotate = "*Rotate0*". These Attributes are included in the IDP ICS with the Manager REQUIRED to supply the Attribute ("w") and be able to supply the default value ("w←") (see [Base-ICS]) and the Worker REQUIRED to Support both the Attribute ("r") and its default value ("r"), with the two exceptions of (1) *FoldCatalogOrientation* = "*Rotate0*" (the *FoldCatalog* Attribute itself is not in the IDP ICS) and (2) *PageOrder* = "*Reader*" (the *PageOrder* Attribute is only meta data about the document while the *PageDistributionScheme* Attribute is prescriptive). The Use Cases in Appendix B **r-Test** Conformance Drawings" assume these JDF default values. Note: The [Base-ICS] requires the Manager to supply any Attribute which has a default value defined in the ***JDF Instance*** if the default value is the desired value.

Given that a Worker MAY Support an Attribute with configurable defaults that MAY differ from the JDF defaults, the Manager is never guaranteed behavior unless it explicitly provides a value.

Table 44: LayoutPreparationParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *LayoutPreparation*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
BindingEdge		w←			r		The Manager MUST supply when *PageDistributionScheme* = "*Saddle*". MUST NOT be specified if the input document is already imposed. **r-Test:** See Appendix B.
Left		w←			r←		
Right		w←			r←		
Top		w←			r←		
FinishingOrder		w			r		NEED NOT be specified if the input document is already imposed. **r-Test:** See Appendix B.
GatherFold		w←			r		The JDF Default.
NumberUp		w←			r		If a Worker Supports *Rotate*, the Worker MUST apply *Rotate* after *NumberUp*. MUST NOT be specified if the input document is already imposed. **r-Test:** See Appendix B for values.

Name or Value	Manager			Worker			Description
Level ➜	**1**	**2**	**3**	**1**	**2**	**3**	
PageDistributionScheme		w			r		MUST NOT be specified if the input document is already imposed. **r-Test:** See Appendix B.
Perfect		w←			r		
Saddle		w←			r		
Sequential		w←			r		The JDF Default.
PresentationDirection		w←			r		The *z* dimension means the imposition stack, not the actual output stack, so that the Worker MUST apply the DigitalPrintingParams/@PageDelivery to the imposition stack. MUST NOT be specified if the input document is already imposed. **r-Test:** See Appendix B for values.
Rotate	w			r			NEED NOT be specified if the input document is already imposed. **r-Test:** See Appendix B.
Rotate0	w←			r			The JDF Default.
Sides	w			r			**r-Test:** See Appendix B.
OneSidedFront	w←			r			The JDF Default.
TwoSidedFlipX	w←			r			
TwoSidedFlipY	w←			r			
PartIDKeys	w←			r?	r		If specified, MUST have the same Partitions as **DigitalPrintingParams**. Worker recovery when this condition is not met is implementation dependent.
RunIndex	w←			r			MUST NOT use more than one Partition to specify content for the same side of a Sheet. MUST NOT define a Sheet to be printed on two different media. See DigitalPrintingParams/@ PartIDKeys. MUST not be present if either of *DocIndex* or *DocRunIndex* is present. **r-Test:** MUST apply **LayoutPreparationParams** according to the logical Page ranges specified by *RunIndex*.
ImageShift		w←			r		Manager MUST supply in order to get gutter shift for a one-up duplex case. See Appendix B. MUST NOT be specified if the input document is already imposed. See Table 45: ImageShift.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
InsertSheet		w←			r		MUST NOT be specified if the input document is already imposed with blank pages at the position of insert sheets. See Table 39: InsertSheet – LayoutPreparationParams.
Media	w←			r			MUST be the same references for the same Partitions as **DigitalPrintingParams**. See Table 47: Media.
PageCell		w←			r		MUST NOT be specified if the input document is already imposed with blank pages at the position of insert sheets. See Table 46: PageCell.

7.19.1 ImageShift

Table 45: ImageShift
Referenced by: LayoutPreparationParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ShiftFront		w			r		**r-Test:** See Appendix B.
0 0		w←			r		The JDF Default.
all remaining values		w←			r		

7.19.2 PageCell

Table 46: PageCell
Referenced by: LayoutPreparationParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Rotate		w			r		**r-Test:** See Appendix B.
Rotate0		w←			r		The JDF Default.
FitPolicy		w←			r		See Table 32: FitPolicy.

7.20 Media

Media for Job Submission, Resource Response, Command and Signal for Media Catalog

When the Manager supplies neither Media/@ProductID nor Media/GeneralID to select **Media**, the **Media** MAY be selected by other **Media** Attributes that specify the characteristics of the **Media**. Such Attributes are called *Characteristic Attributes*. Such selection by *Characteristic Attributes* is an OPTIONAL feature for Managers to supply and for Workers to Support. Such Worker Support MAY include selection by the Worker operator.

If a **Media** Attribute is a *Characteristic Attribute*, the term "*Characteristic Attribute*" appears on the first line of the row for the Attribute in Table 47 "*Media*".

If a Manager Supports **Media** selection by *Characteristic Attributes*, the Manager MUST be able to supply *all* of the *Characteristic Attributes*.

If a Worker Supports **Media** selection by *Characteristic Attributes*, the Worker MUST Support *all* of the *Characteristic Attributes* and MUST meet the following **r-Test**:

Characteristic Attribute **r-Test:** If the Worker Supports **Media** Selection by *Characteristic Attributes* and the Manager supplies neither *ProductID* nor **GeneralID**, the Worker MUST:

1. include the requested *Characteristic Attributes* in the display to the operator if the Worker identifies this **Media** to the operator, or
2. select the requested **Media** automatically from amongst the loaded **Media** using the value of the *Characteristic Attributes*.

Table 47: Media

Referenced by: DigitalPrintingParams,
Layout – Component, **Layout** – InsertSheet, **LayoutPreparationParams**, ResourceInfo
Input to: *DigitalPrinting Combined Node*
Input to Processes: *DigitalPrinting*

Name or Value	Producer			Consumer			Description
Level ➔	1	2	3	1	2	3	
BackCoatings	w←			r←			*Characteristic Attribute*. See [JDF1.5] for defaulting rules. **r-Test:** See *Characteristic Attribute* **r-Test**.
Brand	w←			r←			*Characteristic Attribute*. MUST be supplied if known by the Manager. **r-Test:** See *Characteristic Attribute* **r-Test**.
DescriptiveName	w←			r←			**r-Test:** If the Worker identifies this **Media** Resource to the operator, the Worker MUST display this value.

Name or Value	Producer			Consumer			Description
Level ➔	1	2	3	1	2	3	
Dimension	w			r			*Characteristic Attribute*. The Manager MUST specify the dimensions of the **Media** appropriate for the orientation (i.e., Portrait versus Landscape) (see Appendix B). If that orientation differs from that defined for the *ProductID* or **GeneralID**, if supplied, the orientation specified by *Dimension* MUST take precedence. If *ProductID* and/or **GeneralID** are also supplied, Media/@Dimension size values MUST be within +/- 5 points of the size of the Media defined for the *ProductID* and/or **GeneralID**. If Media/@Dimension is outside this tolerance, the error recovery is outside the scope of the IDP ICS. The Manager SHOULD supply values that agree with the size in points values in [JDF1.5] Appendix G. **r-Test:** The Worker selects media of the specified dimensions +/- 5 points. See *Characteristic Attribute* **r-Test**, Appendix B and [JDF1.5] Appendix G.
FrontCoatings	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.
Grade	w?			r?			
HoleType	w←			r←			*Characteristic Attribute*. The Worker NEED NOT Support multiple values in a single **Media**. Note: See [JDF1.5] Appendix M Default Process Edge and Usage Notes columns for the relationship of the holes axis and certain **Media** sizes. **r-Test:** The **Media** selected MUST have the correct number of holes. See *Characteristic Attribute* **r-Test** and [JDF1.5] Appendix M.
None	w←			r			
R2-generic	w←			r?			
R3-generic	w←			r?			
R4-generic	w←			r?			
R5-generic	w←			r?			
all remaining values	w←			r?			The Manager SHOULD Support additional values.

Name or Value	Producer			Consumer			Description
Level ➔	1	2	3	1	2	3	
ImagableSide	w←			r←			***Characteristic Attribute***. **r-Test:** See ***Characteristic Attribute* r-Test**
Both	w←			r←			
Front	w?			r?			
Back	w?			r?			
Neither	w?			r?			
ISOPaperSubstrate	w?			r?			This attribute will replace @*Grade* in future.
MediaColorName	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.
MediaColorNameDetails	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.
MediaQuality	w?			r?			
MediaSetCount	w←			r←			*Characteristic Attribute*. For collated tabbed media, the Manager MUST supply when neither *ProductID* nor **GeneralID** are supplied. **r-Test:** See *Characteristic Attribute* **r-Test**.
MediaType	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.
Paper	w←			r			
all remaining values	w?			r?			
MediaTypeDetails	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.
Plain	!w			r?			This commonly used value is *not* defined in [JDF1.5].
Stationery	w←			r?			Same as *MediaType* = "*Paper*".
all remaining values	w←			r?			The Manager SHOULD Support additional values from the [JDF1.5].
MediaUnit	w?			r?			
Sheet	w?			r?			If a continuous sheet printer emulates cut sheets, it MUST return "*Sheet*".
PrePrinted	w←			r?			Characteristic Attribute*.* ***r-Test:* See** Characteristic Attribute *r-Test.*

Name or Value	Producer			Consumer			Description
Level ➜	1	2	3	1	2	3	
ProductID	w←			r← w←			Such IDs MUST uniquely identify the media independent of any other **Media** Attributes, except the orientation as defined by the order of the values of the Media/@Dimension. MUST be supplied if known by the Manager. The Worker SHOULD Support *ProductID*. The Worker SHOULD write if known by the Worker. If neither *ProductID* nor GeneralID[@IDUsage = "DeviceProductID"]/@IDValue are supplied, *Characteristic Attributes* MAY be Supported. **r-Test:** If the Manager supplies this Attribute, the Worker MUST preserve the supplied Media/@ProductID value in any returned **Media** Resource. **r-Test:** If the Worker Supports *ProductID*, the Worker MUST use this supplied value: (1) to include in the display to the operator if the Worker identifies this **Media** to the operator and (2) to select the requested **Media** automatically from amongst the loaded **Media**.
RecycledPercentage	w?			r?			
StockType	w←			r?			The Manager MUST supply if known and *Weight* is supplied. The Manager MUST supply if the Worker is to calculate the US weight and to display the *StockType* and US weight to the operator.
all values	w←			r?			
Texture	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.
all values	w←			r?			The Manager SHOULD Support values from the [JDF1.5].
Thickness	w←			r?			The Writer MUST supply if known
Weight	w←			r←			*Characteristic Attribute*. **r-Test:** See *Characteristic Attribute* **r-Test**.

Name or Value	Producer			Consumer			Description
Level ➔	1	2	3	1	2	3	
GeneralID	w←			r←			GeneralID[@IDUsage= "DeviceProductID"]/@IDValue is the ID assigned by the Worker for this **Media**. Such IDs MUST uniquely identify the media independent of any other **Media** Attributes, except the orientation as defined by the order of the values of the Media/@Dimension. MUST be supplied if known by the Manager. **r-Test:** The Worker MUST Support **GeneralID** when it doesn't Support *ProductID* and MAY Support both. If the Manager supplies both this value and the Media/@ProductID, they MUST identify the same media. If neither are supplied, *Characteristic Attributes* MAY be Supported. **r-Test:** If the Worker Supports GeneralID [@IDUsage= "DeviceProductID"]/ @IDValue, the Worker MUST use this supplied value: (1) to include in the display to the operator if the Worker identifies this **Media** to the operator and (2) to select the requested **Media** automatically from amongst the loaded **Media** and print on it. See Table 34: GeneralID.

7.21 RenderingParams

Table 48: RenderingParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *Rendering*

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
AutomatedOverPrintParams	w?			r			See Table 18: AutomatedOverPrintParams.

7.22 RunList

The print stream Pages represented by the **RunList** document Resource MUST be in reader order, except when the Manager pre-orders a saddle stitched booklet, in which case the Manger MUST also supply LayoutPreparationParams/@PageDistributionScheme = "*Sequential*" and LayoutPreparationParams/@PresentationDirection = "*Xyz*" or "*xyz*". If RunList/@PageOrder is supplied, the Worker MUST ignore it and MUST NOT affect the results. See Appendix B "*Saddle Stitched Use Cases*".

Table 49: RunList

Input to: *DigitalPrinting Combined Node*

Input to Processes: *LayoutPreparation*, *Imposition*

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Directory		w?			r		**r-Test:** The Worker MUST use the Directory to resolve any child LayoutElement/FileSpec/@URL Attributes according to [JDF1.5], including Appendix K.
PageCopies	!w			r?			
Pages		w←			r		If supplied, the Manager MUST supply a list of IntegerRangeList values which when resolved as indices of Pages of the **LayoutElement** are strictly increasing. For example, "1 3 4~10 15~-4 -2~-1" as long as there is at least 20 Pages. **r-Test:** The printed output MUST contain all Pages in the output selected by *Pages* and in the order respective of parameterization of **LayoutPreparationParams**.
PartIDKeys		w←			r		
Run		w←			r		For multiple input files. **r-Test:** Worker MUST generate Sheets containing all Pages defined in all supplied Partitioned **RunList** Resources.
InsertSheet		w←			r		See Table 40: InsertSheet – RunList.
LayoutElement	w			r			See Table 43: LayoutElement.

7.23 ScreeningParams

Table 50: ScreeningParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *Screening*

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ScreenSelector	w←			r			See Table 51: ScreenSelector.

7.23.1 ScreenSelector

Table 51: ScreenSelector

Referenced by: ScreeningParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ScreeningFamily	w←			r			**r-Test:** The selected screening is visible in the output.
ScreeningType	w←			r			**r-Test:** The selected screening is visible in the output.

7.24 SeparationSpec

Table 52: SeparationSpec

Referenced by: ColorantParams

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Name	w			r			Manager MUST supply a ColorPool/Color/@Name that matches this value, in order to specify a *Spot Color*, *Highlight Color*, or *Spot Varnish*. **Note:** For *Overcoat Varnish* this Attribute is not applicable. **r-Test:** The printed output contain the color Separations specified.

7.25 SpineTapingParams

Table 53: SpineTapingParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *SpineTaping*

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
NoOp		w←			r		**r-Test:** The output has been processed or not according to the value.

7.26 StitchingParams

Table 54: StitchingParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *Stitching*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
NoOp		w←			r		**r-Test:** The output has been processed or not according to the value.
NumberOfStitches		w?			r←		
StitchType		w←			r		If the Worker is able to stitch, MUST Support the type of stitching. **r-Test:** See Appendix B.
Corner		w←			r←		**r-Test:** The output is stapled in the corner. The orientation of the staple is implementation-dependent.
Saddle		w←			r←		**r-Test:** The output is stapled in the middle with an implementation-dependent number of stables.
Side		w←			r←		**r-Test:** The output is stapled along the edge with an implementation-dependent number of staples.

7.27 TrimmingParams

Table 55: TrimmingParams

Input to: *DigitalPrinting Combined Node*

Input to Processes: *Trimming*

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Height		w←			r←		
NoOp		w←			r		**r-Test:** The output has been processed or not according to the value.
TrimmingOffset		w←			r←		
Width		w←			r←		

7.28 UsageCounter

Note: Support for **UsageCounter** is a Level 2 requirement in this ICS for IDP Managers and IDP Workers. However, if a Level 1 Manager or Worker Supports **UsageCounter**, this section specifies the conformance requirements.

In order for a Manager to enable the Worker to return **UsageCounter** Resource, the Manager MUST supply one or more skeleton **UsageCounter** Resources as Input Resources to any Process, though this ICS limits the Process to be either a *DigitalPrinting* Process or a *DigitalPrinting* Combined Process. If the Manager supplies any **UsageCounter** Input Resources, the Worker MUST return all of its Supported **UsageCounter** Resources (as Input Resources to the Process). If the Manager does not supply any skeleton **UsageCounter** Resources as Input Resources to the Process, the Worker MUST NOT return any. A Worker MUST return all of its **UsageCounter** Resources in ResourceInfo of a Resource Signal if all are requested. A Worker MAY return a UsageCounterLink to each of its **UsageCounter** Resources in the AuditPool/PhaseTime, and MUST return a UsageCounterLink to each of its **UsageCounter** Resources in the AuditPool/ResourceAudit.

Note: a **UsageCounter** in [JDF1.5] is an Input Resource even though a Worker executing the Process may modify some of its Attributes and even though such modified values are accessible after the Process has finished. Note also that the **UsageCounter** Resource exists for counting items that don't have a Physical Resource associated with them. For example, counting of *Impressions* requires a **UsageCounter** because there is no Physical Resource for *Impressions*. However, counting of Sheets doesn't require a **UsageCounter**, because **Media**, as a Physical Resource, has counters.

7.28.1 Counting of Countable Events

Each time a *Countable Event* occurs, the Worker MUST increase the value of each counter whose corresponding **UsageCounter** is intended to count the *Countable Event*. A **UsageCounter** is intended to count a *Countable Event* if another UsageCounter/@CounterTypes could be constructed such that it also counts the *Countable Event* and it has exactly one value from each *Category* of the original UsageCounter/@CounterTypes. The Worker computes the increment from a formula that it determines from the **Units** *Category* value of *CounterTypes* (see each **Units** *Category* value in Table 56: UsageCounter) and uses only the *CounterTypes* values of the constructed **UsageCounter** rather than the original one.

Here are three examples with a *Countable Event* that puts a black *Impression* on a simplex Sheet:

a) This *Countable Event* would increase the value of a **UsageCounter** with values {*OneSided*, *Black*, *Color*, *Impressions*} because the constructed **UsageCounter** {*OneSided*, *Black*, *Impressions*} meets the above criteria. Note, this example is valid even if the Worker Supports other **UsageCounter** Resources with **Usage** or **Media Size** values.

b) This *Countable Event* would increase the value of a **UsageCounter** with values {*OneSided*, *Separation*, *Impressions*} because the constructed **UsageCounter** {*OneSided*, *Separation*, *Impressions*} meets the above criteria. Note, this example is valid even if the Worker Supports other **UsageCounter** Resources with **Usage** or **Media Size** values.

c) This *Countable Event* would not increase a **UsageCounter** with values {*TwoSided*, *Black*, *Color*, *Impressions* } or {*TwoSided*, *Separation*, *Impressions* } because it is not possible to construct a **UsageCounter** that meets the above criteria because **Media Size** only has the value *TwoSided*.

7.28.2 Details of *CounterID* and *CounterTypes* Attributes

The following detailed Manager and Worker conformance requirements are defined for the *CounterID* and *CounterTypes* Attributes:

1. If the Manager supplies multiple **UsageCounter** Resources to a Process, each UsageCounter/@CounterID (if supplied[1]) MUST be different from the others supplied to the Process. Note: A [JDF1.5] Errata adds a "?" to UsageCounter/@CounterID, so that the Manager MAY omit it if unknown.

2. If the Manager supplies at least one **UsageCounter** Resource as input to a Process, the Worker MUST match all Manager-supplied **UsageCounter** Resources having a supplied *CounterID* before it matches any Manager-supplied **UsageCounter** Resources not having a supplied *CounterID*.

3. A Worker MUST Support either *Surface Countable Events* or *Separation Countable Events*; a Worker NEED NOT Support both types of events. However, each **UsageCounter** Resource MUST count either one type or the other, but MUST NOT count both types.

4. **r-Test:** If the Manager supplies a **UsageCounter** Resource with *CounterID*, and the Worker finds a match from among its Supported **UsageCounter** Resources (using case-sensitive string equality), the Worker:

    a) MUST set the UsageCounter/@CounterTypes Attribute in the Manager-supplied **UsageCounter** Resource without otherwise changing it, and

    b) MAY add a PhaseTime Audit with a UsageCounterLink to the Manager-supplied **UsageCounter** Resource, and

    c) MUST add a ResourceAudit Audit with a UsageCounterLink to the Manager-supplied **UsageCounter** Resource.

5. **r-Test:** If **r-Test** #4 match fails, the Worker MUST leave the Manager-supplied **UsageCounter** Resource unchanged.

6. **r-Test:** If the Manager supplies a **UsageCounter** Resource with no *CounterID* and the Worker has at least one additional **UsageCounter** Resource to return that does not match another Manager-supplied **UsageCounter** by this **r-Test** or **r-Test** #4, the Worker:

    a) MUST select one of its unmatched **UsageCounter** Resources, and

    b) MUST set the UsageCounter/@CounterID and UsageCounter/@CounterTypes in the Manager-supplied **UsageCounter** Resource without otherwise changing it, and

    c) MAY add a PhaseTime Audit with a UsageCounterLink to the Manager-supplied **UsageCounter** Resource, and

    d) MUST add a ResourceAudit Audit Element with a UsageCounterLink to the Manager-supplied **UsageCounter** Resource.

7. **r-Test:** If the Manager supplies a **UsageCounter** Resource with no *CounterID* and the Worker has no additional **UsageCounter** Resources to return, the Worker MUST leave this Manager-supplied **UsageCounter** Resource and UsageCounterLink unchanged.

    Note: r-Tests #6 and #7 are intended to allow a Manager to supply several **UsageCounter** Resources and have the Worker assign each of its **UsageCounter** Resources to a Manager-supplied **UsageCounter** Resource (if the Manager supplies enough). The Manager can then access each returned **UsageCounter** Resource by the *ID* Attribute that the Manager supplied.

8. If the Manager supplies at least one **UsageCounter** Resource as input to the Process and the Worker still has unmatched **UsageCounter** Resources after matching all Manager-supplied **UsageCounter** Resources, the Worker:

    a) MUST supply a copy of each of its unmatched **UsageCounter** Resources with UsageCounterLink Elements as inputs to the Process, and

    b) MAY add a PhaseTime Audit with a UsageCounterLink to each Worker-supplied **UsageCounter** Resource, and

    c)   MUST add a ResourceAudit Audit Element with *Reason* = "`ProcessResult`" for each Worker-added **UsageCounter** Resource to indicate that the Worker has added a **UsageCounter** Resource and UsageCounterLink Element to the JDF.

9.   **r-Test:** If a Manager is interested in several *Countable Events* as a total, the Manager implementation MUST be able to obtain the UsageCounterLink/@ActualAmount values whether the Worker returns them in a single **UsageCounter** or in several **UsageCounter** instances.

Table 56 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 56: UsageCounter
Referenced by: ResourceInfo
Input to: *DigitalPrinting Combined Node*
Input to Processes: *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 section 7.28.2 for additional conformance requirements.
CounterTypes	!w r			r? w←			This Attribute indicates the *Countable Events* that this counter counts, whether or not these *Countable Events* actually occurred. Each value of this Attribute belongs to a *Category*, which is shown below with its values: • **Media Sides**: *Insert*, *InsertPrefuser*[2], *OneSided*, *TwoSided* • **Media Size**: *NormalSize*, *LargeSize* • **Colorant**: *Black*, *Blank*[3], *HighlightColor*, *Color*, *Separation*[2], *Varnish*[2] • **Usage**[4]: *User*, *Auxiliary* • **Units**[5]: *Impressions*[2], *Clicks*[2], *pt*[2] The Worker MUST supply for this Attribute: • Exactly one **Units** value • 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 section 7.28.2 for additional conformance requirements and Appendix A UsageCounter **r-Test** Examples for sample Jobs that will be used for certification testing.

---

[2]This ICS adds the following *CounterTypes* values: *InsertPrefuser*, *Separation*, *Varnish*, *Impressions*, *Clicks*, and *pt* that are not in JDF1.5.

[3]A JDF1.5 Errata re-arranges the categories of the NMTOKEN values of the UsageCounter/@CounterTypes slightly, by moving the "*Blank*" value from the **Media Sides** *Category* to the **Colorant** *Category*, on the grounds that a Blank Sheet is the empty colorant. Then Blank *Impressions* can be indicated as *OneSided* or *TwoSided* as well. This move makes the categories more orthogonal. Also the categories were not normative in [JDF1.5], but are in this ICS.

[4]A removes the "*Waste*" value from the Usage *Category*. Note: The JDF1.5] Usage *Category* does NOT include a Maintenance value. In order to count Maintenance *Impressions*, count against a Maintenance Job, e.g.:
DeviceInfo/@DeviceOperationMode = "*Maintenance*",

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Auxiliary	r			w←			Describes a *Countable Event* for an Auxiliary Sheet. An Auxiliary Sheet is any Sheet that is neither part of the document nor an Insert Sheet requested by the JDF Instance. In other words, an Auxiliary Sheet is any requested or automatically generated Sheet where InsertSheet/@SheetType = "*AccountingSheet*", "*ErrorSheet*", "*JobSheet*", or "*SeparatorSheet*". Examples of requested or automatically-supplied Auxiliary Sheets include: Job (or banner), confirmation, slip, separator, or error Sheets. See also "*User*".
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 MUST Support this value if it Supports *Surface Countable Events*. By contrast, a counter that counts *Separation Countable Events* MUST 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.

UsageCounter/MISDetails/@DeviceOperationMode = "*Maintenance*", DeviceInfo/@StatusDetails = "*Maintenance*". The PWG Counter Standard [PWG-Counter-Std] does include "*Maintenance*" counters, but it is intended to apply to Device counters, not Job counters.
[5]This ICS adds the **Units** *Category* that is not in JDF1.5.

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Clicks	r?			w←			Specifies that the increment for a *Countable Event* is the product of a set of (double) non-negative numbers, one number for each value of *CounterTypes* that describes the *Countable Event*. Each *CounterTypes Value* is associated with a number, which is 1.0 for most values, including the "*Clicks*" value, but MAY be greater or less than 1.0. For examples, see *Click* in section 2 Glossary. Because this ICS doesn't specify any rules for associating this number with a value of *CounterTypes*, the Manager MUST NOT give any meaning to the sum or difference of two UsageCounterLink/@ActualAmount "*Clicks*" values with differing *CounterID* values. This value is not defined in JDF1.5].
Color	r			w←			Describes a *Surface Countable Event* where the Printer prints with full color (such as CMYK). A color Printer MUST Support this value if it Supports *Surface Countable Events*. By contrast, a counter that counts *Separation Countable Events* MUST 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 MUST be counted). See [PWG-Counter-Std].
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* MUST Support this value if it Supports *Surface Countable Events*. By contrast, a counter that counts *Separation Countable Events* MUST use the "*Separation*" **Colorant** value to count the application of each *Spot Color* or *Spot Varnish* colorant.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Impressions	r			w←			Specifies that the increment for a *Countable Event* is 1.0. This value is for use with a cut Sheet Machine or a continuous feed Machine. The Worker SHOULD Support this value. This value is not defined in JDF1.5].
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 JDF1.5].
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 MUST NOT use this event to count one side of a duplexed Sheet. All Printers MUST Support this value.
pt	r?			w←			Specifies that the increment for a *Countable Event* be the length of the image in points. This value is for use with a continuous feed Machine. This value is not defined in JDF1.5].
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 MUST 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* MUST use the "*Black*", "*HighlightColor*", or "*Color*" **Colorant** value to count the application of all colorants on a Surface. This value is not defined in JDF1.5].

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
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 MUST NOT use this event to count one side of a simplexed Sheet. All duplex Printers MUST Support this value.
User	r			w←			Describes a *Countable Event* where the Printer prints Pages of the document supplied by the JDF Instance or Insert Sheets requested by the JDF Instance where InsertSheet/@SheetType = "*InsertSheet*" or "*FillSheet*". The Worker MUST also count as "*User*", any back side of a duplex Sheet produced because the JDF Instance: 1. changed **Media**, or 2. changed from duplex to simplex after the front side. If the last *Impression* is printed on the front side of a duplex Sheet, the Worker MUST either: (1) count the back side as "*User*" or (2) not count it at all, rather than count it as "*Auxiliary*". See also "*Auxiliary*".
Varnish	r			w←			Describes a *Separation Countable Event* where the Printer prints an *Overcoat Varnish* layer. This value is not defined in JDF1.5].
Waste	r?			!w			Note: [JDF1.5] removes this value. Instead, 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 MUST ignore values that it doesn't Support.
Scope	wr			rw			This Attribute MUST have a "*Job*" value.
Job	wr			r w←			This ICS covers only Job counts. If the Worker supplies a **UsageCounter**, it MUST supply this Attribute with a "*Job*" value. **r-Test:** Restarts at zero for a new Job.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Unit	!w r?			r? !w			The Manager and Worker MUST NOT use the *Unit* Attribute to specify Units for the Attributes of **UsageCounter** and UsageCounterLink that contain "Amount" in their name. Rather the @CounterTypes specifies the Units using one of the **Units *Category*** values.

8   Conformance Tables – JMF Messages

This section includes additional JMF conformance requirements for Manager and Worker implementations when conforming to the [JMF-ICS] and [MIS-ICS] (see Table 2: IDP ICS Conformance Levels).

If an IDP Manager or Worker Supports Level 2 of the [JMF-ICS], it MUST Support the HoldQueueEntry, and ResumeQueueEntry Commands and the QueueStatus Query as specified in [JMF-ICS] (even though they are OPTIONAL in the [JMF-ICS]).

8.1   KnownDevices

8.1.1   Response – KnownDevices

For Response[@Type="KnownDevices"]/DeviceList/DeviceInfo, see section 8.4.1.1 "DeviceInfo" in section 8.4.1 "Signal – Status".

8.2   Resource

8.2.1   Query – Resource

See Resource Query in [JMF-ICS] and [MIS-ICS].

8.2.1.1   ResourceQuParams

A child of Resource Query as specified in [JMF-ICS] and [MIS-ICS].

Table 57: ResourceQuParams

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ResourceName	w←			r			
Component	w←			r			
Ink	w←			r?			
Media	w←			r			
UsageCounter		w←			r		
ResourceID	w←			r			A Worker MUST Support an *ID* for a **Component**, **Media**, or **UsageCounter**

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
							Resource and MAY Support an *ID* for an Ink Resource.

8.2.2 Signal – Resource

See Resource Signal in [JMF-ICS] and [MIS-ICS].

8.2.2.1 ResourceInfo

A child of Resource Signal as specified in [JMF-ICS] and [MIS-ICS].

Table 58: ResourceInfo

Referenced externally by: Signal - Resource

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Component – Cover		r?			w←		See Table 24: Component – Cover.
Component – Exchange	r?			w←			See Table 25: Component – Exchange.
Component – Input	r?			w←			See Table 26: Component – Input.
Component – Output	r?			w←			See Table 27: Component – Output.
Ink	r			w←			See Table 36: Ink.
Media	r			w←			See Table 47: Media.
UsageCounter		r			w←		See Table 56: UsageCounter.

8.3 Media Resource Query/Command

8.3.1 List of supported Query/Signal/Commands

Table 59: Supported Query/Signal/Command/Response

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
Media Resource Query		w←			r		Purposes: - Read Media Catalog - Read Media assigned to trays and amount in the trays
Media Resource Response to Query		r			w		Media Catalog or Media assigned to trays and amount in the trays
Media Resource Signal		r?			w←		Signal for updated Media Catalog and for updated Media assignment or amount in trays

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Media Resource Command		w?			r?		Update Media Catalog
Media Resource Response to Command		r?			w?		Updated Media Catalog is returned as result of the Command

8.3.2 Query Media Catalog and Media assigned to trays

Table 60: Query for Media assigned to trays

Class for: Query-Media assigned to tray

Name or Value	Producer			Consumer			Description
Level ➜	1	2	3	1	2	3	
AcknowledgeURL		!w			r?		
ResourceQuParams		w			r		Abstract Element that is a placeholder for any descriptive Elements that provide details required for the Query.
Subscription		w←			r		A Consumer MUST Support this Element for establishing a Persistent Channel. See Table 62: Subscription to Media assigned to trays.

Table 61: ResourceQuParams for Media Catalog

Referenced by: Query-Media assigned to tray

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Context		w			r		
Global		w			r		
Exact		w			r		
true		w			r		
Location		w?			r		Filter to return only the media assigned to the specified tray
JobID		!w			!r		
JobPartID		!w			!r		
QueueEntryID		!w			!r		
ResourceDetails		w			r		
Full		w			r		
ResourceName		w			r		
Media		w			r		

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Scope		w			r		
Allowed		w			r		To return the list of Media currently <u>defined</u> in the Media Catalog of the device.
Present		w			r		Filter to return only the list of Media currently <u>assigned</u> to one or several trays of the device Note: a Media can be assigned to a tray without being defined in the Media Catalog.
Usage		!w			!r		
Part		!w			!r		

Table 62: Subscription to Media assigned to trays

Referenced by: Query-Media assigned to tray

Name or Value	Producer			Consumer			Description
Level ➜	1	2	3	1	2	3	
MinDelayTime		w?			r		Signals related to this Subscription are not sent more frequently than this interval.
RepeatTime		w?			r		*RepeatTime* MUST NOT be less than *MinDelayTime*. Signals are generated at the interval specified (+/- 10%). If not specified, new signals are expected in the following cases: - Query with Scope="Allowed": 　• One or several Media are added to the media catalog 　• One or several Media are removed from the media catalog - Query with Scope="Present": 　• A Media is unassigned to a tray 　• A Media is assigned to a tray 　• Tray is full after being loaded 　• Low level alert 　• Empty level alert 　• Significant change of paper level (not every time one sheet is taken from the tray)
URL		w			r		Signals are delivered to the specified URL.

8.3.3 Response and Signal for Media assigned to trays

Table 63: ResourceInfo for Resource Response and Signal for Media Catalog

Referenced externally by: Response - Signal

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
ResourceName		r?			w		
Media		r?			w		
Level		r?			w		
OK		r?			w		Specification is left to the Device manufacturer.
Low		r?			w		Specification is left to the Device manufacturer.
Empty		r?			w		Specification is left to the Device manufacturer.
Media		r?			w		In the Media table, the Worker is the Writer and the Manager is the Reader
AmountPool		r?			w←		**w-Test:** The Worker MUST write AmountPool in case of Query with Scope="Present"

Table 64: AmountPool

Referenced by: ResourceInfo

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

Table 65: PartAmount

Referenced by: AmountPool

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
DescriptiveName		r?			w?		
Orientation		r?			w←		If know, the Worker writes the orientation of the **Media** in the tray
Rotate0		r?			w←		Media is loaded Short Edge Feed (SEF)
Rotate90		r?			w←		Media is loaded Long Edge Feed (LEF)
Other value		!r			!w		
ActualAmount		r?			w←		Amount of **Media** remaining in the tray The value is the number of sheets **w-Test:** In case of Query with Scope="Present", the Worker MUST write the (estimated) amount if it knows it.

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Part		r?			w←		**w-Test:** Query with Scope="Present", the Worker MUST write the tray name in Part/@Location

Table 66: Part

Referenced by: PartAmount

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
Location		r?			w		Name of the tray

8.3.4 Command to update Media Catalog

Table 67: Command for entire Media Catalog

Class for: Update-Media Catalog

Name or Value	*Producer*			*Consumer*			Description
Level ➜	1	2	3	1	2	3	
ResourceCmdParams		w			r		Abstract Element that is a placeholder for any descriptive Elements that provide details required for the Command.

Table 68: ResourceCmdParams to update Media Catalog

Referenced by: Command

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ResourceName		w			r		
Media		w			r		
UpdateMethod		w			r		Whatever is the type of update, Worker may keep any specific information that is already known about the media (f.i. calibration information, fusing temperature…), even for removed media.
Incremental		w←			r		To update the catalog with new and modified media: the media that are not specified in the update are kept.
Complete		w←			r		To fully replace the catalog: the media that are not specified in the update are removed.
JobID		!w			!r		

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
JobPartID		!w			!r		
QueueEntryID		!w			!r		
Media		w			r		One ResourceInfo is written per updated Media. In the Media table, the Manager is the Writer and the Worker is the Reader

8.3.5 Response for Media Catalog update

Table 69: ResourceInfo for Resource Response for Media Catalog updated
Referenced externally by: Response

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
ResourceName		r			w		
Media		r			w		
CommandResult		r			w		
New		r?			w←		The Media is newly added to the Media Catalog
Merged		r?			w←		An existing Media was merged with the new one in the Media Catalog. This occurs when only non-characteristic attributes are modified.
Replaced		r?			w←		An existing Media was replaced completely in the Media Catalog
Media		r			w		One ResourceInfo is written per Media of the updated Catalog. In the Media table, the Worker is the Writer and the Manager is the Reader
AmountPool		r!			w!		

8.4 Status

8.4.1 Signal – Status

See Status Query in [JMF-ICS] and [MIS-ICS].

8.4.1.1 DeviceInfo

Table 70 shows the conformance requirements if the KnownDevices or Status Messages are Supported.

Table 70: DeviceInfo

Referenced externally by: Response – KnownDevices/DeviceList, Signal - Status

Name or Value	Manager			Worker			Description
Level ➔	1	2	3	1	2	3	
CounterUnit	r			w←			Specifies the Units for other DeviceInfo Attributes and DeviceInfo/JobPhase Attributes. MUST be supplied if the Units are different than copies, since omissions means the Units for the output **Component** for the Process, which is copies for *DigitalPrinting*. See [JDF1.5]. The Manager MUST treat the Units for the other DeviceInfo Attributes and for all DeviceInfo/JobPhase Attributes as specified by this Attribute (see [JDF1.5]). If these Attributes are displayed to the user, the Units MUST be indicated. **r-Test:** If these Attributes are displayed to the user, the Units are indicated.
Impressions	r			w←			MUST supply, if counting *Surface Impression*. This string value defined by this ICS.
SeparationImpressions	r			w←			MUST supply, if counting *Separation Impression*. This string value defined by this ICS.
DeviceStatus	r←			w←			
all values from Table 105	r			w←			If the Worker writes values, the Worker SHOULD use the values in Table 105: DeviceStatus and StatusDetails Attribute Value Pairs. **r-Test:** See Table 105 for equivalencies.
StatusDetails	r?			w←			The Worker MUST supply if known. For values, see Table 105: DeviceStatus and StatusDetails Attribute Value Pairs.
Comment	r?			w?			The Worker MAY supply a human readable string that provides details beyond the token value of DeviceInfo/@StatusDetails. See Table 8: Comment – Worker Created.
JobPhase	r?			w←			See [MIS-ICS]. See Table 71: JobPhase.

8.4.1.2 JobPhase

Table 71: JobPhase

Referenced by: DeviceInfo

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
PercentCompleted	r?			w←			The Worker MUST supply, if the Worker Supports [JMF-ICS] Level 2.
Status	r			w			Same values as JDF/@Status in Table 6: JDF Node. For values, see Table 103: Status and StatusDetails Attribute Value Pairs.
StatusDetails	r?			w←			MUST supply if known. Same values as JDF/@StatusDetails in Table 6: JDF Node. For values, see Table 103: Status and StatusDetails Attribute Value Pairs.
JDF	r←			w←			See [MIS-ICS] for conformance. See Table 6: JDF Node.
Comment	r?			w?			The Worker MAY supply a human readable string that provides details beyond the token value of JobPhase/@StatusDetails. See Table 8: Comment – Worker Created.
ModuleStatus	r?			w←			If there are multiple types of JobPhase Elements, each JobPhase MUST have a ModuleStatus whose ModuleStatus/@ModuleType identifies the JobPhase (see Table 72). See [MIS-ICS] DeviceInfo, JobPhase, and ModuleStatus for usage. See Table 72: ModuleStatus.

8.4.1.3 ModuleStatus

Table 72: ModuleStatus

Referenced by: JobPhase

Name or Value	Manager			Worker			Description
Level ➜	1	2	3	1	2	3	
DeviceStatus	r←			w←			See [MIS-ICS]. For values, see Table 105: DeviceStatus and StatusDetails Attribute Value Pairs.
ModuleType	r?			w			Identifies type of module. The values are defined by this ICS for ModuleStatus and ModulePhase.
all values	r?			w←			See Table 10: ModulePhase for values and Appendix C *StatusDetails* Values (Normative) for usage.
StatusDetails	r?			w←			This ICS defines additional values to be used with each *DeviceStatus* value, so that *StatusDetails* MUST NOT be omitted, except when the details are unknown. For values, see Table 105: DeviceStatus and StatusDetails Attribute Value Pairs.
all values from Table 105	r			r? w←			If the Worker writes values, the Worker SHOULD use the values in Table 105: DeviceStatus and StatusDetails Attribute Value Pairs. **r-Test:** See Table 105 for equivalencies.
Comment	r?			w?			The Worker MAY supply a human readable string that provides details beyond the token value of ModuleStatus/@StatusDetails. See Table 8: Comment – Worker Created.

9   References

9.1   Normative References

[Base-ICS]   Base ICS, Version 1.5, work in progress. Available at http://www.cip4.org.

[IDP-ICS]   The Integrated Digital Printing (IDP) ICS (This ICS). Available at http://www.cip4.org.

[JDF1.5]   JDF Specification (JDF), Release 1.5, published December 31, 2013. Available at: http://www.cip4.org.

 [JMF-ICS]   Job Messaging Format (JMF) ICS, Version 1.5, work in progress. Available at: http://www.cip4.org.

[MIS-ICS]   MIS ICS, Version 1.5, work in progress, available at http://www.cip4.org.

9.2   Informative References

[Delmar97]   Delmar's **Dictionary of Digital Printing & Publishing**, Frank J. Ramano, editor, Copyright 1997. See http://www.delmarlearning.com.

[DPJUCR-ICS]   Digital Printing Job Usage Counter Resource (DPJUCR) ICS, Version 1.3, indicated by the Light Green fill sections in the [IDP-ICS].

[IDP-ICS-1.0]   Integrated Digital Printing (IDP) ICS, Version 1.0 (for JDF 1.2), available at http://www.cip4.org.

[IDP-ICS-1.3]   Integrated Digital Printing (IDP) ICS, Version 1.3 (for JDF 1.3), available at http://www.cip4.org.

[IDP-AN]   Integrated Digital Printing Application Note, Version 1.3, work in progress, available at http://www.cip4.org.

[IPP-ODP]   Office Digital Printing ICS, Version 1.3, available at: http://www.cip4.org.

[IPP-std]   Digital Printing (IDP) ICS, Version 1.0 (for JDF 1.2), available at http://www.cip4.org.

[PWG-Counter-Std]   **The Printer Working Group (**PWG**) Candidate Standard** IEEE-ISTO 5106.1-2005 **-** PWG **Standard for Imaging System Counters**, published September 23, 2005. Available at: http://www.pwg.org. This definition of "impression" goes on to say: "Source: This document defines Impression consistently with the usage in the Job Monitoring MIB [RFC2707] and IPP/1.1 [RFC2911]."

[RFC2707]   **Job Monitoring MIB - V1.0, RFC 2707**, November 1999. All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: http://www.rfc-editor.org/rfcsearch.html.

[RFC2911]   **Internet Printing Protocol/1.1: Model and Semantics, RFC 2911**, September 2000. All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: http://www.rfc-editor.org/rfcsearch.html.

Appendix A UsageCounter r-Test Examples (Normative)

The examples in this Appendix will be used as part of the CIP4 Certification Testing for conformance to the IDP ICS.

A.1 Example of a Four-Sheet Job

Consider a print Job with the following four Sheets: Front-only in simplex mode, Front-only in duplex mode (either because of a Media change or a change to simplex for the next Page), Front & Back - duplex, and Back-only - simplex. Note that in all the examples the *OneSided*-only counter is *not* incremented at all for the two-sided Sheet (2nd and 3rd Sheets) and the *TwoSided*-only counter is not incremented for either of the one-sided Sheets (1st and 4th Sheets).

The tables below show *CounterTypes* values in the first column, the counter increment for each printed Sheet in the next four columns and the value of UsageCounterLink/@ActualAmount in the last column.

The Printer prints Black only. The first 3 rows are with **Surface Countable Event**s, the second 3 rows include **Blank,** and the third 3 rows are with **Separation Countable Event**s.

Note: each *CounterTypes* could have additional values of "*NormalSize*", "*LargeSize*", "*User*" and "*Auxiliary*", and there would be no difference in the counter values.

Table 73: Duplex Monochrome Printer – Three Sheet Job

CounterTypes	Front only - simplex	Front only - duplex	Front & Back	Back only - simplex	Total (*ActualAmount*)
"*OneSided Black Impressions*"	1	0	0	1	2
"*TwoSided Black Impressions*"	0	1	2	0	3
"*OneSided TwoSided Black Impressions*"	1	1	2	1	5
"*OneSided Black Blank Impressions*"	1	0	0	1	2
"*TwoSided Black Blank Impressions*"	0	2	2	0	4
"*OneSided TwoSided Black Blank Impressions*"	1	2	2	1	6
"*OneSided Separation Impressions*"	1	0	0	1	2
"*TwoSided Separation Impressions*"	0	1	2	0	3
"*OneSided TwoSided Separation Impressions*"	1	1	2	1	5

A.2 Example Scenarios with Colorant Values

This appendix lists 16 example scenarios and shows the UsageCounterLink/@ActualAmount increment for each scenario for 3 counters that count **Surface Countable Event**s, 1 counter that counts Blank events, and 2 counters that count **Separation Countable Event**s. The first column of Table 74 describes scenarios and the

remaining columns shows counters and their values. Each `UsageCounter/@CounterTypes` has the values `{OneSided, Impressions}` plus the **Colorant** value specified in the column. Each cell indicates the amount that would be added to the counter for the scenario specified for the row. Note that no printer would likely have all of these counters, but they would increment as specified regardless of the other counters in the Printer.

Table 74: Scenarios for Counting Colorants

Type of Countable Event =>	Surface Countable Event			either	Separation Countable Event	
Scenario: A printer prints the following on one side of a Sheet	Black counter	Highlight Color counter	Color counter	Blank counter	Separation counter	Varnish counter
3. black only	1				1	
4. black only and *Spot Varnish*		1			2	
5. black only and *Overcoat Varnish*	1				1	1
6. Black and one *Spot Color*		1			2	
7. Black and two *Spot Colors*		1			3	
8. Black, one *Spot Color* and *Spot Varnish*		1			3	
9. Black, one *Spot Color* and *Overcoat Varnish*		1			2	1
10. Blank or pre-printed Sheet via any path				1		
11. Full color (CMYK)			1		4	
12. Full color (CMYK) and *Spot Varnish*			1		5	
13. Full color (CMYK) and *Overcoat Varnish*			1		4	1
14. Full color (CMYK) and two *Spot Colors*			1		6	
15. Full color (CMYK), two *Spot Colors* and *Spot Varnish*			1		7	
16. Full color (CMYK), two *Spot Colors* and *Overcoat Varnish*			1		6	1
17. *Spot Varnish* only		1			1	
18. *Overcoat Varnish* only						1

Appendix B   r-Test Conformance Drawings (Normative)

This Appendix is Normative. However, if an implementer finds a potential error, that implementer needs to seek confirmation from CIP4 that it is an error and CIP4 will publish an [IDP-ICS] errata.

B.1 Introduction and Assumptions

This Appendix lists the Use Cases that the IDP ICS covers with respect to LayoutPreparationParams (and finishing) and DigitalPrintingParams that affect the placement of Pages on Sheets and in-line finishing, so that we can write the r-Tests as an Appendix to the IDP ICS, much like the current UsageCounter Example appendix that shows the required output. Except for simple image shift to obtain a gutter for one up case, the details of the Page image is not specified by these Use Cases. The PIA/GATF can use the appendix as the **r-Tests**. In the process we want to eliminate alternative JDF representations, by specifying a single representation for each Use Case, if possible. Support of other representation will be beyond the scope of the ICS, i.e., will be OPTIONAL.

The Use Cases include the following IDP Attributes:

1. **LayoutPreparationParams**: *BindingEdge*, *FinishingOrder*, *NumberUp*, *PageDistributionScheme*, *PageOrder*, *PresentationDirection*, *Rotate*, and Sides.

2. LayoutPreparationParams/ImageShift: *ShiftFront*.

3. LayoutPreparationParams/PageCell/FitPolicy: *RotatePolicy*, *SizePolicy*.

4. **DigitalPrintingParams**: *PageDelivery, Sides*.

5. **Media**: *Dimension*.

6. Intermediate ComponentLink: *Orientation.*

B.2 Use Case Methodology, Legend, and Conventions

This section described the use cases. The use cases are divided into families of related use cases.

B.2.1 List of the Use Cases

The use cases are divided into families of related cases. The following Use Families are defined:

1. Family A: One-up, Two-sided,
2. Family B: One-up, Two-sided, Corner Stitched
3. Family C: One-up, Two-Sided, Edge Stitched
4. Family D: Two-Up, Two-Sided, Saddle Stitched,
5. Family E: One-Up, Two-Sided, Perfect Bound, cut Sheet
6. Family F: 2-Up, Two-sided, 2 Pages per Finished Page, Sequential
7. Family G: 4-up, Two-sided, 4 Pages per Finished Page, Sequential,
8. Family H: 6-up, Two-sided, 6 Pages per Finished Page, Sequential
9. Family I: 8-up, Two-Sided, 8 Pages per Finished Page, Sequential
10. Family J: 9-up, Two-Sided, 9 Pages per Finished Page, Sequential
11. Family K: 16-up, Two-sided, 16 Pages per Finished Page, Sequential
12. Family L: Pre-imposed, Two-Sided, Saddle Sheets, Worker staples and folds
13. Family M: One-up, Two-sided, Mixed Orientation Document
14. Family N: 4-up, Two-sided, Sequential, Mixed Orientation Document, PageCell scaling
15. Family O: One-up, Two-Sided, Edge Stitched AND Hole Making (two finishing operations)
16. Family P: One-up, Two-Sided, Pre-Printed Soft Cover (CoverApplication)

Each Use Case Family has a single table of the use cases that belong to the family. Each use case in a family is described as a single statement row extending across the entire table. Each Use Case statement is labeled <Letter><number>. where <letter> is the Use Case Family letter (A, B, ...) and each <number> is the use case number within that family (1, 2, ...). After each use case statement is listed one or more JDF alternative representations as separate rows.

B.3 Use cases NOT described and are outside the scope of the IDP ICS

The following Use cases will *not* be covered for the reasons given and so will be outside the scope of the IDP ICS and could be so-called OPTIONAL Value-Add if Supported by a Manager and a Worker, but not covered by the ICS. In other words the following Use Cases are either (1) "w?" and "r?" explicitly in the IDP ICS or implicitly by not being in the IDP ICS:

Table 75: Use Cases outside the scope of IDP and this Use Case document

Use Cases outside the scope of IDP and this Use Case document	Therefore, JDF Elements, Attributes, and values NOT needed
1. The use cases do *not* cover when the orientation of the input content (Portrait versus Landscape) is not known to the Manager, i.e., the Manager has to know either because the customer of the Print shop says so, or the Manager examines the PDL content and determines the bound box of the content. The reason is that not knowing can be made to work for the predominant number of cases (Book/Portrait and Calendar/Landscape) by supplying LayoutPreparationParams/FitPolicy/@RotatePolicy = "*RotateCounterClockwise*", but NOT for Book/Landscape and Calendar/Portrait). Therefore, the IDP ICS and these Use Cases do not include FitPolicy/@RotatePolicy.	
2. The use cases do *not* cover when the binding edge is not known (Left, Top, Right) to the Manager. The reason is that not knowing can be made to work for the predominant number of cases (no finishing and finishing on the long edge), but not for finishing on the short edge and not for right to left languages.	
3. Not covering corner stapling vertical, horizontal, or angled; which is implementation-dependent for the Worker.	So don't add: ComponentLink/ @Orientation = "*FlipNNN*".
4. Not covering mixed sized media documents, but cover mixed orientation of the same size media.	
5. Not covering the use case of saddle stitching parallel to the short edge of the Finished Page (parallel to the long edge of the process Sheet) is NOT considered an IDP ICS Use case, because the media is very long and narrow.	
6. The Use Case of Two-Up Perfect Bound is outside the scope of the IDP ICS and Use Cases, since it would require folding and then gathering and we didn't know of any Integrated Digital Printers that did that.	So don't add: LayoutPreparationParams/ @FinishingOrder.
7. The Use Case where Landscape is indicated in the document by rotation of the Coordinate System of the PDL by 90 degrees from Portrait which is the way Windows Drivers produce Landscape documents and mixed Portrait and Landscape documents. This form of Landscape document is sometimes called Rotate90 Landscape in order to distinguish it from Landscape where the X dimension is longer than the Y dimension.	
8. The Use Case where the Worker produces the stack which needs each Sheet to be flipped by a down stream Finishing Device as part of the Finishing	

Use Cases outside the scope of IDP and this Use Case document	Therefore, JDF Elements, Attributes, and values NOT needed
Device's operation.	
9. The Use Case of putting two input Pages side by side on a Finished Page with Saddle Imposition and Stitching can't be done in JDF 1.5, we believe.	
10. The Use Case of specifying Creeping with a multi-up grid is outside the scope. However, specify a fixed image shift away/toward a binding edge to give a gutter for one-up is Supported using LayoutPreparationParams/ImageShift/@ShiftFront and omitting the: LayoutPreparationParams/ImageShift/@ShiftBack in order to shift in the same direction away/toward a binding edge.	
11. Don't test short edge feed versus long edge feed.	

B.4 Legend used in each Use Case Family

The column headings list the Attribute name, including the XPath for **LayoutPreparationParams** (abbreviated: **LPParams**), **DigitalPrintingParams** (abbreviated **DPParams**), **Media**, and **FileSpec** Attributes.

A hyphen in a cell indicates that the Attribute is outside the scope of this Use Case, i.e., is OPTIONAL for the Manager to supply and the Worker to Support in this Use Case.

There are no blank cells in the Use Case Tables, so we know that each cell has been considered.

Now that the JDF 1.5 Base ICS requires that the Producer (Manager for these Use Cases) MUST supply the Attribute and its default value when the Manager wants the default value, these Use Cases JDF Instances reflect this requirement. However, the value is shown in square brackets in the tables just to indicate that it is the [JDF1.5] default value. Note: The [JDF1.5] still requires that the Consumer (Worker for these Use Cases) behave as if the default value were explicitly supplied whether or not the Consumer is using an XML parser, see [JDF1.5] Table 1-3 and Page 8.

B.4.1   Use Case Naming Conventions within a Family

The term "Book" is used in naming the Use Cases with a Family to mean a document that the human Reader opens to the Left for Left to Right languages and opens to the Right for Right to Left languages, i.e., are bound on the Left and Right, respectively. Book is also described as "Head to Head", since the head (top) of one side of a Sheet is imposed so that it backs up to the head (top) of the other side of the Sheet.

The term "Calendar" is used for documents that the human reader opens to the Top for both Left to Right languages and Right to Left languages, i.e., are bound on the Top. Calendar documents are also described as "Head to Toe", since the head (top) of one side of a Sheet is imposed so that it backs up to the toe (bottom) of the other side of the Sheet.

The Head to Head and Head to Toe descriptions are easy to check for in the Drawings by comparing the front and back side drawings relative to the numbers placed in each Page.

B.4.2   Use Case Diagram Conventions and Conformance Testing

The last column of each table contains the Diagrams of the output stack that are used by the Certification Testers for the **r-Test**. The last column is labeled: "Output stack ..." and is further subdivided with the following headings:

"Top Sheet" - shows the Top Sheet on the output stack and is further subdivided with the following headings:
"Top" - top side of the Top Sheet.
"Bot." - bottom side of the Top Sheet.

"Bottom Sheet" or "Bot. Sheet" - shows the Bottom Sheet on the output stack and is further subdivided with the following headings:

"Top" - top side of the Bottom Sheet.

"Bottom" or "Bot." - bottom side of the Bottom Sheet.

The numbered cells within a rectangle represent print-stream Pages submitted to the Worker in reader order and in reader orientation. Each number is underlined so that it is easy to know whether the number is right side up or upside down in the drawing.

The Top Surface of each Sheet is oriented with JDF coordinate system of the JDF Virtual Machine showing the X axis to the right, Y axis upward, and the Z axis coming out of the Page towards the reader of this document.

The Bottom Surface of each Sheet is oriented with JDF coordinate system of the JDF Virtual Machine showing the X axis to the *left*, Y axis upward, and the Z axis *going into the Page away from the reader* of this document. In other words the drawing of the Bottom Surface (or back side of each Sheet) is drawn as flipped around the Y axis for both the *Sides* = "*TwoSidedFlipY*" and *Sides* = "*TwoSidedFlipX*" cases. In other words, the flipping of the images according to the *Sides* Attribute is what the Worker does. The flipping of the diagrams (always around the vertical Y Axis) is what the Certification Tester does when looking at the output. Note: if the back side were drawn taking into account which axis the Worker flips the image, all drawings would appear upright in this document.

Also a Worker implementation is free to orient the stack in any of the four 90 degree orientations, since the drawing are shown relative to the JDF Virtual Machine, not to the physical Device.

B.4.3 Duplex documents with an odd number of Pages and DigitalPrintingParams/@PageDelivery

The DigitalPrintingParams/@PageDelivery Attribute controls whether the Worker outputs the stacks face up or face down or either as determined by the Worker. The "*SameOrderFaceUp*" requests the stack to be face up; the "*SameOrderFaceDown*" requests the stack to be face down; and *PageDelivery* omitted requests the Worker to choose either face up or face down. The Manager MUST supply the Pages in reader order. When printing face up, a Manager NEED NOT fill out the Pages to be 0 modulo the number of Page Cells on a Sheet. Instead, when printing face up, the Worker MUST insert blank images for the highest numbered Page Cells in the document. Therefore, the Certification tests include documents that are any 0 to N modulo, where N is the number of Page Cells on a Sheet. In other words, the r-Test source input documents include input Page documents with a number of Pages, so that the last Sheet in the output stack has from one Page cell to being full of Page cells. The Drawing Heading Row indicates the range of Pages in the input document as part of the r-Test. For example, in Table 76 and Table 77, the Diagram Column Heading is "Output stack 3,4 pg document, showing that the r-Test includes both a 3-Page and a 4-Page input Document.

For example: Table 76 shows the output stack for a Portrait One Up for three-Page and a four-Page input stream. The rows with PageDelivery column = "*SameOrderFaceUp*" in the table show the output stack Face Up. The rows with PageDelivery column = "*SameOrderFaceDown*" in the table show the output stack Face Up . The rows with PageDelivery column = "*<not present so either is OK:>*" in the table show both the Face Up and Face Down drawings, since a Worker is free to produce either when DigitalPrintingParams/@PageDelivery is not present.

Table 76: Example Use Case Diagram

DigitalPrintingParams/ @PageDelivery	Output Stack 3,4-Page Document			
	Top Sheet		Bottom Sheet	
	Top	Bottom	Top	Bottom
SameOrderFaceUp	1	2	3	4
SameOrderFaceUp	1	2	3	

DigitalPrintingParams/ @PageDelivery	Output Stack 3,4-Page Document			
	Top Sheet		Bottom Sheet	
	Top	Bottom	Top	Bottom
SameOrderFaceDown	4	3	2	1
SameOrderFaceDown		3	2	1
<not present so either is OK:>	1	2	3	4
	4	3	2	1
<not present so either is OK:>	1	2	3	
		3	2	1

B.4.4 Certification Tester Actions

The certification tester picks up the output stack from the Printer's output bin and orients the top Sheet as shown in the first drawing and then flips the output around his left viewing edge (*independent* of any Attribute in the JDF Instance, including *Sides* and *BindingEdge*) in order to check that the back side is correctly oriented according to the Diagram. If the Use Case did not supply a DigitalPrintingParams/@PageDelivery Attribute, the tester may flip the stack over to find the first Page. For the Use Cases that fold the output, the Certification Tester unfolds that output to match it with the drawing.

B.4.5 Reducing the number of table rows

In order to reduce the number of Diagrams (without reducing the number of **r-Tests**), the above table is drawn without the DigitalPrintingParams/@PageDelivery column and without the blank Page cells as:

Table 77: Equivalent Drawing to the above 6 r-Test Use Case Diagram

Output Stack 3,4-Page Document			
Top Sheet		Bottom Sheet	
Top	Bottom	Top	Bottom
1	2	3	4

Note: Only Use Case Family A: One-up, Two-sided, FaceUp and FaceDown shows all the r-Test cases explicitly, as in Table 76. All the other Use Case Families show only the single row as in Table 77, however, all the r-Tests are implied as in Table 76.

In checking the back sides of the Sheets in the drawing, the terms "Head to Head" and "Head to Toe" descriptions are easy to check for in the Drawings by comparing the front and back side drawings relative to the top and bottoms of the numbers placed in each Page and flipping the drawings around the vertical reading edge.

NumberUp greater than "1 1" is indicated with dashed lines within a solid rectangle, to represent boundaries between logical Pages of the print-stream Pages as imposed by the Worker on the output Sheet (solid rectangle).

B.4.6 Covering one sided (simplex) use cases

These Use Case Tables and drawings also cover one-sided simplex cases, simply by changing the rows that have DigitalPrintingParams/@Sides and LayoutPreparationParams/@Sides Attribute values from "*TwoSidedFlipY*" to "*OneSidedFront*" and re-interpreting the Drawings as follows (ignoring the rows with "*TwoSidedFlipX*" values):

Table 78: Sides = "TwoSidedFlipY" Use Case row

DigitalPrintingParams/@Sides LayoutPreparationParams/@Sides	Output Stack 3,4-Page Document			
	Top Sheet		Bottom Sheet	
	Top	Bottom	Top	Bottom
TwoSidedFlipY	1	2	3	4

For example, Table 78 is to be interpreted for purposes of Certification Testing of One Sided Use Cases as if the Use Case row was as in Table 79, where "Sheet 1" is the first Sheet, "Sheet 2" is the second Sheet, "Sheet 3 is the third Sheet, and "Sheet 4 is the fourth Sheet in the output stack:

Table 79: Equivalent Drawing to Table 78 above for the Use Case: Sides = "OneSidedFront"

DigitalPrintingParams/@Sides LayoutPreparationParams/@Sides	Output Stack 3,4-Page Document			
	Sheet 1	Sheet 2	Sheet 3	Sheet 4
OneSidedFront	1	2	3	4

B.5 Assumed Interpretations of JDF for Use Cases

B.5.1 Assumed interpretation of DigitalPrintingParams/@PageDelivery

We assume that the correct interpretation of the DigitalPrintingParams/@PageDelivery (in spite of the name of the Attribute and value) is talking about the delivery of the stack as a whole and NOT about the delivery of individual Sheets (or Pages) to the output bin or finisher. The TSC approved the addition of the following note to JDF 1.4:

> Note that these values refer to the orientation of the entire stack being output from the press, not individual Sheets. For example, "*SameOrderFaceDown*" means that the stack can be picked up and turned over to find the output Sheets in the same order as the input **RunList** with the first Page on top facing up.

> 1. "Same Order" means in Reader Order since the schema default for LayoutPreparationParams/@PageOrder = "*Reader*" and "Reverse Order" means the reverse of Reader Order.

B.5.2 Assumed interpretation of RunList/LayoutElement/FileSpec/@PageOrder

PageOrder is only metadata, it's an instruction to the agent writing the ticket upstream; *PageOrder* is *not* an instruction to the IDP Worker.

The RunList/@Pages is the instruction to the IDP Worker. "*0 ~ -1*" is 1 to N order, and "-1 ~ 0" is N to 1.

Table 80 shows the eight combinations of RunList/LayoutElement/FileSpec/@PageOrder and DigitalPrintingParams/@PageDelivery. The purpose of this table is to show how streaming could be done with and without stapling and what Attributes and values would need to be added to the Use Cases and IDP ICS. The yellow Use Case Supports streaming with stapling when the staple comes from the *top*, while the blue Use Case Supports streaming when the staple comes from the *bottom*. Since most implementations staple from the top, but a few staple from the bottom, the Use Cases and the IDP ICS are intended to allow both implementations. Therefore, when DigitalPrintingParams/@PageDelivery is not supplied by the Manager, a conforming Worker is free to delivery the output stack either as if DigitalPrintingParams/@PageDelivery = "*SameOrderFaceUp*" or "*SameOrderFaceDown*". Note: the output for the two DigitalPrintingParams/@PageDelivery values: "*ReverseOrderFaceUp*" and "*ReverseOrderFaceDown*" are neither in Reader Order nor Reverse Reader Order; they are useful if down stream finishing would flip each Sheet as it is processed. Such processing is outside the scope of the IDP ICS and the IDP Use Cases and is filled with red like this in Table 80.

B.5.3 Assumed interpretation of RunList/@Pages

If RunList/@Pages is omitted, it is ambiguous whether "all Pages" means in 1 to N order versus N to 1 order in the sentence: "If none of *Pages*, *FirstPage*, *NPage*, *PageNames* or *SkipPage* is specified, all Pages in the **LayoutElement** are selected". This ICS assumes that "all Pages" means in 1 to N order.

Drawing Convention: The front of the corner staple is shown as a solid diagonal line: (1) and the back of the staple is shown as a dashed diagonal line: (2) (representing the two ends of the staple on the back side).

Table 80: Combinations of RunList/LayoutElement/FileSpec/@PageOrder and DigitalPrintingParams/@PageDelivery

DigitalPrintingParams/@PageDelivery	In Use Cases?	Pages = "0 ~ -1" Output stack 4-pg document				Pages = "-1 ~ 0" Output stack 4-pg document			
		Top Sheet		Bottom Sheet		Top Sheet		Bottom Sheet	
		Top	Bot.	Top	Bot.	Top	Bot.	Top	Bot.
SameOrderFaceUp	yes	1	2	3	4	4	3	2	1
SameOrderFaceDown	yes	4	3	2	1	1	2	3	4
ReverseOrderFaceUp	no	3	4	1	2	2	1	4	3
ReverseOrderFaceDown	no	2	1	4	3	3	4	1	2

B.6 Assumptions for Use Cases

Table 81 lists the assumptions that apply to all use cases. Some of the assumptions are irrelevant to some Use Cases.

Table 81: Assumptions about Use Cases

	Assumptions	Corresponding JDF Attributes and values
1.	The Pages in the input print stream are in Reader Order, i.e., 1 to N, unless specified otherwise, in the Use Case Family (pre-ordered Pages).	
2.	The result when the input document is NOT in Reader Order is NOT covered by the IDP ICS and the Use Cases, i.e., is outside the scope of IDP ICS.	
3.	Content is upright for reading. The only times the input would not be upright. If the reader is supposed to turn his head, but the ticket and the Work NEED NOT worry about this; its transparent to the ticket and the Worker[6].	
4.	In order to maintain Device-independent and configuration-independent JDF tickets all IDP JDF ticket specifications assume the JDF Virtual Printer: **RunList** is in Reader Order, i.e., RunList/LayoutElement/FileSpec/@PageOrder = "*Ascending*" (no schema default), LayoutPreparationParams/@PageOrder ="*Reader*" (schema default), DigitalPrintingParams/@PageDelivery = "*SameOrderFaceUp*" (no schema default), paper travels toward X-axis, moves paper along the Y-axis, and Z is the top of the stack (Reader Page 0 is on the top of the stack which is the highest value of Z). The JDF ticket written by the Manager is written against the Virtual Printer. The Worker implementation maps the semantics specified by the ticket into its implementation, performing any necessary transformations transparently so that the output is the same as the JDF Instance requested. See JDF **7.2.64.1 Coordinate systems in DigitalPrinting and** Figure 2-11 in Section 2.5, Coordinate Systems.	
5.	Assume settings in **DigitalPrintingParams** that influence the mapping of **RunList** Surfaces to a sequence of Sheets assumes a processing order driven by the order of "Sheets" as defined by the input **RunList**(Surfaces).	
6.	Assume setting for **DigitalPrintingParams** Collate none or Sheet. Assume Collate is with respect to copy boundaries. So the PageDelivery setting is respective of the collated result, meaning you collate, then you apply the PageDelivery setting.	

---

[6] Microsoft Windows drivers rotate the content of the document pages counter clockwise to achieve landscape, rather than supply the bounding box with X > Y. These Use Cases are termed "Rotated90 Landscape" in order to distinguish them from JDF Landscape use cases where Media/@Dimension has X > Y. So the Worker thinks that Rotated90 Landscape documents are portrait, since X < Y. In other words, all Windows driver documents appear as Portrait and the interpreter rotates the landscape pages as indicated in the PDL for each page. But Windows Drivers are outside the scope of these **r-Test** Use Cases and IDP ICS.

Assumptions	Corresponding JDF Attributes and values
7. Supplying LayoutPreparationParams/@BindingEdge has no effect on the output, except when LayoutPreparationParams/@PageDistributionScheme = "*Saddle*". So it is NOT shown in this table. A Manager MAY supply it and the Worker will ignore it, except when LayoutPreparationParams/@PageDistributionScheme = "*Saddle*".	LayoutPreparationParams/@BindingEdge = "*Left*", "*Top*", or "*Right*" and LayoutPreparationParams/@PageDistributionScheme = "*Saddle*".
8. Absent any output ComponentLink rotation and absent any input MediaLink rotation: The orientation of the output **Component** from Digital Printing Process exactly matches that of the Media. So layout doesn't alter the coordinate system of the **Component**.	
9. The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.	
10. The IDP Manager supplies the orientation of the input content (**Portrait** versus **Landscape**) which is reflected in the JDF Instance submitted to the Worker. Therefore, either the customer of the print shop has to indicate the orientation or the Manager has to examine the PDL document and determine the bounding box orientation (portrait versus landscape).	Media/@Dimension = X < Y versus X > Y, e.g., "*8.5 11*" versus "*11 8.5*" depending on whether the PDL being submitted to the Printer is Portrait versus Landscape.
11. While FitPolicy/@RotatePolicy helps the Worker in all cases to avoid clipping when the content is oriented differently than the Media, the Worker cannot determine the binding edge reliably from the PDL content. Therefore, if the Manager supplies the Media orientation that is different from the orientation of the PDL as specified by its bounding box, clipping will happen unless the Manager explicitly supplies LayoutPreparationParams/PageCell/FitPolicy/@RotatePolicy.	LayoutPreparationParams/PageCell/FitPolicy/@RotatePolicy.
12. The Manager supplies the face of the output stack (**Face Up** or **Face Down**) or omits it and lets the Worker choose.	DigitalPrintingParams/@PageDelivery = "*SameOrderFaceUp*" versus "*SameOrderFaceDown*".
13. If the ticket says nothing about finishing then no finishing is performed.	
14. The Media is letter or A4. To simplify, the dimensions are given in inches in the tables and only letter is shown. However, the tests are performed using points as specified in JDF.	Media/@Dimension = "*8.5 11*" versus "*11 8.5*".
15. This ICS applies to Sheet-Fed Printers.	
16. Pick the simplest alternative for each use case Family, but also make the same Attributes required to be supplied and Supported across Families to make the ticket as similar as possible across Families.	
17. Don't have multiple alternatives that produce the same output for the same use case.	
18. Pick the alternatives for the Use Cases that have as similar JDF Instances as possible.	

Assumptions	Corresponding JDF Attributes and values
19. Avoid use of rotation and coordinate system transformations as much as possible.	
20. JDF Virtual Printer specifies that stapling is performed from the Top of the output Stack to the Bottom of the output Stack. Also most stapling mechanisms physically perform stapling from the top of the output stack to the bottom of the output stack. So there is no need to cover stapling from the bottom of the output stack.	Therefore, Intermediate Component/@Orientation = "*FlipN*" input to **Stitching** Process is NOT included in the Stitching Use Cases. If the Manager leaves out DigitalPrinting Params/@PageDelivery, the Worker is free to choose the *PageDelivery* that will allow the Worker to staple from the direction (top or bottom) depending on the Device implementation, so that Devices can Support stapling whether they staple from the top or bottom. See section Assumed interpretation of DigitalPrintingParams/@PageDelivery in section B.5 "Assumed Interpretations of JDF for Use Cases".
21. Because of assumption #7 above, for a right to left language, need the staple on the upper right side of Finished Page. Supplying LayoutPreparationParams/@BindingEdge = "*Right*" does NOT help.	Therefore, the Manager MUST supply Intermediate ComponentLink/@Orientation = "Rotate90" as the Intermediate **Component** input to the **Stitching** Process using *CombinedProcessIndex* in order to get a corner staple in the upper right hand corner of the Finished Page.
22. Rotation in the ticket due to assumption #21 above occurs *after* the layout because it is input to **Stitching** Process, so the **LayoutPreparationParams** Attributes are the same as for a Left to Right language.	Effect on drawing. First the flip due to the *Sides* Attribute happens around the X-axis versus the Y-axis, depending on the value of LayoutPreparationParams/@Sides = "*TwoSidedFlipX*" versus "*TwoSidedFlipY*", respectively. *Then* the rotate of the Intermediate **Component** into **Stitching** to get the upper right hand corner (instead of the upper left hand corner) happens, which makes the drawings look like they flipped around the Y-axis versus the X-axis, respectively.

Assumptions	Corresponding JDF Attributes and values
23. In order to shift the images away from the *SpineTaping* edge, use LayoutPreparationParams/PageCell/ImageShift/ @ShiftFront. Assume that PageCell/ImageShift happens before PageCell/Rotate (since JDF says "Rotate happens after all other parameters"). However, most implementations have NOT used PageCell/ImageShift, but have used LayoutPreparationParams/ImageShift/@ShiftFront, since for one-up, rotating the Page Grid is the same as rotating the PageCell content.	To make a One-up Gutter: LayoutPreparationParams/ImageShift/@ShiftFront = "*0 −n*" when the SpineTaping edge is the Top edge and "*+n 0*" or "*−n 0*" when the **SpineTaping** edge is the Left or Right edge, respectively.
24. JDF1.5] says: If not specified, *ShiftBack* MUST be calculated from *ShiftFront* so that the content remains aligned. We assume that means that it shifts in a direction that makes the same gutter on the back side as on the front, i.e., shifts away from the binding edge or what will become the binding edge, by the same amount. In other words, if you hold the output up to the light, the image on the back side will have shifted in the same physical direction as the image on the front side. Therefore, these Use Cases do not include *ShiftBack*.	LayoutPreparationParams/ ImageShift/@ShiftFront = "0 -n" Spine on Top edge. LayoutPreparationParams/ ImageShift/@ShiftFront = "+n 0" Spine on Left edge. LayoutPreparationParams/ ImageShift/@ShiftFront = "-n 0" Spine on Right edge.
25. Need to specify LayoutPreparationParams/ @PresentationDirection in order to indicate how the Pages are to be distributed in the Page Grid when LayoutPreparationParams/ @PageDistributionScheme = "*Sequential*" (the default). But this means that a Z direction will be specified. But the Z direction means in the imposition stack, not the output stack. (Possible [JDF1.5] clarification, but will be clarified in the IDP ICS anyway). Therefore, leaving out DigitalPrintingParams/@PageDelivery will still allow the Worker to produce the output stack either "*SameOrderFaceUp*" or "*SameOrderFaceDown*".	LayoutPreparationParams/ @PresentationDirection = "*XYz*" still allows the Worker to produce the output stack of Sheets in either Z direction.

B.6.1 JDF Default values for Attributes

If there are any JDF defaults that would change the result from that shown in these Diagrams, then the IDP ICS requires the Manager to supply the Attribute ("w") with the value that is in our table.

If there are any JDF defaults that do NOT affect our Diagrams, then we can leave them out of the IDP ICS and we assume that they have no affect on our Use cases.

B.7 Use Case Details

This sections contains all of the Use Cases. Each Use Case Family is in one of the following sub-sections. Each Use Case Family as a single table showing the salient JDF Attributes for each Use Case within the family and a drawing of each Use Case.

B.7.1 Family A: One-up, Two-sided, FaceUp and FaceDown

Drawing Convention: See section Use Case Diagram Conventions and Conformance Testing in section B.4.

Note: only Use Case Family A, Diagrams show all 6 Output possibilities for each Use Case. The others Tables show only one row per Use Case. See section B.4 Legend used in each Use Case Family.

**Table 82: Family A: One-up, Two-Sided, FaceUp and FaceDown**

LPParams/ @Number Up	LPParams/ @PageDistribution Scheme	Media/@ Dimension	LPParams/ PageCell/ FitPolicy/ @Rotate Policy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides		DPParams/ @PageDelivery	Output stack 3,4-pg document			
								Top Sheet		Bottom Sheet	
								Top	Bot.	Top	Bot.
Family A.1. Portrait[7], Book[8,] L-to-R and R-to-L Lang: The Manager knows that the supplied document is a Portrait document, flip around long edge (Book = head to head), Left-to-Right and Right-to-Left language, no Binding:											
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipY		SameOrderFaceUp	1	2	3	4
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipY		SameOrderFaceUp	1	2	3	
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipY		SameOrderFaceDown	4	3	2	1
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipY		SameOrderFaceDown		3	2	1
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipY		<not present so either is OK:>	1 / 4	2 / 3	3 / 2	4 / 1

---

[7] The word "Portrait" in the Family title refers to the source document page orientations, not the orientation of the Finished Page which is 2-up and so is Landscape.

[8] The word "Book" in the Family title refers to the Finished Document orientation and that the Reader opens the document to the left or right, like a book.

LPParams/ @Number Up	LPParams/ @PageDistribution Scheme	Media/@ Dimension	LPParams/ PageCell/ FitPolicy/ @Rotate Policy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides			DPParams/ @PageDelivery	Top Sheet Top	Top Sheet Bot.	Bottom Sheet Top	Bottom Sheet Bot.
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipY			\<not present so either is OK:\>	1	2	3	
										3̄	2̄	1

Family A.3. Portrait, Calendar[9], L-to-R and **R-to-L Lang**: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Left-to-Right and Right-to-Left language, no Binding:

1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipX			SameOrderFaceUp	1	2̄	3	4̄
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipX			SameOrderFaceUp	1	2̄	3	
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipX			SameOrderFaceDown	4̄	3	2̄	1
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipX			SameOrderFaceDown		3	2̄	1
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipX			\<not present so either is OK:\>	1	2̄	3	4̄
									4̄	3	2̄	1
1 1	*[Sequential]*	8.5 11		[Rotate0]	TwoSidedFlipX			\<not present so either is OK:\>	1	2̄	3	
										3	2̄	1

Family A.5. Landscape[10], Book, L-to-R and **R-to-L Lang**: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right and Right-to-Left language, no Binding:

| 1 1 | *[Sequential]* | 11 8.5 | | [Rotate0] | TwoSidedFlipY | | | *SameOrderFaceUp* | 1 | 2 | 3 | 4 |

---

[9] The word "Calendar" in the Family title refers to the Finished Document orientation and that the Reader opens the document to the top, like a calendar.

[10] The word "Landscape" in the Family title refers to the source document page orientations, not the orientation of the Finished Page which is 2-up and so is Portrait.

LPParams/ @Number Up	LPParams/ @PageDistribution Scheme	Media/@ Dimension	LPParams/ PageCell/ FitPolicy/ @Rotate Policy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	DPParams/ @PageDelivery	Output stack 3,4-pg document Top Sheet Top	Top Sheet Bot.	Bottom Sheet Top	Bottom Sheet Bot.
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipY	*SameOrderFaceUp*	1	2	3	
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipY	*SameOrderFaceDown*	4	3	2	1
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipY	*SameOrderFaceDown*		3	2	1
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipY	*<not present so either is OK:>*	1 / 4	2 / 3	3 / 2	4 / 1
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipY	*<not present so either is OK:>*	1 /	2 / 3	3 / 2	/ 1

Family A.7. Landscape, Calendar, L-to-R and **R-to-L Lang**: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Left-to-Right and Right-to Left language, no Binding:

LPParams/ @Number Up	LPParams/ @PageDistribution Scheme	Media/@ Dimension	LPParams/ PageCell/ FitPolicy/ @Rotate Policy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	DPParams/ @PageDelivery	Top Sheet Top	Top Sheet Bot.	Bottom Sheet Top	Bottom Sheet Bot.
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipX	*SameOrderFaceUp*	1	2̄	3	4̄
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipX	*SameOrderFaceUp*	1	2̄	3	
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipX	*SameOrderFaceDown*	4̄	3	2̄	1
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipX	*SameOrderFaceDown*		3	2̄	1
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipX	*<not present so either is OK:>*	1 / 4̄	2̄ / 3	3 / 2̄	4̄ / 1
1 1	*[Sequential]*	11 8.5		[Rotate0]	TwoSidedFlipX	*<not present so either is OK:>*	1	2̄	3	

LPParams/ @Number Up	LPParams/ @PageDistribution Scheme		Media/@ Dimension	LPParams/ PageCell/ FitPolicy/ @Rotate Policy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides		DPParams/ @PageDelivery	Output stack 3,4-pg document			
									Top Sheet		Bottom Sheet	
									Top	Bot.	Top	Bot.
									☐	③̄	⁻②̄	①̄

B.7.2 Family B: One-up, Two-sided, Corner Stitched

Drawing Convention: The front of the corner staple is shown as a solid diagonal line: ⟨╱1⟩ and the back of the staple is shown as a dashed diagonal line: ⟨╱2⟩ (representing the two ends of the staple on the back side). Note: Whether a corner staple is horizontal, vertical, or angled depends on the implementation of the Worker and is outside the scope of these r-Test Use Cases and IDP ICS.

Table 83: Family B: One-up, Two-Sided, Corner Stitched

| LPParams/ @*NumberUp*	LPParams/ @*PageDistributionScheme*		Media/ @Dimension	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation	Stitching Params/ @StitchType		Output stack 3,4-pg document			
									Top Sheet		Bot. Sheet	
									Top	Bot.	Top	Bot.
Family B.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Left-to-Right language, Upper Left Corner Stitch.												
1 1	[Sequential]		8.5 11	[Rotate0]	TwoSidedFlipY	Rotate0	Corner		╱1	╱2	╱3	╱4
Family B.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a Portrait document, flip around long edge (Book = head to head), Right-to-Left language, Upper Right Corner Stitch. LayoutPreparation is the same as Left-to-Right, then rotation is applied:												
1 1	[Sequential]		8.5 11	[Rotate0]	TwoSidedFlipY	Rotate90	Corner		╲1	╲2	╲3	╲4
Family B.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar = head to toe, e.g., a contract), Left-to-Right language, Upper Left Corner Stitch:												

LPParams/ @*NumberUp*	LPParams/ @*PageDistrib utionScheme*	Media/ @Dimension	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation	Stitching Params/ @StitchType	Output stack 3,4-pg document			
							Top Sheet		Bot. Sheet	
							Top	Bot.	Top	Bot.
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipX	Rotate0	Corner	◸1	⃗2⃗	◸3	⃗4⃗

Family B.4, Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar = head to toe, e.g., a contract), Right-to-Left language, Upper Right Corner Stitch:

1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipX	*Rotate90*	Corner	◹1	⋰2	◹3	⋰4

Family B.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, flip around <u>short</u> edge (Book = head to head, e.g., a bookkeeper ledger), Left-to-Right language, Upper Left Corner Stitch:

1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipY	*Rotate0*	Corner	◸1	2⋰	◸3	4⋰

Family B.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book = head to head, e.g., a bookkeeper ledger for right to left language), Right-to-Left language, Upper Right Corner Stitch:

1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipY	*Rotate90*	Corner	◹1	⋰2	◹3	⋰4

Family B.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar - head to toe), Left-to-Right language, Upper Left Corner Stitch:

1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipX	Rotate0	Corner	◸1	⃗2⋰	◸3	⃗4⋰

Family B.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar = head to toe), Right-to-Left language, Upper Right Corner Stitch:

1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipX	Rotate90	Corner	◹1	⋰2⃗	◹3	⋰4⃗

B.7.3 Family C: One-up, Two-Sided, Edge Stitched

Drawing Convention: The front of the edge stitches is shown as a solid line: ⊡1 and the back of the edge stitches is shown as a dashed line: ⋮4⋮ .

Table 84: Family C: One-up, Two-Sided, Edge Stitched

LPParams/ *@NumberUp*	LPParams/ *@PageDistributionScheme*	Media/ @Dimension	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation	StitchingParams/ @StitchType	Output stack 3,4-pg document			
							Top Sheet		**Bot. Sheet**	
							Top	Bot.	Top	Bot.
Family C.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a Portrait document, Edge stitch long Left edge (Book = head to head), Left-to-Right language,										
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipY	Rotate0	Side	1	2	3	4
Family C.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a Portrait document, Edge stitch long Right edge (Book = head to head), Right-to-Left language, LayoutPreparation is the same as Left-to-Right, then rotation is applied:										
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipY	Rotate180	Side	1	2	3	4
Family C.3. Portrait, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a Portrait document, Edge stitch short Top edge (Calendar = head to toe, e.g., a contract), Left-to-Right and Right-to-Left language:										
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipX	Rotate90	Side	1	2̄	3	4̄
Family C.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, Edge stitch short Left edge (Book = head to head, e.g., a bookkeeper ledger), Left-to-Right language:										
1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipY	Rotate0	Side	1	2	3	4
Family C.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a Landscape document, Edge stitch short Right edge (Book = head to head, e.g., a bookkeeper ledger for right to left language), Right-to-Left language. LayoutPreparation is the same as Left-to-Right, then rotation is applied:										
1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipY	Rotate180	Side	1	2	3	4
Family C.7. Landscape, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a Landscape document, Edge stitch long Top edge (Calendar - head to toe), Left-to-Right and Right-to-Left language:										
1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipX	Rotate90	Side	1	2̄	3	4̄

B.7.4 Family D: Two-Up, Two-Sided, Saddle Stitched, Reader Order

Drawing Convention: The Surface of each 2-Up imposed Surface is shown as two rectangles inside a larger rectangle. The top side of the top Sheet is shown with a solid dark line to indicate both the top of the staple and the peak fold: [8|1]. The bottom side of the bottom Sheet is shown with a dashed line to indicate the bottom of the staple and the valley fold: [4:5] The diagram shows the booklet *after* being unfolded by the certification tester.

Table 85: Family D: Two-up, Two-Sided, Saddle Stitched, Reader Order

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ @Binding Edge[11]	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link (Stitching)/ @Orientation	Stitching Params/ @StitchType	Output stack 5,6,7,8-pg document *unfolded*			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
Family D.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch <u>long</u> <u>Left</u> edge (Book = head to head), Left-to-Right language, Reader Order: Logical pre-ordered Page order: 1, 2, 3, 4, 5, 6, 7, 8:											
2 1	Saddle	17 11	Left	[Rotate0]	TwoSidedFlipY	Rotate0	Saddle	[8│1]	[2│7]	[6│3]	[4:5]
Family D.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch <u>long</u> <u>Right</u> edge (Book = had to head), Right-to-Left language, Reader Order: Logical pre-ordered Page order: 1, 2, 3, 4, 5, 6, 7, 8:											
2 1	Saddle	17 11	Right	[Rotate0]	TwoSidedFlipY	Rotate0	Saddle	[1│8]	[7│2]	[3│6]	[5:4]
Family D.7. Landscape, Calendar, L-to-R Lang and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, Edge stitch <u>long</u> <u>Top</u> edge (Calendar - head to toe), Left-to-Right language, Reader Order: Logical pre-ordered Page order: 1, 2, 3, 4, 5, 6, 7, 8:											
1 2	Saddle	11 17	Top	[Rotate0]	TwoSidedFlipX	Rotate90	Saddle	[8/1]	[7/2]	[6/3]	[5/4]

[11] LayoutPreparationParams/@BindingEdge effects on the result and the behavior of the Worker for this Saddle Stitch Use Case Family and so MUST be present, while it is not present in any other use case and the Worker MUST ignore it if it is. See JDF1.5].

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.5 Family E: One-Up, Two-Sided, Perfect Bound, cut Sheet, Spine Taping with gutter

Drawing Convention: The front of the gluing is shown as a solid line: $\boxed{1}$ and the back of the gluing is shown as a dashed line: $\boxed{4}$. The image shift moves *away* from the glue line (solid line). This Use Case Family does NOT cover simplex. LPParams/ImageShift/@ShiftBack is omitted so that the Worker shifts the back image to keep the image aligned with the front image (when you hold it up to the light), i.e., shift the image away from the binding edge, or the edge that will become the binding edge, by the same amount.

Table 86: Family E: One-up, Two-Sided, Perfect Bind, cut Sheets, *SpineTaping* gutter

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ ImageShift/ @ShiftFront	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation	Spine Taping Params/ @NoOp	Output stack 4-pg document			
								Top Sheet		Bot. Sheet	
								Top	Bot.	Top	Bot.
Family E.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a Portrait document, SpineTaping along the long Left edge (Book = head to head) with Gutter, Left-to-Right language,											
1 1	[Sequential]	8.5 11	+n 0	[Rotate0]	TwoSidedFlipY	Rotate0	[false]	1	2	3	4
Family E.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, *SpineTaping* along the <u>long Right</u> edge (Book = head to head) with Gutter, Right-to-Left language, LayoutPreparation is the same as Left-to-Right, then rotation is applied:											
1 1	[Sequential]	8.5 11	-n 0	[Rotate0]	TwoSidedFlipY	Rotate180	[false]	1	2	3	4
Family E.3. Portrait, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, *SpineTaping* along the <u>short Top</u> edge (Calendar = head to toe, e.g., a contract) with Gutter, Left-to-Right language:											
1 1	[Sequential]	8.5 11	0 -n	[Rotate0]	TwoSidedFlipX	Rotate90	[false]	1	2	3	4
Family E.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, *SpineTaping*											

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ ImageShift/ @ShiftFront	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation	Spine Taping Params/ @NoOp	Output stack 4-pg document			
								Top Sheet		Bot. Sheet	
								Top	Bot.	Top	Bot.
along the <u>short</u> <u>Left</u> edge (Book = head to head, e.g., a bookkeeper ledger) with Gutter, Left-to-Right language:											
1 1	[Sequential]	11 8.5	+n 0	[Rotate0]	TwoSidedFlipY	Rotate0	[false]	1	2	3	4
Family E.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, *SpineTaping* along the <u>short</u> <u>Right</u> edge (Book = head to head, e.g., a bookkeeper ledger for right to left language) with Gutter, Right-to-Left language. LayoutPreparation is the same as Left-to-Right, then rotation is applied:											
1 1	[Sequential]	11 8.5	-n 0	[Rotate0]	TwoSidedFlipY	Rotate180	[false]	1	2	3	4
Family E.7. Landscape, Calendar, L-to-R Lang and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, *SpineTaping* along the <u>long</u> <u>Top</u> edge (Calendar - head to toe) with Gutter, Left-to-Right and Right-to-Left language:											
1 1	[Sequential]	11 8.5	0 -n	[Rotate0]	TwoSidedFlipX	Rotate90	[false]	1	2	3	4

B.7.6 Family F: 2-Up, Two-sided, 2 Pages per Finished Page, Sequential

Drawing Convention: The Surface of each 2-Up imposed Surface is shown as two rectangles inside a larger rectangle: [1 2]. Diagram shows the booklet unfolded by the certification tester.

Table 87: Family F: 2-Up, Two-Sided, 2 Pages per Finished Page, Sequential

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 5,6,7,8-pg document			
						Top Sheet		Bottom Sheet	
						Top	Bottom	Top	Bottom
Family F.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short l</u>edge (Book = head to head), Left-to-Right language, no Binding, 2 <u>Portrait</u> Pages per Finished Page:									
2 1	[Sequential]	17 11	[Rotate0]	TwoSidedFlipY	XYz	1 2	3 4	5 6	7 8

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 5,6,7,8-pg document			
						Top Sheet		**Bottom Sheet**	
						Top	Bottom	Top	Bottom
Family F.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Book = head to head), Right-to-Left language, no Binding, 2 <u>Portrait</u> Pages per Finished Page:									
2 1	[Sequential]	17 11	[Rotate0]	TwoSidedFlipY	xYz	2 1	4 3	6 5	8 7
Family F.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 2 <u>Portrait</u> Pages per Finished Page:									
2 1	[Sequential]	17 11	[Rotate0]	TwoSidedFlipX	XYz	1 2	4̄ 3̄	5 6	8̄ 7̄
Family F.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 2 <u>Portrait</u> Pages per Finished Page:									
2 1	[Sequential]	17 11	[Rotate0]	TwoSidedFlipX	xYz	2 1	3̄ 4̄	6 5	7̄ 8̄
Family F.5. Landscape, Book, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right and Right-to-Left language, no Binding, 2 <u>Landscape</u> Pages per Finished Page:									
1 2	[Sequential]	11 17	[Rotate0]	TwoSidedFlipY	yXz	1 / 2	3 / 4	5 / 6	7 / 8
Family F.7. Landscape, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Calendar), Left-to-Right and Right-to-Left language, no Binding, 2 <u>Landscape</u> Pages per Finished Page:									
1 2	[Sequential]	11 17	[Rotate0]	TwoSidedFlipX	yXz	1 / 2	4̄ / 3̄	5 / 6	8̄ / 7̄

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.7 Family G: 4-up, Two-sided, 4 Pages per Finished Page, Sequential, Page Cell scaling
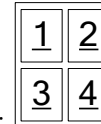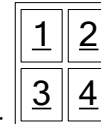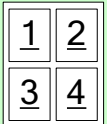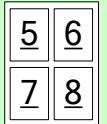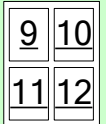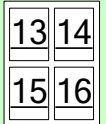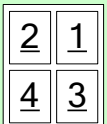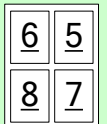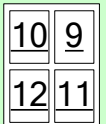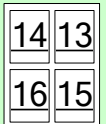
Drawing Convention: The Surface of each 4-up Finished Page is shown as four rectangles inside a larger rectangle: [1 2 / 3 4]. Diagram shows each Finished Page as seen by the certification tester. There will be a PDL file that has its PageCell bigger than the PageCell of the Surface and one that is smaller. The PDL that is bigger MUST be reduced with either the ReduceToFit or FitToPage values of the LayoutPreparationParams/PageCell/FitPolicy/@SizePolicy. The PDL file that is smaller MUST be expanded with the FitToPage value, but MUST NOT be expanded with the ReduceToFit value. To save space, the table below only shows the FitToPage value.

Table 88: Family G: 4-Up, Two-sided, 4 Pages per Finished Page, Sequential, PageCell scaling

LPParams/ @NumberUp	LPParams/ @PageDistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 9-16-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
Family G.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a Portrait document, flip around long ledge (Book = head to head), Left-to-Right language, no Binding, 4 Portrait Pages per Finished Page:										
2 2	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 / 3 4	5 6 / 7 8	9 10 / 11 12	13 14 / 15 16
Family G.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a Portrait document, flip around long edge (Book = head to head), Right-to-Left language, no Binding, 4 Portrait Pages per Finished Page:										
2 2	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	2 1 / 4 3	6 5 / 8 7	10 9 / 12 11	14 13 / 16 15
Family G.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a Portrait document, flip around short edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 4 Portrait Pages per Finished Page:										

LPParams/ @NumberUp	LPParams/ @PageDistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 9-16-pg document			
							Top Sheet		**Bottom Sheet**	
							Top	Bottom	Top	Bottom
2 2	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 4	8 7 9 5 (rotated)	9 10 11 12	15 16 13 14 (rotated)

Family G.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 4 <u>Portrait</u> Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @PageDistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top Sheet Top	Top Sheet Bottom	Bottom Sheet Top	Bottom Sheet Bottom
2 2	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	2 1 4 3	7 8 5 6 (rotated)	10 9 12 11	16 15 14 13 (rotated)

Family G.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @PageDistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top Sheet Top	Top Sheet Bottom	Bottom Sheet Top	Bottom Sheet Bottom
2 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 4	5 6 7 8	9 10 11 12	13 14 15 16

Family G.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @PageDistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top Sheet Top	Top Sheet Bottom	Bottom Sheet Top	Bottom Sheet Bottom
2 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	2 1 4 3	6 5 8 7	10 9 12 11	14 13 16 15

Family G.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Left-to-Right language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @PageDistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 9-16-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
2 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 / 3 4	8 7 / 6 5	9 10 / 11 12	16 15 / 14 13
Family G.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Right-to-Left language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:										
2 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	2 1 / 4 3	7 8 / 5 6	10 9 / 12 11	16 15 / 14 13

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

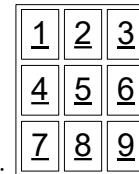## B.7.8 Family H: 6-up, Two-sided, 6 Pages per Finished Page, Sequential, Page Cell scaling
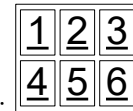
Drawing Convention: The Surface of each 6-up Finished Page is shown as 6 rectangles inside a larger rectangle: [1 2 3 / 4 5 6]. Diagram shows each Finished Page as seen by the certification tester. See section Family G: 4-up, Two-sided, 4 Pages per Finished Page, Sequential, for the discussion about LayoutPreparationParams/PageCell/FitPolicy/@SizePolicy.

Table 89: Family H: 6-Up, Two-sided, 6 Pages per Finished Page, Sequential, Page Cell scaling

| LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 13-24-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
Family H.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> ledge (Book = head to head), Left-to-Right language, no Binding, 6 <u>Portrait</u> Pages per Finished Page:										

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme		Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 13-24-pg document			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
3 2	[Sequential]		17 11	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 / 4 5 6	7 8 9 / 10 11 12	13 14 15 / 16 17 18	19 20 21 / 22 23 24

Family H.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long </u>edge (Book = head to head), Right-to-Left language, no Binding, 6 <u>Portrait</u> Pages per Finished Page:

3 2	[Sequential]		17 11	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	3 2 1 / 6 5 4	9 8 7 / 12 11 10	15 14 13 / 18 17 16	21 20 19 / 24 23 22

Family H.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 6 <u>Portrait</u> Pages per Finished Page:

3 2	[Sequential]		17 11	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 / 4 5 6	12 11 10 / 9 8 7 (inverted)	13 14 15 / 16 17 18	24 23 22 / 21 20 19 (inverted)

Family H.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 6 <u>Portrait</u> Pages per Finished Page:

3 2	[Sequential]		17 11	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	3 2 1 / 6 5 4	10 11 12 / 7 8 9 (inverted)	15 14 13 / 18 17 16	22 23 24 / 19 20 21 (inverted)

Family H.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding, 6 <u>Landscape</u> Pages per Finished Page:

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 13-24-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
2 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 / 3 4 / 5 6	7 8 / 9 10 / 11 12	13 14 / 15 16 / 17 18	19 20 / 21 22 / 23 24
Family H.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a Landscape document, flip around short edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding, 6 Landscape Pages per Finished Page:										
2 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	2 1 / 4 3 / 6 5	8 7 / 10 9 / 12 11	14 13 / 16 15 / 18 17	20 19 / 22 21 / 24 23
Family H.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, flip around long edge (Calendar), Left-to-Right language, no Binding, 6 Landscape Pages per Finished Page:										
2 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 / 3 4 / 5 6	ↁↂ 11 12 / 9 10 / 7 8 (rotated 180°)	13 14 / 15 16 / 17 18	23 24 / 21 22 / 19 20 (rotated 180°)
Family H.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a Landscape document, flip around long edge (Calendar), Right-to-Left language, no Binding, 6 Landscape Pages per Finished Page:										
2 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	2 1 / 4 3 / 6 5	11 12 / 9 10 / 7 8 (rotated 180°)	14 13 / 16 15 / 18 17	24 23 / 21 22 / 19 20 (rotated 180°)

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.9 Family I: 8-up, Two-Sided, 8 Pages per Finished Page, Sequential, Page Cell scaling
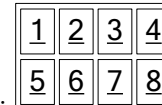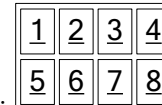
Drawing Convention: The Surface of each 8-up Finished Page is shown as 8 rectangles inside a larger rectangle: [1 2 3 4 / 5 6 7 8]. Diagram shows each Finished Page as seen by the certification tester. See section Family G: 4-up, Two-sided, 4 Pages per Finished Page, Sequential, for the discussion about LayoutPreparationParams/PageCell/FitPolicy/@SizePolicy.

Table 90: Family I: 8-Up, Two-sided, 8 Pages per Finished Page, Sequential, Page Cell scaling

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 17-32-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
Family I.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> ledge (Book = head to head), Left-to-Right language, no Binding, 8 <u>Portrait</u> Pages per Finished Page:										
4 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 4 / 5 6 7 8	9 10 11 12 / 13 14 15 16	17 18 19 20 / 21 22 23 24	25 26 27 28 / 29 30 31 32
Family I.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Right-to-Left language, no Binding, 8 <u>Portrait</u> Pages per Finished Page:										
4 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	4 3 2 1 / 8 7 6 5	12 11 10 9 / 16 15 14 13	20 19 18 17 / 24 23 22 21	28 27 26 25 / 32 31 30 29
Family I.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 8 <u>Portrait</u> Pages per Finished Page:										
4 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 4 / 5 6 7 8	(inverted) 9 10 11 12 / 13 14 15 16	17 18 19 20 / 21 22 23 24	(inverted) 25 26 27 28 / 29 30 31 32
Family I.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document										

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 17-32-pg document			
							Top Sheet		**Bottom Sheet**	
							Top	Bottom	Top	Bottom
is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 8 <u>Portrait</u> Pages per Finished Page:										
4 2	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	4 3 2 1 / 8 7 6 5	13 14 15 16 / 9 10 11 12	20 19 18 17 / 24 23 22 21	29 30 31 32 / 25 26 27 28
Family I.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding, 2 <u>Landscape</u> Pages per Finished Page:										
2 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 / 3 4 / 5 6 / 7 8	9 10 / 11 12 / 13 14 / 15 16	17 18 / 19 20 / 21 22 / 23 24	25 26 / 27 28 / 29 30 / 31 32
Family I.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding, 8 <u>Landscape</u> Pages per Finished Page:										
2 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	2 1 / 4 3 / 6 5 / 8 7	10 9 / 12 11 / 14 13 / 16 15	18 17 / 20 19 / 22 21 / 24 23	26 25 / 28 27 / 30 29 / 32 31
Family I.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Left-to-Right language, no Binding, 8 <u>Landscape</u> Pages per Finished Page:										
2 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 / 3 4 / 5 6 / 7 8	16 15 / 14 13 / 12 11 / 10 9	17 18 / 19 20 / 21 22 / 23 24	32 31 / 30 29 / 28 27 / 26 25

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 17-32-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
Family I.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Right-to-Left language, no Binding, 8 <u>Landscape</u> Pages per Finished Page:										
2 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	2 1 / 4 3 / 6 5 / 8 7	16 15 / 14 13 / 12 11 / 10 9	18 17 / 20 19 / 22 21 / 24 23	32 31 / 30 29 / 28 27 / 26 25

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.10 Family J: 9-up, Two-Sided, 9 Pages per Finished Page, Sequential, Page Cell scaling
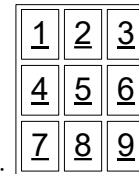
Drawing Convention: The Surface of each 9-up Finished Page is shown as 9 rectangles inside a larger rectangle: [1 2 3 / 4 5 6 / 7 8 9]. Diagram shows each Finished Page as seen by the certification tester. See section Family G: 4-up, Two-sided, 4 Pages per Finished Page, Sequential, for the discussion about LayoutPreparationParams/PageCell/FitPolicy/@SizePolicy.

Table 91: Family J: 9-Up, Two-sided, 9 Pages per Finished Page, Sequential, Page Cell scaling

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 19-36-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
Family J.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> ledge (Book = head to head), Left-to-Right language, no Binding, 9 <u>Portrait</u> Pages per Finished Page:										

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 19-36-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
3 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 / 4 5 6 / 7 8 9	10 11 12 / 13 14 15 / 16 17 18	19 20 21 / 22 23 24 / 25 26 27	28 29 30 / 31 32 33 / 34 35 36

Family J.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Right-to-Left language, no Binding, 9 <u>Portrait</u> Pages per Finished Page:

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top	Bottom	Top	Bottom
3 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	3 2 1 / 6 5 4 / 9 8 7	12 11 10 / 15 14 13 / 18 17 16	21 20 19 / 24 23 22 / 27 26 25	30 29 28 / 33 32 31 / 36 35 34

Family J.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 9 <u>Portrait</u> Pages per Finished Page:

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top	Bottom	Top	Bottom
3 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 / 4 5 6 / 7 8 9	(inverted) 16 17 18 / 13 14 15 / 10 11 12	19 20 21 / 22 23 24 / 25 26 27	(inverted) 34 35 36 / 31 32 33 / 28 29 30

Family J.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 9 <u>Portrait</u> Pages per Finished Page:

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimen sion	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 19-36-pg document			
							Top Sheet		**Bottom Sheet**	
							Top	Bottom	Top	Bottom
3 3	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	3 2 1 6 5 4 9 8 7	18 17 16 15 14 13 12 11 10 (rotated 180°)	21 20 19 24 23 22 27 26 25	36 35 34 33 32 31 30 29 28 (rotated 180°)
Family J.5. Landscape, Book, L-to-R: The Manager knows that the supplied document is a Landscape document, flip around short edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding, 9 Landscape Pages per Finished Page:										
3 3	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 4 5 6 7 8 9	10 11 12 13 14 15 16 17 18	19 20 21 22 23 24 25 26 27	28 29 30 31 32 33 34 35 36
Family J.6. Landscape, Book, R-to-L: The Manager knows that the supplied document is a Landscape document, flip around short edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding, 9 Landscape Pages per Finished Page:										
3 3	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	3 2 1 6 5 4 9 8 7	12 11 10 15 14 13 18 17 16	21 20 19 24 23 22 27 26 25	30 29 28 33 32 31 36 35 34
Family J.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, flip around long edge (Calendar), Left-to-Right language, no Binding, 9 Landscape Pages per Finished Page:										
3 3	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 4 5 6 7 8 9	18 17 16 15 14 13 12 11 10 (rotated 180°)	19 20 21 22 23 24 25 26 27	36 35 34 33 32 31 30 29 28 (rotated 180°)
Family J.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a Landscape document, flip around long edge (Calendar), Right-to-Left language,										

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimen sion	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presenta tion Direction	Output stack 19-36-pg document			
							Top Sheet		**Bottom Sheet**	
							Top	Bottom	Top	Bottom
no Binding, 9 Landscape Pages per Finished Page:										
3 3	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	3 2 1 / 6 5 4 / 9 8 7	16 17 18 / 13 14 15 / 10 11 12	21 20 19 / 24 23 22 / 27 26 25	34 35 36 / 31 32 33 / 28 29 30

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.11 Family K: 16-up, Two-sided, 16 Pages per Finished Page, Sequential, Page Cell scaling
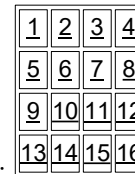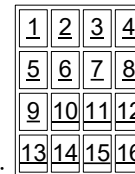
Drawing Convention: The Surface of each 9-up Finished Page is shown as 9 rectangles inside a larger rectangle: [1 2 3 4 / 5 6 7 8 / 9 10 11 12 / 13 14 15 16] . Diagram shows each Finished Page as seen by the certification tester. See section Family G: 4-up, Two-sided, 4 Pages per Finished Page, Sequential, for the discussion about LayoutPreparationParams/PageCell/FitPolicy/@SizePolicy.

Table 92: Family K: 16-Up, Two-sided, 16 Pages per Finished Page, Sequential, Page Cell scaling

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimen sion	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presen tation Direction	Output stack 33-64-pg document			
							Top Sheet		**Bottom Sheet**	
							Top	Bottom	Top	Bottom
Family K.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a Portrait document, flip around long ledge (Book = head to head), Left-to-Right language, no Binding, 16 Portrait Pages per Finished Page:										

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 33-64-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
4 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 4 / 5 6 7 8 / 9 10 11 12 / 13 14 15 16	17 18 19 20 / 21 22 23 24 / 25 26 27 28 / 29 30 31 32	33 34 35 36 / 37 38 39 40 / 41 42 43 44 / 45 46 47 48	49 50 51 52 / 53 54 55 56 / 57 58 59 60 / 61 62 63 64

Family K.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a Portrait document, flip around long edge (Book = head to head), Right-to-Left language, no Binding, 16 Portrait Pages per Finished Page:

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top	Bottom	Top	Bottom
4 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	4 3 2 1 / 8 7 6 5 / 12 11 10 9 / 16 15 14 13	20 19 18 17 / 24 23 22 21 / 28 27 26 25 / 32 31 30 29	36 35 34 33 / 40 39 38 37 / 44 43 42 41 / 48 47 46 45	52 51 50 49 / 56 55 54 53 / 60 59 58 57 / 64 63 62 61

Family K.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a Portrait document, flip around short edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 16 Portrait Pages per Finished Page:

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top	Bottom	Top	Bottom
4 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 4 / 5 6 7 8 / 9 10 11 12 / 13 14 15 16	29 30 31 32 / 25 26 27 28 / 21 22 23 24 / 17 18 19 20 (rotated 180°)	33 34 35 36 / 37 38 39 40 / 41 42 43 44 / 45 46 47 48	61 62 63 64 / 57 58 59 60 / 53 54 55 56 / 49 50 51 52 (rotated 180°)

Family K.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a Portrait document, flip around short edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 16 Portrait Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 33-64-pg document Top Sheet — Top	Top Sheet — Bottom	Bottom Sheet — Top	Bottom Sheet — Bottom
4 4	[Sequential]	11 17	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	4 3 2 1 8 7 6 5 12 11 10 9 16 15 14 13	32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 *(rotated 180°)*	36 35 34 33 40 39 38 37 44 43 42 41 48 47 46 45	64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 *(rotated 180°)*

Family K.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, flip around short edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding, 16 Landscape Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top Sheet — Top	Top Sheet — Bottom	Bottom Sheet — Top	Bottom Sheet — Bottom
4 4	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32	33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

Family K.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a Landscape document, flip around short edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding, 16 Landscape Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top Sheet — Top	Top Sheet — Bottom	Bottom Sheet — Top	Bottom Sheet — Bottom
4 4	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	4 3 2 1 8 7 6 5 12 11 10 9 16 15 14 13	20 19 18 17 24 23 22 21 28 27 26 25 32 31 30 29	36 35 34 33 40 39 38 37 44 43 42 41 48 47 46 45	52 51 50 49 56 55 54 53 60 59 58 57 64 63 62 61

Family K.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, flip around long edge (Calendar), Left-to-Right language, no Binding, 16 Landscape Pages per Finished Page:

LPParams/ @NumberUp	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Top Sheet — Top	Top Sheet — Bottom	Bottom Sheet — Top	Bottom Sheet — Bottom
4 4	[Sequential]	17 11	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16	32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17 *(rotated 180°)*	33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 *(rotated 180°)*

Family K.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a Landscape document, flip around long edge (Calendar), Right-to-Left language, no Binding, 16 Landscape Pages per Finished Page:

LPParams /@Number Up	LPParams/@Page Distribution Scheme	Media/@Dimen sion	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presen tation Direction	Output stack 33-64-pg document			
							Top Sheet		**Bottom Sheet**	
							Top	Bottom	Top	Bottom
4 4	[Sequential]	17 11	*FitToPage*	*[Rotate0]*	*TwoSidedFlipX*	xyz	4 3 2 1 8 7 6 5 12 11 10 9 16 15 14 13	32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17	36 35 34 33 40 39 38 37 44 43 42 41 48 47 46 45	64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.12 Family L: Pre-imposed, Two-Sided, Saddle Sheets, Worker staples and folds

Table 93: Family L Assumptions: Pre-Imposed, two-sided, Saddle Stitched, Worker staples and folds

Assumptions of the Use Case Family L:	Corresponding JDF Attributes and values
1. JDF Virtual Machine specifies that stapling is performed from the Top of the output Stack to the Bottom of the output Stack. Also most stapling mechanisms physically perform stapling from the top of the output stack to the bottom of the output stack. So there is no need to cover stapling from the bottom of the output stack in the r-Test Use Cases and IDP ICS. However, allow a Worker to choose the DigitalPrintingParams/@PageDelivery, if the Manager omits, so that a Worker MAY stream a stapled document that matches the stapling direction of the Device.	Therefore, Intermediate Component/@Orientation = "*FlipN*" input to **Stitching** Process is NOT included in this Use Case Family.
2. Assume that supplying LayoutPreparationParams/@BindingEdge is required in order to know which edge of Page 1 is to be bound when saddle stitching.	LayoutPreparationParams/@BindingEdge
3. Because of assumption #2 above for a right to left language, need the staple on the upper right side of Finished Page. Supplying LayoutPreparationParams/@BindingEdge = "Right" does NOT help.	Therefore, the Manager MUST supply Intermediate ComponentLink/ @Orientation = "*Rotate180*" as the Intermediate **Component** input to the **Stitching** Process using *CombinedProcessIndex* in order to get an Edge Stitch on the right hand edge of the Finished Page.

Assumptions of the Use Case Family L:	Corresponding JDF Attributes and values
4. Rotation in the ticket due to assumption #3 above occurs after the layout because it is input to **Stitching** Process, so the LayoutPreparationParams Attributes are the same as for a Left to Right language (except for the LayoutPreparationParams/@BindingEdge which is "Right" instead of "Left".	Effect on drawing. First the flip due to the *Sides* Attribute happens around the X-axis versus the Y-axis, depending on the value of LayoutPreparationParams/@Sides = "*TwoSidedFlipX*" versus "*TwoSidedFlipY*", respectively. _Then_ the rotate of the Intermediate Component into Stitching to get the upper right hand corner (instead of the upper left hand corner) happens, which makes the drawings look like they flipped around the Y-axis versus the X-axis, respectively.

Drawing Convention: The Surface of each 2-Up imposed Surface is shown as two rectangles inside a larger rectangle. The top side of the top Sheet is shown with a solid line to indicate both the top of the staple and the peak fold: [8 | 1]. The bottom side of the bottom Sheet is shown with a dashed line to indicate the bottom of the staple and the valley fold: [4 : 5]. The diagram shows the booklet *after* being unfolded by the certification tester.

Table 94: Family L: Pre-Imposition Two-Up, Two-Sided, Saddle Stitched, Worker staples and folds

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimen sion	LPParams/ @BindingEdge[12]	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate ComponentLink (Stitching)/ @Orientation	Stitching Params/ @StitchType	Output stack 5,6,7,8-pg document *unfolded*			
								Top Sheet		**Bottom Sheet**	
								Top	Bottom	Top	Bottom
Family L.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch <u>long</u> <u>Left</u> edge (Book = head to head), Left-to-Right language:											
1 1	[Sequential]	17 11	Left	[Rotate0]	TwoSidedFlipY	Rotate0	Saddle	[8 | 1]	[2 | 7]	[6 | 3]	[4 : 5]
Family L.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch <u>long</u> <u>Right</u> edge (Book = had to head), Right-to-Left language:											

---

[12] LayoutPreparationParams/@BindingEdge effects on the result and the behavior of the Worker for this Saddle Stitch Use Case Family and so MUST be present, while it is not present in any other use case and the Worker MUST ignore it if it is. See JDF1.5].

LPParams/@Number Up	LPParams/@Page Distribution Scheme	Media/@Dimension	LPParams/@BindingEdge[12]	LPParams/@Rotate	LPParams/Sides DPParams/@Sides	Intermediate ComponentLink (Stitching)/@Orientation	Stitching Params/@StitchType	Output stack 5,6,7,8-pg document *unfolded*			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
1 1	[Sequential]	17 11	Right	[Rotate0]	TwoSidedFlipY	Rotate0	Saddle	1 8	7 2	3 6	5 4
Family L.7. Landscape, Calendar, L-to-R Lang and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, Edge stitch <u>long</u> <u>Top</u> edge (Calendar - head to toe), Left-to-Right language:											
1 1	[Sequential]	11 17	Top	[Rotate0]	TwoSidedFlipX	Rotate90	Saddle	8/1	7/2	6/3	5/4

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.13 Family M: One-up, Two-sided, Mixed Orientation Document

Table 95: Family M Assumptions: One-up, Two-Sided, Mixed Orientation Document

Assumptions of the Use Case Family M:	Corresponding JDF Attributes and values
The Pages in the document are the same size, but mixed orientation with one of two arrangements for each 4-page document: (1) an initial Portrait page, then two Landscape pages and finally a Portrait page, or (2) an initial Landscape page, then two Portrait pages and finally a Landscape page. The Manager specifies which way to rotate the Pages in the document that are not the same as the initial Page, knowing whether the document is to be bound on the left, top, or right.	LayoutPreparationParams/PageCell/FitPolicy/@RotatePolicy = "*RotateCounterClockwise*" or "*RotateClockwise*".

Drawing Convention: See section Use Case Diagram Conventions and Conformance Testing in section B.4.

Table 96: Family M: One-up, Two-Sided, Mixed Orientation Document

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @RotatePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation	Output stack 3,4-pg document			
							Top Sheet		Bottom Sheet	
							Top	Bottom	Top	Bottom
Family M.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Left-to-Right language, no Binding:										
1 1	[Sequential]	8.5 11	RotateCounterClockwise	[Rotate0]	TwoSidedFlipY	Rotate0	1	2	3	4
Family M.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Right-to-Left language, no Binding:										
1 1	[Sequential]	8.5 11	RotateClockwise	[Rotate0]	TwoSidedFlipY	Rotate0	1	2	3	4
Family M.3. Portrait, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Left-to-Right language, no Binding:										
1 1	[Sequential]	8.5 11	RotateCounterClockwise	[Rotate0]	TwoSidedFlipX	Rotate0	1	2	3	4
Family M.4. Portrait, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding:										
1 1	[Sequential]	8.5 11	RotateClockwise	[Rotate0]	TwoSidedFlipX	Rotate0	1	2	3	4
Family M.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding:										
1 1	[Sequential]	11 8.5	RotateCounterClockwise	[Rotate0]	TwoSidedFlipY	Rotate0	1	2	3	4
Family M.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding:										
1 1	[Sequential]	11 8.5	RotateClockwise	[Rotate0]	TwoSidedFlipY	Rotate0	1	2	3	4
Family M.7. Landscape, Calendar, L-to-R Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Left-to-Right language, no Binding:										

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme		Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @RotatePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate Component Link/ @Orientation			Output stack 3,4-pg document			
										Top Sheet		Bottom Sheet	
										Top	Bottom	Top	Bottom
1 1	[Sequential]		11 8.5	RotateCounterClockwise	[Rotate0]	TwoSidedFlipX	Rotate0			1	2	3	4
Family M.8. Landscape, Calendar, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Right-to-Left language, no Binding:													
1 1	[Sequential]		11 8.5	RotateClockwise	[Rotate0]	TwoSidedFlipX	Rotate0			1	2	3	4

B.7.14 Family N: 4-up, Two-sided, Sequential, Mixed Orientation Document, PageCell scaling

Table 97: Family N Assumptions: 4-up, two-sided, cut Sheet, Mixed Orientation Document, PageCell scaling

Assumptions of the Use Case Family N:	Corresponding JDF Attributes and values
The Pages in the document are the same size, but mixed orientation with one of two arrangements for the 16-page document: (1) an initial Portrait page, then a mixture of Portrait and Landscape pages, where pages: 4, 6, 7, 9, 10, 11 and 12 are Portrait, or (2) an initial Landscape page, then a mixture of Portrait and Landscape pages, where pages: 4, 6, 7, 9, 10, 11 and 12 are Landscape. The Manager specifies which way to rotate the Pages in the document that are not the same as the initial Page, knowing whether the document is to be bound on the left, top, or right. **Note:** this example is intended to illustrate a mixed orientation document and is not intended to be realistic.	LayoutPreparationParams/PageCell/FitPolicy/@RotatePolicy = "*RotateCounterClockwise*" or "*RotateClockwise*"
The PageCell content is required to be scaled to fit.	LayoutPreparationParams/PageCell/FitPolicy/@SizePolicy = "*FitToPage*"
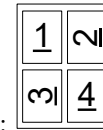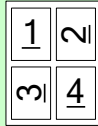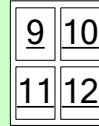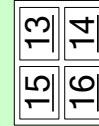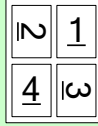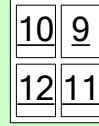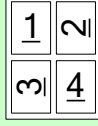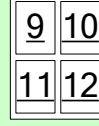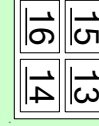
Drawing Convention: The Surface of each 4-up Finished Page is shown as four rectangles inside a larger rectangle: ⊞ (1 2 / 3 4). Diagram shows each Finished Page as seen by the certification tester.

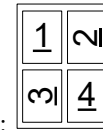**Table 98: Family N: 4-Up, Two-sided, Sequential, Mixed Orientation Document, PageCell scaling**

LPParams/ @Number Up	LPParams/ @Page DistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @RotatePolicy	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 9-16-pg document			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
Family N.1. Portrait, Book, L-to-R Page Distribution: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Left-to-Right language, no Binding, 4 <u>Portrait</u> Pages per Finished Page:											
2 2	[Sequential]	11 17	RotateCounter Clockwise	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	1 2 / 3 4	5 6 / 7 8	9 10 / 11 12	13 14 / 15 16
Family N.2. Portrait, Book, R-to-L Page Distribution: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>long</u> edge (Book = head to head), Right-to-Left language, no Binding, 4 <u>Portrait</u> Pages per Finished Page:											
2 2	[Sequential]	11 17	RotateClockwise	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	2 1 / 4 3	6 5 / 8 7	10 9 / 12 11	14 13 / 16 15
Family N.3. Portrait, Calendar, L-to-R Page Distribution: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Left-to-Right language, no Binding, 4 <u>Portrait</u> Pages per Finished Page:											
2 2	[Sequential]	11 17	RotateCounter Clockwise	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	1 2 / 3 4	8 7 / 6 5	9 10 / 11 12	16 15 / 14 13

LPParams/ @Number Up	LPParams/ @Page DistributionScheme	Media/ @Dimension	LPParams/ PageCell/ FitPolicy/ @RotatePolicy	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presentation Direction	Output stack 9-16-pg document			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
Family N.4. Portrait, Calendar, R-to-L Page Distribution: The Manager knows that the supplied document is a <u>Portrait</u> document, flip around <u>short</u> edge (Calendar, e.g., a contract), Right-to-Left language, no Binding, 4 <u>Portrait</u> Pages per Finished Page:											
2 2	[Sequential]	11 17	RotateClockwise	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	(2 1 / 4 3)	(7 8 / 5 6)	(10 9 / 12 11)	(16 15 / 13 14)
Family N.5. Landscape, Book, L-to-R Page Distribution: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Left-to-Right language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:											
2 2	[Sequential]	17 11	RotateCounterClockwise	FitToPage	[Rotate0]	TwoSidedFlipY	Xyz	(1 2 / 3 4)	(5 6 / 7 8)	(9 10 / 11 12)	(13 14 / 15 16)
Family N.6. Landscape, Book, R-to-L Page Distribution: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>short</u> edge (Book, e.g., a bookkeeper ledger), Right-to-Left language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:											
2 2	[Sequential]	17 11	RotateClockwise	FitToPage	[Rotate0]	TwoSidedFlipY	xyz	(2 1 / 4 3)	(6 5 / 8 7)	(10 9 / 12 11)	(14 13 / 16 15)
Family N.7. Landscape, Calendar, L-to-R Page Distribution: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Left-to-Right language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:											
2 2	[Sequential]	17 11	RotateCounterClockwise	FitToPage	[Rotate0]	TwoSidedFlipX	Xyz	(1 2 / 3 4)	(8 7 / 6 5)	(9 10 / 11 12)	(16 15 / 14 13)
Family N.8. Landscape, Calendar, R-to-L Page Distribution: The Manager knows that the supplied document is a <u>Landscape</u> document, flip around <u>long</u> edge (Calendar), Right-to-Left language, no Binding, 4 <u>Landscape</u> Pages per Finished Page:											

LPParams/ @Number Up	LPParams/ @Page DistributionScheme	Media/ @Dimen sion	LPParams/ PageCell/ FitPolicy/ @RotatePolicy	LPParams/ PageCell/ FitPolicy/ @SizePolicy	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	LPParams/ @Presen tation Direction	Output stack 9-16-pg document			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
2 2	[Sequential]	17 11	RotateClockwise	FitToPage	[Rotate0]	TwoSidedFlipX	xyz	2 1 / 4 3	7 8 / 5 6	10 9 / 12 11	15 16 / 13 14

Note: The LayoutPreparationParams/@Rotate rotation happens *after NumberUp*, so that the X and Y in *NumberUp* is *before* rotation.

B.7.15 Family O: One-up, Two-Sided, Edge Stitched AND Hole Making (two finishing operations)

Table 99: Family O Assumptions: One-up, Two-Sided, Edge Stitched AND Hole Making (two finishing ops)

Assumptions of the Use Case Family O:	Corresponding JDF Attributes and values
Intermediate ComponentLink/@Orientation specifies the logical orientation of the exchange **Component** in relation to the Process coordinate system for that Process step only. Therefore, Intermediate Component/@Orientation needs to be restated for each finishing Process, if a value other than "Rotate0" is needed. input to **Stitching** Process is NOT included in this Use Case Family.	Need separate ComponentLink/@Orientation Resources or use the same ComponentLink with *CombinedProcessIndex*.

Drawing Convention: The front of the edge stitches and hole making is shown as a solid line: ⏚1⏛ and the back of the edge stitches and hole making is shown as a dashed line: ⏚4⏛ .

Table 100: Family O: One-up, Two-Sided, Edge Stitched AND Hole Making (two finishing operations)

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimen sion	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Intermediate ComponentLink/ @Orientation (Stitching proc #)	Intermediate ComponentLink/ @Orientation (HoleMaking proc #)	Stitching Params/ @StitchType	HoleMaking Params/ @HoleType	Output stack 3,4-pg document Top Sheet Top	Bot.	Bot. Sheet Top	Bot.
Family O.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch and Hole Making <u>long</u> <u>Left</u> edge (Book = head to head), Left-to-Right language,											
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipY	Rotate0	Rotate0	Side	R3-generic	1	2	3	4
Family O.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch and Hole Making <u>long</u> <u>Right</u> edge (Book = head to head), Right-to-Left language, LayoutPreparation is the same as Left-to-Right, then rotation is applied:											
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipY	Rotate180	Rotate180	Side	R3-generic	1	2	3	4
Family O.3. Portrait, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, Edge stitch and Hole Making <u>short</u> <u>Top</u> edge (Calendar = head to toe, e.g., a contract), Left-to-Right and Right-to-Left language:											
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipX	Rotate90	Rotate90	Side	R3-generic	1	2	3	4
Family O.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, Edge stitch and Hole Making <u>short</u> <u>Left</u> edge (Book = head to head, e.g., a bookkeeper ledger), Left-to-Right language:											
1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipY	Rotate0	Rotate0	Side	R3-generic	1	2	3	4
Family O.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, Edge stitch and Hole Making <u>short</u> <u>Right</u> edge (Book = head to head, e.g., a bookkeeper ledger for right to left language), Right-to-Left language. LayoutPreparation is the same as Left-to-Right, then rotation is applied:											
1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipY	Rotate180	Rotate180	Side	R3-generic	1	2	3	4
Family O.7. Landscape, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, Edge stitch and Hole Making <u>long</u> <u>Top</u> edge (Calendar - head to toe), Left-to-Right and Right-to-Left language:											
1 1	[Sequential]	11 8.5	[Rotate0]	TwoSidedFlipX	Rotate90	Rotate90	Side	R3-generic	1	2	3	4

B.7.16 Family P: One-up, Two-Sided, Pre-Printed Soft Cover (CoverApplication)

Table 101: Family P Assumptions: One-up, Two-Sided, Soft Cover (CoverApplication)

Assumptions of the Use Case Family P:	Corresponding JDF Attributes and values
Input **Component** (Cover) - for the soft wrap around cover	Component/@Usage = "*Input*" @ProcessUsage = "*Cover*"
Input **Media** or **Component** for the book block	Component/@Usage = "*Input*"
Input **CoverApplicationParams**	CoverApplicationParams/@Usage = "*Input*"
Rotate the Input **Component** (Cover), rather than an intermediate **Component**: +180 degrees for R to L languages to bind on right and +90 degrees for Calendar binding on top.	
The ***CoverApplication*** Process knows how to glue the soft (wrap around) cover to the book block and so the JDF doesn't need to specify CoverApplicationParams/GlueApplication and the IDP ICS doesn't include CoverApplicationParams/GlueApplication	

Instead of supplying the pre-printed cover as in Input Component (Cover), the pre-printed cover can be supplied as an InsertSheet referenced from LayoutPreparationParams (see Table 39: InsertSheet – LayoutPreparationParams and referenced from Table 40: InsertSheet – RunList. Workers that Support soft covers MUST Support either method.

Drawing Convention: The front of the gluing and front edge of the spine of the soft (wrap around) cover is shown as a solid line: $\boxed{1}$ and the back of the gluing and

back edge of the spine of the soft (wrap around) cover is shown as a dashed line: $\boxed{4}$.

Table 102: Family P: One-up, Two-Sided, Pre-Printed Soft Cover (CoverApplication)

LPParams/ @Number Up	LPParams/ @Page Distribution Scheme	Media/ @Dimen sion	LPParams/ @Rotate	LPParams/Sides DPParams/ @Sides	Cover Media/ @Dimension	ComponentLink/ @Orientation (Cover) proc #)	ComponentLink/ @Orientation proc #)	Output stack 3,4-pg document			
								Top Sheet		Bottom Sheet	
								Top	Bottom	Top	Bottom
Family P.1. Portrait, Book, L-to-R Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, apply Soft (wrap around) Cover with spine on the <u>long Left</u> edge (Book = head to head), Left-to-Right language,											
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipY	17+ 11	Rotate0	Rotate0	1	2	3	4
Family P.2. Portrait, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, apply Soft (wrap around) Cover with spine on the <u>long Right</u> edge (Book = head to head), Right-to-Left language, LayoutPreparation is the same as Left-to-Right, then rotation is applied:											
1 1	[Sequential]	8.5 11	[Rotate0]	TwoSidedFlipY	17+ 11	Rotate180	Rotate180	1	2	3	4
Family P.3. Portrait, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Portrait</u> document, apply Soft (wrap around) Cover with spine on the <u>short Top</u> edge (Calendar = head to toe, e.g., a contract), Left-to-Right and Right-to-Left language:											
1 1	[Sequential]	5.5 8.5	[Rotate0]	TwoSidedFlipX	5,517+	Rotate90	Rotate90	1	2	3	4
Family P.5. Landscape, Book, L-to-R Lang: The Manager knows that the supplied document is a Landscape document, apply Soft (wrap around) Cover with spine on the <u>short Left</u> edge (Book = head to head, e.g., a bookkeeper ledger), Left-to-Right language:											
1 1	[Sequential]	8.5 5.5	[Rotate0]	TwoSidedFlipY	17+ 5.5	Rotate0	Rotate0	1	2	3	4
Family P.6. Landscape, Book, R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, apply Soft (wrap around) Cover with spine on the <u>short Right</u> edge (Book = head to head, e.g., a bookkeeper ledger for right to left language), Right-to-Left language. LayoutPreparation is the same as Left-to-Right, then rotation is applied:											
1 1	[Sequential]	8.5 5.5	[Rotate0]	TwoSidedFlipY	17+ 5.5	Rotate180	Rotate180	1	2	3	4
Family P.7. Landscape, Calendar, L-to-R and R-to-L Lang: The Manager knows that the supplied document is a <u>Landscape</u> document, apply Soft (wrap around) Cover with spine on the <u>long Top</u> edge (Calendar - head to toe), Left-to-Right and Right-to-Left language:											

| 1 1 | [Sequential] | | 11 8.5 | [Rotate0] | TwoSidedFlipX | 11 17+ | Rotate90 | Rotate90 | | 1 | 2 | 3 | 4 |

Appendix C StatusDetails Values (Normative)

This appendix defines combinations of the *Status* and *StatusDetails* Attribute Values for use in Job Context and the combinations of *DeviceStatus* and *StatusDetails* Attribute values for use in Device Context. The values in this Appendix are a subset of the values defined in [JDF1.5] Appendix C.1 "*StatusDetails Supported Strings*", plus a few new *StatusDetails* values are defined and a few new combinations of existing values are defined.

StatusDetails is defined to be a string in JDF 1.5, so that multiple values could be supplied by a Worker. The values included in JDF 1.5 Appendix C.1 are defined as mixed case tokens, as if they were NMTOKEN values. Therefore, to maximize interoperability Workers SHOULD supply a single value and from this ICS Appendix. Also, this Appendix gives precedence as to which value the Worker SHOULD use if more than one value applies. If the Manager displays some human readable representation of *StatusDetails* values, the Manager SHOULD Support all of the values in this Appendix, including the equivalencies specified in this Appendix.

C.1 Status and StatusDetails Attribute Values Pairs

This sub-section lists the *StatusDetails* values that are defined for use with the IDP ICS in particular Job Contexts. Implementations MAY use other values as well. However, there will be less interoperability. A Job Context is defined to be the combinations of *Status* and *StatusDetails* Attribute values used in the following Elements:

> JDF/AuditPool/PhaseTime (for Audit Elements).
>
> DeviceInfo/JobPhase (for Status Signal Messages).
>
> DeviceInfo/JobPhase/JDF (for Status Signal Messages).

Table 103 lists the combinations of *StatusDetails* values used in combination with *Status* values in Job Context. Rows are sorted by *Status* in the likely order of occurrence.

The Category column lists the *Category* Attribute Values for those *StatusDetails* values that are a sub-category of a more general *Category* value (from the JDF Appendix C).

The U, D, R, and M columns apply to particular values of *ModuleType*, namely:

> **U:** *Mime**U**npacker*,
> **D:** *Referenced**D**ataCollector*,
> **R:** ***R**IP*
> **M:** ***M**arker*.

The values of U, D, R, and M columns indicate the presence or absence of child module Elements, where child module Element.

> **y:** MUST be present,
> **n:** MUST NOT be present,
> ***:** MAY be present or absent depending on how phases and modules are modeled (see [MIS-ICS]).

The Description column indicates specific usage with the IDP ICS.

Table 103: Status and StatusDetails Attribute Value Pairs

Referenced by: JDF Node, JobPhase, PhaseTime

Status	StatusDetails	Category	U	D	R	M	Description
Waiting	-		n	n	n	n	No production/ processing has started on this Node. The Node has not yet entered the TestRun Phase. Because the IDP-ICS does not include provisions for TestRunInProgress, Ready and

Status	StatusDetails	Category	U	D	R	M	Description
							Waiting MAY be used interchangeably. The *StatusDetails* is unknown.
	JobIncoming		y	y	n	n	The Worker is accepting and unpacking the MIME package, but is NOT fetching any assets references, except the JDF ticket itself, if the JDF is not in the MIME package.
Ready	-		n	n	n	n	No production/ processing has started on this Node. The Node has not yet entered the TestRun Phase. Because the IDP-ICS does not include provisions for TestRunInProgress, Ready and Waiting MAY be used interchangeably. The *StatusDetails* is unknown.
	WaitingForReferencedDataCollector *		n	n	n	n	The Printer does NOT model any module prior to the *ReferencedDataCollector* module and is waiting for a *ReferencedDataCollector* module to become available. New value defined by this ICS.
	WaitingForRIP *		n	n	n	n	The Printer does NOT model any module prior to the *RIP* module and is waiting for a *RIP* module (process slot) to become available. New value defined by this ICS.
	WaitingForMarker *		n	n	n	n	The Printer does NOT model any module prior to the *Marker* module and is waiting for a *Marker* module to become available. New value defined by this ICS.
Setup	-		n	n	n	n	Work is being performed to setup the Node to run, but no production/ processing is taking place. Does not include any Process steps described in the Combined Process Node such as RIP, etc, May include manual operations such as loading paper. The *StatusDetails* is unknown.
	JobIncoming		n	y	n	n	The *ReferencedDataCollector*

Status	StatusDetails	Category	U	D	R	M	Description
							module performs Setup for the RIP module by fetching data referenced from the JDF after the MIME is unpacked and the JDF obtained. New combination defined by this ICS.
	MissResources		n	*	*	n	Manual Operator setup. SHOULD include EmployeeLink to record operator time spent on Job. Note gaps in time sequence where Job was Waiting but not consuming Resources.
InProgress	-		n	n	n	n	Production/ processing is being performed on any Process step of the Node. The *StatusDetails* is unknown.
	JobStreaming		n	y	y	n	Productive processing (RIP, etc) is taking place where no final output is being produced [13]while data referenced from the JDF and possibly the PDL are still being fetched.
	Processing *		n	*	y	n	Other productive processing (RIP, etc) is taking place but no final output is being produced. All input data has arrived (not InProgress/JobStreaming nor Waiting/JobIncoming). New value defined by this ICS.
	Good		n	*	*	y	Good output is being produced by the final Process step (whether the Job is also streaming and processing).
	Waste		n	*	*	y	Waste output is being produced by the final Process step.
Stopped	-		n	n	n	n	No production/ processing was being performed on any Process step of the Node. All Modules allocated to or occupied by the Node were Stopped. Modules of the Device that were "occupied" or allocated to this Node MUST be recorded in one or

---

[13] The IDP ICS restricts "JobStreaming" to not include when output is being produced, since the IDP ICS also restricts the StatusDetails attribute to a single value. When output is being produced, the StatusDetails SHOULD be "Good" or "Waste".

Status	StatusDetails	Category	U	D	R	M	Description
							more ModulePhase child Elements. ModulePhase MUST NOT be recorded with ModulePhase/@DeviceStatus= "Running" in a PhaseTime with PhaseTime/@Status="Stopped" (else the PhaseTime would be InProgress). The *StatusDetails* is unknown.
	CoverOpen	InterlockOpen	n	*	*	y	The Manager MAY treat the same as the more general InterlockOpen value.
	DoorOpen	InterlockOpen	n	*	*	y	The Manager MAY treat the same as the more general InterlockOpen value.
	Failure		n	*	*	y	Workers SHOULD use more specific *StatusDetails* values of InterlockOpen, OutputAreaFull, PaperJam, or WasteFull if available.
	InputTrayMissing	InterlockOpen	n	*	*	y	The Manager MAY treat the same as the more general InterlockOpen value.
	InterlockOpen	Failure	n	*	*	y	Printing cannot proceed because one or more inter-locks are open indicating the operator is actively working on the Machine. The Worker MAY supply this general "InterlockOpen" value or the more-specific values: CoverOpen, DoorOpen, InputTrayMissing or OutputTrayMissing. The Manager SHOULD accept both the general value and the more specific values.
	MissResources	Pause	n	*	*	y	Machine is out of Media, Ink, Staples, OutputBin (full), or other consumable Resource that would require human attention. Note: the Marker is assigned to the Job while in this state and other Jobs are not able to use the Marker. Not to be used for internally piped data underflows - Job would not be "Stopped", it would be InProgress/Processing or perhaps InProgress/JobStreaming.

Status	StatusDetails	Category	U	D	R	M	Description
							If no additional data was forthcoming because the Process step causing the underflow was Stopped or Suspended, then those other values of Status would be more appropriate.
	OutputAreaFull	Failure	n	*	*	y	
	OutputTrayMissing	InterlockOpen	n	*	*	y	The Manager MAY treat the same as the more general InterlockOpen value.
	PaperJam	Failure	n	*	*	y	
	Pause		n	*	*	y	Workers SHOULD use more specific *StatusDetails* values of MissResources if available.
	WasteFull	Failure	n	*	*	y	
Suspended	-		n	n	n	n	Production/processing is not being performed on any Process step of the Node. No Modules are "occupied" or "blocked" by this Node and other Nodes can be freely processed. Because Jobs are so easily taken on and off of the Digital Press, Jobs would likely enter the Suspended state instead of the Stopped state on certain Device error conditions. The *StatusDetails* is unknown.
	DocumentAccessError	Failure	n	n	n	n	The Device could not access one or more documents passed by reference. The Job is Suspended, while other Jobs are allowed to run. New combination defined by this ICS.
	JobSuspended		n	n	n	n	The Node is Suspended because the QueueEntry has been Suspended either by the Device or the Manager. On a heartbeat Signal, MUST NOT have any ModuleStatus.
	MissResources		n	n	n	n	Machine is out of Media, Ink, or other consumable, or an input Resource (RunList) is not available. When a Node is MissResources but no Modules are "occupied" or "blocked" by this Node, the Node is Suspended, not Stopped and no

Status	StatusDetails	Category	U	D	R	M	Description
							child Module Elements are indicated. This is a common scenario for Digital Printing systems that let Jobs that can be processed by the available Resources bypass Jobs waiting on Resources. I.e. A Job that needs 11x17 paper can be Suspended/MissResources while other Jobs that use the available 8.5x11 paper in the Machine proceed in the meanwhile. New combination defined by this ICS.
	WaitingForReferencedDataCollector *		n	n	n	n	The Printing Device models any module prior to the *ReferencedDataCollector* module. The Node is automatically *Suspended* by the Worker because it is waiting behind other Jobs for the *ReferencedDataCollector* module and the Worker will resume the Node when a *ReferencedDataCollector* module becomes available. New value defined by this ICS.
	WaitingForRIP *		n	*	n	n	The Printing Device models any module prior to the *RIP* module. The Node is automatically *Suspended* by the Worker because it is waiting behind other Jobs for a *RIP* module (Process slot) and the Worker will resume the Node when a *RIP* module becomes available. New value defined by this ICS.
	WaitingForMarker *		n	*	*	n	The Printing Device models any module prior to the *Marker* module. The Node is automatically *Suspended* by the Worker because it is waiting behind other Jobs for the *Marker* module and the Worker will resume the Node when a *Marker* module becomes available. New value defined by this ICS.
Aborted	–		n	n	n	n	Processing on the Job has been

Status	StatusDetails	Category	U	D	R	M	Description
							halted by local action, unrecoverable errors, or JMF AbortQueueEntry. There is still the possibility for the Job to be re-run by manual intervention (rework) returning the Node to Waiting or Ready. The *StatusDetails* is unknown.
	AbortedBySystem		n	n	n	n	
	JobCanceledByOperator		n	n	n	n	Note: [JDF1.5] changed JobCanceledByOperator from Stopped to Aborted.
	JobCanceledByUser		n	n	n	n	
Completed	–		n	n	n	n	Processing of the Job has run to completion. There is still the possibility for the Job to be re-run by manual intervention (rework) returning the Node to Waiting or Ready and re-setting appropriate Resource Status or Amounts. The *StatusDetails* is unknown.
	JobCompletedSuccessfully		n	n	n	n	The completed successfully, including producing all of the copies requested.
	JobCompletedWithErrors		n	n	n	n	
	JobCompletedWithWarnings		n	n	n	n	This value should be used if the number of copies produced was less than the number requested. The IDP ICS REQUIRES the Worker to update the Output ComponentLink/@ActualAmount, so the Manager can tell that less than the requested number of copes was produced

C.1.1 Excluded *StatusDetails* Values

Table 104 lists the *StatusDetails* values from JDF 1.5 Appendix C.1 that are not included in the IDP ICS. These values MAY be used by Managers or Workers, though there will be less interoperability.

Table 104: JDF 1.5 Appendix C.1 <u>Job Context</u> values omitted from the IDP ICS

Status values	Excluded *StatusDetails* Values
TestRunInProgress	
FailedTestRun	
Setup	*Calibrating*, *WarmingUp*
Waiting or Ready	*JobHeldOnCreate*, *JobHeld*, *JobIncoming*, *JobResuming*, *JobScheduling*
InProgress	*JobSuspending*, *MovingToPaused*, *ProcessingToStopPoint*
Cleanup	

C.2 DeviceStatus and StatusDetails Attribute Value Pairs

This sub-section lists the *StatusDetails* Attribute Values that are defined for use with the IDP ICS in Device Context. Implementations MAY use other values as well. However, there will be less interoperability. Device Context is defined to be the combinations of *DeviceStatus* and *StatusDetails* Attribute values used in the following Attributes:

PhaseTime/ModulePhase (for Audit Elements)

DeviceInfo (for Status Signal Messages)

DeviceInfo/ModuleStatus (for Status Signal Messages)

DeviceInfo/JobPhase/ModuleStatus (for Status Signal Messages)

Table 105 lists the combinations of *StatusDetails* Attribute Values used in combination of *DeviceStatus* Attribute Values in Device Context. Rows are sorted by *DeviceStatus* in the likely order of occurrence.

The Category column lists the *Category* Attribute Value for those *StatusDetails* values that are a sub-category of a more general *Category* value (from the JDF Appendix C).

The U, D, R, and M columns apply to particular values of *ModuleType*, namely:

U: *MimeUnpacker*
D: *ReferencedDataCollector*
R: *RIP*
M: *Marker*

The values of U, D, R, and M columns indicate the presence or absence of child Elements, where child Element.

Child Element:

y: MUST be present (y),
n: MUST NOT be present (n),
*: MAY be present or absent (*) depending on how phases and modules are modeled (see [MIS-ICS]).

The Description column indicates specific usage with the IDP ICS.

Note: the "*Cleanup*" value of *DeviceStatus* is not included in the ICS.

Table 105: DeviceStatus and StatusDetails Attribute Value Pairs

Referenced by: DeviceInfo, ModulePhase, ModuleStatus

DeviceStatus	*StatusDetails*	*Category*	U	D	R	M	Description
Unknown	-		n	n	n	n	DeviceStatus and StatusDetails is unknown (though the Machine is accessible).
Unknown	ControlDeferred		n	n	n	n	The Worker does not know the Status or StatusDetails of the Machine, because the Machine is not accessible. Note: [JDF1.5] changes "*Stopped*" to "*Unknown*" for use with "*ControlDeferred*".
Idle	-		*	*	*	*	The Device is Idle and the *StatusDetails* unknown.
Down	-		*	*	*	*	The Device is Down, but the reason is unknown.
	BreakDown		n	n	n	y	
	Repair		n	n	n	y	
	ShutDown		n	n	n	y	
Setup	-		*	*	*	*	The Device is being setup, but the reason is unknown.
	Calibrating		n	n	n	y	
	SizeChange		n	n	n	y	Many Digital Printing systems won't perform the size change until after they RIP and then start or try to start printing the Job. The **Status**/ **StatusDetails** at that point would be Suspended/MissResources or Stopped/MissResources.
	WarmingUp		n	n	n	y	
Running	-		*	*	*	*	The Device is Running, but the *StatusDetails* is unknown.
	Processing*		n	n	y	n	New value defined by this ICS. Other productive processing (RIP, etc) is taking place but no final output is being produced. All input data has

DeviceStatus	StatusDetails	Category	U	D	R	M	Description
							arrived (not InProgress/JobStreaming nor Waiting/JobIncoming).
	Good		n	n	n	y	Good output is being produced by the final Process step.
	Waste		n	n	n	y	Waste output is being produced by the final Process step.
Stopped	-		*	*	*	*	The Device is Stopped, but the reason is unknown.
	CoverOpen	InterlockOpen	n	n	n	y	The Manager MAY treat the same as the more general InterlockOpen value.
	DoorOpen	InterlockOpen	n	n	n	y	The Manager MAY treat the same as the more general InterlockOpen value.
	Failure		n	n	n	y	Workers SHOULD use more specific *StatusDetails* values of InterlockOpen, OutputAreaFull, PaperJam, or WasteFull if available.
	InputTrayMissing	InterlockOpen	n	n	n	y	The Manager MAY treat the same as the more general InterlockOpen value.
	InterlockOpen	Failure	n	n	n	y	Printing cannot proceed because one or more inter-locks are open indicating the operator is actively working on the Machine. The Worker MAY supply this general "InterlockOpen" value or the more-specific values: CoverOpen, DoorOpen, InputTrayMissing or OutputTrayMissing. The Manager SHOULD accept both the general value and the more specific values.
	Maintenance		n	n	n	y	Because Jobs are so easily put on and off a digital press, the Node in question would likely be Suspended, not Stopped.
	MissResources	Pause	n	n	n	y	Machine is out of Media, Ink, or other consumable. Not to be used for internally piped data underflows - Job

DeviceStatus	StatusDetails	Category	U	D	R	M	Description
							would not be "Stopped", it would be InProgress/Processing or perhaps InProgress/JobStreaming. If no additional data was forthcoming because the Process step causing the underflow was Stopped or Suspended, then those other values of Status would be more appropriate.
	OutputAreaFull	Failure	n	n	n	y	
	OutputTrayMissing	InterlockOpen	n	n	n	y	The Manager MAY treat the same as the more general InterlockOpen value.
	PaperJam	Failure	n	n	n	y	
	Pause		n	n	n	y	Workers SHOULD use more specific *StatusDetails* values of MissResources if available.
	WasteFull	Failure	n	n	n	y	

Appendix D   Changes from JDF 1.2 IDP ICS (Informative)

Table 106 lists the important changes from the JDF 1.2 IDP ICS [IDP-ICS-1.0]. Note: Additions include both REQUIRED and OPTIONAL additions. Removals from [IDP-ICS] that are now covered in the [Base-ICS], [JMF-ICS], and/or [MIS-ICS] in the JDF 1.5 ICSs are *not* mentioned in this table. Removals that are not in any of these ICSs are still OPTIONAL for a Manager or Worker to supply or Support; removal does not mean prohibition.

Table 106: Changes from JDF 1.2 IDP ICS 1.0

Location	Description
1. Section 2 Glossary	Defined many more terms
2. Section 3 Conformance Levels	Changed from a single conformance level to three levels (0-2). Levels 1 and 2 require conformance to [JMF-ICS] and [MIS-ICS]
3. Section 3.1 Physical Resource Conformance Requirements for IDP Workers	Added Worker Physical Resource Conformance Requirements for Level 1: **Component** (Input), **Component** (Output), **Ink** (Input), and **Media** (Input); for Level 2: **Component** (Cover) and **UsageCounter** (Input) when conforming to [MIS-ICS] Level 2. Added Lot Control for **Media**, if conforming to [MIS-ICS] Level 3.
4. Section 4 Conformance Tables – JDF Instances	Require Worker to Support an IDP Node as Root Node and as a child Node. Worker MUST either execute the first found IDP executable Node (*ExecutionPolicy* = "`FirstFound`") or all of the executable IDP Nodes in a JDF Instance (*ExecutionPolicy* = "`AllFound`").
5. Table 6: JDF Node	Removed: *Activation*, **NodeInfo**. Added: *StatusDetails*, Comment – Worker Created. Changed: *Category*, *ICSVersions*. Types removed: *Approval*, *ColorCorrection*, *Trapping*.
6. Section 4.4 Audit Elements	Added conformance requirements for audits (PhaseTime, ModulePhase)
7. Table 12: DigitalPrinting Combined Node – Input Resources	Added: **Component** – Cover, **Component** – Input, **Ink**, **UsageCounter**. Removed: **ColorCorrectionParams**, **Device**, **TrappingDetails**. *ColorSpaceConversion* MUST appear exactly once. **Layout** MUST NOT appear.
8. Section 6 Conformance Tables – ResourceLinks	Added ComponentLink – Cover and ComponentLink – Exchange.
9. Section 7 Conformance Tables – Resources	Tables added: **AutomatedOverPrintParams**, **Color**, **Component** – Cover, **Component** – Input, **GeneralID**, **Ink**, **RenderingParams**, **UsageCounter**. Tables removed: **ColorCorrectionParams**, **InterpretingParams**, **Sheet**, **TrappingDetails**. Removed: *DocIndex* and *DocRunIndex* Partition Keys from all tables and *RunIndex* Partition Keys from all tables except: **DigitalPrintingParams** and **LayoutPreparationParams**.

Location	Description
10. Table 29: DigitalPrintingParams	Added: *PageDelivery*, **Component** – Input, **Ink**. Removed: *DirectProofAmount*, *ManualFeed*. Forbid: *Sides*.
11. Table 30: Disjointing	Added: **InsertSheet**. Forbid: *Number*.
12. Table 31: FileSpec	Removed: *Compression*, Container.
13. Table 32: FitPolicy	Added: *RotatePolicy*, *SizePolicy* = "`FitToPage`".
14. Table 33: FoldingParams	Added: `F6-1, F6-5, F8-2, F8-4`.
15. Section 7.16 InsertSheet	Divided **InsertSheet** into three tables: InsertSheet – Disjointing, InsertSheet – LayoutPreparationParams, InsertSheet – RunList. Changed **Sheet** (deprecated in JDF 1.3) to Layout; Removed: `Slip`.
16. Section 7.17 Layout	Divided **Layout** into: **Layout** – , **Layout** – InsertSheet
17. Table 44: LayoutPreparationParams	Added: *BindingEdge*, *FinishingOrder*, **Media**. Removed: *PageOrder*, **FitPolicy**, all *Rotate* values except "`Rotate0`".
18. Table 46: PageCell	Removed: all *Rotate* values except "`Rotate0`".
19. Table 45: ImageShift	Removed *ShiftBack* (Defaults to *ShiftFront* in opposite direction).
20. Table 47: Media	Added concept of Media selection by Attribute and by **GeneralID**. *Dimension* MUST always be supplied. Added: *LotControl*, *Texture*, **GeneralID**. Removed: *ImagableSide*, all *MediaType* values except "`Paper`", all *MediaTypeDetails* values except "`Stationery`"*, MediaUnit, Opacity, PartIDKeys* = "`Location`", *PrePrinted*, Location.
21. Table 49: RunList	Removed: *ComponentGranularity*, *EndOfDocument*, *NPage* Forbid: *PageCopies*.
22. Section 8 Conformance Tables – JMF Messages	Tables added: ResourceQuParams, ResourceInfo, DeviceInfo, JobPhase, ModuleStatus.
23. Added Normative Appendices:	Appendix A: UsageCounter r-Test Examples (Normative). Appendix B: r-Test Conformance Drawings (Normative). Appendix C: StatusDetails Values (Normative) .

Appendix E   Changes from IDP ICS 1.3 (Informative)

Table 107 lists all changes to produce *IDP ICS 1.3, Errata Revision A* from *IDP ICS 1.3* [IDP-ICS-1.3].

Table 107: Changes from IDP ICS 1.3

Location	Description
1. Table 2: IDP ICS Conformance Levels	Levels reworked to 3 levels.
2. Table 33: FoldingParams	Added: *F6-3, F6-7*
3. Table 39: InsertSheet – LayoutPreparationParams	Conformance Requirements moved from Level 1 to Level 2 for the @*SheetType* Attribute, and for the values of @*SheetType* and @*SheetUsage*. **Note:** the @*SheetUsage* Attribute was already Level 2 and the Worker values for the cited Attribute values were already "r" for Level 2.
4. Table 44: LayoutPreparationParams	Conformance Requirements moved from Level 1 to Level 2 for **InsertSheet**. **Note:** the Worker value was already "r" for Level 2.
5. Table 47: Media	Added: *Grade, ImagableSide, ISOPaperSubstrate, MediaQuality, MediaUnit, PrePrinted, RecylcledPercentage, Thickness* Removed: *LotControl*
6. Table 54: StitchingParams	Added: *NumberOfStitches*
7. Table 55: TrimmingParams	Added: *Height, TrimmingOffset, Width*
8. Table 59: Supported Query/Signal/Command/Response	New table
9. Table 60: Query for Media assigned to trays	New table
10. Table 61: ResourceQuParams for Media Catalog	New table
11. Table 62: Subscription to Media assigned to trays	New table
12. Table 63: ResourceInfo for Resource Response and Signal for Media Catalog	New table
13. Table 64: AmountPool	New table
14. Table 65: PartAmount	New table
15. Table 66: Part	New table
16. Table 67: Command for entire Media Catalog	New table
17. Table 68: ResourceCmdParams to update Media Catalog	New table

Location	Description
18. Table 69: ResourceInfo for Resource Response for Media Catalog updated	New table
19. Table 70: DeviceInfo	Conformance Requirements added for the @*DeviceStatus* Attribute and its values.