

Application Note for the  
**Integrated Digital Printing (IDP) ICS**

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**Digital Printing WG**

**Abstract**

The CIP4 JDF Integrated Digital Printing (IDP) Interoperability Conformance Specification (ICS) [IDP-ICS] specifies the Conformance Requirements for a subset of JDF defined as Level 1 Integrated Digital Printing. This subset is useful for black and white and limited color integrated digital printing systems with in-line finishing capabilities. It encompasses production printing IPP semantics [IPP-std].

This version applies to interactions using JDF version 1.2.

As a convenience to the reader, this Application Note for the Integrated Digital Printing (IDP) ICS [IDP-AN] contains all of the Integrated Digital Printing ICS [IDP-ICS] text so that the reader does not need to consult both documents. The IDP ICS text is shown with no highlight like this while Application Note text is highlighted in turquoise like this. In addition, some information from the [Base-ICS] is also copied into this Application Note and highlighted in yellow like this.



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# 1 Introduction

JDF (Job Definition Format) describes a job from conception through delivery. A job ticket can be used to specify the entire workflow or part of the workflow. The Interoperability and Conformance Specification (ICS) for Digital Printing [IDP-ICS] defines subsets of JDF necessary to describe what a JDF producer (JDF *Controller/Agent*) could direct a JDF consumer (JDF Device) to do, such as printing, hole making, folding, imposition, etc.

The CIP4 JDF Specification [JDF1.2] defines all valid JDF and JDF syntax and is available at [www.cip4.org](http://www.cip4.org).

JDF is a very comprehensive job ticket format that allows for many different ways to specify a digital print job. To minimize complexity and to better guarantee interoperability between JDF producers and consumers, this ICS identifies a relatively small subset of JDF for Digital Printing.

This ICS defines a subset of JDF referred to as Level 1. Level 1 is useful for color and black and white integrated digital printing systems with in-line finishing capabilities. It encompasses production printing IPP semantics.

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

See Chapter 1 in [JDF1.2] for an introduction to JDF. Recommended reading:

- 1.1 Background in JDF
- 1.4 Glossary of Terminology
- 1.5 Data Structures
- 1.6 Units

## 1.1 Scope

This ICS defines a subset of JDF referred to as Level 1. Level 1 is useful for black and white and limited color integrated digital printing systems with in-line finishing capabilities. It encompasses production printing IPP semantics [IPP-std].

This application note includes the following:

- A combined Process node that includes the *DigitalPrinting* Process.

This application note does not specify conformance for or restrict any of the following:

- Product Intent, JMF, and Capabilities because they will be included in a future version or covered by another ICS.
- The Device is not required to write or add to a JDF job ticket (it is not an Agent). This includes AuditPool entries and StatusDetails.
- Job submission methods.

Support for color will be added in a future version.

## 1.2 Conformance Requirements

This ICS defines one Conformance Level of Conformance Requirements for defining an Integrated Digital Printing node in a JDF Instance.

To be conformant to this ICS, an *Integrated Digital Printing Controller* MUST satisfy the Conformance Requirements for a Manager in:

- The [Base-ICS] Level 0 or higher
- This ICS Level 1

To be conformant to this ICS, an *Integrated Digital Printer* MUST satisfy the Conformance Requirements for a Worker in:

- The [Base-ICS] Level 0 or higher
- This ICS Level 1

Restrictions that are defined in [Base-ICS] apply and are not explicitly repeated here, except as noted. In the case of Table 8: JDF **Combined Digital Printing Node**, all of [Base-ICS] Table 6: JDF Node has been incorporated. This Application Note is NOT intended to specify any additional conformance requirements above those specified in the [JDF1.2], [Base-ICS], or [IDP-ICS]; if any are found, they MUST be ignored. In case there are any conflicts between this Application Note and the [JDF1.2], [Base-ICS], or [IDP-ICS], those documents take precedence over this Application Note. Similarly, if there are any conflicts between the [IDP-ICS] and the [Base-ICS] or the [JDF1.2], the precedence order in order of decreasing significance is: [JDF1.2], [Base-ICS], and [IDP-ICS]. However, the order for permitting increasing Manager or Worker conformance requirements is the opposite, namely: [JDF1.2], [Base-ICS], or [IDP-ICS]. For example, a requirement to write could be “w?” (indicated by “?” in the EBNF), “w←” in the [Base-ICS], and “w” in the [IDP-ICS], respectively.

Note: The [IDP-ICS] v1.0 does not specify the sector-specific Digital Printing information that [Base-ICS] Level 1 conformance would require, so that a Worker conforming *only* to the IDP ICS won't be providing an updated JDF for use by a [Base-ICS] Level 1 Manager product. However, implementers are encouraged to write the JDF even though IDP ICS doesn't require it and doesn't specify what to write. A future revision to the IDP ICS will specify what to write as a higher level of conformance..

## 1.3 Terminology

This section defines terminology used throughout this document. References to other documents are indicated with square brackets, e.g. [JDF1.2]. For most terms, see the Terminology section in [JDF1.2] and [Base-ICS]. Especially note the significance and meaning of the conformance terms: MUST, MUST NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, NEED NOT, and OPTIONAL as defined in [JDF1.2] section 1.4.1 Conformance Terminology and appearing as all caps in ICS documents. Any conformance term in this Application Note is simply re-stating the conformance that is already specified in some other cited document, since conformance to an Application Note is not meaningful and is not intended. Blue occurrences of these conformance terms are recommendations and are informative only.

can – is able to. This application note uses “could” to mean “is possible”. Note: This application note avoids the use of “can” to mean “may”, since may (or more properly “MAY”) means is an implementation option. See [Base-ICS] section 2, Terminology.

**Combined Digital Printing Node** – A JDF *Combined* node (value of the *Type* Attribute is “*Combined*”) that contains a *Digital Printing* Process and that conforms to the requirements of this ICS.

**Controller/Agent** – as defined by the JDF Specification [JDF1.2] is a JDF Controller/Agent that writes and routes JDF, representing a job, to a *Device*.

**Customer** – a user who purchases a Consumer product or a *Controller/Agent* product from a *Vendor*. It is the Customer who is concerned about Interoperability between *Device* and *Controller/Agent* products of a particular Interface. Some Conformance Requirements of a *Controller/Agent* or *Device* include interactions between the *Controller/Agent* and the Customer or between the *Device* and the Customer. For example, in order for a *Vendor* to claim conformance to an ICS for a *Device*, a Customer MUST be able to configure a default natural language for the *Device* to use.

**Device** – as defined in the JDF Specification [JDF1.2] interprets JDF and executes instructions representing a job.

**Feature** – the parts of an **Interface** that a *Device* supports and that a *Controller/Agent* invokes in order to achieve some well-defined behavior. The semantics of the **Feature** is defined in the Interface standard with reference to [JDF1.2]. Examples of **Features** of (1) an API, (2) a file format, or (3) a network protocol. **Interface** are: (1) functions in an Application Programming Interface (API), (2) an element in an XML file, and (3) an operation or Attribute in a network protocol such as JMF, respectively.

**Integrated Digital Printer** – a *Device* that supports the *DigitalPrinting* Process along with some Prepress Processes and perhaps some Postpress Processes. The term *Worker* refers to the **Integrated Digital Printer** in this ICS.

**Integrated Digital Printing Controller** – a Controller that sends a JDF Instance to an *Integrated Digital Printer*. The term *Manager* refers to the **Integrated Digital Printing Controller** in this ICS.

**JDF Interoperability Conformance Specification (ICS)** – a CIP4 approved document that defines one or more **Interfaces** and/or **Conformance Levels** between entities in the JDF Specification [JDF1.2] and the conformance requirements for a *Controller/Agent* and a *Device* of that **Interface** such that conforming implementations will interoperate.

**Support** – a *Device* implementation **supports** a *Feature*, if the *Device* implementation responds to a request from a *Controller/Agent* for that *Feature* across the **Interface**. Such a response **MUST** be according to the semantics defined in the JDF and ICS specifications. Note: a *Device* **MAY** choose to disable a **Feature** in the *Device*, so that the *Device* implementation no longer **supports** the *Feature*, but that is a *Customer* choice, not a *Vendor* choice.

**Vendor** – a company or organization that produces a product that conforms to the **Interface** defined in an ICS as a *Controller/Agent* or as a *Device* of that **Interface**. Some conformance requirements of a *Controller/Agent* or *Device* include interactions between the **Vendor** and the *Customer*. For example, in order for a **Vendor** to claim conformance to this application note for a *Device*, a **Vendor** **MUST** state the **Conformance Levels** and **Conformance Modules** supported by the *Device* implementation in any claim of conformance to this application note.

### 1.3.1 Other Terminology

This section contains additional definitions.

**Job** – a unit of work that could be considered, at least from some point of view, by itself. Thus what is considered as a job from the point of view of a printing system may be a part of a job from the point of view of a print shop. JDF is concerned with specifying the unit of work that comprises a job and how it is to be accomplished via one or more steps. Typically, a job consists of work done on one or more files, using a set of resources, to produce output.

**Document** – a meaningful unit of information. It may be represented in various ways: for example as a file, as a part of a file, or by printed output from a job. The JDF defined in this specification specifies how input files are Processed to produce output.

**JDF Job Ticket** – a data structure that specifies how a job is to be done. A JDF job ticket is comprised of one or more **JDF nodes**. Each JDF node specifies a step in the performance of the job. A JDF node is represented by an XML element, and as such may have attributes and may contain subelements. Subelements are XML elements that are contained in another element.

**Process** – an entity that performs a unit of work or a step in the job workflow. **Stitching** Processes, **Folding** Processes, **Trimming** Processes, and **LayoutPreparation** Processes, are examples of Processes. A JDF node specifies the unit of work done by one or more Processes.

In addition to JDF nodes that specify the unit of work done by a single Process, JDF also allows nodes that specify a job step that includes work done by two or more distinct Processes. In this case, the output resource(s) of one Process are the input resource(s) to another Process. Such JDF nodes are called combined Process nodes.

**Resources** – objects, such as Media, that are input to or output by Processes. Resources that are input to Processes may be consumed by the Process (e.g., Media for the *DigitalPrinting* Process) or merely used by them (e.g. **Media** for the *LayoutPreparation* Process).

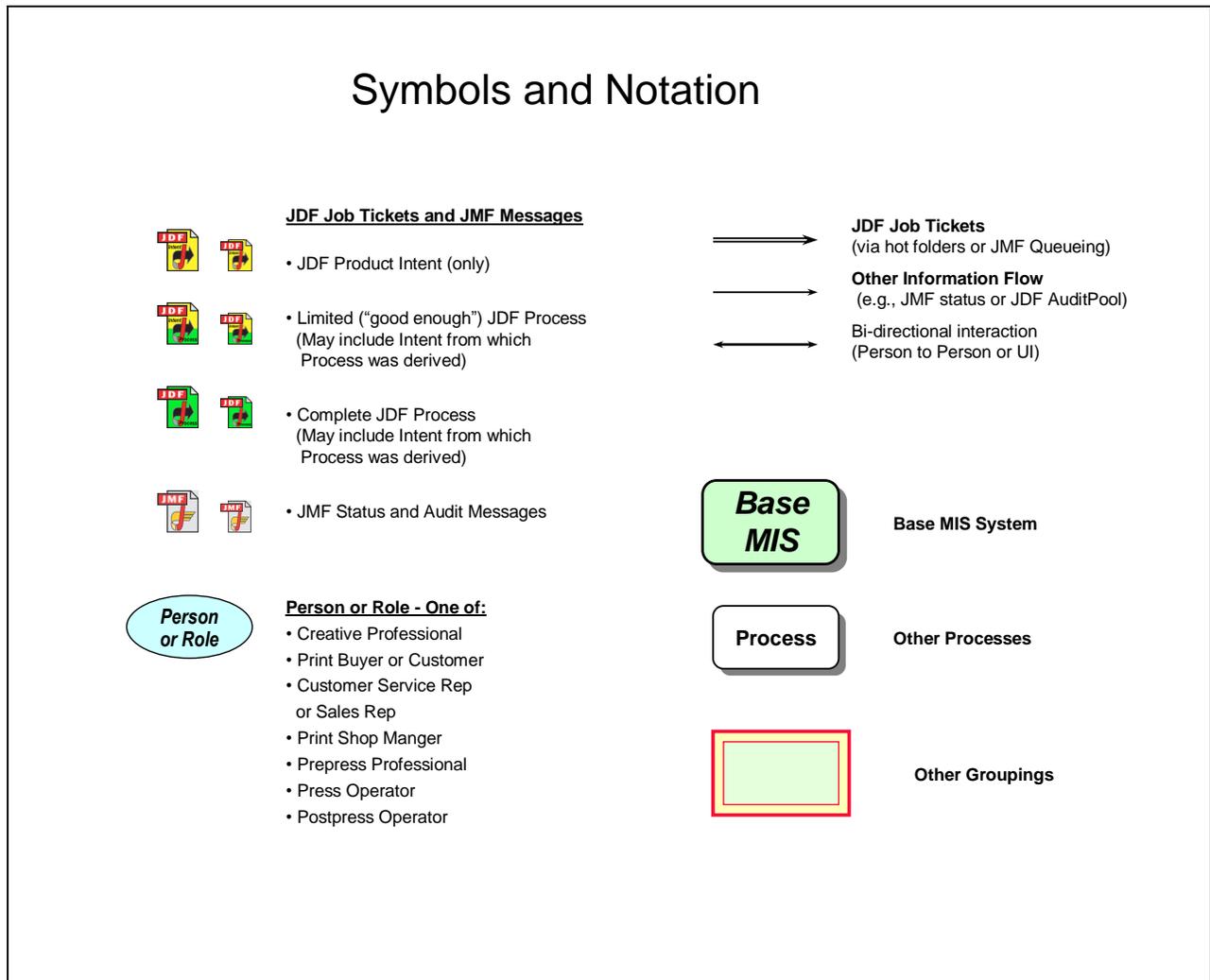
**Page** – a unit of output that is normally imaged on a single contiguous area on the output medium. The page is normally the unit of output to which medium selection, imposition, and a variety of other output-Processing options are applied.

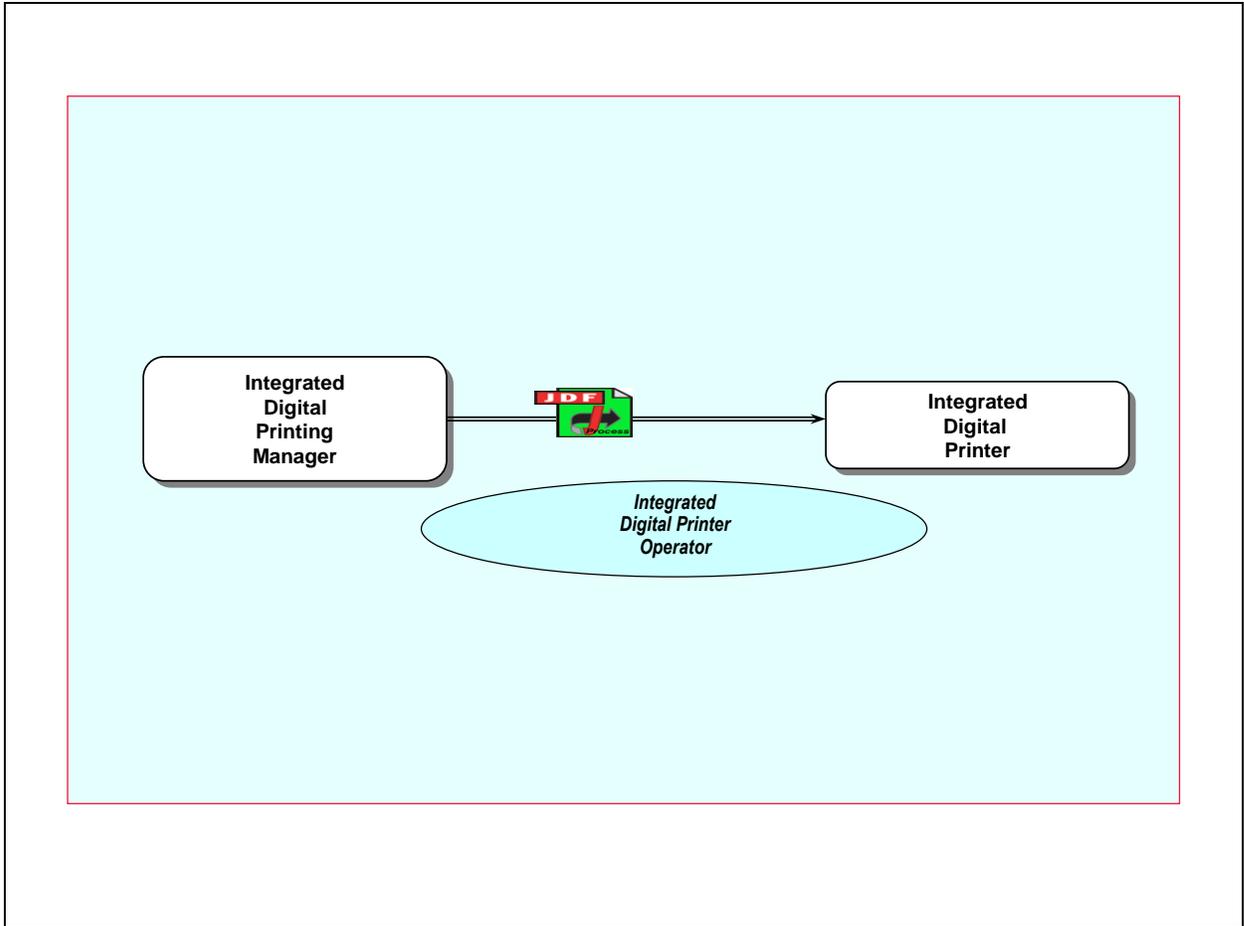
**Sheet** – a unit of a medium, typically a sheet of paper or an area on a continuous roll of roll-fed paper, on which output is printed. Sheets may be cut and/folded after printing. A sheet with no folds typically contains 1 or 2 finished pages; a brochure with one fold inside normally contains 4 finished pages

## 1.4 Reference Model and Digital Printing

Following is a Reference Model diagram that shows the relationship between the MIS and an *Integrated Digital Printer*. This application note describes the interface between the *Integrated Digital Printer Manager* and the *Integrated Digital Printer*.

**Figure 1: Reference Model and Digital Printing**





## 1.5 Overview of JDF

### 1.5.1 What is JDF?

JDF is an extensible, XML-based job ticket format used by the printing industry. It has the ability to unify the Prepress, press, and Postpress aspects of a printing job and provides the means to bridge the communication gap between MIS (Management Information Services) and Production Services. MIS oversees the relationship between all of the units in a workflow and is responsible for planning and controlling the job. Production Services is responsible for the operation of the job. JDF provides a way to describe a job from the time that a customer places the order until the time that the finished product is placed in the customer's hands.

JDF was developed and is maintained by CIP4 (International Cooperation for Integration of Processes in Prepress, Press, and Postpress) which is an international world wide operating standards body whose purpose is to encourage computer based integration of all Processes that have to be considered in the graphics arts industry.

JDF is a vendor-independent XML-based data format. JDF is not a product or application. It is a technology that could be incorporated into a product or application. As an extensible format, it could easily be tailored to meet vendor-specific product requirements and capabilities. JDF does not dictate that a workflow must be constructed in any pre-specified way; its flexibility allows JDF to be used to model custom solutions. JDF is equally as effective with a simple system such as submitting a job to a printer.

See Chapter 2 in [JDF1.2] for an overview of JDF. Recommended reading:

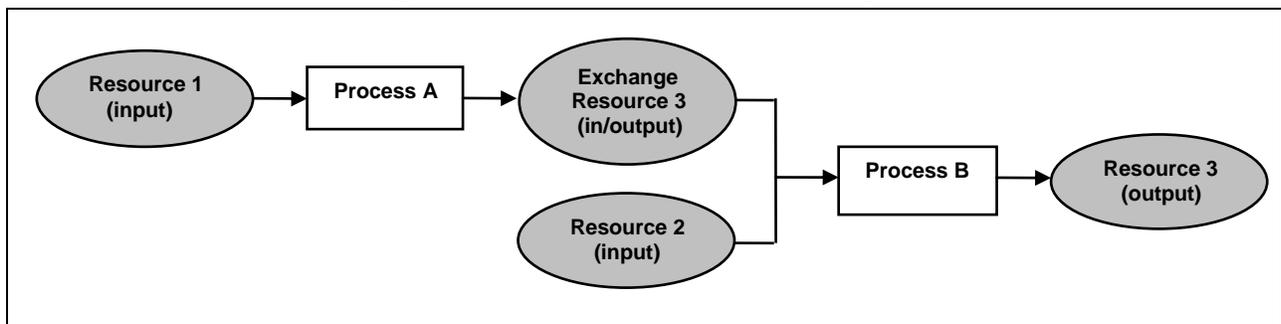
- 2.1 System Components
- 2.2 JDF WorkFlow
- 2.3 Hierarchical Tree Structure and Networks in JDF

## 1.5.2 Elements in a JDF Job Ticket

A JDF node is an XML element that represents an aspect of a job in terms of a Process, such as **Stitching**, **Folding**, or **Trimming**; in terms of a product that contributes to the end result, such as a brochure; or in terms of the combination of the two. A Process is a unit of work or a step in the job workflow. A JDF node that is comprised of multiple Processes is called a combined Process JDF node.

Resources are inputs to and outputs from Processes that provide details or information to the Process or from one Process to another Process. For example, the **StitchingParams** resource is an input to the **Stitching** Process and specifies the number of stitches and the placement of the stitches. The **Component** resource is an output of the **DigitalPrinting** Process and the associated **ComponentLink** specifies how many copies of the job to produce. The order that the Processes are specified in a combined Process JDF node is pertinent because it defines the order that the Processes are to be executed. So if the job is to be stitched before it is folded as in the case of a saddle stitched booklet, then the **Stitching** Process must be specified before the **Folding** Process.

Figure 2: Process and Resource Relationship



A JDF job ticket is an XML document so it requires that the version of XML and the character set encoding be specified.

```
<?xml version="1.0" encoding="UTF-8"?>
```

The Attribute *encoding*="UTF-8" is the default that specifies compressed Unicode which includes ASCII as a subset.

A JDF node is specified as follows:

```
<JDF ID="node ID" Type="pre-defined JDF type or any JDF Process" Types="list of JDF Processes if
combined Process JDF node" Status="Ready" Activation="Active"
xmlns="http://www.cip4.org/JDFSchema_1_1" xmlns:privatens="private XML namespace"
Version="1.2">
```

JDF extensibility is implemented using XML namespaces. The URI for the official JDF XML namespace is [http://www.cip4.org/JDFSchema\\_1\\_1](http://www.cip4.org/JDFSchema_1_1). Private namespaces can be declared and used to extend existing JDF resources by adding private attributes and elements. The namespaces that are to be used by the job ticket are declared in the JDF node and appear as *xmlns:privatens* = "private namespace". Namespaces that contain vendor specific elements, attributes and/or values MUST be declared (see [JDF1.2] section 3.10.1: Namespaces in XML).

The version of JDF that is used to generate the job ticket is specified in the outside JDF node by the *Version* attribute. The version of JDF that is supported by the Integrated Digital Printing ICS is 1.2.

A JDF node has attributes and contains elements. Elements have attributes and contain subelements. Subelements are XML elements that are contained in another element. A JDF node MAY contain any or all of the following elements (according to [JDF1.2]):

- **Comment** - Human readable comment or description of the job ticket. A JDF node MAY contain 0 or more Comment elements.
- **AncestorPool** - Contains 1 or more Ancestor elements and is only required for a spawned job. Spawning is the Process of extracting a JDF sub-node from a job and creating a new, complete JDF document. An Ancestor element reflects the family tree of the spawned job. The root JDF node of a spawned JDF Instance MUST contain 0 or 1 AncestorPool element (see Table 8: JDF Combined DigitalPrinting Node).
- **CustomerInfo** - Information about the customer who ordered the job. A JDF node MUST contain 0 or 1 CustomerInfo elements.
- **NodeInfo** - Information about planned scheduling and message routing. A JDF node MUST contain 0 or 1 NodeInfo elements.
- **ResourceLinkPool** - Links the JDF node to the Resources it uses. Also identifies the Processes each Resource is an input to or output from and whether the Resource is an input or output. A JDF node MUST contain 0 or 1 ResourceLinkPool elements.
- **ResourcePool** - Contains 0 or more Resource elements where a Resource element is something that is consumed or produced. There are many possible Resources defined by JDF, many of which will not be supported by a specific implementation of JDF. A JDF node MUST contain 0 or 1 ResourcePool elements.
- **AuditPool** - Contains post-facto recorded results. A JDF node MUST contain 0 or 1 AuditPool elements.
- **StatusPool** - Describes the status of a JDF node that Processes partitioned Resources. A partitioned Resource is a Resource that has individual nested parts. A JDF node MUST contain 0 or 1 StatusPool elements.
- **JDF** - A nested JDF node. A JDF node MUST contain 0 or more JDF nodes.

### 1.5.3 Structure and Content of a JDF Job Ticket

The actual view of a JDF job ticket is the physical structure or content of the job ticket. Following is a sample JDF job ticket document that contains all of the elements described in the previous section:

**Figure 3: Structure of a JDF Job Ticket**

```
<?xml version="1.0" encoding="UTF-8"?>
<JDF ID="outer node ID" Type="pre-defined JDF type or any JDF Process"
  Types="list of JDF Processes if combined Process JDF node" Status="Ready" Activation="Active"
  xmlns="http://www.cip4.org/JDFSchema_1_1" xmlns:privatens="private XML namespace"
  Version="1.2" ... >
  <Comment ...>
</Comment>
<AncestorPool >
  <Ancestor .../>
  <Ancestor .../>
</AncestorPool>
<CustomerInfo .../>
<NodeInfo .../>
<ResourceLinkPool>
```

```
        <Link for 1st Resource and Processes that use it appear here />
        <Link for 2nd Resource and Processes that use it appear here />
    </ResourceLinkPool>
    <ResourcePool>
        <1st Resource appears here />
        <2nd Resource appears here />
    </ResourcePool>
    <AuditPool>
        <An Audit element appears here />
    </AuditPool>
    <StatusPool>
        <Status="Ready"/>
    </StatusPool>
    <JDF ID="inner node ID" Type="pre-defined JDF type or any JDF Process"
        Types="list of JDF Processes in combined Process JDF node" Status="Ready">
        Elements contained in this nested JDF node appear here. Any of the elements shown above in the
        outside JDF node could appear here.
    </JDF>
</JDF>
```

### 1.5.3.1 Comments in a JDF Job Ticket

There are two types of comments that could appear in a JDF job ticket:

The following notation allows comments to be added inside of the job ticket. These comments aren't available outside of the job ticket. They are just comments to assist anyone reading the JDF in the job ticket.

```
<!-- The following specifies how to print duplex. -->
```

The following is a comment that could be extracted from the JDF job ticket and interpreted by the consumer of the job ticket:

```
<Comment Name="JobDescription">A description of this job. </Comment>
```

## 1.6 Digital Printing Job Ticket

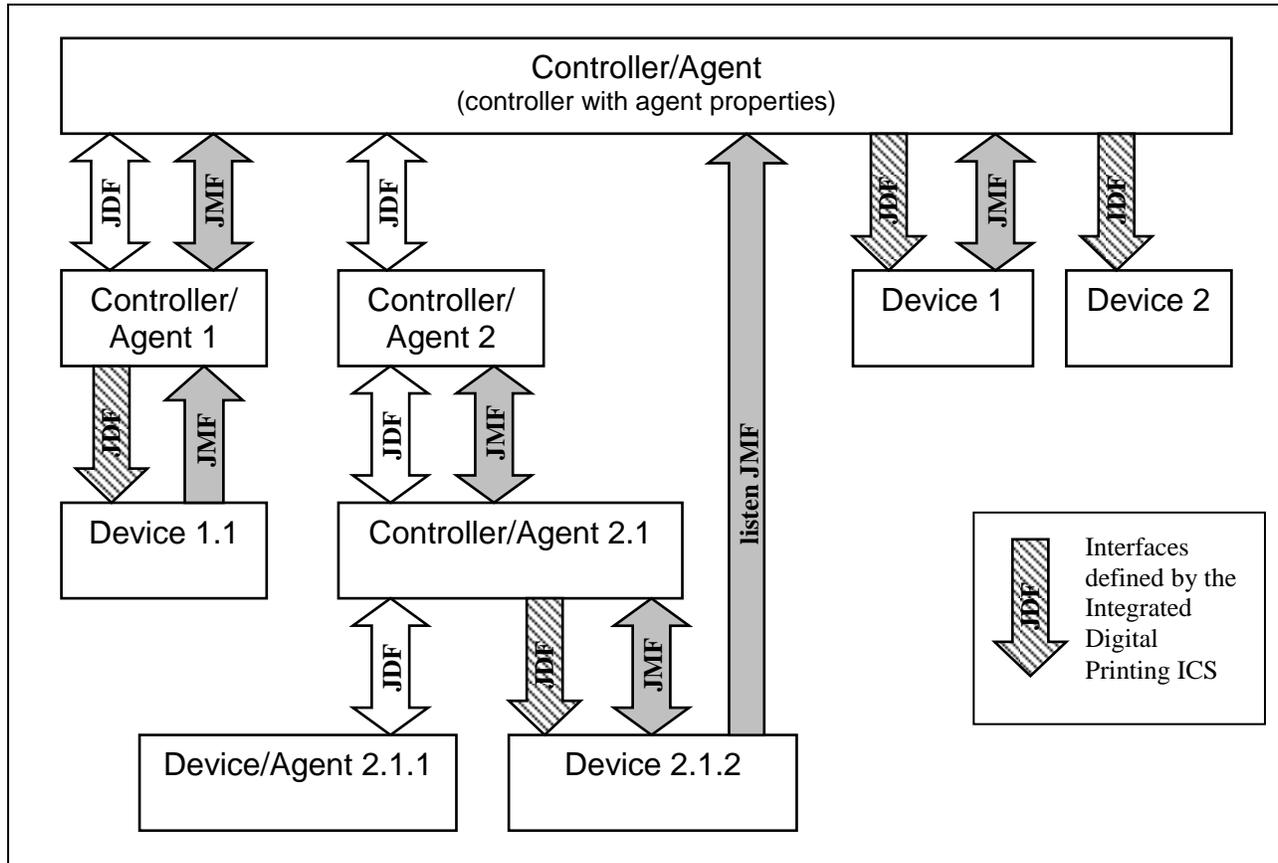
A Digital Printing Job Ticket **MUST** contain a combined Process JDF node (*Types* = "Combined") that contains some of the features described in section 7 Features Supported. The job ticket **MAY** contain JDF that is not described in this application note. In this case if a Device consuming the job ticket is only interested in the features included in this application note, then the Device **MUST** search for the combined Process JDF node and Process it.

For a Device to be in conformance with the Integrated Digital Printing ICS, it must be able to consume and Process all of the JDF that appears in the Integrated Digital Printing ICS for a given conformance level without an error.

## 1.7 Conformance Interface, Producer, and Consumer

The following diagram, derived from the diagram that appears in the JDF Specification [JDF1.2] section 2.1.2.6 System Interaction, shows the hierarchical structure and the interaction of the components in a JDF system.

Figure 4: Example of JDF and JMF workflow interactions



The diagram was modified to show the interfaces that are conformance interfaces for the Integrated Digital Printing ICS. The arrows labeled “JDF” that have been crosshatched show these interfaces. Note that all of the interfaces that are conformance interfaces for the Integrated Digital Printing ICS are interfaces in which a JDF instance is passed from the output of a *Controller/Agent* to the input to a Device.

The Conformance Interface defined in this application note consists of the interface between a *Controller/Agent* that produces a JDF instance and a Device that consumes a JDF instance and that executes a JDF *Combined Process* that includes a *DigitalPrinting* Process as specified by that JDF instance.

A Producer of this Interface is a *Controller/Agent* that uses a JDF instance to specify the execution of a JDF *Combined Process* that includes a *DigitalPrinting* Process by a Device.

A Consumer of this Interface is a Device that consumes JDF instances and that executes a JDF *Combined Process* that includes a *DigitalPrinting* Process as specified by that JDF instance.

## 2 Conformance Rules – JDF Combined Node

This application note specifies a subset of JDF that could be used to enable interoperability when used by a *Controller/Agent* to specify the execution of a *Combined Digital Printing Node*. For Level 1, this application note defines:

- the requirements for a JDF node to be a (conforming) *Combined Digital Printing Node*;
- the requirements for a JDF **Device** to be a (conforming) Digital Printing Device

In defining conformance for a *Combined Digital Printing Node*, this application note defines

- JDF that the *Combined Digital Printing Node* **MUST** contain;
- JDF that the *Combined Digital Printing Node* **MAY** optionally contain.

Any JDF node that contains JDF that is not in either a) or b) does not conform to this application note.

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

A conforming *Integrated Digital Printer* **MUST** execute a *Combined Digital Printing Node*.

### 2.1 Processes of the Combined Node

A *Combined Digital Printing Node* **MUST** be a JDF *Combined* node as specified in [JDF1.2]. For details of the Processes that can be in a Combined Node for this ICS, see Table 1 and Table 2 below and the *Types* Attribute in Table 8: JDF Combined **DigitalPrinting Node**

#### 2.1.1 Sequence of Processes

The following table shows the Processes that are possible successors of other Processes. The Processes listed across the top of the tables are the Processes that are immediate successors of the Processes listed along the left side. An “→” indicates a Successor Process that *MAY immediately* follow the Process in the left column. Each process in the left column *MAY* be *immediately* followed by one of the Successor processes indicated by an “→” in that row. A blank indicates that the successor process **MUST NOT immediately** follow the Process in the left column.

The Processes that a Manager **MUST** include in the value of the *Types* Attribute are in **bold typeface** and **MUST** occur in the order that the **bold typeface** values appear in the first column of the tables.

Example: The *Types* attribute **MUST** begin with *LayoutPreparation* and *Imposition*. According to the table, only one of two possible processes *MAY* immediately follow *Imposition*. They are: *Trapping* (vector) and *Interpreting* as indicated by the two “→” arrows in the second row. If *Interpreting* is selected as the successor of *Imposition*, then according to the table, the possible successor processes to *Interpreting* are *Trapping* (vector) or *Rendering* as indicated in the two “→” arrows in the fourth row. Etc.

**Table 1: Sequencing of Processes – DigitalPrinting and Before**

Process	Possible Immediate Successor Process									
	LayoutPreparation	Imposition	Trapping (vector)	Interpreting	Rendering	ColorCorrection	ColorSpaceConversion	Trapping (raster)	Screening	DigitalPrinting
LayoutPreparation		→								
Imposition			→	→						
Trapping (vector)		→		→	→					
Interpreting			→		→					
Rendering						→	→	→	→	→
ColorCorrection			→	→	→		→	→	→	→
ColorSpaceConversion			→	→	→	→	→	→	→	→
Trapping (raster)									→	→
Screening										→

**Table 2: Sequencing of Processes – DigitalPrinting and After**

Process	Possible Immediate Successor Process							
	DigitalPrinting	Stitching	Folding	Trimming	HoleMaking	CoverApplication	SpineTaping	Approval
DigitalPrinting		→	→	→	→	→	→	→
Stitching		→	→	→	→	→	→	→
Folding		→	→	→	→	→	→	→
Trimming		→	→	→	→	→	→	→
HoleMaking		→	→	→	→	→	→	→
CoverApplication		→	→	→	→			→
SpineTaping		→	→	→	→			→
Approval								

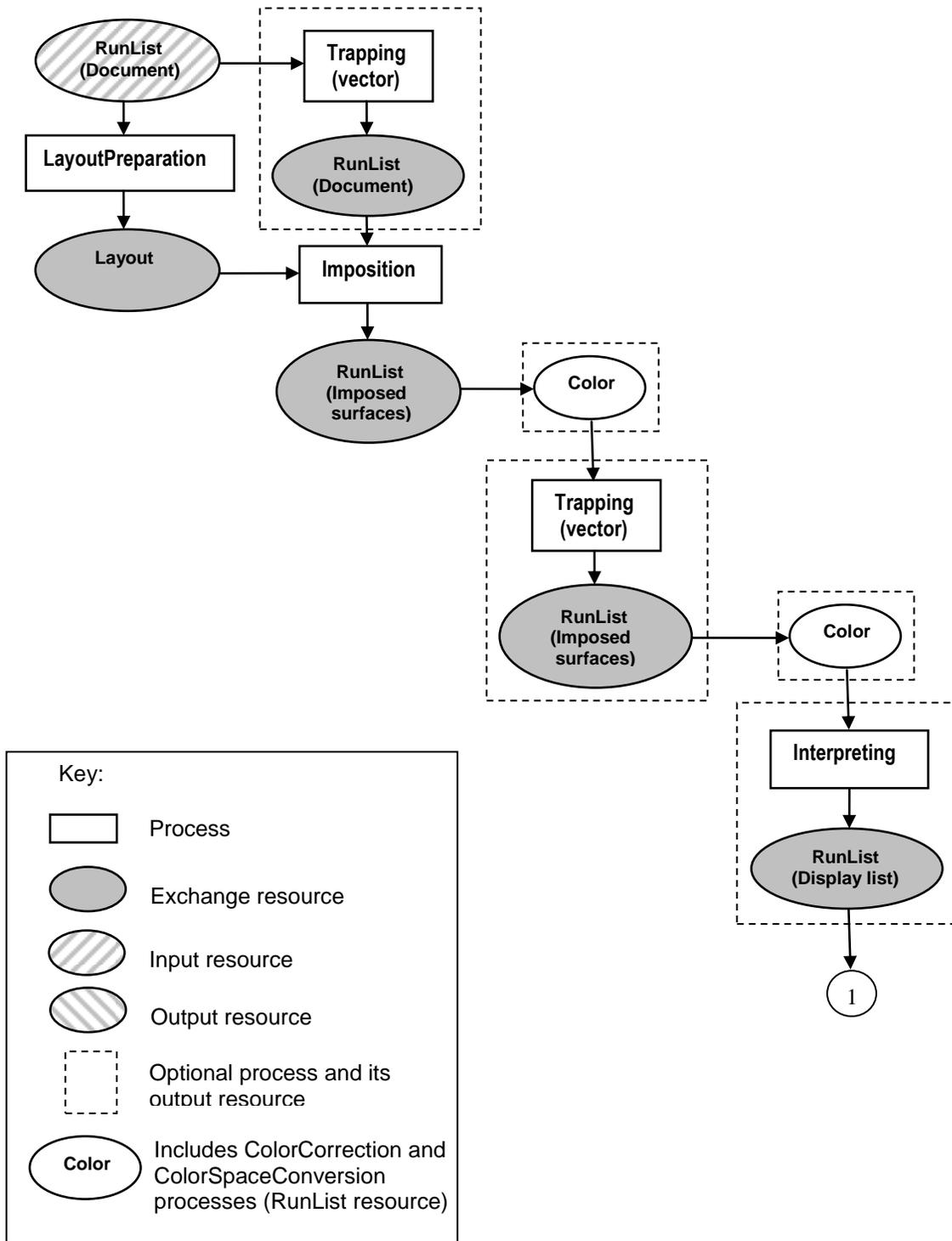
## 2.1.2 Processes and Exchange Resources

Resources represent the “things” that are produced (output) or consumed (input) by Processes. Exchange Resources are resources that are produced by one Process and consumed by another Process within a *JDF Combined Node*.

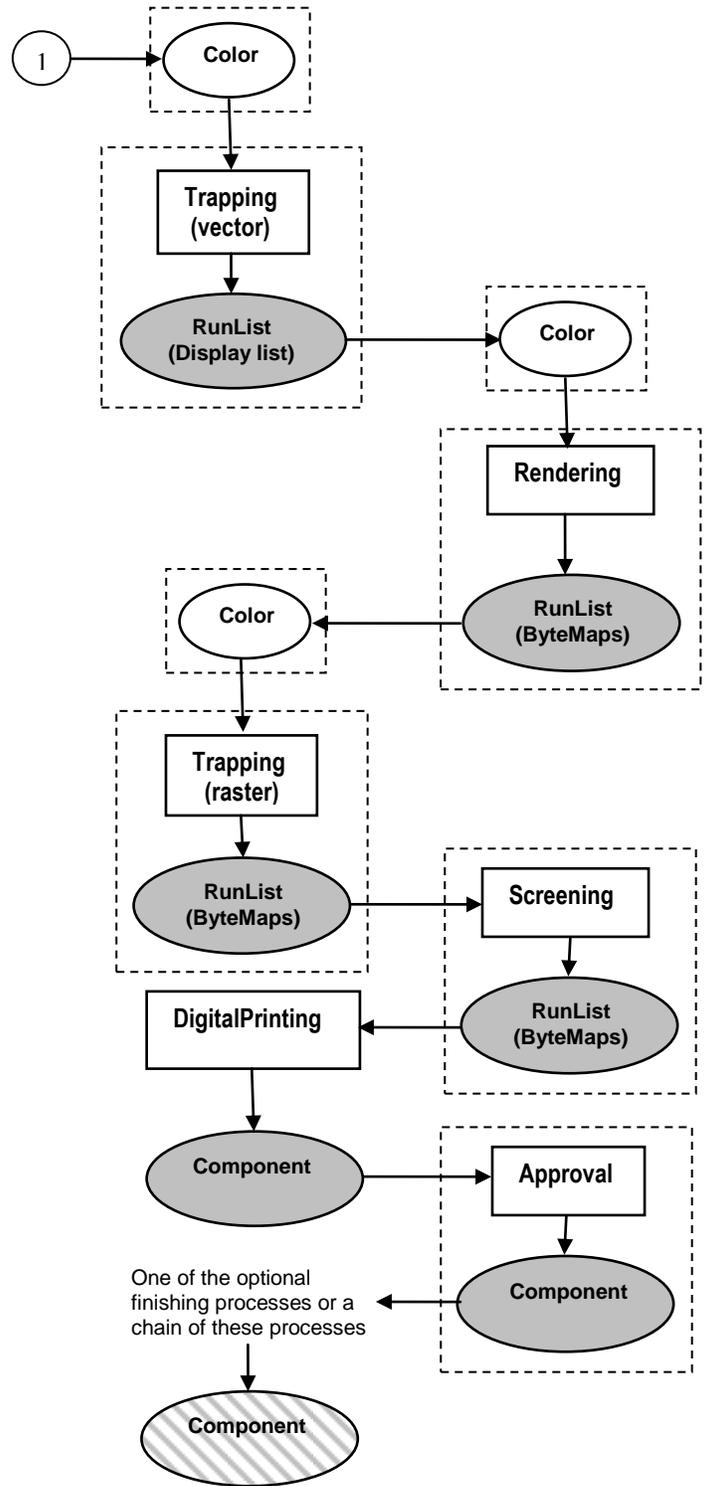
In a *JDF Combined Node* a Resource that is an output from one Process and an input to another (an Exchange resource) does not appear in the JDF Job Ticket, except when the Exchange Resource has a *PipeProtocol* Attribute that is set to "*Internal*".

The following diagram shows the sequence of the Processes in *a Combined Digital Printing Node* and the flow of the content data (Exchange Resources) from one Process to the next.

Figure 5: Process and Resource Flow



**Figure 6: Process and Resource Flow (continued)**



## 2.2 Attributes of the Combined Node

See Table 8: JDF for a list of the *Combined Digital Printing Node* attributes.

### 2.2.1 Types Attribute

The value of the **Types** Attribute for the *Combined Digital Printing Node* consists of the sequence of *Type* values for the included Processes.

The **Types** Attribute of the *Combined Digital Printing Node* MUST contain the *Type* values for the required Processes in Table 4: Supported Processes and their Resources. The *Type* values for each of the required Processes MUST occur in the value of the **Types** Attribute exactly once.

The *Type* values for each of the required Processes MUST occur in the value of the **Types** Attribute in the order in which the Processes are listed in Table 4: Supported Processes and their Resources.

For the required Processes the *Type* values that occur in the value of the **Types** Attribute are:

1. "LayoutPreparation"
2. "Imposition"
3. "Interpreting"
4. "Rendering"
5. "DigitalPrinting"

The corresponding **Types** value for the above would be "*LayoutPreparation Imposition Interpreting Rendering DigitalPrinting*".

If a **Trapping** Process is present, the **Trapping** Process *Type* value MUST occur in the **Types** value.

The **Trapping** Process *Type* value MAY appear in one of four places in the value of the **Types** Attribute:

- a. before "*Imposition*" (for vector-based trapping)
- b. after "*Imposition*" (for vector-based trapping)
- c. after "*Interpreting*" (for vector-based trapping)
- d. after "*Rendering*" (for raster-based trapping)

The **Trapping** Process *Type* value MUST NOT appear at any other place in the value of the **Types** attribute.

If a **Screening** Process is present, the **Screening** Process *Type* value MUST occur in the **Types** value.

For each of the Processes listed in Table 4: Supported Processes and their Resources that is present, the corresponding Process:

- a. The *Type* value of the Process MUST occur in the **Types** value
- b. The *Type* values must occur in the order in which the Processes are executed
- c. The *Type* values MUST occur after the *Type* value of the **DigitalPrinting** Process

## 2.3 Elements of the Combined Node

The following table lists the child elements of a Combined Digital Printing Node as specified in [JDF1.2], and the number of occurrences of each that **MUST** occur in a Combined Digital Printing Node.

A Combined Digital Printing Node **MUST** contain exactly one of the child elements for which the number of occurrences specified is “1” and **MAY** contain “0 or 1” or “0 or more” of the other child elements, as specified in the following table.

**Table 3: Combined Digital Printing Node Child Elements and Number of Occurrences**

JDF node child element	Number of occurrences
AuditPool	0 or 1
Comment	0 or more
CustomerInfo	0 or 1
NodeInfo	0 or 1
ResourcePool	1
ResourceLinkPool	1

## 2.4 Resources of the Combined Node (derived from [JDF1.2])

The conformance statements in this section are derived from [JDF1.2]. The Processes to be executed are defined in the *Types* Attribute of the Combined Digital Printing Node. Resources are elements that are consumed (input) or produced (output) by Processes. The Resources are defined and reside in the **ResourcePool**. The Resources are linked to their respective Processes in the **ResourceLinkPool**.

### 2.4.1 Resource Attributes

A Resource that resides in the **ResourcePool** has a set of attributes. See Table 32: for a list of the Resource attributes.

## 2.4.2 Resources and Processes

The following table lists the input and output resources that are required by or optional for each of the Processes included in a Combined Digital Printing Node.

**Table 4: Supported Processes and their Resources**

Process	Required non-Exchange Input Resources	Optional non-Exchange Input Resources	Optional Intermediate Exchange Resources	Required non-Exchange Output Resources
<b>LayoutPreparation</b>	LayoutPreparationParams RunList (Document)	---	---	---
<b>Imposition</b>	RunList (Document)	---	---	---
<b>Trapping</b> (vector)	TrappingDetails	---	---	---
<b>Interpreting</b>	InterpretingParams	ColorantControl	---	---
<b>Rendering</b>	RenderingParams (see ** below)	---	---	---
<b>ColorCorrection</b>	ColorCorrectionParams	---	---	---
<b>ColorSpaceConversion</b>	ColorSpaceConversionParams	---	---	---
<b>Trapping</b> (raster)	TrappingDetails	---	---	---
<b>Screening</b>	ScreeningParams	---	---	---
<b>DigitalPrinting</b>	DigitalPrintingParams	ColorantControl Media	---	Component (see * below)
<b>Stitching</b>	StitchingParams	---	Component	Component (see * below)
<b>Folding</b>	FoldingParams	---	Component	Component (see * below)
<b>Trimming</b>	TrimmingParams	---	---	Component (see * below)
<b>HoleMaking</b>	HoleMakingParams	---	Component	Component (see * below)
<b>CoverApplication</b>	CoverApplicationParams	---	Component	Component (see * below)
<b>SpineTaping</b>	SpineTapingParams	---	Component	Component (see * below)
<b>Approval</b>	ApprovalParams	---	---	Component ApprovalSuccess

\* **Component** is a required output resource only if it occurs as the output resource of the last Process listed in the Combined Digital Printing Node's Types attribute. **Component** is a non-Intermediate exchange resource for all other Processes for which this note applies.

\*\* The Integrated Digital Printing ICS requires that **RenderingParams** be provided as an input resource for the **Rendering** Process. In [JDF1.2] **RenderingParams** is not a required input resource to the **Rendering** Process.

Because the **LayoutPreparation**, **Imposition**, **Interpreting**, **Rendering**, and **DigitalPrinting** Processes MUST always be present in a Combined Digital Printing Node, the **RunList** and **Component** resources and their respective resource links MUST always be present as well.

Resources that are inputs to or outputs from Processes MUST appear in the ResourcePool. There are also resources that appear in the ResourcePool that are not inputs to or outputs from Processes, but are merely used by another resource that is in the ResourcePool. The **LayoutElement** is an example of such a Resource. It is defined in the ResourcePool and referenced by the **RunList** resource, but is not an input to or output from a Process.

Note that because **LayoutElement** is not an input to or output from a Process, it does not have an associated resource link in the ResourceLinkPool.

### 2.4.3 Resources and ResourcePool

Resources that are required by the Combined Digital Printing node MUST be present in ResourcePool Elements of the Combined Digital Printing node itself or ancestor nodes. Some types of Resources MUST only appear once in the ResourcePool, others MAY appear 0 or multiple times.

### 2.4.4 ResourceLink Elements and ResourceLinkPool

Each Combined Digital Printing node MUST contain a ResourceLinkPool element. A ResourceLink element for each Resource that is an input to or an output from a Process MUST appear in the ResourceLinkPool. The ResourceLink elements also define whether the resources are inputs (consumed) or outputs (produced) and the Processes they are inputs to or outputs from.

If a Resource is an input to a Process, then the ResourceLink for the Resource MAY have a *CombinedProcessIndex* Attribute, The *CombinedProcessIndex* Attribute is an integer that is the zero-based index into the Combined Digital Printing Node's *Types* attribute. It identifies the Processes to which the Resource is an input. For example, as shown below, the *CombinedProcessIndex* for RunListLink MAY have a value of "0 1", because the **RunList** resource is an input to both the **Layout Preparation** and **Imposition** Processes.

```
...
<RunListLink rRef="RL" Usage="Input" CombinedProcessIndex="0 1" />
...
```

In most cases it is possible to unambiguously determine the Process that a resource is an input to. In these cases it is not necessary to specify the *CombinedProcessIndex*.

- A *CombinedProcessIndex* is not required to (MAY) be specified for a ResourceLink under the following conditions:
  1. If a Process requires an input Resource and one of its predecessor Processes is able to provide an intermediate ResourceLink, then the Process MUST use that intermediate ResourceLink.
  2. If a Process requires an input Resource and none of the predecessor Processes are able to provide an intermediate ResourceLink, then the Process MUST be able to unambiguously determine which ResourceLink in the ResourceLinkPool to use.
  3. If the input resource is an optional input to the Process and it is not ambiguous as to which Process the resource is an input to.
- A *CombinedProcessIndex* MUST be specified for a ResourceLink under the following conditions:
  1. If the Process requires an input Resource and it cannot unambiguously determine the required ResourceLink in the ResourceLinkPool to use.
  2. If the input Resource is an optional input to the Process and it is ambiguous as to which Process the resource is an input to.

If the *CombinedProcessIndex* is specified for a ResourceLink, then the Process identified MUST use the Resource for that ResourceLink as the input resource even if a predecessor Process provides an intermediate ResourceLink.

If there is a ComponentLink with the Usage Attribute set to "Output" and the *CombinedProcessIndex* Attribute is not present, then this ComponentLink is for a **Component** that is an output resource of the last Process in the Combined Digital Printing Node.

The *rRef* Attribute of each ResourceLink element references a Resource that is defined in the ResourcePool.

In the following example, the ComponentLink element is located in the ResourceLinkPool and uses the *rRef* Attribute to reference the **Component** Resource that is defined in the ResourcePool and has an *ID* of "Amount".

```
...
<ResourceLinkPool>
```

```

    <ComponentLink rRef="Amount" Usage="Output" Amount="5" />
    ...
  </ResourceLinkPool>
  <ResourcePool>
    <Component ID="Amount" Class="Quantity" Status="Unavailable"
      ComponentType="FinalProduct" />
    ...
  </ResourcePool>
  ...

```

Only those Resources that appear in the `ResourceLinkPool` MUST be used when the job is Processed. So if there are Resources defined in the `ResourcePool` that should be inputs to or outputs from the Processes specified in the `Types` Attribute for the JDF node, these Resources must each have a `ResourceLink` in the `ResourceLinkPool` or they will not be used.

There is a list of all possible `ResourceLink` Elements that could exist in the `ResourceLinkPool` supported by the Integrated Digital Printing ICS. It is possible that some of the Processes supported by the Integrated Digital Printing ICS may not be included in the job ticket because the function is not necessary or is not supported by the product. Thus, the Resources required by that Process are not be defined in the `ResourcePool`, and the `ResourceLink` for that Resource MUST NOT appear in the `ResourceLinkPool`. For example, if the job is not to be stitched, the **Stitching** Process is not needed. "*Stitching*" MUST not appear in the `Types` Attribute of the JDF node, there MUST not be a **StitchingParams** resource, and a `StitchingParamsLink` MUST NOT appear in the `ResourceLinkPool`.

A `ResourceLink` element with the `Usage` Attribute set to "*Input*", the `Orientation` Attribute set to the desired rotation, and the corresponding `ComponentLink` having the `PipeProtocol` Attribute set to "*Internal*" is used in a Combined Digital Printing node to change the orientation of a physical resource. `ComponentLink` is the only intermediate `ResourceLink` element that is supported in this application note. Specifying the `Orientation` Attribute for `ComponentLink` causes the orientation of the media to be changed prior to execution of the Process that the `ComponentLink` is an input to. A `ComponentLink` with the `Usage` Attribute set to "*Output*" and the `CombinedProcessIndex` set to the predecessor Process must also be specified.

Following is an example of an intermediate `ComponentLink` that specifies that stitching is to occur in the upper right corner of the sheets. The left reference edge is the default if an intermediate `ComponentLink` with the `Orientation` Attribute is not specified for a Process. In the following example the `Orientation` Attribute is set to `Rotate90` so that the sheets will be rotated 90 degrees counterclockwise before the **Stitching** Process is executed.

```

...
<JDF ID="J1" Type="Combined" Types="LayoutPreparation Imposition Trapping Interpreting Rendering
  Screening DigitalPrinting Stitching Folding Trimming HoleMaking CoverApplication
  SpineTaping Approval" ... >
...
  <ResourceLinkPool>
    ...
    <ComponentLink rRef="StitchingOrientation" Usage="Output"
      CombinedProcessIndex="6" />
    <ComponentLink rRef="StitchingOrientation" Usage="Input"
      CombinedProcessIndex="7" Orientation="Rotate90" />
    <StitchingParamsLink rRef="StitchingParams" Usage="Input"
      CombinedProcessIndex="7" />
    ...
  </ResourceLinkPool>
  <ResourcePool>
    ...
    <Component ID="StitchingOrientation" ComponentType="PartialProduct"
      Status="Available"
      PipeProtocol="Internal" />

```

```

        <StitchingParams ID="StitchingParams" Class="Parameter" Status="Available"
            StitchType="Corner" NumberOfStitches="1" Angle="0" />
        ...
    </ResourcePool>
    ...
</JDF>

```

## 2.5 Example

The structure and content of a Digital Printing Job Ticket are shown as follows. The specific order of the elements belonging to a Combined Digital Printing Node, the resources listed in the **ResourcePool**, and the resource links in the **ResourceLinkPool** is not required by JDF. Only a subset of JDF Processes and JDF Resources (as defined in this application note) is supported in a Combined Digital Printing Node, all of which are listed below. Although all of the Processes and Resources that are supported by the Combined Digital Printing Node are listed below, it is unlikely that any one-job ticket will contain all of them.

**Figure 7: Structure of a Digital Printing Job Ticket**

```

<?xml version="1.0" encoding="UTF-8" standalone="yes" ?>
<JDF ID="J1" Category="DigitalPrinting" Type="Combined" Types="LayoutPreparation Imposition
    Trapping Interpreting Rendering ColorCorrection ColorSpaceConversion Screening
    DigitalPrinting Stitching Folding Trimming HoleMaking CoverApplication SpineTaping
    Approval" Status="Ready" Activation="Active"
    xmlns="http://www.cip4.org/JDFSchema_1_1" xmlns:privatens="private XML
    namespace" Version="1.2" ... >
    <Comment ...>
    </Comment>
    <CustomerInfo ... />
    <NodeInfo ... />
    <ResourceLinkPool>
        <RunListLink rRef="ID of RunList resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for LayoutPreparation and
                Imposition" />
        <LayoutPreparationParamsLink rRef="ID of LayoutPreparationParams resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for LayoutPreparation" />
        <TrappingDetailsLink rRef="ID of TrappingDetails resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for Trapping" />
        <ColorantControlLink rRef="ID of ColorantControl resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for Trapping, Interpreting, and/or
                DigitalPrinting" />
        ... additional ColorantControlLink elements
        <InterpretingParamsLink rRef="ID of InterpretingParams resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for Interpreting" />
        <RenderingParamsLink rRef="ID of RenderingParams resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for Rendering" />
        <ColorCorrectionParamsLink rRef="ID of ColorCorrectionParams resource" ...
            Usage="Input"
            CombinedProcessIndex="index into Types for ColorCorrection" />
        <ColorSpaceConversionParamsLink
            rRef="ID of ColorSpaceConversionParams resource" ...

```

```

        Usage="Input"
        CombinedProcessIndex="index into Types for ColorSpaceConversion" />
<ScreeningParamsLink rRef="ID of ScreeningParams resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for Screening" />
<ComponentLink rRef="ID of output Component for DigitalPrinting Process or last
finishing Process" ...
    Usage="Output"
    CombinedProcessIndex="index into Types for DigitalPrinting Process or last
finishing Process" />
<DeviceLink rRef="ID of Device resource" ...
    Usage="Input" />
<MediaLink rRef="ID of Media resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for DigitalPrinting" />
... additional MediaLink elements
<DigitalPrintingParamsLink rRef="ID of DigitalPrintingParams resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for DigitalPrinting" />
<ComponentLink rRef="ID of input Component for Stitching Process"
    Usage="Output"
    CombinedProcessIndex="index into Types for predecessor of Stitching Process"
    />
<ComponentLink rRef="ID of input Component for Stitching Process "
    Orientation="transformation of the orientation" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for Stitching Process" />
<StitchingParamsLink rRef="ID of StitchingParams resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for Stitching" />
<ComponentLink rRef="ID of input Component for Folding Process"
    Usage="Output"
    CombinedProcessIndex="index into Types for predecessor of Folding Process"
    />
<ComponentLink rRef="ID of input Component for Folding Process"
    Orientation="transformation of the orientation" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for Folding Process" />
<FoldingParamsLink rRef="ID of FoldingParams resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for Folding" />
<TrimmingParamsLink rRef="ID of TrimmingParams resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for Trimming" />
<ComponentLink rRef="ID of input Component for HoleMaking Process"
    Usage="Output"
    CombinedProcessIndex="index into Types for predecessor of HoleMaking
Process" />
<ComponentLink rRef="ID of input Component for HoleMaking Process"
    Orientation="transformation of the orientation" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for HoleMaking Process" />
<HoleMakingParamsLink rRef="ID of HoleMakingParams resource" ...
    Usage="Input"
    CombinedProcessIndex="index into Types for HoleMaking" />
<ComponentLink rRef="ID of input Component for CoverApplication Process"

```

```

        Usage="Output"
        CombinedProcessIndex="index into Types for predecessor of CoverApplication
        Process" />
    <ComponentLink rRef="ID of input Component for CoverApplication Process"
        Orientation="transformation of the orientation" ...
        Usage="Input"
        CombinedProcessIndex="index into Types for CoverApplication Process" />
    <CoverApplicationParamsLink rRef="ID of CoverApplicationParams resource" ...
        Usage="Input"
        CombinedProcessIndex="index into Types for CoverApplication" />
    <ComponentLink rRef="ID of input Component for SpineTaping Process"
        Usage="Output"
        CombinedProcessIndex="index into Types for predecessor of SpineTaping
        Process" />
    <ComponentLink rRef="ID of input Component for SpineTaping Process"
        Orientation="transformation of the orientation" ...
        Usage="Input"
        CombinedProcessIndex="index into Types for SpineTaping Process" />
    <SpineTapingParamsLink rRef="ID of SpineTapingParams resource" ...
        Usage="Input"
        CombinedProcessIndex="index into Types for SpineTaping"/>
    <ApprovalParamsLink rRef="ID of ApprovalParams resource" ...
        Usage="Input"
        CombinedProcessIndex="index into Types for Approval" />
    <ApprovalSuccessLink rRef="ID of ApprovalSuccess resource" ...
        Usage="Output"
        CombinedProcessIndex="index into Types for Approval" />
</ResourceLinkPool>
<ResourcePool>
    <LayoutElement ... />
    ... additional LayoutElement resources
    <RunList ... >
        <LayoutElementRef ... />
    </RunList>
    <LayoutPreparationParams ...
    />
    <TrappingDetails ... />
    <ColorantControl .../>
    ... additional ColorantControl resources
    <InterpretingParams.../>
    <ColorCorrectionParams ... />
    <ColorSpaceConversion ... />
    <RenderingParams .../>
    <ScreeningParams ... />
    <Component
        ID="ID for output Component of DigitalPrinting Process or last finishing
        Process"... />
    <Device ... />
    <Media ... />
    ... additional Media resources
    <DigitalPrintingParams ... >
        <MediaRef ... />
    </DigitalPrintingParams>
    <Component ID="ID for input Component of Stitching Process" .../>
    <StitchingParams ... />
    <Component ID="ID for input Component of Folding Process" .../>

```

```

        <FoldingParams ... />
        <TrimmingParams ... />
        <Component ID="ID for input Component of HoleMaking Process" .../>
        <HoleMakingParams ... />
        <Component ID="ID for input Component of CoverApplication Process" .../>
        <CoverApplicationParams ... />
        <Component ID="ID for input Component of SpineTaping Process" .../>
        <SpineTapingParams ... />
        <ApprovalParams ... />
        <ApprovalSuccess ... />
    </ResourcePool>
    <AuditPool>
        <Created ... />
        <Modified ... />
        ... additional Modified elements
    </AuditPool>
</JDF>

```

According to [JDF1.2], the Processes listed above, as the values for the JDF node's *Types* Attribute are the Processes that MUST be executed. If the work performed by a Process is not to be performed, the Process MUST not appear as a value for the *Types* Attribute and resources MUST not be defined in the *ResourcePool* or *ResourceLinkPool* for that Process. For example, if the job is not to be stitched, the **Stitching** Process MUST not appear as a value for *Types*, and **StitchingParams** MUST not appear in the *ResourcePool* or *StitchingParamsLink* in the *ResourceLinkPool*.

The order of the Processes listed in the JDF node's *Types* Attribute is significant because it is the order that the Processes MUST be executed, which is the order that the work will be performed (for example, **Stitching** MUST occur before **Folding** as shown above). The order is not significant for commutative Processes. Commutative Processes when executed produce the same result regardless of the order in which the Processes are executed. For example, if the *Types* Attribute contains **HoleMaking** and **Stitching** and the result is the same as if **Stitching** is listed before **HoleMaking**, then the Device could execute the **Stitching** Process before the **HoleMaking** Process.

Vector **Trapping** is an example of a Process that could be executed in one of multiple places. If a Device is only able to perform the vector **Trapping** Process in one place and the result is the same as if the **Trapping** Process were specified in another place, then the Device is free to perform vector trapping in an order other than what is specified in the *Types* Attribute.

In a Combined Digital Printing Node the output Resource of one Process could be the input Resource to another Process; this type of Resource is called an exchange Resource. It is important to note that when a Resource is an exchange Resource, a corresponding *ResourceLink* MUST NOT appear in the *ResourceLinkPool*, unless the *ResourceLink* is a link for an intermediate exchange Resource. Two links for an intermediate exchange Resource MUST be present in the *ResourceLinkPool* when it is necessary to specify information that is only specified in the link for the exchange resource (*Orientation* for example). An example of this concept in [IDP-ICS] is specifying the input *ComponentLink/@Orientation* to change the orientation of the Component. The *Usage* Attribute of one of the links for an intermediate exchange Resource MUST be set to "Input" and the *Usage* Attribute for the other link MUST be set to "Output". A *ResourceLink* for a Resource that is not an exchange resource MUST appear in the *ResourceLinkPool* if the Processes that it is an input to or output from are listed in the JDF node's *Types* attribute.

### 3 Conformance Tables – Processes

See Appendix A “How to Read ICS Documents” in [Base-ICS] for an explanation of the table format and the codes used to specify conformance.

#### 3.1 Combined Node – Digital Printing

This section specifies Processes that a conforming implementation supports.

The tables in this section, section 4 and section 5 follow the format as defined in the [Base-ICS], except in the following cases.

1. The lines following the table caption in [IDP-AN] may contain a “For Processes” line that lists Processes that consume or produce the Element or Resource described by the table.
2. The lines following the table caption in [IDP-AN] may contain a “Features” line that lists features that the Element or Resource supports. An Element or Attribute within the table has the features specified by the Features line below the table caption unless its row has a “Features” line. Such a “Features” line specifies the features for the row. An Attribute Value has the features of its Attribute unless its row has a “Features” line.
3. If the “Features” line or the “for Processes” line contains an Element, Resource or Process name in parenthesis, then the following features pertain to the referenced Element, Resource or Process. Such Elements corresponds to the Element or Resource in the “Referenced by” line above or the Process in the “Input to” or “Output from” line above. For example, if the following lines are present below a table caption:

**Referenced by:** PartAmount, RunListLink  
**For Processes:** (PartAmount) *DigitalPrinting, Stitching*  
 (RunListLink) *LayoutPreparation, Imposition*  
**Features:** (PartAmount) Stapling-and-Stitching, Folding,  
 (RunListLink) Range-of-Pages-to-Output

The above means PartAmount is for *DigitalPrinting, Stitching, Stapling-and-Stitching, and Folding*;  
 RunListLink is for *LayoutPreparation, Imposition and Range-of-Pages-to-Output*

The following 3 tables specify the input, output, and intermediate Resources (respectively) that [IDP-ICS] supports.

**Table 5: Supported Input Resources**  
**Features:** see each row in the table

Name	Manager			Worker			Description
	Level →	1	2	3	1	2	
ApprovalParams	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Approval". See Table 34: ApprovalParams <b>Features:</b> Approval
Colorant Control	w←			r			MUST NOT appear more than once. If present, MUST be an input to both <i>DigitalPrinting</i> and <i>Interpreting</i> . See Table 38: ColorantControl <b>Features:</b> Spot-Color, Process-Color-Model

Name	Manager			Worker			Description
	Level →	1	2	3	1	2	
ColorCorrectionParams	w←			r			MUST NOT appear more than once. MUST be present if JDF/@Types includes "ColorCorrection". See Table 40: ColorCorrectionParams
ColorSpaceConversionParams	w←			r			MUST NOT appear more than twice. MUST be present if JDF/@Types includes "ColorSpaceConversion". See Table 41: ColorSpaceConversionParams
CoverApplicationParams	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "CoverApplication". See Table 47: CoverApplicationParams <b>Features:</b> Binding
Device	w←			r			According to [JDF1.2] the device id (name of the device) of the Worker executing the JDF node MUST match at least the value of Device/@DeviceID in order to execute this JDF node. See [JDF1.2] section 4.2.1. This Application Note strongly recommends that at most one Device input resource be specified as input resource to the combined process node. [JDF1.2] doesn't explicitly specify the meaning for multiple Device resources. See Table 48: Device <b>Features:</b> Destination-or-Physical-Printer-Requested
DigitalPrintingParams	w			r			MUST appear once. See Table 49: DigitalPrintingParams <b>Features:</b> Collate, Input-Tray-Name, Jog-Offset, Margins, Output-Bin-Name, Page-Delivery, Proof-Print
FoldingParams	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Folding". See Table 54: FoldingParams <b>Features:</b> Folding
HoleMakingParams	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "HoleMaking". See Table 55: HoleMakingParams <b>Features:</b> Punching-and-Hole-Making

Name	Manager			Worker			Description
	Level →	1	2	3	1	2	
<b>InterpretingParams</b>	w			r			MUST appear once. See Table 57: InterpretingParams <b>Features:</b> Print-Quality
<b>LayoutPreparationParams</b>	w			r			MUST appear once. See Table 60: LayoutPreparationParams <b>Features:</b> Covers, Fit-Policy, Image-Shift-Back-Side, Image-Shift-Front-Side, Input-Tray-Name, Interleave-Sheets, Media, Number-Up, Start-Separator/Slip-End-Sheets
<b>Media</b>	w←			r			MAY appear more than once. See Table 63: Media <b>Features:</b> Covers, Media
<b>RenderingParams</b>	w			r			MUST appear once. For this ICS, all <b>RenderingParams</b> Attributes are optional; there is no table to reference. See Table 67: RenderingParams <b>Features:</b> Approval, Black-Overprint, Destination-or-Physical-Printer-Resolution
<b>RunList (Document)</b>	w			r			MUST appear once. See Table 68: RunList <b>Features:</b> Covers, Document-Compression, Document-Format, Document-URL, Document-Natural-Language, Force-Page, Insert-Sheet, Range-of-Pages-to-Include
<b>ScreeningParams</b>	w←			r			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Screening". See Table 69: ScreeningParams <b>Features:</b> Screening
<b>SpineTapingParams</b>	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "SpineTaping". See Table 73: SpineTapingParams <b>Features:</b> Binding
<b>StitchingParams</b>	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Stitching". See Table 74: StitchingParams <b>Features:</b> Stapling-and-Stitching

Name	Manager			Worker			Description
	Level →	1	2	3	1	2	
TrappingDetails	w←			r			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Trapping". See Table 77: TrappingDetails <b>Features:</b> Trapping
TrimmingParams	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Trimming". See Table 78: TrimmingParams <b>Features:</b> Trimming

Table 6: Supported Output Resources

Name	Manager			Worker			Description
	Level →	1	2	3	1	2	
ApprovalSuccess	w←			r?			MUST NOT appear more than once. MUST be present if JDF/@Types includes "Approval". See Table 36: ApprovalSuccess <b>Features:</b> Approval
Component	w			r			MUST appear once. See Table 44: Component – Output

Table 7: Supported Intermediate Resources

Name	Manager			Worker			Description
	Level →	1	2	3	1	2	
Component	w←			r?			MAY appear more than once. See Table 45: Component – Intermediate <b>Features:</b> Binding Folding Punching-and-Hole-Making, MIS Support, Stapling-and-Stitching

## 4 Conformance Tables – JDF Instances

The tables in this section summarize the JDF Resources and elements that are supported by the [IDP-ICS].

Note: In the conformance tables, text copied verbatim from the [Base-ICS] is highlighted yellow like this, including [Base-ICS] conformance words and codes, but without the “[Base-ICS]:” attribution (so as to reduce clutter).

### 4.1 JDF Node

Table 8 specifies the conformance requirements for a **Combined Digital Printing Node** which MAY be either a Root node or a Subnode in a JDF Instance.

[Base-ICS]: Table 8 specifies the conformance requirements for Attributes and Elements for a JDF Node, whether it is a Root Node or a Subnode. Most of the Attributes and Elements have the *same* Conformance Requirements whether the node is a Root Node or a Subnode. Those that differ are marked with “w←” and the Description column specifies the conditions. The JDF Node requirements for Attributes and Values in Table 8 are fulfilled when the Attributes are specified in the AncestorPool/Ancestor elements and their Subnodes, respectively (see [Base-ICS] Table 56: Ancestor).

**Table 8: JDF Combined DigitalPrinting Node**  
**Features:** all features

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Activation</i>	w			r			See [JDF1.2] section 4.2.1 <b>Features:</b> Hold-Job
<i>Active</i>	w←			r			
<i>TestRunAndGo</i>	w?			r			A Worker MAY treat <i>TestRunAndGo</i> in the same way as <i>Active</i> .
<i>Held</i>	w←			r			
<i>all remaining values</i>	w?			r			A Worker MUST NOT process tickets that are not active. [JDF1.2]: <i>Inactive, Informative, TestRun.</i>
<i>Category</i>	w			r			
<i>DigitalPrinting</i>	w			r			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>CommentURL</i>	w?			r?			<p>Links to a human readable description of the job in any format. The [Base-ICS] makes no statement about supported formats or how a Worker should deal with the data referenced by the URL.</p> <p>The job description referenced by this URL does NOT affect the value of any Attributes in the JDF Node, even when there is an apparent name similarity.</p> <p>If the scheme is not “cid”, the Manager MUST keep the Comment available for the Worker to retrieve at least until the Worker completes or aborts the job.</p>
<i>file:...</i>	w←			r			URL whose scheme is “file”
<i>http:...</i>	w?			r?			URL whose scheme is “http”
<i>cid:...</i>	w?			r?			URL whose scheme is “cid”
<i>all remaining values</i>	!w			r?			
<i>DescriptiveName</i>	w←			r?			<p>MUST occur in Root Node, indicating a single line Job Title; SHOULD occur in Subnodes with other values. If the Worker identifies the node to an operator, it SHOULD include the <i>DescriptiveName</i> in any such identification.</p> <p><b>Note:</b> many devices have limited possibilities to display the job description. The string value should be as short as possible.</p> <p><b>Features:</b> Job-Name</p>
<i>ICSVersions</i>	w←			r?			<p>MUST occur in Root Node, MAY occur in Subnodes.</p> <p>Each NMTOKEN value has the syntax:                      &lt; ICSName&gt; _L &lt; ICSLevelNumber&gt; - &lt; MajorVersion&gt; . &lt; MinorVersion&gt;</p> <p>The Manager MUST supply a set of NMTOKEN values, one for each ICS with which the JDF Instance complies. The NMTOKEN values are unordered.</p> <p>Each ICS specifies only the unique NMTOKEN value(s) that pertain to its domain, even if the ICS requires other ICS’s to be supported.</p> <p><b>Features:</b> ICS-Versions</p>
<i>Base_L0-1.0</i>	w			r			Specifies that the JDF node conforms to [Base-ICS] level 0. MUST only be specified if unidirectional JDF is acceptable to the Manager.
<i>IDP_L1-1.0</i>	w			r			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>ID</i>	w			r			MUST be supplied if a new node is created. MUST NOT be modified.
<i>JobID</i>	w←			r			MUST occur in Root Node, MAY occur in Subnodes. If not present in the Combined Digital Printing Node, is inherited from an ancestor node <b>Features:</b> Job-Identification
<i>JobPartID</i>	w			r			Each JDF Node (Product, Process Group, Combined Process, and Process) MUST have a <i>JobPartID</i> and its value MUST be unique within the context of all JDF Instances that have the same <i>JobID</i> in the print shop’s workflow. When creating JDF sub-nodes, a worker MUST generate the new <i>JobPartID</i> by adding a suffix to the parent JDF node’s <i>JobPartID</i> . Each suffix MUST start with a period “.” and MUST NOT exceed 3 characters including the <i>period</i> . The resulting <i>JobPartID</i> MUST NOT exceed 63 characters. <b>Note:</b> JobPartID is required even at the root level <b>Features:</b> Job-Identification
<i>NamedFeatures</i>	w?			r?			<b>Features:</b> Named-Features
<i>ProjectID</i>	w?			r?			<b>Features:</b> MIS Support
<i>MaxVersion</i>	w←			r			MUST be in Root Node, MAY be in Subnodes.
<i>1.2</i>	w			r			
<i>Status</i>	w			r			See [JDF1.2] sections 3.1.2 and 4.3, and section A.2 of [Base-ICS].
<i>Ready</i>	w			r			Note: the [Base-ICS] has “all values” with “w←” but the IDP ICS has just “w” for “Ready”
<i>TemplateID</i>	w?			r?			<b>Features:</b> Job-Ticket-Template-ID
<i>TemplateVersion</i>	w?			r?			<b>Features:</b> Job-Ticket-Template-Version
<i>Type</i>	w			r			As specified in [JDF1.2]
<i>Combined</i>	w			r			
<i>Types</i>	w			r			See Table 1: Sequencing of Processes – DigitalPrinting and Before and Table 2: Sequencing of Processes – DigitalPrinting and After for the order of the values.

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Approval</i>	w←			r?			Exactly one MUST be present if final approval is requested. <b>Features:</b> Approval
<i>ColorCorrection</i>	w←			r?			Exactly one MUST be present if color correction is requested.
<i>ColorSpaceConversion</i>	w←			r?			Either one or two MUST be present if color space conversion is requested.
<i>CoverApplication</i>	w←			r?			MUST be present if cover application is requested. Multiple MAY be present. <b>Features:</b> Binding
<i>DigitalPrinting</i>	w			r			Exactly one MUST be present <b>Features:</b> many features
<i>Folding</i>	w←			r?			MUST be present if folding is requested. Multiple MAY be present. <b>Features:</b> Folding
<i>HoleMaking</i>	w←			r?			MUST be present if hole-making is requested. Multiple MAY be present. <b>Features:</b> Punching-and-Hole-Making
<i>Imposition</i>	w			r			Exactly one MUST be present
<i>Interpreting</i>	w			r			Exactly one MUST be present <b>Features:</b> Print-Quality
<i>LayoutPreparation</i>	w			r			Exactly one MUST be present <b>Features:</b> many features
<i>Rendering</i>	w			r			Exactly one MUST be present <b>Features:</b> Approval, Destination-or-Physical-Printer-Resolution, Proof-Print
<i>Screening</i>	w←			r?			Exactly one MUST be present if screening is requested. <b>Features:</b> Screening
<i>SpineTaping</i>	w←			r?			MUST be present if spine taping is requested. Multiple MAY be present. <b>Features:</b> Binding
<i>Stitching</i>	w←			r?			MUST be present if stitching is requested. Multiple MAY be present. <b>Features:</b> Stapling-and-Stitching
<i>Trapping</i>	w←			r?			Exactly one MUST be present if trapping is requested. <b>Features:</b> Trapping

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Trimming</i>	w←			r?			MUST be present if trimming is requested. Multiple MAY be present. <b>Features:</b> Trimming
<i>all remaining values</i>	!w			r?			[JDF1.2] has many additional values. See [JDF1.2] section 6.
<i>Version</i>	w←			r?			MUST be in Root Node, MAY be in Subnodes. See [JDF1.2] section 3.11 for information about versioning.
<i>1.2</i>	w			r?			
<i>xmlns</i>	w←			r?			MUST be in Root Node, MAY be in Subnodes. The namespace for JDF may be the default namespace or any prefixed namespace.
<i>http://www.CIP4.org/JDFSchemas_1_1</i>	w			r?			<b>Note:</b> that for all 1.x versions of [JDF1.2], the namespace URI is the same
<i>xmlns:xsi</i>	w←			r?			MUST be in Root Node, MAY be in Subnodes.
<i>http://www.w3.org/2001/XMLSchema-instance</i>	w			r?			
<i>xsi:type</i>	w			r?			Helps JDF Schema aware implementations to identify specific node types.
AncestorPool	w?			r			See Table 9: AncestorPool MUST only be specified in the root node of a spawned JDF.
AuditPool	w			r?			MUST be present and local, is not inherited from an ancestor node. See Table 11: AuditPool <b>Features:</b> Job-Created-By, Job-Modified-By, Job-Ticket-Created-By
Comment	w←			r?			If Comment[@Name="Instruction"] is present and the Worker displays instructions to the operator, the Worker MUST display the instruction part of this Comment to the operator. See Table 13: Comment <b>Features:</b> Comment/Description-of-Job, Job-Ticket-Template-Comment-or-Description, Message-to-Operator
CustomerInfo	w←			r?			If not present in the Combined Digital Printing Node, is inherited from an ancestor node. See Table 14: CustomerInfo <b>Features:</b> Billing-Code, Contact-Information, Job-Name, Notification

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
JDF		!w			r		Child JDF Node(s). According to [JDF1.2] a process node <b>MUST NOT</b> have a child node. See Table 8: JDF Combined DigitalPrinting Node
NodeInfo		w←			r		If present, <b>MUST</b> be local. Is not inherited from an ancestor node. See Table 16: NodeInfo <b>Features:</b> Job-Priority, Destination-or-Physical-Printer-Requested
ResourceLinkPool		w←			r		In general a <b>ResourceLinkPool</b> is required, except for a Gray Box that doesn't have linked resources. <b>MUST</b> be present and local; is not inherited from an ancestor node. See Table 19: ResourceLinkPool
ResourcePool		w←			r		The MIS and Product-Sector ICS's specify particular <b>Resource</b> children of this Element. <b>MUST</b> be present in Combined Digital Printing Node and/or an ancestor node.
StatusPool		w←			r		The <b>StatusPool</b> <b>MUST</b> be updated if <b>AncestorPool/Part</b> is specified. MIS and Product-Sector ICS's specify particular <b>StatusPool</b> children of this Element See [Base-ICS] Table 8: StatusPool.

**Table 9: AncestorPool**  
**Referenced by:** JDF Combined DigitalPrinting Node

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
Ancestor		w			r		See Table 10: Ancestor
Part		w←			r		The <b>Part</b> element contains the partition attributes that are filled in <i>Status</i> messages, <b>PartStatus</b> , <b>Audits</b> etc.

**Table 10: Ancestor**  
**Referenced from: AncestorPool**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
All attributes defined in Table 8: JDF Combined DigitalPrinting Node.	w←			r?			The conformance requirements that are defined in Table 8: JDF Combined DigitalPrinting Node apply to Attributes and their values in Ancestor.
NodeInfo	w?			r			The conformance requirements that are defined in Table 16: NodeInfo apply to the NodeInfo in Ancestor.

### 4.1.1 AuditPool

**Table 11: AuditPool**  
**Referenced by: JDF Combined DigitalPrinting Node**  
**Features: Job-Created-By, Job-Modified-By, Job-Ticket-Created-By**

Name or Value	Producer			Consumer			Description
	Level →	1	2	3	1	2	
Audit	w			r?			Abstract Element “w” for the Audit element means that the AuditPool must contain at least one Audit element, thus excluding the [JDF1.2] case of no Audit element. See Table 12: Audit – Derived Element

**Table 12: Audit – Derived Elements**  
**Derived from: Audit**  
**Features: Job-Created-By, Job-Modified-By, Job-Ticket-Created-By**

Name or Value	Producer			Consumer			Description
	Level →	1	2	3	1	2	
Created	w			r?			<b>Features:</b> Job-Created-By, Job-Ticket-Created-By
Modified	w←			r?			<b>Features:</b> Job-Modified-By

### 4.1.2 Comment

**Table 13: Comment**

**Referenced by:** JDF Combined **DigitalPrinting Node**, CustomerMessage

**For Processes:** *DigitalPrinting*

**Features:** (JDF Combined **DigitalPrinting Node**) Comment/Description-of-Job, Job-Ticket-Template-Comment-or-Description, Message-to-Operator, (CustomerMessage) Notification

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Language</i>	w?			r			
<i>Name</i>	w			r			
<i>Description</i>	w←			r?			The Manager MUST supply at MOST one Comment with this value in a JDF Node. <b>Features:</b> Media
<i>JobDescription</i>	w←			r?			The Manager MUST supply at MOST one Comment with this value in a JDF Node. If present, MUST appear in the root JDF Node <b>Features:</b> Comment/Description-of-Job
<i>Instruction</i>	w←			r			The Worker MUST display the content of each Comment Element having this value, regardless of the number of such Comment Elements in a JDF Node. <b>Features:</b> Message-to-Operator
<i>TemplateDescription</i>	w?			r?			<b>Features:</b> Job-Ticket-Template-Comment-or-Description
<i>UserText</i>	w?			r?			<b>Features:</b> Notification
<content of element>	w			r			

### 4.1.3 CustomerInfo

**Table 14: CustomerInfo**

**Referenced by:** JDF Combined DigitalPrinting Node

**Features:** Billing-Code, Contact-Information, Job-Name, Notification

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>BillingCode</i>	w?			r?			<b>Features:</b> Billing-Code
<i>CustomerJobName</i>	w←			r?			<b>Features:</b> Job-Name
<b>Contact</b>	w?			r?			See Table 46: Contact <b>Features:</b> Contact-Information
CustomerMessage	w?			r?			See Table 15: CustomerMessage <b>Features:</b> Notification

**Table 15: CustomerMessage**

**Referenced by:** CustomerInfo

**Features:** Notification

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Language</i>	w?			r?			
<i>MessageEvents</i>	w			r?			
<i>Accepted</i>	w?			r?			
<i>JobCompletedSuccessfully</i>	w←			r?			
<i>JobCompletedWithErrors</i>	w←			r?			
<i>JobCompletedWithWarnings</i>	w←			r?			
<i>JobInProgress</i>	w?			r?			
<i>Show List</i>	w?			r?			
<i>UserText</i>	w?			r?			
<b>Com Channel</b>	w?			r?			See Table 42: ComChannel
Comment	w?			r?			See Table 13: Comment

#### 4.1.4 NodeInfo

**Table 16: NodeInfo**  
**Referenced by: JDF Combined DigitalPrinting Node**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>JobPriority</i>	w←			r			Features: Job-Priority
<i>Route</i>	w←			r?			<p>A Routing Controller MAY use <i>Route</i> to direct the JDF to the intended target.</p> <p>[JDF1.2]: The URL of the controller or device that is to execute this node. If <i>Route</i> is not specified, the routing controller MUST determine a potential target controller or device independently. For details, see Section 4.2, Process Routing.</p> <p>Note that the receiving Device MUST NOT use <i>Route</i> to determine whether to execute the node. Rather a Device MUST use a <b>Device</b> input resource (if specified) to determine whether to execute the node.</p> <p>Features: Destination-or-Physical-Printer-Requested</p>
<i>TargetRoute</i>	w?			r			<p>Where the Worker returns or forwards the JDF after processing. If <i>TargetRoute</i> is not supplied, the Worker MUST send the completed JDF according to [JDF1.2] <i>TargetRoute</i> description.</p> <p>A Worker that only complies to Level 0 of this ICS NEED NOT Support <i>TargetRoute</i>.</p> <p>If JMF/QueueSubmissionParams/@ReturnJMF or JMF/QueueSubmissionParams/@ReturnURL is supplied, then the Worker MUST ignore <i>TargetRoute</i>.</p>

**Table 17: StatusPool**

Referenced by: JDF Combined DigitalPrinting Node

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Status</i>		w	r				
<i>Pool</i>		!w	r?				Not allowed in StatusPool
<i>All other values</i>		w←	r				[JDF1.2]: <i>Waiting, TestRunInProgress, Ready, FailedTestRun, Setup, InProgress, Cleanup, Stopped, Completed, Aborted</i>
PartStatus		w←	r				See Table 18: PartStatus

**Table 18: PartStatus**

Referenced by: StatusPool

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Status</i>		w	r				
<i>Pool</i>		!w	r?				Not allowed in PartStatus
<i>all remaining values</i>		w←	r				[JDF1.2]: <i>Waiting, TestRunInProgress, Ready, FailedTestRun, Setup, InProgress, Cleanup, Stopped, Completed, Aborted</i>
Part		w	r				The part of the process that the <i>Status</i> Attribute applies to.  Other ICS's specify the attributes for the Part Element. See Table 30: Part – for RunList or Component -Intermediate and Table 31: Part – for Media (Derived from [IDP-ICS])

#### 4.1.5 ResourceLinkPool

**Table 19: ResourceLinkPool**

Referenced by: JDF Combined DigitalPrinting Node

Name or Value	Producer			Consumer			Description
	Level →	1	2	3	1	2	
ResourceLink		w			r?		Abstract Element See Table 20: ResourceLink See Table 21: ResourceLink – Derived Elements

## 4.2 ResourceLinks

### 4.2.1 ResourceLink

**Table 20: ResourceLink**  
 Referenced by: ResourceLinkPool

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
CombinedProcessIndex	w←			r			[JDF1.2] section 3.7 requires the use of <i>CombinedProcessIndex</i> when multiple resources of the same <b>Resource/@Type</b> and <b>ResourceLink/@Usage</b> are specified in one JDF node See Section 2.4.4 “ <i>ResourceLink Elements and ResourceLinkPool</i> ” for a description of when to specify <i>CombinedProcessIndex</i> .
rRef	w			r			Copied from [Base-ICS]
Usage	w			r			Copied from [Base-ICS]
Input	w			r			
Output	w			r			

**Table 21: ResourceLink – Derived Elements**

**Derived from:** ResourceLink  
**Features:** see below

The following table lists all ResourceLinks as required by the [JDF1.2] as a consequence of conforming to [JDF1.2] and is presented here as a convenience to the reader. The “w” and “r” conformance tags are consequences of requirements in the [JDF1.2].

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
ApprovalParamsLink	w←			r			<b>Features:</b> Approval
ColorantControlLink	w←			r			<b>Features:</b> Spot-Color
ColorCorrectionParamsLink	w←			r			
ColorSpaceConversionParamsLink	w←			r			
ComponentLink	w			r			<b>Features:</b> Number-of-Copies, Binding, Folding, Punching-and-Hole-Making, Stapling-and-Stitching
CoverApplicationParamsLink	w←			r?			<b>Features:</b> Binding
DeviceLink	w←			r			<b>Features:</b> Destination-or-Physical-Printer-Requested

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
DigitalPrintingParamsLink	w			r			<b>Features:</b> Collate, Input-Tray-Name, Jog-Offset, Margins, Output-Bin-Name, Page-Delivery, Proof-Print
FoldingParamsLink	w←			r?			<b>Features:</b> Folding
HoleMakingParamsLink	w←			r?			<b>Features:</b> Punching-and-Hole-Making
InterpretingParamsLink	w			r			<b>Features:</b> Print-Quality
LayoutPreparationParamsLink	w			r			<b>Features:</b> Covers, Fit-Policy, Image-Shift-Back-Side, Image-Shift-Front-Side, Input-Tray-Name, Interleave-Sheets, Media, Number-Up, Start-Separator/Slip-End-Sheets
MediaLink	w←			r			<b>Features:</b> Covers, Media, Insert-Sheet, Interleave-Sheets, Start-Separator/Slip-End-Sheets
RenderingParamsLink	w			r			<b>Features:</b> Approval, Black-Overprint, Destination-or-Physical-Printer-Resolution, Proof-Print
RunListLink	w			r			<b>Features:</b> Covers, Document-Compression, Document-Format, Document-URL, Document-Natural-Language, Force-Page, Insert-Sheet, Range-of-Pages-to-Include
ScreeningParamsLink	w←			r			<b>Features:</b> Screening
SpineTapingParamsLink	w←			r?			<b>Features:</b> Binding
StitchingParamsLink	w←			r?			<b>Features:</b> Stapling-and-Stitching
TrappingDetailsLink	w←			r			<b>Features:</b> Trapping
TrimmingParamsLink	w←			r?			<b>Features:</b> Trimming
<i>all remaining values</i>	!w			r?			See [JDF1.2] section 7.

## 4.2.2 ComponentLink

**Table 22: ComponentLink**

**Referenced by:** ResourceLinkPool

**For Processes:** *DigitalPrinting, Stitching, Folding, Trimming, HoleMaking, CoverApplication, SpineTaping, Approval*

**Features:** see below

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Amount</i>	w←			r			<b>Features:</b> Number-of-Copies
<i>Orientation</i>	w←			r			It is more common to specify the <i>Rotate</i> values than the <i>Flip</i> values. Thus, support of the <i>Flip</i> values is not required. <b>Features:</b> Stapling-and-Stitching, Folding, Trimming, Punching-and-Hole-Making, Binding
<i>Rotate0</i>	w←			r			
<i>Rotate90</i>	w←			r?			
<i>Rotate180</i>	w←			r?			
<i>Rotate270</i>	w←			r?			
<i>all remaining values</i>	w?			r?			[JDF1.2]: <i>Flip0, Flip90, Flip180, Flip270</i>
AmountPool	w←			r?			MUST be present to specify the <i>Orientation</i> for partitions. See Table 23: AmountPool <b>Features:</b> Stapling-and-Stitching, Folding, Trimming, Punching-and-Hole-Making, Binding

**Table 23: AmountPool**

**Referenced by:** ComponentLink

**For Processes:** *DigitalPrinting, Stitching, Folding, Trimming, HoleMaking, CoverApplication, SpineTaping, Approval*

**Features:** Stapling-and-Stitching, Folding, Trimming, Punching-and-Hole-Making, Binding

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
PartAmount	w←			r			See Table 24: PartAmount

**Table 24: PartAmount**

**Referenced by:** AmountPool

**For Processes:** *DigitalPrinting, Stitching, Folding, Trimming, HoleMaking, CoverApplication, SpineTaping, Approval*

**Features:** Stapling-and-Stitching, Folding, Trimming, Punching-and-Hole-Making, Binding

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Orientation</i>	w←			r			
<i>Rotate0</i>	w←			r			
<i>Rotate90</i>	w←			r?			
<i>Rotate180</i>	w←			r?			
<i>Rotate270</i>	w←			r?			
<i>all remaining values</i>	w?			r?			[JDF1.2]: <i>Flip0, Flip90, Flip180, Flip270</i>
Part	w←			r			For the Attributes of Part, see <i>PartIDKeys</i> in Table 45: Component – Intermediate

### 4.2.3 MediaLink

**Table 25: MediaLink**

**Referenced by:** ResourceLinkPool

**For Processes:** *DigitalPrinting*

**Features:** Covers, Media, Insert-Sheet, Interleave-Sheets, Start-Separator/Slip-End-Sheets

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Orientation</i>	w?			r?			
<i>all values</i>	w?			r?			[JDF1.2]: <i>Rotate0, Rotate90, Rotate180, Flip0, Flip90, Flip180, Flip270</i>

### 4.2.4 RunListLink

**Table 26: RunListLink**

**Referenced by:** ResourceLinkPool

**For Processes:** *LayoutPreparation, Imposition*

**Features:** Range-of-Pages-to-Output

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
Part	w←			r			See Table 30: Part. [Base-ICS] requires the Worker to support partitioning of ResourceLink. See section 2.4 for a description of Resource Link.

### 4.3 ResourceRefs

A ResourceRef element may occur where [JDF1.2] specifies a data type of refElement. Conforming Consumers MUST support reading ResourceRef elements wherever a data type of refElement is specified in [JDF1.2].

**Table 27: ResourceRef**

Name or Value	Manager			Worker			Description	
	Level →	1	2	3	1	2		3
<i>rRef</i>		w			r			This Attribute MUST NOT reference a Resource that is a sub-element of another Resource. In a JDF the referenced Resource MUST be a direct child of a ResourcePool. In a JMF the referenced Resource MUST be the direct child of either ResourceInfo or ResourceCmdParams.
<i>rSubRef</i>		!w			r?			The Manager MUST NOT supply this Attribute because this ICS does not allow a ResourceRef to reference sub-elements of a Resource.
Part		w?			r			A Worker MUST read and support References to a partition of a Resource.

**Table 28: ResourceRef – Derived Elements**

Derived from: ResourceRef

Name or Value	Manager			Worker			Description	
	Level →	1	2	3	1	2		3
MediaRef		w←			r			See Table 29: MediaRef

#### 4.3.1 MediaRef

**Table 29: MediaRef**

Referenced by: **DigitalPrintingParams, Sheet**

For Processes: *DigitalPrinting, LayoutPreparation, Imposition*

Features: Covers, Media, Insert-Sheet, Interleave-Sheets, Start-Separator/Slip-End-Sheets

Name or Value	Manager			Worker			Description	
	Level →	1	2	3	1	2		3
Part		w←			r			See Table 31: Part – for Media

## 4.4 Part – of a ResourceLink or ResourceRef (derived from [IDP-ICS])

**Table 30: Part – for RunList or Component -Intermediate**

**Referenced by:** PartAmount, RunListLink

**For Processes:** (PartAmount) *DigitalPrinting, Stitching, Folding, Trimming, HoleMaking, CoverApplication, SpineTaping, Approval,*  
(RunListLink) *LayoutPreparation, Imposition*

**Features:** (PartAmount) *Stapling-and-Stitching, Folding, Trimming, Punching-and-Hole-Making, Binding,*  
(RunListLink) *Range-of-Pages-to-Output*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.

**Table 31: Part – for Media (Derived from [IDP-ICS])**

**Referenced by:** MediaRef

**For Processes:** *DigitalPrinting, LayoutPreparation, Imposition*

**Features:** *Covers, Media, Insert-Sheet, Interleave-Sheets, Start-Separator/Slip-End-Sheets*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Location</i>	w←			r			

## 5 Conformance Tables – Resources

**Table 32: Resource**  
**Referenced by: ResourcePool**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Class</i>	w			r			JDF1.2] Manager MUST supply.
<i>all values</i>	w←			r			[JDF1.2]: <i>Consumable, Implementation, Parameter, Quantity</i>
<i>ID</i>	w			r			Copied from [Base-ICS]
<i>Status</i>	w			r			Copied from [Base-ICS]
<i>Available</i>	w←			r			Input Resources MUST have Status = “Available”.
<i>Unavailable</i>	w←			r			Output Resources MUST have Status = “Unavailable”.

### 5.1 Address

**Table 33: Address**  
**Referenced by: Contact**  
**For Processes: DigitalPrinting, Approval**  
**Features: Approval, Proof-Print, Contact-Information,**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>City</i>	w?			r?			
<i>Country</i>	w?			r?			
<i>ExtendedAddress</i>	w?			r?			
<i>PostalCode</i>	w?			r?			
<i>PostBox</i>	w?			r?			
<i>Region</i>	w?			r?			
<i>Street</i>	w?			r?			

## 5.2 ApprovalParams

**Table 34: ApprovalParams**  
**Referenced by: DigitalPrintingParams**  
**Input to: DigitalPrinting, Approval**  
**Features: Approval, Proof-Print**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
ApprovalPerson	w←			r?			See Table 35: ApprovalPerson

**Table 35: ApprovalPerson**  
**Referenced by: ApprovalParams**  
**For Processes: DigitalPrinting, Approval**  
**Features: Approval, Proof-Print**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
Contact	w			r?			See Table 46: Contact

## 5.3 ApprovalSuccess

**Table 36: ApprovalSuccess**  
**Output from: DigitalPrinting Approval**  
**Features: Approval**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
							No attributes are supported

## 5.4 AutomatedOverPrintParams

**Table 37: AutomatedOverPrintParams**  
**Referenced by: RenderingParams**  
**For Processes: Rendering**  
**Features: Black-Overprint**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
OverPrintBlackLineArt	w?			r?			
OverPrintBlackText	w?			r?			

## 5.5 ColorantControl

**Table 38: ColorantControl**  
**Input to:** *DigitalPrinting, Interpreting*  
**Features:** Spot-Color, Process-Color-Model

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			For other <i>PartIDKeys</i> values, See Table 80 Partitioning Resources other than RunList.
<i>ProcessColorModel</i>	w←			r			<b>Features:</b> Process-Color-Model
<i>DeviceCMYK</i>	w←			r?			Color Devices MUST support <i>DeviceCMYK</i> . Black and white Devices MAY convert color to black and white.
<i>DeviceGray</i>	w←			r			
ColorantParams	w←			r?			See Table 39: ColorantParams <b>Features:</b> Spot-Color

**Table 39: ColorantParams**  
**Referenced by:** **Colorant Control**  
**For Processes:** *DigitalPrinting, Interpreting*  
**Features:** Spot-Color

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>SeparationSpec</i>	w			r			Table 71: SeparationSpec

## 5.6 ColorCorrectionParams

**Table 40: ColorCorrectionParams**  
**Input to:** *ColorCorrection*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
							No attributes are supported

## 5.7 ColorSpaceConversionParams

**Table 41: ColorSpaceConversionParams**

Input to: *ColorSpaceConversion*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
							No attributes are supported

## 5.8 ComChannel

**Table 42: ComChannel**

Referenced by: **Cont act** , CustomerMessage

For Processes: *DigitalPrinting*, *Approval*

Features: (**Cont act**) Approval, Proof-Print, Contact-Information, (CustomerMessage) Notification

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>ChannelType</i>	w?			r?			
<i>all values</i>	w?			r?			[JDF1.2]: <i>Email, Fax, InstantMessaging, JMF, Phone ,PrivateDirectory, WWW</i>
<i>ChannelTypeDetails</i>	w?			r?			
<i>all values</i>	w?			r?			[JDF1.2]: <i>Form, ISDN, Landline, Mobile, Secure, Target</i>
<i>Locator</i>	w?			r?			MUST be in URL format

## 5.9 Company

**Table 43: Company**

Referenced by: **Cont act**

For Processes: *DigitalPrinting*, *Approval*

Features: Approval, Proof-Print, Contact-Information,

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>OrganizationName</i>	w?			r?			

## 5.10 Component – Output)

**Table 44: Component – Output**

**Output from:** *DigitalPrinting, Stitching, Folding, Trimming, HoleMaking, CoverApplication, SpineTaping, Approval*

**Features:** Binding, Folding, Punching-and-Hole-Making, Stapling-and-Stitching

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Component Type</i>	w			r			

## 5.11 Component – Intermediate

**Table 45: Component – Intermediate**

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

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Component Type</i>	w			r			
<i>PartialProduct</i>	w			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>PipeProtocol</i>	w			r			
<i>Internal</i>	w			r			

## 5.12 Contact

**Table 46: Contact**

**Referenced by:** ApprovalPerson, CustomerInfo

**For Processes:** *DigitalPrinting, Approval*

**Features:** (ApprovalPerson) Approval, Proof-Print, (CustomerInfo) Contact-Information,

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Contact Types</i>	w			r?			[JDF1.2]: Manager MUST supply
<b>Address</b>	w?			r?			See Table 33: Address
<b>Com Channel</b>	w?			r?			See Table 42: ComChannel
<b>Company</b>	w?			r?			See Table 43: Company
<b>Person</b>	w?			r?			See Table 66: Person

## 5.13 CoverApplicationParams

**Table 47: CoverApplicationParams**

**Input to:** *CoverApplication*

**Features:** Binding

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>No Op</i>	w←			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

## 5.14 Device

**Table 48: Device**

**Features:** Destination-or-Physical-Printer-Requested

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>DeviceID</i>	w←			r			Copied from [Base-ICS]
<i>Manufacturer</i>	w?			r?			
<i>ModelNumber</i>	w?			r?			

## 5.15 DigitalPrintingParams

**Table 49: DigitalPrintingParams**

**Input to:** *DigitalPrinting*

**Features:** Collate, Input-Tray-Name, Jog-Offset, Margins, Output-Bin-Name, Page-Delivery, Proof-Print

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Collate</i>	w←			r			MUST NOT occur in a partition <b>Features:</b> Collate
<i>None</i>	w←			r			
<i>Sheet</i>	w←			r			
<i>SheetAndSet</i>	w?			r?			
<i>SheetSetAndJob</i>	w?			r?			
<i>DirectProofAmount</i>	w←			r?			<b>Features:</b> Proof-Print
<i>ManualFeed</i>	w←			r?			<b>Features:</b> Input-Tray-Name
<i>NonPrintableMarginBottom</i>	w?			r?			<b>Features:</b> Margins
<i>NonPrintableMarginLeft</i>	w?			r?			<b>Features:</b> Margins
<i>NonPrintableMarginRight</i>	w?			r?			<b>Features:</b> Margins
<i>NonPrintableMarginTop</i>	w?			r?			<b>Features:</b> Margins
<i>OutputBin</i>	w←			r?			MUST support if Device has multiple output bins. <b>Features:</b> Output-Bin-Name
<i>LargeCapacity</i>	w←			r			
<i>Top</i>	w←			r			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>all remaining values</i>	w?			r?			[JDF1.2]: <i>AnyLargeFormat, AnySmallFormat, AutoSelect, Booklet, Bottom, Continuous, Disc, Disc-n, Envelope, Envelope-n, FaceDown, FaceUp, FitMedia, Front, LargeCapacity-n, Left, Mailbox-n, Middle, MyMailbox, Rear, Right, Roll, Roll-n, Side, Stacker-n, Tray, Tray-n</i>
<i>PageDelivery</i>	w?			r?			<b>Features:</b> Page-Delivery
<i>all values</i>	w?			r?			[JDF1.2]: <i>Fanfold, SameOrderFaceUp, SameOrderFaceDown, ReverseOrderFaceUp, ReverseOrderFaceDown</i>
<i>PartIDKeys</i>	w←			r			<b>Features:</b> Page-Delivery
<i>DocIndex</i>	w←			r			MUST NOT be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST NOT be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST NOT be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than <i>RunList</i> for other <i>PartIDKeys</i> values.
<b>ApprovalParams</b>	w←			r?			Only valid if <i>DirectProofAmount</i> is not 0. See Table 34: <i>ApprovalParams</i> . <b>Features:</b> Proof-Print
<b>Disjointing</b>	w←			r?			MUST NOT occur in a partition See Table 50: <i>Disjointing</i> <b>Features:</b> Jog-Offset
<b>Media</b>	w←			r			See Table 63: <i>Media</i> <b>Features:</b> Covers, Media

## 5.16 Disjointing

**Table 50: Disjointing**  
**Referenced by: DigitalPrintingParams**  
**For Processes: DigitalPrinting**  
**Features: Jog-Offset**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>OffsetAmount</i>	w?			r?			
<i>OffsetDirection</i>	w←			r			
<i>Alternate</i>	w←			r			
<i>None</i>	w←			r			
<i>all remaining values</i>	w?			r?			[JDF1.2]: <i>Left, Right</i>

## 5.17 FileSpec

**Table 51: FileSpec**

**Referenced by:** Container, Layout Element

**For Processes:** LayoutPreparation, Imposition

**Features:** Covers, Document-Compression, Document-Format, Document-URL, Document-Natural-Language, Insert-Sheet, Range-of-Pages-to-Include

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Compression</i>	w←			r			Device MUST NOT process the file for any values that it does not support. <b>Features:</b> Document-Compression
<i>None</i>	w←			r			
<i>all remaining values</i>	w?			r?			[JDF1.2]: <i>Compress, Base64, BinHex, Deflate, Gzip, MacBinary, UUEncode, ZLIB</i>
<i>DocumentNaturalLang</i>	w?			r?			<b>Features:</b> Document-Natural-Language
<i>MimeType</i>	w			r			Device MUST NOT process the file for any values that it does not support. <b>Features:</b> Document-Format
<i>application/pdf</i>	w←			r?			
<i>some remaining values</i>	w?			r?			[JDF1.2]: <i>application/postscript, application/octet-stream, application/vnd.hp-PCL, application/vnd.podl-ppml+ xml, ICC Profile, image/jpeg, image/tiff, multipart/related, text/plain</i>
<i>MimeTypeVersion</i>	w?			r?			<b>Features:</b> Document-Format
<i>some values</i>	w?			r?			[JDF1.2]: <i>PS/1, PS/2, PS/3, PCL/3, PCL/4, PCL/5, PCL/5e, PCL/6, PCL/X, PDF/1.0, PDF/1.1, PDF/1.2, PDF/1.3, PDF/1.4, PDF/1.5, PDF/1.6, PDF/X-1a:2001, PDF/X-3:2002, PDF/X-1a:2003, PDF/X-3:2003, PDF/X-2:2003, PDF/PPML/VDX-2002, PDF/is-1.0, ICC-Profile/2.1.0, ICC-Profile/2.2.0, ICC-Profile/2.4.0, ICC-Profile/4.0.0, PPML/1.5, PPML/2.0, PPML/2.1, tiff/6.0</i>
<i>URL</i>	w			r			<b>Features:</b> Covers, Document-URL, Insert-Sheet, Range-of-Pages-to-Include
<i>cid:</i>	w←			r			Required for MIME multipart/related.
<i>file:</i>	w←			r			
<i>http:</i>	w←			r?			
<i>some additional values</i>	w?			r?			[JDF1.2]: <i>ftp:, https:</i>

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
Container	w←			r?			MUST be present if <i>Compression</i> is not <i>None</i> . See Table 52: Container

**Table 52: Container**

**Referenced by:** **FileSpec**

**For Processes:** *LayoutPreparation, Imposition*

**Features:** Covers, Document-Compression, Document-Format, Document-URL, Document-Natural-Language, Insert-Sheet, Range-of-Pages-to-Include

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
FileSpec	w			r			See Table 51: FileSpec

## 5.18 FitPolicy

**Table 53: FitPolicy**

**Referenced by:** *LayoutPreparationParams*, *PageCell*

**For Processes:** *LayoutPreparation*

**Features:** (*LayoutPreparationParams*) *Fit-Policy*, (*PageCell*) *Number-Up*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>RotatePolicy</i>	w?			r?			
<i>all values</i>	w?			r?			[JDF1.2]: <i>NoRotate, RotateOrthogonal, RotateClockwise, RotateCounterClockwise</i>
<i>SizePolicy</i>	w←			r			
<i>ClipToMaxPage</i>	w←			r			
<i>ReduceToFit</i>	w←			r			
<i>all remaining values</i>	w?			r?			[JDF 1.2]: <i>Abort, FitToPage, Tile</i>

## 5.19 FoldingParams

**Table 54: FoldingParams**

**Input to:** *Folding*

**Features:** Folding

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>FoldCatalog</i>	w←			r?			
<i>F4-1</i>	w←			r?			booklets
<i>F6-2</i>	w←			r?			brochures
<i>F6-4</i>	w←			r?			c-fold
<i>F6-6</i>	w←			r?			z-fold (uneven)
<i>No Op</i>	w←			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other <i>PartIDKeys</i> values.

## 5.20 HoleMakingParams

**Table 55: HoleMakingParams**  
**Input to: *HoleMaking***  
**Features: Punching-and-Hole-Making**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>HoleType</i>	w			r?			
<i>S-generic</i>	w←			r?			
<i>S1-generic</i>	w←			r?			
<i>R2-generic</i>	w←			r?			
<i>R3-generic</i>	w←			r?			
<i>R4-generic</i>	w←			r?			
<i>R5-generic</i>	w←			r?			
<i>No Op</i>	w←			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

## 5.21 InsertSheet

**Table 56: InsertSheet**

**Referenced by: Layout PreparationParams, RunList**  
**For Processes: LayoutPreparation, Imposition**

**Features: (Layout PreparationParams) Interleave-Sheets, Start-Separator/Slip-End-Sheets,**  
**(RunList) Covers, Force-Page, Insert-Sheet**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>IncludeInBundleItem</i>	w?			r?			<b>Features:</b> Start-Separator/Slip-End-Sheets
<i>all values</i>	w?			r?			[JDF1.2]: <i>After, Before, New, None</i>
<i>IsWaste</i>	w?			r?			<b>Features:</b> Start-Separator/Slip-End-Sheets
<i>SheetFormat</i>	w←			r			
<i>Blank</i>	w←			r			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Brief</i>	w?			r?			<b>Features:</b> Start–Separator/Slip–End-Sheets
<i>Duplicate</i>	w?			r?			<b>Features:</b> Interleave-Sheets
<i>Full</i>	w?			r?			<b>Features:</b> Start–Separator/Slip–End-Sheets
<i>Standard</i>	w←			r			<b>Features:</b> Start–Separator/Slip–End-Sheets
<b>Sheet Type</b>	w			r			
<i>FillSheet</i>	w←			r			<b>Features:</b> Covers, Force-Page
<i>InsertSheet</i>	w←			r			<b>Features:</b> Insert-Sheet
<i>JobSheet</i>	w←			r			<b>Features:</b> Start–Separator/Slip–End-Sheets
<i>SeparatorSheet</i>	w←			r			<b>Features:</b> Interleave-Sheets, Start–Separator/Slip–End-Sheets
<b>Sheet Usage</b>	w			r			<b>Features added:</b> Insert-Sheet
<i>FillForceBack</i>	w←			r			<b>Features:</b> Covers, Force-Page
<i>FillForceFront</i>	w←			r			<b>Features:</b> Covers, Force-Page
<i>Interleaved</i>	w?			r?			<b>Features:</b> Interleave-Sheets
<i>InterleavedBefore</i>	w?			r?			<b>Features:</b> Interleave-Sheets
<i>Header</i>	w←			r			<b>Features:</b> Insert-Sheet, Start–Separator/Slip–End-Sheets
<i>Trailer</i>	w←			r			<b>Features:</b> Insert-Sheet, Start–Separator/Slip–End-Sheets
<i>Slip</i>	w←			r			<b>Features:</b> Start–Separator/Slip–End-Sheets
<i>SlipCopy</i>	w←			r			<b>Features:</b> Start–Separator/Slip–End-Sheets
<b>RunList</b>	w?			r?			See Table 68: RunList <b>Features:</b> Insert-Sheet
<b>Sheet</b>	w←			r			See Table 72: Sheet <b>Features:</b> Covers, Insert-Sheet, Interleave-Sheets, Start–Separator/Slip–End-Sheets

## 5.22 InterpretingParams

**Table 57: InterpretingParams**

**Input to:** *Interpreting*  
**Features:** Print-Quality

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>PrintQuality</i>	w←			r			
<i>Draft</i>	w←			r?			
<i>High</i>	w←			r?			
<i>Normal</i>	w←			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

## 5.23 JobField

**Table 58: JobField**

**Referenced by:** MarkObject  
**For Processes:** *LayoutPreparation*  
**Features:** Start-Separator/Slip-End-Sheets

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Show List</i>	w			r?			See [JDF1.2] for other values.
<i>UserText</i>	w?			r?			
<i>JobName</i>	w?			r?			
<i>JobSubmitterName</i>	w?			r?			
<i>UserText ?</i>	w?			r?			

## 5.24 LayoutElement

**Table 59: LayoutElement**

**Referenced by:** *RunList*

**For Processes:** *LayoutPreparation, Imposition*

**Features:** Covers, Document-Compression, Document-Format, Document-URL, Document-Natural-Language, Force-Page, Insert-Sheet, Range-of-Pages-to-Include

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<b>FileSpec</b>	w←			r			See Table 51: FileSpec

## 5.25 LayoutPreparationParams

**Table 60: LayoutPreparationParams**

**Input to:** *LayoutPreparation*

**Features:** Covers, Fit-Policy, Image-Shift-Back-Side, Image-Shift-Front-Side, Interleave-Sheets, Number-Up, Page-Distribution, Page-Order, Presentation-Direction, Rotate-Sheet-Content, Sides, Start-Separator/Slip-End-Sheets

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>NumberUp</i>	w←			r			<b>Features:</b> Number-Up
<i>PageDistributionScheme</i>	w←			r			<b>Features:</b> Page-Distribution
<i>Perfect</i>	w←			r			
<i>Saddle</i>	w←			r			
<i>Sequential</i>	w←			r			
<i>PageOrder</i>	w←			r			<b>Features:</b> Page-Order
<i>Booklet</i>	w←			r?			
<i>Reader</i>	w←			r			
<i>PresentationDirection</i>	w←			r			<b>Features:</b> Presentation-Direction, Number-Up
<i>FoldCatalog</i>	w←			r			
<i>YXz</i>	w←			r			
<i>Rotate</i>	w←			r			<b>Features:</b> Rotate-Sheet-Content
<i>all values</i>	w←			r			[JDF1.2]: <i>Rotate0 (default), Rotate90, Rotate180, and Rotate270.</i>
<i>Sides</i>	w←			r			<b>Features:</b> Covers, Sides
<i>OneSidedBackFlipX</i>	w←			r?			
<i>OneSidedBackFlipY</i>	w←			r?			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>OneSidedFront</i>	w←			r			
<i>TwoSidedFlipX</i>	w←			r?			Worker MUST support for duplexing printers.
<i>TwoSidedFlipY</i>	w←			r?			Worker MUST support for duplexing printers.
<i>PartIDKeys</i>	w←			r			<b>Features:</b> Covers, Sides
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.
<b>Fit Policy</b>	w←			r			See Table 53: FitPolicy <b>Features:</b> Fit-Policy
ImageShift	w←			r			See Table 62: ImageShift <b>Features:</b> Fit-Policy, Image-Shift-Back-Side, Image-Shift-Front-Side
<b>Insert Sheet</b>	w←			r			See Table 56: InsertSheet <b>Features:</b> Interleave-Sheets, Start-Separator/Slip-End-Sheets
PageCell	w←			r			See Table 61: PageCell <b>Features:</b> Number-Up

**Table 61: PageCell**

Referenced by: **LayoutPreparationParams**  
 For Processes: *LayoutPreparation*  
 Features: Number-Up

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Rotate</i>	w←			r			
<i>all values</i>	w←			r			[JDF1.2]: <i>Rotate0</i> (default), <i>Rotate90</i> , <i>Rotate180</i> , and <i>Rotate270</i> .
<b>Fit Policy</b>	w←			r			See Table 53: FitPolicy

**Table 62: ImageShift**

Referenced by: *LayoutPreparationParams*

For Processes: *LayoutPreparation*

Features: Fit-Policy, Image-Shift-Back-Side, Image-Shift-Front-Side

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>PositionX</i>	w?			r?			<b>Features:</b> Fit-Policy
<i>all values</i>	w?			r?			[JDF1.2]: <i>Center, Left, Right, Spine, None</i>
<i>PositionY</i>	w?			r?			<b>Features:</b> Fit-Policy
<i>all values</i>	w?			r?			[JDF1.2]: <i>Center, Left, Right, Spine, None</i>
<i>ShiftBack</i>	w←			r			<b>Features:</b> Image-Shift-Back-Side
<i>ShiftFront</i>	w←			r			<b>Features:</b> Image-Shift-Front-Side

## 5.26 Media

**Table 63: Media**

Referenced by: *DigitalPrintingParams, Sheet*

Input to: *DigitalPrinting*

For Processes: *DigitalPrinting, LayoutPreparation, Imposition*

Features: (*DigitalPrintingParams* and *DigitalPrinting*) Covers, Media, (*Sheet*) Covers, Insert-Sheet, Interleave-Sheets, Start-Separator/Slip-End-Sheets

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>BackCoatings</i>	w←			r?			
<i>all values</i>	w←			r?			[JDF1.2]: <i>Coated, Glossy, HighGloss, InkJet, Matte, None, Satin, and Semigloss</i>
<i>Brand</i>	w←			r?			
<i>DescriptiveName</i>	w←			r			
<i>Dimension</i>	w←			r?			Note: [JDF1.2] Appendix N Media Sizes specifies Media dimensions to the nearest point. Therefore, Device implementers are cautioned to take this into account and match the value of Media/@Dimension with the sizes of supported pre-cut Media within a tolerance of half a point (0.2 mm).
<i>FrontCoatings</i>	w←			r?			See <i>BackCoatings</i> for valid values
<i>HoleType</i>	w←			r?			
<i>None</i>	w←			r?			
<i>S-generic</i>	w←			r?			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>S1-generic</i>	w←			r?			
<i>R2-generic</i>	w←			r?			
<i>R3-generic</i>	w←			r?			
<i>R4-generic</i>	w←			r?			
<i>R5-generic</i>	w←			r?			
<i>ImagableSide</i>	w←			r?			
<b>all values</b>	w←			r?			[JDF1.2]: <i>Back, Both, Front, and Neither</i>
<i>LabColorValue</i>	w?			r?			
<i>MediaColorName</i>	w←			r?			
<b>all values</b>	w?			r?			[JDF1.2] Appendix 3.3.2 NamedColor: Black, Blue, Brown, Buff, Cyan, Gold, Goldenrod, Gray, Green, Ivory, Magenta, MultiColor, Mustard, NoColor, Orange, Pink, Red, Silver, Turquoise, Violet, White, and Yellow, plus any of these prefixed by: Clear, ClearDark, ClearLight, Dark, or Light.
<i>MediaColorNameDetails</i>	w←			r?			
<i>MediaSetCount</i>	w←			r?			
<i>MediaType</i>	w←			r?			See [JDF1.2] for more values.
<i>Disc</i>	w?			r?			
<i>Other</i>	w?			r?			
<i>Paper</i>	w←			r?			
<i>Transparency</i>	w←			r?			
<i>MediaTypeDetails</i>	w←			r?			
<i>CardBoard</i>	w←			r?			
<i>ContinuousLong</i>	w←			r?			
<i>ContinuousShort</i>	w←			r?			
<i>Envelope</i>	w←			r?			
<i>EnvelopePlain</i>	w←			r?			
<i>EnvelopeWindow</i>	w←			r?			
<i>FullCutTabs</i>	w←			r?			
<i>Labels</i>	w←			r?			
<i>Letterhead</i>	w←			r?			

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>MultiLayer</i>	w←			r?			
<i>MultiPartForm</i>	w←			r?			
<i>Photographic</i>	w←			r?			
<i>PreCutTabs</i>	w←			r?			
<i>Stationery</i>	w←			r?			Same as Paper
<i>TabStock</i>	w←			r?			
<i>Tractor</i>	w←			r?			
<i>MediaUnit</i>	w←			r?			
<i>all values</i>	w←			r?			[JDF1.2]: <i>Continuous, Roll, and Sheet (default).</i>
<i>Opacity</i>	w←			r?			
<i>all values</i>	w←			r?			[JDF1.2]: <i>Opaque, Transparent, and Translucent</i>
<i>PartIDKeys</i>	w←			r			
<i>Location</i>	w←			r			
<i>PrePrinted</i>	w←			r?			
<i>ProductID</i>	w←			r?			<b>Features:</b> MIS Support
<i>StockType</i>	w←			r?			Required if worker is to calculate US weight. <b>Features:</b> Media
<i>all values</i>	w←			r?			[JDF1.2]: <i>Bristol, Bond, Cover, Index, Newsprint, Offset (This includes book stock), Tag, and Text</i>
<i>Weight</i>	w←			r?			<b>Features:</b> Media
<i>Location</i>	w←			r?			MUST support if Device has multiple input bins. See Table 64: Location <b>Features:</b> Media, Input-Tray-Name

**Table 64: Location**  
**Referenced by: Media**  
**Features: Input-Tray-Name**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>LocationName</i>	w			r			
<i>AnySmallFormat</i>	w?			r?			
<i>AnyLargeFormat</i>	w?			r?			
<i>AutoSelect</i>	w?			r?			
<i>Bottom</i>	w?			r?			Same as Lower
<i>BypassTray</i>	w?			r?			
<i>BypassTray-n</i>	w?			r?			
<i>Continuous</i>	w?			r?			
<i>Disc</i>	w?			r?			
<i>Disc-n</i>	w?			r?			
<i>Envelope</i>	w?			r?			
<i>Envelope-n</i>	w?			r?			
<i>Front</i>	w?			r?			
<i>InsertTray</i>	w?			r?			
<i>InsertTray-n</i>	w?			r?			
<i>LargeCapacity</i>	w←			r			Same as Main
<i>LargeCapacity-n</i>	w?			r?			
<i>Left</i>	w?			r?			
<i>Middle</i>	w?			r?			Same as Center
<i>Rear</i>	w?			r?			
<i>Right</i>	w?			r?			
<i>Roll</i>	w?			r?			
<i>Roll-n</i>	w?			r?			
<i>Side</i>	w?			r?			
<i>Top</i>	w←			r			Same as Upper
<i>Tray</i>	w?			r?			
<i>Tray-n</i>	w?			r?			Same as Cassette

## 5.27 ObjectResolution

**Table 65: ObjectResolution**

Referenced by: **RenderingParams**

For Processes: *Rendering*

Features: Approval, Destination-or-Physical-Printer-Resolution

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Resolution</i>	w			r			[JDF1.2]: Manager MUST supply, so Worker MUST support.

## 5.28 Person

**Table 66: Person**

Referenced by: **Contact**

For Processes: *DigitalPrinting, Approval*

Features: Approval, Proof-Print, Contact-Information

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>FamilyName</i>	w?			r?			
<i>FirstName</i>	w?			r?			

## 5.29 RenderingParams

**Table 67: RenderingParams**

Input to: *Rendering*

Features: Approval, Destination-or-Physical-Printer-Resolution

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<b>AutomatedOverPrintParams</b>	w?			r?			See Table 37: AutomatedOverPrintParams <b>Features:</b> Black-Overprint
<b>ObjectResolution</b>	w?			r?			See Table 65: ObjectResolution
<i>PartIDKeys</i>	w←			r?			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

### 5.30 RunList

**Table 68: RunList**

**Input to:** *LayoutPreparation, Imposition*

**Features:** Covers, Document-Compression, Document-Format, Document-URL, Document-Natural-Language, Force-Page, Insert-Sheet, Range-of-Pages-to-Include

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>ComponentGranularity</i>	w←			r			
<i>All</i>	w←			r			
<i>Document</i>	w←			r			[JDF1.2]: The default.
<i>all remaining values</i>	w?			r?			[JDF1.2]: <i>BundleItem, Page, Set</i>
<i>Directory</i>	w?			r			
<i>EndOfBundleItem</i>	w?			r?			
<i>EndOfDocument</i>	w←			r			
<i>EndOfSet</i>	w?			r?			
<i>NPage</i>	w←			r			
<i>Pages</i>	w←			r			<b>Features:</b> Covers, Force-Page, Insert-Sheet, Range-of-Pages-to-Include
<i>PageCopies</i>	w?			r?			If present, MUST only appear as an Attribute of the RunList that is a subelement of an InsertSheet <b>Features:</b> Insert-Sheet
<i>PartIDKeys</i>	w←			r			
<i>Run</i>	w←			r			See Partitioning <b>RunList</b> Example.
<b>Insert Sheet</b>	w←			r			See Table 56: InsertSheet <b>Features:</b> Covers, Force-Page, Insert-Sheet
<b>Layout Element</b>	w←			r			See Table 59: LayoutElement

### 5.31 ScreeningParams

**Table 69: ScreeningParams**

**Input to:** *Screening*  
**Features:** *Screening*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.
ScreenSelector	w←			r			See Table 70: ScreenSelector

**Table 70: ScreenSelector**

**Referenced by:** *ScreeningParams*  
**For Processes:** *Screening*  
**Features:** *Screening*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>ScreeningFamily</i>	w←			r?			
<i>ScreeningType</i>	w←			r			
<i>all values</i>	w?			r?			[JDF1.2]: <i>Adaptive, AM, ErrorDiffusion, FMHybridAM-FM, HybridAMline-dot</i>

### 5.32 SeparationSpec

**Table 71: SeparationSpec**

**Referenced by:** *Colorant Params*  
**For Processes:** *DigitalPrinting, Interpreting*  
**Features:** *Spot-Color*

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Name</i>	w			r			

### 5.33 Sheet

**Table 72: Sheet**

**Referenced by: Insert Sheet**

**For Processes: *LayoutPreparation, Imposition***

**Features:** Covers, Insert-Sheet, Interleave-Sheets, Start-Separator/Slip-End-Sheets

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<b>Media</b>	w←			r			See Table 63: Media
<b>Surface</b> (Front)	w?			r?			See Table 75: Surface <b>Features:</b> Start-Separator/Slip-End-Sheets
<b>Surface</b> (Back)	w?			r?			See Table 75: Surface <b>Features:</b> Start-Separator/Slip-End-Sheets

### 5.34 SpineTapingParams

**Table 73: SpineTapingParams**

**Input to: *SpineTaping***

**Features:** Binding

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>No Op</i>	w←			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

## 5.35 StitchingParams

**Table 74: StitchingParams**  
**Input to: *Stitching***  
**Features: Stapling-and-Stitching**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Angle</i>	w?			r?			
<i>No Op</i>	w←			r			
<i>NumberOfStitches</i>	w?			r?			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.
<i>Stitch Type</i>	w←			r			
<i>Corner</i>	w←			r?			
<i>Saddle</i>	w←			r?			
<i>Side</i>	w←			r?			

## 5.36 Surface

**Table 75: Surface**  
**Referenced by: *Sheet***  
**For Processes: *LayoutPreparation***  
**Features: Start-Separator/Slip-End-Sheets**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>Side</i>	w			r?			[JDF1.2]: Manager MUST supply.
<i>Back</i>	w?			r?			
<i>Front</i>	w←			r			
MarkObject	w?			r?			See Table 76: MarkObject

**Table 76: MarkObject**  
**Referenced by: Surface**  
**For Processes: LayoutPreparation**  
**Features: Start-Separator/Slip-End-Sheets**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
JobField	w?			r?			See Table 58: JobField

### 5.37 TrappingDetails

**Table 77: TrappingDetails**  
**Input to: Trapping**  
**Features: Trapping**

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
No Op	w←			r			
PartIDKeys	w←			r			
DocIndex	w←			r			MUST not be present if <i>RunIndex</i> is present.
DocRunIndex	w←			r			MUST not be present if <i>RunIndex</i> is present.
RunIndex	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

## 5.38 TrimmingParams

**Table 78: TrimmingParams**

**Input to:** *Trimming*

**Features:** Trimming

Name or Value	Manager			Worker			Description
	Level →	1	2	3	1	2	
<i>No Op</i>	w←			r			
<i>PartIDKeys</i>	w←			r			
<i>DocIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>DocRunIndex</i>	w←			r			MUST not be present if <i>RunIndex</i> is present.
<i>RunIndex</i>	w←			r			MUST not be present if either of <i>DocIndex</i> or <i>DocRunIndex</i> is present.
<i>all remaining values</i>	w?			r?			See Table 80 Partitioning Resources other than RunList for other PartIDKeys values.

## 6 Resources – Informative

### 6.1 Resource References

In some cases, it is possible that more than one Resource references (uses or contains) another Resource. Instead of defining the referenced Resource twice and risking that when updating one definition, the other definition is forgotten and not updated, a Resource reference (Inter-Resource Linking) MAY be used. Using a Resource reference is also a way to isolate a Resource definition from the Resources that use or contain it.

The Integrated Digital Printing ICS allows for the use of Resource References instead of imbedding Resources inside of other Resources.

In the following example a **Media** Resource is declared in the ResourcePool. The **DigitalPrintingParams** and **Sheet** Resources each use a Resource reference to refer to the **Media** Resource. Note the addition of the “Ref” suffix when the **DigitalPrintingParams** and **Sheet** Resources reference the **Media** Resource and the use of the *rRef* Attribute to identify the **Media** Resource by its *ID* attribute. It is clear that both the **DigitalPrintingParams** and **Sheet** Resources are referencing the same **Media** Resource. Any updates to the **Media** Resource will only have to be made in one place.

```

.....
<ResourcePool>
    ...
    <Media ID="TopTray" Class="Consumable" Status="Available" >
        <Location LocationName="Top"/>
    </Media>
    <LayoutPreparationParams ID="LPP" Class="Parameter" Status="Available" >
        <InsertSheet ... >
            <Sheet>
                <MediaRef rRef="TopTray" />
            </Sheet>
        </InsertSheet>
    </LayoutPreparationParams>
    <DigitalPrintingParams ID="DPP" Class="Parameter" Status="Available" >
        <MediaRef rRef="TopTray" />
    </DigitalPrintingParams>
    ...
</ResourcePool>
...

```

### 6.2 Partitioning Resources

Part of a Resource may have to be defined or referenced separately from another part of the Resource. For example, specific pages of a job are to be printed on the front side of the sheet and the rest of the job is to be printed on both sides of the sheet. A partitioned Resource contains nested child Resource elements, each with the same name as the Resource.

Following are tables that list the valid combination of the partition keys that this application note supports and a description of when each is used.

**Table 79 Partitioning RunList**

Description	Partition Keys	Comments
Select specific files or portions of a file or files.	<i>Run</i>	<p>EndOfDocument or EndOfSet may be implied from the PDL if the PDL supports internal documents and/or sets.</p> <p>If the PDL does not support internal documents or sets then specify EndOfDocument, EndOfSet for each RunList partition so that DocIndex or SetIndex is used to partition other Resources to select specific documents or sets.</p> <p>Specify EndOfBundleItem for each RunList partition so that BundleItemIndex is used to partition other Resources to select specific bundles.</p>

The following Resources MAY be partitioned using the partition keys in the following table:

- **Colorant Control**
- **CoverApplicationParams**
- **DigitalPrintingParams**
- **FoldingParams**
- **HoleMakingParams**
- **InterpretingParams**
- **LayoutPreparationParams**
- **RenderingParams**
- **ScreeningParams**
- **SpineTapingParams**
- **TrappingDetails**
- **TrimmingParams**

**Table 80 Partitioning Resources other than RunList**

Description	Partition Keys	Comments
Select specific Runs in the job.	<i>Run</i>	Allows for the selection of a <b>RunList</b> <i>Run</i> partition by a Resource other than <b>RunList</b> . For example, <i>Run</i> = "first 3 pages". Whereas the index partitions, <i>BundleItemIndex</i> for example, cannot be named, it must be an IntegerRangeList.
Select specific pages in the job.	<i>RunIndex</i>	
Select specific documents.	<i>DocIndex</i>	
Select specific pages in specific documents.	<i>DocIndex</i> <i>DocRunIndex</i>	
Select specific pages in all documents.	<i>DocRunIndex</i>	
Select specific bundle items.	<i>BundleItemIndex</i>	
Select specific sets in a job.	<i>SetIndex</i>	
Select specific documents in specific	<i>SetIndex</i>	

Description	Partition Keys	Comments
sets.	<i>SetDocIndex</i>	
Select specific documents in all sets.	<i>SetDocIndex</i>	
Select specific pages in specific sets.	<i>SetIndex</i> <i>SetRunIndex</i>	
Select specific pages in all sets.	<i>SetRunIndex</i>	
Select specific RunTags.	<i>RunTags</i>	For this application note, only to be used when the PDL supports internal labels and <i>RunTag</i> is implied from the PDL. For this application note, <i>RunTags</i> only refers to labeled documents within the PDL.
Select specific pages in the documents that RunTags references.	<i>RunTags</i> <i>DocRunIndex</i>	For this application note, only to be used when the PDL supports internal labels and <i>RunTag</i> is implied from the PDL.

Following are examples of the use of partitioning as supported by this application note:

- 1) Partitioning **RunList** to define the files or a portion of the file in a job:
  - a) When the aggregate of the files are to be treated as a single entity:  
*PartIDKeys = "Run"* is specified in the parent **RunList** Resource and *Run = "unique identifier"* is specified in each nested child **RunList** .
  - b) When the pages of each file are to be referenced with respect to the beginning of each file:  
 The same as above and in addition *EndOfDocument = "true"* is specified for each nested **RunList** child Resource.

Note: If *EndOfDocument = "true"* is not present for the last nested child **RunList** , even though the default for *EndOfDocument* is "*false*", the behavior is such that the last nested child **RunList** does include *EndOfDocument* set to "*true*". As a result, it is treated as the last document and is referenced using a *DocIndex* partition.

- 2) Partitioning **RunList** to define portions of a job as bundle items so that the individual bundle items could be referenced separately in other Resources by partitioning using *BundleItemIndex*. Partitioning **RunList** so that individual bundle item are defined is necessary when insert sheets are included in the **RunList** and the insert sheets are to be finished with all of part of the document or job:

*PartIDKeys = "Run"* is specified in the parent **RunList** Resource. *Run = "unique bundle item identifier"* and *EndOfBundleItem = "true"* are specified in each nested child **RunList** .

There may also be an *EndOfDocument = "true"* specified for each nested **RunList** child Resource if it is necessary for other Resources to partition by *DocIndex*.

Note: If *EndOfBundleItem = "true"* is not present for the last nested child **RunList** , even though the default for *EndOfBundleItem* is "*false*", the behavior is such that the last nested child **RunList** does include *EndOfBundleItem* set to "*true*". As a result, it is treated as the last bundle item and is referenced using a *BundleItemIndex* partition.

- 3) Partitioning a Resource other than **RunList** to specify that certain pages are to be treated differently:

- a) When specific pages of the job are to be treated differently than the rest of the job:  
*PartIDKeys* = "RunIndex" is specified in the parent Resource and *RunIndex* = "list of individual pages and/or page ranges" is specified in each nested child Resource Element.
- b) When specific *BundleItems* of the job are to be treated differently than the rest of the job:  
*PartIDKeys* = "BundleItemIndex" is specified in the parent Resource and *BundleItemIndex* = "list of individual BundleItems and/or BundleItem ranges" is specified in each nested child Resource element.
- c) When a specific file or portion of a file in the job is to be treated differently than the rest of the job:  
*PartIDKeys* = "DocIndex" is specified in the parent Resource and *DocIndex* = "index of document" is specified in each nested child Resource element.
- d) When specific pages of a file or portion of a file in the job are to be treated differently than the rest of the file or job:  
*PartIDKeys* = "DocIndex DocRunIndex" is specified in the parent Resource, *DocIndex* = "index of document" is specified in each nested child Resource, and *DocRunIndex* = "list of individual pages and/or page ranges" is specified in each Resource element that is a nested child of a nested child Resource.

An example of 1a) and 3a) would be if specific pages and page ranges are to be printed on the front side of the sheet and the rest of the pages are to be printed on both sides of the sheet.

The **RunList** Resource is partitioned by *Run* so that two files will be included in the job. Note that *EndOfDocument* is not specified for the nested **RunList** child elements, so the pages of the job are an aggregate of the pages of all documents.

The **LayoutPreparationParams** Resource is the Resource that is partitioned. Note that the parent **LayoutPreparationParams** includes *PartIDKeys* = "RunIndex" which specifies that partitioning is being done based on the *RunIndex* Attribute and that each child **LayoutPreparationParams** includes page numbers and page ranges as values for its *RunIndex* attribute. Note that the pages referenced by *RunIndex* are the aggregate of the pages in both files, so the page numbers of the second file starts where the page numbers of the first file ends.

```

...
<ResourcePool>
  ...
  <RunList ID="RunList" Class="Parameter" Status="Available" PartIDKeys="Run" >
    <RunList Run="1" >
      <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile1.ps" />
      </LayoutElement>
    </RunList>
    <RunList Run="2" >
      <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile2.ps" />
      </LayoutElement>
    </RunList>
  </RunList>
  <LayoutPreparationParams ID="LPP" Class="Parameter" Status="Available"
    PartIDKeys="RunIndex" >
    <LayoutPreparationParams RunIndex="5 6 8~12 20~-1" Sides="OneSidedFront" />
    <LayoutPreparationParams RunIndex="0~4 7 13~19" Sides="TwoSidedFlipY" />
  </LayoutPreparationParams>

```

```

...
</ResourcePool>
...

```

An example 2), 3b), and 3a) would be if:

- 5 pages are input to the job
- pages 0 through 2 are punched and rotated 90 degrees
- pages 0 through 1 are output to the Top bin
- pages 2 through 4 are stapled and output to the Bottom bin

The **RunList** Resource is partitioned by *Run* so that specific pages in the file are bundled together and referenced as a single entity. Note that *EndOfBundleItem* is specified for the nested **RunList** child elements, so that certain pages of the file will be included in each of the bundles. Each *BundleItem* is referenced by a 0-based index, where 0 is the first *BundleItem*, 1 is the second *BundleItem*, etc.

The **LayoutPreparationParams** Resource is also partitioned. Note that the parent **LayoutPreparationParams** includes *PartIDKeys* = "RunIndex" which specifies that partitioning is being done based on the *RunIndex* Attribute and that each child **LayoutPreparationParams** includes page numbers and page ranges as values for its *RunIndex* attribute.

*BundleItemIndex* partitions the **DigitalPrintingParams**, **HoleMakingParams**, and **StitchingParams** Resources. Partitioning by *BundleItemIndex* allows each *BundleItem* to be referenced individually so that attributes could be applied to a *BundleItem* or to multiple *BundleItems*.

```

...
<ResourcePool>
...
  <RunList PartIDKeys="Run" ComponentGranularity="BundleItem">
    <RunList Run="0" Pages="0~1" EndOfBundleItem="true" >
      <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile1.ps" />
      </LayoutElement>
    </RunList>
    <RunList Run="1" Pages="2" EndOfBundleItem="true" >
      <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile1.ps" />
      </LayoutElement>
    </RunList>
    <RunList Run="2" Pages="3~4" EndOfBundleItem="true" >
      <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile1.ps" />
      </LayoutElement>
    </RunList>
  </RunList>

  <LayoutPreparationParams ID="LPP" Class="Parameter" Status="Available" PartIDKeys="RunIndex"
    Rotate="Rotate0" >
    <LayoutPreparationParams RunIndex="0~2" Rotate="Rotate90" />
  </LayoutPreparationParams>

  <DigitalPrintingParams ID="DPP" Class="Parameter" Status="Available"
    PartIDKeys="BundleItemIndex" OutputBin="Top" >
    <DigitalPrintingParams BundleItemIndex="1~2" OutputBin="Bottom" >
  </DigitalPrintingParams >

```

```

<HoleMakingParams ID="HMP" Class="Parameter" Status="Available" PartIDKeys="BundleItemIndex"
>
  <HoleMakingParams BundleItemIndex="0~1" HoleType="R3-generic"/>
</HoleMakingParams>

<StitchingParams ID="SP" Class="Parameter" Status="Available" PartIDKeys="BundleItemIndex" >
  <StitchingParams BundleItemIndex="1~2" StitchType="Corner"/>
</StitchingParams>
...
</ResourcePool>

```

An example of 1b) and 3c) would be if a job contains multiple files that are to be printed where the first file is to be printed on the front side of the sheet and the second file on both sides of the sheet.

The **RunList** Resource is partitioned by *Run* so that two files could be included in the job. Note that *EndOfDocument* is not specified for the nested **RunList** child elements, so the pages of the job are an aggregate of the pages of all files.

*DocIndex* partitions the **LayoutPreparationParams** Resource, so that *Sides* could be specified for each file. Note that the value of *DocIndex* refers to the relative position of the file in the **RunList**.

```

...
<ResourcePool>
  ...
  <RunList ID="RunList" Class="Parameter" Status="Available" PartIDKeys="Run" >
    <RunList Run="1" EndOfDocument="true" >
      <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile1.ps" />
      </LayoutElement>
    </RunList>
    <RunList Run="2" EndOfDocument="true" >
      <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile2.ps" />
      </LayoutElement>
    </RunList>
  </RunList>
  <LayoutPreparationParams ID="LPP" Class="Parameter" Status="Available"
  PartIDKeys="DocIndex" >
    <LayoutPreparationParams DocIndex="0" Sides="OneSidedFront" />
    <LayoutPreparationParams DocIndex="1" Sides="TwoSidedFlipY" />
  </LayoutPreparationParams>
  ...
</ResourcePool>
...

```

An example of 1b) and 3d) would be if a job contains multiple files that are to be printed where the first file is to be printed on the front side of the sheet and the second file on both sides of the sheet, except pages 4 and 5 of the second file are to be printed on the back side of the sheet.

The **RunList** Resource is partitioned by *Run* so that two files could be included in the job. Note that *EndOfDocument = "true"* is specified for the first nested **RunList** child element, so the pages for each document could be referenced with respect to the beginning of the document. In this example page 4 and 5 for the second document are the 4th and 5th pages of the second document regardless of the number of pages in the first document.

*DocIndex* partitions the **LayoutPreparationParams** Resources, so that *Sides* could be specified for each document. Note that the value of *DocIndex* refers to the relative position of the document in the **RunList**.

```

...
<ResourcePool>
...
  <RunList ID="RunList" Class="Parameter" Status="Available" PartIDKeys="Run" >
    <RunList Run="1" EndOfDocument="true" >
      <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile1.ps" />
      </LayoutElement>
    </RunList>
    <RunList Run="2" >
      <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
        <FileSpec URL="file:///d:/printFile2.ps" />
      </LayoutElement>
    </RunList>
  </RunList>
  <LayoutPreparationParams ID="LPP" Class="Parameter" Status="Available"
  PartIDKeys="DocIndex DocRunIndex" >
    <LayoutPreparationParams DocIndex="0" Sides="OneSidedFront" />
    <LayoutPreparationParams DocIndex="1" Sides="TwoSidedFlipY" />
    <LayoutPreparationParams DocRunIndex="4 5"
      Sides="OneSidedBackFlipY" />
  </LayoutPreparationParams>
</LayoutPreparationParams>
...
</ResourcePool>
...

```

An example of 2), 3b), and 3c) would be if:

- job contains 2 files
- first files is rotated 90 degrees
- pages 0 through 2 of the first files are punched
- an insert sheet is placed before page 2 of the second file
- the insert sheet and pages 2 through 4 of the second file are stapled

The **RunList** Resource is partitioned by *Run* so that specific pages in the file are bundled together and referenced as a single entity. Note that *EndOfBundleItem* is specified for the nested **RunList** child elements, so that certain pages of the file will be included in each of the bundles. Each **BundleItem** could be referenced by a 0-based index, where 0 is the first **BundleItem**, 1 is the second **BundleItem**, etc.

The **LayoutPreparationParams** Resource is also partitioned. Note that the parent **LayoutPreparationParams** includes *PartIDKeys* = "DocIndex" which specifies that partitioning is being done based on the *DocIndex* Attribute and that each child **LayoutPreparationParams** includes the index of the document as a value for its *DocIndex* attribute.

*BundleItemIndex* partitions the **HoleMakingParams** and **StitchingParams** Resources. Partitioning by *BundleItemIndex* allows each **BundleItem** to be referenced individually so that attributes could be applied to a **BundleItem** or to multiple **BundleItems**.

```

...
<ResourcePool>
...
  <RunList PartIDKeys="Run" ComponentGranularity="BundleItem">

```

```

<RunList Run="0" Pages="0~2" EndOfBundleItem="true" >
  <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile1.ps" />
  </LayoutElement>
</RunList>
<RunList Run="1" Pages="3~-1" EndOfDocument="true" EndOfBundleItem="true" >
  <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile1.ps" />
  </LayoutElement>
</RunList>
<RunList Run="2" Pages="0 1" EndOfBundleItem="true" >
  <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile2.ps" />
  </LayoutElement>
  <InsertSheet SheetType="InsertSheet" SheetUsage="Header" />
</RunList>
<RunList Run="3" Pages="2~4" EndOfBundleItem="true" >
  <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile2.ps" />
  </LayoutElement>
  <InsertSheet SheetType="InsertSheet" SheetUsage="Header" />
</RunList>
<RunList Run="4" Pages="5~-1" EndOfDocument="true" EndOfBundleItem="true" >
  <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile2.ps" />
  </LayoutElement>
</RunList>
</RunList>

<LayoutPreparationParams ID="LPP" Class="Parameter" Status="Available" PartIDKeys="DocIndex"
  Rotate="Rotate0" >
  <LayoutPreparationParams DocIndex="0" Rotate="Rotate90" />
</LayoutPreparationParams>

<HoleMakingParams ID="HMP" Class="Parameter" Status="Available"
  PartIDKeys="BundleItemIndex" >
  <HoleMakingParams BundleItemIndex="0" HoleType="R3-generic"/>
</HoleMakingParams>

<StitchingParams ID="SP" Class="Parameter" Status="Available" PartIDKeys="BundleItemIndex" >
  <StitchingParams BundleItemIndex="3" StitchType="Corner"/>
</StitchingParams>
...
</ResourcePool>
...

```

### 6.3 Resource References and Partitioning Resources

Following is an example of using both Resource references and partitioned Resources.

Resource references are used to refer to the four **Layout Element** Resources that identify the files that are part of the job. There are four **RunList** partitions, each of which contains a reference to a **Layout Element** that resides in the ResourcePool.

There are three **Media** Resources that are referenced by a **DigitalPrintingParams** Resource. The **DigitalPrintingParams** Resource has been partitioned so that the four input files could be printed on media pulled from different input trays.

- The first file is printed using the media in the Top tray.
- The second file is printed using the media in the Middle tray.
- The third file is printed using the media in the Bottom tray.
- The first and last pages of the fourth file are printed using the Top tray.
- The rest of the pages of the fourth file are printed using the Middle tray.

```

.....
<ResourcePool>
  ...
  <LayoutElement ID="InputFile1" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile1.ps" />
  </LayoutElement>
  <LayoutElement ID="InputFile2" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile2.ps" />
  </LayoutElement>
  <LayoutElement ID="InputFile3" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile3.ps" />
  </LayoutElement>
  <LayoutElement ID="InputFile4" Class="Parameter" Status="Available" >
    <FileSpec URL="file:///d:/printFile4.ps" />
  </LayoutElement>
  <RunList ID="RunList" Class="Parameter" Status="Available" PartIDKeys="Run" >
    <RunList Run="1" EndOfDocument="true" >
      <LayoutElementRef rRef="InputFile1" />
    </RunList>
    <RunList Run="2" EndOfDocument="true">
      <LayoutElementRef rRef="InputFile2" />
    </RunList>
    <RunList Run="3" EndOfDocument="true" >
      <LayoutElementRef rRef="InputFile3" />
    </RunList>
    <!-- Note that including EndOfDocument="true" for the following RunList
         is not required since this is the last document in the RunList. -->
    <RunList Run="4" EndOfDocument="true">
      <LayoutElementRef rRef="InputFile4" />
    </RunList>
  </RunList>
  <Media ID="TopTray" Class="Parameter" Status="Available">
    <Location LocationName="Top" />
  </Media>
  <Media ID="MiddleTray" Class="Parameter" Status="Available" >
    <Location LocationName="Middle" />
  </Media>
  <Media ID="BottomTray" Class="Parameter" Status="Available" >
    <Location LocationName="Bottom" />
  </Media>
  <!-- Partition DigitalPrintingParams by both DocIndex and DocRunIndex so that each file in the
       job and the pages in each file could be individually referenced -->
  <DigitalPrintingParams ID="DPP" Class="Parameter" Status="Available"
    PartIDKeys="DocIndex DocRunIndex">
    <!-- The top tray is the default tray to be used, so it is specified in the parent
         DigitalPrintingParams. It will be used by the 1st file in the job since there is not a
         partition for the 1st file. -->

```

```
<MediaRef rRef="TopTray" />
<!-- The middle tray will be used to print the file identified by DocIndex="1", which is
the 2nd file. -->
<DigitalPrintingParams DocIndex="1">
  <MediaRef rRef="MiddleTray" />
</DigitalPrintingParams>
<!-- The bottom tray will be used to print the file identified by DocIndex="2", which is
the 3rd file. -->
<DigitalPrintingParams DocIndex="2">
  <MediaRef rRef="BottomTray" />
</DigitalPrintingParams>
<!--The top tray will be used to print the first and last pages of the file identified by
DocIndex="3" and the middle tray will be used to print the rest of the pages in the file.
-->
<DigitalPrintingParams DocIndex="3">
  <DigitalPrintingParams DocRunIndex="0 -1" >
    <MediaRef rRef="TopTray" />
  </DigitalPrintingParams>
  <DigitalPrintingParams DocRunIndex="1~2" >
    <MediaRef rRef="MiddleTray" />
  </DigitalPrintingParams>
</DigitalPrintingParams>
</DigitalPrintingParams>
</ResourcePool>
...
```

## 7 Features Supported

This section describes the features that are supported by the Integrated Digital Printing ICS. Each feature has a short description, **Partition Keys**, **Conformance Levels**, **Elements/Resources Used**, **Processes**, **Syntactic Fragment**, and **Allowed Values**.

Features defined in the following sections may be used in combination. For example, even though the Sides and Number Up features are shown as appearing in their own **LayoutPreparationParams** Resources in the following section, they **MUST** be combined in the same **LayoutPreparationParams** Resource as follows:

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"
    Sides="OneSidedFront" NumberUp="1 2" />
```

Following are descriptions of the headings that appear for each feature:

<b>Partition Keys</b>	<p>For each feature, one or more of the following will appear under the Partition Keys heading:</p> <ul style="list-style-type: none"> <li>• None The Resources used by the feature <b>MUST NOT</b> be partitioned.</li> <li>• <i>ResourceName</i> - None <i>ResourceName</i> <b>MUST NOT</b> be partitioned when used for this feature.</li> <li>• RunList - See Table 79 Partitioning RunList The RunList Resource <b>MAY</b> be partitioned by the keys listed in the table and <b>MUST NOT</b> be partitioned by any other keys.</li> <li>• <i>ResourceName</i> - See Table 80 Partitioning Resources other than RunList <i>ResourceName</i> <b>MAY</b> be partitioned by the keys listed in the table and <b>MUST NOT</b> be partitioned by any other keys.</li> </ul> <p>It is possible that a specific Resource that is used for two features <b>MAY</b> be partitioned for one of the features and <b>MUST</b> not be partitioned for the other feature. In this case the attributes of the Resource that are used for the feature where partitioning is allowed <b>MAY</b> appear a partition, and the attributes of the Resource that are used for the feature where partitioning is not allowed <b>MUST</b> not appear in a partition.</p>
<b>Elements/Resources Used</b>	Identifies the JDF Elements and Resources that are used by the Feature.
<b>Processes</b>	Identifies the Processes to include in the JDF node's Types attribute.
<b>Syntactic Fragment</b>	<p>Shows how the JDF for the feature must appear in a Combined Digital Printing Node.</p> <p>Following are examples of how the syntactic fragment of the feature must appear for various types of partitioning.</p> <p>When no partitioning is specified, the entire job is selected, so the attributes must be specified in the root Resource as shown in the following example:</p> <pre>&lt;LayoutPreparationParams ID="<i>Reference ID</i>" Class="Parameter" Status="Available"     Sides="OneSidedFront" /&gt;</pre> <p>To select specific documents in a job, the Resource must be partitioned using DocIndex and the attributes must be specified in the partition, as shown in the following example:</p> <p>To specify two sided for all pages in the job, except the second document in the job the is to be printed on the front side:</p> <pre>&lt;LayoutPreparationParams ID="<i>Reference ID</i>" Class="Parameter" Status="Available"</pre>

	<p><b>Sides="TwoSidedFlipY" PartIDKeys="DocIndex" &gt;</b>  <b>&lt;LayoutPreparationParams DocIndex="1" Sides="OneSidedFront" /&gt;</b>          &lt;/LayoutPreparationParams&gt;</p> <p>To select specific pages in a job, where the job consists of one document or there are multiple documents in the job and the pages in the aggregate of the documents are to be treated as a single entity, the Resource must be partitioned using RunIndex and the attributes must be specified in the partition, as shown in the following example:</p> <p>To specify two sided for all pages in the job, except pages 6 through 10 which are to be printed on the front side:</p> <p><b>&lt;LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"</b>  <b>Sides="TwoSidedFlipY" PartIDKeys="RunIndex" &gt;</b>  <b>&lt;LayoutPreparationParams RunIndex="6-10" Sides="OneSidedFront" /&gt;</b>          &lt;/LayoutPreparationParams&gt;</p> <p>To select specific pages in a specific document in a job, where the job consists of multiple documents and the pages in each document are to be referenced with respect to the beginning of each document, the Resource must be partitioned using DocIndex and DocRunIndex and the attributes must be specified in the partition, as shown in the following example:</p> <p>To specify two sides for all pages in the job, except pages 6 through 10 in the second document in the job are to be printed on the front side:</p> <p><b>&lt;LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"</b>  <b>Sides="TwoSidedFlipY" PartIDKeys="DocIndex DocRunIndex" &gt;</b>  <b>&lt;LayoutPreparationParams DocIndex="1" &gt;</b>              &lt;LayoutPreparationParams                  <b>DocRunIndex="6-10" Sides="OneSidedFront" /&gt;</b>              &lt;/LayoutPreparationParams&gt;          &lt;/LayoutPreparationParams&gt;</p>
<p><b>Allowed Values</b></p>	<p>Identifies the values that are allowed to be specified for each JDF attribute. The allowed values listed are all of the values that are valid for the Combined Digital Printing Node.</p> <p>The consumer of a Combined Digital Printing Node MUST be able to consume a job ticket that contains any of the allowed values, but the consumer is not required to support the functionality defined by the allowed values.</p>

## 7.1 Approval

Determines whether or not an approval is required for this job. Could be used to get an approval for a job that is a proof print prior to resubmitting the job for a final print.

### Partition Keys

None

### Elements/Resources Used

**Address**

**ApprovalParams**

ApprovalPerson

**ApprovalSuccess**

**Com Channel**

**Company**  
**Contact**  
**Person**  
**RenderingParams**

**Processes**

**Rendering**  
**Approval**

**Syntactic Fragment**

```
<RenderingParams ID="Reference ID" Class="Parameter" Status="Available" >
  <ObjectResolution Resolution="device resolution to use" />
</RenderingParams>
<ApprovalParams ID="Reference ID" Class="Parameter" Status="Available"
  <ApprovalPerson>
    <Contact ContactTypes="Approver"
      <Address City="city" Country="country"
        PostBox="post office box"
        PostalCode="zip or postal code"
        Region="state or province"
        Street="street address"
        ExtendedAddress="additional address info" />
      <ComChannel ChannelType="communication type"
        ChannelTypeDetails="details of communication
        type"
        Locator="communication location" />
      <Company OrganizationName="company/organization name" />
      <Person FirstName="first name"
        FamilyName="family/last name" />
    </Contact>
  </ApprovalPerson>
</ApprovalParams>
<ApprovalSuccess ID="Reference ID" Class="Parameter" Status="Available" />
```

**Allowed Values**

*ID*

String that uniquely identifies the RenderingParams or ApprovalParams.

*Resolution*

If present, MUST be:

$x$   $y$  *Horizontal and vertical resolution, where x and y are in DPI.*

*ApprovalPerson*

MUST be 1 or more occurrences.

*ContactTypes*

MUST be set to "Approver".

*City*

If present, MUST be a String that is the name of the city.

*Country*

If present, MUST be a String that is the name of the country.

*PostBox*

If present, MUST be a String that is the post office box (e.g., P.O. Box 101).

*PostalCode*

If present, MUST be a String that is the zip or postal code.

*Region*

If present, MUST be a String that is the state or province.

**Street**

If present, MUST be a String that is the street address.

**ExtendedAddress**

If present, MUST be a String that is the additional address information (e.g. Suite 245).

**ChannelType**

MUST be set to one of the following values:

<i>Email</i>	<i>Email address</i>
<i>Fax</i>	<i>Fax number</i>
<i>InstantMessaging</i>	<i>An instant message</i>
<i>JMF</i>	<i>A JMF messaging channel</i>
<i>Phone</i>	<i>Telephone number</i>
<i>PrivateDirectory</i>	<i>Account of a registered customer of a certain service</i>
<i>WWW</i>	<i>WWW home page or form</i>

**ChannelTypeDetails**

MUST be set to one of the following values:

<i>Form</i>	<i>Valid when ChannelType is WWW.</i>
<i>Landline</i>	<i>Valid when ChannelType is Phone.</i>
<i>Mobile</i>	<i>Valid when ChannelType is Phone.</i>
<i>Secure</i>	<i>Valid when ChannelType is Phone.</i>
<i>ISDN</i>	<i>Valid when ChannelType is Phone.</i>
<i>Target</i>	<i>Valid when ChannelType is WWW to send events to the URL specified in Locator.</i>
<i>Private directory service vendor name</i>	
<i>Instant message service vendor name</i>	

**Locator**

If present, MUST be a String that is the details about how to communicate (e.g. phone number, fax number, email address, URL).

<i>If ChannelType is:</i>	<i>Locator MUST use the form:</i>
<i>Email</i>	<i>Locator = "mailto:..." URL [RFC2808].</i>
<i>Fax</i>	<i>Locator = "fax:..." URL [RFC2808].</i>
<i>JMF</i>	<i>Locator = "http://..." URL [RFC2616].</i>
<i>Phone</i>	<i>Locator = "tel:..." URL [RFC2808].</i>
<i>WWW</i>	<i>Locator = "http://..." URL [RFC2616].</i>

**OrganizationName**

If present, MUST be a String that is the name of the company or organization.

**FirstName**

If present, MUST be a String that is the first name of the contact.

**FamilyName**

If present, MUST be a String that is the family or last name of the contact.

## 7.2 Billing-Code

A code to bill charges incurred.

**Partition Keys**

None

**Elements/Resources Used**

CustomerInfo

**Processes**

None

**Syntactic Fragment**

```
<CustomerInfo BillingCode = "charge code" />
```

**Allowed Values**

BillingCode

MUST be a string that is the billing code.

## 7.3 Binding

How to bind the output.

**Partition Keys**

**Component** - None

ComponentLink - None

**CoverApplicationParams** and **SpineTapingParams**- See Table 80 Partitioning Resources other than **RunList** for the valid partition keys.

**Elements/Resources Used**

**Component**

ComponentLink

**CoverApplicationParams**

**SpineTapingParams**

**Processes**

**SpineTaping**

**CoverApplication**

**Syntactic Fragment**

SoftCover

To apply glue to the binding edge of a single sheet that wraps from the front around the binding edge to the back (also referred to as Perfect binding). An example of this type of binding is a softcover book.

```
<ComponentLink rRef="ID of Component Resource"
  Usage="Output"
  CombinedProcessIndex="index into Types for predecessor Process" />
<ComponentLink rRef="ID of Component Resource"
  Usage="Input" CombinedProcessIndex="index into Types for
  CoverApplication" Orientation="which edge to bind" />
...
<Component ID="Reference ID" Class="Quantity"
  ComponentType="PartialProduct" Status="Available"
  PipeProtocol="Internal" />
<CoverApplicationParams ID="Reference ID" Class="Parameter"
  Status="Available"
  NoOp="whether or not to bind" />
```

Tape

To apply a tape strip along the binding edge to separate front and back covers.

```
<ComponentLink rRef="ID of Component Resource"
  Usage="Output"
  CombinedProcessIndex="index into Types for predecessor Process" />
<ComponentLink rRef="ID of SpineTapingParams Resource"
  Usage="Input" CombinedProcessIndex="index into Types for SpineTaping"
  Orientation="which edge to bind" />
```

```
...
<Component ID="Reference ID" Class="Quantity"
  ComponentType="PartialProduct" Status="Available"
  PipeProtocol="Internal" />
<SpineTapingParams ID="Reference ID" Class="Parameter" Status="Available"
  NoOp="whether or not to bind" />
```

### Allowed Values

#### *ID*

Strings that uniquely identify the Component, SpineTapingParams or CoverApplicationParams.

#### *No Op*

If present, MUST be set to one of the following values:

<i>false</i>	<i>The specified binding is to be performed. This is the default.</i>
<i>true</i>	<i>To turn binding off. No binding is performed. All other binding attributes are ignored.</i>

### Component

MUST be present if Orientation is specified.

#### ComponentLink

MUST be present if Orientation is specified.

#### ComponentType

MUST be set to "*PartialProduct*".

#### CombinedProcessIndex

MUST be an Integer.

#### Orientation

MUST be present if binding on other than the y-axis is desired. If present, MUST be one of the following values:

<i>Rotate0</i>	<i>Don't rotate the sheet. Binding is to occur on the edge that is along the y-axis (left edge) of the sheet.</i>
<i>Rotate90</i>	<i>Rotate the sheet 90 degrees counter-clockwise. Binding is to occur on the edge that is opposite the x-axis (top edge) of the pre-rotated sheet.</i>
<i>Rotate180</i>	<i>Rotate the sheet 180 degrees. Binding is to occur on the edge that is opposite of the y-axis (right edge) of the pre-rotated sheet.</i>
<i>Rotate270</i>	<i>Rotate the sheet 270 degrees. Binding is to occur on the edge that is along the x-axis (bottom edge) of the pre-rotated sheet.</i>
<i>Flip0</i>	<i>Do not rotate the sheet, flip the sheet around the x-axis. Binding is to occur on the edge that is along the y-axis (left edge) of the pre-flipped sheet.</i>
<i>Flip90</i>	<i>Rotate the sheet 90 degrees counter-clockwise and flip around the x-axis. Binding is to occur on the edge that is opposite the x-axis (top edge) of the pre-rotated/flipped sheet.</i>
<i>Flip180</i>	<i>Rotate the sheet 180 degrees and flip around the x-axis. Binding is to occur on the edge that is opposite of the y-axis (right edge) of the pre-rotated/flipped sheet.</i>
<i>Flip270</i>	<i>Rotate the sheet 270 degrees counter-clockwise and flip around the x-axis. Binding is to occur on the edge that is along the x-axis (bottom edge) of the pre-rotated/flipped sheet.</i>

#### PipeProtocol

MUST be set to "*Internal*".

#### Usage

MUST be set to one of the following values:

*Input*  
*Output*

## 7.4 Black-Overprint

Automated selection of overprint for black text and/or graphics.

### Partition Keys

**AutomatedOverPrintParams** - None

**RenderingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**AutomatedOverPrintParams**

**RenderingParams**

### Processes

**Rendering**

### Syntactic Fragment

```
<RenderingParams ID="Reference ID" Class="Parameter" Status="Available" >  
  <AutomatedOverPrintParams OverPrintBlackText="whether to overprint black text"  
    OverPrintBlackLineArt="whether to overprint black graphics" />  
</RenderingParams>
```

### Allowed Values

*ID*

String that uniquely identifies the RenderingParams.

*OverPrintBlackText*

If present, MUST be set to one of the following values:

*false*      This is the default.  
*true*

*OverPrintBlackLineArt*

If present, MUST be set to one of the following values:

*false*      This is the default.  
*true*

## 7.5 Collate

Whether the sheets in the documents and the documents in the job should be collated when multiple copies of the job are requested.

### Partition Keys

None

### Elements/Resources Used

**DigitalPrintingParams**

### Processes

**DigitalPrinting**

### Syntactic Fragment

```
<DigitalPrintingParams ID="Reference ID" Class="Parameter" Status="Available"  
  Collate="whether to collate or not" />
```

**Allowed Values**

*ID*

String that uniquely identifies the DigitalPrintingParams.

*Collate*

MUST be set to one of the following values:

*None*

*Do not collate.*

*Sheet*

*Collate the sheets in the documents in the job.*

*SheetSetAndJob*

*Collate the sheets in the documents, documents in the sets, and the sets in the job.*

*SheetAndSet*

*Collate the sheets in the sets in the job.*

Example: A job contains 2 documents, A and B, each have 2 sheets, A1, A2, and B1, B2. The number of job copies requested is 3.

If *Collate* = *None*, the sheet order will be: A1A1A1 A2A2A2 B1B1B1 B2B2B2

If *Collate* = *Sheet* the sheet order will be: A1A2 A1A2 A1A2 B1B2 B1B2 B1B2

If *Collate* = *SheetSetAndJob*, the sheet order will be: A1A2B1B2 A1A2B1B2 A1A2B1B2

## 7.6 Comment/Description-of-Job

A comment that describes the job and will be carried along with the job. This information is about the job not the job ticket template. Use the Job-Ticket-Template-Comment-or-Description to include a description of the job ticket template.

This comment MUST only be present in the root JDF Node. If the Combined Digital Printing Node is the root JDF Node, then this comment appears in the Combined Digital Printing Node. If the Combined Digital Printing Node is not the root JDF node, then if present this comment MUST appear in the root JDF Node and not the child Combined Digital Printing Node.

**Partition Keys**

None

**Elements/Resources Used**

JDF

Comment

**Processes**

None

**Syntactic Fragment**

```
<JDF ID=... Type="Combined" Types=... Status="Ready" ...>
  <Comment Language="language code or language and country code "
    Name="JobDescription"> comment or description text </Comment>
  ...
</JDF>
```

**Allowed Values**

Name

Always set to JobDescription.

*comment or description text*

MUST be a String that contains a comment about or a description of the Combined Digital Printing Node.

*Language*

If present, MUST be set to contain either a language code in the form “en” or a language and country code in the form “en-US”.

## 7.7 Contact-Information

Contact information for the job.

### Partition Keys

None

### Elements/Resources Used

**Address**  
**Com Channel**  
**Company**  
**Contact**  
 CustomerInfo  
**Person**

### Processes

None

### Syntactic Fragment

```
<CustomerInfo>
  <Contact ContactTypes="classification of contact" >
    <Address City="city" Country="country" PostBox="post office box"
      PostalCode="zip or postal code" Region="state or province"
      Street="street address" ExtendedAddress="additional address
        info"
    />
    <ComChannel ChannelType="communication type"
      ChannelTypeDetails="details of communication type"
      Locator="communication location" />
    <Company OrganizationName="company/organization name" />
    <Person FirstName="first name" FamilyName="family/last name" />
  </Contact>
</CustomerInfo>
```

### Allowed Values

#### Contact

One or more MUST be present.

#### Contact Types

MUST be set to one or more of the following values:

Administrator
Accounting
Approver
Customer
Delivery
Owner
Pickup
Sender
Supplier
SurplusReturn
ArtReturn

City

- If present, **MUST** be a String that is the name of the city.
- Country**  
If present, **MUST** be a String that is the name of the country.
- PostBox**  
If present, **MUST** be a String that is the post office box (e.g. P.O. Box 101).
- PostalCode**  
If present, **MUST** be a String that is the zip or postal code.
- Region**  
If present, **MUST** be a String that is the state or province.
- Street**  
If present, **MUST** be a String that is the street address.
- ExtendedAddress**  
If present, **MUST** be a String that is the additional address information (e.g. Suite 245).
- ChannelType**  
**MUST** be set to one of the following values:
- |                         |  |
|-------------------------|--|
| <i>Email</i>            | <i>Email address.</i>  |
| <i>Fax</i>              | <i>Fax number.</i>   |
| <i>InstantMessaging</i> | <i>An instant message</i>                                    |
| <i>JMF</i>              | <i>A JMF messaging channel</i>                               |
| <i>Phone</i>            | <i>Telephone number.</i>                                     |
| <i>PrivateDirectory</i> | <i>Account of a registered customer of a certain service</i> |
| <i>WWW</i>              | <i>WWW home page or form.</i>                                |
- ChannelTypeDetails**  
**MUST** be set to one of the following values:
- |  |  |
|--|--|
| <i>Form</i>                                  | <i>Valid when ChannelType is WWW.</i>  |
| <i>Landline</i>                              | <i>Valid when ChannelType is Phone.</i>  |
| <i>Mobile</i>                                | <i>Valid when ChannelType is Phone.</i>  |
| <i>Secure</i>                                | <i>Valid when ChannelType is Phone.</i>  |
| <i>ISDN</i>                                  | <i>Valid when ChannelType is Phone.</i>  |
| <i>Target</i>                                | <i>Valid when ChannelType is WWW to send events to the URL specified in Locator.</i> |
| <i>Private directory service vendor name</i> |  |
| <i>Instant message service vendor name</i>   |  |
- Locator**  
If present, **MUST** be a String that is the details about how to communicate (e.g. phone number, fax number, email address, URL).
- If ChannelType is:* *Locator MUST use the form:*
- |              |  |
|--------------|--|
| <i>Email</i> | <i>Locator = "mailto:..." URL [RFC2808].</i> |
| <i>Fax</i>   | <i>Locator = "fax:..." URL [RFC2808].</i>    |
| <i>JMF</i>   | <i>Locator = "http://..." URL [RFC2616].</i> |
| <i>Phone</i> | <i>Locator = "tel:..." URL [RFC2808]</i>     |
| <i>WWW</i>   | <i>Locator = "http://..." URL [RFC2616].</i> |
- OrganizationName**  
If present, **MUST** be a String that is the name of the company or organization.
- FirstName**  
If present, **MUST** be a String that is the first name of the contact.
- FamilyName**  
If present, **MUST** be a String that is the family or last name of the contact.

## 7.8 Covers

There are two ways to include covers with a job. One, the content that is to be imaged on the covers is not included in the job, the covers are either blank or preprinted. Two, the content that is to be imaged

on the covers is included in the job. For the first case, see Insert-Sheet. For the second case, the following description explains how different media could be specified for the front cover, back cover, and the document body.

Print front and/or back covers with the job, where the first one or two pages and/or the last one of two pages of the job contains the content of the front and/or back covers.

### Partition Keys

**Insert Sheet** - None

**Layout Element** - None

All ResourceRef - None

**Layout PreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Media** - Location

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

### Elements/Resources Used

Container

**Insert Sheet**

**Layout Element**

ResourceRef

**Layout PreparationParams**

**Media**

MediaRef

**RunList**

### Processes

**LayoutPreparation**

### Syntactic Fragment

Using the RunIndex partition key to select pages for the front and back covers:

```
<Media ID="Front cover media reference ID" Class="Consumable" Status="Available" />
</Media ID="Back cover media reference ID" Class="Consumable" Status="Available" />
</Media ID="Document body media reference ID" Class="Consumable" Status="Available" />
<LayoutPreparationParams ID="LayoutPreparationParams reference ID" Class="Parameter" Status="Available" PartIDKeys="RunIndex" >
  <!-- Sides and Media for front cover -->
  <LayoutPreparationParams RunIndex="0" | "0 1" Sides="sides to print front cover on" />
  <!-- Sides and Media for document body -->
  <LayoutPreparationParams RunIndex="1~2" | "1~3" | "2~2" | "2~3" Sides="sides to print document body on" />
  <!-- Sides and Media for back cover -->
  <LayoutPreparationParams RunIndex="-1" | "-2 -1" Sides="sides to print back cover on" />
</LayoutPreparationParams>
```

Using the DocIndex and DocRunIndex partition keys to select pages for the front and back covers of a specific document:

```

<Media ID="Front cover media reference ID" Class="Consumable" Status="Available"
/>
<Media ID="Back cover media reference ID" Class="Consumable" Status="Available"
/>
<Media ID="Document body media reference ID" Class="Consumable"
  Status="Available" />
<LayoutPreparationParams ID="LayoutPreparationParams reference ID"
Class="Parameter"
  Status="Available" PartIDKeys="DocIndex DocRunIndex" >
  <LayoutPreparationParams DocIndex="index of document "
    <!-- Sides and Media for front cover -->
    <LayoutPreparationParams DocRunIndex="0" | "0 1"
      Sides="sides to print front cover on" />
    <!-- Sides and Media for document body -->
    <LayoutPreparationParams
      DocRunIndex="1~2" | "1~3" | "2~2" | "2~3"
      Sides="sides to print document body on" />
    <!-- Sides and Media for back cover -->
    <LayoutPreparationParams DocRunIndex="-1" | "-2 -1"
      Sides="sides to print back cover on" />
  </LayoutPreparationParams>
</LayoutPreparationParams>
<!-- Take the case where the media for the front and back covers is the same as the media for
the
  body of the document and the entire document (covers and body) is to be printed two
sided. The body of the document could end on the front side of a sheet, which would
mean that the front side of the back cover would print on the back side of the last sheet of
the body of the document. The following will force the back side of the last sheet of the
body of the document to be blank if the body of the document ends on the front side of
the sheet by conditionally inserting a fill sheet. If the body of the document ends on the
back side of the sheet, then a fill sheet is not inserted because the front side of the back
cover will already be printed on the next sheet. -->
<LayoutElement ID="LayoutElement reference ID" Class="Parameter" Status="Available" >
  <FileSpec URL="document file name" />
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
PartIDKeys="Run">
  <RunList Run="document's page range Run value" Pages="0~3">
    <LayoutElementRef rRef="LayoutElement reference ID" />
  </RunList>
  <!-- Include the last two pages which will be the back cover. -->
  <RunList Run="document's page range Run value" Pages="-2 -1">
    <LayoutElementRef rRef="LayoutElement reference ID" />
    <!-- The following will insert a sheet before the third to the last page if
necessary. -->
    <InsertSheet SheetType="FillSheet" SheetUsage="FillForceFront"
      SheetFormat="Blank" />
  </RunList>
</RunList>

```

### Allowed Values

*ID*

String that uniquely identify the **Media**, **Layout PreparationParams** and **RunList**.

*rRef*

Strings that reference the **Media, Layout PreparationParams** and **RunList** by means of their unique IDs.

**Run**

String that uniquely identifies a specific partition of the **RunList**.

**DocIndex**

If present, **MUST** be the Index of document being referenced. Specify **DocIndex** and **DocRunIndex** to reference the pages in an individual document.

**RunIndex** or **DocRunIndex**

Specify **RunIndex** to reference the pages in the job and **DocRunIndex** to reference the pages in an individual document.

- 0 *First page. Use for first RunIndex/DocRunIndex for one-sided front cover.*
- 1 *Last page. Use for third RunIndex/DocRunIndex for one-sided back cover.*
- 0 1 *First two pages. Use for first RunIndex/DocRunIndex for two-sided front cover.*
- 2 -1 *Last two pages. Use for third RunIndex/DocRunIndex for two-sided back cover.*
- 1~2 *Second through second to the last pages. Use for second RunIndex/DocRunIndex for document body when front and back covers are one-sided.*
- 1~3 *Second through third to the last pages. Use for second RunIndex/DocRunIndex for document body when front cover is one-sided and back cover is two-sided.*
- 2~2 *Third through second to the last pages. Use for second RunIndex/DocRunIndex for document body when front cover is two-sided and back cover is one-sided.*
- 2~3 *Third through third to the last pages. Use for second RunIndex/DocRunIndex for document body when front and back covers are two-sided.*

**Sides**

**MUST** be set to one of the following values:

- OneSidedBackFlipX** *Image on back side of the media where the page content is placed such that binding occurs along the x-axis. This is equivalent to tumble.*
- OneSidedBackFlipY** *Image on back side of the media where the page content is placed such that binding occurs along the y-axis.*
- OneSidedFront** *Image on front side of the media. This is the default.*
- TwoSidedFlipX** *Image on front and back sides of media where the page content is placed such that binding occurs along the x-axis. This is equivalent to tumble.*
- TwoSidedFlipY** *Image on front and back sides of media where the page content is placed such that binding will occur along the y-axis.*

**URL**

**MUST** be set to the location of the document. See Document-URL on page 109 for usage notes.

**Pages**

**MUST** be set to "0~3" for the first occurrence of Pages and "-2 -1" for the second.

**Sheet Type**

**MUST** be set to "FillSheet".

**Sheet Usage**

**MUST** be set to "FillForceFront".

**Sheet Format**

**MUST** be set to "Blank".

Note: Valid combinations of Pages and Sides are:

- 0 and OneSidedFront to print the first page on the front side of the front cover.
- 0 and OneSidedBackFlipX or OneSidedBackFlipY to print the first page on the back side of the front cover.
- -1 and OneSidedBackFlipX or OneSidedBackFlipY to print the last page on the back side of the back cover.
- -1 and OneSidedFront to print last page on the front side of the back cover.
- 0 1 and TwoSidedFlipX or TwoSidedFlipY to print the first two pages on the front and back sides of the front cover.
- -2 -1 and TwoSidedFlipX or TwoSidedFlipY to print the last two pages on the front and back sides of the back cover.
- 1~-2, 1~-3, 2~-2, 2~-3, and any value of Sides to print the body of the document as specified by Sides.

## 7.9 Destination-or-Physical-Printer-Requested

Printer or destination device that is to execute the Combined Digital Printing Node. [JDF1.2]: “Note that the receiving Device MUST NOT use *Route* to determine whether to execute the node. Rather a Device MUST use a **Device** input resource (if specified) to determine whether to execute the node.”

### Partition Keys

None

### Elements/Resources Used

#### Device

NodeInfo

### Processes

None

### Syntactic Fragment

```
<NodeInfo Route="URL of device" />
```

...

```
<Device ID="Reference ID" Class="Implementation" Status="Available >
  DeviceID="name or ID of device"
  Manufacturer="manufacturer of device"
  ModelNumber="model number of device" />
```

### Allowed Values

*ID*

String that uniquely identifies the Device.

*DeviceID*

String that identifies the device.

*Manufacturer*

If present, MUST be a String that identifies the manufacturer of the device.

*ModelNumber*

If present, MUST be a String that identifies the model number of the device.

*Route*

Optional. URL of device.

## 7.10 Destination-or-Physical-Printer-Resolution

Resolution that the destination or physical printer is to use in the horizontal (cross-feed) and vertical (feed) directions in units of DPI.

**Partition Keys**

**Object Resolution** - None

**RenderingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Elements/Resources Used**

**Object Resolution**

**RenderingParams**

**Processes**

**Rendering**

**Syntactic Fragment**

```
<RenderingParams ID="Reference ID" Class="Parameter" Status="Available" >  
  <ObjectResolution Resolution="device resolution to use" />  
</RenderingParams>
```

**Allowed Values**

*ID*

String that uniquely identifies the RenderingParams.

*Resolution*

MUST be set where:

*x y*      *Horizontal and vertical resolution where x and y are in DPI.*

## 7.11 Document-Compression

Compression algorithm to use to compress or encoding to use to encode the document data.

**Partition Keys**

**FileSpec** - None

**Layout Element** - None

All ResourceRef - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

**Elements/Resources Used**

Container

**FileSpec**

**Layout Element**

ResourceRef

**RunList**

**Processes**

**LayoutPreparation**

**Syntactic Fragment**

For jobs that contain a single document (file):

```
<LayoutElement ID="LayoutElement reference ID" Class="Parameter"  
  Status="Available" >  
  <FileSpec Compression="compression algorithm to use" >  
    <Container>  
      <FileSpec .../>  
    </Container>  
  </FileSpec>
```

```

</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available" >
  <LayoutElementRef rRef="LayoutElement reference ID" />
</RunList>

```

For jobs that contain multiple documents (files):

```

<LayoutElement ID="LayoutElement 1 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec Compression="compression algorithm to use" >
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<LayoutElement ID="LayoutElement 2 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec Compression="compression algorithm to use"
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" >
  <RunList Run="document's Run value" >
    <LayoutElementRef rRef="LayoutElement 1 reference ID" />
  </RunList>
  <RunList Run="document's Run value" >
    <LayoutElementRef rRef="LayoutElement 2 reference ID" />
  </RunList>
</RunList>

```

#### Allowed Values

*ID*

String that uniquely identifies the LayoutElement.

*Run*

String that uniquely identifies a specific partition of the RunList.

*Compression*

MUST be set to one of the following values:

*None*            *Do not compress. This is the default.*  
*Base64*  
*BinHex*  
*Compress*  
*Deflate*  
*Gzip*  
*MacBinary*  
*UUEncode*  
*ZLIB*

*Container*

MUST be present if Compression for parent FileSpec is not set to "None"

## 7.12 Document-Format

Identifies the format of the data in the document in a job.

#### Partition Keys

**FileSpec** - None

**Layout Element** - None

All ResourceRef - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

**Elements/Resources Used**

Container

**FileSpec**

**Layout Element**

ResourceRef

**RunList**

**Processes**

**LayoutPreparation**

**Syntactic Fragment**

For jobs that contain a single document (file):

```
<LayoutElement ID="LayoutElement reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec MimeType="data file format"
    MimeTypeVersion="version or level of data file format" >
    <Container>
      <FileSpec MimeType="file format of container file"
        MimeTypeVersion="version or level of file format for container file"
        />
    </Container>
  </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available" >
  <LayoutElementRef rRef="LayoutElement reference ID" />
</RunList>
```

For jobs that contain multiple documents (files):

```
<LayoutElement ID="LayoutElement 1 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec MimeType="data file format"
    MimeTypeVersion="version or level of data file format" >
    <Container>
      <FileSpec MimeType="file format of container file"
        MimeTypeVersion="version or level of file format for container file"
        />
    </Container>
  </FileSpec>
</LayoutElement>
<LayoutElement ID="LayoutElement 2 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec MimeType="data file format"
    MimeTypeVersion="version or level of data file format" >
    <Container>
      <FileSpec MimeType="file format of container file"
        MimeTypeVersion="version or level of file format for container file"
        />
    </Container>
  </FileSpec>
```

```
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" >
  <RunList Run="document's Run value" >
    <LayoutElementRef rRef="LayoutElement 1 reference ID" />
  </RunList>
  <RunList Run="document's Run value" >
    <LayoutElementRef rRef="LayoutElement 2 reference ID" />
  </RunList>
</RunList>
```

### Allowed Values

#### *ID*

Strings that uniquely identify the **Layout Element** and **RunList**.

#### *rRef*

Strings that reference the **Layout Element** and **RunList** by means of their unique *IDs*.

#### *Run*

String that uniquely identifies a specific partition of the **RunList**.

#### Container

MUST be present if data file is compressed, so it has a container file.

#### *Mime Type*

Following are examples of values that may be supported (see [JDF1.2] Appendix P):

*application/pdf*

*application/postscript*

*application/octet-stream* (supported by devices that are capable of auto-sensing the format)

*application/vnd.hp-PCL*

*application/vnd.podi-ppml+xml*

*application/zip*

*ICC Profile*

*image/jpeg*

*image/tiff*

*multipart/related*

*text/plain*

#### *Mime Type Version*

MUST be a String that identifies the version of the *Mime Type*. Following are examples of values that may be supported:

*PS/1*

*PS/2*

*PS/3*

*PCL/3*

*PCL/4*

*PCL/5*

*PCL/5e*

*PCL/6*

*PCL/X*

*PDF/1.0*

*PDF/1.1*

*PDF/1.2*

*PDF/1.3.*

*PDF/1.4*

*PDF/1.5*

*PDF/1.6*

*PDF/X-1a:2001*

*PDF/X-3:2002*  
*PDF/X-1a:2003*  
*PDF/X-3:2003*  
*PDF/X-2:2003*  
*PDF/PPML/VDX-2002*  
*PDF/is-1.0*  
*ICC-Profile/2.1.0*  
*ICC-Profile/2.2.0*  
*ICC-Profile/2.4.0*  
*ICC-Profile/4.0.0*  
*PPML/1.5*  
*PPML/2.0*  
*PPML/2.1*  
*tiff/6.0*

## 7.13 Document-Natural-Language

The natural language of the document in a job.

### Partition Keys

**FileSpec** - None

**Layout Element** - None

All ResourceRef - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

### Elements/Resources Used

Container

**FileSpec**

**Layout Element**

ResourceRef

**RunList**

### Processes

*LayoutPreparation*

### Syntactic Fragment

For jobs that contain a single document (file):

```
<LayoutElement ID="LayoutElement reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec DocumentNaturalLanguage="data format" >
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available" >
  <LayoutElementRef rRef="LayoutElement reference ID" />
</RunList>
```

For jobs that contain multiple documents (files):

```
<LayoutElement ID="LayoutElement 1 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec DocumentNaturalLanguage="data format" >
    <Container>
```

```

        <FileSpec .../>
    </Container>
</FileSpec>
</LayoutElement>
<LayoutElement ID="LayoutElement 2 reference ID" Class="Parameter"
    Status="Available" >
    <FileSpec DocumentNaturalLanguage="data format" >
        <Container>
            <FileSpec .../>
        </Container>
    </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
    PartIDKeys="Run" >
    <RunList Run="document's Run value" >
        <LayoutElementRef rRef="LayoutElement 1 reference ID" />
    </RunList>
    <RunList Run="document's Run value" >
        <LayoutElementRef rRef="LayoutElement 2 reference ID" />
    </RunList>
</RunList>

```

#### Allowed Values

*ID*

String that uniquely identifies the **RunList** .

*Run*

String that uniquely identifies a specific partition of the **RunList** .

**Container**

MUST be present if data file is compressed, so it has a container file.

*DocumentNaturalLanguage*

MUST be a String that represents either a language in the form “en” or a language and country code in the form “en-US”. If not specified defaults to system specified.

## 7.14 Document-URL

Location of the document in a job.

#### Partition Keys

**FileSpec** - None

**Layout Element** - None

All ResourceRef - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

#### Elements/Resources Used

Container

**FileSpec**

**Layout Element**

ResourceRef

**RunList**

#### Processes

*LayoutPreparation*

#### Syntactic Fragment

For jobs that contain a single document (file):

```

<LayoutElement ID="LayoutElement reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec URL="file name" >
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  Directory="directory where files reside" >
  <LayoutElementRef rRef="LayoutElement reference ID" />
</RunList>

```

For jobs that contain multiple documents (files):

```

<LayoutElement ID="LayoutElement 1 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec URL="document 1 file name" >
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<LayoutElement ID="LayoutElement 2 reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec URL="document 2 file name" >
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" Directory="directory where files reside" >
  <RunList Run="document's Run value" EndOfDocument=
    "whether or not document is to be treated separately" >
    <LayoutElementRef="LayoutElement 1 reference ID" />
  </RunList>
  <RunList Run="document's Run value" EndOfDocument=
    "whether or not document is to be treated separately" >
    <LayoutElementRef="LayoutElement 2 reference ID" />
  </RunList>
</RunList>

```

#### Allowed Values

##### *ID*

Strings that uniquely identify the **Layout Element** and **RunList**.

##### *rRef*

Strings that reference the **Layout Element** and **RunList** by means of their unique *IDs*.

##### Container

MUST be present if data file is compressed, so it has a container file.

##### *Directory*

If present, MUST be a URL that identifies where the files reside.

##### *EndOfDocument*

If present, MUST be set to one of the following values:

*false* This is the implied default.

*true*

**Run** String that uniquely identifies a specific partition of the RunList.

**URL** MUST be set as the location of the file in the form as specified in [URL-AN]. Use of URL = "" for any other MimeType does not conform to this application note because it requires a private agreement between the *Controller/Agent* and Device.

The following URL schemes must be supported:

*cid*  
*file*  
*http*

The following URL schemes may be supported:

*ftp*  
*https*

## 7.15 Fit-Policy

What to do when the page content does not fit on the media.

### Partition Keys

**Fit Policy** - None

**ImageShift** - None

**Layout PreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**Fit Policy**

**ImageShift**

**Layout PreparationParams**

### Processes

**LayoutPreparation**

### Syntactic Fragment

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available" >  
  <FitPolicy SizePolicy="what to do when content doesn't fit"  
    RotatePolicy="how to rotate when content doesn't fit" />  
  <ImageShift  
    PositionX="how to horizontally position the content"  
    PositionY="how to vertically position the content" />  
</LayoutPreparationParams>
```

### Allowed Values

*ID*

String that uniquely identifies the **Layout PreparationParams**.

*RotatePolicy*

If present, MUST be set to one of the following values:

*NoRotate*

*Do not rotate.*

*RotateOrthogonal*

*Rotate by 90° in either direction, i.e., rotate if necessary to fit.*

*RotateClockwise*

*Rotate clockwise by 90°.*

*RotateCounterClockwis*

*Rotate counter-clockwise by 90°.*

*e*

### *SizePolicy*

If present, MUST be set to one of the following values:

<i>Abort</i>	<i>Emit an error and abort printing</i>
<i>ClipToMaxPage</i>	<i>The page contents should be clipped to the size of the container. The printed area is either centered in the source image.</i>
<i>FitToPage</i>	<i>The page contents should be scaled up or down to fit the media. The aspect ratio is maintained.</i>
<i>ReduceToFit</i>	<i>The page contents should be scaled down but not scaled up to fit the media. The aspect ratio is maintained.</i>
<i>Tile</i>	<i>The page contents should be split into several tiles, each printed on its own surface.</i>

### *PositionX*

If present, MUST be set to one of the following values:

<i>Center</i>	<i>Center the contents horizontally without regard to the limitations of the media's printable area.</i>
<i>Left</i>	<i>Position the left edge of the contents to be coincident with the left edge of the media's printable area.</i>
<i>Right</i>	<i>Position the right edge of the contents to be coincident with the right edge of the media's printable area.</i>
<i>Spine</i>	<i>Position the images so they are coincident with the horizontal binding edge of the printable area.</i>
<i>None</i>	<i>Place the contents where the print data specifies.</i>

### *PositionY*

If present, MUST be set to one of the following values:

<i>Bottom</i>	<i>Position the bottom edge of the contents to be coincident with the bottom edge of the media's printable area.</i>
<i>Center</i>	<i>Center the contents vertically without regard to the limitations of the media's printable area.</i>
<i>Spine</i>	<i>Position the images so they are coincident with the horizontal binding edge of the printable area.</i>
<i>Top</i>	<i>Position the top edge of the contents to be coincident with the top edge of the media's printable area.</i>
<i>None</i>	<i>Place the contents where the print data specifies.</i>

## 7.16 Folding

How to fold the output.

### **Partition Keys**

**Component** - None

**ComponentLink** - None

**FoldingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### **Elements/Resources Used**

**Component**

**ComponentLink**

**FoldingParams**

### **Processes**

**Folding**

### **Syntactic Fragment**

<ComponentLink rRef="ID of Component Resource" >

```

Usage="Output" CombinedProcessIndex="index into Types for predecessor
Process" />
<ComponentLink rRef="ID of Component Resource "
Usage="Input" CombinedProcessIndex="index into Types for Folding"
Orientation="which edge to fold" />
...
<Component ID="Reference ID" Class="Quantity" ComponentType="PartialProduct"
Status="Available" PipeProtocol="Internal" />
<FoldingParams ID="Reference ID" Class="Parameter" Status="Available" >
NoOp="whether or not to fold"
FoldCatalog="type of folding operation to perform"

```

**Allowed Values**

*ID*

String that uniquely identifies the **FoldingParams**.

*No Op*

If present, **MUST** be set to one of the following boolean values:

<i>false</i>	<i>To use other FoldingParams attributes to specify folding. This is the default.</i>
<i>true</i>	<i>To turn folding off. All other FoldingParams attributes are ignored.</i>

*FoldCatalog*

**MUST** be set to one of the following values to specify the type of fold operation to perform:

<i>F4-1</i>	<i>perform a saddle-fold operation. This fold is used for booklets.</i>
<i>F6-2</i>	<i>perform a z-fold in thirds operation. This fold is used for brochures.</i>
<i>F6-4</i>	<i>perform a c-fold operation</i>
<i>F6-6</i>	<i>perform a z-fold operation. The result of the F6-6 z-fold is such that the sheet is face down. If the desired result is that the sheet be face up, then set Orientation = "Flip180" in the input ComponentLink for the Intermediate Component.</i>

*Component*

**MUST** be present if *Orientation* is specified.

*ComponentLink*

**MUST** be present if *Orientation* is specified.

*Component Type*

**MUST** be set to "*PartialProduct*".

*CombinedProcessIndex*

**MUST** be an Integer.

*Orientation*

**MUST** be present if folding on other than the y-axis is desired. If present, **MUST** be one of the following values:

<i>Rotate0</i>	<i>Don't rotate the sheet. Folding is to occur from the edge that is along the y-axis (left edge) of the sheet.</i>
<i>Rotate90</i>	<i>Rotate the sheet 90 degrees counter-clockwise. Folding is to occur from the edge that is opposite the x-axis (top edge) of the pre-rotated sheet.</i>
<i>Rotate180</i>	<i>Rotate the sheet 180 degrees. Folding is to occur from the edge that is opposite of the y-axis (right edge) of the pre-rotated sheet</i>
<i>Rotate270</i>	<i>Rotate the sheet 270 degrees. Folding is to occur from the edge that is along the x-axis (bottom edge) of the pre-rotated sheet.</i>

<i>Flip0</i>	<i>Do not rotate the sheet; flip the sheet around the x-axis. Folding is to occur from the edge that is along the y-axis (left edge) of the pre-flipped sheet.</i>
<i>Flip90</i>	<i>Rotate the sheet 90 degrees counter-clockwise and flip around the x-axis. Folding is to occur from the edge that is opposite the x-axis (top edge) of the pre-rotated/flipped sheet.</i>
<i>Flip180</i>	<i>Rotate the sheet 180 degrees and flip around the x-axis. Folding is to occur from the edge that is opposite of the y-axis (right edge) of the pre-rotated/flipped sheet.</i>
<i>Flip270</i>	<i>Rotate the sheet 270 degrees counter-clockwise and flip around the x-axis. Folding is to occur from the edge that is along the x-axis (bottom edge) of the pre-rotated/flipped sheet.</i>

*PipeProtocol*

MUST be set to "Internal".

*Usage*

MUST be set to one of the following values:

*Input*

*Output*

## 7.17 Force-Page

Force the first page of the specified range of pages to either the front or back side of the sheet. This feature is used to ensure that chapters will start on a specific side of the sheet and is only honored when two-sided printing is specified.

### Partition Keys

**Insert Sheet** - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

### Elements/Resources Used

**Insert Sheet**

**RunList**

### Processes

**LayoutPreparation**

### Elements/Resources Used

**Insert Sheet**

**Layout Element**

**RunList**

### Syntactic Fragment

```
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run">
  <!-- The following will insert a sheet before the first page of the specified page range so
  that the first page of the page range will print on the desired side of the sheet. -->
  <RunList Run="document's page range Run value"
    Pages="force first page in range of pages to a new sheet">
    <LayoutElementRef rRef="LayoutElement reference ID" />
    <InsertSheet SheetType="FillSheet"
      SheetUsage="whether to force to back or front side"
      SheetFormat=Blank" />
  </RunList>
```

... Include as many partitioned RunLists here as needed in the form as shown above.  
 ... There should be one for each page range where the first page of the ... page range will be forced to print on the specified side.

```
<!-- The last page range is for the end of the document. -->
<RunList Run="document's page range Run value"
  Pages="last page range of document" >
  <LayoutElementRef rRef="LayoutElement reference ID" />
</RunList>
</RunList>
```

**Allowed Values**

*ID*

String that uniquely identifies the **RunList** .

*rRef*

String that references the **RunList** by means of its unique.

*Run*

String that uniquely identifies a specific partition of the RunList.

*Pages*

MUST be set, where:

*x~y* Range of pages that are to occur before forcing a new sheet. The last page

range begins with the last page to force to a specific side through the end of the document (-1).

*Sheet Type*

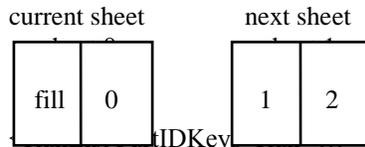
MUST be set to "FillSheet".

*Sheet Usage*

MUST be set to one of the following values:

**FillForceBack**

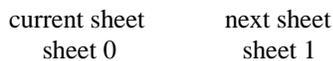
If page 0 is the next page in the RunList, specify SheetUsage = "FillForceBack" to fill the front surface of the current sheet (sheet 0) so that the next page (page 0) will be imaged on the back surface of the current sheet (sheet 0) if the next page (page 0) would not have already been imaged on the back surface, as follows:



```
<RunList Run="0" Pages="0" ...>
  <InsertSheet SheetUsage="FillForceBack" .../>
</RunList>
<RunList Run="1" Pages="1 2" .../>
</RunList>
```

**FillForceFront**

If page 1 is the next page in the **RunList**, specify *SheetUsage* = "FillForceFront" to fill the back surface of the current sheet (sheet 0) so that the next page (page 1) will be imaged on the front surface of the next sheet (sheet 1) if the next page (page 1) would not have already been imaged on the back surface, as follows:



```

<RunList PartIDKeys=Run" ...>
  <RunList Run="0" Pages="0" .../>
  <RunList Run="1" Pages="1 2" .../>
  <InsertSheet SheetUsage="FillForceFront" .../>
</RunList>
</RunList>

```

**Sheet Format**

MUST be set to "Blank".

Example: When printing two sided, to ensure that page 0 is printed on the back side of a sheet and pages 3 and 6 are printed on the front side of a sheet, set SheetUsage and partition the RunList as follows:

```

<RunList PartIDKeys=Run" ...>
  <RunList Run="0" Pages="0~2" ...>
    <InsertSheet SheetType="FillSheet" SheetUsage="FillForceBack"
      SheetFormat="Blank" .../>
  </RunList>
  <RunList Run="1" Pages="3~5" .../>
    <InsertSheet SheetType="FillSheet" SheetUsage="FillForceFront"
      SheetFormat="Blank" .../>
  </RunList>
  <RunList Run="1" Pages="6~-1" .../>
    <InsertSheet SheetType="FillSheet" SheetUsage="FillForceFront"
      SheetFormat="Blank" .../>
  </RunList>
</RunList>

```

The result will be as follows:

x	y	Result
0	2	A fill page will be inserted before page 0, so that page 0 is on the back side.
3	5	Because page 3 will be on the front side, it is not necessary to insert a fill sheet before page 3.
6	-1	A fill page will be inserted before page 6, which is the back side of page 5, so that page 6 is on the front side.

## 7.18 Hold-Job

Hold the job on the spooled queue.

**Partition Keys**

None

**Elements/Resources Used**

JDF

**Processes**

None

**Syntactic Fragment**

```
<JDF ID=... Type="Combined" Types=... Status="Ready" Activation="held status of job"  
... >
```

**Allowed Values**

*Activation*

MUST be set to one of the following values:

<i>Held</i>	Job is held and cannot be processed.
<i>Active</i>	Job is released to be processed.

## 7.19 ICS-Versions

The versions of the Interoperability and Conformance Specifications that were used to generate the job ticket.

**Partition Keys**

None

**Elements/Resources Used**

JDF

**Processes**

None

**Syntactic Fragment**

```
<JDF ID=... Type="Combined" Types=... Status="Ready" ICSVersions="ICS versions" ...  
>
```

**Allowed Values**

*ICSVersions*

MUST be NMTOKENS of the form <ICSName>\_L<ICSLevel>-<ICSVersion>. To include the Integrated Digital Printing ICS, the following MUST be specified:

IDP\_L1-1.0

## 7.20 Image-Shift-Back-Side

Offset the logical page origin as specified, in points, to the right or left and/or above or below the physical page on the back of the sheet.

**Partition Keys**

ImageShift - None

**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Elements/Resources Used**

ImageShift

**LayoutPreparationParams**

**Processes**

*LayoutPreparation*

**Syntactic Fragment**

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available" >  
  <ImageShift ShiftBack="x and y offset amount" />  
</LayoutPreparationParams>
```

**Allowed Values**

*ID*

String that uniquely identifies the `LayoutPreparationParams`.

*ShiftBack*

MUST be an `XYPair` (doubles), that are the amount to shift the image in the x and y directions.

## 7.21 Image-Shift-Front-Side

Offset the logical page origin as specified, in points, to the right or left and/or above or below the physical page on the front of the sheet.

**Partition Keys**

`ImageShift` - None

**`LayoutPreparationParams`** - See Table 80 Partitioning Resources other than `RunList` for the valid partition keys.

**Elements/Resources Used**

`ImageShift`

**`LayoutPreparationParams`**

**Processes**

*`LayoutPreparation`*

**Syntactic Fragment**

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available" >
```

```
<ImageShift ShiftFront="x and y offset amount" />
```

```
</LayoutPreparationParams>
```

**Allowed Values**

*ID*

String that uniquely identifies the **`LayoutPreparationParams`**.

*ShiftFront*

MUST be an `XYPair` (doubles) that are the amount, in points, to shift the image in the x and y directions.

## 7.22 Input-Tray-Name

Name of the input tray that contains the media to be used.

**Partition Keys**

**`DigitalPrintingParams`** - See Table 80 Partitioning Resources other than `RunList` for the valid partition keys.

**`Media`** - Location

**Elements/Resources Used**

**`DigitalPrintingParams`**

**`Media`**

`MediaRef`

`Part`

**Processes**

*`DigitalPrinting`*

**Syntactic Fragment**

```
<Media ID="Media reference ID" Class="Consumable" Status="Available"
  <Location LocationName="name of input tray" />
</Media>
<DigitalPrintingParams ID="DigitalPrintingParams reference ID" Class="Parameter"
  Status="Available ManualFeed="whether or not media will be manually fed">
  <MediaRef rRef="Media reference ID" />
</DigitalPrintingParams>
```

**Allowed Values**

*ID*

Strings that uniquely identify the **Media** and **DigitalPrintingParams**.

*rRef*

Strings that reference the **Media** and **DigitalPrintingParams** by means of their unique IDs.

*Location*

If present, MUST contain *LocationName*.

*LocationName*

If present, MUST be set to one of the following values:

<i>AnySmallFormat</i>	
<i>AnyLargeFormat</i>	
<i>AutoSelect</i>	
<i>Bottom</i>	same as Lower
<i>BypassTray</i>	
<i>BypassTray-n</i>	where <i>n</i> is an integer
<i>Continuous</i>	
<i>Disc</i>	
<i>Disc-n</i>	where <i>n</i> is an integer
<i>Envelope</i>	
<i>Envelope-n</i>	where <i>n</i> is an integer
<i>Front</i>	
<i>InsertTray</i>	
<i>InsertTray-n</i>	where <i>n</i> is an integer
<i>LargeCapacity</i>	same as Main
<i>LargeCapacity-n</i>	where <i>n</i> is an integer
<i>Left</i>	
<i>Middle</i>	same as Center
<i>Rear</i>	
<i>Right</i>	
<i>Roll</i>	
<i>Roll-n</i>	where <i>n</i> is an integer
<i>Side</i>	
<i>Top</i>	same as Upper
<i>Tray</i>	
<i>Tray-n</i>	where <i>n</i> is an integer, same as Cassette

*ManualFeed*

If present, MUST be a one of the following values:

<i>false</i>	<i>The media will not be fed manually. This is the default.</i>
<i>true</i>	<i>The media will be fed manually. If LocationName is specified for the input tray name, then the media will be manually fed using the specified input tray name. If LocationName is not specified, then the system specified input tray will be used to manually feed the media.</i>

Examples:

The result of the following two examples is the same, page 0 of the **RunList** is printed on the media loaded in Tray-2 and the rest of the pages of the **RunList** are printed on the media loaded in Tray-1. In the first example a single **Media** Resource is partitioned by *Location* and in the second example there are two media Resources.

1. In the following example the **Media** Resource is partitioned by *Location* and the **DigitalPrintingParams** partition for page 0 contains a **MediaRef** that contains the **Media** partition for the Cover media loaded in Tray-2.

```

...
<Media ID="M1" PartIDKeys="Location" >
  <Location LocationName="Tray-1" />
  <Media Location="Cover" >
    <Location LocationName="Tray-2" />
  </Media>
</Media>
<DigitalPrintingParams ID="DPP" PartIDKeys="RunIndex" >
  <MediaRef rRef="M1" />
  <DigitalPrintingParams RunIndex="0" >
    <MediaRef rRef=M1" >
      <Part Location="Cover" />
    </MediaRef>
  </DigitalPrintingParams>
</DigitalPrintingParams>
...

```

2. In the following example there are two **Media** Resources and the **DigitalPrintingParams** partition for page 0 contains a **MediaRef** for the media loaded in Tray-2.

```

...
<Media ID="M1" >
  <Location LocationName="Tray-1" />
</Media>
<Media ID="M2" >
  <Location LocationName="Tray-2" />
</Media>
<DigitalPrintingParams ID="DPP" PartIDKeys="RunIndex" >
  <MediaRef rRef="M1" />
  <DigitalPrintingParams RunIndex="0" >
    <MediaRef rRef=M2" />
  </DigitalPrintingParams>
</DigitalPrintingParams>
...

```

## 7.23 Insert-Sheet

Insert a blank (or preprinted) sheet before and/or after a specified page range. If any type of finishing (hole making, stitching, etc.) is specified for the page range, then the insert sheet will be included with the specified page range.

### Partition Keys

**FileSpec** - None  
**Insert Sheet** - None  
**Layout Element** - None  
 All ResourceRef - None

**Media** - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

**Sheet** - None

**Elements/Resources Used**

Container

**FileSpec**

InsertSheet

**Layout Element**

ResourceRef

**Media**

MediaRef

**RunList**

**Sheet**

**Processes**

*LayoutPreparation*

**Syntactic Fragment**

Following demonstrates how to place an insert sheet before or after a specific page range of a document:

```
<LayoutElement ID="LayoutElement reference ID" Class="Parameter"
  Status="Available" >
  <FileSpec Url="file name" />
</LayoutElement>
<Media ID="Media 2 reference ID" Class="Consumable" Status="Available" />
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" >
  <RunList Run="insert sheet Run value"
    Pages="x-y page range before or after insert sheet" >
    <LayoutElementRef rRef="LayoutElement reference ID" />
    <InsertSheet SheetType="InsertSheet"
      SheetUsage="where to insert sheet" >
      <RunList PageCopies="number of copies of insert sheet" />
      <Sheet>
        <MediaRef rRef="Media 2 reference ID" />
      </Sheet>
    </InsertSheet>
  </RunList>
  <RunList Run="Run value for remainder of document"
    Pages="z--1 page range after insert sheet" >
    <LayoutElementRef rRef="LayoutElement reference ID" />
  </RunList>
</RunList>
```

**Allowed Values**

*ID*

Strings that uniquely identify the **Layout Element**, **Media** and **RunList**.

*rRef*

Strings that reference the **Layout Element**, **Media** and **RunList** by means of their unique *IDs*.

*Run*

Strings that uniquely identify the page range before/after the insert sheet or the page range after the insert sheet. The value could be anything that uniquely identifies this RunList partition.

**Pages**

MUST be present, where:

*x~y* Insert before (SheetUsage=Header) or after (SheetUsage=Trailer) the

range of pages starting with *x* and ending with *y*. *x* is 0 to indicate the first page of the document. *y* is -1 to indicate the last page of the document.

*z~-1* Page range after insert sheet to the end of the document.

**PageCopies**

If present, MUST be an integer in the range 1 through 999. Default is 1.

**Sheet Type**

MUST be set to "InsertSheet"

**Sheet Usage**

MUST be set to one of the following values:

<i>Header</i>	Insert sheet before the specified page(s)
<i>Trailer</i>	Insert sheet after the specified page(s)

## 7.24 Interleave-Sheets

Whether to interleave a printed or blank sheet between each sheet of the output.

**Partition Keys**

None

**Elements/Resources Used**

**Insert Sheet**  
**Layout PreparationParams**  
**Media**  
 MediaRef  
**Sheet**

**Processes**

**LayoutPreparation**

**Syntactic Fragment**

```
<Media ID="Interleave media reference ID" Class="Consumable" Status="Available" />
<LayoutPreparationParams ID="LayoutPreparationParams Reference ID"
Class="Parameter"
Status="Available"
<InsertSheet SheetType="SeparatorSheet"
SheetUsage="where to insert interleave sheet"
SheetFormat="type of sheet to interleave" >
<Sheet>
<MediaRef rRef="Interleave media reference ID" />
</Sheet>
</InsertSheet>
</LayoutPreparationParams>
```

**Allowed Values**

*ID*

Strings that uniquely identify the **Media** and **Layout PreparationParams**.

*rRef*

Strings that reference the **Media** and **LayoutPreparationParams** by means of their unique *IDs*.

*Sheet Type*

MUST be set to "*Separator*".

*Sheet Usage*

MUST be set to one of the following values:

<i>Interleaved</i>	<i>Interleave sheet is produced after each sheet.</i>
<i>InterleavedBefore</i>	<i>Interleave sheet is produced before each sheet.</i>

*Sheet Format*

MUST be set to one of the following values:

<i>Duplicate</i>	<i>Print same content as previous sheet onto each interleave sheet.</i>
<i>Blank</i>	<i>Do not print on the interleave sheet. Sheet may be blank or preprinted.</i>

## 7.25 Job-Created-By

Name or user ID of the person who submitted the job. If present, this information MUST be included in the **AuditPool** of the Combined Digital Printing Node when the Combined Digital Printing Node is created.

**Partition Keys**

None

**Elements/Resources Used**

AuditPool  
Created

**Processes**

None

**Syntactic Fragment**

```
<AuditPool>  
  <Created ID="ID of this Created element"  
    Author="name or user ID of person who created job"  
    TimeStamp="date and time of creation" />  
</AuditPool>
```

**Allowed Values**

*ID*

Unique ID used to refer to this **Created** element by subsequent correction **Audit** elements.

*Author*

If present, MUST be a String. This may contain, for example, the user *ID* and hostname in the form *userID@hostname*.

*TimeStamp*

MUST be a date and time in ISO 8601 format. If the date and time is not known then zeros for the date and time values are provided.

## 7.26 Job-Identification

IDs that are used to identify a job.

**Partition Keys**

None

**Elements/Resources Used**

JDF

**Processes**

None

**Syntactic Fragment**

<JDF ID=... Type="Combined" Types=... Status="Ready" **JobID**="job identifier"  
**JobPartID**="" ... >

**Allowed Values**

*JobID*

If present, MUST be a string that identifies a job.

*JobPartID*

If present, MUST be a string that identifies a JDF node in a job.

## 7.27 Job-Modified-By

Name or user ID of the person who modified the job. The hostname may also be specified.

**Partition Keys**

None

**Elements/Resources Used**

AuditPool

Modified

**Processes**

None

**Syntactic Fragment**

<AuditPool>  
<**Modified ID**="ID of this Modified element" **Author**="name or user ID of person  
who modified job"  
**TimeStamp**="date and time of modification" />  
</AuditPool>

**Allowed Values**

*ID*

Unique *ID* used to refer to this **Modified** element by subsequent correction **Audit** elements.

*Author*

If present, MUST be a String. This may contain, for example, the user *ID* and hostname in the form *userID@hostname*.

*TimeStamp*

MUST be a date and time in ISO 8601 format. If the date and time is not known then zeros for the date and time values are provided.

## 7.28 Job-Name

Either a user friendly name of the job, such as the customer's name for the job and/or the name of the Combined Digital Printing Node.

The customer's name for the job and the name of the Combined Digital Printing Node may be the same. The Device **MUST** use the name of the Combined Digital Printing Node if it is provided, otherwise the Device **MAY** use the customer name of the job.

### Partition Keys

None

### Elements/Resources Used

JDF  
CustomerInfo

### Processes

None

### Syntactic Fragment

Customer's name of the job:

```
<CustomerInfo CustomerJobName="job name" />
```

Name of the Combined Digital Printing Node:

```
<JDF ID=... Types="Combined" Types=... Status="Ready"  
DescriptiveName="description of the Combined Digital Printing Node" ... >
```

### Allowed Values

*CustomerJobName*

If present, **MUST** be a string that is a user friendly name of the job.

*DescriptiveName*

If present, **MUST** be a string that is the name of the Combined Digital Printing Node.

## 7.29 Job-Priority

Scheduling priority of job.

### Partition Keys

None

### Elements/Resources Used

NodeInfo

### Processes

None

### Syntactic Fragment

```
<NodeInfo JobPriority="priority" />
```

### Allowed Values

*JobPriority*

**MUST** be an integer in the range of 1 through 100, where 1 is the lowest priority and 100 is the highest priority.

## 7.30 Job-Ticket-Created-By

The name and version of the agent application that created the Combined Digital Printing Node.

### Partition Keys

None

### Elements/Resources Used

AuditPool  
Created

### Processes

None

### Syntactic Fragment

```
<AuditPool >  
  <Created ID="ID of this Created element" AgentName="name of agent application"  
    AgentVersion="version of agent application"  
    TimeStamp="date and time of creation" />  
</AuditPool>
```

### Allowed Values

*ID*

Unique *ID* used to refer to this Created element by subsequent correction Audit elements.

*AgentName*

If present, MUST be a String that identifies the agent application that created the job ticket. This could be a company and or product name.

*AgentVersion*

If present, MUST be a String that identifies the version of the agent application that created the job ticket.

*TimeStamp*

MUST be a date and time in ISO 8601 format. If the date and time is not known then zeros for the date and time values are provided.

## 7.31 Job-Ticket-Template-Comment-or-Description

Text that describes what the job ticket template will be used for or what function it provides.

### Partition Keys

None

### Elements/Resources Used

JDF  
Comment

### Processes

None

### Syntactic Fragment

```
<JDF ID=... Type="Combined" Types=... Status="Ready" ... >  
  <Comment Language="language code or language and country code"  
    Name="TemplateDescription">job ticket template comment or description  
    text  
  </Comment>
```

...  
</JDF>

**Allowed Values**

*Name*

MUST be set to "*TemplateDescription*".

*job ticket template comment or description text*

String that contains a comment about or a description of the job ticket template.

*Language*

If present, MUST be set to contain either a language code in the form "*en*" or a language and country code in the form "*en-US*".

## 7.32 Job-Ticket-Template-ID

Unique job ticket template identifier. The intended use is by the application or user that created the job ticket template as a way to uniquely identify a job ticket template.

**Partition Keys**

None

**Elements/Resources Used**

JDF

**Processes**

None

**Syntactic Fragment**

<JDF ID=... Type="Combined" Types=... Status="Ready"  
**TemplateID**="*job ticket template ID*" ... >

**Allowed Values**

*TemplateID*

MUST be a String. Could be a name or *ID*.

## 7.33 Job-Ticket-Template-Version

The version of the job ticket template. The intended use is by the application or user that created the job ticket template as a way to identify the job ticket template.

**Partition Keys**

None

**Elements/Resources Used**

JDF

**Processes**

None

**Syntactic Fragment**

<JDF ID=... Type="Combined" Types=... Status="Ready"  
**TemplateVersion**="*job ticket template version*" ... >

**Allowed Values**

*TemplateVersion*

MUST be a String that may be, for example, in the form “*a.b*”, where “*a*” is the major version number and “*b*” is the minor version number.

## 7.34 Jog-Offset

Jog offset between copies of a component and between components.

### Partition Keys

None

### Elements/Resources Used

**DigitalPrintingParams**  
**Disjointing**

### Processes

**DigitalPrinting**

### Syntactic Fragment

```
<DigitalPrintingParams ID="Reference ID" Class="Parameter" Status="Available"  
  <Disjointing OffsetDirection="how to jog offset between copies"  
    OffsetAmount="number of components to offset simultaneously" />  
</DigitalPrintingParams>
```

### Allowed Values

*ID*

String that uniquely identifies the **DigitalPrintingParams**.

*OffsetDirection*

MUST be one of the following values:

*Alternate*      *The position of the first component is opposite to the position of the previous component and subsequent components are each offset to alternating positions. For example, if the last item in the stack was positioned to the right then the subsequent items will be positioned to the left, right, left, right, etc.*

*Left*      *Offset consecutive components sideways to the left. Left is with respect to the coordinate system feed direction.*

*None*      *Do not offset consecutive components. The position of all components is the same as the position of the previous component. This is the default.*

*Right*      *Offset consecutive components sideways to the right.*

*OffsetAmount*

If present, MUST be an Integer that specifies the number of components to offset.

## 7.35 Margins

Specifies the width in points of the non-printable margins measured inward from the edges of the media (before trimming).

Note: Because a specific device NEED NOT support a zero value, i.e. the image data might not be imaged to the edge when a zero value is specified.

### Partition Keys

**DigitalPrintingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

## DigitalPrintingParams

### Processes

#### *DigitalPrinting*

### Syntactic Fragment

```
<DigitalPrintingParams ID="Reference ID" Class="Parameter" Status="Available"  
  NonPrintableMarginBottom ="width of bottom margin"  
  NonPrintableMarginLeft ="width of left margin"  
  NonPrintableMarginRight ="width of right margin"  
  NonPrintableMarginTop ="width of top margin" />
```

### Allowed Values

#### ID

String that uniquely identifies the DigitalPrintingParams.

#### NonPrintableMarginBottom

If present, MUST be a double that is the width of the bottom margin, in points. Specifying zero indicates that there is to be no bottom margin.

#### NonPrintableMarginLeft

If present, MUST be a double that is the width of the left margin, in points. Specifying zero indicates that there is to be no left margin.

#### NonPrintableMarginRight

If present, MUST be a double that is the width of the right margin, in points. Specifying zero indicates that there is to be no right margin.

#### NonPrintableMarginTop

If present, MUST be a double that is the width of the top margin, in points. Specifying zero indicates that there is to be no top margin.

## 7.36 Media

Name and properties of the media on which to print. When specifying Media/@Dimension, some applications round the size to the nearest point. For example, [JDF1.2] Appendix N Media Sizes specifies Media dimensions to the nearest point. For pre-cut Media, implementers are cautioned to take this into account and match the value of Media/@Dimension with the sizes of supported pre-cut Media within a tolerance of half a point (0.2 mm). See Media Dimension Matching Example at the end of this section.

### Partition Keys

**DigitalPrintingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Media** - *Location*

### Elements/Resources Used

Comment

**DigitalPrintingParams**

**Media**

MediaRef

Part

### Processes

#### *DigitalPrinting*

### Syntactic Fragment

To print the entire document using the same Media:

```
<Media ID="Media reference ID" Class="Consumable" Status="Available"  
  BackCoatings="coating already applied to back side of media"
```

**Brand**="brand name of media"  
**DescriptiveName**="short descriptive name of media"  
**Dimension**="media x and y dimensions"  
**FrontCoatings**="coating already applied to front side of media"  
**HoleType**="number of pre-punched holes"  
**ImagableSide**="side of media that may be marked"  
**LabColorValue**="media color in CIELAB color space"  
**MediaColorName**="name of media color"  
**MediaColorNameDetails**="details of media color name"  
**MediaType**="media type"  
**MediaTypeDetails**="media type details"  
**MediaSetCount**="number of media in each set"  
**MediaUnit**="format of media as it is delivered"  
**Opacity**="opacity of the media"  
**Preprinted**="whether media is preprinted or not"  
**RecycledPercentage**="percentage of recycled material in media"  
**StockType**="stock type of media"  
**Weight**="media weight"

</Media>

```

<DigitalPrintingParams ID="DigitalPrintingParams reference ID"
Class="Parameter"
  Status="Available" >
  <MediaRef rRef="Media reference ID" />
</DigitalPrintingParams>
    
```

For example, to print part of the document using one Media and the other part using another Media.

```

<Media ID="Media 1 reference ID" Class="Consumable"
Status="Available"
  ... same options as shown above ... />
</Media>
<Media ID="Media 2 reference ID" Class="Consumable"
Status="Available"
  ... same options as shown above ... />
</Media>
<DigitalPrintingParams ID="DigitalPrintingParams reference ID"
Class="Parameter" Status="Available"
PartIDKeys="DocIndex DocRunIndex" >
  <MediaRef rRef="Media 1 reference ID" />
  <DigitalPrintingParams DocIndex="index of document"
    <DigitalPrintingParams
      DocRunIndex="pages or ranges of pages" >
      <MediaRef rRef="Media 2 reference ID" />
    </DigitalPrintingParams>
  </DigitalPrintingParams>
</DigitalPrintingParams>
    
```

### Allowed Values

*ID*

Strings that uniquely identify the **Media** and **DigitalPrintingParams**.

*rRef*

Strings that reference the **Media** and **DigitalPrintingParams** by means of their unique IDs.

**DocIndex**

Index of document being referenced.

**DocRunIndex**

- x Single page to print on media. Zero or more page numbers could be specified.
- x ~ y Range of pages to print on media. Zero or more page ranges could be specified.

**BackCoatings**

If present, MUST be set to one of the following values:

- None*
- Coated* A coating of a system specified type.
- Glossy*
- HighGloss*
- InkJet* A coating intended for use with inkjet technology.
- Matte*
- Satin*
- Semigloss*

**Brand**

If present, MUST be a String that is information about the media, such as the manufacturer, model, part number, and/or type.

**Dimension**

If present, MUST be set to a XYPair (doubles) for x and y dimensions expressed in points. See *Dimension* Description in Table 63: Media, the discussion at the beginning of this Media section, and Media Dimension Matching Example at the end of this section.

**DescriptiveName**

If present, MUST be a string that is a short descriptive name of the media.

**FrontCoatings**

If present, MUST be set to one of the values listed above in BackCoatings.

**HoleType**

If present, MUST be set to one of the following values:

- None* No pre-punched holes. This is the default.
- S-generic special use* System specified number of pre-punched holes for special use
- S1-generic calendar.* 1 pre-punched hole for special use. For example calendar.
- R2-generic* 2 pre-punched holes, suitable for ring binding
- R3-generic* 3 pre-punched holes, suitable for ring binding
- R4-generic* 4 pre-punched holes, suitable for ring binding
- R5-generic* 5 pre-punched holes, suitable for ring binding

**ImagableSide**

If present, MUST be set to one of the following values:

- Back*
- Both*
- Front*
- Neither*

**LabColorValue**

Absolute LabColor of the media in CIELAB color space. If present, MUST be in the form "l a b" where l, a, and b are space delimited doubles.

**Language**

If present, MUST be set to contain either a language code in the form "en" or a language and country code in the form "en-US".

**MediaColorName**

If present, MUST be set to one of the following values:

*Black*  
*Blue*  
*Brown*  
*Buff*  
*Cyan*  
*Gold*  
*Goldenrod*  
*Gray*  
*Green*  
*Ivory*  
*Magenta*  
*MultiColor*  
*Mustard*  
*NoColor*  
*Orange*  
*Pink*  
*Red*  
*Silver*  
*Turquoise*  
*Violet*  
*White*  
*Yellow*

Any of the above with the prefix "*Clear*", "*Dark*" or "*Light*".

***MediaColorNameDetails***

If present, MUST be a String without spaces. If *MediaColorNameDetails* is present, *MediaColorName* must be specified.

***MediaType***

If present, MUST be set to one of the following values:

*Disc*  
*Other*  
*Paper*  
*Transparency*

***MediaTypeDetails***

If present, MUST be set to one of the following values:

<i>CardBoard</i>	<i>Thick stock.</i>
<i>ContinuousLong</i>	<i>Continuously connected sheets connected along the long edge.</i>
<i>ContinuousShort</i>	<i>Continuously connected sheets connected along the short edge.</i>
<i>Envelope</i>	<i>Envelopes that are used for conventional mailing purposes.</i>
<i>EnvelopePlain</i>	<i>Envelopes that are not preprinted and have no windows.</i>
<i>EnvelopeWindow</i>	<i>Envelopes that have windows for addressing purposes.</i>
<i>FullCutTabs</i>	<i>Media with tabs that run full length of media, where only one tab is visible.</i>
<i>Labels</i>	<i>Label stock, e.g., a sheet of peel-off labels.</i>
<i>Letterhead</i>	<i>Media that has a letterhead.</i>
<i>MultiLayer</i>	<i>Form medium composed of multiple layers which are preattached to one another, e.g., for use with impact printers.</i>
<i>MultiPartForm</i>	<i>Form medium composed of multiple layers not preattached to one another; each sheet may be drawn separately from an input source.</i>
<i>Photographic</i>	<i>Separately cut sheets of an opaque material to produce photographic quality images.</i>

<i>PreCutTabs</i>	<i>Media with tabs that are cut so that more than one tab is visible.</i>
<i>Stationery</i>	<i>Media that is stationery.</i>
<i>TabStock</i>	<i>Media with tabs that are either FullCutTabs or PreCutTabs. Use with MediaSetCount for number of tabs.</i>
<i>Tractor</i>	<i>Tractor fed paper.</i>

**MediaSetCount**

If present, MUST be an integer in the range 1 through 65535.

**MediaUnit**

If present, MUST be set to one of the following values:

<i>Continuous</i>	
<i>Roll</i>	
<i>Sheet</i>	<i>This is the default.</i>

**Opacity**

If present, MUST be set to one of the following values

<i>Opaque</i>
<i>Transparent</i>
<i>Translucent</i>

**PrePrinted**

If present, MUST be set to one of the following values:

<i>true</i>	<i>The media is preprinted.</i>
<i>false</i>	<i>The media is not preprinted. This is the default.</i>

**RecycledPercentage**

If present, MUST be set to a double that is a percentage, between 0 and 100, of recycled material that the media contains.

**StockType**

If present, MUST be set to one of the following values:

<i>Bristol</i>	
<i>Bond</i>	
<i>Cover</i>	
<i>Index</i>	
<i>Newsprint</i>	
<i>Offset</i>	<i>This includes book stock.</i>
<i>Tag</i>	
<i>Text</i>	

**Weight**

If present, MUST be set to a double that is weight of media in grams per square meter.

**Example:**

The result of the following two examples is the same. Page 0 of the RunList is printed on Cover stock and the rest of the pages of the RunList are printed on Bond stock. In the first example Media is partitioned by Location and in the second example there are two Media Resources.

1. In the following example the Media Resource is partitioned by Location and the DigitalPrintingParams partition for page 0 contains a MediaRef that contains the Media partition for Cover stock.

```
...
<Media ID="M1" PartIDKeys="Location" StockType="Bond" >
  <Media Location="Cover" StockType="Cover" />
</Media>
<DigitalPrintingParams ID="DPP" PartIDKeys="RunIndex" >
  <MediaRef rRef="M1" />
  <DigitalPrintingParams RunIndex="0" >
```

```

    <MediaRef rRef="M1" >
      <Part Location="Cover" />
    </MediaRef>
  </DigitalPrintingParams>
</DigitalPrintingParams>

```

2. In the following example there are two Media Resources and the DigitalPrintingParams partition for page 0 contains a MediaRef for the Cover stock.

```

...
<Media ID="M1" StockType="Bond" />
<Media ID="M2" StockType="Cover" />
<DigitalPrintingParams ID="DPP" PartIDKeys="RunIndex" >
  <MediaRef rRef="M1" />
  <DigitalPrintingParams RunIndex="0" >
    <MediaRef rRef="M2" />
  </DigitalPrintingParams>
</DigitalPrintingParams>

```

3. Media Dimension Matching Example - It is common practice for applications to round Media sizes to the nearest point when submitting JDF tickets with Media/@Dimensions specified. For example, [JDF1.2] Appendix N Media Sizes specifies Media dimensions to the nearest point. Digital Printers need to match such a specification to the supported pre-cut media on hand. Therefore, Device implementers are cautioned to match the value of Media/@Dimension with the sizes of supported pre-cut Media within a tolerance of half a point (0.2 mm). For example, JIS B4 is defined to be 257 by 364 mm. 257 mm is equal to 728.503 which rounds to 729 points. Converting 729 points is 257.175 mm. So the Digital Printer has to match 257.175 with 257, i.e., within a tolerance of approximately 0.2 mm, The rounding of half a point causes a rounding error of .175 mm (.5 pts / 72 pts/in \* 25.4 mm/in). Thus rounding to the nearest tenth of a mm is not sufficient.

## 7.37 Message-to-Operator

Message to the operator that contains information regarding the processing of the job. Note: The natural language is not localized by any recipient, since this message is generated by a human.

### Partition Keys

None

### Elements/Resources Used

JDF

Comment

### Processes

None

### Syntactic Fragment

```

<JDF ID=... Type="Combined" Types=... Status="Ready" ... >
  <Comment Language="language code or language and country code"
    Name="Instruction"> message to the operator
  </Comment>
</JDF>

```

### Allowed Values

Name

Always set to Instruction.

*message to the operator*

MUST be a String that contains a message or instructions for the operator.

*Language*

If present, MUST be set to contain either a language code in the form “en” or a language and country code in the form “en-US”.

## 7.38 MIS Support

Used when the Device is fed by an MIS.

### Partition Keys

None

### Elements/Resources Used

#### Component

JDF

#### Media

### Processes

None

### Syntactic Fragment

```
<JDF ID=... Type="Combined" Types=... Status="Ready" ProjectID="project identifier" ...
>
...
<Component ID="Reference ID" Class="Quantity" ComponentType="FinalProduct"
  Status="Available" ProductID="ID of Component resource defined in MIS" >
  <Media ID="Reference ID" Class="Consumable"
    ProductID="ID of Media resource defined in MIS" >
  ...
</JDF>
```

### Allowed Values

*ID*

String that uniquely identifies the JDF Node, **Component**, and **Media** resources.

*Product ID*

If present, MUST be a string that identifies the **Component** or **Media** resource in the MIS.

*Project ID*

If present, MUST be a string that identifies the project that this JDF belongs to. Used by the MIS to group a set of JDF jobs.

## 7.39 Named-Features

The name of features that are an implementation set of parameters for setting up a Device that the Device must apply to the JDF ticket.

### Partition Keys

None

### Elements/Resources Used

JDF

### Processes

None

**Syntactic Fragment**

<JDF ID=... Type="Combined" Types=... Status="Ready"  
**NamedFeatures**="features that Device is to apply" ... >

**Allowed Values**

*NamedFeatures*

MUST be strings that are an ordered list of name value pairs with an even number of entries.

## 7.40 Notification

Specifies who should be notified when certain events pertaining to the job occur.

**Partition Keys**

None

**Elements/Resources Used**

**Com Channel**  
CustomerInfo  
CustomerMessage

**Processes**

None

**Syntactic Fragment**

```
<CustomerInfo>  
  <CustomerMessage Language="language code or language and country code"  
    MessageEvents = "set of events that trigger the message"  
    ShowList="UserText" >  
    <ComChannel  
      ChannelType="how to deliver notification"  
      ChannelTypeDetails="details of how to deliver notification"  
      Locator="where to deliver notification" />  
    <Comment Language="language code or language and country code for  
comment text"  
      Name="UserText">text to accompany notification</Comment>  
    </CustomerMessage>  
  </CustomerInfo>
```

**Allowed Values.**

*ChannelType*

MUST be set to one of the following values:

<i>Email</i>	<i>An email address to send the events to.</i>
<i>Fax</i>	<i>A fax number to send the events to.</i>
<i>InstantMessagin</i>	<i>An instant message is sent.</i>
<i>g</i>	
<i>JMF</i>	<i>A JMF messaging channel to send the events to.</i>
<i>Phone</i>	<i>A phone number to send the events to.</i>
<i>PrivateDirectory</i>	<i>An account of a registered customer to send events to.</i>
<i>WWW</i>	<i>A WWW home page to send events to.</i>

*ChannelTypeDetails*

If present, MUST be set to one of the following values:

<i>Form</i>	<i>Valid when ChannelType is WWW.</i>
<i>Landline</i>	<i>Valid when ChannelType is Phone.</i>
<i>Mobile</i>	<i>Valid when ChannelType is Phone.</i>

<i>Secure</i>	<i>Valid when ChannelType is Phone.</i>
<i>ISDN</i>	<i>Valid when ChannelType is Phone.</i>
<i>Target the URL</i>	<i>Valid when ChannelType is WWW to send events to specified in Locator.</i>
<i>Private directory service vendor name</i>	
<i>Instant message service vendor name</i>	

**ComChannel**

If not present, events are sent to location as specified by the system. Zero or more ComChannel elements MAY be present.

**Locator**

String that specifies where or to whom the events are to be send. Some examples are a phone number or URL.

<i>If ChannelType is:</i>	Locator MUST use the form:
<i>Email</i>	Locator="mailto:..." URL [RFC2808].
<i>Fax</i>	Locator="fax:.." URL [RFC2808].
<i>JMF</i>	Locator="http://..." URL [RFC2616].
<i>Phone</i>	Locator="tel:..." URL [RFC2808].
<i>WWW</i>	Locator="http://..." URL [RFC2616].

**Language**

If present, MUST be set to contain either a language code in the form "en" or a language and country code in the form "en-US".

- CustomerMessage/@Language is the language for the entire CustomerMessage.
- Comment/@Language is the language for the Comment text.
- If CustomerMessage/@Language is specified and Comment/@Language is not specified, then CustomerMessage/@Language is also the language for the Comment text.
- If Comment/@Language is specified, then it is the language for the Comment text.
- Multiple Comment elements may be included with different values for their @Language attributes.

**MessageEvents**

MUST be set to one or more of the following values:

*Accepted*  
*JobCompletedSuccessfully*  
*JobCompletedWithErrors*  
*JobCompletedWithWarnings*  
*JobInProgress*

**Name**

If Comment element is present, MUST be set to "UserText".

**ShowList**

If present, MUST be set to "UserText".

*text to accompany notification*

If present, MUST be set to the text that is to be included in the notification event.

## 7.41 Number-of-Copies

Number of copies of the job to print.

**Partition Keys**

None

**Elements/Resources Used**  
**ComponentLink**

**Processes**  
**DigitalPrinting**

**Syntactic Fragment**  
<ComponentLink rRef="*ID of Component Resource*" Usage="Output"  
**Amount**="*number of copies*" />

**Allowed Values**  
**rRef**  
String that references the **Component** Resource being linked.  
**Amount**  
MUST be present.

## 7.42 Number-Up

Number of pages to image on a single side of the sheet.

To produce booklets, use the Number Up feature with the Stapling-and-Stitching feature on page 154 and the Folding feature on page 112 .

**Partition Keys**  
**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Elements/Resources Used**  
**LayoutPreparationParams**  
**FitPolicy**  
**PageCell**

**Processes**  
**LayoutPreparation**

**Syntactic Fragment**  
If the dimensions of the **Media** are such that the pages will optimally fit on the media sheet:  
<LayoutPreparationParams ID="*Reference ID*" Class="Parameter" Status="Available"  
**NumberUp**="*number of pages along x axis and y axis*" />

If the dimensions of the **Media** are such that the pages must be rotated to optimally fit on the sheet surface:

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"  
NumberUp="number of pages along x axis and y axis"  
PresentationDirection="order to distribute pages" >  
<PageCell Rotate="degrees of rotation" />  
  <FitPolicy SizePolicy="what to do if content doesn't fit" />  
</PageCell>  
</LayoutPreparationParams>
```

**Allowed Values**  
**ID**  
String that uniquely identifies the LayoutPreparationParams.  
**NumberUp**  
MUST be set as follows:

*x y Place the pages in x columns and y rows on the sheet, where x and y are integers.*

### **Rotate**

If present, MUST be set to one of the following values:

*Rotate0 This is the default.  
Rotate90 Rotate 90 degrees counter-clockwise.  
Rotate180  
Rotate270 Rotate 90 degrees clockwise.*

### **PresentationDirection**

If present, MUST be set to one of the following values:

*FoldCatalog Pages are imaged so that the result is compatible with a finished product produced from the folding catalog as specified in FoldCatalog.*

*XYZ Permutations of the letters XYZ and xyz so that exactly one of upper or lower case of x y and z define the order in which content pages are flowed along each axis with respect to the coordinate system of the front side of the sheet.*

- *X - Specifies flowing left to right across a sheet surface.*
- *x - Specifies flowing right to left across a sheet surface.*
- *Y - Specifies flowing bottom to top vertically across a sheet surface.*
- *y - Specifies flowing top to bottom vertically across a sheet surface.*
- *Z - Specifies flowing bottom of stack to top of stack through the stack.*
- *z - Specifies flowing top of stack to bottom of stack through the stack.*

### **SizePolicy**

If present, MUST be set to one of the following values:

*Abort Emit an error and abort printing.*

*ClipToMaxPage The page contents should be clipped to the size of the container. The printed area is either centered in the source image.*

*FitToPage The page contents should be scaled up or down to fit the media. The aspect ratio is maintained.*

*ReduceToFit The page contents should be scaled down but not scaled up to fit the media. The aspect ratio is maintained.*

*Tile The page contents should be split into several tiles, each printed on its own surface.*

### **Examples:**

To print 2 columns by 1 row on **Media** having the dimension 11 x 8.5 inches

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"  
  NumberUp="2 1" />
```

To print 1 column by 2 rows on **Media** having the dimension 8.5 X 11 inches:

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"  
  NumberUp="1 2"  
  PresentationDirection="YXz" >  
  <PageCell Rotate="Rotate90" >  
    <FitPolicy SizePolicy="ReduceToFit" />  
  </PageCell>  
</LayoutPreparationParams>
```

## 7.43 Output-Bin-Name

Name of the output bin to which output will be directed.

### Partition Keys

**DigitalPrintingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**DigitalPrintingParams**

### Processes

**DigitalPrinting**

### Syntactic Fragment

```
<DigitalPrintingParams ID="Reference ID" Class="Parameter" Status="Available"  
  OutputBin="output bin name" />
```

### Allowed Values

*ID*

String that uniquely identifies the **DigitalPrintingParams**.

*OutputBin*

MUST be set to one of the following values:

*AnyLargeFormat*

*AnySmallFormat*

*AutoSelect*

*Booklet*

*Bottom*

same as Lower

*Continuous*

*Disc*

*Disc-n*

where *n* is an integer

*Envelope*

*Envelope-n*

where *n* is an integer

*FaceDown*

*FaceUp*

*FitMedia*

*Front*

*LargeCapacity*

same as Main

*LargeCapacity-n*

where *n* is an integer

*Left*

*Mailbox-n*

where *n* is an integer

*Middle*

*MyMailbox*

*Rear*

*Right*

*Roll*

*Roll-n*

where *n* is an integer

*Side*

*Stacker-n*

where *n* is an integer

*Top*

same as Upper

*Tray*

*Tray-n*

where *n* is an integer

## 7.44 Page-Delivery

How pages are to be delivered to the output bin or stacker. This feature should only be used if the *Controller/Agent* has knowledge of how the Device normally delivers the pages to the output bin or stacker and wants a different behavior.

### Partition Keys

**DigitalPrintingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**DigitalPrintingParams**

### Processes

*DigitalPrinting*

### Syntactic Fragment

```
<DigitalPrintingParams ID="Reference ID" Class="Parameter" Status="Available"  
  PageDelivery="how to deliver pages" />
```

### Allowed Values

*ID*

String that uniquely identifies the **DigitalPrintingParams**.

*PageDelivery*

MUST be set to one of the following values:

*Fanfold*

*Alternate face up and face down.*

*SameOrderFaceUp*

*Page order as is with the front sides of the media up.*

*SameOrderFaceDown*

*Page order as is with the front sides of the media down.*

*ReverseOrderFaceUp*

*Page order reversed with the front sides of the media up.*

*ReverseOrderFaceDown*

*Page order reversed with the front sides of the media down.*

## 7.45 Page-Distribution

How pages are to be distributed onto a multi-up grid of finished page cells. To be used with the Number Up and Presentation Direction features.

### Partition Keys

**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**LayoutPreparationParams**

### Processes

*LayoutPreparation*

### Syntactic Fragment

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"  
  PageDistributionScheme="how to distribute the pages" />
```

### Allowed Values

*ID*

String that uniquely identifies the **LayoutPreparationParams**.

### *PageDistributionScheme*

MUST be set to one of the following values:

*Saddle*

*Distribute pages onto a sequence of one or more imposition layouts in proper order for saddle stitch binding*

*Perfect*

*Distribute pages onto a sequence of one or more signatures in proper order for perfect binding*

*Sequential*

*The pages are distributed onto the multi-up layout according to the value of the PresentationDirection attribute. This is the default.*

## 7.46 Page-Order

How the pages in the **RunList** are ordered.

### Partition Keys

**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**LayoutPreparationParams**

### Processes

*LayoutPreparation*

### Syntactic Fragment

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"  
PageOrder="order of pages" />
```

### Allowed Values

*ID*

String that uniquely identifies the LayoutPreparationParams.

*PageOrder*

MUST be set to one of the following values:

*Booklet* Pages are in booklet order.

*Reader* Pages are in reader order. This is the default.

## 7.47 Presentation-Direction

Indicates the order in which content pages will be distributed into the page cells. To be used with the Number Up and Page Distribution features.

### Partition Keys

**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**LayoutPreparationParams**

### Processes

*LayoutPreparation*

### Syntactic Fragment

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"  
PresentationDirection="order to distribute pages" />
```

### Allowed Values

*ID*

String that uniquely identifies the **LayoutPreparationParams**.

*PresentationDirection*

MUST be set to one of the following values:

*FoldCatalog*

*Pages are imaged so that the result is compatible with a finished product produced from the folding catalog as specified in FoldCatalog.*

*XYZ*

Permutations of the letters XYZ and xyz so that exactly one of upper or lower case of x y and z define the order in which content pages are flowed along each axis with respect to the coordinate system of the front side of the sheet.

- X - Specifies flowing left to right across a sheet surface.
- x - Specifies flowing right to left across a sheet surface.
- Y - Specifies flowing bottom to top vertically across a sheet surface.
- y - Specifies flowing top to bottom vertically across a sheet surface.
- Z - Specifies flowing bottom of stack to top of stack through the stack.
- z - Specifies flowing top of stack to bottom of stack through the stack.

## 7.48 Print-Quality

The print quality that the device is to use for the documents in a job.

### Partition Keys

**InterpretingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**InterpretingParams**

### Processes

*Interpreting*

### Syntactic Fragment

```
<InterpretingParams ID="Reference ID" Class="Parameter" Status="Available"  
  PrintQuality="print quality" />
```

### Allowed Values

*ID*

String that uniquely identifies the InterpretingParams.

*Print Quality*

MUST be set to one of the following values:

Draft

*Lowest quality available on the device.*

High

*Highest quality available on the device.*

Normal

*Default quality provided by the device. This is the default.*

## 7.49 Process-Color-Model

Specifies whether to print in color or black/white.

Note: Conversion from color to black/white is device dependent.

**Partition Keys**

**Colorant Control** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Elements/Resources Used**

**Colorant Control**

**Processes**

**DigitalPrinting**  
**Interpreting**

Note: The same ColorantControl Resource MUST be specified as the input to both the **DigitalPrinting** and **Interpreting** Process.

**Syntactic Fragment**

```
<ColorantControl ID="Reference ID" Class="Parameter" Status="Available"  
    ProcessColorModel="process color model" />
```

**Allowed Values**

*ID*

String that uniquely identifies the **Colorant Control**.

*ProcessColorModel*

MUST be set to one of the following values

*DeviceCMYK*

*DeviceGray*

## 7.50 Proof-Print

Whether or not to proof print the job and if so who should approve the proof.

**Partition Keys**

**DigitalPrintingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Elements/Resources Used**

**Address**  
**ApprovalParams**  
ApprovalPerson  
**Com Channel**  
**Company**  
**Contact**  
**DigitalPrintingParams**  
**Person**

**Processes**

**DigitalPrinting**

**Syntactic Fragment**

```
<DigitalPrintingParams ID="Reference ID" Class="Parameter" Status="Available"  
    DirectProofAmount="number of copies to print for the proof" >  
    <ApprovalParams ID="Reference ID" Class="Parameter" Status="Available"  
        <ApprovalPerson>
```

```

        <Contact ContactTypes="Approver"
            <Address City="city" Country="country"
                PostBox="post office box"
                PostalCode="zip or postal code"
                Region="state or province"
                Street="street address"
                ExtendedAddress="additional address info" />
            <ComChannel ChannelType="communication type"
                ChannelTypeDetails="details of communication
                type"
                Locator="communication location" />
            <Company OrganizationName="company/organization name" />
            <Person FirstName="first name"
                FamilyName="family/last name" />
        </Contact>
    </ApprovalPerson>
</ApprovalParams>
</DigitalPrintingParams>

```

### Allowed Values

#### *ID*

String that uniquely identifies the RenderingParams, **DigitalPrintingParams**, or ApprovalParams.

#### **ApprovalParams**

Only valid if *DirectProofAmount* is not 0.

#### ApprovalPerson

MUST be present; 1 or more occurrences.

#### *DirectProofAmount*

If present, MUST be an Integer. Default is 0.

#### *ContactTypes*

MUST be set to "Approver".

#### *City*

If present, MUST be a String that is the name of the city.

#### *Country*

If present, MUST be a String that is the name of the country.

#### *PostBox*

If present, MUST be a String that is the post office box (e.g. P.O. Box 101).

#### *PostalCode*

If present, MUST be a String that is the zip or postal code.

#### *Region*

If present, MUST be a String that is the state or province.

#### *Street*

If present, MUST be a String that is the street address.

#### *ExtendedAddress*

If present, MUST be a String that is the additional address information (e.g. Suite 245).

#### *ChannelType*

If present, MUST be set to one of the following values:

<i>Email</i>	<i>Email address.</i>
<i>Fax</i>	<i>Fax number.</i>
<i>InstantMessaging</i>	<i>An instant message</i>
<i>JMF</i>	<i>A JMF messaging channel</i>
<i>Phone</i>	<i>Telephone number.</i>
<i>PrivateDirectory</i>	<i>Account of a registered customer of a certain service</i>

**WWW** *WWW home page or form.*

**ChannelTypeDetails**  
 If present, MUST be set to one of the following values:

<i>Form</i>	<i>Valid when ChannelType is WWW.</i>
<i>Landline</i>	<i>Valid when ChannelType is Phone.</i>
<i>Mobile</i>	<i>Valid when ChannelType is Phone.</i>
<i>Secure</i>	<i>Valid when ChannelType is Phone.</i>
<i>ISDN</i>	<i>Valid when ChannelType is Phone.</i>
<i>Target</i>	<i>Valid when ChannelType is WWW to send events to the URL specified in Locator.</i>
<i>Private directory service vendor name</i>	
<i>Instant message service vendor name</i>	

**Locator**  
 If present, MUST be a String that is the details about how to communicate (e.g. phone number, fax number, email address, URL).

<i>If ChannelType is:</i>	<b>Locator MUST use the form:</b>
<i>Email</i>	Locator="mailto:..." URL [RFC2808].
<i>Fax</i>	Locator="fax:..." URL [RFC2808].
<i>JMF</i>	Locator="http://..." URL [RFC2616].
<i>Phone</i>	Locator="tel:..." URL [RFC2808].
<i>WWW</i>	Locator="http://..." URL [RFC2616].

**OrganizationName**  
 If present, MUST be a String that is the name of the company or organization.

**FirstName**  
 If present, MUST be a String that is the first or given name of the contact.

**FamilyName**  
 If present, MUST be a String that is the family or last name of the contact.

## 7.51 Punching-and-Hole-Making

How many holes to punch and where to punch the holes in the output.

### Partition Keys

**Component** - None

**ComponentLink** - None

**HoleMakingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**Component**

**ComponentLink**

**HoleMakingParams**

### Processes

**HoleMaking**

### Syntactic Fragment

```
<ComponentLink rRef="ID of Component Resource"
  Usage="Output" CombinedProcessIndex="index into Types for predecessor
  Process" />
<ComponentLink rRef="ID of Component Resource"
  Usage="Input" CombinedProcessIndex="index into Types for HoleMaking"
  Orientation="which edge to punch" />
...
```

```
<Component ID="Reference ID" Class="Quantity" ComponentType="PartialProduct"
Status="Available"
  PipeProtocol="Internal" />
<HoleMakingParams ID="Reference ID" Class="Parameter" Status="Available"
  NoOp="whether or not to punch holes"
  HoleType="number, size, spacing and style name of holes to punch" />
```

**Allowed Values**

*ID*

String that uniquely identifies the **HoleMakingParams**.

*No Op*

If present, MUST be set to one of the following values:

- |              |  |
|--------------|--|
| <i>true</i>  | To turn hole-making off. All other <b>HoleMakingParams</b> attributes are ignored. |
| <i>false</i> | To use other <b>HoleMakingParams</b> attributes to specify                         |
| hole-        | making. This is the default.   |

**Component**

MUST be present if *Orientation* is specified.

*ComponentLink*

MUST be present if *Orientation* is specified.

*ComponentType*

MUST be set to "*PartialProduct*".

*CombinedProcessIndex*

MUST be an *Integer*.

*Orientation*

MUST be present if punching on other than the y-axis is desired. If present, MUST be set to one of the following values:

- |                  |   |
|------------------|---|
| <i>Rotate0</i>   | <i>Don't rotate the sheet. Punching is to occur on the edge that is along the y-axis (left edge) of the sheet.</i>  |
| <i>Rotate90</i>  | <i>Rotate the sheet 90 degrees counter-clockwise. Punching is to occur on the edge that is opposite the x-axis (top edge) of the pre-rotated sheet.</i>                                     |
| <i>Rotate180</i> | <i>Rotate the sheet 180 degrees. Punching is to occur on the edge that is opposite of the y-axis (right edge) of the pre-rotated sheet</i>  |
| <i>Rotate270</i> | <i>Rotate the sheet 270 degrees. Punching is to occur on the edge that is along the x-axis (bottom edge) of the pre-rotated sheet.</i>  |
| <i>Flip0</i>     | <i>Do not rotate the sheet; flip the sheet around the x-axis. Punching is to occur on the edge that is along the y-axis (left edge) of the pre-flipped sheet.</i>                           |
| <i>Flip90</i>    | <i>Rotate the sheet 90 degrees counter-clockwise and flip around the x-axis. Punching is to occur on the edge that is opposite the x-axis (top edge) of the pre-rotated/flipped sheet.</i>  |
| <i>Flip180</i>   | <i>Rotate the sheet 180 degrees and flip around the x-axis. Punching is to occur on the edge that is opposite of the y-axis (right edge) of the pre-rotated/flipped sheet.</i>              |
| <i>Flip270</i>   | <i>Rotate the sheet 270 degrees counter-clockwise and flip around the x-axis. Punching is to occur on the edge that is along the x-axis (bottom edge) of the pre-rotated/flipped sheet.</i> |

*PipeProtocol*

MUST be set to "*Internal*".

### Usage

MUST be set to one of the following values:

*Input*  
*Output*

### Hole Type

SHOULD be set to one of the following values:

<i>S-generic</i>	<i>Punch the system specified number of holes for special use.</i>
<i>S1-generic</i>	<i>Punch 1 hole for special use. For example calendar.</i>
<i>R2-generic</i>	<i>Punch 2 holes suitable for ring binding</i>
<i>R3-generic</i>	<i>Punch 3 holes suitable for ring binding</i>
<i>R4-generic</i>	<i>Punch 4 holes suitable for ring binding</i>
<i>R5-generic</i>	<i>Punch 5 holes suitable for ring binding</i>

## 7.52 Range-of-Pages-to-Include

Range of pages from the **Layout Element** that are to be included in the RunList

### Partition Keys

**Layout Element** - None

All ResourceRef - None

**RunList** - See Table 79 Partitioning RunList for the valid partition keys.

### Elements/Resources Used

**FileSpec**

**Layout Element**

ResourceRef

**RunList**

### Processes

**LayoutPreparation**

### Syntactic Fragment

```
<LayoutElement ID="LayoutElement reference ID" Class="Parameter" Status="Available" >
  <FileSpec URL="file name" >
    <Container>
      <FileSpec .../>
    </Container>
  </FileSpec>
</LayoutElement>
<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" >
  <RunList Run="Run value"
    Pages="pages or ranges of pages to include"
    NPage="number of pages to include">
    <LayoutElementRef="LayoutElement reference ID" />
  </RunList>
</RunList>
```

### Allowed Values

*ID*

Strings that uniquely identify the **Layout Element** and **RunList**.

*rRef*

Strings that reference the **Layout Element** and **RunList** by means of their unique IDs.

**Container**

MUST be present if data file is compressed, so it has a container file.

**Run**

String that uniquely identifies a specific partition of the **RunList**.

**NPage**

If present, MUST be the number of pages defined by the **RunList**.

**Pages**

Page numbering is zero-based: "0". Negative values select pages from the end of the **Layout Element** where "-1" is the last page in the **Layout Element**, -2 the second to last, etc. If not present, the default is as if **Pages** is set to "0~1".

- x Page number from the **Layout Element** to include in the **RunList**. Zero or more page numbers may be specified.
- x~y Range of pages from the **Layout Element** to include in the **RunList**, where x is the first page and y is the last page of the range to include from the **LayoutElement**. Zero or more page ranges may be specified.

**URL**

MUST be set to the location of the file in the form as specified in [URL-AN].

Examples:

1. The result of the following is that pages 0, 3, 5, 8 through 12, and 20 through the end of file1.pdf are included in the **RunList** :

```
<RunList ID="RL" Class="Parameter" Status="Available" PartIDKeys="Run" >
  <LayoutElement ID="LE" Class="Parameter" Status="Available" >
    <FileSpec URL="file1.pdf" />
  </LayoutElement>
  <RunList Run="1" Pages="0 3 5" />
  <RunList Run="2" Pages="8~12" />
  <RunList Run="3" Pages="20~-1" />
</RunList>
```

2. The result of the following is that all pages of file2.pdf and just the last two pages of file3.pdf are included in the **RunList** :

```
<RunList ID="RL" Class="Parameter" Status="Available" PartIDKeys="Run" >
  <RunList Run="1" >
    <LayoutElement ID="LE1" Class="Parameter" Status="Available" >
      <FileSpec URL="file2.pdf" />
    </LayoutElement>
  </RunList>
  <RunList Run="2" Pages="-2~-1" >
    <LayoutElement ID="LE2" Class="Parameter" Status="Available" >
      <FileSpec URL="file3.pdf" />
    </LayoutElement>
  </RunList>
</RunList>
```

## 7.53 Range-of-Pages-to-Output

Range of pages in the job, document, set, or bundle item to output. The value specified must be a subset of Range-of-Pages-to-Include on page 148. If not specified, it defaults to Range of Pages to Include.

If two-sided printing is specified, then the pages selected by partitioning the RunListLink will not be repositioned, they will appear on the same side of the sheet that they would have appeared on if all of the pages in the RunList were output. If the result is that there would be sheets that are blank on the front and back sides, these blank sheets are not produced as output.

If the desired result is that the selected pages be imaged consecutively starting on the front side of the first sheet, followed by the back side of the first sheet, followed by the front side of the second sheet, etc, then the **RunList** must be modified to specify only the pages that are to be produced as output.

### Partition Keys

Part - None

RunListLink - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

Part

RunListLink

### Processes

*LayoutPreparation*

### Syntactic Fragment

The following syntactic fragment must be used when specific pages of the RunList are to be output: <RunList ID="*RunList reference ID*" Class="Parameter" Status="Available"

```

  PartIDKeys="Run" >
  <RunList Run="Run value" >
    <LayoutElement ID="LayoutElement reference ID" Class="Parameter"
      Status="Available >
      <FileSpec URL="file name" />
    </LayoutElement>
  </RunList>
</RunList>
...
<RunListLink rRef="ID of RunList Resource being referenced" Usage="Input">
  <Part RunIndex="pages or ranges of pages of job to output" />
</RunListLink>

```

The following syntactic fragment must be used when specific documents, sets, or bundle items are to be output:

```

<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" >
  <RunList Run="Run value" EndOfDocument | EndOfSet |
  EndOfBundleItem="true">
    <LayoutElement ID="LayoutElement reference ID" Class="Parameter"
      Status="Available >
      <FileSpec URL="file 1 name" />
    </LayoutElement>
  </RunList>

```

```

<RunList Run="Run value" EndOfDocument | EndOfSet | EndOfBundleItem
="true">
  <LayoutElement ID="LayoutElement reference ID" Class="Parameter"
    Status="Available >
    <FileSpec URL="file 2 name" />
  </LayoutElement>
</RunList>
</RunList>
...
<RunListLink rRef="ID of RunList Resource being referenced" Usage="Input" >
  <Part DocIndex | SetIndex | BundleItemIndex=
    "indices of documents, sets, or bundle items" />
</RunListLink>

```

The following syntactic fragment must be used when specific pages of specific documents or sets are to be output:

```

<RunList ID="RunList reference ID" Class="Parameter" Status="Available"
  PartIDKeys="Run" >
  <RunList Run="Run value" EndOfDocument | EndOfSet="true">
    <LayoutElement ID="LayoutElement reference ID" Class="Parameter"
      Status="Available >
      <FileSpec URL="file 1 name" />
    </LayoutElement>
  </RunList>
  <RunList Run="Run value" EndOfDocument | EndOfSet="true">
    <LayoutElement ID="LayoutElement reference ID" Class="Parameter"
      Status="Available >
      <FileSpec URL="file 2 name" />
    </LayoutElement>
  </RunList>
</RunList>
...
<RunListLink rRef="ID of RunList Resource being referenced" Usage="Input" >
  <Part DocIndex | SetIndex="index of document or set"
    DocRunIndex | SetRunIndex=
      "pages or ranges of pages of document or set to output" />
  ... Partitions for additional DocIndex/DocRunIndex may appear here
</RunListLink>

```

#### Allowed Values

*ID* and *rRef*

String that uniquely identifies the **RunList** .

*rRef*

String that references the **RunList** by means of its unique ID.

*RunIndex*, *DocRunIndex*, or *SetRunIndex*

Page numbering is zero-based: "0". Negative values select pages from the end of the **LayoutElement** where "-1" is the last page in the **LayoutElement** , -2 the second to last, etc. If not present, the default is as if Pages is set to "0~-1".

x Page number from the **LayoutElement** to include in the **RunList** . Zero or more page numbers may be specified.

x~y Range of pages from the **LayoutElement** to include in the **RunList** , where x is the first page and y is the last page of the range to include from the **LayoutElement** . Zero or more page ranges may be specified.

*DocIndex*, *SetIndex*, or *BundleItemIndex*

MUST be set to an **IntegerRangeList** that represents the indices of the documents, sets, or bundle items in the job.

## 7.54 Rotate-Sheet-Content

Degrees to rotate the content on the surface of the sheet with respect to the media coordinate system.

This feature only covers the case where the specified rotation is applied to the entire sheet.

### Partition Keys

**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**LayoutPreparationParams**

### Processes

**LayoutPreparation**

### Syntactic Fragment

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available"
  Rotate="degrees of rotation" />
```

### Allowed Values

*ID*

String that uniquely identifies the **LayoutPreparationParams**.

*Rotate*

MUST be set to one of the following values:

*Rotate0*

*This is the default.*

*Rotate90*

*Rotate 90 degrees counter-clockwise.*

*Rotate180*

*Rotate270*

*Rotate 90 degrees clockwise.*

## 7.55 Screening

Vendor specific screening family name or screening type to use.

### Partition Keys

**ScreeningParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

ScreenSelector - None

### Elements/Resources Used

**ScreeningParams**

ScreenSelector

### Processes

**Screening**

### Syntactic Fragment

```
<ScreeningParams ID="Reference ID" Class="Parameter" Status="Available" >
  <ScreenSelector ScreeningFamily="vendor-specific screening family name"
    ScreeningType="general type of screening" />
</ScreeningParams>
```

### Allowed Values

*ID*

String that uniquely identifies the **ScreeningParams**.

*ScreeningFamily*

If present, **MUST** be a string that identifies the screening family name.

*ScreeningType*

If present, **MUST** be set to one of the following values:

- Adaptive*
- AM*
- ErrorDiffusion*
- FM*
- HybridAM-FM*
- HybridAMline-dot*

## 7.56 Sides

Whether to print on one or two sides the sheet.

**Partition Keys**

**LayoutPreparationParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Elements/Resources Used**

**LayoutPreparationParams**

**Processes**

**LayoutPreparation**

**Syntactic Fragment**

To print the entire document the same:

```
<LayoutPreparationParams ID="Reference ID" Class="Parameter"
  Status="Available" Sides="sides to print on" />
```

**Allowed Values**

*ID*

String that uniquely identifies the **LayoutPreparationParams**.

*Sides*

**MUST** be set to one of the following values:

- |                          |  |
|--------------------------|--|
| <i>OneSidedBackFlipX</i> | <i>Page content is imaged on the back side of media so that the corresponding page cells back up to a blank front cell when flipping around the X axis. Equivalent to “WorkAndTumble” with a blank front side.</i> |
| <i>OneSidedBackFlipY</i> | <i>Page content is imaged on the back side of media so that the corresponding page cells back up to a blank front cell when flipping around the Y axis. Equivalent to “WorkAndTurn” with a blank front side.</i>   |
| <i>OneSidedFront</i>     | <i>Page content is imaged on the front side of media.</i>  |
| <i>TwoSidedFlipX</i>     | <i>Page content is imaged on both the front and back sides of media sheets so that the corresponding page cells back up to each other when flipping around the X axis. Equivalent to “WorkAndTumble”.</i>          |
| <i>TwoSidedFlipY</i>     | <i>Page content is imaged on both the front and back sides of media sheets so that the corresponding page cells back up to each other when flipping around the Y axis. Equivalent to “WorkAndTurn”.</i>            |

## 7.57 Spot-Color

Separation to render spot color.

### Partition Keys

**Colorant Control** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

**Colorant Params** - None

**SeparationSpec** - None

### Elements/Resources Used

**Colorant Control**

**Colorant Params**

**SeparationSpec**

### Processes

**DigitalPrinting**

**Interpreting**

Note: The same **Colorant Control** Resource MUST be specified as the input to both the **DigitalPrinting** and **Interpreting** Processes.

### Syntactic Fragment

```
<ColorantControl ID=Reference ID Class="Parameter" Status="Available" >  
  <ColorantParams>  
    <SeparationSpec Name=separation name />  
  </ColorantParams>  
</ColorantControl>
```

### Allowed Values

*ID*

String that uniquely identifies the ColorantControl.

*Name*

MUST be a String that is the name of the separation spec.

## 7.58 Stapling-and-Stitching

How specific pages, documents, or job should be stapled/stitched together.

### Partition Keys

**Component** - None

**ComponentLink** - None

**StitchingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**Component**

**ComponentLink**

**StitchingParams**

### Processes

**Stitching**

### Syntactic Fragment

```
<ComponentLink rRef=ID of Component Resource>
```

```

Usage="Output" CombinedProcessIndex="index into Types for predecessor
Process" />
<ComponentLink rRef="ID of Component Resource"
Usage="Input" CombinedProcessIndex="index into Types for Stitching"
Orientation="which edge to stitch" />
...
<Component ID="Reference ID" Class="Quantity" ComponentType="PartialProduct"
Status="Available"
PipeProtocol="Internal" />
<StitchingParams ID="Reference ID" Class="Parameter" Status="Available"
NoOp="whether or not to stitch"
Angle="angle of stitch"
NumberOfStitches="number of stitches"
StitchType="position of stitches" />

```

### Allowed Values

#### *ID*

String that uniquely identifies the **StitchingParams**.

#### *No Op*

If present, MUST be set to one of the following values:

<i>true</i>	To turn stitching off. All other <b>StitchingParams</b> attributes are ignored.
<i>false</i>	To use other <b>StitchingParams</b> attributes to specify stitching. This is the default.

### Component

MUST be present if *Orientation* is specified

#### ComponentLink

MUST be present if *Orientation* is specified.

#### ComponentType

MUST be set to "*PartialProduct*".

#### CombinedProcessIndex

MUST be an Integer.

#### *Orientation*

MUST be present if stitching on other than the y-axis is desired. If present, MUST be set to one of the following values:

<i>Rotate0</i>	Don't rotate the sheet. Stitching is to occur on the edge that is along the y-axis (left edge) of the sheet.
<i>Rotate90</i>	Rotate the sheet 90 degrees counter-clockwise. Stitching is to occur on the edge that is opposite the x-axis (top edge) of the pre-rotated sheet.
<i>Rotate180</i>	Rotate the sheet 180 degrees. Stitching is to occur on the edge that is opposite of the y-axis (right edge) of the pre-rotated sheet
<i>Rotate270</i>	Rotate the sheet 270 degrees. Stitching is to occur on the edge that is along the x-axis (bottom edge) of the pre-rotated sheet.
<i>Flip0</i>	Do not rotate the sheet; flip the sheet around the x-axis. Stitching is to occur on the edge that is along the y-axis (left edge) of the pre-flipped sheet.
<i>Flip90</i>	Rotate the sheet 90 degrees counter-clockwise and flip around the x-axis. Stitching is to occur on the edge that is opposite the x-axis (top edge) of the pre-rotated/flipped sheet.

*Flip180*

*Rotate the sheet 180 degrees and flip around the x-axis. Stitching is to occur on the edge that is opposite of the y-axis (right edge) of the pre-rotated/flipped sheet.*

*Flip270*

*Rotate the sheet 270 degrees counter-clockwise and flip around the x-axis. Stitching is to occur on the edge that is along the x-axis (bottom edge) of the pre-rotated/flipped sheet.*

*PipeProtocol*

MUST be set to "Internal".

*Usage*

MUST be set to one of the following values:

*Input*

*Output*

*Angle*

If present, MUST be an integer that is the angle, in degrees, of each stitch; Increasing in the counterclockwise direction. Valid values are 0 through 359, where 0 is horizontal or parallel to the x axis. The default is system specified. If *StitchType* is Saddle, Angle is ignored.

*NumberOfStitches*

If present, MUST be an integer in the range of 1 through 255. If *NumberOfStitches* is not present or is set to -1, the system specifies the number of stitches. The default is -1.

*StitchType*

If present, MUST be set to one of the following values:

*Corner*

Stitch in the corner that is at the clockwise end of the y-axis after *Orientation* is applied.

*Saddle*

Stitch on the middle fold which is on the saddle parallel to the y-axis after *Orientation* is applied.

*Side*

Stitch along the y-axis after *Orientation* is applied. If *NumberOfStitches* is 1, then the stitch is placed parallel to the y-axis after *Orientation* is applied and in the corner that is at the clockwise end of the y-axis after *Orientation* is applied.

## 7.59 Start–Separator/Slip–End-Sheets

Whether start, separator/slip, and/or end sheets are to be included with the job. If any type of finishing (hole making, stitching, etc.) is specified for any part of the job, the start, separator/slip, and end sheets will not be included in the finishing.

**Partition Keys**

None

**Elements/Resources Used**

**Insert Sheet**

**JobField**

**Layout PreparationParams**

MarkObject

**Media**

MediaRef

**Sheet**

**Surface**

**Processes**

**LayoutPreparation**

### Syntactic Fragment

```

<Media ID="Media reference ID" Class="Consumable" Status="Available" ... />
<LayoutPreparationParams ID="Reference ID" Class="Parameter" Status="Available" >
  <InsertSheet SheetType="type of insert sheet to include"
    IsWaste="whether or not to discard separator sheets"
    SheetUsage="where to include separator sheet"
    SheetFormat="what it to appear on separator sheet" >
    IncludeInBundleItem="which bundle item to include this insert sheet in"
    <Sheet>
      <MediaRef rRef="Media reference ID" />
      <Surface Side="side to print UserText on">
        <MarkObject>
          <JobField
            ShowList="type of text to place on sheet"
            UserText="text to place on sheet"
          </JobField>
        </MarkObject>
      </Surface>
    </Sheet>
  </InsertSheet>
</LayoutPreparationParams>

```

### Allowed Values

#### ID

String that uniquely identifies the **Layout PreparationParams**.

#### IncludeInBundleItem

If present, MUST be set to one of the following values:

- |               |  |
|---------------|--|
| <i>After</i>  | This <b>Insert Sheet</b> is to be included in the <b>BundleItem</b> that occurs after this <b>Insert Sheet</b> . “ <i>After</i> ” is equivalent to “ <i>None</i> ” if no <b>BundleItem</b> is defined after this <b>Insert Sheet</b>                   |
| <i>Before</i> | This <b>Insert Sheet</b> is to be included in the <b>BundleItem</b> that occurs before this <b>Insert Sheet</b> . “ <i>Before</i> ” is equivalent to “ <i>None</i> ” if no <b>BundleItem</b> is defined before this <b>Insert Sheet</b>                |
| <i>New</i>    | A new <b>BundleItem</b> is created. This <b>Insert Sheet</b> will be in the new <b>BundleItem</b> by itself unless another <b>Insert Sheet</b> with <i>IncludeInBundleItem</i> = “ <i>Before</i> ” occurs immediately after this <b>Insert Sheet</b> . |
| <i>None</i>   | This <b>Insert Sheet</b> is not included in a <b>BundleItem</b> . This is the default.   |

#### IsWaste

If present, MUST be set to one of the following boolean values:

- |              |   |
|--------------|---|
| <i>false</i> | Separator sheets are not to be discarded after the completion of the job. |
| <i>true</i>  | Separator sheets are to be discarded after the completion of the job.     |

#### SheetFormat

If present, MUST be set to one of the following values:

- |                 |  |
|-----------------|--|
| <i>Blank</i>    | Content of Separator sheet is to be blank.       |
| <i>Brief</i>    | Content of Separator sheet is the brief version. |
| <i>Full</i>     | Content of Separator sheet is the full version.  |
| <i>Standard</i> | Content of Separator sheet is the standard.      |

#### SheetType

MUST be set to one of the following values:

- |                       |   |
|-----------------------|---|
| <i>JobSheet</i>       | Include a sheet that delimits the job           |
| <i>SeparatorSheet</i> | Include a sheet that delimits each copy of each |

		document in the job or each copy of the job.
<b>Sheet Usage</b>		
	MUST be set to one of the following values:	
<i>Trailer</i>		Include an insert sheet at the end of the job when <i>SheetType=JobSheet</i> or at the end of each copy of
<i>each</i>		document in the job when <i>Sheet Type =</i>
<i>SeparatorSheet.</i>		
<i>Slip</i>		Include an insert sheet between each copy of each
		document in the job when <i>Sheet Type=SeparatorSheet.</i>
<i>SlipCopy</i>		Include an insert sheet between copies of the job when
		<i>Sheet Type=SeparatorSheet.</i>
<i>Header</i>		Include an insert sheet at the start of the job when
		<i>Sheet Type=JobSheet</i> or at the start of each copy of
		each document in the job when
		<i>Sheet Type=SeparatorSheet.</i>
<b>Side</b>		
	MUST be set to one of the following values:	
<i>Back</i>		
<i>Front</i>		
<b>Show List</b>		
	MUST be set to one of the following values:	
<i>JobName</i>		
<i>JobSubmitterName</i>		
<i>UserText</i>		
<b>Surface</b>		
	MUST be present if text is to appear on the Separator Sheet.	
<b>UserText</b>		
	MUST be the String that is to appear on the Separator Sheet.	

## 7.60 Trapping

Whether trapping is to be performed or not. The type of trapping, raster or vector (see Figure 5: Process and Resource Flow on page 20), that is performed depends on where the Trapping Process occurs in the *Types* attribute in the Combined Digital Printing Node. Raster trapping occurs when the **RunList** is ByteMap elements, otherwise vector trapping occurs.

### Partition Keys

**TrappingDetails** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

#### TrappingDetails

### Processes

#### Trapping

### Syntactic Fragment

```
<TrappingDetails ID="Reference ID" Class="Parameter" Status="Available"
  NoOp="whether or not to perform trapping"/>
```

### Allowed Values

#### ID

String that uniquely identifies the TrappingDetails.

*No Op*

If present, MUST be set to one of the following values:

*true* To turn trapping off. All other **TrappingDetails** attributes are

ignored.

*false* To use other **TrappingDetails** attributes to specify trapping.

This is the default.

## 7.61 Trimming

Perform a trimming operation on the final product.

### Partition Keys

**TrimmingParams** - See Table 80 Partitioning Resources other than RunList for the valid partition keys.

### Elements/Resources Used

**TrimmingParams**

### Processes

**Trimming**

### Syntactic Fragment

```
<TrimmingParams ID="Reference ID" Class="Parameter" Status="Available"  
  NoOp="whether or not to trim" />
```

### Allowed Values

*ID*

String that uniquely identifies the **TrimmingParams**.

*No Op*

If present, MUST be set to one of the following values:

*true* To turn trimming off. All other **TrimmingParams** attributes are ignored.

*false* To use other **TrimmingParams** attributes to specify trimming. This is the default.

## 8 References

CIP4 documents are available at <http://www.cip4.org>. RFCs are available at: <http://www.rfc-editor.org/rfcsearch.html>. Internet-Drafts are available at: <http://www.ietf.org/ID.html>. IEEE-ISTO PWG standards are located at: <http://www.pwg.org> or more specifically at: <http://www.pwg.org/ipp/index.html>.

### 8.1 Normative References (for [IDP-ICS])

- [Base-ICS] Base Interoperability Conformance Specification (Base ICS), Version 1.0, published December 2004, Errata Revision B, published 19-Feb-2006, available at: <http://www.cip4.org>.
- [IPP-std] Internet Printing Protocol/1.1: Model and Semantics, RFC 2911, September 2000. All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <http://www.rfc-editor.org/rfcsearch.html>.
- [JDF1.2] Job Definition Format (JDF), Version 1.2, published May 7, 2004, Errata February 2005, available at: <http://www.cip4.org>.

### 8.2 Informative References (for [IDP-ICS] and [IDP-AN])

- [IDP-AN] Integrated Digital Printing Application Note, version 1.0, work in progress, available at <http://www.cip4.org>. (This document with the updated title: “Application Note for the Integrated Digital Printing (IDP) ICS”).
- [IDP-ICS] Integrated Digital Printing ICS, version 1.0, published January 2005, Errata Revision A, published February 2006, available at <http://www.cip4.org>.
- [RFC2616] RFC 2616 Hypertext Transfer Protocol — HTTP/1.1, Date: June 1999, Produced by: Internet Engineering Task Force (IETF), Network Working Group, Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <http://www.rfc-editor.org/rfcsearch.html>.
- [RFC2808] RFC 2806, URLs for Telephone Calls, by A. Vaha-Sipila, Date: April 2000, Produced by: Internet Engineering Task Force (IETF), Network Working Group, Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <http://www.rfc-editor.org/rfcsearch.html>.
- [URL-AN] CIP4 Application Note - The Use of the File URL in JDF, Available at [www.cip4.org](http://www.cip4.org).

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