ICS

INTEROPERABILITY
CONFORMANCE
SPECIFICATION

# Integrated Digital Printing ICS

Version 1.8

13 January 2026

CIP4
ORGANIZATION

CIP4 THANKS ITS PARTNER LEVEL MEMBERS

# Legal Notice

**Use of this document is subject to the following conditions which are deemed accepted by any person or entity making use hereof.**

## Copyright Notice



## Trademarks and Tradenames

CIP4 Organization, CIP4, Exchange Job Definition Format, XJDF, Exchange Job Messaging Format, XJMF, Job Definition Format, JDF, Job Messaging Format, JMF and the CIP4 logo are trademarks of CIP4.

Rather than put a trademark symbol in every occurrence of other trademarked names, we state that we are using the names only in an editorial fashion, and to the benefit of the trademark owner, with no intention of infringement of the trademark.

Except as contained in this legal notice or as allowed by membership in CIP4, the name of CIP4 SHALL not be used in advertising or otherwise to promote the use or other dealings in this specification without prior written authorization from CIP4.

## Waiver of Liability

**This specification is provided as is, without warranty of any kind, express, implied, or otherwise, including but not limited to the warranties of merchantability, fitness for a particular purpose and non infringement. In no event will CIP4 be liable for any claim, damages or other liability, whether in an action of contract, tort or otherwise, arising from, out of, or in connection with this specification or the use or other dealings in this specification.**

# Table of Contents

# 1 Introduction

**JDF**, see [JDF 1.8], 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 wide format printing.

A description of the conformance tables and other **ICS** notation can be found in the CIP4 [Base 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, see [IPP STD 1]/ [RFC2911], where an operator is involved.

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 Use of ICS Documents

This ICS is a CIP4 *Domain ICS*, specifically intended for the interaction between an *MIS* acting as the *Manager* and an *Integrated Digital Printer* acting as the *Worker*.

The correct implementation of this *Domain ICS* requires a common way to present data and to communicate between systems; these are specified in the [Base ICS], [Messaging ICS] and [Management Information System ICS]. These ICS's should always be used in conjunction with this *Domain ICS*.

## 1.3 Conventions Used in this Specification

Throughout this document a number of formatting and stylistic conventions have been employed that are intended to help the reader. These are intended to align with those of the **JDF** specification. See [JDF 1.8].

### 1.3.1 Document References

References to other publications are collated in Appendix C References. Within the text these references use a meaningful short symbolic name that may be clicked to allow the reader to navigate directly to the full description in the appendix. These references use a common text style as described in the following section.

### 1.3.2 Text Styles

There are a number of text styles that are used to identify the various components of the specification. Some of the text styles support dynamic links; these allow the reader to click on the term and navigate to the definition of the term (if it is locally defined).

| | |
|---|---|
| • ***AuditPool*** | A **JDF** or **JMF** element. Usually these are dynamic links leading to the definition of the element. |
| • **Process** | A specific *Process* such as **ColorSpaceConversion** or **Rendering**. These can be dynamic links leading to the definition of the *Process*. |
| • @*Attribute* | A **JDF** or **JMF** attribute within the context of an element. |
| • "Value" | The content of an attribute. |
| • **JDF** | **JDF** or **JMF** are used when referring to the specification in general rather than elements with the same name. |
| • *Glossary Item* | The document utilizes some specialist terms; these are defined in Table 1.2 Glossary and highlighted throughout the document. |
| • [JDF 1.8] | Identifies a reference to an item within this specification (such as a particular table, section etc.) or to an entry in the references appendix. These are dynamic links leading to the item itself. |
| • http://www.CIP4.org | A hyperlink reference to an external item. |

### 1.3.3 XPath Notation

- *JDF*/@*JobID* — The document utilizes [XPath] notation when it is required to define the particular context for an item. It is particularly useful when there is a conditional term relating to the context, e.g. *JDF*[@*Type* = "DigitalPrinting"] identifies a **JDF** *Process Node* for digital printing.

### 1.3.4 Specification of Cardinality

The following table illustrates the notation of *Manager* and *Worker Conformance Requirements* in ICS tables.

If an attribute, attribute value or element is not provided explicitly or implicitly by a table row of <all other values>, it is assumed to be out of scope. An empty cell for a *Conformance Level* specifies that the *Trait* is out of scope for that *Conformance Level*. Out of scope values MAY be written and MAY be processed, but a conforming processor NEED NOT support them. The implied cardinality of out of scope values is therefore w? r?.

*Table 1.1: Specification of cardinality*

| NOTATION | NAME | DESCRIPTION |
|---|---|---|
| w | Write Required | When this cardinality indicator is applied to an attribute or element name, the *Trait* SHALL be written by the *Manager* or *Worker*.<br>When this cardinality indicator is applied to an attribute value that is not a list type it specifies the only acceptable value.<br>When this cardinality indicator is applied to an attribute value that is a list type, it specifies that the value SHALL be present in the list. |
| w? | Write Optional | The element, or attribute, or attribute value MAY be written by the *Manager* or *Worker*.<br>When this cardinality indicator is applied to an attribute value that is a list type, it specifies that the value MAY be present in the list. |
| w← | Write Conditional | When this cardinality indicator is applied to an attribute or element name, the *Trait* SHALL be written by the *Manager* or *Worker* depending on conditions. The details of the condition will be specified in the description.<br>When this cardinality indicator is applied to an attribute value that is not a list type, it specifies that the value is a valid selection from a list of acceptable values, one of which SHALL be present.<br>When this cardinality indicator is applied to an attribute value that is a list type, it specifies that the value is a valid selection from a list of the values defined in this ICS that have a w←, one or more of which SHALL be present. |
| w! | Write Forbidden | The element, or attribute, or attribute value SHALL NOT be written by the *Manager* or *Worker*.<br>When this cardinality indicator is applied to an attribute value that is a list type, it specifies that the value SHALL NOT be present in the list. |
| r | Read Required | The element, or attribute, or attribute value SHALL be read by the *Manager* or *Worker*. |
| r? | Read Optional | The element, or attribute, or attribute value MAY be read by the *Manager* or *Worker*. |
| r← | Read Conditional | The element, or attribute, or attribute value SHALL be read by the *Manager* or *Worker* depending on conditions. The details of the condition will be specified in the description. |

## 1.4 Certification

A *Manager* or *Worker* implementation can be self certified against one of the levels as specified in Table 2.1 Conformance Levels. Certification against the ICS for the *Worker* role SHOULD be 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*.

Additional hints for self certification are provided in the descriptions and are marked with the label "**Conformance Test:**".

### 1.4.1 Conformance Test Drawings

Previous versions of this ICS provided an appendix with visualizations of 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.

If reference to these use cases is required then the reader should refer to [Integrated Digital Printing ICS 1.5], 'Appendix B r-Test Conformance Drawings (Normative)'.

## 1.5 Changes from the Previous Version

This version of the Integrated Digital Printing ICS represents a revision to align with [JDF 1.8]. It represents a significant revision from earlier versions. In part this is cosmetic to align the document with the latest CIP4 document standards; in part it is organizational to align the structure with all other ICS documents that have been also been revised in this cycle.

In addition to the above there have also been a number of changes made to improve the usefulness of this ICS.

The ICS version has been changed to 1.8.

### 1.5.1 Additions

There are no significant additions to this version of the specification.

### 1.5.2 Removals

There are no significant removals from this version of the specification.

### 1.5.3 Modifications

- Queue filtering within QueueEntry has been updated to use QueueFilter.
- Disjointing has been moved to Stacking.

## 1.6 Glossary

This section defines terminology used throughout this document. References to other documents are indicated with square brackets, e.g. [JDF 1.8].

This table also include glossary entries from [Base ICS], [Messaging ICS] and [Management Information System ICS].

*Table 1.2: Glossary (Sheet 1 of 2)*

| TERM | DEFINITION |
|---|---|
| **Characteristic Attribute** | A ***Media*** attribute that is used to select ***Media*** by its characteristics rather than by ***Media***/@*ProductID* or ***Media***/***GeneralID***. |
| **Click** | A *Click* is the basic unit that the *Machine* vendor uses to charge for usage of the *Machine*. |
| **Combined Digital Printing Node** | A **JDF** Combined node (i.e. @*Type*="Combined") that contains a **DigitalPrinting** *Process* and that conforms to the requirements of this ICS. |
| **Combined Process Node** | See [JDF 1.8]. |
| **Conformance Level** | See [Base ICS]. |
| **Conformance Requirement** | See [Base ICS]. |
| **Conformance Test** | See [Base ICS]. |
| **Countable Event** | An event that can be counted by a ***UsageCounter*** and is either a *Separation Countable Event* or a *Surface Countable Event*. |
| **Device** | See [JDF 1.8]. |
| **Domain ICS** | See [Base ICS]. |
| **Final Product** | See [JDF 1.8]. |
| **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). |

*Table 1.2: Glossary (Sheet 2 of 2)*

| TERM | DEFINITION |
|---|---|
| **Integrated Digital Printer** | A *Device* that supports the **DigitalPrinting** *Process* along with some prepress *Processes* and perhaps some postpress *Processes*. It is the *Worker* for this ICS. |
| **Job** | See [JDF 1.8]. |
| **Machine** | See [JDF 1.8]. |
| **Manager** | See [Management Information System ICS]. |
| **Media Catalog** | A job independent list of media. This may be either a global list or a list specific to one or more input trays. |
| **MIS** | See [Management Information System ICS]. |
| **Overcoat Varnish** | A varnish that is applied to the entire surface. |
| **Page** | See [JDF 1.8]. |
| **Partial Product** | See [JDF 1.8]. |
| **Process** | See [JDF 1.8]. |
| **Process Node** | See [JDF 1.8]. |
| **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*. |
| **Sheet** | See [JDF 1.8]. |
| **Spot Color** | A color (e.g., Acme yellow) that is usually intended to be produced by means of a special colorant. |
| **Spot Varnish** | A varnish that partially covers the surface. |
| **Surface Countable Event** | A *Countable Event* that occurs for each surface impression. For example, if a printer applies CMYK, one *Separation Countable Events* occur. The "Black", "HighlightColor" and "Color" colorant category values each describe *Surface Countable Events*. |
| **Trait** | See [JDF 1.8]. |
| **Worker** | In the context of this ICS the *Worker* is an *Integrated Digital Printer*. |

# 2 Conformance

## 2.1 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 2.1 Conformance Levels 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.

To be conformant to a level of this ICS (as specified in the first column of Table 2.1 Conformance Levels), a *Manager* SHALL conform to the *Manager* part or a *Worker* (in an *Integrated Digital Printer*) SHALL conform to the *Worker* part of this ICS and the [Base ICS], [Messaging ICS] and [Management Information System ICS] as shown in Table 2.1 Conformance Levels below.

**Note:** The *Integrated Digital Printing Conformance Levels* are incremental, i.e., support for a particular *Conformance Level* requires support for all lower *Conformance Levels*, except for the [Base ICS] levels 1 and 2 that are themselves non incremental.

*Table 2.1: Conformance Levels*

| LEVEL OF THIS ICS | LEVEL OF BASE ICS | LEVEL OF MESSAGING ICS | LEVEL OF MIS ICS | DESCRIPTION |
|---|---|---|---|---|
| 1 | 2 | 1 | 1 | This combination of ICS levels includes:<br>• Hot folder and **JMF** submission and return.<br>• Basic printing functionality. |
| 2 | 2 | 1 | 2 | This combination of ICS levels adds:<br>• Advanced imposition (mandatory for the *Worker*, optional for the *Manager*).<br>• **JMF** for ***Status*** and ***Resource*** messages.<br>• **JMF** for synchronizing ***Media*** resources.<br>• In-line finishing, but is OPTIONAL to support. |
| 3 | 2 | 1 | 2 | This combination of ICS levels adds:<br>• ***UsageCounter*** resource for counting impressions. |

# 3 JDF Instances

The tables in this section specify the conformance requirements for attributes and elements for a **JDF** node. A *Worker* SHALL search the **JDF** root and its children to find *Integrated Digital Printing* executable **JDF** instances that match the criteria specified in this ICS, the [Base ICS], and the [JDF 1.8].

## 3.1 JDF

This section specifies the *Conformance Requirements* for a **JDF** node for *Integrated Digital Printing*.

### 3.1.1 JDF DigitalPrinting Node sent by a Manager

The following table specifies the details of the root **JDF** specific to this ICS. For additional *Conformance Requirements*, see [Management Information System ICS].

*Table 3.1: JDF DigitalPrinting Node sent by a Manager (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Category* | w | w | w | r? | r? | r? | See [JDF 1.8]. |
| IDP.DigitalPrinting | w | w | w | r? | r? | r? | |
| *ICSVersions* | w | w | w | r? | r? | r? | See [Base ICS]. |
| IDP_L1-1.8 | w | w! | w! | r? | | | Specifies conformance to the *Integrated Digital Printing* ICS *Conformance Level* 1. |
| IDP_L2-1.8 | w! | w | w! | | r? | | Specifies conformance to the *Integrated Digital Printing* ICS *Conformance Level* 2. |
| IDP_L3-1.8 | w! | w! | w | | | r? | Specifies conformance to the *Integrated Digital Printing* ICS *Conformance Level* 3. |
| <all other values> | w← | w← | w← | r? | r? | r? | @*ICSVersions* SHALL contain all the values specified in the ICS documents that are required for conformance to this ICS as specified in Table 2.1 Conformance Levels. |
| *Status* | w | w | w | r | r | r | **Conformance Test:**<br>As in the [JDF 1.8] and [Base ICS].<br>See "**JDF Node**" in [JDF 1.8].<br>For values, see Table B.1 Status and StatusDetails Attribute Value Pairs. |
| *StatusDetails* | w? | w? | w? | r? | r? | r? | This ICS defines additional values to be used with each @*Status* value, so that @*StatusDetails* SHALL NOT be omitted, except when the details are unknown.<br>For values, see Table 103: Status and StatusDetails Attribute Value Pairs. |
| *Type* | w | w | w | r | r | r | See [JDF 1.8]. |
| Combined | w | w | w | r | r | r | |

*Table 3.1: JDF DigitalPrinting Node sent by a Manager (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Types* | w | w | w | r | r | r | @*Types* SHALL NOT contain more than one instance of any value. The order of values in @*Types* SHALL be determined from ▸ Table 3.6 DigitalPrinting Combined Node - Processing Sequence. **Conformance Test:** A *Worker* SHALL process a node which contains all the required (“r”) @*Types* values. |
| ColorSpaceConversion | w | w | w | r | r | r | **Note:** Supplying a PDF with a “Reference Printing Condition” or “Supporting Color Re-targeting” using multiple **ColorSpaceConversion** *Processes* is outside the scope of this ICS. |
| CoverApplication | | w? | w? | | r | r | See ▸ Section 5.5.1 Component – Cover. |
| DigitalPrinting | w | w | w | r | r | r | |
| Folding | | w? | w? | | r | r | The action a *Worker* takes if it does not support **Folding** is outside of the scope of this ICS. |
| HoleMaking | | w? | w? | | r | r | The action a *Worker* takes if it does not support **HoleMaking** is outside of the scope of this ICS. |
| Imposition | w | w | w | r | r | r | |
| Interpreting | w | w | w | r | r | r | |
| LayoutPreparation | w | w | w | r | r | r | |
| Rendering | w | w | w | r | r | r | |
| Screening | | w? | w? | | r | r | The action a *Worker* takes if it does not support **Screening** is outside of the scope of this ICS. |
| SpineTaping | | w? | w? | | r | r | The action a *Worker* takes if it does not support **SpineTaping** is outside of the scope of this ICS. |
| Stacking | | w? | w? | | r | r | Stacking SHALL be specified if **Stacking** or dis-jointing of the *Final Products* is required. The action a *Worker* takes if it does not support **Stacking** is outside of the scope of this ICS. |
| Stitching | | w? | w? | | r | r | The action a *Worker* takes if it does not support **Stitching** is outside of the scope of this ICS. |
| Trimming | | w? | w? | | r | r | The action a *Worker* takes if it does not support **Trimming** is outside of the scope of this ICS. |
| <all other values> | w? | w? | w? | r? | r? | r? | The *Manager* SHOULD NOT write *Processes* that are not recognized by the *Worker*. A *Worker* NEED NOT process a node that contains values that it does not support. |
| ***AuditPool*** | w | w | w | r? | r? | r? | See ▸ [Management Information System ICS]. |

### 3.1.1.1 JDF DigitalPrinting Node sent by a Manager - Input Resources

*Table 3.2: JDF DigitalPrinting Node sent by a Manager - Input Resources (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ColorantControl*** | w← | w← | w← | r | r | r | ***ColorantControl*** SHALL NOT be specified more than once. |
| ***ColorSpaceConversionParams*** | w | w | w | r | r | r | ***ColorSpaceConversionParams*** SHALL be specified exactly once. |
| ***Component*** (Input) | w← | w← | w← | r | r | r | This ***Component*** is produced by an 'upstream' node, and is an input to this node.<br>***Component*** MAY appear more than once. At least one of ***Component*** or ***Media*** SHALL be specified. |
| ***Component*** (Cover) | | w← | w← | | r? | r? | ***Component*** (Cover) SHALL be specified if ***JDF***/@*Types* includes "CoverApplication" and an external cover is supplied.<br>**Note:** ***Component*** (Cover) becomes an OPTIONAL input to the **CoverApplication** *Process*.<br>Soft cover produced by an upstream node or preprinted that is input to this node.<br>See Section 6.1.1 ComponentLink - Cover. |
| ***CoverApplicationParams*** | w← | w← | w← | r? | r? | r? | ***CoverApplicationParams*** SHALL NOT be specified more than once.<br>***CoverApplicationParams*** SHALL be present if ***JDF***/@*Types* includes "CoverApplication". |
| ***Device*** | w← | w← | w← | r | r | r | This ICS strongly recommends that at most one ***Device*** resource be specified as an input to the **DigitalPrinting** *Combined Process Node*.<br>See [Management Information System ICS]. |
| ***DigitalPrintingParams*** | w | w | w | r | r | r | ***DigitalPrintingParams*** SHALL be specified exactly once. |
| ***FoldingParams*** | w← | w← | w← | r | r | r | ***FoldingParams*** SHALL NOT be specified more than once.<br>***FoldingParams*** SHALL be specified if ***JDF***/@*Types* includes "Folding". |
| ***HoleMakingParams*** | w← | w← | w← | r | r | r | ***HoleMakingParams*** SHALL NOT be specified more than once.<br>***HoleMakingParams*** SHALL be specified if ***JDF***/@*Types* includes "HoleMaking". |
| ***Ink*** | w← | w← | w← | r | r | r | ***Ink*** SHALL be specified by the *Manager* when specifying inks beyond the default ***Device*** process colorants, e.g., for highlight color, *Spot Color*, *Spot Varnish*, and *Overcoat Varnish*.<br>***Ink*** SHALL be supported by the *Worker* if the ***Device*** supports multiple ink setup options. |
| ***InterpretingParams*** | w | w | w | r | r | r | ***InterpretingParams*** SHALL be specified exactly once. |
| ***Layout*** | w! | w! | w! | r? | r? | r? | ***Layout*** SHALL NOT be an input to any *Process*. ***Layout*** SHALL only be referenced from ***Component*** (Input), ***StackingParams***/***Disjointing***/***InsertSheet*** or ***RunList***/***InsertSheet*** (RunList) to specify the ***Media***. |

*Table 3.2: JDF DigitalPrinting Node sent by a Manager - Input Resources (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *LayoutPreparationParams* | w | w | w | r | r | r | *LayoutPreparationParams* SHALL be specified exactly once. |
| *Media* | w← | w← | w← | r | r | r | *Media* MAY be specified multiple times. At least one of *Component* or *Media* SHALL be supplied. |
| *RenderingParams* | w | w | w | r | r | r | *RenderingParams* SHALL be specified exactly once. |
| *RunList* | w | w | w | r | r | r | *RunList* SHALL be specified exactly once. |
| *ScreeningParams* | w← | w← | w← | r | r | r | *ScreeningParams* SHALL NOT be specified more than once, and SHALL be specified if *JDF*/@*Types* includes "Screening". |
| *SpineTapingParams* | w← | w← | w← | r? | r? | r? | *SpineTapingParams* SHALL NOT be specified more than once, and SHALL be specified if *JDF*/@*Types* includes "SpineTaping". |
| *StackingParams* New in ICS 1.8 | w← | w← | w← | r? | r? | r? | *StackingParams* SHALL NOT be specified more than once, and SHALL be specified if *JDF*/@*Types* includes "Stacking". |
| *StitchingParams* | w← | w← | w← | r? | r? | r? | *StitchingParams* SHALL NOT be specified more than once, and SHALL be specified if *JDF*/@*Types* includes "Stitching". |
| *TrimmingParams* | w← | w← | w← | r? | r? | r? | *TrimmingParams* SHALL NOT be specified more than once, and SHALL be specified if *JDF*/@*Types* includes "Trimming". |
| *UsageCounter* | | | w? | | | r | The *Manager* SHOULD specify one or more outline *UsageCounter* resources so that the *Worker* can update them. |

### 3.1.1.2 JDF DigitalPrinting Node sent by a Manager - Output Resources

*Table 3.3: JDF DigitalPrinting Node sent by a Manager - Output Resources*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Component* | w | w | w | r | r | r | *Component* SHALL be specified once for one of: DigitalPrinting, Stitching, Folding, Trimming, HoleMaking, CoverApplication, SpineTaping, in accordance with the [JDF 1.8]. |

#### 3.1.1.2.1 JDF DigitalPrinting with Different Amounts for Components

The following example shows how a *Manager* can specify different quantities for each document of a *Job* by referring to the final output ***Component***.

*Figure 3-1: JDF DigitalPrinting with Different Amounts for Components*

```
<ResourceLinkPool>
  <ComponentLink CombinedProcessIndex="3"
   DescriptiveName="The link points to 10 copies of the first document and 100 copies of the second
document"
    Usage="Output" rRef="r_000003">
    <AmountPool>
      <PartAmount Amount="10">
        <Part DocIndex="0"/>
      </PartAmount>
      <PartAmount Amount="100">
        <Part DocIndex="1"/>
      </PartAmount>
    </AmountPool>
  </ComponentLink>
  <DigitalPrintingParamsLink CombinedProcessIndex="2" Usage="Input" rRef="r_000004"/>
  <MediaLink CombinedProcessIndex="1 2" Usage="Input" rRef="r_000005"/>
  <RunListLink CombinedProcessIndex="0 2" Usage="Input" rRef="r_000006"/>
</ResourceLinkPool>
```

### 3.1.2 JDF DigitalPrinting Node sent by a Worker

The following table specifies the details of the root **JDF** specific to this ICS. For additional *Conformance Requirements*, see [Management Information System ICS].

*Table 3.4: JDF DigitalPrinting Node sent by a Worker (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ICSVersions* | r? | r? | r? | w | w | w | See [Base ICS]. |
| IDP_L1-1.8 | r? | | | w | w! | w! | Specifies conformance to the *Integrated Digital Printing* ICS *Conformance Level* 1. |
| IDP_L2-1.8 | | r? | | w! | w | w! | Specifies conformance to the *Integrated Digital Printing* ICS *Conformance Level* 2. |
| IDP_L3-1.8 | | | r? | w! | w! | w | Specifies conformance to the *Integrated Digital Printing* ICS *Conformance Level* 3. |
| <all other values> | r? | r? | r? | w← | w← | w← | @*ICSVersions* SHALL contain all the values specified in the ICS documents that are required for conformance to this ICS as specified in Table 2.1 Conformance Levels. |
| *Status* | r? | r? | r? | w | w | w | **Conformance Test:**<br>As in the [JDF 1.8] and [Base ICS].<br>See "**JDF Node**" in [JDF 1.8].<br>For values, see Table B.1 Status and StatusDetails Attribute Value Pairs. |
| *StatusDetails* | r? | r? | r? | w← | w← | w← | This ICS defines additional values to be used with each @*Status* value, so that @*StatusDetails* SHALL NOT be omitted, except when the details are unknown. The *Worker* SHOULD use @*StatusDetails* values from Table B.1 Status and StatusDetails Attribute Value Pairs.<br>**Conformance Test:**<br>See Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs.. |

*Table 3.4: JDF DigitalPrinting Node sent by a Worker (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| **AuditPool** | r? | r? | r? | w | w | w | See [Management Information System ICS]. |

### 3.1.2.1 JDF DigitalPrinting Node sent by a Worker - Input Resources

See [Management Information System ICS], this ICS requires no additional *Conformance Settings*.

*Table 3.5: JDF DigitalPrinting Node sent by a Worker - Input Resources*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| **UsageCounter** | | | r | | | w← | The *Worker* SHALL specify 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 outline **UsageCounter** resource.<br>**Conformance Test:**<br>The *Worker* returns all of its supported **UsageCounter** instances when *Manager* supplies one, and returns none, if the *Manager* supplied none. The *Manager* SHALL manifest the values in some way, such as the user interface, log files, or by passing up stream. |

### 3.1.2.2 JDF DigitalPrinting Node sent by a Worker - Output Resources

See [Management Information System ICS], this ICS requires no additional *Conformance Settings*.

## 3.2 DigitalPrinting Combined Node Process Sequence

The tables in this section pertain to a "Combined" *Process* for *Integrated Digital Printing* (IDP).

In defining conformance for an *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* SHALL execute a *Combined Digital Printing* node. This node MAY be the root node or a child node in a **JDF** instance.

The following table specifies the sequencing and cardinality of the **JDF** *Processes* that form the *Combined Digital Printing Node*. The sequence is determined by the order of the *Process* name in the @*Types* attribute value.

*Table 3.6: DigitalPrinting Combined Node - Processing Sequence*

| PROCESS NAME | CARDINALITY | DESCRIPTION |
|---|---|---|
| **LayoutPreparation** | REQUIRED | |
| **Imposition** | OPTIONAL | **Imposition** SHALL occur exactly once among the 2 possible positions. |
| **ColorSpaceConversion** | OPTIONAL | **ColorSpaceConversion** SHALL occur exactly once among the 3 possible positions. |
| **Interpreting** | REQUIRED | **Interpreting** SHALL appear exactly once. |
| **ColorSpaceConversion** | OPTIONAL | **ColorSpaceConversion** SHALL occur exactly once among the 3 possible positions. |
| **Rendering** | REQUIRED | |
| **ColorSpaceConversion** | OPTIONAL | **ColorSpaceConversion** SHALL occur exactly once among the 3 possible positions. |
| **Screening** | OPTIONAL | |

*Table 3.6: DigitalPrinting Combined Node - Processing Sequence*

| PROCESS NAME | CARDINALITY | DESCRIPTION |
|---|---|---|
| **Imposition** | OPTIONAL | **Imposition** SHALL occur exactly once among the 2 possible positions. |
| **DigitalPrinting** | REQUIRED | |
| **Stitching** | OPTIONAL | One of the finishing *Processes*. This *Process* SHALL appear either zero times or one time. It MAY appear in any order with the other finishing *Processes*. |
| **Folding** | OPTIONAL | One of the finishing *Processes*. This *Process* SHALL appear either zero times or one time. It MAY appear in any order with the other finishing *Processes*. |
| **Trimming** | OPTIONAL | One of the finishing *Processes*. This *Process* SHALL appear either zero times or one time. It MAY appear in any order with the other finishing *Processes*. |
| **HoleMaking** | OPTIONAL | One of the finishing *Processes*. This *Process* SHALL appear either zero times or one time. It MAY appear in any order with the other finishing *Processes*. |
| **CoverApplication** | OPTIONAL | One of the finishing *Processes*. This *Process* SHALL appear either zero times or one time. It MAY appear in any order with the other finishing *Processes*. |
| **SpineTaping** | OPTIONAL | One of the finishing *Processes*. This *Process* SHALL appear either zero times or one time. It MAY appear in any order with the other finishing *Processes*. |

### 3.2.1 DigitalPrinting Exchange Resources

*Table 3.7: DigitalPrinting Combined Node - Exchange Resources*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Component*** | w← | w← | w← | r | r | 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 [JDF 1.8].<br>See Section 5.5.2 Component – Exchange and Section 6.1.2 ComponentLink - Exchange. |

## 3.3 AuditPool

This section specifies the requirements for ***Audit*** elements in the ***AuditPool***. See [Management Information System ICS] for additional ***Audit*** element and ***AuditPool*** requirements.

### 3.3.1 AuditPool sent by a Manager

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

### 3.3.2 AuditPool sent by a Worker

*Table 3.8: AuditPool Element (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Created*** | r? | r? | r? | w← | w← | w← | See [Management Information System ICS]. |
| ***Modified*** | r? | r? | r? | w? | w? | w? | See [Management Information System ICS]. |

*Table 3.8: AuditPool Element (Sheet 2 of 2)*

| NAME OR VALUE LEVEL→ | MANAGER 1 | MANAGER 2 | MANAGER 3 | WORKER 1 | WORKER 2 | WORKER 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| ***PhaseTime*** | | r | r | | w | w | See [Management Information System ICS]. |
| ***ProcessRun*** | r? | r? | r? | w | w | w | See [Management Information System ICS]. |
| ***ResourceAudit*** | | r | r | | w? | w? | See [Management Information System ICS]. |

### 3.3.2.1 Created

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

### 3.3.2.2 Modified

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

### 3.3.2.3 PhaseTime

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

### 3.3.2.4 ProcessRun

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

### 3.3.2.5 ResourceAudit

***ResourceAudit*** elements SHALL be specified to record the consumption of a resource by the *Worker*.

*Table 3.9: ResourceAudit Element*

| NAME OR VALUE | MANAGER LEVEL 1 | MANAGER LEVEL 2 | MANAGER LEVEL 3 | WORKER LEVEL 1 | WORKER LEVEL 2 | WORKER LEVEL 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *AgentName* | | r? | r? | | w | w | See [Management Information System ICS]. |
| *AgentVersion* | | r? | r? | | w | w | See [Management Information System ICS]. |
| *ID* | | r | r | | w | w | **Conformance Test:** The *Manager* SHALL NOT create costing data from the same ***ResourceAudit*** more than once. |
| *Reason* | | r | r | | w? | w? | See [Management Information System ICS]. |
| PlanChange | | r | r | | w← | w← | The *Manager* SHALL NOT create costing entries for ***ResourceAudit*** with @*Reason* = "PlanChange". |
| ProcessResult | | r | r | | w← | w← | |
| <all other values> | | r? | r? | | w? | w? | |
| *refID* | | r | r | | w← | w← | See [Management Information System ICS]. **Conformance Test:** If a ***ResourceAudit*** references another ***ResourceAudit*** via @*refID*, the *Manager* SHALL update any costing data in the referenced ***ResourceAudit*** with the costing data from the ***ResourceAudit*** whose @*ID* value matches the value @*refID*. |
| *TimeStamp* | | r? | r? | | w | w | See [Management Information System ICS]. |
| ***Part*** | | r? | r? | | w← | w← | See [Management Information System ICS]. |
| ***ResourceLink*** | | r | r | | w | w | See [Management Information System ICS]. |

#### 3.3.2.5.1 ResourceLink

*Table 3.10: ResourceLink Element*

| NAME OR VALUE | MANAGER LEVEL 1 | MANAGER LEVEL 2 | MANAGER LEVEL 3 | WORKER LEVEL 1 | WORKER LEVEL 2 | WORKER LEVEL 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *ActualAmount* | | r | r | | w← | w← | See ▸ [Management Information System ICS].<br>**Conformance Test:**<br>The *Manager* SHALL create costing entries for the quantity specified in this @*ActualAmount*. |
| *MinStatus* | | r? | r? | | w← | w← | See ▸ [Management Information System ICS].<br>**Conformance Test:**<br>The *Worker* SHALL NOT execute **JDF** *Nodes* that have one or more input resources with a @*Status* value “lower” than the value specified in @*MinStatus*. See ▸ [JDF 1.8]. |
| ***AmountPool*** | | r? | r? | | w? | w? | See ▸ [Management Information System ICS]. |
| ***Part*** | | r | r | | w? | w? | See ▸ [Management Information System ICS]. |

#### 3.3.2.5.2 AmountPool

*Table 3.11: AmountPool Element*

| NAME OR VALUE | MANAGER LEVEL 1 | MANAGER LEVEL 2 | MANAGER LEVEL 3 | WORKER LEVEL 1 | WORKER LEVEL 2 | WORKER LEVEL 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| ***PartAmount*** | | r | r | | w | w | See ▸ [Management Information System ICS]. |

#### 3.3.2.5.3 PartAmount

If a *Worker* can distinguish between good and waste, it SHALL supply the waste amount in ***PartAmount***/@*ActualAmount* with ***PartAmount***/***Part***/@*Condition* = "Waste" and SHALL supply the good amount excluding the waste amount in ***PartAmount***/@*ActualAmount* with ***PartAmount***/***Part***/@*Condition* = "Good".

*Table 3.12: PartAmount Element*

| NAME OR VALUE | MANAGER LEVEL 1 | MANAGER LEVEL 2 | MANAGER LEVEL 3 | WORKER LEVEL 1 | WORKER LEVEL 2 | WORKER LEVEL 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *ActualAmount* | | r | r | | w | w | See ▸ [Management Information System ICS].<br>**Conformance Test:**<br>The *Manager* SHALL create costing entries for the quantity specified in this @*ActualAmount*. |
| ***Part*** | | r | r | | w | w | See ▸ [Management Information System ICS]. |

#### 3.3.2.5.4 Part

See ▸ [Management Information System ICS].

# 4 Messages

This chapter discusses the *Conformance Requirements* for **JMF** messages.

## 4.1 Message Types

The following table specifies the *Conformance Requirements* for message types that *Managers* and *Workers* SHALL support. The specific details of *Conformance Requirements* for each message type is described later in this chapter. *Managers* and *Workers* SHALL support all message types required by the [Messaging ICS] and [Management Information System ICS] and MAY support other message types.

*Table 4.1: JMF Message Types*

| MESSAGE TYPE | MESSAGE FAMILY | MANAGER 1 | MANAGER 2 | MANAGER 3 | WORKER 1 | WORKER 2 | WORKER 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| ***HoldQueueEntry*** | ***Command*** | | w? | w | | r? | r | See [Messaging ICS]. |
| | ***Response*** | | r? | r | | w? | w | |
| ***KnownDevices*** | ***Query*** | | w | w | | r | r | See [Messaging ICS]. |
| | ***Response*** | | r | r | | w | w | |
| ***QueueStatus*** | ***Query*** | | w? | w | | r? | r | See [Messaging ICS]. |
| | ***Response*** | | r? | r | | w? | w | |
| ***Resource*** (Component) Tracking Resource Consumption | ***Query*** | | w | w | | r | r | See [Management Information System ICS]. |
| | ***Response*** | | r | r | | w | w | |
| | ***Signal*** | | r | r | | w | w | |
| ***Resource*** (Ink) Tracking Resource Consumption | ***Query*** | | w | w | | r? | r? | See [Management Information System ICS]. The *Worker* SHALL write ***Response*** and ***Signal*** when it supports ***Ink*** consumption tracking. |
| | ***Response*** | | r | r | | w← | w← | |
| | ***Signal*** | | r | r | | w← | w← | |
| ***Resource*** (Media) Tracking Resource Consumption | ***Query*** | | w | w | | r | r | See [Management Information System ICS]. |
| | ***Response*** | | r | r | | w | w | |
| | ***Signal*** | | r | r | | w | w | |
| ***Resource*** (UsageCounter) Tracking Resource Consumption | ***Query*** | | | w | | | r | See [Management Information System ICS]. |
| | ***Response*** | | | r | | | w | |
| | ***Signal*** | | | r | | | w | |
| ***Resource*** (Media) Requesting a Media Catalog | ***Query*** | | w | w | | r | r | See [Management Information System ICS]. |
| | ***Response*** | | r | r | | w | w | |
| ***Resource*** (Media) Requesting Media Tray Assignment | ***Query*** | | w | w | | r | r | See [Management Information System ICS]. |
| | ***Response*** | | r | r | | w | w | |

*Table 4.1: JMF Message Types*

| MESSAGE TYPE | MESSAGE FAMILY | MANAGER 1 | MANAGER 2 | MANAGER 3 | WORKER 1 | WORKER 2 | WORKER 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| *Resource* (Media) Update a Media Catalog | *Command* | | w | w | | r | r | See [Management Information System ICS]. |
| | *Response* | | r | r | | w | w | |
| *ResumeQueueEntry* | *Command* | | w? | w | | r? | r | See [Messaging ICS]. |
| | *Response* | | r? | r | | w? | w | |
| *Status* | *Query* | | w | w | | r | r | See [Management Information System ICS]. |
| | *Response* | | r | r | | w | w | |
| | *Signal* | | r | r | | w | w | |

## 4.2 JMF

The following table specifies the details of **JMF** specific to this ICS. For additional conformance requirements, see [Management Information System ICS].

*Table 4.2: JMF Element*

| NAME OR VALUE LEVEL→ | MANAGER 1 | MANAGER 2 | MANAGER 3 | WORKER 1 | WORKER 2 | WORKER 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *ICSVersions* | w r? | w r? | w r? | r? w | r? w | r? w | See [Messaging ICS]. |
| IDP_L1-1.8 | w r? | w! | w! | r? w | w! | w! | Specifies conformance to the Integrated Digital Printing ICS *Conformance Level* 1. |
| IDP_L2-1.8 | w! | w r? | w! | w! | r? w | w! | Specifies conformance to the Integrated Digital Printing ICS *Conformance Level* 2. |
| IDP_L3-1.8 | w! | w! | w r? | w! | w! | r? w | Specifies conformance to the Integrated Digital Printing ICS *Conformance Level* 3. |
| <all other values> | w← r? | w← r? | w← r? | r? w← | r? w← | r? w← | @*ICSVersions* SHALL contain all the values specified in the ICS documents that are required for conformance to this ICS as specified in Table 2.1 Conformance Levels. |

## 4.3 HoldQueueEntry

See [Messaging ICS].

### 4.3.1 Command

See [Messaging ICS].

### 4.3.2 Response

See [Messaging ICS].

## 4.4 KnownDevices

***KnownDevices*** is described in the [Messaging ICS], however, this ICS further restricts the contents of the ***Device*** element returned in the ***Response***

### 4.4.1 Query

See [Messaging ICS].

### 4.4.2 Response

See [Messaging ICS].

#### 4.4.2.1 Device

The ***KnownDevices Response*** contains the ***Device*** element in ***Response***/[@*Type*="KnownDevices"]/***DeviceList***/***DeviceInfo***.

*Table 4.3: Device Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *DeviceClass* | | r | r | | w | w | **Conformance Test:** The *Worker* SHALL specify @*DeviceClass* with a value containing at least one of the NMTOKEN items listed below. |
| IntegratedDigitalPrinter | | r | r | | w← | w← | |
| SheetFedDigitalPrinter | | r | r | | w← | w← | |
| WebDigitalPrinter | | r | r | | w← | w← | |
| WideFormatPrinter | | r | r | | w← | w← | |
| <all other values> | | | | | w! | w! | |

## 4.5 QueueStatus

See [Messaging ICS].

### 4.5.1 Query

See [Messaging ICS].

### 4.5.2 Response

See [Messaging ICS].

## 4.6 Resource

***Resource*** messages are provided for reporting ***Resource*** consumption, and synchronizing ***Media*** catalogs.

### 4.6.1 Resource Messages for Tracking Resource Consumption

***Resource*** messages are used by the *Manager* to request updates from the *Worker* regarding ***Resource*** consumption.

#### 4.6.1.1 Component Resource Consumption Tracking

##### 4.6.1.1.1 Query

***Resource Query*** message used by the *Manager* to subscribe for ***Component*** consumption ***Signals***.

*Table 4.4: Resource Query Message for Subscribing to Resource Consumption Signals - Component*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceQuParams*** | | w | w | | r | r | |

#### 4.6.1.1.2 ResourceQuParams

*Table 4.5: ResourceQuParams Element for Subscribing to Resource Consumption Signals - Component*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ResourceName* | | w | w | | r | r | |
| Component | | w | w | | r | r | |

#### 4.6.1.1.3 Response

***Response*** to a ***Query*** with a ***Subscription*** requesting signals to track ***Component*** consumption.

#### 4.6.1.1.4 Signal

***Resource Signal*** messages containing ***Component*** consumption information.

*Table 4.6: Resource Signal for Tracking Resource Consumption - Component*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceInfo*** | | r | r | | w | w | See ▸ [Management Information System ICS]. |

#### 4.6.1.1.5 ResourceInfo

*Table 4.7: ResourceInfo Element for Tracking Resource Consumption - Component*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Component*** | | r | r | | w | w | See ▸ [Management Information System ICS]. |

### 4.6.1.2 Ink Resource Consumption Tracking

#### 4.6.1.2.1 Query

***Resource Query*** message used by the *Manager* to subscribe for ***Ink*** consumption ***Signals***.

"

*Table 4.8: Resource Query Message for Subscribing to Resource Consumption Signals - Ink*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceQuParams*** | | w | w | | r | r | |

#### 4.6.1.2.2 ResourceQuParams

*Table 4.9: ResourceQuParams Element for Subscribing to Resource Consumption Signals - Ink*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ResourceName* | | w | w | | r | r | |
| Ink | | w | w | | r | r | |

#### 4.6.1.2.3 Response

***Response*** to a ***Query*** with a ***Subscription*** requesting signals to track ***Ink*** consumption.

#### 4.6.1.2.4 Signal

***Resource Signal*** messages containing ***Ink*** consumption information.

*Table 4.10: Resource Signal for Tracking Resource Consumption - Ink*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceInfo*** | | r | r | | w | w | See ▸ [Management Information System ICS]. |

#### 4.6.1.2.5 ResourceInfo

*Table 4.11: ResourceInfo Element for Tracking Resource Consumption - Ink*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Ink*** | | r | r | | w | w | See ▸ [Management Information System ICS]. |

### 4.6.1.3 Media Resource Consumption Tracking

#### 4.6.1.3.1 Query

***Resource Query*** message used by the *Manager* to subscribe for ***Media*** consumption ***Signals***.

*Table 4.12: Resource Query Message for Subscribing to Resource Consumption Signals - Media*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceQuParams*** | | w | w | | r | r | |

#### 4.6.1.3.2 ResourceQuParams

*Table 4.13: ResourceQuParams Element for Subscribing to Resource Consumption Signals - Media*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ResourceName* | | w | w | | r | r | |
| Media | | w | w | | r | r | |

#### 4.6.1.3.3 Response

***Response*** to a ***Query*** with a ***Subscription*** requesting signals to track ***Media*** consumption.

#### 4.6.1.3.4 Signal

***Resource Signal*** messages containing ***Media*** consumption information.

*Table 4.14: Resource Signal for Tracking Resource Consumption - Media*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ResourceInfo | | r | r | | w | w | See ▸ [Management Information System ICS]. |

#### 4.6.1.3.5 ResourceInfo

*Table 4.15: ResourceInfo Element for Tracking Resource Consumption - Media*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| Media | | r | r | | w | w | See ▸ [Management Information System ICS]. |

### 4.6.1.4 UsageCounter Resource Consumption

#### 4.6.1.4.1 Query

**Resource Query** message used by the *Manager* to subscribe for **UsageCounter** consumption **Signals**.

*Table 4.16: Resource Query Message for Subscribing to Resource Consumption Signals - UsageCounter*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ResourceQuParams | | w | w | | r | r | |

#### 4.6.1.4.2 ResourceQuParams

*Table 4.17: ResourceQuParams Element for Subscribing to Resource Consumption Signals - UsageCounter*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ResourceName | | w | w | | r | r | |
| UsageCounter | | w | w | | r | r | |

#### 4.6.1.4.3 Response

**Response** to a **Query** with a **Subscription** requesting signals to track **UsageCounter** consumption.

#### 4.6.1.4.4 Signal

**Resource** Signal messages containing **UsageCounter** consumption information.

*Table 4.18: Resource Signal for Tracking Resource Consumption - UsageCounter*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ResourceInfo | | r | r | | w | w | See ▸ [Management Information System ICS]. |

#### 4.6.1.4.5 ResourceInfo

*Table 4.19: ResourceInfo Element for Tracking Resource Consumption - UsageCounter*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***UsageCounter*** | | r | r | | w | w | See [Management Information System ICS]. |

### 4.6.2 Resource Messages for Requesting Media Catalog

An *Integrated Digital Printer* can provide information regarding media to the *Manager*.

#### 4.6.2.1 Query

*Table 4.20: Resource Query Message for Requesting a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ID* | | w | w | | r | r | See [JDF 1.8]. |
| *Type* | | w | w | | r | r | See [JDF 1.8]. |
| Resource | | w | w | | r | r | |
| ***ResourceQuParams*** | | w | w | | r | r | See [JDF 1.8]. |

#### 4.6.2.1.1 ResourceQuParams

The following table only defines the *Conformance Requirement Traits* specific to this ICS. See [Management Information System ICS] for additional requirements.

*Table 4.21: ResourceQuParams Element for Requesting a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Context* | | w | w | | r | r | |
| Global | | w | w | | r | r | |
| *Exact* | | w | w | | r | r | |
| true | | w | w | | r | r | |
| *Location* | | w? | w? | | r | r | Filter to return only the media assigned to the specified tray. |
| *JobID* | | w! | w! | | r! | r! | |
| *JobPartID* | | w! | w! | | r! | r! | |
| *QueueEntryID* | | w! | w! | | r! | r! | |
| *ResourceDetails* | | w | w | | r | r | |
| Full | | w | w | | r | r | |
| *ResourceName* | | w | w | | r | r | |
| Media | | w | w | | r | r | |
| *Scope* | | w | w | | r | r | |

*Table 4.21: ResourceQuParams Element for Requesting a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| Allowed | | w | w | | r | r | To return the list of media currently defined in the *Media Catalog* of the *Device*. |
| *Usage* | | w! | w! | | r! | r! | |
| ***Part*** | | w! | w! | | r! | r! | |

### 4.6.2.2 Response

The following table only defines the *Conformance Requirement Traits* specific to this ICS. See [Management Information System ICS] for additional requirements.

*Table 4.22: ResourceQuParams Element for Requesting a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceInfo*** | | r | r | | w | w | See [Management Information System ICS]. |

#### 4.6.2.2.1 ResourceInfo

The following table only defines the *Conformance Requirement Traits* specific to this ICS. See [Management Information System ICS] for additional requirements.

*Table 4.23: ResourceInfo Element for Requesting a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Media*** | | r | r | | w | w | See [JDF 1.8]. |

## 4.6.3 Resource Messages for Requesting Media Tray Assignment

An *Integrated Digital Printer* can provide information regarding the location of media to the *Manager*.

### 4.6.3.1 Query

*Table 4.24: Resource Query Message for Requesting a Worker's Media Tray Assignment*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ID* | | w | w | | r | r | See [JDF 1.8]. |
| *Type* | | w | w | | r | r | See [JDF 1.8]. |
| Resource | | w | w | | r | r | |
| ***ResourceQuParams*** | | w | w | | r | r | See [JDF 1.8]. |

#### 4.6.3.1.1 ResourceQuParams

The following table only defines the *Conformance Requirement Traits* specific to this ICS. See [Management Information System ICS] for additional requirements.

*Table 4.25: ResourceQuParams Element for Requesting a Worker's Media Tray Assignment*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Context* | | w | w | | r | r | |
| Global | | w | w | | r | r | |
| *Exact* | | w | w | | r | r | |
| true | | w | w | | r | r | |
| *Location* | | w? | w? | | r | r | Filter to return only the media assigned to the specified tray. |
| *JobID* | | w! | w! | | r! | r! | |
| *JobPartID* | | w! | w! | | r! | r! | |
| *QueueEntryID* | | w! | w! | | r! | r! | |
| *ResourceDetails* | | w | w | | r | r | |
| Full | | w | w | | r | r | |
| *ResourceName* | | w | w | | r | r | |
| Media | | w | w | | r | r | |
| *Scope* | | w | w | | r | r | |
| Present | | w | w | | r | r | Filter to return only the list of media currently assigned 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! | w! | | r! | r! | |
| ***Part*** | | w! | w! | | r! | r! | |

### 4.6.3.2 Response

The following table only defines the *Conformance Requirement Traits* specific to this ICS. See [Management Information System ICS] for additional requirements.

*Table 4.26: ResourceQuParams Element for Requesting a Worker's Media Tray Assignment*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceInfo*** | | r | r | | w | w | See [Management Information System ICS]. |

#### 4.6.3.2.1 ResourceInfo

The following table only defines the *Conformance Requirement Traits* specific to this ICS. See [Management Information System ICS] for additional requirements.

*Table 4.27: ResourceInfo Element for Requesting a Worker's Media Tray Assignment*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Level* | | r? | r? | | w | w | See [JDF 1.8]. |

*Table 4.27: ResourceInfo Element for Requesting a Worker's Media Tray Assignment*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *AmountPool* | | r? | r? | | w | w | See [JDF 1.8]. |
| *Media* | | r | r | | w | w | See [JDF 1.8]. |

#### 4.6.3.2.1.1 AmountPool

*Table 4.28: AmountPool Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *PartAmount* | | r? | r? | | w | w | See [JDF 1.8]. |

#### 4.6.3.2.1.2 PartAmount

*Table 4.29: PartAmount Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *DescriptiveName* | | r? | r? | | w | w | See [JDF 1.8]. |
| *Orientation* | | r? | r? | | w← | w← | @*Orientation* SHALL be specified.<br>If known, the *Worker* SHALL specify the orientation of the media in the tray. |
| Rotate0 | | r? | r? | | w← | w← | The media is loaded Short Edge Feed (SEF). |
| Rotate90 | | r? | r? | | w← | w← | The media is loaded Long Edge Feed (LEF). |
| <All other values> | | | | | w! | w! | |
| *ActualAmount* | | r? | r? | | w← | w← | The amount of media remaining in the tray. The value is the number of sheets. |
| *Part* | | r? | r? | | w← | w← | See [JDF 1.8]. |

#### 4.6.3.2.1.3 Part

*Table 4.30: Part Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Location* | | r? | r? | | w | w | Name of the tray. |

### 4.6.4 Resource Messages to Update Media Catalog

A *Manager* can instruct an *Integrated Digital Printer* to update their media catalog.

#### 4.6.4.1 Command

*Table 4.31: Resource Command Message for Updating a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceCmdParams*** | | w | w | | r? | r? | Abstract placeholder element for any descriptive elements that provide details required for the command. |

##### 4.6.4.1.1 ResourceCmdParams

*Table 4.32: ResourceCmdParams Element for Updating a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ResourceName* | | w | w | | r | r | See [JDF 1.8]. |
| Media | | w | w | | r | r | See [JDF 1.8]. |
| *UpdateMethod* | | w | w | | r | r | Whatever is the type of update, *Worker* may keep any specific information that is already known about the media (i.e. calibration information, fusing temperature...), even for removed media. |
| Incremental | | w← | w← | | r | r | To update the catalog with new and modified media: the media that are not specified in the update are kept. |
| Complete | | w← | w← | | r | r | To fully replace the catalog: the media that are not specified in the update are removed. |
| ***Media*** | | w | w | | r | r | One ***ResourceInfo*** is written per updated media. In Table 5.24 Media Resource sent by a Manager, the *Manager* is the writer and the *Worker* is the reader |

#### 4.6.4.2 Response

*Table 4.33: Resource Response Message for Updating a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ResourceInfo*** | | r | r | | w | w | See [Management Information System ICS]. |

#### 4.6.4.3 ResourceInfo

*Table 4.34: ResourceInfo Element for Updating a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ResourceName* | | r | r | | w | w | |
| Media | | r | r | | w | w | |
| *CommandResult* | | r | r | | w | w | |

*Table 4.34: ResourceInfo Element for Updating a Worker's Media Catalog*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| New | | r? | r? | | w← | w← | The media is newly added to the *Media Catalog*. |
| Merged | | r? | r? | | w← | 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? | r? | | w← | w← | An existing media was replaced completely in the *Media Catalog*. |
| ***Media*** | | r | r | | w | w | One ***ResourceInfo*** is specified for each media of the updated catalog.<br>In Table 5.24 Media Resource sent by a Manager, the *Worker* is the writer and the *Manager* is the reader |
| ***AmountPool*** | | r! | r! | | w! | w! | |

## 4.7 ResumeQueueEntry

See [Messaging ICS].

### 4.7.1 Command

See [Messaging ICS].

### 4.7.2 Response

See [Messaging ICS].

## 4.8 Status

### 4.8.1 Query

See [Messaging ICS].

### 4.8.2 Response

See [Messaging ICS].

### 4.8.3 Signal

See the relevant sections regarding status in [Messaging ICS] and [Management Information System ICS].

#### 4.8.3.1 DeviceInfo

This section shows the conformance requirements for ***DeviceInfo*** as used by the ***KnownDevices*** and ***Status*** messages if they are supported.

*Table 4.35: DeviceInfo Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *CounterUnit* | | r | r | | w← | w← | Specifies the units for other **DeviceInfo** attributes and **DeviceInfo**/**JobPhase** attributes. @CounterUnit SHALL be specified if the units are different than copies, since omissions means the units for the output **Component** for the *Process*, which is copies for the *Combined Digital Printing Node*.<br>See [JDF 1.8].<br>The *Manager* SHALL treat the units for the other **DeviceInfo** attributes and for all **DeviceInfo**/**JobPhase** attributes as specified by @CounterUnit.<br>See [JDF 1.8].<br>If these attributes are displayed to the user, the units SHALL be indicated.<br>**Conformance Test:**<br>If these attributes are displayed to the user, the units are indicated. |
| Impressions | | r | r | | w← | w← | This value SHALL be specified if counting the passage of a surface through the printing system.<br>The string value is defined by this ICS. |
| SeparationImpressions | | r | r | | w← | w← | This value SHALL be specified if counting separation impressions.<br>The string value is defined by this ICS. |
| *DeviceStatus* | | r← | r← | | w← | w← | If the *Worker* specifies @DeviceStatus, it should use the values show in Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs.<br>**Conformance Test:**<br>See Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs for equivalencies. |
| <all values> | | r | r | | w← | w← | |
| *StatusDetails* | | r? | r? | | w← | w← | @StatusDetails SHALL be specified if known by the *Worker*.<br>See Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs. |
| **Comment** | | r? | r? | | w? | w? | The *Worker* MAY supply a human readable string that provides details beyond the token value of **DeviceInfo**/@StatusDetails. |
| **JobPhase** | | r? | r? | | w← | w← | See [Management Information System ICS]. |

### 4.8.3.2 JobPhase

*Table 4.36: JobPhase Element (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *PercentCompleted* | | r? | r | | w? | w | See [JDF 1.8]. |

*Table 4.36: JobPhase Element (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Status* | | r | r | | w | w | @*Status* SHALL contain the same values as those specified in ***JDF***/@*Status*.<br>See ▸ Table B.1 Status and StatusDetails Attribute Value Pairs. |
| *StatusDetails* | | r? | r? | | w← | w← | @*StatusDetails* SHALL be specified if known.<br>See ▸ Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs. |
| ***Comment*** | | r? | r? | | w? | w? | The *Worker* MAY supply a human readable string that provides details beyond the token value of ***JobPhase***/@*StatusDetails*. |
| ***ModuleStatus*** | | r? | r? | | w← | w← | If there are multiple types of ***JobPhase*** elements, each ***JobPhase*** SHALL have a ***ModuleStatus*** whose ***ModuleStatus***/@*ModuleType* identifies the ***JobPhase***.<br>See ▸ [Management Information System ICS], ***DeviceInfo***, ***JobPhase*** and ***ModuleStatus*** for usage. |

#### 4.8.3.3 ModuleStatus

*Table 4.37: ModuleStatus Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *DeviceStatus* | | r← | r← | | w← | w← | For values see ▸ Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs.<br>See ▸ [Management Information System ICS]. |
| *ModuleType* | | r? | r? | | w | w | See ▸ Appendix B Status Details Values for usage. |
| *StatusDetails* | | r? | r? | | w? | w? | This ICS defines additional values to be used with each @*DeviceStatus* value, so that @*StatusDetails* SHOULD NOT be omitted.<br>See ▸ Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs.<br>**Conformance Test:**<br>See ▸ Table B.2 DeviceStatus and StatusDetails Attribute Value Pairs for equivalencies. |
| ***Comment*** | | r? | r? | | w? | w? | The *Worker* MAY supply a human readable string that provides details beyond the token value of ***ModuleStatus***/@*StatusDetails*. |

## 4.9 Common Message Elements

### 4.9.1 Subscription

The ***Subscription*** element is used by ***Resource*** query messages to register for ***Resource*** consumption information.

# 5 Resources

## 5.1 Color

*Table 5.1: Color Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ActualColorName* | w? | w? | w? | r | r | r | @*ActualColorName* is the name used in the separation color space definition in the PDL file, it defaults to @*Name*.<br>@*ActualColorName* SHALL be specified, if known. Also if the value of @*ActualColorName* is equal to that of @*Name*, the *Manager* SHALL specify this attribute to indicate to the *Worker* that the *Manager* has confirmed the actual color name.<br>**Note:** This attribute was added in [JDF 1.8].<br>**Conformance Test:**<br>The printer output shows the specified color. |
| *Name* | w | w | w | r | r | r | The value of @*Name* SHALL match ***SeparationSpec***/@*Name* and ***Ink***/@*Separation*, if ***Ink*** is specified.<br>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 specified.<br>**Conformance Test:**<br>The printed output shows the specified color. |

## 5.2 ColorantControl

*Table 5.2: ColorantControl Resource (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ProcessColorModel* | w | w | w | r | r | r | |
| DeviceCMYK | w← | w← | w← | r← | r← | r← | Color *Devices* SHALL support @*ProcessColorModel*="DeviceCMYK".<br>**Conformance Test:**<br>The printed output SHALL be in color on a color *Device* for a color input document. |
| DeviceGray | w← | w← | w← | r | r | r | The *Manager* SHALL specify @*ProcessColorModel*="DeviceGray" for monochrome or gray scale printing.<br>**Conformance Test:**<br>The printed output SHALL be a monochrome grayscale output for a color input document. |

*Table 5.2: ColorantControl Resource (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| <all other values> | w? | w? | w? | r? | r? | r? | |
| *ColorantOrder* | w | w | w | r | r | r | See [JDF 1.8]. |
| *ColorantParams* | w← | w← | w← | r? | r? | r? | *ColorantParams* SHALL be specified by the *Manager* in order to specify spot colors or a highlight color. |
| *ColorPool* | w← | w← | w← | r | r | r | *ColorPool* SHALL be specified by the *Manager* in order to specify spot colors or a highlight color. |

### 5.2.1 ColorantOrder

*Table 5.3: ColorantOrder Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *SeparationSpec* | w | w | w | r | r | r | See [JDF 1.8]. |

### 5.2.2 ColorantParams

*Table 5.4: ColorantParams Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *SeparationSpec* | w | w | w | r | r | r | See [JDF 1.8]. |

## 5.3 ColorPool

*Table 5.5: ColorPool Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Color* | w | w | w | r | r | r | See [JDF 1.8]. |

## 5.4 ColorSpaceConversionParams

*Table 5.6: ColorSpaceConversionParams Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *NoOp* | w? | w? | w? | r | r | r | **Conformance Test:** The output has been processed according to the value. |

# 5.5 Component

## 5.5.1 Component – Cover

*Table 5.7: Component Resource - Cover*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ComponentType* | | w | w | | r | r | See [JDF 1.8].<br>**Conformance Test:**<br>The output contains the supplied soft cover that is wrapped around the book block body. |
| Sheet | | w? | w? | | r | r | |
| PartialProduct | | w? | w? | | r | r | |
| <all other values> | | w! | w! | | | | |
| *ProductType* | | w | w | | r | r | See [JDF 1.8]. |
| BackCover | | w? | w? | | r | r | |
| Cover | | w? | w? | | r | r | |
| FrontCover | | w? | w? | | r | r | |
| <all other values> | | w! | w! | | | | |

## 5.5.2 Component – Exchange

*Table 5.8: Component Resource - Exchange*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| | | | | | | | See [JDF 1.8], [Base ICS] and [Management Information System ICS]. |

## 5.5.3 Component – Input

*Table 5.9: Component Resource - Input*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Media*** | w | w | w | r | r | r | See [JDF 1.8]. |

## 5.5.4 Component – Output

*Table 5.10: Component Resource - Output (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ComponentType* | w | w | w | r | r | r | See [JDF 1.8]. |

*Table 5.10: Component Resource - Output (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| FinalProduct | w | w | w← | r | r | r | FinalProduct SHOULD be specified unless the output represents a *Partial Product* that will be processed offline to create a *Final Product*. |
| PartialProduct | w! | w! | w← | | | r | PartialProduct MAY be specified if the product is to be processed offline. |
| <all other values> | w? | w? | w? | r? | r? | r? | |
| *PartIDKeys* | w! | w! | w? | | | r? | @*PartIDKeys* SHOULD NOT be specified if @*ComponentType* contains "FinalProduct". |

## 5.6 CoverApplicationParams

*Table 5.11: CoverApplicationParams Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *NoOp* | | w← | w← | | r | r | See [JDF 1.8].<br>**Conformance Test:**<br>The output has been processed according to the value. |

## 5.7 Device

See [Management Information System ICS].

## 5.8 DigitalPrintingParams

*Table 5.12: DigitalPrintingParams Resource (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Collate* | w← | w← | w← | r | r | r | @*Collate* SHALL NOT be specified in a partition. |
| None | w← | w← | w← | r | r | r | |
| Sheet | w← | w← | w← | r | r | r | |
| <all other values> | w? | w? | w? | r? | r? | r? | |
| *OutputBin* | w? | w? | w? | r← | r← | r← | @*OutputBin* SHALL be supported by the *Worker* if ***Device*** has multiple output bins. |
| AutoSelect | w← | w← | w← | r | r | r | |
| <all other values> | w? | w? | w? | r? | r? | r? | |

*Table 5.12: DigitalPrintingParams Resource (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *PageDelivery* | w← | w← | w← | r← | r← | r← | @*PageDelivery* SHALL be supported by the *Worker* if it supports both face-up and face-down output.<br>If @*PageDelivery* is not specified, 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*.<br>**Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| SameOrderFaceDown | w← | w← | w← | r | r | r | The *Worker* MAY stream to the output. |
| SameOrderFaceUp | w← | w← | w← | r | r | 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* SHALL 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.<br>See Section 1.4.1 Conformance Test Drawings. |
| <all other values? | w? | w? | w? | r? | r? | r? | |
| *PartIDKeys* | w? | w? | w? | r | r | r | See [JDF 1.8]. |
| DocIndex | w? | w? | w? | r | r | r | "RunIndex" SHALL NOT be specified if "DocIndex" is specified in @*PartIDKeys*. |
| DocRunIndex | w? | w? | w? | r | r | r | "RunIndex" SHALL NOT be specified if "DocRunIndex" is specified in @*PartIDKeys*. |
| RunIndex | w? | w? | w? | r | r | r | The "RunIndex" *Page* range SHALL only include one or more of the explicit or implicit run index *Page* ranges as defined by ***LayoutPreparationParams***, i.e., each ***DigitalPrintingParams*** *Page* range SHALL 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 SHALL be the same or be less granular than ***LayoutPreparationParams*** partitions.<br>"RunIndex" SHALL NOT be specified if either of "DocIndex" or "DocRunIndex" is specified in @*PartIDKeys*. |
| <all other values? | w? | w? | w? | r? | r? | r? | |
| *Sides* | w! | w! | w! | | | | Use ***LayoutPreparationParams***/@*Sides*. |
| ***Media*** | w | w | w | r | r | r | See [JDF 1.8]. |

## 5.9 FitPolicy

*Table 5.13: FitPolicy Resource*

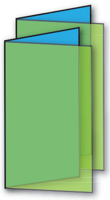
| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *RotatePolicy* | w← | w← | w← | r | r | r | @*RotatePolicy* shall be specified by the *Manager* if the document contains mixed orientation or if the *Manager* does not know whether it does or not.<br>See Appendix B for Mixed Orientation Use Cases. |
| NoRotate | w← | w← | w← | r | r | r | **Conformance Test:**<br>Output SHALL NOT be rotated. |
| RotateClockwise | w← | w← | w← | r | r | r | **Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| RotateCounterClockwise | w← | w← | w← | r | r | r | **Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| *SizePolicy* | w← | w← | w← | r | r | r | @*SizePolicy* SHALL be specified if the input stream *Page* size is different from ***PageCell*** size in the *Page* grid. |
| ClipToMaxPage | w← | w← | w← | r | r | r | **Conformance Test:**<br>The printed output SHALL be clipped if input stream *Page* size is bigger than the ***PageCell***. SHALL NOT be scaled. |
| FitToPage | w← | w← | w← | r | r | r | **Conformance Test:**<br>The printed output SHALL be expanded or reduced to fit the ***PageCell***.<br>See Section 1.4.1 Conformance Test Drawings for *Page* scaling use cases. |
| ReduceToFit | w← | w← | w← | r | r | r | **Conformance Test:**<br>The printed output SHALL be reduced but not expanded to fit the ***PageCell***. |

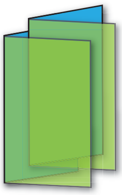
## 5.10 FoldingParams

When folding single and multiple sheets together it is necessary to correctly specify the order of the **Folding** and **Gathering** *Processes* in ***LayoutPreparationParams***. Case A: **Folding**→**Gathering**, is typically used for bound books; Case B: **Gathering**→**Folding**, is typically used for saddle stitched booklets etc. See Figure 5-1: Distinguishing Fold/Gather from Gather/Fold).

*Figure 5-1: Distinguishing Fold/Gather from Gather/Fold*

**Case A: Folding→Gathering** **Case B: Gathering→Folding**





**Note:** In this figure and in the illustrations in Table 5.14 FoldingParams Resource, the front of the sheet prior to folding is shown blue and the back of the sheet is shown green. Both are semi-transparent to assist visualization.

- For Case A: **Folding**→**Gathering**, the **Gathering** *Process* MAY be added after a **Folding** *Process* if the individual folded sheets need to be stacked.

- For Case B: **Gathering→Folding**, a **Gathering** *Process* SHALL be inserted before **Folding** *Processes*. Another **Gathering** *Process* MAY also added after the **Folding** *Process* if the groups need to be stacked.
- For Case A: **Folding→Gathering**, a consistent imposition SHALL be done, ***LayoutPreparationParams***/ @*FinishingOrder* SHALL be set accordingly (its default is "GatherFold", i.e. Case B).

*Table 5.14: FoldingParams Resource (Sheet 1 of 2)*

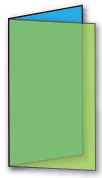
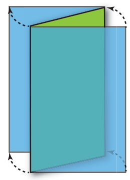
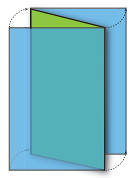
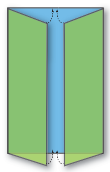
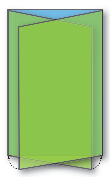
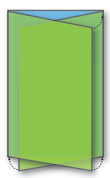
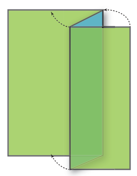
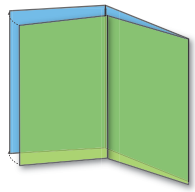
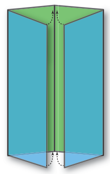
| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *FoldCatalog* | w← | w← | w← | r? | r? | r? | See [JDF 1.8].<br>**Note:** The description for the @*FoldCatalog* enumerations below shows the typically used term or name for the fold, and an illustrative diagram. |
| F4-1 | w← | w← | w← | r? | r? | r? | Half Fold.  |
| F6-1 | w← | w← | w← | r? | r? | r? | Letter Fold.  |
| F6-2 | w← | w← | w← | r? | r? | r? | Letter Fold.  |
| F6-3 | w← | w← | w← | r? | r? | r? | Gate Fold.<br>**Note:** This illustration is shown 'flipped', to allow a better view of the folded pages.  |
| F6-4 | w← | w← | w← | r? | r? | r? | Letter Fold.<br>**Note:** This illustration is shown 'flipped', to allow a better view of the folded pages.  |
| F6-5 | w← | w← | w← | r? | r? | r? | Letter Fold.  |
| F6-7 | w← | w← | w← | r? | r? | r? | Fold Out.<br>**Note:** This illustration is shown 'flipped', to allow a better view of the folded pages.  |

*Table 5.14: FoldingParams Resource (Sheet 2 of 2)*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION | |
|---|---|---|---|---|---|---|---|---|
| F8-2 | w← | w← | w← | r? | r? | r? | Parallel Fold. |  |
| F8-4 | w← | w← | w← | r? | r? | r? | Double Gate Fold.<br>**Note:** This illustration is shown 'flipped' after folding. |  |
| <all other values> | w? | w? | w? | r? | r? | r? | Use of other folding catalog values are outside the scope of the IDP ICS. | |
| *NoOp* | w← | w← | w← | r | r | r | **Conformance Test:**<br>The output has been processed or not according to the value. | |

## 5.11 GeneralID

*Table 5.15: GeneralID Resource*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *IDUsage* | w | w | w | r | r | r | |
| DeviceProductID | w← | w← | w← | r | r | r | NMTOKEN defined by this ICS to indicate *Worker* assigned media IDs. *Worker* SHALL use @*IDValue* to select *Worker* assigned media IDs |
| *IDValue* | w | w | w | r | r | r | The ID assigned by the *Worker*.<br>**Conformance Test:**<br>See ***Media*/*GeneralID***. |

## 5.12 HoleMakingParams

*Table 5.16: HoleMakingParams Resource (Sheet 1 of 2)*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *HoleType* | w | w | w | r? | r? | r? | |
| S-generic | w← | w← | w← | r? | r? | r? | |
| S1-generic | w← | w← | w← | r? | r? | r? | |
| R2-generic | w← | w← | w← | r? | r? | r? | |
| R3-generic | w← | w← | w← | r? | r? | r? | |
| R4-generic | w← | w← | w← | r? | r? | r? | |

*Table 5.16: HoleMakingParams Resource (Sheet 2 of 2)*

| NAME OR VALUE<br>LEVEL→ | MANAGER<br>1 | <br>2 | <br>3 | WORKER<br>1 | <br>2 | <br>3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| R5-generic | w← | w← | w← | r? | r? | r? | |
| *NoOp* | w← | w← | w← | r | r | r | **Conformance Test:**<br>The output has been processed or not according to the value. |

## 5.13 Ink

*Table 5.17: Ink Resource (Sheet 1 of 2)*

| NAME OR VALUE<br>LEVEL→ | MANAGER<br>1 | <br>2 | <br>3 | WORKER<br>1 | <br>2 | <br>3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *ColorName* | w! | w! | w! | r? | r? | r? | Partition using @*Separation*, instead of using @*ColorName*. |
| *Family* | w← | w← | w← | r← | r← | r← | @*Family* SHALL be specified if @*InkName* is specified.<br>**Conformance Test:**<br>The *Worker* SHALL use this supplied value:<br>• To include in the display to the operator if the *Worker* identifies this ***Ink*** to the operator.<br>• To select the requested ***Ink*** automatically from amongst the loaded ink resources. |
| HighlightColor | w← | w← | w← | r | r | r | SHALL be supplied for *Highlight Color*.<br>Value defined by this ICS. |
| Varnish | w← | w← | w← | r | r | r | SHALL be supplied for *Spot Varnish* and *Overcoat Varnish*.<br>Value defined by this ICS. |
| <all other values> | w? | w? | w? | r? | r? | r? | |
| *InkName* | w? | w? | w? | r← | r← | r← | The fully qualified name of the ink, i.e., include ***Ink***/@*Family* in the value, e.g. "Pantone 47 C", "HighlightColor Red", "Varnish glossy", etc.<br>For a *Highlight Color*, the *Manager* SHALL specify the *Highlight Color* token followed by one or more values take from the 'NamedColor' enumeration in [JDF 1.8] Appendix A.<br>The *Manager* SHALL NOT fill this attribute with guessed values like "Spot 01" or any other non-describing texts.<br>**Conformance Test:**<br>The *Worker* SHALL use this supplied value:<br>• To include in the display to the operator if the *Worker* identifies this ***Ink*** to the operator.<br>• To select the requested ***Ink*** automatically from amongst the loaded ink resources. |
| *PartIDKeys* | w← | w← | w← | r? | r? | r? | @*PartIDKeys* SHALL be specified for *Highlight Color*, *Spot Color*, *Spot Varnish* and *Overcoat Varnish* in order to specify ***Ink*** resources other than the default process color inks. |

*Table 5.17: Ink Resource (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| Separation | w | w | w | r | r | r | For *Highlight Color*, *Spot Color*, *Spot Varnish* and *Overcoat Varnish* depending on the value of **Ink**/ @*Separation*.<br>**Conformance Test:**<br>The output SHALL show the ink specified by @*Separation* attribute. |
| *Separation* | w← | w← | w← | r? | r? | r? | @*Separation* SHALL be specified if @*PartIDKeys* is specified.<br>For *Highlight Color*, *Spot Color*, *Spot Varnish* and *Overcoat Varnish*, the value SHALL match ***ColorantControl***/***ColorPool***/***Color***/@*Name* and ***ColorantControl***/***ColorantParams***/***SeparationSpec***/ @*Name* which SHALL also be specified.<br>Process colorants NEED NOT be specified, i.e., explicit or implicit partitions.<br>**Conformance Test:**<br>The requested color is printed. |
| Varnish | w← | w← | w← | r? | r? | r? | SHALL be supplied for *Spot Varnish* and *Overcoat Varnish*. |
| <all other values> | w← | w← | w← | r← | r← | 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. |

### 5.13.1 Part

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

## 5.14 InterpretingParams

See [JDF 1.8].

## 5.15 Layout

***Layout*** SHALL NOT be an input to any *Process*.

### 5.15.1 Layout – Component

*Table 5.18: Layout Resource - Component*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***Media*** | w | w | w | r | r | r | ***Media*** SHALL be the media from which the input ***Component*** was produced by some node.<br>**Conformance Test:**<br>The printed output is on the input ***Component***. |

### 5.15.2 Layout – InsertSheet

*Table 5.19: Layout Resource - InsertSheet*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *PartIDKeys* | w! | w! | w! | r? | r? | r? | The *Manager* SHALL NOT partition ***InsertSheet***/ ***Layout***.<br>**Note:** ***Layout*** in this context is only used to access the ***Media*** resource. |
| ***Media*** | w | w | w | r | r | r | ***Media*** SHALL be the media from which the input ***Component*** was produced by some node.<br>**Conformance Test:**<br>The printed output is on the input ***Component***. |

## 5.16 LayoutPreparationParams

***LayoutPreparationParams***/@*PageOrder* (which has a default value of "Reader", see [JDF 1.8]) is meta data and SHALL have no effect on the output; hence, it is NOT included in the IDP ICS.

The following ***LayoutPreparationParams*** attributes have a **JDF** default value; that value is the only value REQUIRED by the IDP ICS for a *Worker* to support:

- @*FinishingOrder*="GatherFold"
- @*FoldCatalogOrientation*="Rotate0"
- @*PageOrder*="Sequential"
- @*Rotate*="Rotate0"
- ***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:

1 @*FoldCatalogOrientation*="Rotate0"
@*FoldCatalog* itself is not in this IDP ICS

2 @*PageOrder*="Reader"
@*PageOrder* is only meta data about the document while @*PageDistributionScheme* is prescriptive

The use cases in Section 1.4.1 Conformance Test 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 5.20: LayoutPreparationParams Resource (Sheet 1 of 3)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *BndingEdge* | w← | w← | w← | r | r | r | @*BindingEdge* SHALL be specified by the *Manager* when @*PageDistributionScheme*="Saddle".<br>@*BindingEdge* SHALL NOT be specified if the input document is already imposed.<br>**Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| Left | w← | w← | w← | r | r | r | |
| Right | w← | w← | w← | r | r | r | |
| Top | w← | w← | w← | r | r | r | |

*Table 5.20: LayoutPreparationParams Resource (Sheet 2 of 3)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *FinishingOrder* | w | w | w | r | r | r | @*FinishingOrder* NEED NOT be specified if the input document is already imposed.<br>**Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings. |
| GatherFold | w← | w← | w← | r | r | r | This is the default value. See ▸ [JDF 1.8]. |
| *NumberUp* | w← | w← | w← | r | r | r | If a *Worker* supports rotation, then the *Worker* SHALL apply @*Rotate* after @*NumberUp*.<br>@*NumberUp* SHALL NOT be specified if the input document is already imposed.<br>**Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings for values. |
| *PageDistributionScheme* | w | w | w | r | r | r | @*PageDistributionScheme* SHALL NOT be specified if the input document is already imposed.<br>**Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings. |
| Perfect | w← | w← | w← | r | r | r | |
| Saddle | w← | w← | w← | r | r | r | |
| Sequential | w← | w← | w← | r | r | r | This is the default value. See ▸ [JDF 1.8]. |
| *PresentationDirection* | w← | w← | w← | r | r | r | The z dimension means the imposition stack, not the actual output stack, so that the *Worker* SHALL apply the ***DigitalPrintingParams***/@*PageDelivery* to the imposition stack.<br>@*PresentationDirection* SHALL NOT be specified if the input document is already imposed.<br>**Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings for values. |
| *Rotate* | w | w | w | r | r | r | @*Rotate* NEED NOT be specified if the input document is already imposed.<br>**Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings. |
| Rotate0 | w← | w← | w← | r | r | r | This is the default value. See ▸ [JDF 1.8]. |
| *Sides* | w | w | w | r | r | r | **Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings. |
| OneSidedFront | w← | w← | w← | r | r | r | This is the default value. See ▸ [JDF 1.8]. |
| TwoSidedFlipX | w← | w← | w← | r | r | r | |
| TwoSidedFlipY | w← | w← | w← | r | r | r | |
| *PartIDKeys* | w← | w← | w← | r | r | r | If @*PartIDKeys* is specified, then it SHALL have the same partitions as ***DigitalPrintingParams***. *Worker* recovery when this condition is not met is implementation dependent. |

*Table 5.20: LayoutPreparationParams Resource (Sheet 3 of 3)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| RunIndex | w← | w← | w← | r | r | r | RunIndex SHALL NOT use more than one partition to specify content for the same side of a *Sheet*.<br>RunIndex SHALL NOT define a *Sheet* to be printed on two different media. See ***DigitalPrintingParams***/@*PartIDKeys*.<br>RunIndex SHALL NOT be present if either of DocIndex or DocRunIndex is present.<br>**Conformance Test:**<br>SHALL apply ***LayoutPreparationParams*** according to the logical *Page* ranges specified by @*PartIDKeys*="RunIndex". |
| ***ImageShift*** | w← | w← | w← | r | r | r | ***ImageShift*** SHALL be specified by the *Manager* in order to get gutter shift for a one-up duplex case. See Section 1.4.1 Conformance Test Drawings.<br>***ImageShift*** SHALL NOT be specified if the input document is already imposed. |
| ***InsertSheet*** | w← | w← | w← | r | r | r | ***InsertSheet*** SHALL NOT be specified if the input document is already imposed with blank pages at the positions of the inserted sheets. |
| ***Media*** | w← | w← | w← | r | r | r | ***Media*** SHALL be the same as those referenced from the same partitions of ***DigitalPrintingParams***. |
| ***PageCell*** | w← | w← | w← | r | r | r | ***PageCell*** SHALL NOT be specified if the input document is already imposed with blank pages at the positions of the inserted sheets. |

## 5.16.1 ImageShift

*Table 5.21: ImageShift Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ShiftFront* | w | w | w | r | r | r | **Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| 0 0 | w← | w← | w← | r | r | r | This is the default value. See [JDF 1.8]. |
| <all other values> | w← | w← | w← | r | r | r | |

## 5.16.2 InsertSheet

*Table 5.22: InstertSheet Element (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *SheetType* | | w | w | | r | r | **Conformance Test:**<br>See values. |

*Table 5.22: InstertSheet Element (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| InsertSheet | w← | w← | w← | r | r | r | **Note:** This value is typically used to insert pre-printed 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.<br>**Conformance Test:**<br>A *Sheet* of media positioned according to @*SheetUsage* SHALL be inserted into the printed output. |
| JobSheet | w← | w← | w← | r | r | r | SHALL be specified in the root node.<br>**Conformance Test:**<br>See @*SheetUsage* values. |
| *SheetUsage* | w | w | w | r | r | r | **Conformance Test:**<br>See values. |
| Header | w← | w← | w← | r | r | r | **Conformance Test:**<br>If @*SheetType*="InsertSheet", the printed output SHALL include an *Insert Sheet* before the sheets generated by this partition of ***LayoutPreparationParams***. If @*SheetType*="JobSheet", the printed output SHALL include a *Job Sheet* before the job. |
| Trailer | w← | w← | w← | r | r | r | **Conformance Test:**<br>If @*SheetType*="InsertSheet", the printed output SHALL include an *Insert Sheet* after the sheets generated by this partition of ***LayoutPreparationParams***.<br>If ***LayoutPreparationParams*** is partitioned by @*RunIndex* and the next *Page* is in the middle of a *Sheet*, the printed output SHALL end with the current *Sheet*, (unless there is no current *Sheet*) and the *Insert Sheet* SHALL be inserted. If @*SheetType*="JobSheet", the printed output SHALL include a *Job Sheet* after the job. |

### 5.16.3 PageCell

*Table 5.23: PageCell Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Rotate* | w | w | w | r | r | r | **Conformance Test:**<br>See ▸ Section 1.4.1 Conformance Test Drawings. |
| Rotate0 | w← | w← | w← | r | r | r | This is the default value. See ▸ [JDF 1.8]. |
| ***FitPolicy*** | w← | w← | w← | r | r | r | |

## 5.17 Media

### 5.17.1 Media sent by a Manager

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.

Those ***Media*** attributes that are *Characteristic Attributes* are identified with this term in the first line of the description in Table 5.24 Media Resource sent by a Manager.

If a *Manager* supports media selection by *Characteristic Attributes*, then the *Manager* SHALL be able to supply all of the *Characteristic Attributes*.

If a *Worker* supports media selection by *Characteristic Attributes*, then the *Worker* SHALL support all of the *Characteristic Attributes* and SHALL meet the following:

### Characteristic Attribute r-Test

If the *Worker* supports media selection by *Characteristic Attributes* and the *Manager* supplies neither @*ProductID* nor ***GeneralID Resource***, then the *Worker* shall do either of:

- Include the requested *Characteristic Attributes* in the display to the operator if the *Worker* identifies this ***Media*** to the operator
- Select the requested ***Media*** automatically from amongst the loaded ***Media*** using the value of the *Characteristic Attributes*.

*Table 5.24: Media Resource sent by a Manager (Sheet 1 of 4)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *BackCoatings* | w← | w← | w← | r | r | r | *Characteristic Attribute.*<br>See [JDF 1.8] for defaulting rules.<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| *Brand* | w← | w← | w← | r | r | r | *Characteristic Attribute.*<br>@*Brand* SHALL be specified if it is known by the *Manager*.<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| *DescriptiveName* | w← | w← | w← | r | r | r | **Conformance Test:**<br>If the *Worker* identifies this ***Media*** resource to the operator, then the *Worker* SHALL display this value. |
| *Dimension* | w | w | w | r | r | r | *Characteristic Attribute.*<br>The *Manager* SHALL specify the dimensions of the ***Media*** appropriate for the orientation (i.e., portrait versus landscape) (see Section 1.4.1 Conformance Test Drawings). If that orientation differs from that defined for the @*ProductID* or ***GeneralID***, if supplied, the orientation specified by @*Dimension* SHALL take precedence.<br>If @*ProductID* and/or ***GeneralID*** are also supplied, ***Media***/@*Dimension* size values SHALL 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.<br>The *Manager* SHOULD supply values that agree with the size in points values in [JDF 1.8] Appendix G.<br>**Conformance Test:**<br>The *Worker* selects media of the specified dimensions +/- 5 points. See Characteristic Attribute r-Test, Section 1.4.1 Conformance Test Drawings and [JDF 1.8] Appendix G. |
| *FrontCoatings* | w← | w← | w← | r | r | r | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |

*Table 5.24: Media Resource sent by a Manager (Sheet 2 of 4)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *HoleType* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>The *Worker* NEED NOT support multiple values in a single ***Media***.<br>**Note:** See [JDF 1.8] Appendix M Default Process Edge and Usage Notes columns for the relationship of the holes axis and certain media sizes.<br>**Conformance Test:**<br>The Media selected shall have the correct number of holes. See *Characteristic Attribute* r-Test and [JDF1.5] Appendix M.<br>**Conformance Test:**<br>The media selected SHALL have the correct number of holes. See Characteristic Attribute r-Test and [JDF 1.8] Appendix M. |
| None | w← | w← | w← | r | r | r | |
| R2-generic | w← | w← | w← | r? | r? | r? | |
| R3-generic | w← | w← | w← | r? | r? | r? | |
| R4-generic | w← | w← | w← | r? | r? | r? | |
| R5-generic | w← | w← | w← | r? | r? | r? | |
| <all other values> | w← | w← | w← | r? | r? | r? | The *Manager* SHOULD support additional values. |
| *ImagableSide* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| Back | w? | w? | w? | r? | r? | r? | |
| Both | w← | w← | w← | r← | r← | r← | |
| Front | w? | w? | w? | r? | r? | r? | |
| Neither | w? | w? | w? | r? | r? | r? | |
| *MediaColorName* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| *MediaColorNameDetails* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| *MediaSetCount* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>For collated tabbed media, the *Manager* SHALL specify @*MediaSetCount* when neither @*ProductID* or ***GeneralID*** are supplied.<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| *MediaType* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| Paper | w← | w← | w← | r | r | r | |

*Table 5.24: Media Resource sent by a Manager (Sheet 3 of 4)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| <all other values> | w? | w? | w? | r? | r? | r? | |
| *MediaTypeDetails* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| Plain | w! | w! | w! | r? | r? | r? | This commonly used value is **not** defined in [JDF 1.8]. |
| Stationery | w← | w← | w← | r? | r? | r? | Same as @*MediaType*="Paper". |
| <all other values> | w← | w← | w← | r? | r? | r? | The *Manager* SHOULD support additional values from [JDF 1.8]. |
| *PrePrinted* | w← | w← | w← | r? | r? | r? | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| *ProductID* | w← | w← | w← | r←<br>w← | r←<br>w← | r←<br>w← | @*ProductID* SHALL 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*.<br>@*ProductID* SHALL be specified if known by the *Manager*.<br>The *Worker* SHOULD support @*ProductID*.<br>The *Worker* SHOULD write if known by the *Worker*.<br>If neither @*ProductID* nor ***GeneralID***[@*IDUsage*="DeviceProductID"]/@*IDValue* are supplied, *Characteristic Attributes* MAY be supported.<br>**Conformance Test:**<br>If the *Manager* supplies this attribute, the *Worker* SHALL preserve the supplied ***Media***/@*ProductID* value in any returned ***Media*** resource.<br>**Conformance Test:**<br>If the *Worker* supports @*ProductID*, the *Worker* SHALL use this supplied value to both:<br>• Include in the display to the operator if the *Worker* identifies this media to the operator<br>• Select the requested media automatically from amongst the loaded media. |
| *StockType* | w← | w← | w← | r? | r? | r? | @*StockType* SHALL be specified if known and @*Weight* is specified.<br>@*StockType* SHALL be specified by the *Manager* if the *Worker* is to calculate the US weight and to display the value of @*StockType* and US weight to the operator. |
| <all values> | w← | w← | w← | r? | r? | r? | |
| *Texture* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| <all values> | w← | w← | w← | r? | r? | r? | The *Manager* SHOULD support values from [JDF 1.8]. |

*Table 5.24: Media Resource sent by a Manager (Sheet 4 of 4)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Thickness* | w← | w← | w← | r? | r? | r? | @*Thickness* SHALL be specified if known. |
| *Weight* | w← | w← | w← | r← | r← | r← | *Characteristic Attribute.*<br>**Conformance Test:**<br>See Characteristic Attribute r-Test. |
| ***GeneralID*** | w← | w← | w← | r← | r← | r← | ***GeneralID***[@*IDUsage*="DeviceProductID"]/@*IDValue* is the ID assigned by the *Worker* for this ***Media***. Such IDs SHALL 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*.<br>***GeneralID*** SHALL be specified if known by the *Manager*.<br>**Conformance Test:**<br>The *Worker* SHALL support ***GeneralID*** when it doesn't support @*ProductID* and MAY support both.<br>If the *Manager* supplies both this value and the ***Media***/@*ProductID*, then those values SHALL identify the same media.<br>If neither are supplied, *Characteristic Attributes* MAY be supported.<br>**Conformance Test:**<br>If the *Worker* supports ***GeneralID***[@*IDUsage*="DeviceProductID"]/@*IDValue*, the *Worker* SHALL use this supplied value to both:<br>• Include in the display to the operator if the *Worker* identifies this media to the operator<br>• Select the requested media automatically from amongst the loaded media. |

### 5.17.2 Media sent by a Worker

No additional *Conformance Requirements* to those specified in [Management Information System ICS] are required.

## 5.18 RenderingParams

*Table 5.25: RenderingParams Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***AutomatedOverPrintParams*** | w? | w? | w? | r | r | r | |

### 5.18.1 AutomatedOverPrintParams

*Table 5.26: AutomatedOverPrintParams Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *OverPrintBlackText* | w? | w? | w? | r | r | r | **Conformance Test:**<br>If @*OverPrintBlackText*="true" is supplied, the *Worker* SHALL 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.<br>See @*OverPrintBlackLineArt* in [JDF 1.8]. |

## 5.19 RunList

The print stream pages represented by the ***RunList*** document resource SHALL be in reader order, except when the *Manager* pre-orders a saddle stitched booklet, in which case the *Manger* SHALL also supply ***LayoutPreparationParams***/@*PageDistributionScheme*="Sequential" and ***LayoutPreparationParams***/@*PresentationDirection*="Xyz" or "xyz". If ***RunList***/@*PageOrder* is supplied, the *Worker* SHALL ignore it and SHALL NOT affect the results. See Section 1.4.1 Conformance Test Drawings, “Saddle Stitched Use Cases”.

*Table 5.27: RunList Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Directory* | w? | w? | w? | r | r | r | **Conformance Test:**<br>The *Worker* SHALL use @*Directory* to resolve any child ***LayoutElement/FileSpec/***@*URL* attributes.<br>See [JDF 1.8]. |
| *PageCopies* | w! | w! | w! | r? | r? | r? | |
| *Pages* | w← | w← | w← | r | r | r | If supplied, the *Manager* SHALL supply a list of 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 are at least 20 Pages.<br>**Conformance Test:**<br>The printed output SHALL contain all pages in the output selected by @*Pages* and in the order respective of parameterization of ***LayoutPreparationParams***. |
| *PartIDKeys* | w← | w← | w← | r | r | r | See [JDF 1.8]. |
| Run | w← | w← | w← | r | r | r | For multiple input files.<br>**Conformance Test:**<br>The *Worker* SHALL generate sheets containing all pages defined in all supplied partitioned ***RunList*** resources. |
| ***InsertSheet*** | w← | w← | w← | r | r | r | See [JDF 1.8]. |
| ***LayoutElement*** | w | w | w | r | r | r | See [JDF 1.8]. |

### 5.19.1 InsertSheet

*Table 5.28: InsertSheet Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *SheetType* | w | w | w | r | r | r | |
| FillSheet | w← | w← | w← | r | r | r | MAY be specified in a partition.<br>**Conformance Test:**<br>See @*SheetUsage* values. |
| InsertSheet | w← | w← | w← | r | r | r | **Note:** This value is typically used to insert pre-printed 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.<br>**Conformance Test:**<br>The printed output SHALL include a *Sheet* of media positioned according to @*SheetUsage*. |
| *SheetUsage* | w | w | w | r | r | r | **Conformance Test:**<br>The printed output SHALL contain a media *Sheet* that was inserte3d an positioned according to @*SheetUsage*. |
| FillForceBack | w← | w← | w← | r | r | r | |
| FillForceFront | w← | w← | w← | r | r | r | **Note:** A typical use is to start a chapter on the front side of the finished *Page*. |
| Header | w← | w← | w← | r | r | r | |
| Trailer | w← | w← | w← | r | r | r | |
| ***Layout*** | w← | w← | w← | r | r | r | See Section 5.15.2 Layout – InsertSheet. |

### 5.19.2 LayoutElement

*Table 5.29: LayoutElement Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***FileSpec*** | w | w | w | r | r | r | See [JDF 1.8]. |

### 5.19.3 FileSpec

*Table 5.30: FileSpec Element (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *MimeType* | w | w | w | r | r | r | See [JDF 1.8]. |
| application/pdf | w← | w← | w← | r | r | r | |
| <all other values> | w? | w? | w? | r? | r? | r? | |

*Table 5.30: FileSpec Element (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *URL* | w | w | w | r | r | r | See [Base ICS] for values.<br>**Note:** Involves ***RunList***/@*Directory*, if supplied.<br>**Conformance Test:**<br>See that the file is fetched from the specified location. |

## 5.20 ScreeningParams

*Table 5.31: ScreeningParams Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***ScreenSelector*** | w← | w← | w← | r | r | r | |

### 5.20.1 ScreenSelector

*Table 5.32: ScreenSelector Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *ScreeningFamily* | w← | w← | w← | r | r | r | **Conformance Test:**<br>The selected screening is visible in the output. |
| *ScreeningType* | w← | w← | w← | r | r | r | **Conformance Test:**<br>The selected screening is visible in the output. |

## 5.21 SeparationSpec

*Table 5.33: SeparationSpec Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Name* | w | w | w | r | r | r | The *Manager* SHALL supply a ***ColorPool***/***Color***/@*Name* that matches this value, in order to specify a *Spot Color*, *Highlight Color*, or *Spot Varnish*.<br>**Note:** This attribute is not applicable for *Overcoat Varnish*.<br>**Conformance Test:**<br>The printed output contains the color separations specified. |

## 5.22 SpineTapingParams

*Table 5.34: SpineTapingParams Resource*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *NoOp* | w← | w← | w← | r | r | r | **Conformance Test:** The output has been processed or not according to the value. |

## 5.23 StackingParams

New in ICS 1.8

*Table 5.35: StackingParams Resource*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| ***Disjointing*** Modified in ICS 1.8 | w← | w← | w← | r? | r? | r? | ***Disjointing*** SHALL NOT be specified in a partition. **Modification note:** In ICS 1.8 ***Disjointing*** was moved from ***DigitalPrintingParams*** because it was deprecated from ***DigitalPrintingParams*** in **JDF** 1.8. |

### 5.23.1 Disjointing

*Table 5.36: Disjointing Element (Sheet 1 of 2)*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *Number* | w! | w! | w! | | | | |
| *OffsetDirection* | w← | w← | w← | r | r | r | See [JDF 1.8]. |
| Alternate | w← | w← | w← | r← | r← | r← | "Alternate" SHALL be supported by the *Worker* if the *Device* is able to jog the output stack. **Conformance Test:** Case 1: If uncollated i.e., ***DigitalPrintingParams***/ @*Collate*="None") and ***Disjointing***/@*OffsetAmount* is NOT present, then each stack of 'Sheet 1' SHALL be offset from each stack of 'Sheet 2', etc., in the printed output, as if @*OffsetAmount* = ***ComponentLink***/@*Amount*. **Conformance Test:** Case 2: If collated i.e., ***DigitalPrintingParams***/ @*Collate*="Sheet" and ***Disjointing***/@*OffsetAmount* is NOT present, then each collated copy SHALL be offset from the next copy, in the printed output, as if @*OffsetAmount*= "1". |
| None | w← | w← | w← | r | r | r | **Conformance Test:** The printed output SHALL NOT contain any sheets that are offset from one another. |

*Table 5.36: Disjointing Element (Sheet 2 of 2)*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| ***InsertSheet*** | w← | w← | w← | r | r | r | **Conformance Test:**<br>Case 1: If uncollated (i.e., ***DigitalPrintingParams***/ @*Collate*="None") and ***Disjointing***/@*OffsetAmount* is NOT present, then the inserted *Sheet* SHALL be output between each stack of 'Sheet 1' and each stack of 'Sheet 2', etc., in the printed output, as if as if @*OffsetAmount*=***ComponentLink***/@*Amount*.<br>**Conformance Test:**<br>Case 2: If collated i.e., ***DigitalPrintingParams***/ @*Collate*="Sheet" and ***Disjointing***/@*OffsetAmount* is NOT present, then the inserted *Sheet* SHALL be output between each collated copy and the next copy, in the printed output, as if @*OffsetAmount*= "1".<br>See Section 5.23.2 InsertSheet. |

## 5.23.2 InsertSheet

*Table 5.37: InsertSheet Element*

| NAME OR VALUE LEVEL→ | MANAGER 1 | 2 | 3 | WORKER 1 | 2 | 3 | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| *SheetType* | w | w | w | r | r | r | |
| SeparatorSheet | w← | w← | w← | r | r | r | SHALL be specified in the root node.<br>**Conformance Test:**<br>See @*SheetUsage* values. |
| *SheetUsage* | w← | w← | w← | r | r | r | |
| Header | w← | w← | w← | r | r | r | **Conformance Test:**<br>If @*SheetType*="SeparatorSheet", the printed output SHALL include a separator *Sheet* before each disjointed set. |
| Trailer | w← | w← | w← | r | r | r | **Conformance Test:**<br>If @*SheetType*="SeparatorSheet", the printed output SHALL include a separator *Sheet* after each disjointed set. |
| SlipCopy | w← | w← | w← | r | r | r | **Conformance Test:**<br>If @*SheetType*="SeparatorSheet", the printed output SHALL include a separator *Sheet* between each disjointed set. |
| ***Layout*** | w← | w← | w← | r | r | r | See Section 5.15.2 Layout – InsertSheet. |

## 5.24 StitchingParams

*Table 5.38: StitchingParams Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *NoOp* | w← | w← | w← | r | r | r | **Conformance Test:** The output has been processed or not according to the value. |
| *NumberOfStitches* | w? | w? | w? | r← | r← | r← | |
| *StitchType* | w← | w← | w← | r | r | r | If the *Worker* is able to stitch, then it SHALL support the type of stitching. **Conformance Test:** See Section 1.4.1 Conformance Test Drawings. |
| Corner | w← | w← | w← | r← | r← | r← | **Conformance Test:** The output is stapled in the corner. The orientation of the staple is implementation-dependent. |
| Saddle | w← | w← | w← | r← | r← | r← | **Conformance Test:** The output is stapled in the middle with an implementation dependent number of staples. |
| Side | w← | w← | w← | r← | r← | r← | **Conformance Test:** The output is stapled along the edge with an implementation dependent number of staples. |

## 5.25 TrimmingParams

*Table 5.39: TrimmingParams Resource*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Height* | w← | w← | w← | r← | r← | r← | |
| *NoOp* | w← | w← | w← | r | r | r | **Conformance Test:** The output has been processed or not according to the value. |
| *TrimmingOffset* | w← | w← | w← | r← | r← | r← | |
| *Width* | w← | w← | w← | r | r | r | |

## 5.26 UsageCounter

A ***UsageCounter*** tracks the *Clicks* of a *Device*.

In order for a *Manager* to enable the *Worker* to return a ***UsageCounter*** resource, the *Manager* SHALL 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* SHALL 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* SHALL NOT return any. A *Worker* SHALL return all of its ***UsageCounter*** resources in a ***ResourceInfo*** if all are requested. A *Worker* MAY return a ***UsageCounterLink*** to each of its ***UsageCounter*** resources in the ***AuditPool***/***PhaseTime***, and SHALL return a ***UsageCounterLink*** to each of its ***UsageCounter*** resources in the ***AuditPool***/***ResourceAudit***.

**Note:** A ***UsageCounter*** in [JDF 1.8] 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:** 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.

### 5.26.1 Counting of Countable Events

Each time a *Countable Event* occurs, the *Worker* SHALL increase the value of each counter whose corresponding ***UsageCounter*** is intended to count that *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 value of the **'Units'** category of @*CounterTypes* (see each **'Units'** category value in Table 5.41 UsageCounter sent by a Worker) 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*:

1. This *Countable Event* would increase the value of a ***UsageCounter*** with values "OneSided", "Black", "Color" and "Impressions" because the constructed ***UsageCounter*** "OneSided", "Black" and "Impressions" meets the above criteria.
   **Note:** This example is valid even if the *Worker* supports other ***UsageCounter*** resources with "Usage" or "Media Size" values.
2. This *Countable Event* would increase the value of a ***UsageCounter*** with values "OneSided", "Separation" and "Impressions" because the constructed ***UsageCounter*** "OneSided", "Separation" and "Impressions" meets the above criteria.
   **Note:** This example is valid even if the *Worker* supports other ***UsageCounter*** resources with "Usage" or "Media Size" values.
3. This *Countable Event* would not increase a ***UsageCounter*** with values "TwoSided", "Black", "Color" and "Impressions" or "TwoSided", "Separation" and "Impressions" because it is not possible to construct a ***UsageCounter*** that meets the above criteria because "Media Size" only has the value "TwoSided".

### 5.26.2 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* SHALL be different from the others supplied to the *Process*.
   **Note:** A [JDF 1.8] 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* SHALL 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* SHALL support either *Surface Countable Events* or *Separation Countable Events*; a *Worker* NEED NOT support both types of events. However, each ***UsageCounter*** resource SHALL count either one type or the other, but SHALL NOT count both types.
4. **Conformance 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), then the *Worker*:
   a) SHALL set the ***UsageCounter***/@*CounterTypes* attribute in the *Manager*-supplied ***UsageCounter*** resource without otherwise changing it, and
   b) MAY add a ***PhaseTime*** audit with a ***UsageCounter*** link to the *Manager*-supplied ***UsageCounter*** resource, and
   c) SHALL add a ***ResourceAudit*** audit with a ***UsageCounter*** link to the *Manager*-supplied ***UsageCounter*** resource.
5. **Conformance Test:** If r-Test #4 match fails, the *Worker* SHALL leave the *Manager*-supplied ***UsageCounter*** resource unchanged.
6. **Conformance 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) SHALL select one of its unmatched ***UsageCounter*** resources, and
   b) SHALL 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 ***UsageCounter*** link to the *Manager*-supplied ***UsageCounter*** resource, and
   d) SHALL add a ***ResourceAudit*** audit element with a ***UsageCounter*** link to the *Manager*-supplied ***UsageCounter*** resource.
7. **Conformance Test:** If the *Manager* supplies a ***UsageCounter*** resource with no @*CounterID* and the *Worker* has no additional ***UsageCounter*** resources to return, the *Worker* SHALL leave this *Manager*-supplied ***UsageCounter*** resource and ***UsageCounter*** link 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) SHALL supply a copy of each of its unmatched ***UsageCounter*** resources with ***UsageCounter*** link elements as inputs to the *Process*, and

b) MAY add a ***PhaseTime*** audit with a ***UsageCounter*** link to each *Worker*-supplied ***UsageCounter*** resource, and

c) SHALL 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 ***UsageCounter*** link element to the **JDF**.

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

Table 5.41 UsageCounter sent by a Worker 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.

### 5.26.3 UsageCounter sent by a Manager

*Table 5.40: UsageCounter sent by a Manager*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *CounterID* | | | w? | | | r | See above for additional conformance requirements. |

### 5.26.4 UsageCounter sent by a Worker

*Table 5.41: UsageCounter sent by a Worker (Sheet 1 of 5)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *CounterID* | | | r | | | w← | The name of the ***UsageCounter*** instance as defined by the *Worker*. See above for additional conformance requirements. |

*Table 5.41: UsageCounter sent by a Worker (Sheet 2 of 5)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *CounterTypes* | | | r | | | w← | @*CounterTypes* indicates the *Countable Events* that this counter counts, whether or not these *Countable Events* actually occurred. Each value of @*CounterTypes* belongs to a category, which is shown highlighted below with its values:<br>**Colorant**<br>Black, Blank[1], Color, HighlightColor, Separation[1], Varnish[1]<br>**Media Sides**<br>OneSided, TwoSided<br>**Media Size**<br>LargeSize, NormalSize<br>**Units**[4]<br>Clicks[1], Impressions[1], pt[1]<br>**Usage**[3]<br>Auxiliary, Insert, InsertPrefuser[1], User<br>For @*CounterTypes*, the *Worker* SHALL specify:<br>• Exactly one value from the **'Units'** category.<br>• At least one value from the **'Colorant'** category.<br>• At least one value from the **'Media Sides'** category.<br>• Zero or more values from the **'Media Size'** category.<br>• Zero or more values from the **'Usage'** category.<br>• Zero or more values from each new extension category.<br>See Section 5.26.2 Details of CounterID and CounterTypes Attributes for additional conformance requirements and Appendix A UsageCounter for sample jobs that will be used for certification testing. |

**Notes:**

1. This ICS adds the following @*CounterType* values: "InsertPrefuser", "Separation", "Varnish", "Impressions", "Clicks" and "pt".
2. A **JDF** 1.5 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 [JDF 1.8], but are in this ICS.
3. Removes the "Waste" value from the usage category.
   **Note:** The [JDF 1.8] usage *Category* does NOT include a maintenance value. In order to count maintenance impressions, count against a maintenance job, e.g.: ***DeviceInfo***/@*DeviceOperationMode*="Maintenance", ***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.
4. This ICS adds the **'Units'** category that is not in [JDF 1.8].

*Table 5.41: UsageCounter sent by a Worker (Sheet 3 of 5)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| Auxiliary | | | r | | | w← | Describes a *Countable Event* for an *Auxiliary Sheet*.<br>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.<br>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* SHALL support this value if it supports *Surface Countable Events*. By contrast, a counter that counts *Separation Countable Events* SHALL use the "Separation" colorant value to count the application of a black colorant. |
| Blank | | | r | | | w← | Describes a *Countable Event* where the printer uses no colorant on blank or pre-printed media. A counter MAY Support a "Blank" value as a *Surface Countable Event* or a *Separation Countable Event*, depending on implementation |
| 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".<br>Because this ICS doesn't specify any rules for associating this number with a value of @*CounterTypes*, the *Manager* SHALL NOT give any meaning to the sum or difference of two ***UsageCounter***/@*ActualAmount* "Clicks" values with differing @*CounterID* values.<br>This value is not defined in [JDF 1.8]. |
| Color | | | r? | | | w← | Describes a *Surface Countable Event* where the printer prints with full color (such as CMYK). A color printer SHALL support this value if it supports *Surface Countable Events*. By contrast, a counter that counts *Separation Countable Events* SHALL use "Separation" as the value for @*Colorant* to count the application of each CMYK colorant.<br>"Color" takes precedence over "Black" or "HighlightColor" on a given *Sheet* surface (i.e., the most complex *Process* SHALL be counted).<br>See [PWG-Counter-Std]. |

*Table 5.41: UsageCounter sent by a Worker (Sheet 4 of 5)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| HighlightColor | | | r? | | | w← | Describes a *Surface Countable Event* where the printer prints with a *Highlight Color*, *Spot Color*, or *Spot Varnish*. This *Countable Event* typically occurs when a printer uses a black colorant plus one other colorant, but this rule MAY vary by implementation. See "Black" and "Color" values.<br>A *Worker* for any *Highlight Color* printer SHALL support this value if it supports *Surface Countable Events*. By contrast, a counter that counts *Separation Countable Events* SHALL use "Separation" as the value for @*Colorant* to count the application of each *Spot Color* or *Spot Varnish* colorant. |
| 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.<br>This value is not defined in [JDF 1.8]. |
| Insert | | | r? | | | w← | Describes a *Countable Event* where the printer produces a post-fuser insert *Sheet*. If @*CounterTypes* contains only "Insert", "Blank" and a value from the **'Units'** category, 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 a value from the **'Units'** category, then the counter counts only pre-fuser insert sheets.<br>This value is not defined in [JDF 1.8]. |
| 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*. |
| OneSide | | | r? | | | w← | Describes a *Countable Event* where the printer prints on one side of a *Sheet* with the intention of printing on only one side of a *Sheet*. The *Worker* SHALL NOT use this event to count one side of a duplexed *Sheet*. All printers SHALL support this value. |
| 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*.<br>This value is not defined in [JDF 1.8]. |
| Separation | | | r? | | | w← | Describes a *Separation Countable Event* where the printer prints a layer of any color of toner, ink, *Spot Color*, or *Spot Varnish*. A printer SHALL support this value if it supports *Separation Countable Events*, regardless of whether it prints black only, *Spot Color*, *Spot Varnish* or CMYK. By contrast, a counter that counts *Surface Countable Events* SHALL use the "Black", "HighlightColor", or "Color" colorant value to count the application of all colorants on a Surface.<br>This value is not defined in [JDF 1.8]. |

*Table 5.41: UsageCounter sent by a Worker (Sheet 5 of 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* SHALL NOT use this event to count one side of a simplex *Sheet*. All duplex printers SHALL support this value. |
| User | | | r? | | | w← | Describes a *Countable Event* where the printer prints pages of the document supplied by the **JDF** instance or insert sheets requested by the **JDF** instance where ***InsertSheet***/@*SheetType* = "InsertSheet" or "FillSheet". The *Worker* SHALL also count as "User", any back side of a duplex *Sheet* produced because the **JDF** instance:<br>• changed ***Media***<br>• changed from duplex to simplex after the front side.<br>If the last impression is printed on the front side of a duplex *Sheet*, the *Worker* SHALL either:<br>• count the back side as "User"<br>• 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.<br>This value is not defined in [JDF 1.8]. |
| Waste | | | r? | | | w← | **Note:** This value has been deprecated in [JDF 1.8]. Instead, count "Waste" (and "Good") for ***Media*** by partitioning it with @*Condition*. |
| <all other values> | | | r? | | | w← | A *Worker* MAY include other implementation-defined values for an existing category or a new category.<br>**Conformance Test:**<br>A *Manager* SHALL ignore values that it doesn't Support. |
| *Scope* | | | r? | | | w← | @*Scope* SHALL have a value of "Job". |
| Job | | | r? | | | w← | This ICS covers only job counts. If the *Worker* supplies a ***UsageCounter***, it SHALL supply @*Scope* = "Job" value.<br>**Conformance Test:**<br>Restarts at zero for a new job. |
| *Unit* | | | r? | | | w← | The *Manager* and *Worker* SHALL NOT use @*Unit* to specify units for the attributes of ***UsageCounter*** and ***UsageCounterLink*** that contain *"...Amount"* in their name. Rather @*CounterTypes* specifies the units using one of values from the **'Units'** category values. |

# 6 ResourceLinks

## 6.1 ComponentLink

### 6.1.1 ComponentLink - Cover

*Table 6.1: ComponentLink Element - Cover*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Orientation* | w← | w← | w← | r | r | 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* SHALL also be rotated with the same value.<br>**Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| Rotate0 | w← | w← | w← | r | r | r | **Note:** The spine is positioned along the left edge. |
| Rotate90 | w← | w← | w← | r← | r← | r← | **Note:** The spine is positioned along the bottom edge. |
| Rotate180 | w← | w← | w← | r← | r← | r← | **Note:** The spine is positioned along the right edge. |
| Rotate270 | w← | w← | w← | r? | r? | r? | **Note:** The spine is positioned along the top edge. |
| *ProcessUsage* | w | w | w | r | r | r | **Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| Cover | | w | w | | r | r | |

### 6.1.2 ComponentLink - Exchange

*Table 6.2: ComponentLink Element - Exchange (Sheet 1 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Orientation* | w← | w← | w← | r | r | r | @*Orientation* SHALL be specified in order to change the default coordinate system of the intermediate exchange resource coming into finishing *Processes*.<br>The *Worker* SHALL support **ComponentLink**(Exchange) and @*Orientation* if the *Worker* supports any finishing *Processes*.<br>**Note:** @*Orientation* specifies the logical orientation of the exchange **Component** in relation to the *Process* coordinate system for that *Process* step only.<br>**Conformance Test:**<br>See Section 1.4.1 Conformance Test Drawings. |
| Rotate0 | w← | w← | w← | r | r | r | **Note:** This is the left edge. |

*Table 6.2: ComponentLink Element - Exchange (Sheet 2 of 2)*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| Rotate90 | w← | w← | w← | r← | r← | r← | **Note:** This is the top edge. |
| Rotate180 | w← | w← | w← | r← | r← | r← | **Note:** This is the right edge. |
| Rotate270 | w← | w← | w← | r? | r? | r? | **Note:** This is the bottom edge. |

## 6.1.3 ComponentLink - Output

*Table 6.3: ComponentLink Element - Output*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Amount* | w← | w← | w← | r | r | r | @*Amount* SHALL specify the number of planned copies of the *Final Product*. Exactly one of @*Amount* or ***AmountPool*** SHALL be specified. |
| *Orientation* | w! | w! | w! | | | | @*Orientation* SHALL NOT be specified. |
| ***AmountPool*** | w← | w← | w← | r | r | r | Exactly one of ***AmountPool*** or @*Amount* ***AmountPool*** SHALL be specified. |

### 6.1.3.1 AmountPool

*Table 6.4: AmountPool Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| ***PartAmount*** | w← | w← | w← | r | r | r | See ▸ [Management Information System ICS]. |

### 6.1.3.2 PartAmount

*Table 6.5: PartAmount Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *Amount* | w | w | w | r | r | r | @*Amount* SHALL specify the number of planned copies of the *Final Product* or products that are selected by ***Part***. |
| ***Part*** | w | w | w | r | r | r | See ▸ [Management Information System ICS]. |

### 6.1.3.3 Part

*Table 6.6: Part Element*

| NAME OR VALUE | MANAGER | | | WORKER | | | DESCRIPTION |
|---|---|---|---|---|---|---|---|
| LEVEL→ | 1 | 2 | 3 | 1 | 2 | 3 | |
| *SetIndex* | w! | w! | w? | | | r | @*SetIndex* MAY be specified for multi-set documents such as PDF/VT. |

# A UsageCounter

This appendix shows a number of *Conformance Test* examples. These examples 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 in duplex mode
- Back only in simplex mode

**Note:** In all the examples the "OneSided" only counter is not incremented at all for the "TwoSided" *Sheet* (2nd and 3rd sheets) and the "TwoSided" only counter is not incremented for either of the "OneSided" sheets (1st and 4th sheets).

The table below shows values for ***UsageCounter***/@*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 three rows are with *Surface Countable Events*, the second three rows include blank, and the third three rows are with *Separation Countable Events*.

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

*Table A.1: Duplex Monochrome Printer - Three Sheet Job*

| COUNTER TYPE | FRONT ONLY SIMPLEX | FRONT ONLY DUPLEX | FRONT & BACK | BACK ONLY SIMPLEX | TOTAL (ACTUAL AMOUNT) |
|---|---|---|---|---|---|
| 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 TwoSide 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 three counters that count *Surface Countable Events*, one counter that counts "Blank" events, and two counters that count *Separation Countable Events*. The first column of ▸ Table A.2 Scenarios for Counting Colorants 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:** It is unlikely that a printer would have all of these counters, but they would increment as specified regardless of the other counters in the printer.

*Table A.2: Scenarios for Counting Colorants*

| COUNTER TYPE => | SURFACE COUNTABLE EVENT | | | EITHER | SEPARATION COUNTABLE EVENT | |
|---|---|---|---|---|---|---|
| SCENARIO | BLACK COUNTER | HIGHLIGHT COLOR COUNTER | COLOR COUNTER | BLANK COUNTER | SEPARATION COUNTER | VARNISH COUNTER |
| Black only | 1 | | | | 1 | |
| Black only and *Spot Varnish* | | 1 | | | 2 | |
| Black only and *Overcoat Varnish* | 1 | | | | 1 | 1 |
| Black and one *Spot Color* | | 1 | | | 2 | |
| Black and two *Spot Colors* | | 1 | | | 3 | |
| Black and one *Spot Color* and one *Spot Varnish* | | 1 | | | 3 | |
| Black, one *Spot Color* and *Over-coat Varnish* | | 1 | | | 2 | 1 |
| Blank or pre-printed sheet via any path | | | | 1 | | |
| Full color (CMYK) | | | 1 | | 4 | |
| Full color (CMYK) and *Spot Var-nish* | | | 1 | | 5 | |
| Full color (CMYK) and *Overcoat Varnish* | | | 1 | | 4 | 1 |
| Full color (CMYK) and two *Spot Colors* | | | 1 | | 6 | |
| Full color (CMYK), two *Spot Col-ors* and *Spot Varnish* | | | 1 | | 7 | |
| Full color (CMYK), two *Spot Col-ors* and *Overcoat Varnish* | | | 1 | | 6 | 1 |
| *Spot Colors* only | | 1 | | | 1 | |
| *Overcoat Colors* only | | | | | | 1 |

# B Status Details Values

This appendix defines combinations of the @Status and @StatusDetails attribute values for use within a *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 [JDF 1.8] Appendix C.1 “StatusDetails Supported Strings”, plus some additional status details values and additional combinations of existing values are defined.

The @StatusDetails is defined to be a string in [JDF 1.8], so that multiple values could be supplied by a *Worker*. The values included in [JDF 1.8] 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 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.

## B.1 Status and StatusDetails Attribute Value Pairs

*Table B.1: Status and StatusDetails Attribute Value Pairs (Sheet 1 of 4)*

| STATUS | STATUS DETAILS | DESCRIPTION |
|---|---|---|
| Aborted | | Processing of the *Job* has been halted by a local action, unrecoverable errors, or **JMF** ***AbortQueueEntry***.<br>There is still the possibility for the *Job* to be re-run by manual intervention (rework) returning the node to Waiting or Ready.<br>Status details are unknown, i.e., @StatusDetails is not specified. |
| | AbortedBySystem | The *Job* has been aborted by the *Device*. |
| | JobCanceledByOperator<br>Modified in JDF 1.5 | **Modification Note:** In **JDF** 1.5 using @StatusDetails="JobCanceledByOperator" was moved from @Status="Stopped" to "Aborted". |
| | JobCanceledByUser | The *Job* has been canceled by the *Manager*. |
| Completed | | Processing of the *Job* has run to completion.<br>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.<br>Status details are unknown, i.e., @StatusDetails is not specified. |
| | JobCompletedSuccessfully | The *Job* completed successfully, including producing all of the copies requested. |
| | JobCompletedWithErrors | The *Job* completed, but there are some errors such as incomplete number of copies. |
| | JobCompletedWithWarnings | 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 |

*Table B.1: Status and StatusDetails Attribute Value Pairs (Sheet 2 of 4)*

| STATUS | STATUS DETAILS | DESCRIPTION |
|---|---|---|
| InProgress | | Production processing is being performed on any *Process* step.<br>Status details are unknown, i.e., @*StatusDetails* is not specified. |
| | Good | Good output is being produced by the final *Process* step (whether the *Job* is also streaming and processing). |
| | JobStreaming | Productive processing (RIP, etc.) is taking place where no final output is being produced while data referenced from the **JDF** and possibly the PDL are still being fetched.<br>**Note:** This ICS restricts JobStreaming to not include when output is being produced, since this ICS also restricts the @*StatusDetails* attribute to a single value. When output is being produced, the value of @*StatusDetails* SHOULD be "Good" or "Waste". |
| | Processing | Other productive processing (RIP, etc.) is taking place but no final output is being produced.<br>The *Worker* has received all input data and the job @*Status*/@*StatusDetails* pair is not "InProgress"/"JobStreaming" nor "Waiting"/"JobIncoming". |
| | Waste | Waste output is being produced by the final *Process* step. |
| Ready | | No production or processing has started. The node has not yet entered the TestRun Phase.<br>Because this ICS does not include provisions for "TestRunInProgress", the values of Ready and Waiting MAY be used interchangeably.<br>Status details are unknown, i.e., @*StatusDetails* is not specified. |
| | WaitingForReferencedDataCollector | The *Worker* does NOT model any module prior to that used for collecting referenced data and is waiting for a suitable module to become available. |
| | WaitingForRIP | The Worker does NOT model any module prior to that used to produce raster images and is waiting for a suitable module to become available. |
| | WaitingForMarker | The Worker does NOT model any module prior to that used for marking and inline finishing and is waiting for a suitable module to become available. |
| Setup | | Work is being performed to setup the *Device* to run, but no production or processing is taking place.<br>This does not include any *Process* steps described in the *Combined Digital Printing Node* such as RIP, etc.<br>It may include manual operations such as loading paper.<br>Status details are unknown, i.e., @*StatusDetails* is not specified. |
| | JobIncoming | The referenced data collector module is performing setup for the RIP module by fetching data referenced from the **JDF** after the MIME is unpacked and the **JDF** obtained.<br>New combination defined by this ICS. |
| | MissResources | Manual Operator setup. This SHOULD include an ***EmployeeLink*** to record operator time spent on *Job.*<br>Note gaps in time sequence where *Job* was Waiting but not consuming resources. |

*Table B.1: Status and StatusDetails Attribute Value Pairs (Sheet 3 of 4)*

| STATUS | STATUS DETAILS | DESCRIPTION |
|---|---|---|
| Stopped | | No production or processing was being performed on any *Process* step of the node. All Modules allocated to or occupied by the node were Stopped.<br>Status details are unknown, i.e., @*StatusDetails* is not specified. |
| | CoverOpen | The *Manager* MAY treat the same as the more general InterlockOpen value. |
| | DoorOpen | The *Manager* MAY treat the same as the more general InterlockOpen value. |
| | Failure | *Workers* SHOULD use more specific values of @*StatusDetails* if they are available, i.e., InterlockOpen, OutputAreaFull, PaperJam, or WasteFull. |
| | InputTrayMissing | The *Manager* MAY treat the same as the more general InterlockOpen value. |
| | InterlockOpen | The *Worker* cannot proceed because one or more inter-locks are open indicating the operator is actively working on the *Machine*.<br>The *Worker* MAY supply this general InterlockOpen value or one of the more-specific values, i.e., CoverOpen, DoorOpen, InputTrayMissing or OutputTrayMissing.<br>The *Manager* SHOULD accept both the general value and the more specific values. |
| | MissResources | The *Worker's Machine* has run out of media, ink, staples etc., the output bin is full, or another consumable resource requires human attention.<br>**Note:** The marker is assigned to the *Job* while in this state and other *Jobs* are not able to use the marker.<br>This combination should not to be used for internally piped data underflows; in this case the *Job* would not be Stopped, instead the values of the @*Status*/@*StatusDetails* pair would be either "InProgress"/"Processing" or "InProgress"/"JobIncoming".<br>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 | The *Worker's Machine* has stopped as the output area is full. |
| | OutputTrayMissing | The *Manager* MAY treat the same as the more general InterlockOpen value. |
| | PaperJam | The *Worker's Device* has stopped due to a paper feed error. |
| | Pause | *Workers* SHOULD use more specific values of @*StatusDetails*, e.g. MissResources if available. |
| | WasteFull | The *Worker's Machine* has stopped as the waste area is full. |

*Table B.1: Status and StatusDetails Attribute Value Pairs (Sheet 4 of 4)*

| STATUS | STATUS DETAILS | DESCRIPTION |
|---|---|---|
| Suspended | | Production or 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.<br>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.<br>Status details are unknown, i.e., @*StatusDetails* is not specified. |
| | DocumentAccessError | The *Device* could not access one or more documents passed by reference. The *Job* is Suspended, while other *Jobs* are allowed to run.<br>New combination defined by this ICS. |
| | JobSuspended | The node is Suspended because the ***QueueEntry*** has been Suspended either by the *Device* or the *Manager*.<br>Any **JMF** heartbeat signal SHALL NOT specify ***ModuleStatus***. |
| | MissResources | The *Machine* is out of media, ink, or another consumable item, or an input resource, e.g. ***RunList*** is not available.<br>When a node is MissResources but no modules are "occupied" or "blocked" by this node, then the node is Suspended and not Stopped and no 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 other 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* can proceed in the meanwhile.<br>New combination defined by this ICS. |
| | WaitingForReferencedDataCollector | The *Worker Device* models any module prior to the referenced data collector module.<br>The node is automatically Suspended by the *Worker* because it is waiting behind other *Jobs* for the referenced data collector module and the *Worker* will resume the node when a referenced data collector module becomes available. |
| | WaitingForRIP | The *Worker 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. |
| | WaitingForMarker | The *Worker Device* models any module prior to the marker module.<br>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. |
| Waiting | | No production or processing has started on this node. The node has not yet entered the TestRun phase.<br>Because this ICS does not include provisions for TestRunInProgress, Ready and Waiting MAY be used interchangeably.<br>Status details are unknown, i.e., @*StatusDetails* is not specified. |
| | JobIncoming | The *Worker* is accepting and unpacking the MIME package, but is NOT fetching any assets references, except the **JDF** ticket itself if it is not in the MIME package. |

## B.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:

- ***DeviceInfo*** (for ***Status*** signal messages).
- ***DeviceInfo***/***ModuleStatus*** (for ***Status*** signal messages).
- ***DeviceInfo***/***JobPhase***/***ModuleStatus*** (for ***Status*** signal messages).

Down

*Table B.2: DeviceStatus and StatusDetails Attribute Value Pairs (Sheet 1 of 2)*

| STATUS | STATUSDETAILS | DESCRIPTION |
|---|---|---|
| Down | | The *Device* is Down, but the reason is unknown. |
| | BreakDown | The *Device* has broken down and is not Running. |
| | Repair | The *Device* is undergoing repair. |
| | ShutDown | The *Device* has shut down and is not Running. |
| Idle | | The *Device* is Idle and the status details are unknown. |
| Running | | The *Device* is operating normally. |
| | Processing | Other productive processing (RIP, etc.) is taking place but no final output is being produced. All input data has arrived, i.e., the @*Status*/@*StatusDetails* pair is not "InProgress"/"JobStreaming" nor "Waiting"/"JobIncoming". |
| | Good | Good output is being produced by the final *Process* step. |
| | Waste | Waste output is being produced by the final *Process* step. |
| Setup | | The *Device* is being setup, but the reason is unknown. |
| | Calibrating | The *Device* is being calibrated. |
| | SizeChange | 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 values of the @*Status*/@*StatusDetails* pair would be "Suspended"/"MissResources" nor "Stopped"/"MissResources". |
| | WarmingUp | The *Device* is being warming up. |

*Table B.2: DeviceStatus and StatusDetails Attribute Value Pairs (Sheet 2 of 2)*

| STATUS | STATUSDETAILS | DESCRIPTION |
|---|---|---|
| Stopped | | The *Device* is Stopped, but the reason is unknown. |
| | CoverOpen | The *Manager* MAY treat the same as the more general InterlockOpen value |
| | DoorOpen | The *Manager* MAY treat the same as the more general InterlockOpen value |
| | Failure | The *Worker* SHOULD use more specific values of @*StatusDetails* if available, i.e., InterlockOpen, OutputAreaFull, PaperJam, or WasteFull. |
| | InputTrayMissing | The *Manager* MAY treat the same as the more general InterlockOpen value |
| | InterlockOpen | The *Worker* cannot proceed because one or more inter-locks are open indicating the operator is actively working on the *Machine*.<br>The *Worker* MAY supply this general InterlockOpen value or the more-specific values, i.e., CoverOpen, DoorOpen, InputTrayMissing or OutputTrayMissing.<br>The Manager *SHOULD* accept both the general value and the more specific values. |
| | Maintenance | Because jobs are so easily put on and off a digital press, the node in question would likely be Suspended rather than Stopped. |
| | MissResources | The *Machine* is out of media, ink, or other consumable.<br>This value SHALL NOT be used for internally piped data underflows. In this case the job would not be Stopped, the @*Status*/@*StatusDetails* pair would be "InProgress"/"Processing" or "InProgress"/"JobStreaming".<br>If no additional data was forthcoming because the *Process* step that was causing the underflow was Stopped or Suspended, then those other values of @*Status* would be more appropriate |
| | OutputAreaFull | The *Worker's Machine* has stopped as the output area is full. |
| | OutputTrayMissing | The *Manager* MAY treat the same as the more general InterlockOpen value |
| | PaperJam | The *Worker's Device* has stopped due to a paper feed error. |
| | Pause | The *Worker* SHOULD use more specific values of @*StatusDetails* if available, i.e., MissResources. |
| | WasteFull | The *Worker's Machine* has stopped as the waste area is full. |
| Unknown | | The actual values of @*DeviceStatus* and @*StatusDetails* are unknown, although the *Machine* is accessible. |
| | ControlDeferred<br>Modified in JDF 1.5 | The *Worker* does not know values of @*DeviceStatus* and @*StatusDetails* of the *Machine*, because the *Machine* is not accessible.<br>**Modification Note:** In **JDF** 1.5 using @*StatusDetails*="ControlDeferred" was moved from @*Status*="Stopped" to "Unknown". |

# C References

*Table C.1: References*

| SYMBOLIC NAME | REFERENCED DOCUMENT |
|---|---|
| [Base ICS] | *Base ICS*<br>Version 1.8<br>Date: To be released<br>Produced by: CIP4 Organization<br>Available at: http://www.CIP4.org |
| [IPP STD 1] | *Integrated Printing Protocol/1.1: Model and Semantics*<br>Date: September 2000<br>RFC: 2911<br>Produced by: Internet Engineering Task Force (IETF), Network Working Group<br>Available at: http://www.rfc-editor.org/rfcsearch.html |
| [Integrated Digital Printing ICS 1.5] | *Integrated Digital Printing ICS*<br>Version 1.5<br>Date: November 2019<br>Available at: http://www.CIP4.org |
| [JDF 1.8] | *Job Definition Format Specification*<br>Version 1.8<br>Date: To be released<br>Produced by: CIP4 Organization<br>Available at: http://www.CIP4.org |
| [Messaging ICS] | *Messaging ICS*<br>Version 1.8<br>Date: To be released<br>Produced by: CIP4 Organization<br>Available at: http://www.CIP4.org |
| [Management Information System ICS] | *Management Information System ICS*<br>Version 1.8<br>Date: To be released<br>Produced by: CIP4 Organization<br>Available at: http://www.CIP4.org |
| [PWG-Counter-Std] | *The PWG Candidate Standard 5106.1-2007 - The PWG Standardized Imaging System Counters v1.1*<br>Date: April 2007<br>Produced by: The Printer Working Group<br>Available at: http://www.pwg.org |
| [RFC2911] | *RFC 2911*<br>*Internet Printing Protocol/1.1: Model and Semantics*<br>Date: September 2000<br>Produced by: Internet Engineering Task Force (IETF), Network Working Group<br>Available at: http://www.rfc-editor.org/rfcsearch.html |
| [XPath] | *XML Path Language (XPath) 2.0 (Second Edition)*<br>*Version W3C Recommendation 14 December 2010*<br>Date: 14 December 2010<br>Produced by: World Wide Web Consortium (W3C)<br>Available at: https://www.w3.org/TR/xpath20/ |

CIP4

ORGANIZATION

INTEGRATION THROUGH COOPERATION

CIP4 THANKS ITS PARTNER LEVEL MEMBERS



cip4.org