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**The Printer Working Group**

**PWG Print Job Ticket and  
Associated Capabilities Version 1.0  
(PJT)**

Status: Approved

Abstract: This specification provides the Job Ticket and Capabilities for the Print Service. The Print Service Capabilities are supplied by the Print Service to inform the prospective Print Job Request submitter of the PrintJobTicket elements and element values supported by the Print Service. The PrintJobTicket is supplied by the client, along with Document Data, in a Print Job Request to indicate User intent for the Print Job. The Print Service contains a default PrintJobTicket that provides defaults when the corresponding element is not included with a PrintJob Creation Request.

The PrintJobTicket datatype is used by several elements including those that: represent the defaults of the Print Service, represent the user intent in a PrintJob Creation Request, and within the resulting Job Object representing the accepted print intent. A closely related datatype, the Print Service Capabilities, represents which PrintJobTicket elements are supported and what values are permitted. The PWG Semantic Model PrintJobTicket datatype, the associated Print Service Capabilities datatypes and their various instantiations are represented as a subset of the PWG Semantic Model v2 XML Schema. This specification also identifies certain Print Service Description elements relate to formatting the Document

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In general, a PWG standard is a specification that is stable, well understood, and is technically competent, has multiple, independent and interoperable implementations with substantial operational experience, and enjoys significant public support.

For additional information regarding the Printer Working Group visit:

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## About the Semantic Model Work Group

The Semantic Model Working Group is responsible for the modeling of the services hosted on Multifunction Devices (e.g., Print, Copy, Scan, Fax, Email, Resource, System Control, and Transform). Standardization of the Multifunction Device model and semantics will support interoperability of devices and services on the internet and in local and enterprise networks enabling improved job submission, job management, remote administration, and support. The goal of the project is to define a unified semantic model and set of abstract operations for the most common and essential service and device features of the Multifunction Device.

For additional information regarding Semantic Model visit:

<http://www.pwg.org/mfd/>

Implementers of this specification are encouraged to join the [Semantic Model](#) mailing list in order to participate in any discussions of the specification. Suggested additions, changes, or clarification to this specification, should be sent to the [Semantic Model](#) Mailing list for consideration.

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## 1. Introduction

The original PWG Semantic Model v1 [PWG5105.1] has been extended from describing a print service to the entire typical multifunction device (MFD) Services [PWG5108.1]. It includes the MFD's configuration covering such things as the input trays, media paths and network interfaces. The model covers the user facing services hosted on an MFD such as Copy, Scan and Print. For each of these services the model includes elements covering the Service Object, and when applicable the service's contained Jobs and Documents.

Included in the PWG's Semantic Model is a PrintService. Since the PrintService is a job based service it contains Jobs and the Jobs contain Document(s). The PrintService contains elements covering its status, configuration, capabilities and defaults. The PrintService contains a JobTable that contains the list of queued, processing and completed PrintJobs. The PrintJobs contains elements covering its state and processing intent (i.e., PrintJobTicket). See section 4.1 for an overview of PrintJobTickets, and its associated capabilities and defaults.

## 2. Terminology

### 2.1 Conformance Terminology

Capitalized terms, such as MUST, MUST NOT, REQUIRED, SHOULD, SHOULD NOT, MAY, and OPTIONAL, have special meaning relating to conformance as defined in RFC 2119 [RFC2119].

CONDITIONALLY REQUIRED - The specified element for the associated feature MUST be implemented if the associated feature is supported by the PrintService implementation

### 2.2 Other Terminology

See [PWG5108.01] section 1.3.2 for common Semantic Model terminology used. For this specification the “<service>” in the [PWG5108.01] section 1.3.2 is replaced with “Print”.

#### 2.2.1 Conventions used in figures

The conventions shown in Figure 1 are used in the XML schema figures within this specification. Required semantic elements (e.g., Element1) are shown in a solid box and optional elements (e.g., Element3) are shown in a dashed box. A sequence of elements (e.g., Element2, Element3, any) is represented by the connector to the right of Element1. When only one of a set of elements can be used (e.g., Element4 or Element5) that group is represented by the connector to the right of Element2. All sequences of lists have an extension point at the end (i.e., any) that allows vendors or sites to add their own properly qualified extensions. See PWG5108.1 section 10. All processing elements are decorated with the MustHonor attribute. The element may also be decorated with properly qualified vendor extension attributes.

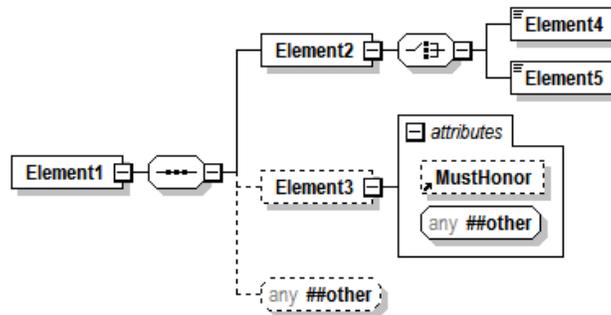


Figure 1 Model Conventions

## **3. Requirements**

### **3.1 Rationale for PrintJobTicket and Associated Capabilities**

This specification is being published to provide a concise reference for the PrintJobTicket and associated capabilities as defined in the MFD Model and Common Semantics Version 1.0 [PWG5108.1].

This specification establishes a minimum set of REQUIRED and CONDITIONALLY REQUIRED PrintJobTicket elements to improve interoperability. The minimum set of elements is defined to satisfy the needs of mobile and resource constrained clients of cloud-based PrintServices.

### **3.2 Out of Scope**

1. This specification shall create no new semantic definitions.
2. This specification does not address Print Job Templates. A Print Job Template is an unbound PrintJobTicket. These can be stored in a repository or on a client until bound to an object. Print JobTickets are bound to a request, a Job, or a service (i.e., PrintServiceDefaults). (See [PWG5108.1 §2.3])

### **3.3 Design Requirements**

- 1) This specification includes all the PrintJobTicket related elements. Included in this are:
  - a) The descriptive elements for Jobs and Documents
  - b) The processing elements for Jobs and Documents
  - c) The Print Service capability elements
  - d) A limited set of Print Service descriptive elements.
- 2) An associated free standing XML schema for the elements is published.

## 4. PrintJobTicket

### 4.1 Overview

As shown in Figure 2 the PrintJobTicket datatype contains three groups of elements. With the exception of the JobName element in PrintJobDescription, all PrintJobTicket elements are optional.

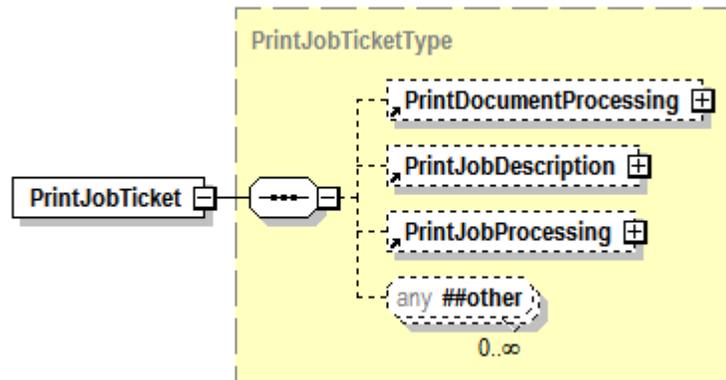


Figure 2 PrintJobTicket

The PrintJobTicket datatype contains elements for job and document processing, and for the descriptive properties of a PrintJob. PrintJobDescription and PrintJobProcessing elements apply to the entire Job. PrintDocumentProcessing Elements apply to all Documents within the Job unless overridden at the Document level. In other words the Job's PrintDocumentProcessing element contains the requested values for all the contained Documents except when overridden by a PrintDocumentTicket. The typical PrintJob contains only a single Document and does not contain a PrintDocumentTicket.

The most common form of a PrintJob contains only a single document. The PrintJobTicket's PrintDocumentProcessing elements are applied to all the Documents in the Job. PrintDocumentTickets are optional in single and multi-document jobs. The PrintDocumentTicket defines exception processing on a per document basis. The PrintDocumentTicket datatype contains elements for document processing and descriptive properties of a Document within a PrintJob. A Document's PrintDocumentProcessing elements will override the values specified in the PrintJobTicket's PrintDocumentProcessing element.

The PrintJobTicket datatype is used in a number of ways associated with the PrintJob.

- It is the datatype of the PrintJobTicket data object used in a job creation protocol to carry the PrintService Client's print intent. The content of a PrintJobTicket is configured by a User through a PrintService Client. The PrintJobTicket is then submitted by the PrintService Client to the PrintService along with the Document(s) to print. PrintServices MUST gracefully handle PrintJobTickets that contain unsupported elements and values.
- It is the datatype of the PrintJobTicket data object used in a PrintJob Object to indicate the accepted request. This might differ from the PrintService Client request. It might have been modified to resolve conflicting or unsupported elements. (See section 4.2 below)

- It may be used in the PrintJob to carry the applied PrintJobTickets elements as a PrintJob is processed by the PrintService. The PrintJobReceipt records the JobTicket elements applied to the PrintJob. This element is created and populated by the PrintService as the PrintJob is processed. The PrintJobReceipt MUST include all the PrintJobTicket's elements as they are applied to the PrintJob. Additionally the PrintJobReceipt MUST include the default elements, and values, when they have been applied to the PrintJob. (i.e., PrintJobReceipt).
- It is used by the PrintService to indicate the default values for the PrintService. The DefaultPrintJobTicket is the representation of the defaults supplied by the PrintService when the corresponding element is not included with a PrintJob Creation Request (i.e., PrintServiceDefaults).

The PrintJobTicketCapabilities datatype is closely related to the PrintJobTicket datatype. For every element in PrintJobTicket there is an associated PrintServiceCapabilities element. (See Appendix F and G) The primary difference is the datatype of the associated capabilities element. The capabilities element is used to indicate if a PrintJobTicket element is supported by the PrintService and its supported values. In some cases all that is required is a Boolean to indicate the element is supported. For the other elements the range or list of values supported is provided. (See Appendix A)

The PrintJobTicketCapabilities datatype is used by the PrintService in two ways.

- It is used within PrintServiceCapabilities to indicate the full set of supported elements and values (e.g., media even if it is not currently loaded in any input tray)
- It is used within PrintServiceCapabilitiesReady to indicate the elements and values that can be honored without operator intervention (e.g., media that is currently loaded in an input tray).

Although the model contains a large number of elements, most of them are optional. This allows a wide variety of PrintServices, and PrintService Clients to make use of the model. The model supports PrintService with limited features up to production class PrintServices. Compliant PrintService Clients can interoperate with them all. Section 8.1 specifies the REQUIRED and CONDITIONALLY REQUIRED subset of elements for the PWG PrintJobTicket.

## 4.2 MustHonor element processing

The PrintService creates a PrintJob when it accepts a PrintJob Creation Request. The PrintJob contains a copy of the submitted PrintJobTicket, possibly modified. The User has the ability to specify "best effort" or "MustHonor" for any of the processing elements within a PrintJobTicket. The "MustHonor" processing model also applies to PrintDocumentTickets.

When a processing element is marked "MustHonor" it means that the element and its value MUST be supported by the PrintService and MUST be bound to the PrintJob or the PrintService MUST NOT accept the PrintJob. All other processing elements are "best effort". The PrintService MAY omit the processing element. The PrintService MAY change the processing element's value.

The newly created PrintJob contains the accepted PrintJobTicket. The PrintService's PrintServiceDefault elements and values not specified by the User MUST NOT be included in the PrintJob's PrintJobTicket. The PrintService MUST inform the PrintService

Client whether modifications have been made to the submitted PrintJobTicket in the PrintJob Creation response.

When the PrintService begins to process a Job, and a processing feature specified in the PrintJobTicket is unavailable and the PrintJobTicket element is not marked “MustHonor”, PrintService MAY omit the processing element or change the processing element’s value. If the PrintJobTicket element is marked “MustHonor”, it is an implementation decision whether to abort the Job or to place the Job in the Stopped state until the associated processing feature is available or the PrintJobTicket is modified by the Job owner or administrator.

### **4.3 Job Ticket Precedence**

There are four primary locations for specifying processing instructions for printed documents. Those locations are in the PrintServiceDefaults, within the document content, and in the PrintJobTicket and PrintDocumentTicket.

The lowest precedence is the PrintService’s PrintServiceDefaults. The values from PrintServiceDefaults affect the printed document only when the semantic element has not otherwise been specified.

The next highest precedence is the instructions embedded in the document data. Not all document formats are capable of carrying the instructions. When present they override the associated PrintServiceDefaults.

The next highest precedence is the instructions in the PrintJobTicket. The PrintService MUST attempt to make the PrintJobTicket values take precedence over any embedded instructions in the document data. However there is no guarantee. This behavior maps to the PdlOverrideAttempted value of ‘Attempted’ [RFC2911 §4.4.28].

The highest precedence is the instructions in the PrintDocumentTicket. If present, the Print Service MUST apply the instructions in the PrintDocumentTicket if they differ from the instruction in the PrintJobTicket and “MustHonor” is not specified at either level. If “MustHonor” is specified in the PrintJobTicket or the PrintDocumentTicket or both, the normal “MustHonor” processing is used. The PrintService MUST attempt to make the PrintDocumentTicket values take precedence over any embedded instructions in the document data. However there is no guarantee. This behavior maps to the PdlOverrideAttempted value of ‘Attempted’ [RFC2911 §4.4.28].

The reason PdlOverrideAttempted maps to a value of ‘Attempted’ instead of ‘Guaranteed’ is that many print systems have a conflicting set of precedence rules.

## 5. PrintServiceDescription

The PrintServiceDescription element group contains descriptive information about the PrintService (e.g., MakeAndModel, DocumentFormatSupported, and ColorSupported). The PrintJobTicketCapabilities datatype provides the allowed values for a PrintJobTicket, and most of the PrintJobTicketCapabilities elements are reflected in PrintJobTicket elements. However, in some instances, as in the case of client-generated raster content, there are necessary PrintServiceDescription elements that do not correspond to PrintJobTicket information and a subset of PrintServiceDescription elements are needed by the Print Client for the generation of a document compatible with the PrintService Capabilities. Table 3 in section 8.2 lists these elements.

Element groups are needed to carry

- 1) The subset of PrintServiceDescription elements in a print protocol such as IPP, a Web Services protocol binding, or other bindings or encodings.
- 2) The subset of PrintServiceDescription elements, the PrintJobTicketCapabilities, and the PrintDocumentCapabilities in a protocol.

Section 18 contains these element group definitions.

- 1) The PrintJobCreationElements element group contains the subset of PrintServiceDescription elements
- 2) ThePrintServiceJobCapabilitiéselement group contains the PrintJobCreationElements subset, PrintJobTicketCapabilities, and the PrintDocumentCapabilities

## **6. PrintJobTicket Element Groups**

As indicated in Figure 2, the PrintJobTicket datatype contains three groups of elements i.e., PrintDocumentProcessing, PrintJobDescription and PrintJobProcessing. All PrintJobTicket elements are optional with the exception of the JobName element, which appears in the PrintJobDescription group.

### **6.1 PrintDocumentProcessing**

Figure 3 and Figure 4 show the elements that make up the PrintDocumentProcessing group of elements. The subsections below show the complex PrintDocumentProcessing elements or datatypes.

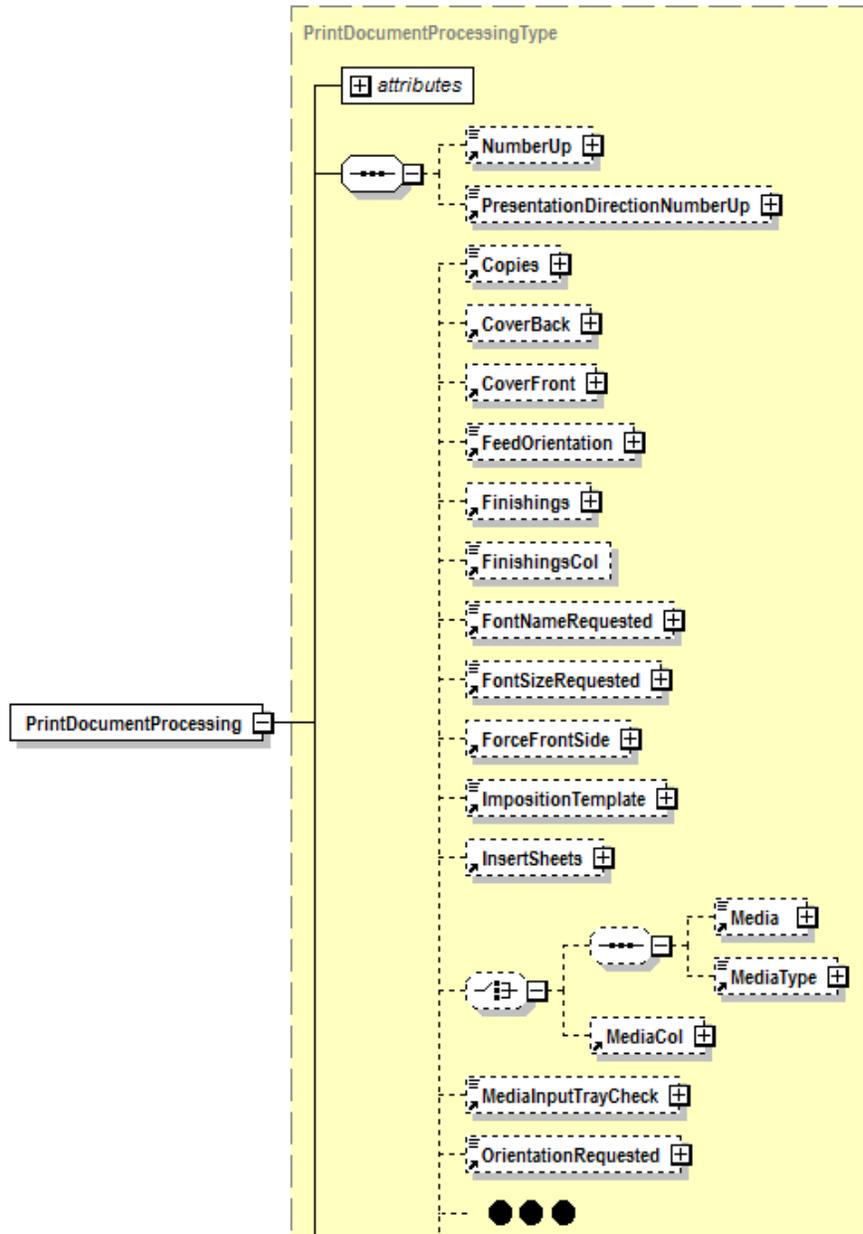


Figure 3 PrintDocumentProcessing (1)

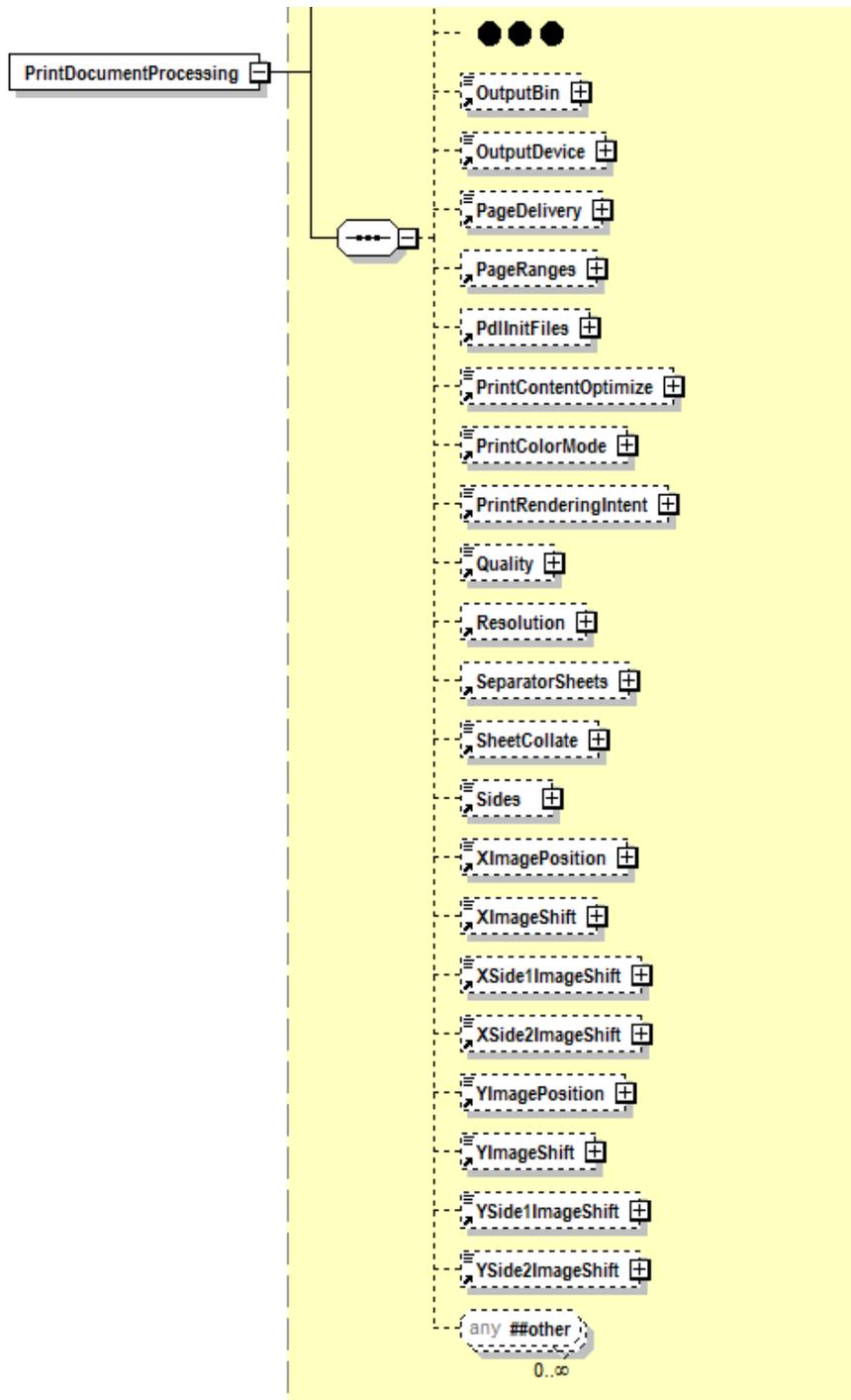


Figure 4 PrintDocumentProcessing (2)

### 6.1.1 CoverCol Datatype

Cover related elements (e.g., CoverBack) have a complex datatype. Figure 5 shows its constituent elements.

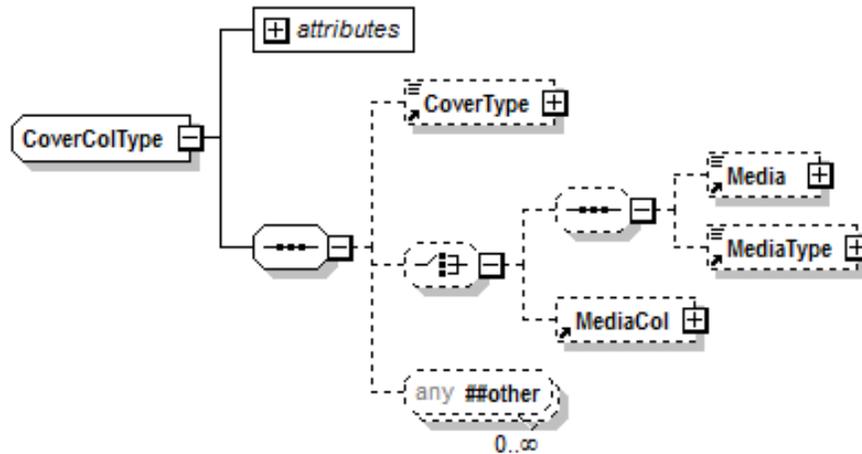


Figure 5 CoverCol Datatype

### 6.1.2 FinishingsCol Datatype

The FinishingsCol datatype is used for FinishingsCol and JobFinishingsCol elements. It allows a finer granularity specification of finishings than is possible with the Finishings and JobFinishings elements. Figure 6 shows its constituent elements.

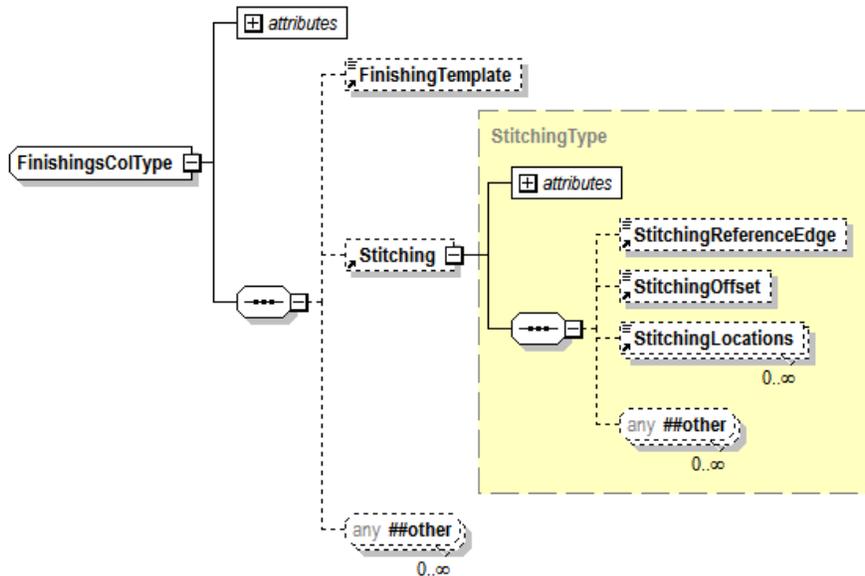


Figure 6 FinishingsCol Datatype

### 6.1.3 InsertSheet Element

Figure 7 shows the constituent elements of the InsertSheet element.

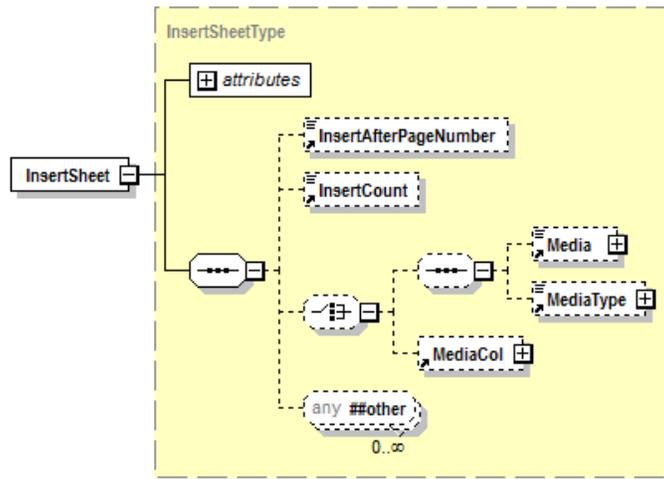


Figure 7 InsertSheet

### 6.1.4 MediaCol and MediaSize Elements

MediaCol allows a finer granularity specification of media than is possible with the Media and MediaType elements. Figure 8 shows the MediaCol constituent elements and the constituent elements of MediaSize and Margins.

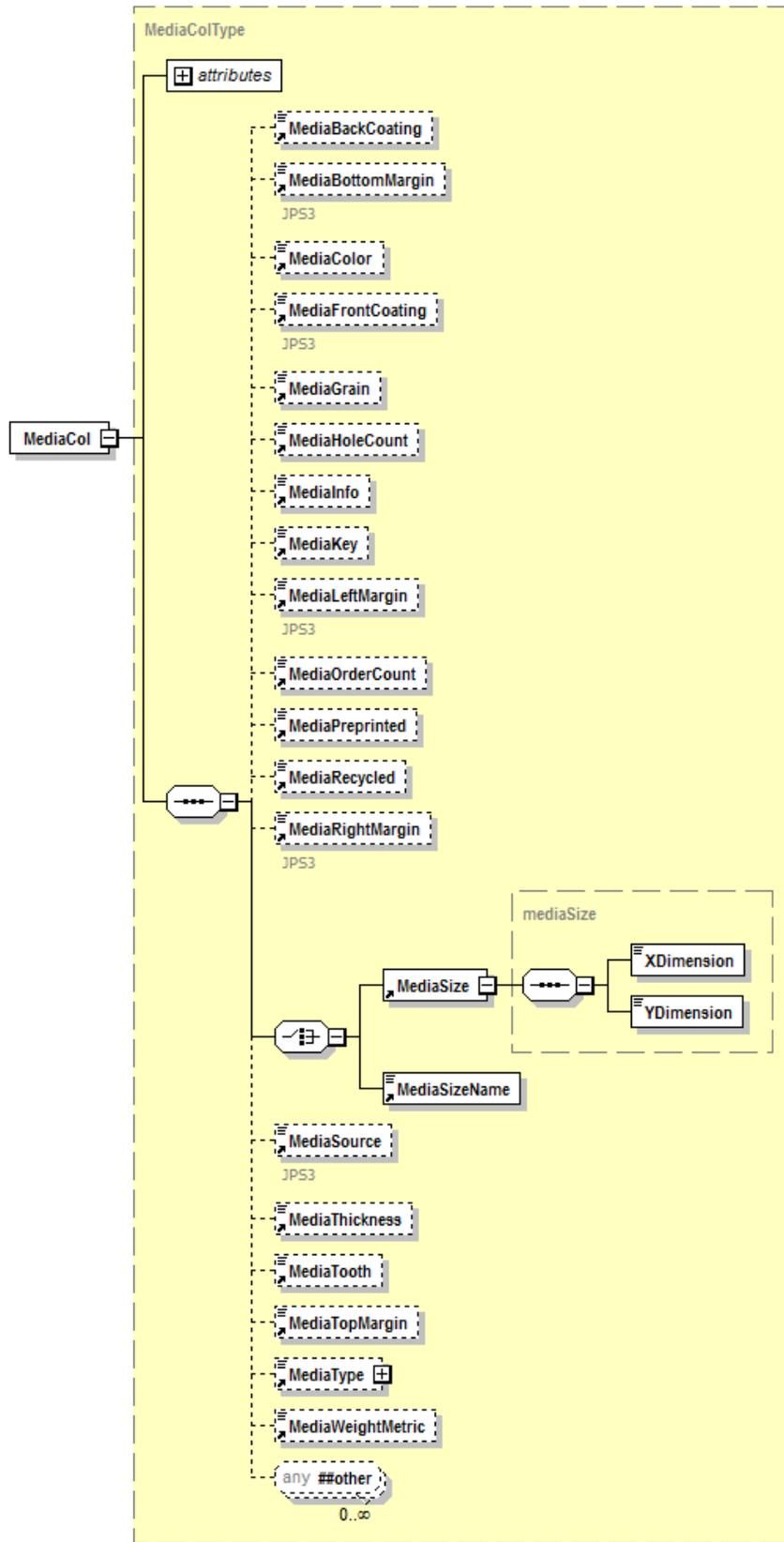


Figure 8 MediaCol and MediaSize

### 6.1.5 Page Ranges Element

Figure 9 shows the constituent elements of the PageRanges element.

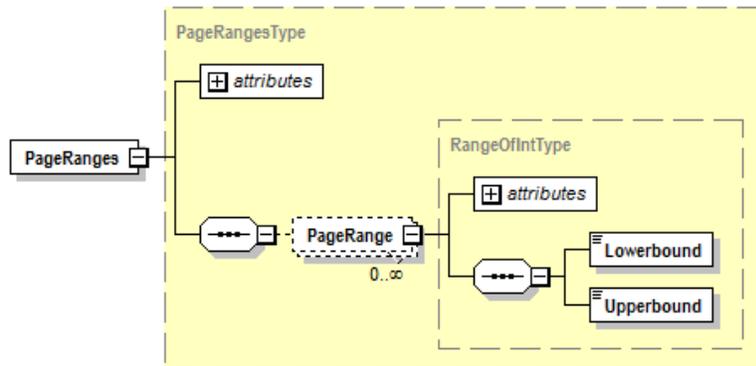


Figure 9 PageRanges

### 6.1.6 PdInitFiles Element

Figure 10 shows the constituent elements of the PdInitFiles element.

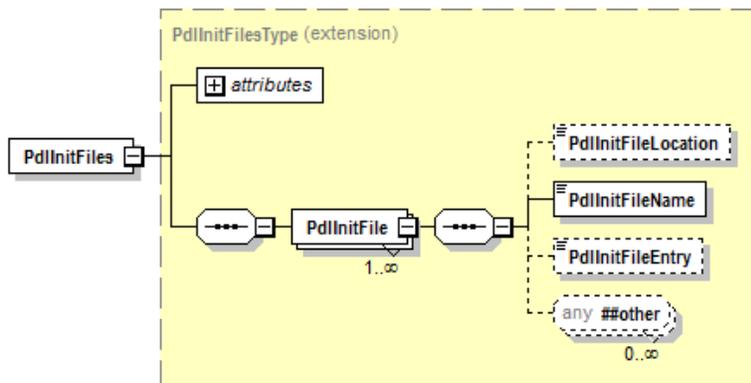


Figure 10 PdInitFiles

### 6.1.7 Resolution Element

Figure 11 shows the constituent elements of the Resolution element.

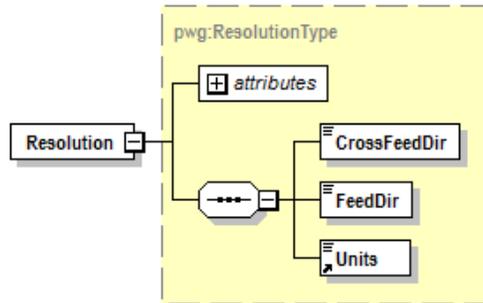


Figure 11 Resolution

### 6.1.8 SeparatorSheets Element

Figure 12 shows the constituent elements of the SeparatorSheets datatype.

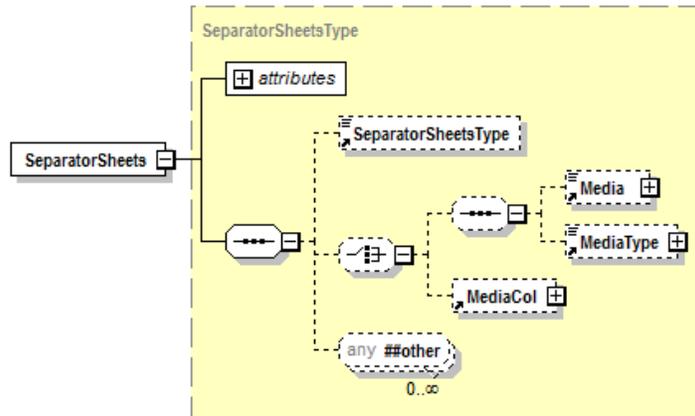


Figure 12 SeparatorSheets

## 6.2 PrintJobDescription

Figure 13 and Figure 14 show the elements that make up the PrintJobDescription group of elements. The subsections below show the complex PrintJobProcessing elements' datatypes.

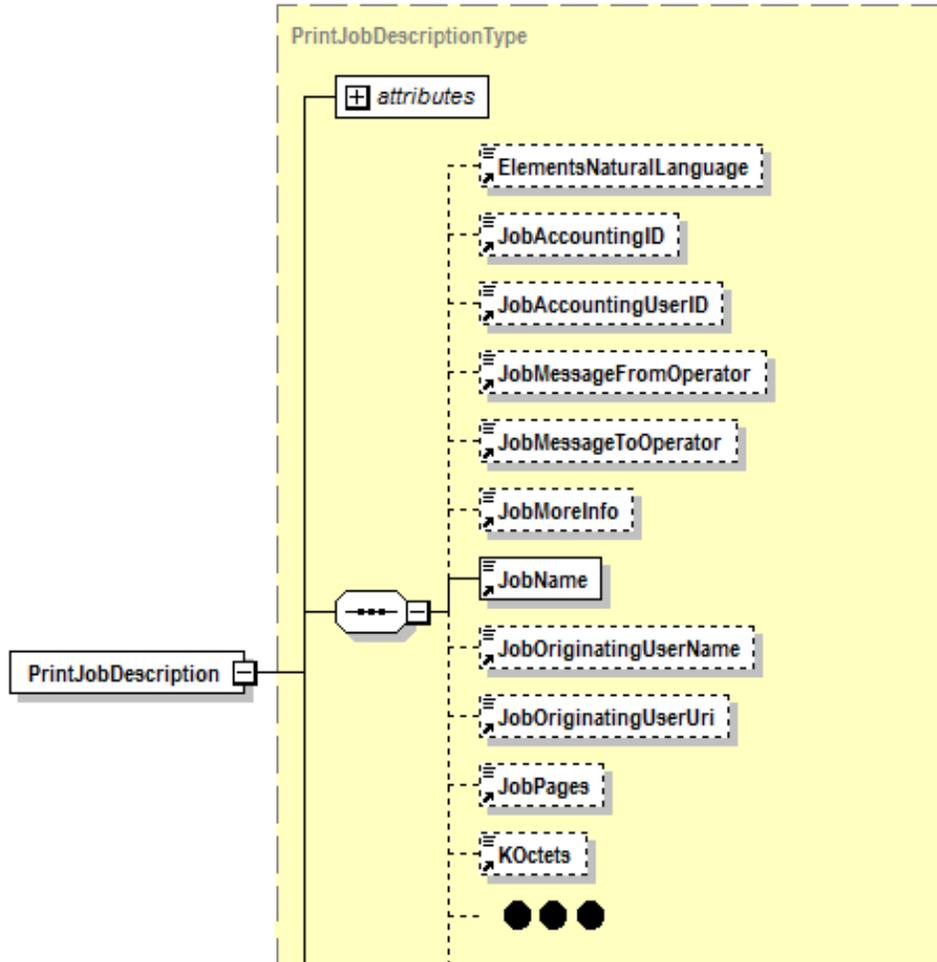


Figure 13 PrintJobDescription (1)

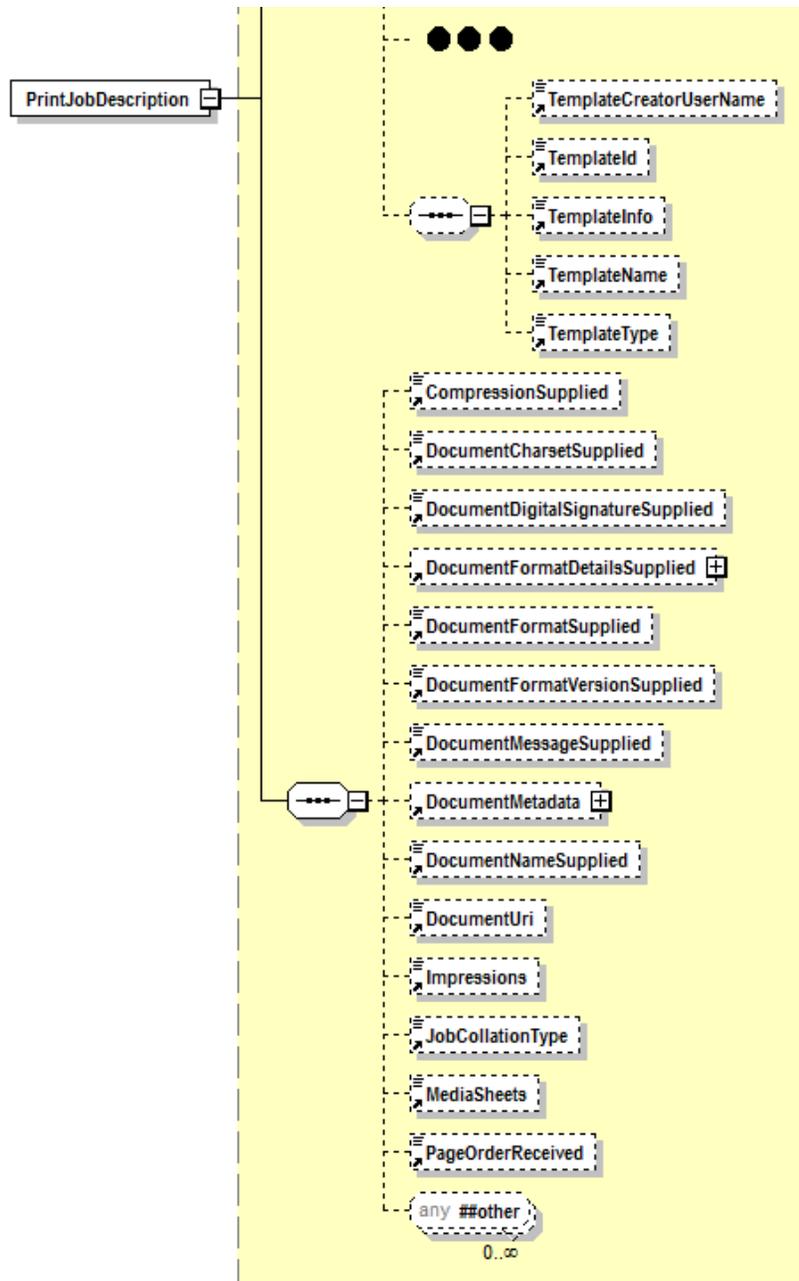


Figure 14 PrintJobDescription (2)

### 6.2.1 DocumentFormatDetailsSupplied Element

The DocumentFormatDetailsSupplied element allows greater details about the document format than is possible with the DocumentFormatSupplied and DocumentFormatVersionSupplied elements. Figure 15 shows the DocumentFormatDetailsSupplied constituent elements. The values of any of the elements supplied must conform to section 3.2.5 of [PWG5100.7]. Implementations that support DocumentFormatDetailsSupplied SHOULD support DocumentFormatDeviceld.

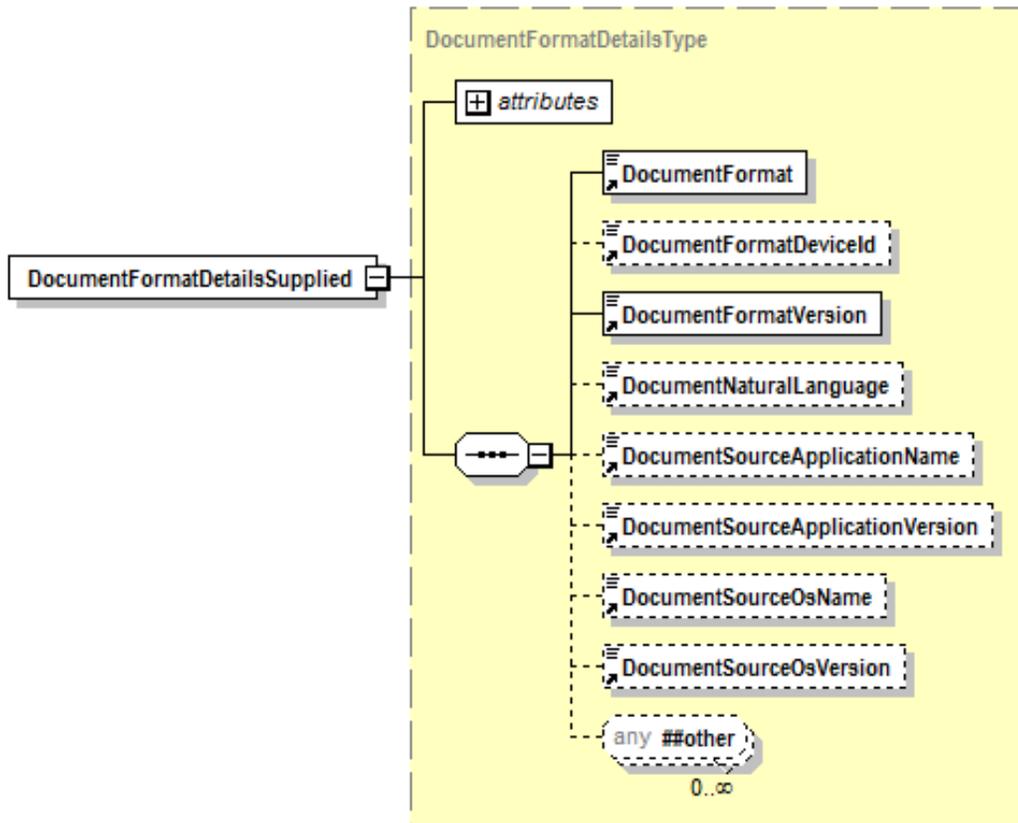


Figure 15 DocumentFormatDetailsSupplied

### 6.3 PrintJobProcessing

Figure 16 shows the elements that make up the PrintJobProcessing group of elements. The subsections below show the complex PrintJobProcessing elements and datatypes. The CoverColType and FinishingsColType datatypes from PrintDocumentProcessing are also used in PrintJobProcessing.

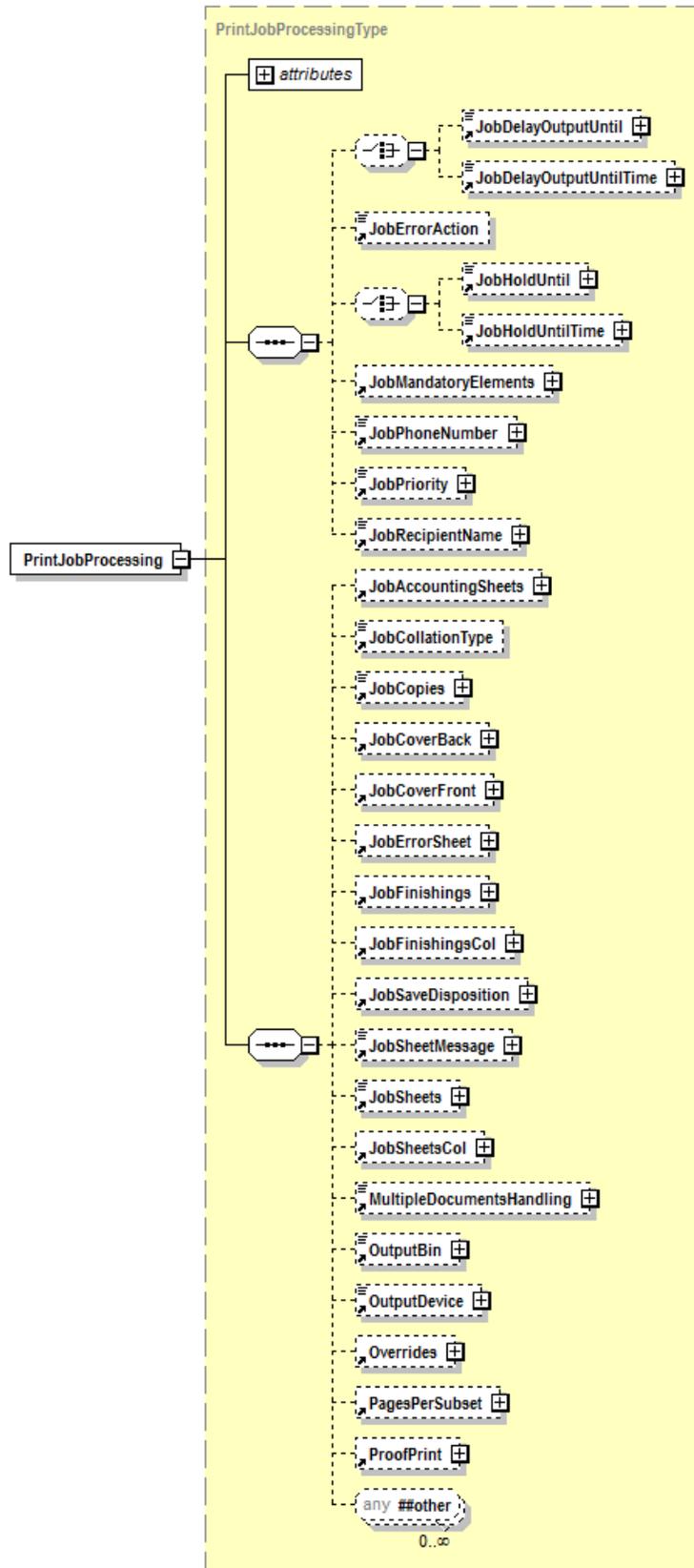


Figure 16 Job Processing

### 6.3.1 JobAccountingSheets Element

Figure 17 shows the constituent elements of the JobAccountingSheets element.

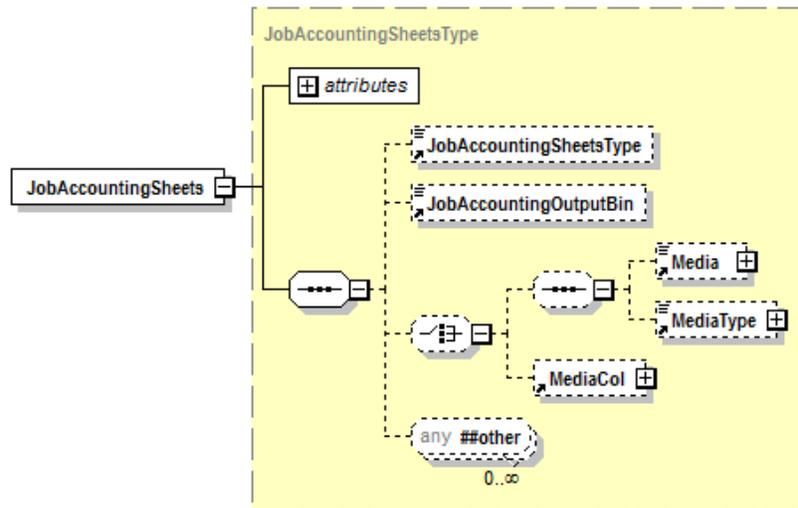


Figure 17 JobAccountingSheets Datatype

### 6.3.2 JobErrorSheet Element

Figure 18 shows the constituent elements of the JobErrorSheet element.

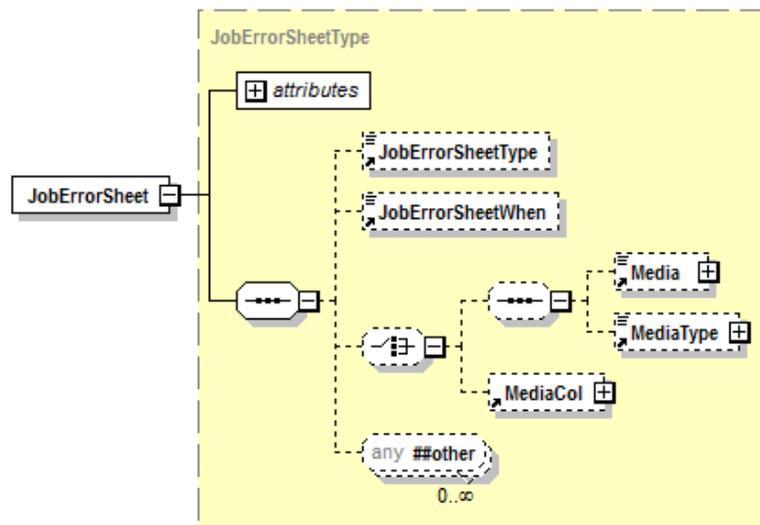


Figure 18 JobErrorSheet

### 6.3.3 JobSaveDisposition Element

Figure 19 shows the constituent elements of the JobSaveDisposition element.

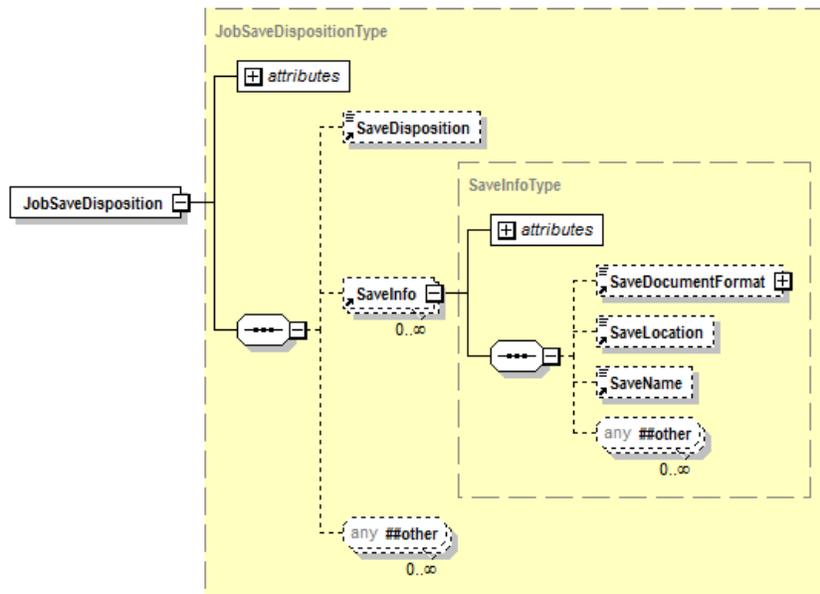


Figure 19 JobSaveDisposition

### 6.4 JobSheetsCol Element

Figure 20 shows the constituent elements of the JobSheetsCol element.

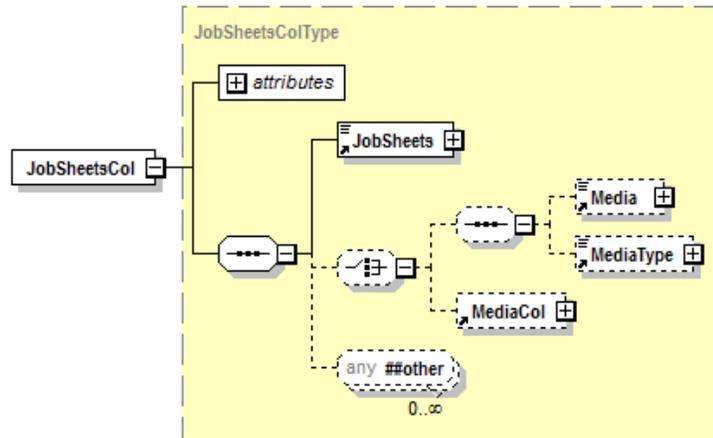


Figure 20 JobSheetsCol

#### 6.4.1 Overrides Element

Figure 21 shows the constituent elements of the Overrides element.

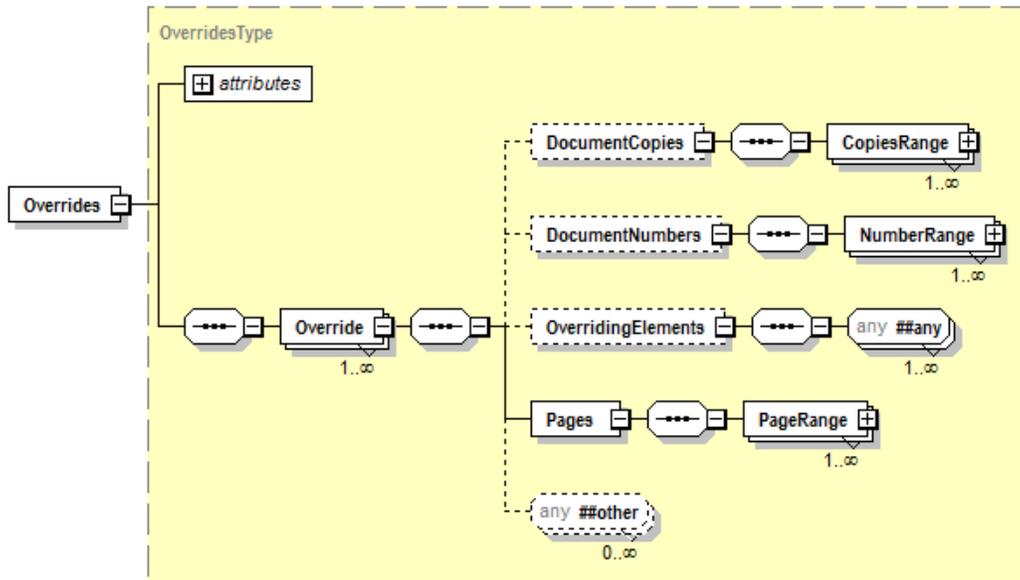


Figure 21 Overrides

### 6.4.2 PagesPerSubset Element

Figure 22 shows the constituent elements of the PagesPerSubset element.

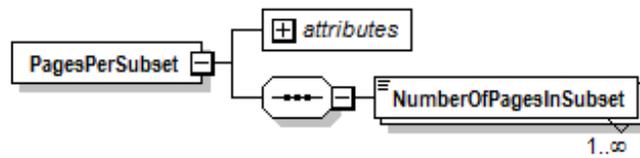


Figure 22 PagesPerSubset

### 6.4.3 ProofPrint Element

Figure 23 shows the constituent elements of the ProofPrint element.

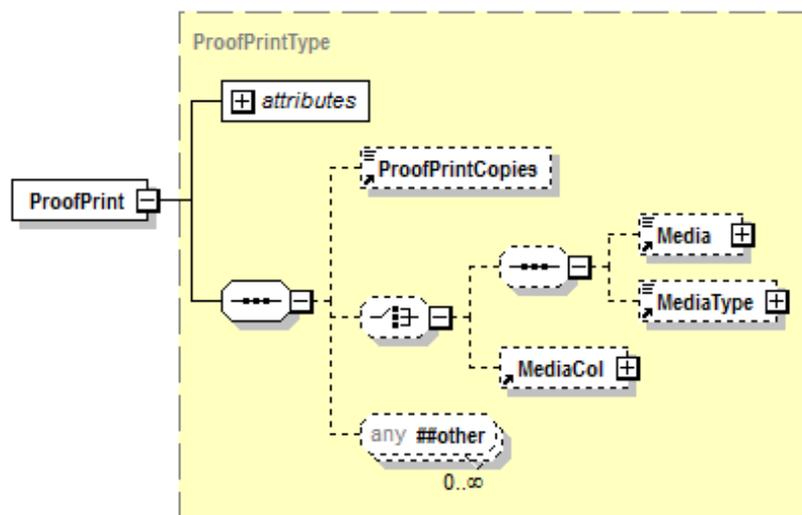


Figure 23 ProofPrint

## 7. PrintDocumentTicket Element Groups

The PrintDocumentTicket element is applicable in multi-document jobs and may be used for single-document jobs.

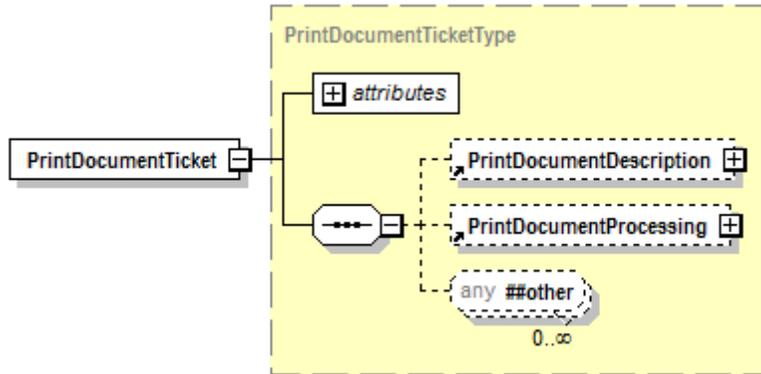


Figure 24 PrintDocumentTicket

### 7.1 PrintDocumentDescription

Figure 25 shows the constituent elements of the PrintDocumentDescription element

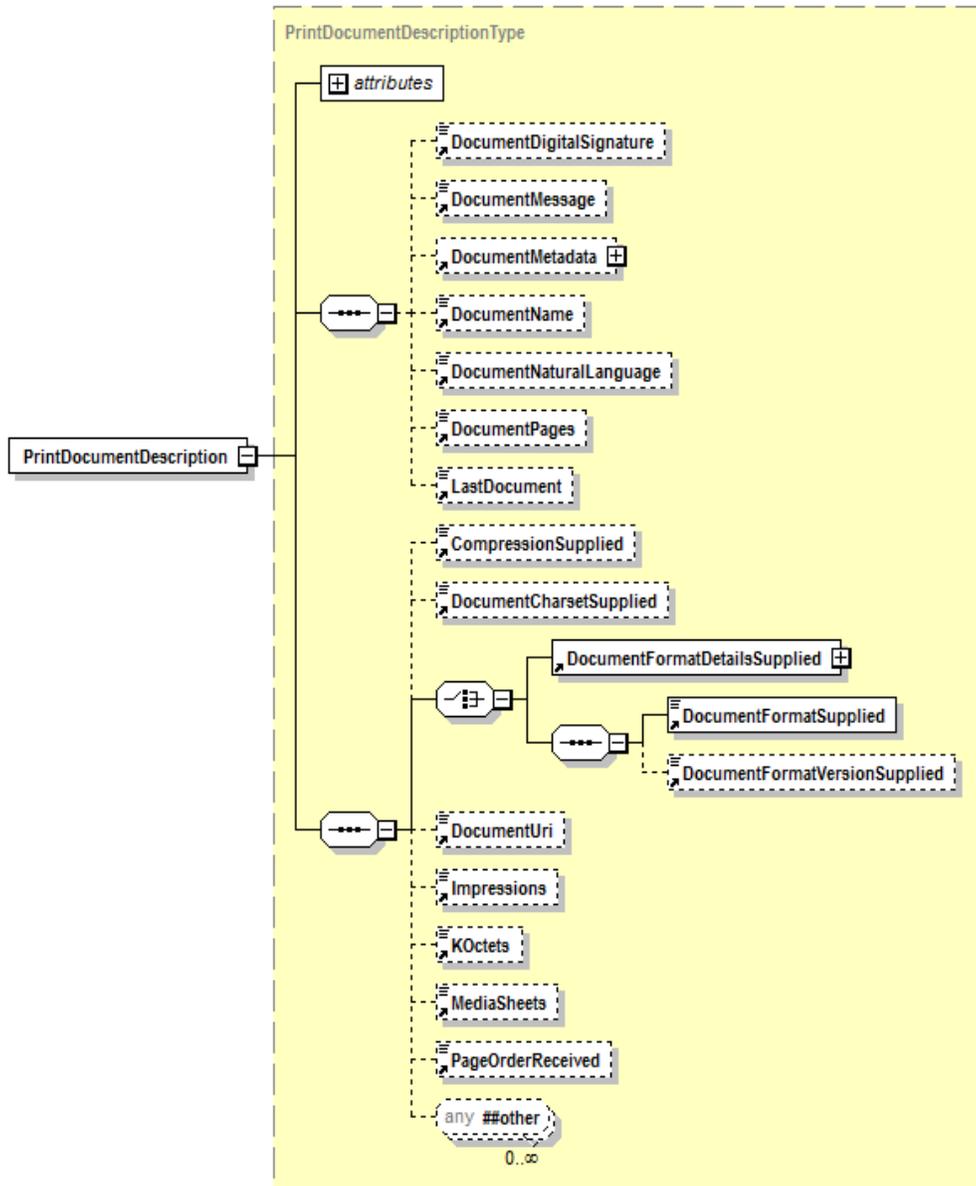


Figure 25 PrintDocumentDescription

## 8. Conformance Requirements

This section describes the PrintJobTicket conformance requirements for both PrintServices and PrintService Clients. Both the PrintService and PrintService Client MUST comply with the data model described in this specification. For an XML binding of this specification the PrintService and PrintService Client MUST comply with the associated PWG Semantic Model XML schema. In general the PrintService has requirements on what it must implement while the PrintService Client can have a minimal (i.e., not use a PrintJobTicket, PrintDocumentTicket or PrintServiceDescription elements) implementation. Both the PrintService and PrintService Client MUST gracefully handle any elements they do not understand.

### 8.1 PrintJobTicket Conformance Requirements

For the purposes of usability and interoperability a subset of the PrintJobTicket elements are specified as REQUIRED or CONDITIONALLY REQUIRED. REQUIRED elements MUST be supported in the PrintJobTickets by all conforming PrintServices. CONDITIONALLY REQUIRED means that if the PrintService supports the associated feature semantics of the listed PrintJobTicket elements, it MUST support the PrintJobTicket element even if a vendor extension covers the same semantic feature. For example if your PrintService permits the selections of specific pages within a document to be printed, then your printer MUST support the PageRanges PrintJobTicket element. If your PrintService has a vendor extension that controls this feature, then your PrintService MAY support that vendor extension element as well. When both the PrintJobTicket and the vendor extension elements for the same feature are specified and one or more of them have “MustHonor” specified, then the usual “MustHonor” processing rules apply (See §4.2). If both the PrintJobTicket and the vendor extension elements for the same feature are specified and “MustHonor” is not involved, the PrintJobTicket element MUST take precedence.

Minimal PrintService Clients can be created that do not submit PrintJobTicket elements. The resulting Job will use the PrintService’s defaults. PrintService Clients may use any of the REQUIRED PrintJobTicket elements with any conforming PrintService. PrintService Clients can use any of the CONDITIONALLY REQUIRED PrintJobTicket elements with any conforming PrintService that supports the element. Complex PrintService Clients can be created that use any of the PrintJobTicket elements defined in this specification or defined by vendor extensions.

Table 1 and Table 2 below specify the set of REQUIRED and CONDITIONALLY REQUIRED PrintJobTicket elements for a conforming PrintService. See Appendix A for a description of the elements. The Open Printing Job Ticket API specification [JTAPI] was considered when determining the set of REQUIRED Job Ticket elements.

**Table 1 Descriptive PrintJobTicket Elements**

	Element Name	Group	Conformance
1.	Compression/ CompressionSupplied	PrintJobDescription	CONDITIONALLY REQUIRED
2.	DocumentFormat/ DocumentFormatSupplied	PrintJobDescription	REQUIRED
3.	DocumentUri (note 1)	PrintDocumentDescription	REQUIRED
4.	JobName	PrintJobDescription	REQUIRED
5.	JobOriginatingUserName	PrintJobDescription	REQUIRED
6.	JobOriginatingUserUri	PrintJobDescription	CONDITIONALLY REQUIRED

*Note 1: Element indicates support for printing by reference*

**Table 2 Processing PrintJobTicket Elements**

	Element Name	Group	Conformance
1.	JobCopies or Copies	PrintJobProcessing or PrintDocumentProcessing	REQUIRED
2.	JobFinishings or Finishings { JogOffset, None, Punch, Staple, StapleBottomLeft, StapleBottomRight, StapleDualBottom, StapleDualLeft, StapleDualRight, StapleDualTop, StapleTopLeft, StapleTopRight,}	PrintJobProcessing or PrintDocumentProcessing	CONDITIONALLY REQUIRED
3.	Media	PrintDocumentProcessing	REQUIRED
4.	MediaType	PrintDocumentProcessing	REQUIRED
5.	MustHonor or JobRequiredElements	PrintJobTicket or PrintJobProcessing	REQUIRED
6.	OrientationRequested	PrintDocumentProcessing	REQUIRED
7.	PageRanges	PrintDocumentProcessing	REQUIRED
8.	PrintColorMode	PrintDocumentProcessing	CONDITIONALLY REQUIRED

9.	Quality	PrintDocumentProcessing	REQUIRED
10.	Sides	PrintDocumentProcessing	CONDITIONALLY REQUIRED

## 8.2 Print Service Conformance Requirements

For the purposes of usability and interoperability a subset of the Print Service elements are specified as. REQUIRED elements MUST be supported by all conforming PrintServices.

PrintService Clients MUST accept all REQUIRED, CONDITIONALLY REQUIRED and OPTIONAL elements. The PrintService Client MUST gracefully handle any elements it does not support. PrintService Clients can be created that use any of the Print Service elements defined in this specification or defined by vendor extensions. It is a PrintService Client implementation decision to determine what information carried in the Print Service elements will be used by the PrintService Client.

Table 3 below specifies the set of REQUIRED and OPTIONAL Print Service elements for a conforming PrintService. See Appendix A for a description of the elements.

**Table 3 Print Service Elements**

	Element Name	Group	Conformance
1.	CharsetConfigured	PrintServiceDescription	REQUIRED (Note 1)
2.	ColorSupported	PrintServiceDescription	REQUIRED
3.	DocumentFormatSupported	PrintServiceDescription	REQUIRED
4.	DocumentPasswordSupported	PrintServiceDescription	OPTIONAL
5.	JobPasswordEncryptionSupported	PrintServiceDescription	OPTIONAL
6.	JobPasswordSupported	PrintServiceDescription	OPTIONAL
7.	MediaBottomMarginSupported, MediaLeftMarginSupported, MediaRightMarginSupported, MediaTopMarginSupported	PrintServiceDescription	OPTIONAL
8.	PwgRasterDocumentResolutionSupported	PrintServiceDescription	OPTIONAL
9.	DocumentFormatDetailsSupported	PrintServiceDescription	OPTIONAL
10.	PwgRasterDocumentSheetBack	PrintServiceDescription	OPTIONAL
11.	PwgRasterDocumentTypeSupported	PrintServiceDescription	OPTIONAL

*Note 1: The XML binding uses utf-8.*

### 8.3 PrintDocumentTicket Conformance Requirements

The Document Object is **CONDITIONALLY REQUIRED** for the PrintService to support. PrintServices that support single document jobs **MAY** support the Document Object. PrintServices that support multi-document Jobs **MUST** support the Document Object. PrintServices that support a Document Object **MUST** support a PrintDocumentTicket. PrintServices that allow document level overrides of DocumentProcessing elements **MUST** support the PrintDocumentTicket

For the purposes of usability and interoperability a subset of the PrintDocumentTicket elements are specified as **REQUIRED** or **CONDITIONALLY REQUIRED**. **REQUIRED** elements **MUST** be supported in the PrintDocumentTickets by all conforming PrintServices. **CONDITIONALLY REQUIRED** means that if the PrintService supports the associated feature semantics of the listed PrintDocumentTicketElements, it **MUST** support the PrintDocumentTicket element even if a vendor extension covers the same semantic

feature. If your PrintService has a vendor extension that controls this feature, then your PrintService MAY support that element as well. . When both the PrintDocumentTicket and the vendor extension elements for the same feature are specified and one or more of them have “MustHonor” specified, then the usual “MustHonor” processing rules apply (See §4.2). If both the PrintDocumentTicket and the vendor extension elements for the same feature are specified and “MustHonor” is not involved, the PrintDocumentTicket element MUST take precedence.

Minimal PrintService Clients can be created that do not submit PrintDocumentTicket elements. The resulting Document will use the PrintService’s defaults unless specified in a PrintJobTicket. PrintService Clients may use any of the REQUIRED PrintDocumentTicket elements with any conforming PrintService. PrintService Clients can use any of the CONDITIONALLY REQUIRED PrintDocumentTicket elements with any conforming PrintService that supports the element. Complex PrintService Clients can be created that use any of the PrintDocumentTicket elements defined in this specification or defined by vendor extensions.

Table 1 and Table 2 above specify the set of REQUIRED and CONDITIONALLY REQUIRED PrintDocumentTicket elements (i.e., PrintDocumentDescription and PrintDocumentProcessing processing elements) for a conforming PrintService. See Appendix A for a description of the elements. The Job Ticket API specification [JTAPI] was considered when determining the set of REQUIRED Document Ticket elements.

## 9. Internationalization Considerations

All Element values defined by enumeration (e.g., State) represent keywords. Keywords are never localized by the PrintService. The client application may convert the values into a form acceptable to the client. This includes not only localization but also transformations into graphical representation. The Elements with an extensible list of keywords are represented by the union of an enumeration of keywords and a pattern for new values.

If elements have values that are Service-generated strings, the PrintService MUST provide the localized value as requested by the user for any supported natural languages. A request for a language not supported results in a response with the string in the default localization.

If elements have string values supplied by administrator or End User (e.g., JobName). No localization is performed on these strings and they are returned in operation responses as set by the administrator or End User.

## 10. Security Considerations

The exact security model for an MFD implementation is out-of-scope for this specification. The IEEE 2600™-2008 standard [IEEE2600] defines security requirements for manufacturers, administrators, and others in the selection, installation, configuration, and usage of hardcopy devices, including PrintServices. The common security considerations for all PrintServices as outlined in the MFD Service Model Requirements [MFD-REQ] are

intended to support the IEEE 2600™-2008 standard. Implementations must preserve the PrintJobTicket and associated capabilities semantics when addressing security considerations and requirements.

## 11. IANA Considerations

Since this specification does not define any new semantic elements and references existing PWG definitions, there are no IANA considerations.

## 12. References

### 12.1 Normative References

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## 12.2 Informative References

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## 14. Appendix A: PrintJobTicket Elements' Semantic Information (Normative)

Table 4 provides information about all the PrintJobTicket elements. Included in the information is the element's name, whether or not it can have multiple values, its syntax and a brief description of its semantics. Included in the brief description for elements with syntax of Keyword are some example values. A description of the Group and Constraint fields is included below. Each entry includes a reference to the standard and section number that provides the authoritative details of the PrintJobTicket element. For elements with an IPP related standard reference see Appendix H for information on the mapping of the element name to its associated IPP attribute name. Also included are the relevant PrintServiceDescription elements.

Group:

- 1 – Document Processing
- 2 – Job Description
- 3 – Job Processing
- 4 – Document Description
- 5 – Print Service Description
- 6 – Operational

Constraint:

Type2 and Type3 keywords are defined in [rfc2911] §6.1. These are extensible keywords with different registration requirements. All PrintJobTicket keywords can be extended with vendor or site specific extensions [PWG5108.1] §10. Other constraints include integer ranges or string length.

**Table 4 PrintJobTicket Element Summary**

Element Name	Multivalued	Syntax	Constraint	Group	Reference
	<b>Description (values)</b>				
<b>ColorSupported</b>	No	Boolean	N/A	5	[RFC2911] §4.4.26
	Identifies whether the device is capable of any type of color printing at all, including highlight color.				
<b>Compression</b>	No	Keyword	Type2	2,4	[RFC2911] §3.2.1.1
	Client specified compression algorithm used for the Document's Data. Values: CompressionWKV, KeywordNsExtensionPattern (e.g., <i>Compress, Deflate, Gzip, None</i> )				

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>CompressionSupplied</b>	No	Keyword	Type2	2,4	[PWG5100.7] §5.2.1
Default compression algorithm used for the all the Job's Document Data. Values: CompressionWKV, KeywordNsExtensionPattern (e.g., <i>Compress, Deflate, Gzip, None</i> )					
<b>Copies</b>	No	Integer	1:MAX	1,3	[rfc2911] §4.2.5
The number of copies of the associated Document(s) to be printed. (See also JobCopies)					
<b>CoverBack</b>	No	<i>complex</i>	Type2	1	[PWG5100.3] §3.1
The back cover to apply this Document. (Type is CoverCol Datatype, see §6.1.1). (Contains Media/MediaType or MediaCol, CoverType) (See also Job CoverBack)					
<b>CoverFront</b>	No	<i>complex</i>	Type2	1	[PWG5100.3] §3.1
The front cover to apply to this Document. (Type is CoverCol Datatype, see §6.1.1). (Contains Media/MediaType or MediaCol, CoverType) (See also Job CoverFront)					
<b>CoverType</b>	No	Keyword	Type2	1	[PWG5100.3] §3.1.2
Indicates if covers are requested and which sides will contain print stream pages. Values: CoverTypeWKV, KeywordNsExtensionPattern (e.g., <i>NoCover, PrintNone, PrintFront, PrintBack, PrintBoth</i> ) (Included in CoverBack, CoverFront, JobCoverBack & JobCoverFront )					
<b>CrossFeed</b>	No	Integer	1:MAX	1	RFC2911] §4.1.15, [PWG5108.02] § 8.1.3.1.16.1
Specifies the resolution in Units for the CrossFeed direction. (Included in Resolution)					
<b>DocumentCharsetSupplied</b>	No	Keyword	Type2	2,4	[PWG5100.7] §5.2.2
Default charset of the Documents content. Values:CharsetWKV, StringExtensionPattern (e.g., <i>utf-8, iso-10646-unicode-latin1</i> )					
<b>DocumentCopies</b>	Yes	RangeOfInteger	1:MAX	3	[PWG5100.6] §4.1.3
Specifies which copies of a Document to apply the override Processing elements. (Included in Overrides)					
<b>DocumentDigitalSignature</b>	No	Keyword	Type2	4	[PWG5100.7] §3.2.3 [PWG5100.5] §9.1.11
The type of digital signature used in the Document Content , Values: DigitalSignatureWKV, KeywordNsExtensionPattern (e.g., <i>None, Pgp, Xdsig</i> )					
<b>DocumentDigitalSignatureSupplied</b>	No	Keyword	Type2	2	[PWG5100.7] §5.2.3
The type of digital signature used in the Document Content. This , Values: DigitalSignatureWKV, KeywordNsExtensionPattern (e.g., <i>None, Pgp, Xdsig</i> )					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
	<b>Description (values)</b>				
<b>DocumentFormat</b>	No	Keyword	Type2	2,4	[RFC2911] §3.2.1.1
	Document format (i.e., PDL) for the Document content, Values: DocumentFormatWKV, MimeExtensionPattern (e.g., <i>application/postscript, image/jpeg, text/plain</i> ) (Included in DocumentFormatDetailsSupplied)				
<b>DocumentFormatDetailsSupplied</b>	No	Complex	N/A	2,4	[PWG5100.7] §5.2.4
	Summarizes the default distinct contained document formats (Contains DocumentSourceApplicationName, DocumentSourceApplicationVersion, DocumentSourceOsName, DocumentSourceOsVersion, DocumentFormat, DocumentFormatDeviceId, DocumentFormatVersion, DocumentNaturalLanguage)				
<b>DocumentFormatDeviceId</b>	No	String	<b>Maxlength=127</b>	2,4	[PWG5100.7] §3.2.5.6
	Type of device for which the document was formatted, following the IEEE 1284-2000 Device ID string. (Included in DocumentFormatDetailsSupplied)				
<b>DocumentFormatSupplied</b>	No	Keyword	Type2	2	[PWG5100.7] §5.2.5
	Document format (i.e., PDL) for the Document content, Values: DocumentFormatWKV, MimeExtensionPattern (e.g., <i>application/postscript, image/jpeg, text/plain</i> )				
<b>DocumentFormatVersion</b>	No	String	<b>Type2</b>	2,4	[PWG5100.7] §3.2.5.7
	Level or version of the DocumentFormat. (Included in DocumentFormatDetailsSupplied)				
<b>DocumentFormatVersionSupplied</b>	No	String	<b>Type2</b>	2	[PWG5100.7] §5.2.6
	Level or version of the DocumentFormat.				
<b>DocumentMessage</b>	No	String	Maxlength=1023	4	[PWG5100.5] §9.1.20
	Message from either (1) the user to the operator about the Documents or (2) from the operator, system administrator, or "intelligent" process to indicate to the end user the reasons for modification or other management action taken on the Documents				
<b>DocumentMessageSupplied</b>	No	String	Maxlength=1023	2	[PWG5100.7] §5.2.7
	message from either (1) the user to the operator about the Documents or (2) from the operator, system administrator, or "intelligent" process to indicate to the end user the reasons for modification or other management action taken on the Documents				
<b>DocumentMetadata</b>	No	Complex	N/A	4	[DCMI] [PWG5100.JPS3] § 5.1.1
	The Dublin Core Metadata Element Set for the document. The XML binding uses XML schema from < <a href="http://dublincore.org/schemas/xmls/qdc/2008/02/11/qualifieddc.xsd">http://dublincore.org/schemas/xmls/qdc/2008/02/11/qualifieddc.xsd</a> >. See PWG5100.JPS3 § 5.1.1 for IPP encoding.				
<b>DocumentName</b>	No	String	Maxlength=255	4	[PWG5100.5] §9.1.21
	Name for the Document to be used in an implementation specific manner.				

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>DocumentNameSupplied</b>	No	String	Maxlength=255	2	[PWG5100.7] §5.2.8
Default name for the Documents in the Job to be used in an implementation specific manner.					
<b>DocumentNaturalLanguage</b>	No	Keyword	Type2	2,4	[RFC2911] §3.2.1.1
Primary Natural Language of the Document. Values: NaturalLanguageWKV, NatLangExtensionPattern (e.g., <i>en, de, fr, en-us</i> ) (Included in DocumentFormatDetailsSupplied)					
<b>DocumentNumbers</b>	Yes	RangeOfInteger	1:MAX	3	[PWG5100.6] §4.1.2
Specifies the documents in a Job for override processing. (Included in Overrides)					
<b>DocumentPages</b>	No	Integer	0:MAX	4	[PWG5100.JPS3] §5.5.3
Total number of input pages for a document in the Job. See [PWG5100.JPS3] §10 for a description of the relationship between Impressions, Sheets and Pages.					
<b>DocumentPassword</b>	No	Sting	1024	6	[PWG5100.JPS3] §5.1.2
Specifies the unencrypted passphrase to be used to access the document content. Note that while this is an operational element the PrintService must keep this element securely stored until it is applied to the document.					
<b>DocumentPasswordSupported</b>	No	Integer	0:1024	5	[PWG5100.JPS3] §5.6.2
Specifies the maximum size for the DocumentPassword passphrase. If DocumentPassword is supported the minimum value for this element is 255.					
<b>DocumentSourceApplicationName</b>	No	String	Type2	2,4	[PWG5100.7] §3.2.5.1
Name of the application that created the document, without its version number. (Included in DocumentFormatDetailsSupplied)					
<b>DocumentSourceApplicationVersion</b>	No	String	Type2	2,4	[PWG5100.7] §3.2.5.2
Version of the application that created the document, without its name. (Included in DocumentFormatDetailsSupplied)					
<b>DocumentSourceOsName</b>	No	Keyword	Type3	2,4	[PWG5100.7] §3.2.5.3
Name of the operating system, without version number, on which the document was generated. Values: OperatingSystemNameWKV, OperatingSystemNameExtensionPattern (e.g., <i>LINUX, OSX, WIN32</i> ) (Included in DocumentFormatDetailsSupplied)					
<b>DocumentSourceOsVersion</b>	No	String	Type2	2,4	[PWG5100.7] §3.2.5.4
version of the operating system, without its name, on which the document was generated. (Included in DocumentFormatDetailsSupplied)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>DocumentUri</b>	No	URI	Unlimited	2,4	[PWG5100.5] §9.1.28
Reference to the document to print. (See also [rfc2911] § 3.3.2)					
<b>ElementsNaturalLanguage</b>	No	Keyword	Type2	2	[rfc2911] §4.3.20
Identifies the natural language used for any Client supplied strings. Values: NaturalLanguageWKV, NatLangExtensionPattern (e.g., <i>en, de, fr, en-us</i> )					
<b>Feed</b>	No	Integer	1:MAX	1	RFC2911] §4.1.15, [PWG5108.02] § 8.1.3.1.16.2
Specifies the resolution in Units for the Feed direction. (Included in Resolution)					
<b>FeedOrientation</b>	No	Keyword	Type3	1	[PWG5100.11] §7.1
Specifies the media edge that is fed into the print engine from the paper tray. Values: FeedOrientationWKV, KeywordNsExtensionPattern (e.g., <i>LongEdgeFirst ShortEdgeFirst</i> )					
<b>Finishings</b>	Yes	Keyword	Type2	1	[rfc2911] §4.2.6 [PWG5100.1] §2
Identifies the finishings that the PrintService uses for each copy of the Output Document. Values: FinishingsWKV, KeywordNsExtensionPattern (e.g., <i>Bale, Bind, BindLeft, BookletMaker, EdgeStitch, Fold, JogOffset, None, Punch, Staple, StapleTopLeft, Trim</i> ). (See also JobFinishings Job element)					
<b>FinishingsCol</b>	No	complex	N/A	1	[PWG5100.3] §3.2
Enables an end user to specify detailed finishing options not possible with the “Finishings” element for the Output Document. (Contains FinishingTemplate, Stitching) (See also JobFinishingsCol element)					
<b>FinishingTemplate</b>	No	String	Maxlength=1023	1	[PWG5100.3] §3.2.1
A string specifying some particular finishing operation. (Included in FinishingsCol, JobFinishingsCol)					
<b>FontNameRequested</b>	No	String	Maxlength=255	1	[PWG5100.11] §7.2
Specifies the name of the font if the document data is in a format that does not have inherent font information (e.g., ‘text/plain’ vs ‘application/pdf’), otherwise, this element is ignored. (e.g., <i>Arial, Courier</i> )					
<b>FontSizeRequested</b>	No	Integer	1:MAX	1	[PWG5100.11] §7.3
Specifies the font size in points (1/72 of an inch) if the document data is in a format that does not have inherent font information (e.g., ‘text/plain’ vs ‘application/pdf’), otherwise, this element is ignored.					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>ForceFrontSide</b>	Yes	List of Integer	1:MAX	1	[PWG5100.3] §3.3
Forces the specified pages to be printed on the front side of a sheet of media. The pages of the output document start at 1.					
<b>ImpositionTemplate</b>	No	Keyword	Type2	1	[PWG5100.3] §3.4
Specifies imposition method for laying out finished page images onto the surface of output media. Values: ImpositionWKV, KeywordNsPattern (e.g., <i>None</i> , <i>Signature</i> )					
<b>Impressions</b>	No	Integer	0:MAX	2,4	[RFC2911] §4.3.17.2
Total size in number of impressions in all the Job"s Document(s).					
<b>InsertAfterPageNumber</b>	No	Integer	0:MAX	1	[PWG5100.3] §3.5.1
Specifies the input page after which the Insert Sheet will be placed. Pages are numbered starting at 1. A 0 value means in front of the first page. (Included in InsertSheet)					
<b>InsertCount</b>	No	Integer	0:MAX	1	[PWG5100.3] §3.5.2
Specifies the number of Insert Sheet to insert. (Included in InsertSheet)					
<b>InsertSheet</b>	Yes	complex	N/A	1	[PWG5100.3] §3.5
Specifies how Insert Sheets are to be inserted into the sequence of media sheets that are produced for each copy of the documents. (Contains InsertAfterPageNumber, InsertCount, Media/MediaType or MediaCol)					
<b>JobAccountingID</b>	No	String	Maxlength=1023	2	[PWG5100.3] §3.6
The account associated with the job (e.g., customer name, internal billing number) . Use of this element is implementation dependent.					
<b>JobAccountingOutputBin</b>	No	Keyword	Type3	3	[PWG5100.3] §3.8.3
Specifies the output bin where the accounting sheet is to be placed. Values: OutputBinWKV, KeywordNsPattern (e.g., <i>Bottom</i> , <i>FaceUp</i> , <i>LargeCapacity</i> , <i>Left</i> , <i>MailboxN*</i> , <i>Rear</i> , <i>Right</i> , <i>Side</i> , <i>StackerN*</i> , <i>Top</i> , <i>TrayN*</i> . *Note: N is replaced by a cardinal number)					
<b>JobAccountingSheets</b>	No	complex	N/A	3	[PWG5100.3] §3.8
Specifies the accounting sheet for a job. (Contains JobAccountingSheetsType, Media/MediaType or MediaCol, JobAccountingOutputBin).					
<b>JobAccountingSheetsType</b>	No	Keyword	Type3	3	[PWG5100.3] §3.8.1
Specifies the accounting sheet format for a job. Values: JobAccountingSheetsTypeWKV, KeywordNsPattern (e.g., <i>None</i> , <i>Standard</i> ) (Included in JobAccountingSheets)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
	<b>Description (values)</b>				
<b>JobAccountingUserID</b>	No	String	Maxlength=1023	2	[PWG5100.3] §3.7
	Specifies the user ID associated with the account specified by the JobAccountingID. These two elements are used for authentication and account tracking				
<b>JobCollationType</b>	No	Keyword	Type2	2	[rfc3381] §4.1
	Describes the sheet collation and document collation for the Job. Sheet collation is defined to be the ordering of sheets within a document copy. Document collation is defined to be the ordering of document copies within a multi-document job.. Values: JobCollateTypeWKV, KeywordNsExtensionPattern (e.g., <i>CollatedDocuments</i> )				
<b>JobCopies</b>	No	Integer	1:MAX	3	[PWG5100.7] §4.1.1
	The number of copies of the Job to be printed. (See also Copies)				
<b>JobCoverBack</b>	No	complex	N/A	3	[PWG5100.7] §4.1.2
	The back cover to apply this Job. (Type is CoverCol Datatype, see §6.1.1). (Contains Media/MediaType or MediaCol, CoverType) (See also Job CoverBack)				
<b>JobCoverFront</b>	No	complex	N/A	3	[PWG5100.7] §4.1.3
	The front cover to apply to this Job. (Type is CoverCol Datatype, see §6.1.1). (Contains Media/MediaType or MediaCol, CoverType) (See also Job CoverFront)				
<b>JobDelayOutputUntil</b>	No	Keyword	Type3	3	[PWG5100.11] §7.4
	Specifies the named time period during which the Job output may be produced. Other job processing can occur at any time. Values: HoldUntilWKV, KeywordNsPattern (e.g., NoHold, Indefinite, DayTime, Evening, Night, Weekend, SecondShift, ThirdShift)				
<b>JobDelayOutputUntilTime</b>	No	String	DateTime [rfc1123]	3	[PWG5100.11] §7.5
	Specifies the date and time after which the Job output may be produced. Other job processing can occur at any time. (e.g., Fri, 03 May 2002 08:49:37 GMT)				
<b>JobErrorAction</b>	No	String	Type2	3	[PWG5100.JPS3] §5.2.1
	Specifies the action a Printer takes when an error is encountered in a document during processing of the job. (e.g., AbortJob, SuspendJob)				
<b>JobErrorSheet</b>	No	complex	N/A	3	[PWG5100.3] §3.9
	Specifies the error sheet for a job. (Contains JobErrorSheetType, JobErrorSheetWhen, Media/MediaType or MediaCol).				
<b>JobErrorSheetType</b>	No	Keyword	Type3	3	[PWG5100.3] §3.9.1
	Specifies the error sheet format for a job. Values: JobErrorSheetTypeWKV, KeywordNsPattern (e.g., <i>None</i> , <i>Standard</i> ) (Included in JobErrorSheet)				

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>JobErrorSheetWhen</b>	No	Keyword	Type2	3	[PWG5100.3] §3.9.2
Indicates conditions required to produce JobErrorSheet. Values: JobErrorSheetWhenWKV, KeywordNsExtensionPattern (e.g., <i>OnError, Always</i> ) (Included in JobErrorSheet)					
<b>JobFinishings</b>	Yes	Keyword	Type2	3	[PWG5100.7] §4.1.4
Identifies the finishings that the PrintService uses for the Job. Values: FinishingsWKV, KeywordNsExtensionPattern (e.g., <i>Bale, Bind, BookletMaker, Fold, JogOffset, None, Punch, Staple, StapleTopLeft, Trim</i> ). (See also Finishings element)					
<b>JobFinishingsCol</b>	No	complex	N/A	3	[PWG5100.7] §4.1.5
Enables an end user to specify detailed finishing options not possible with the "JobFinishings" element for the Job. (Contains FinishingTemplate, Stitching) (See also FinishingsCol element)					
<b>JobHoldUntil</b>	No	Keyword	Type3	3	[rfc2911] §4.2.2
Specifies the named time period during which the Job must become a candidate for processing (i.e., document(s) interpreted and output produced). Values: HoldUntilWKV, KeywordNsPattern (keywords: <i>NoHold, Indefinite, DayTime, Evening, Night, Weekend, SecondShift, ThirdShift</i> )					
<b>JobHoldUntilTime</b>	No	String	DateTime [rfc1123]	3	[PWG5100.11] §7.6
Specifies the date and time after which the Job must become a candidate for processing (i.e., document(s) interpreted and output produced). (e.g., <i>Fri, 03 May 2002 08:49:37 GMT</i> )					
<b>JobMandatoryElements</b>	Yes	List of keywords	Type 3	3	[PWG5100.7] §3.1.2
This deprecated element permits the client to identify which Processing elements the PrintService MUST support in this Job Creation request in order to accept the Job. This element has been replaced by the "MustHonor" attribute on all the processing elements. Values: Any Processing element keyword. Note that the mapping to IPP is "job-mandatory-attributes".					
<b>JobMessageFromOperator</b>	No	String	Maxlength=1023	2	[rfc2911] §4.3.16
Message from an operator, system administrator or "intelligent" process to indicate to the end user the reasons for modification or other management action taken on a job. (e.g., "Job held until system maintenance completed")					
<b>JobMessageToOperator</b>	No	String	Maxlength=1023	2	[PWG5100.3] §3.10
Message from the end user to indicate something about the processing of this Job. (e.g., "Call 555-1234 before running this job")					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
	<b>Description (values)</b>				
<b>JobMoreInfo</b>	No	URI	Unlimited	2	[rfc2911] §4.3.4
	the URI referencing some resource with more information about this Job Object, perhaps an HTML page containing information about the Job.				
<b>JobName</b>	No	String	Maxlength=255	2	[rfc2911] §4.3.5
	User friendly name of the Job. It does not have to be unique.				
<b>JobOriginatingUserName</b>	No	String	Maxlength=255	2	[rfc2911] §4.3.6
	Name of the end user that submitted the print job. The PrintService sets this element to the most authenticated printable name.				
<b>JobOriginatingUserUri</b>	No	URI	Unlimited	2	[PWG5100.JPS3] §5.3.6
	URI of the User that submitted the Job creation request. The PrintService sets this element to the most authenticated user URI available. This element differs from JobOriginatingUserName which is a human readable name. This element is a URI (e.g., urn:uuid:f92eface-7dec-21c3-ab55-12d3c91eabff, mailto:pzehler@example.com).				
<b>JobPages</b>	No	Integer	0:MAX	2	[PWG5100.JPS3] §5.3.4
	Total number of input pages for the documents in the Job. See [PWG5100.JPS3] §10 for a description of the relationship between impressions, sheets and pages.				
<b>JobPassword</b>	No	Base64Binary	Unlimited	2	[PWG5100.11] §6.1
	Password supplied by the client, encrypted according to method specified by the client in the JobPasswordEncryption Element.				
<b>JobPasswordEncryption</b>	No	Keyword	type3	2	[PWG5100.11] §6.2
	Encryption the client is using for the supplied value of the JobPassword Element. Values: JobPasswordEncryptionWKV, KeywordNsExtensionPattern (e.g., None, Shah, MD5)				
<b>JobPhoneNumber</b>	No	String	Maxlength=127	3	[PWG5100.11] §7.7,
	Contains the contact telephone number for this Job.				
<b>JobPriority</b>	No	Integer	1:100	3	[rfc2911] §4.2.1
	Priority for scheduling the Job. A higher value specifies a higher priority.				
<b>JobRecipientName</b>	No	String	Maxlength=255	3	[PWG5100.11] §7.8
	Name of the intended recipient of the Job.				
<b>JobSaveDisposition</b>	No	Complex	N/A	3	[PWG5100.11] §7.9
	Specifies that the PrintService is to save the job as a file that can be re-printed on demand anytime in the future ( <i>Contains SaveDisposition, SaveInfo</i> )				

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>JobSheetMessage</b>	No	String	Maxlength=1023	3	[PWG5100.3] §3.12
Conveys a message that is delivered with the job.					
<b>JobSheets</b>	No	Keyword	type3	3	[rfc2911] §4.2.3
Specifies which job start/end sheet(s), will be printed with a job. Values: JobSheetsWKV, KeywordNsExtensionPattern (e.g., None, Standard, JobStartSheet, FirstPrintStreamPage)					
<b>JobSheetsCol</b>	No	complex	N/A	3	[PWG5100.3] §3.11
Enables an end user to specify detailed Job Sheet options not possible with the "JobSheet" element. (Contains JobSheets, Media/MediaType or MediaCol)					
<b>JobUuid</b>	No	URI	Maxlength=45	2	[PWG5100.JPS3] §5.3.1
Specifies a globally-unique identifier for the job. This element is a URN (e.g., urn:uuid:f92eface-7dec-21c3-ab55-12d3c91eabff).					
<b>Koctets</b>	No	Integer	0:MAX	2,4	[rfc2911] §4.3.17.1
Total size of this Job's Digital Document(s) in integral units of 1024 octets.					
<b>LastDocument</b>	No	Boolean	N/A	4	[PWG5100.5] §9.1.35
Indicates whether or not this Document is the last Document in the Job.					
<b>MediaBottomMargin</b>	No	int	0:MAX	1,3	[PWG5100.JPS3] §7.4.1
Defines the PrintService's physical bottom margin in hundredths of millimeters from the bottom edge, without respect to the value of the "OrientationRequested" element.					
<b>MediaBottomMarginSupported</b>	Yes	List of Integer	0:MAX	5	[PWG5100.JPS3] §5.6.9
Lists the supported values for the "MediaBottomMargin" in hundredths of millimeters or 1/2540th of an inch and specifies a hardware margin supported by the Printer					
<b>MediaLeftMargin</b>	No	int	0:MAX	1,3	[PWG5100.JPS3] §7.4.2
Defines the PrintService's physical left margin in hundredths of millimeters from the left edge, without respect to the value of the "OrientationRequested" element.					
<b>MediaLeftMarginSupported</b>	Yes	List of Integer	0:MAX	5	[PWG5100.JPS3] §5.6.10
Lists the supported values for the "MediaLeftMargin" in hundredths of millimeters or 1/2540th of an inch and specifies a hardware margin supported by the Printer					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>MediaRightMargin</b>	No	int	0:MAX	1,3	[PWG5100.JPS3] §7.4.3
Defines the PrintService's physical right margin in hundredths of millimeters from the right edge, without respect to the value of the "OrientationRequested" element.					
<b>MediaRightMarginSupported</b>	Yes	List of Integer	0:MAX	5	[PWG5100.JPS3] §5.6.11
Lists the supported values for the "MediaRightMargin" in hundredths of millimeters or 1/2540th of an inch and specifies a hardware margin supported by the Printer					
<b>MediaSheets</b>	No	int	0:MAX	4	[rfc2911] §4.3.17.3
The total number of media sheets to be produced for this Document. (job-media-sheets in IPP)					
<b>MediaTopMargin</b>	No	int	0:MAX	1,3	[PWG5100.JPS3] §7.4.7
Defines the PrintService's physical top margin in hundredths of millimeters from the top edge, without respect to the value of the "OrientationRequested" element.					
<b>MediaTopMarginSupported</b>	Yes	List of Integer	0:MAX	5	[PWG5100.JPS3] §5.6.11
Lists the supported values for the "MediaTopMargin" in hundredths of millimeters or 1/2540th of an inch and specifies a hardware margin supported by the Printer					
<b>Media</b>	No	Keyword	type3	1,3	[RFC2911] ] §4.2.11, [PWG5101.1] §5
The name of the medium that the PrintService uses for all impressions of the Job. Values: MediaWKV, MediaNsExtensionPattern (e.g., <i>na_letter_8.5x11in</i> , <i>iso_a4_210x297mm</i> , <i>na_monarch_3.875x7.5in</i> , <i>choice_iso_a4_210x297mm_na_letter_8.5x11in</i> .) (Included in CoverBack, CoverFront, InsertSheet, SeparatorSheets, JobAccountingSheets, JobCoverBack, JobCoverFront, JobErrorSheet, JobSheetsCol)					
<b>MediaBackCoating</b>	No	Keyword	Type3	1,3	[PWG5100.3] §3.13.10
Indicates the pre-process coating applied to the back of the media. Values: MediaCoatingWKV, MediaNsExtensionPattern (e.g., None, Glossy, HighGloss, SemiGloss, Satin, Matte) (Included in MediaCol)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>MediaCol</b>	No	complex	N/A	1,3	[PWG5100.3] §3.13
Enables a client end user to submit a list of media characteristics to the PrintService as a way to more completely specify the media to be used than the Media element. (Contains MediaBackCoating, MediaColor, MediaFrontCoating, MediaGrain, MediaHoleCount, MediaInfo, MediaKey, MediaOrderCount, MediaPrePrinted, MediaRecycled, MediaSize, MediaThickness, MediaTooth, MediaType, MediaWeightMetric, Margins, MediaSource) (Included in CoverBack, CoverFront, InsertSheet, SeparatorSheets, JobAccountingSheets, JobCoverBack, JobCoverFront, JobErrorSheet, JobSheetsCol)					
<b>MediaColor</b>	No	Keyword	Type3	1	[PWG5100.3] §3.13.4
Indicates the desired color of the media being specified. Values: MediaColorWKV, KeywordNsExtensionPattern (e.g., <i>no-color, white, pink, yellow, blue, green, buff, goldenrod, red, gray, ivory, orange</i> ) (See also [pwg5101.1] §4) (Included in MediaCol)					
<b>MediaFrontCoating</b>	No	Keyword	Type3	1,3	[PWG5100.3] §3.13.10
Indicates the pre-process coating applied to the front of the media. Values: MediaCoatingWKV, MediaNsExtensionPattern (e.g., <i>None, Glossy, HighGloss, SemiGloss, Satin, Matte</i> ) (Included in MediaCol)					
<b>MediaGrain</b>	No	Keyword	Type3	1,3	[PWG5100.11] §11.5.2
Indicates the grain of the media. Values: MediaGrainWKV, KeywordNsExtensionPattern (e.g., <i>x-direction, y-direction</i> ) (Included in MediaCol)					
<b>MediaHoleCount</b>	No	Integer	0:MAX	1,3	[PWG5100.3] §3.13.6
Indicates the number of pre-drilled holes in the desired media. (Included in MediaCol)					
<b>MediaInfo</b>	No	String	Maxlength =255	1,3	[PWG5100.3] §3.13.3
Specifies information that helps describe the media instance. Intended for human consumption. (Included in MediaCol)					
<b>MediaInputTrayCheck</b>	No	Keyword	Type3	1	[PWG5100.3] §3.14
Indicates that the characteristics of the media in the identified input tray must match the characteristics of the media identified by the "media" or "media-col" element. Values: MediaInputTrayWKV, MediaNsExtensionPattern (e.g., <i>Top, Middle, Bottom, Side, LargeCapacity, Envelope, Main, Manual</i> . See [RFC2911] Appendix C)					
<b>MediaKey</b>	No	Keyword	Type3	1,3	[PWG5100.3] §3.13.1
The unique media name associated with an instance of MediaCol elements and their values. Identical values of MediaKey and the Media element represent the same media. (Included in MediaCol)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>MediaOrderCount</b>	No	Integer	1:MAX	1,3	[PWG5100.3] §3.13.7
Indicates the number of sheets, within an ordered sequence of sheets; after which the sequence begins to repeat. (Included in MediaCol)					
<b>MediaPrePrinted</b>	No	Keyword	Type3	1,3	[PWG5100.3] §3.13.5
Indicates the pre-printed characteristics of the desired media. Values: MediaPrePrintedWKV, KeywordNsExtensionPattern (e.g., <i>Blank, PrePrinted, LetterHead</i> ) (Included in MediaCol)					
<b>MediaRecycled</b>	No	Keyword	Type3	1,3	[PWG5100.3] §3.13.11
Indicates the recycled characteristics of the media. Values: MediaRecycledWKV, KeywordNsExtensionPattern (e.g., <i>None, Standard</i> ) (Included in MediaCol)					
<b>MediaSheets</b>	No	Integer	0:MAX	2,4	[RFC2911] §4.3.17.2
Total size in number of impressions in all the Job's Document(s).					
<b>MediaSize</b>	No	Complex	N/A	1,3	[PWG5100.3] §3.13.8
Explicitly specifies the numerical media width and height dimensions in hundredth of a millimeter. (Contains XDimension, YDimension) (Included in MediaCol)					
<b>MediaSizeName</b>	No	Keyword	Type3	1,3	[PWG5108.02] §8.1.3.1.15.3, [PWG5101.1] §5
The medium size that the PrintService uses for all impressions of the Job. Values: MediaWKV (e.g., <i>na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in</i> ). (Included in MediaCol)					
<b>MediaSource</b>	No	Keyword	Type3	1,3	PWG5100.JPS3] §7.4.5
Specifies the input tray, slot, roll, or other source for the media Values: MediaSourceWKV, KeywordNsExtensionPattern (e.g., <i>Auto, Bottom, Envelope, LargeCapacity, Top, Tray1</i> ) (Included in MediaCol)					
<b>MediaThickness</b>	No	Integer	1:MAX	1,3	[PWG5100.11] §11.5.3
The thickness of the media in units of one hundredth of a millimeter. This unit is equivalent to 1/2540 th of an inch. (Included in MediaCol)					
<b>MediaTooth</b>	No	Keyword	Type3	1,3	[PWG5100.11] §11.5.1
The tooth (or roughness) of the media. Values: MediaToothWKV, KeywordNsExtensionPattern (e.g., <i>Fine, Medium, Coarse, Linen</i> ) (Included in MediaCol)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>MediaType</b>	No	Keyword	Type3	1,3	[PWG5101.1] §3 [WS-Print] §3.5.2.3.2
The medium type that the PrintService uses for all impressions. Values: MediaTypeWKV, KeywordNsExtensionPattern (e.g., <i>stationery, transparency envelopecontinuous, tab-stock, pre-cut-tabs, photographic, cardstock, other</i> ) (Included in CoverBack, CoverFront, InsertSheet, JobAccountingSheets, JobCoverBack, JobCoverFront, JobErrorSheet, JobSheetsCo, MediaCol I, SeparatorSheets)					
<b>MediaWeightMetric</b>	No	Integer	0:MAX	1,3	[PWG5100.3] §3.13.9
Indicates the weight of the desired media rounded to the nearest whole number of grams per square meter. (Included in MediaCol)					
<b>MultipleDocumentsHandling</b>	No	Keyword	type2	3	[rfc2911] §4.2.4
Controls whether Input Document in multi-Document jobs are combined into a single Output Document or are kept as separate Output Documents Useful for application of Finishings and collation. Values: MultipleDocumentsHandlingWKV, KeywordNsExtensionPattern (e.g. <i>SingleDocument, SeparateDocumentCollatedCopies, SingleDocumentNewSheet</i> )					
<b>NumberOfPagesInSubset</b>	Yes	Integer	1:MAX	3	[PWG5100.JPS3] §5.2.1
Specifies The number of pages in a subset of pages of the document PDL data. (Included in PagesPerSubset)					
<b>NumberUp</b>	No	Integer	1:MAX	1	[rfc2911] §4.2.9
Indicates the number of Input pages that the PrintService is to image on one impression.					
<b>OrientationRequested</b>	No	Keyword	type2	1	[rfc2911] §4.2.10
The desired orientation for printed pages for document formats that don't have a built-in orientation. Values: OrientationRequestedWKV, KeywordNsExtensionPattern (e.g., <i>Portrait, Landscape, ReverseLandscape, ReversePortrait</i> )					
<b>OutputBin</b>	No	Keyword	type2	1,3	[PWG5100.2] §2.1 [PWG5100.5] §8.1
Specifies the output bin where the job is to be delivered. Values: OutputBinWKV, KeywordNsExtensionPattern (e.g., <i>Bottom, FaceUp, LargeCapacity, Left, MailboxN*, Rear, Right, Side, StackerN*, Top, TrayN*</i> . *Note: N is replaced by a cardinal number)					
<b>OutputDevice</b>	No	String	Maxlength=255	1,3	[PWG5100.7] §4.2.1 [PWG5100.5] §8.1
Specifies the device where the pages of of a Job/Document will be printed.					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>Overrides</b>	Yes	complex	N/A	3	[PWG5100.6] §4.1
Provides for the overriding of processing instructions on a page basis. (Contains Pages, DocumentNumbers, DocumentCopies, OverridingElements)					
<b>OverridingElements</b>	Yes	Any	Supported Element	3	[PWG5100.6] §4.1.4
Document Ticket processing elements to apply to the Document pages specified in the Override (Contained in Overrides)					
<b>PageDelivery</b>	No	Keyword	Type2	1	[PWG5100.3] §3.15
Indicates whether the pages of the job are to be delivered to the output bin or finisher in the same page order as the original document and face up or face down. Values: PageDeliveryWKV, KeywordNsExtensionPattern (e.g., <i>ReverseOrderFaceDown</i> , <i>SameOrderFaceUp</i> , <i>SystemSpecified</i> ) . (See also PageOrderReceived)					
<b>PageOrderReceived</b>	No	Keyword	Type3	2,4	[PWG5100.3] §3.16
The order of pages in this Document data as supplied with the job. Values: PageOrderReceivedWKV, KeywordNsExtensionPattern (e.g., <i>1ToNOrder</i> , <i>NTo1Order</i> )					
<b>PageRanges</b>	Yes	RangeOfInteger	1:MAX	1	[RFC2911] §4.2.7
Specifies a range of pages in the document data to be output.					
<b>Pages</b>	Yes	RangeOfInteger	1:MAX	3	[pwg5100.6] §4.1.1
Specifies a range of pages in the document PDL data. (Included in Overrides)					
<b>PagesPerSubset</b>	Yes	Complex	Ordered list of Integer	3	[PWG5100.JPS3] §5.2.1
Combines all of the Pages of all of the Documents into a single stream of Pages. Then the PrintService partitions that single stream into contiguous subsets of Pages according to the list of integers. The list of integers is cyclical. When the last integer in the list is reached, the next subset uses the first.in the list. (Contains NumberOfPagesInSubset)					
<b>PdllnitFile</b>	Yes	Complex	N/A	1	[PWG5100.11] §7.10
Controls initialization of the PrintService's Page Description Language (PDL) interpreter. (Contains PdllnitFileEntry, PdllnitFileLocation. PdllnitFileName)					
<b>PdllnitFileEntry</b>	No	String	Maxlength=255	1	[PWG5100.11] §7.10
Specifies an entry point within the init file at which the PDL interpreter starts. (Included in PdllnitFile)					
<b>PdllnitFileLocation</b>	No	String	Maxlength=1023	1	[PWG5100.11] §7.10
Contains a URL that specifies the path to the directory where the initialization file for the PrintService's PDL interpreter will be found. (Included in PdllnitFile)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>PdInitFileName</b>	No	String	Maxlength=255	1	[PWG5100.11] §7.10
Specifies the name of the PDL interpreter's initialization file within the directory specified by the PdInitFileLocation element. (Included in PdInitFile)					
<b>PdOverrideSupported</b>	No	Keyword	Type2	1	[RFC2911] §4.4.28
Expresses the ability for a PrintService to override document data instructions with PrintJobTicket. Values: PdOverrideSupportedWKV, KeywordNsExtensionPattern(e.g., NotAttempted, Attempted, Guaranteed)					
<b>PresentationDirectionNumberUp</b>	No	Keyword	Type2	1	[PWG5100.3] §3.17
Specifies the placement order of the page images on a Finished-Page Image with the "number-up" element. Values: PresentationDirectionNumberUpWKV, KeywordNsExtensionPattern (e.g., TorightTobottom, TobottomToright, ToleftTotop)					
<b>PrintColorMode</b>	No	keyword	Type3	1	[PWG5100.JPS3] §5.2.2
Specifies the color mode to use for printing. Values: PrintColorModeWKV, KeywordNsExtensionPattern (e.g., Auto, BiLevel, Color, Monochrome, ProcessBilevel)					
<b>PrintContentOptimize</b>	No	Keyword	Type3	1	[PWG5100.7] §4.2.2 [PWG5100.5] §8.1
Directs the type of optimization/processing that will be performed on the Document content. It does not necessarily mean the value describes the content. Values:PrintContentOptimizeWKV, KeywordNsExtensionPattern (e.g., Photo, Text)					
<b>PrintRenderingIntent</b>	No	Keyword	Type3	1	[PWG5100.JPS3] §5.2.3
Specifies how out-of-gamut colors (or shades of gray) are mapped to device colors when printing. Values: PrintRenderingIntentWKV, KeywordNsExtensionPattern (e.g., Absolute, Perceptual, Relative)					
<b>ProofPrint</b>	No	Complex		3	[PWG5100.11] §7.11
Specifies the elements for proof prints of the job that are to be printed prior to the printing the full run of the job. (Contains ProofPrintCopies, Media/MediaType or MediaCol and any other Processing elements).					
<b>ProofPrint Copies</b>	No	Integer	1:MAX	3	[PWG5100.11] §7.11.1.1
The number of copies of the proof job to be printed.					
<b>PwgRasterDocumentSheetBack</b>	No	Keyword	Type3	5	[PWG5102.4] §10.1
Specifies the bitmap coordinate system for the backside of duplex sheets. Values: PwgRasterDocumentSheetBackWKV, KeywordNsExtensionPattern (e.g., Flipped, ManualTumble)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>PwgRasterDocument ResolutionSupported</b>	Yes	List of Resolution	N/A	5	[PWG5102.4] §10.2
Lists the supported page bitmap resolutions in dots per inch					
<b>PwgRasterDocument TypeSupported</b>	Yes	List of Keywords	Type3	5	[PWG5102.4] §10.3
Lists the supported Color Space and bit depth combinations. Values: ColorEntryWKV, KeywordNsExtensionPattern (e.g., Grayscale16, RGBa32, CMYK64)					
<b>Quality</b>	No	Keyword	type2	1	RFC2911] §4.2.13
The output quality that the PrintService uses for the Job. Values: PrintQualityWKV, KeywordNsExtensionPattern (e.g., <i>Draft, Normal, High</i> ) Note: FaxQualityWKV values are also included in the Quality definition for when this element is used in FaxOutJobTickets.					
<b>Resolution</b>	No	Complex	N/A	1	RFC2911] §4.1.15, [PWG5108.02] § 8.1.3.1
The resolution that PrintService uses for the Job in cross-feed and feed direction in units of dpi or dpcm. (Contains Feed, XFeed and Units)					
<b>SaveDisposition</b>	No	Keyword	type3	3	[PWG5100.11] §7.9.1.1
Specifies whether the PrintService must print and/or save the job. Values: SaveDispositionWKV, KeywordNsExtensionPattern (e.g., <i>None, PrintSave, SaveOnly</i> ) (Included in JobSaveDisposition)					
<b>SaveDocumentFormat</b>	No	String	MimeMediaType [rfc2046], [rfc2048]	3	[PWG5100.11] §7.9.1.2.3.3
Indicates the document format in which the PrintService saves the Document Data. (See DocumentFormat Document Description element) (Included in SaveInfo)					
<b>SaveInfo</b>	No	complex	<b>N/A</b>	3	[PWG5100.11] §7.9.1.2
Contains sets of elements that each tells the PrintService how to create each copy of the saved job. (Included in JobSaveDisposition) (Contains SaveLocation, SaveName, SaveDocumentFormat)					
<b>SaveLocation</b>	No	URI	Unlimited	3	[PWG5100.11] §7.9.1.2.3.1
Specifies the path to the directory as a URI where the PrintService saves the Document Data and other Job information. The value may be a relative path. (Included in SaveInfo)					
<b>SaveName</b>	No	String	Unlimited	3	[PWG5100.11] §7.9.1.2.3.2
Specifies the name of the saved job in the directory specified by the "save-location" member element. (Included in SaveInfo)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
	<b>Description (values)</b>				
<b>SeparatorSheets</b>	No	complex	N/A	1	[PWG5100.3] §3.18
	Specifies the separator sheets to be printed with the Document. (Contains SeparatorSheetsType, Media/MediaType or MediaCol)				
<b>SeparatorSheetsType</b>	No	Keyword	Type3	1	[PWG5100.3] §3.18.1
	Specifies the separator sheets type. Values: SeparatorSheetsTypeWKV, KeywordNsExtensionPattern (e.g., None, SlipSheets, StartSheet, EndSheet, BothSheets) (Included in SeparatorSheets)				
<b>SheetCollate</b>	No	Keyword	Type2	1	[rfc3381] §3.1
	Specifies if the media sheets of each copy of each printed document in a job are to be in sequence. Values: SheetCollateWKV, KeywordNsExtensionPattern (e.g., Collated)				
<b>Sides</b>	No	Keyword	type2	1	[rfc2911] §4.2.8
	Indicates how an impression is to be placed upon the side(s) of the media. Values: SidesWKV, KeywordNsExtensionPattern (e.g., OneSided, TwoSidedShortEdge)				
<b>Stitching</b>	No	complex	N/A	1	[PWG5100.3] §3.2.2
	Provides detailed stitching parameters. (Included in FinishingsCol, JobFinishingsCol) (Contains StitchingReferenceEdge, StitchingOffset, StitchingLocations)				
<b>StitchingLocations</b>	Yes	List of Integer	0:MAX	D	[PWG5100.3] §3.2.2.3
	The distance along the stitching axis where a stitch will be placed in hundredths of a millimeter. (Included in Stitching)				
<b>StitchingOffset</b>	No	Integer	0:MAX	1	[PWG5100.3] §3.2.2.2
	The perpendicular distance from the reference edge to the stitching axis in hundredths of a millimeter. (Included in Stitching)				
<b>StitchingReferenceEdge</b>	No	Keyword	type2	1	[PWG5100.3] §3.2.2.1
	Specifies edge of the output media from which the stitching offset is measured. Values: StitchingReferenceEdgeWKV, KeywordNsExtensionPattern (e.g., Bottom, Top, Left, Right) (Included in Stitching)				
<b>TemplateCreatorUserName</b>	No	String	Unlimited	2	[PWG5108.02PWG5108.02] §8.1.3.2.12
	Used only when Ticket is created from a template. This is the most authenticated user name of the template creator				
<b>TemplateId</b>	No	URI	Unlimited	2	[PWG5108.02PWG5108.02] §8.1.3.2.13
	Used only when Ticket is created from a template. This is the ID of the template used to create the Job Ticket.				

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>TemplateInfo</b>	No	String	Maxlength=2047	2	[PWG5108.02] §8.1.3.2.14
Used only when Ticket is created from a template. Information about the template used to create the Job Ticket.					
<b>TemplateName</b>	No	String	Unlimited	2	[PWG5108.02] §8.1.3.2.15
Used only when Ticket is created from a template. Name of template used to create the Job Ticket.					
<b>TemplateType</b>	No	Keyword	Type3	2	[PWG5108.02] §8.1.3.2.16
Used only when Ticket is created from a template. Type of the template used to create the Job Ticket (i.e., <i>PrintJob</i> ).					
<b>Units</b>	No	Keyword	Type2	1	RFC2911] §4.1.15 [PWG5108.02] § 8.1.3.1.16.3
This specifies the units used to express the resolution. Values: UnitsWKV, KeywordNsExtensionPattern (e.g., Dpcm, Dpi)					
<b>XDimension</b>	No	Integer	0:MAX	1,3	[PWG5100.3] §3.13.8.1
Size of the media in hundredths of a millimeter along the bottom edge. (Included in MediaSize)					
<b>XImagePosition</b>	No	Keyword	type2	1	[PWG5100.3] §3.19.2
Causes the specified point of the Finished-Page Image to be positioned at a specified location. Values: XImagePositionWKV, KeywordNsExtensionPattern (e.g., <i>None</i> , <i>Center</i> )					
<b>XImageShift</b>	No	Integer	MIN:MAX	1	[PWG5100.3] §3.19.3
Causes the Finished-Page Image to be shifted in position with respect to the x-axis of the media in hundredths of a millimeter. The values's sign indicates the direction of the shift.					
<b>Xside1ImageShift</b>	No	Integer	MIN:MAX	1	[PWG5100.3] §3.19.4
Causes each Finished-Page Image that would be placed on the front side of a sheet to be shifted in position with respect to the x-axis of the media in hundredths of a millimeter. The value's sign indicates the direction of the shift.					
<b>Xside2ImageShift</b>	No	Integer	MIN:MAX	1	[PWG5100.3] §3.19.5
Causes each Finished-Page Image that would be placed on the backside of a sheet to be shifted in position with respect to the x-axis of the media in hundredths of a millimeter. The value's sign indicates the direction of the shift.					
<b>YDimension</b>	No	Integer	0:MAX	1,3	[PWG5100.3] §3.13.8.2
Size of the media in hundredths of a millimeter along the left edge. (Included in MediaSize)					

Element Name	Multivalued	Syntax	Constraint	Group	Reference
<b>Description (values)</b>					
<b>YImagePosition</b>	No	Keyword	type2	1	[PWG5100.3] §3.19.6
Causes the specified point of the Finished-Page Image to be positioned at a specified location. Values: YImagePositionWKV, KeywordNsExtensionPattern (e.g., None, Center)					
<b>YImageShift</b>	No	Integer	MIN:MAX	1	[PWG5100.3] §3.19.7
Causes the Finished-Page Image to be shifted in position with respect to the y-axis of the media in hundredths of a millimeter. The value's sign indicates the direction of the shift.					
<b>Yside1ImageShift</b>	No	Integer	MIN:MAX	1	[PWG5100.3] §3.19.8
Causes each Finished-Page Image that would be placed on the front side of a sheet to be shifted in position with respect to the y-axis of the media in hundredths of a millimeter. The Value's sign indicates the direction of the shift.					
<b>Yside2ImageShift</b>	No	Integer	MIN:MAX	1	[PWG5100.3] §3.19.9
Causes each Finished-Page Image that would be placed on the backside of a sheet to be shifted in position with respect to the y-axis of the media in hundredths of a millimeter. The value's sign indicates the direction of the shift.					

## 15. Appendix B: PrintServiceCapabilities (Normative)

PrintServiceCapabilities are closely related to the PrintJobTicket. The PrintServiceCapabilities have the same structure and element names as the corresponding PrintJobTicket elements. The PrintServiceCapabilities elements differ in syntax. The purpose of PrintServiceCapabilities is to provide information on what PrintJobTicket elements are supported and what values those elements can have.

For example if a PrintJobTicket element can contain a keyword (e.g. DocumentFormat), then the presence of the corresponding PrintServiceCapabilities element indicate that the PrintJobTicket element is supported. The PrintServiceCapabilities element’s syntax is a list of keywords that supplies the allowed values for the PrintJobTicket element.

In a similar fashion a PrintJobTicket element that has a datatype of integer has a PrintServiceCapabilities element with syntax of a range of integers specifying the range of allowed values for the PrintJobTicket element.

Some PrintJobTicket elements only require the PrintServiceCapabilities to specify that the element is supported. For these instances the PrintServiceCapabilities element uses the Boolean type.

It should be noted that the the MediaCol element is handled differently than other capability elements. Two elements are used to represent the MediaCol capabilities. The MediaColSupported element that contains the list of keywords specifying the MediaCol member element names supported by the printer. MediaColDatabase is a list of all the instances of MediaCol supported by the PrintService. MediaColDatabase can be quite large for high end systems (e.g., Production PrintServices). The MediaColDatabase element is explicitly requested and is not returned with the other PrintDocumentProcessing elements in a GetPrintServiceElements operation response. An implementation of a registration process must accommodate this potentially large amount of data.

Table 5 summarizes the semantics of the PrintServiceCapabilities syntax and specifies which PrintServiceCapabilities element uses the syntax.

**Table 5 PrintServiceCapabilities Syntax For PrintJobTicket Elements**

Capabilities Element	Semantics - Specifies the following for the corresponding element	Capabilities Syntax
CompressionSupplied	list of valid keywords	List of Keywords
Copies	lower and upper bounds	Range of Integers
CoverType	list of valid keywords	List of Keywords
DocumentCharsetSupplied	list of valid keywords	List of Keywords
DocumentDigitalSignatureSupplied	element supported	Boolean

Capabilities Element	Semantics - Specifies the following for the corresponding element	Capabilities Syntax
DocumentFormat	list of valid keywords	List of Keywords
DocumentFormatDetailsSupplied	list of valid keywords	List of Keywords
DocumentFormatDeviceld	element supported	Boolean
DocumentFormatSupplied	list of valid keywords	List of Keywords
DocumentFormatSupplied	list of valid keywords	List of Keywords
DocumentFormatVersion	element supported	Boolean
DocumentFormatVersionSupplied	list of valid keywords	List of Keywords
DocumentMessageSupplied	element supported	Boolean
DocumentNameSupplied	element supported	Boolean
DocumentNaturalLanguage	list of valid keywords	List of Keywords
DocumentPages	element supported	Boolean
DocumentPasswordSupported	supported string length	Integer
DocumentSourceApplicationName	element supported	Boolean
DocumentSourceApplicationVersion	element supported	Boolean
DocumentSourceOsName	list of valid keywords	List of Keywords
DocumentSourceOsVersion	element supported	Boolean
ElementsNaturalLanguage	list of valid keywords	List of Keywords
FeedOrientation	list of valid keywords	List of Keywords
Finishings	list of valid keywords	List of Keywords
FinishingTemplate; Impressions	element supported	Boolean
FontNameRequested	list of valid keywords	List of Keywords
FontSizeRequested	set of integer values	Set of Range of Integers (Note 1)
ForceFrontSide	lower and upper bounds	Range of Integers
ImpositionTemplate	list of valid keywords	List of Keywords
Impressions	element supported	Boolean
InsertAfterPageNumber	lower and upper bounds	Range of Integers
InsertCount	lower and upper bounds	Range of Integers
JobAccountingID	element supported	Boolean
JobAccountingOutputBin	list of valid keywords	List of Keywords
JobAccountingSheetsType	list of valid keywords	List of Keywords
JobAccountingUserID	element supported	Boolean
JobCollationType	list of valid keywords	List of Keywords

Capabilities Element	Semantics - Specifies the following for the corresponding element	Capabilities Syntax
JobCopies	lower and upper bounds	Range of Integers
JobErrorSheetType	list of valid keywords	List of Keywords
JobErrorSheetWhen	list of valid keywords	List of Keywords
JobMandatoryElements	element supported	Boolean
JobMessageFromOperator	element supported	Boolean
JobMessageToOperator	element supported	Boolean
JobMoreInfo	element supported	Boolean
JobName	element supported	Boolean
JobOriginatingUserName	element supported	Boolean
JobOriginatingUserUri	element supported	Boolean
JobPages	element supported	Boolean
JobPasswordEncryption	list of valid keywords	List of Keywords
JobSheetMessage	element supported	Boolean
JobSheets	list of valid keywords	List of Keywords
KOctets	element supported	Boolean
Media	list of valid keywords	List of Keywords
MediaCol	element supported	Boolean
MediaColDatabase (Note 2, Note 3)	list of all the instances of MediaCol supported by the PrintService.	List of MediaCol (Note 4)
MediaColSupported	list of valid keywords (Note 5)	List of Keywords
MediaInputTrayCheck	list of valid keywords	List of Keywords
MediaSheets	element supported	Boolean
MediaSource	list of valid keywords	List of Keywords
MediaType	list of valid keywords	List of Keywords
MultipleDocumentsHandling	list of valid keywords	List of Keywords
NumberUp	valid list of integers	List of Integers
OrientationRequested	list of valid keywords	List of Keywords
OutputBin	list of valid keywords	List of Keywords
OutputDevice	list of valid keywords	List of Keywords
Overrides	element supported	Boolean
PageDelivery	list of valid keywords	List of Keywords

Capabilities Element	Semantics - Specifies the following for the corresponding element	Capabilities Syntax
PageOrderReceived	list of valid keywords	List of Keywords
PageRanges	element supported	Boolean
PagesPerSubset	element supported	Boolean
PdInitFileEntry	list of valid keywords	List of Keywords
PdInitFileLocation	list of valid keywords	List of Keywords
PdInitFileName	list of valid keywords	List of Keywords
PresentationDirectionNumberUp	list of valid keywords	List of Keywords
PrintColorMode	list of valid keywords	List of Keywords
PrintContentOptimize	list of valid keywords	List of Keywords
PrintRenderingIntent	list of valid keywords	List of Keywords
ProofPrintCopies	lower and upper bounds	Range of Integers
Quality	list of valid keywords	List of Keywords
Resolution	allowed resolution tuples	List of Resolutions
SaveDisposition	list of valid keywords	List of Keywords
SaveDocumentFormat	list of valid keywords	List of Keywords
SaveLocation	allowed URI schemes	List of URI schemes
SaveName	element supported	Boolean
SeparatorSheetsType	list of valid keywords	List of Keywords
SheetCollate	list of valid keywords	List of Keywords
Sides	list of valid keywords	List of Keywords
StitchingLocations	set of integer values	Set of Range of Integers (Note 1)
StitchingOffset	set of integer values	Set of Range of Integers (Note 1)
StitchingReferenceEdge	list of valid keywords	List of Keywords
TemplateCreatorUserName	element supported	Boolean
TemplateId	element supported	Boolean
TemplateInfo	element supported	Boolean
TemplateName	element supported	Boolean
TemplateType	list of valid keywords	List of Keywords
XImagePosition	list of valid keywords	List of Keywords
XImageShift	lower and upper bounds	Range of Integers
XSide1ImageShift	lower and upper bounds	Range of Integers

Capabilities Element	Semantics - Specifies the following for the corresponding element	Capabilities Syntax
XSide2ImageShift	lower and upper bounds	Range of Integers
YImagePosition	list of valid keywords	List of Keywords
YImageShift	lower and upper bounds	Range of Integers
YSide1ImageShift	lower and upper bounds	Range of Integers
YSide2ImageShift	lower and upper bounds	Range of Integers

## 16. Appendix C: Keyword Well-Known Values (Informative)

Table 6 shows some of the well-known keywords from the PWG Semantic Model [PWG5108.1] and associated schema. The authoritative registry for the keywords defined in the Internet Printing Protocol is hosted by IANA [IPPREG]. IANA is also the source for other keywords such as character sets <<http://www.iana.org/assignments/character-sets>> and operating system names <<http://www.iana.org/assignments/operating-system-names/operating-system-names.xml>>. Where applicable the last value(s) enclosed in brackets indicate the name of the extension pattern used to extend the values.

**Table 6 Keyword Well Known Values**

Keyword	Well Known Values
CharsetWKV	adobe-standard-encoding, adobe-symbol-encoding, ansi-x3-110-1983, asmo-449, big5, big5-hkscs, bocu-1, bs-4730, bs-viewdata, cesu-8, csa-z243-4-1985-1, csa-z243-4-1985-2, csa-z243-4-1985-gr, csn-369103, dec-mcs, din-66003, dk-us, ds-2089, ebcdic-at-de, ebcdic-at-de-a, ebcdic-ca-fr, ebcdic-dk-no, ebcdic-dk-no-a, ebcdic-es, ebcdic-es-a, ebcdic-es-s, ebcdic-fi-se, ebcdic-fi-se-a, ebcdic-fr, ebcdic-it, ebcdic-pt, ebcdic-uk, ebcdic-us, ecma-cyrillic, es, es2, euc-jp, euc-kr, extended-unix-code-fixed-width-for-japanese, gb18030, gb-1988-80, gb2312, gb-2312-80, gbk, gost-19768-74, greek7, greek7-old, greek-ccitt, hp-desktp, hp-legal, hp-math8, hp-pi-font, hp-roman8, hz-gb-2312, ibm00858, ibm00924, ibm01140, ibm01141, ibm01142, ibm01143, ibm01144, ibm01145, ibm01146, ibm01147, ibm01148, ibm01149, ibm037, ibm038, ibm1026, ibm1047, ibm273, ibm274, ibm275, ibm277, ibm278, ibm280, ibm281, ibm284, ibm285, ibm290, ibm297, ibm420, ibm423, ibm424, ibm437, ibm500, ibm775, ibm850, ibm851, ibm852, ibm855, ibm857, ibm860, ibm861, ibm862, ibm863, ibm864, ibm865, ibm866, ibm868, ibm869, ibm870, ibm871, ibm880, ibm891, ibm903, ibm904, ibm905, ibm918, ibm-symbols, ibm-thai, iec-p27-1, inis, inis-8, inis-cyrillic, invariant, iso-10367-box, iso-10646-ucs-2, iso-10646-ucs-4, iso-10646-ucs-basic, iso-10646-unicode-latin1, iso-10646-utf-1, iso-2022-cn, iso-2022-cn-ext, iso-2022-jp, iso-2022-jp-2, iso-2022-kr, iso-2033-1983, iso-5427, iso-5427-1981, iso-5428-1980, iso-646-basic-1983, iso-646-irv-1983, iso-6937-2-25, iso-6937-2-add, iso-8859-1, iso-8859-10, iso-8859-13, iso-8859-14, iso-8859-15, iso-8859-16, iso-8859-1-windows-3-0-latin-1, iso-8859-1-windows-3-1-latin-1, iso-8859-2, iso-8859-2-windows-latin-2, iso-8859-3, iso-8859-4, iso-8859-5, iso-8859-6, iso-8859-6-e, iso-8859-6-i, iso-8859-7, iso-8859-8, iso-8859-8-e, iso-8859-8-i, iso-8859-9, iso-8859-9-windows-latin-5, iso-8859-suppl, iso-ir-90, iso-unicode-ibm-1261, iso-unicode-ibm-1264, iso-unicode-ibm-1265, iso-unicode-ibm-1268, iso-unicode-ibm-1276, it, jis-c6220-1969-jp, jis-c6220-1969-ro, jis-c6226-1978, jis-c6226-1983, jis-c6229-1984-a, jis-c6229-1984-b, jis-c6229-1984-b-add, jis-c6229-1984-hand, jis-c6229-1984-hand-add, jis-c6229-1984-kana, jis-encoding, jis-x0201, jis-x0212-1990, jus-i-b1-002, jus-i-b1-003-mac, jus-i-b1-003-serb, koi8-r, koi8-u, ks-c-5601-1987, ksc5636, latin-greek, latin-greek-1, latin-lap, macintosh, microsoft-publishing, mnem, mnemonic, msz-7795-3, nats-dano, nats-dano-add, nats-sefi, nats-sefi-add, nc-nc00-10-81, nf-z-62-010, nf-z-62-010--1973-, ns-4551-1, ns-4551-2, pc8-danish-norwegian, pc8-turkish, pt, pt2, ptcp154,

Keyword	Well Known Values
	scsu, sen-850200-b, sen-850200-c, shift-jis, t-101-g2, t-61-7bit, t-61-8bit, tis-620, unicode-1-1, unicode-1-1-utf-7, unknown-8bit, us-ascii, us-dk, utf-16, utf-16be, utf-16le, utf-32, utf-32be, utf-32le, utf-7, utf-8, ventura-international, ventura-math, ventura-us, videotex-suppl, viqr, viscii, windows-1250, windows-1251, windows-1252, windows-1253, windows-1254, windows-1255, windows-1256, windows-1257, windows-1258, windows-31j, [StringNsExtensionPattern]
CompressionWKV	Compress, Deflate, Gzip, ModifiedHuffman, ModifiedRead, MatsushitaWhitelineSkip, None, [KeywordNsExtensionPattern]
CoverTypeWKV	NoCover, PrintBack, PrintBoth, PrintFront, PrintNone, [KeywordNsExtensionPattern]
DocumentDigitalSignatureWKV	Dss, None, Pgp, Smime, Xdsig, [KeywordNsExtensionPattern]
DocumentFormatWKV	application/octet-stream, application/pdf, application/postscript, application/vnd.pwg-xhtml-print+xml, application/vnd.hp-PCL, image/g3fax, image/jpeg, image/tiff, image/pwg-raster, image/tiff-fx, text/html, text/plain, text/plain; charset=ISO-8859-1, text/plain; charset=US-ASCII, text/plain; charset=utf-8, unknown, [MimeExtensionPattern]
FeedOrientationWKV	LongEdgeFirst, ShortEdgeFirst, [KeywordNsExtensionPattern]
FinishingsWKV	Bale, Bind, BindBottom, BindLeft, BindRight, BindTop, BookletMaker, Cover, EdgeStitch, EdgeStitchBottom, EdgeStitchLeft, EdgeStitchRight, EdgeStitchTop, Fold, JogOffset, None, Punch, SaddleStitch, Staple, StapleBottomLeft, StapleBottomRight, StapleDualBottom, StapleDualLeft, StapleDualRight, StapleDualTop, StapleTopLeft, StapleTopRight, Trim, TrimAfterCopies, TrimAfterDocuments, TrimAfterJob, TrimAfterPages, [KeywordNsExtensionPattern]
HoldUntilWKV	DayTime, Evening, Indefinite, Night, NoHold, SecondShift, ThirdShift, Weekend, [KeywordNsExtensionPattern]
ImpositionWKV	None, Signature, [KeywordNsExtensionPattern]
JobAccountingSheetTypeWKV	None, Standard, [KeywordNsExtensionPattern]
JobCollateTypeWKV	CollatedDocuments, Other, UncollatedSheets, UncollatedDocuments, Unknown, [KeywordNsExtensionPattern]
JobErrorSheetTypeWKV	None, Standard, [KeywordNsExtensionPattern]
JobErrorSheetWhenWKV	Always, OnError, [KeywordNsExtensionPattern]

<b>Keyword</b>	<b>Well Known Values</b>
JobPasswordEncryptionWKV	AES, ECC, Md2, Md4, Md5, None, Sha, TripleDES, [KeywordNsExtensionPattern]
JobSheetsWKV	BothSheets, EndSheet, FirstPrintStreamPage, None, Standard, StartSheet, [KeywordNsExtensionPattern]
MediaCoatingWKV	none, glossy, high-gloss, semi-gloss, satin, matte, [MediaNsExtensionPattern]
MediaColorWKV	no-color, white, pink, yellow, blue, green, buff, goldenrod, red, gray, ivory, orange, [MediaColorExtensionPattern]
MediaGrainWKV	x-direction, y-direction, [MediaNsExtensionPattern]
MediaInputTrayWKV	top, middle, bottom, side, large-capacity, envelope, main, manual, [MediaNsExtensionPattern]
MediaPreprintedWKV	blank, preprinted, letterhead, [MediaNsExtensionPattern]
MediaRecycledWKV	none, standard, [MediaNsExtensionPattern]
MediaSourceWKV	Alternate, AlternateRoll, Auto, Bottom, Center, Disc, Envelope, Hagaki, LargeCapacity, Left, Main, MainRoll, Manual, Middle, Photo, Rear, Right, Side, Top, Tray1, Tray2, Tray3, Tray4, Tray5, Tray6, [MediaNsExtensionPattern]
MediaToothWKV	coarse, fine, medium, [MediaNsExtensionPattern]
MediaTypeWKV	back-print-film, cardstock, continuous, continuous-long, continuous-short, envelope, envelope-plain, envelope-window, full-cut-tabs, labels, pre-cut-tabs, multi-layer, multi-part-forms, photographic, photographic-film, photographic-glossy, photographic-high-gloss, photographic-matte, photographic-satin, photographic-semi-gloss, roll, screen, screen-paged, stationery, stationery-coated, stationery-fine, stationery-heavyweight, stationery-inkjet, stationery-letterhead, stationery-lightweight, stationery-preprinted, stationery-prepunched, tab-stock, transparency, other, [MediaTypeExtensionPattern]
MediaWKV	asme_f_28x40in, iso_2a0_1189x1682mm, iso_a0_841x1189mm, iso_a0x3_1189x2523mm, iso_a1_594x841mm, iso_a10_26x37mm, iso_a1x3_841x1783mm, iso_a1x4_841x2378mm, iso_a2_420x594mm, iso_a2x3_594x1261mm, iso_a2x4_594x1682mm, iso_a2x5_594x2102mm, iso_a3_297x420mm, iso_a3-extra_322x445mm, iso_a3x3_420x891mm, iso_a3x4_420x1189mm, iso_a3x5_420x1486mm, iso_a3x6_420x1783mm, iso_a3x7_420x2080mm, iso_a4_210x297mm, iso_a4-extra_235.5x322.3mm, iso_a4-tab_225x297mm, iso_a4x3_297x630mm, iso_a4x4_297x841mm, iso_a4x5_297x1051mm, iso_a4x6_297x1261mm, iso_a4x7_297x1471mm, iso_a4x8_297x1682mm,

Keyword	Well Known Values
	iso_a4x9_297x1892mm, iso_a5_148x210mm, iso_a5-extra_174x235mm, iso_a6_105x148mm, iso_a7_74x105mm, iso_a8_52x74mm, iso_a9_37x52mm, iso_b0_1000x1414mm, iso_b1_707x1000mm, iso_b10_31x44mm, iso_b2_500x707mm, iso_b3_353x500mm, iso_b4_250x353mm, iso_b5_176x250mm, iso_b5-extra_201x276mm, iso_b6_125x176mm, iso_b6c4_125x324mm, iso_b7_88x125mm, iso_b8_62x88mm, iso_b9_44x62mm, iso_c0_917x1297mm, iso_c1_648x917mm, iso_c10_28x40mm, iso_c2_458x648mm, iso_c3_324x458mm, iso_c4_229x324mm, iso_c5_162x229mm, iso_c6_114x162mm, iso_c6c5_114x229mm, iso_c7_81x114mm, iso_c7c6_81x162mm, iso_c8_57x81mm, iso_c9_40x57mm, iso_dl_110x220mm, iso_ra0_860x1220mm, iso_ra1_610x860mm, iso_ra2_430x610mm, iso_sra0_900x1280mm, iso_sra1_640x900mm, iso_sra2_450x640mm, jis_b0_1030x1456mm, jis_b1_728x1030mm, jis_b10_32x45mm, jis_b2_515x728mm, jis_b3_364x515mm, jis_b4_257x364mm, jis_b5_182x257mm, jis_b6_128x182mm, jis_b7_91x128mm, jis_b8_64x91mm, jis_b9_45x64mm, jis_exec_216x330mm, jpn_chou2_111.1x146mm, jpn_chou3_120x235mm, jpn_chou4_90x205mm, jpn_hagaki_100x148mm, jpn_kahu_240x322.1mm, jpn_kaku2_240x332mm, jpn_oufuku_148x200mm, jpn_you4_105x235mm, na_10x11_10x11in, na_10x13_10x13in, na_10x14_10x14in, na_10x15_10x15in, na_10x15_10x15in, na_11x12_11x12in, na_11x15_11x15in, na_12x19_12x19in, na_5x7_5x7in, na_6x9_6x9in, na_7x9_7x9in, na_9x11_9x11in, na_a2_4.375x5.75in, na_arch-a_9x12in, na_arch-b_12x18in, na_arch-c_18x24in, na_arch-d_24x36in, na_arch-e_36x48in, na_b-plus_12x19.17in, na_c_17x22in, na_c5_6.5x9.5in, na_d_22x34in, na_e_34x44in, na_edp_11x14in, na_eur-edp_12x14in, na_executive_7.25x10.5in, na_f_44x68in, na_fanfold-eur_8.5x12in, na_fanfold-us_11x14.875in, na_foolscap_8.5x13in, na_govt-legal_8x13in, na_govt-letter_8x10in, na_index-3x5_3x5in, na_index-4x6_4x6in, na_index-4x6-ext_6x8in, na_index-5x8_5x8in, na_invoice_5.5x8.5in, na_ledger_11x17in, na_legal_8.5x14in, na_legal-extra_9.5x15in, na_letter_8.5x11in, na_letter-extra_9.5x12in, na_letter-plus_8.5x12.69in, na_monarch_3.875x7.5in, na_number-10_4.125x9.5in, na_number-11_4.5x10.375in, na_number-12_4.75x11in, na_number-14_5x11.5in, na_number-9_3.875x8.875in, na_personal_3.625x6.5in, na_quarto_8.5x10.83in, na_super-a_8.94x14in, na_super-b_13x19in, na_wide-format_30x42in,

Keyword	Well Known Values
	om_dai-pa-kai_275x395mm, om_folio_210x330mm, om_folio-sp_215x315mm, om_invite_220x220mm, om_italian_110x230mm, om_juuro-ku-kai_198x275mm, om_large-photo_200x300mm, om_pa-kai_267x389mm, om_postfix_114x229mm, om_small-photo_100x150mm, prc_1_102x165mm, prc_10_324x458mm, prc_16k_146x215mm, prc_2_102x176mm, prc_3_125x176mm, prc_32k_97x151mm, prc_4_110x208mm, prc_5_110x220mm, prc_6_120x320mm, prc_7_160x230mm, prc_8_120x309mm, pwg_letter-or-a4_choice, roc_16k_7.75x10.75in, roc_8k_10.75x15.5in, a0x2, a0x3, a1x3, a1x4, a2x3, a2x4, a2x5, a3x3, a3x4, a3x5, a3x6, a3x7, a4x3, a4x4, a4x5, a4x6, a4x7, a4x8, a4x9, arch-a, arch-b, arch-c, arch-d, arch-e, c, d, e, executive, f, folio, invoice, iso-a0, iso-a1, iso-a10, iso-a1x3, iso-a1x4, iso-a2, iso-a2x3, iso-a2x4, iso-a2x5, iso-a3, iso-a3-extra, iso-a3x3, iso-a3x4, iso-a3x5, iso-a3x6, iso-a3x7, iso-a4, iso-a4x3, iso-a4x4, iso-a4x5, iso-a4x6, iso-a4x7, iso-a4x8, iso-a4x9, iso-a5, iso-a6, iso-a7, iso-a8, iso-a9, iso-b0, iso-b1, iso-b10, iso-b2, iso-b3, iso-b4, iso-b5, iso-b6, iso-b7, iso-b8, iso-b9, iso-c0, iso-c1, iso-c2, iso-c3, iso-c4, iso-c5, iso-c6, iso-c7, iso-c8, iso-designated, iso-ra0, iso-ra1, iso-ra2, iso-sra0, iso-sra1, iso-sra2, jis-b0, jis-b1, jis-b10, jis-b2, jis-b3, jis-b4, jis-b5, jis-b6, jis-b7, jis-b8, jis-b9, monarch-envelope, na-10x13-envelope, na-10x14-envelope, na-10x15-envelope, na-10x15-envelope, na-6x9-envelope, na-7x9-envelope, na-8x10, na-9x11-envelope, na-legal, na-letter, na-number-10-envelope, na-number-9-envelope, quarto, tabloid, 10x11, 10x13, 10x14, 10x15, 11x12, 11x15, 12x19, 2a0, 5x7, 6x9, 7x9, 9x11, a, a0, a1, a10, a2, a3, a4, a4-extra, a4-tab, a5, a5-extra, a6, a7, a8, a9, architecture-a, architecture-b, architecture-c, architecture-d, architecture-e, architecture-f, b, b0, b1, b10, b2, b3, b4, b5, b5-extra, b6, b6/c4, b7, b8, b9, b-plus, c0, c1, c10, c2, c3, c4, c5, c6, c6/c5, c7, c7/c6, c8, c9, chou2, chou3, chou4, comm-10, dai-pa-kai, designated-long, dl, e1, edp, engineering-a, engineering-b, engineering-c, engineering-d, engineering-e, engineering-f, european-edp, exec, f, fanfold-European, fanfold-us, folio-sp, foolscap, german-legal-fanfold, government-legal, government-letter, hagaki, half-letter, index-3x5, index-4x6, index-4x6-ext, index-5x8, Invite, Italian, juuro-ku-kai, kahu, kaku2, large-photo, ledger, legal, legal-extra, letter, letter-extra, letter-plus, letter-tab, mini, number-11, number-12, number-14, oufuku, pa-kai, personal, Postfix, prc1, prc10, prc-16k, prc2, prc3, prc-32k, prc4, prc5, prc6, prc7, prc8, roc-16k, roc-8k, small-photo, statement, super-a, super-b, tabloid-extra, wide-format, you4, bottom, bypass-tray, large-capacity, main, manual, middle, top, side, tray-1, tray-2, tray-3, tray-4, tray-5, tray-6, tray-7, tray-8, tray-9, tray-10,

Keyword	Well Known Values
	[MediaSizeNameExtensionPattern]
MultipleDocumentsHandlingWKV	SeparateDocumentsCollatedCopies, SeparateDocumentsUncollatedCopies, SingleDocument, SingleDocumentNewSheet, [KeywordNsExtensionPattern]
MultipleOperationTimeoutActionWKV	Abort, Hold, Process, [KeywordNsExtensionPattern]
NaturalLanguageWKV	ar, de, en, en-us, es, fr, hi, it, ja, pt, zh, [NatLangExtensionPattern]
OperatingSystemNameWKV	aegis, amiga-os-1.2, amiga-os-1.3, amiga-os-2.0, amiga-os-2.1, amiga-os-3.0, amiga-os-3.1, amiga-os-3.5, amiga-os-3.9 , apollo, aix/370, aix-ps/2, beos-4.5.2, beos-5.0, bs-2000, cedar, cgw, chorus, chrysalis, cmos, cms, cos, cpix, ctos, ctss, dcn, ddos, domain, dos, edx, elf, embos, emmos, epos, foonex, freebsd, forth, fuzz, gcos, gpos, hdos, imagen, instant-internet, intercom, impress, interlisp, ios, irix, isi-68020, its, kosos, linux, linux-1.0, linux-1.2, linux-2.0, linux-2.2, linux-2.4, lisp, lispm, locus, macos, minos, mos, mpe5, mpe/v, mpe/ix, msdos, multics, music, music/sp, mvs, mvs/sp, netbsd-1.0, netbsd-1.1, netbsd-1.2, netbsd-1.3, netware-3, netware-3.11, netware-4.0, netware-4.1, netware-5.0, nexus, nms, nonstop, nos-2, ntos, openbsd, openvms, os/ddp, os/2, os4, os86, osx, pcdos, perq/os, pli, psdos/mit, psos, primos, risc-os, risc-os-3.10, risc-os-3.50, risc-os-3.60, risc-os-3.70, risc-os-4.00, rmx/rdos, ros, rsx11m, rte-a, satops, sinix, sco-open-desktop-1.0, sco-open-desktop-1.1, sco-open-desktop-2.0, sco-open-desktop-3.0, sco-open-desktop-lite-3.0, sco-open-server-3.0, sco-unix-3.2.0, sco-unix-3.2v2.0, sco-unix-3.2v2.1, sco-unix-3.2v4.0, sco-unix-3.2v4.1, sco-unix-3.2v4.2, sco-xenix-386-2.3.2, sco-xenix-386-2.3.3, sco-xenix-386-2.3.4, scs, simp, sun, sun-os-3.5, sun-os-4.0, swift, tac, tandem, tenex, the-major-bbs, tops10, tops20, tos, tp3010, trsdos, ultrix, unix, unix-bsd, unix-v1at, unix-v, unix-v.1, unix-v.2, unix-v.3, unix-pc, unknown, ut2d, v, vm, vm/370, vm/cms, vm/sp, vms, vms/eunice, vrtx, waits, wang, win32, windows-95, windows-95-osr1, windows-95-osr2, windows-98, windows-ce, windows-nt, windows-nt-2, windows-nt-3, windows-nt-3.5, windows-nt-3.51, windows-nt-4, windows-nt-5, worldgroup, wyse-wyxware, x11r3, xde, xenix, [OperatingSystemNameExtensionPattern]
OrientationRequestedWKV	Landscape, None, Portrait, ReverseLandscape, ReversePortrait, [KeywordNsExtensionPattern]
OutputBinWKV	Bottom, Center, Face-down, Face-up, Large-capacity, Left, Middle, My-mailbox, Rear, Right, Side, Top, [KeywordNsExtensionPattern]

<b>Keyword</b>	<b>Well Known Values</b>
OutputChannelWKV	Other, Unknown, SerialPort, ParallelPort, IEEE1284Port, SCSIPort, FTP, TFTP, IEEE1394, DCERemoteProcCall, ONCRemoteProcCall, OLE, NamedPipe, ServerMessageBlock, DLLAPI, VxDABI, SystemObjectManager, DECLAT, USB, IRDA, PortTCP, BidirPortTCP, PortHTTP,, [KeywordNsExtensionPattern]
PageDeliveryWKV	ReverseOrderFaceDown, ReverseOrderFaceUp, SameOrderFaceDown, SameOrderFaceUp, SystemSpecified, [KeywordNsExtensionPattern]
PageOrderReceived WKV	1ToNOrder, NTo1Order, [KeywordNsExtensionPattern]
PdIOverrideSupported WKV	Attempted, Guaranteed, NotAttempted, [KeywordNsExtensionPattern]
PresentationDirection NumberUpWKV	TobottomToleft, TobottomToright, ToleftTobottom, ToleftTotop, TorightTobottom, TorightTotop, TotopToleft, TotopToright, [KeywordNsExtensionPattern]
PrintColorModeWKV	Auto, BiLevel, Color, Highlight, Monochrome, ProcessBiLevel, ProcessMonochrome, [KeywordNsExtensionPattern]
PrintContentOptimize WKV	Graphics, Photo, Text, TextAndGraphics, [KeywordNsExtensionPattern]
PrintQualityWKV	Draft, High, Normal, [KeywordNsExtensionPattern]
PrintRenderingIntent WKV	Absolute, Perceptual, Relative, Saturation, [KeywordNsExtensionPattern]
PwgRasterDocument SheetBackWKV	Flipped, ManualTumble, Normal, Rotated, [KeywordNsExtensionPattern]
SaveDispositionWKV	None, PrintSave, SaveOnly, [KeywordNsExtensionPattern]
SeparatorSheetsType WKV	BothSheets, EndSheet, None, SlipSheets, StartSheet, [KeywordNsExtensionPattern]
SheetCollateWKV	Collated, Uncollated, [KeywordNsExtensionPattern]
SidesWKV	OneSided, TwoSidedLongEdge, TwoSidedShortEdge, [KeywordNsExtensionPattern]
StitchingReferenceEdgeWKV	Bottom, Left, Right, Top, [KeywordNsExtensionPattern]
UnitsWKV	Dpcm. Dpi, [KeywordNsExtensionPattern]
XImagePositionWKV	Center, Left, None, Right, [KeywordNsExtensionPattern]
YImagePositionWKV	Bottom, Center, None, Top, [KeywordNsExtensionPattern]

## 17. Appendix D: Keyword Value extension patterns (Informative)

Table 7 shows the extension patterns for PWG keyword elements. The regular expression syntax is specified in appendix F of the XML Schema Part 2: Datatypes Second Edition specification [XMLDAT]. The link to the appendix that covers regular expressions is <<http://www.w3.org/TR/xmlschema-2/#dt-regex>>

**Table 7 Keyword Value extension patterns**

Pattern Name	Regular Expression
KeywordNsExtensionPattern	<code>\w+:[\w_-\.\.]+</code>
MediaColorExtensionPattern	<code>custom-media-color-[a-z][a-z0-9\-\.]*</code>
MediaNsExtensionPattern	<code>\w+:[\w:/;_-\.\.]+</code>
MediaSizeNameExtensionPattern	<code>(custom_max custom_min custom na asme roc oe)_[\p{L}\d][\p{L}\d-]*_d+(\.\d+)?x\d+(\.\d+)?in</code>  <code>(custom_max custom_min custom na asme roc oe)_[\p{L}\d][\p{L}\d-]*_d+(\.\d+)?x\d+(\.\d+)?mm</code>
MediaTypeExtensionPattern	<code>custom-media-type-[a-z][a-z0-9\-\.]*</code>
MimeExtensionPattern	<code>\w+[\w:/;_-\ \ +\.\.]*</code>
NatLangExtensionPattern	<code>\w+[\w:/;_-\ \ +\.\.]*</code>
OperatingSystemNameExtensionPattern	<code>[A-Z/\.\.]+</code>
StringExtensionPattern	<code>\w+[\w:/;_-\ \ +\.\.]*</code>
StringNsExtensionPattern	<code>\w+:[\w:/;_-\ \ +\.\.]*</code>

## 18. Appendix E: PrintServiceJobCapabilities (Normative)

The elements that represent the allowed values for a PrintJobTicket and, optionally, a PrintDocumentTicket are in a different arc in the PWG Semantic Model than the elements that represent the parameters required for document content generation and job creation operational elements. The PrintServiceCapabilities contains the PrintJobTicketCapabilities and the PrintDocumentTicketCapabilities. The PrintServiceDescription contains the information useful for document content generation and job creation. Table 8 below lists the subset of elements from PrintServiceDescription that relate directly to document content generation or job creation operational elements.

**Table 8 Subset of PrintServiceDescription Elements**

	Element Name	Group
1.	CharsetConfigured	PrintServiceDescription
2.	ColorSupported	PrintServiceDescription
3.	DocumentFormatSupported	PrintServiceDescription
4.	DocumentPasswordSupported	PrintServiceDescription
5.	JobPasswordEncryptionSupported	PrintServiceDescription
6.	JobPasswordSupported	PrintServiceDescription
7.	MediaBottomMarginSupported, MediaLeftMarginSupported, MediaRightMarginSupported, MediaTopMarginSupported	PrintServiceDescription
8.	PwgRasterDocumentResolutionSupported	PrintServiceDescription
9.	DocumentFormatDetailsSuppliedSupported	PrintServiceDescription
10.	PwgRasterDocumentSheetBack	PrintServiceDescription
11.	PwgRasterDocumentTypeSupported	PrintServiceDescription

The PWG Semantic Model schema includes an element definition for an element group to carry the aforementioned elements in a protocol. The PrintServiceJobCapabilities element is the construct used in a protocol to collect the PrintServiceCapabilities and subset of PrintServiceDescription information together.

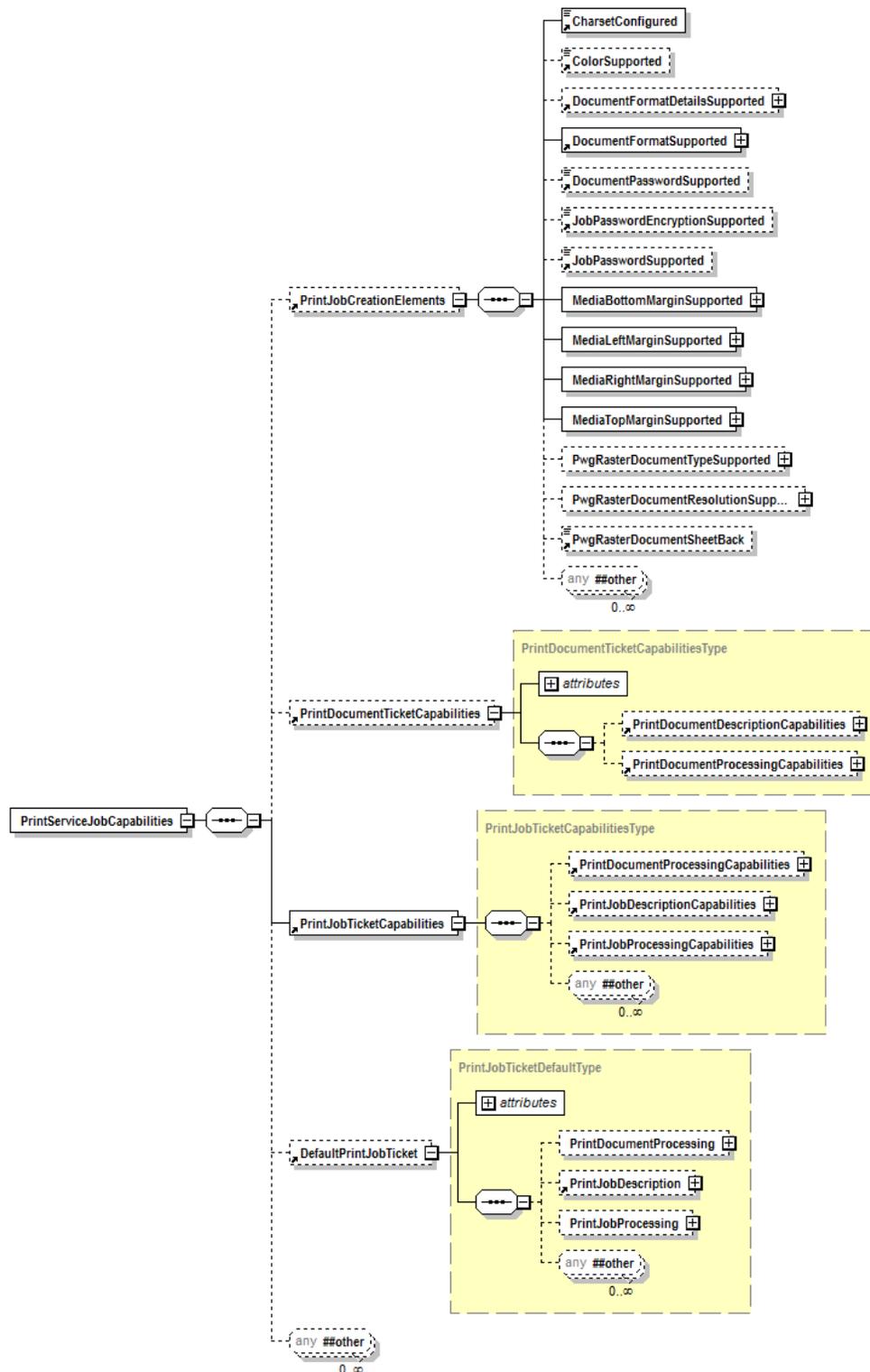


Figure 26 PrintServiceJobCapabilities

## 19. Appendix F: Sample PrintJobTicket (Informative)

XML Version:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Sample simple PrintJobTicket-->
<pwg:PrintJobTicket xsi:schemaLocation="PrintJobTicket.xsd"
xmlns:pwg="http://www.pwg.org/schemas/2011/5/sm" xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance">
  <pwg:PrintDocumentProcessing>
    <pwg:Copies>4</pwg:Copies>
    <pwg:Finishings>
      <pwg:Finishing>Staple</pwg:Finishing>
    </pwg:Finishings>
    <pwg:Media>na_letter_8.5x11in</pwg:Media>
    <pwg:MediaType>stationery</pwg:MediaType>
    <pwg:OrientationRequested>Portrait</pwg:OrientationRequested>
    <pwg:PrintColorMode>Color</pwg:PrintColorMode>
    <pwg:Quality>Normal</pwg:Quality>
    <pwg:Sides>TwoSidedLongEdge</pwg:Sides>
  </pwg:PrintDocumentProcessing>
  <pwg:PrintJobDescription>
    <pwg:ElementsNaturalLanguage>en-us</pwg:ElementsNaturalLanguage>
    <pwg:JobName>Simple Test Job</pwg:JobName>
    <pwg:JobOriginatingUserName>Anne Lang</pwg:JobOriginatingUserName>
    <pwg:Impressions>8</pwg:Impressions>
    <pwg:MediaSheets>4</pwg:MediaSheets>
  </pwg:PrintJobDescription>
</pwg:PrintJobProcessing />
</pwg:PrintJobTicket>
```

Or

JSON Version:

```
{
  "Comment": "Sample simple PrintJobTicket",
  "pwg:PrintJobTicket": {
    "xmlns:pwg": "http://www.pwg.org/schemas/2011/5/sm",
    "pwg:PrintDocumentProcessing": {
      "pwg:Copies": 4,
      "pwg:Finishings": {
        "pwg:Finishing": "Staple"
      },
      "pwg:Media": "na_letter_8.5x11in",
      "pwg:MediaType": "stationery",
      "pwg:OrientationRequested": "Portrait",
      "pwg:PrintColorMode": "Color",
      "pwg:Quality": "Normal",
      "pwg:Sides": "TwoSidedLongEdge"
    },
    "pwg:PrintJobDescription": {
      "pwg:ElementsNaturalLanguage": "en-us",
```

```
    "pwg:JobName": "Simple Test Job",  
    "pwg:JobOriginatingUserName": "Anne Lang",  
    "pwg:Impressions": 8,  
    "pwg:MediaSheets": 4  
  },  
  "pwg:PrintJobProcessing": ""  
}
```

## 20. Appendix G: Sample PrintJobTicketCapabilities (Informative)

XML Version:

```
<?xml version="1.0" encoding="UTF-8"?>
<!--Sample simple PrintJobTicketCapabilities-->
<pwg:PrintJobTicketCapabilities xsi:schemaLocation="http://www.pwg.org/schemas/2012/3/sm
PrintServiceCapabilities.xsd" xmlns:pwg="http://www.pwg.org/schemas/2012/3/sm"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <pwg:PrintDocumentProcessingCapabilities>
    <pwg:Copies>
      <pwg:Lowerbound>1</pwg:Lowerbound>
      <pwg:Upperbound>10</pwg:Upperbound>
    </pwg:Copies>
    <pwg:Finishings>
      <pwg:AllowedValue>Staple</pwg:AllowedValue>
      <pwg:AllowedValue>StapleTopLeft</pwg:AllowedValue>
      <pwg:AllowedValue>JogOffset</pwg:AllowedValue>
    </pwg:Finishings>
    <pwg:Media>
      <pwg:AllowedValue>a4</pwg:AllowedValue>
      <pwg:AllowedValue>na_letter_8.5x11in</pwg:AllowedValue>
      <pwg:AllowedValue>na-8x10</pwg:AllowedValue>
    </pwg:Media>
    <pwg:MediaType>
      <pwg:AllowedValue>stationery</pwg:AllowedValue>
      <pwg:AllowedValue>stationery-coated</pwg:AllowedValue>
      <pwg:AllowedValue>photographic-glossy</pwg:AllowedValue>
    </pwg:MediaType>
    <pwg:OrientationRequested>
      <pwg:AllowedValue>Landscape</pwg:AllowedValue>
      <pwg:AllowedValue>Portrait</pwg:AllowedValue>
    </pwg:OrientationRequested>
    <pwg:PrintColorMode>
      <pwg:AllowedValue>Auto</pwg:AllowedValue>
      <pwg:AllowedValue>Color</pwg:AllowedValue>
      <pwg:AllowedValue>Monochrome</pwg:AllowedValue>
    </pwg:PrintColorMode>
    <pwg:Quality>
      <pwg:AllowedValue>High</pwg:AllowedValue>
      <pwg:AllowedValue>Normal</pwg:AllowedValue>
      <pwg:AllowedValue>Draft</pwg:AllowedValue>
    </pwg:Quality>
    <pwg:Sides>
      <pwg:AllowedValue>OneSided</pwg:AllowedValue>
      <pwg:AllowedValue>TwoSidedLongEdge</pwg:AllowedValue>
    </pwg:Sides>
  </pwg:PrintDocumentProcessingCapabilities>
  <pwg:PrintJobDescriptionCapabilities>
    <pwg:ElementsNaturalLanguage>
      <pwg:AllowedValue>en-us</pwg:AllowedValue>
      <pwg:AllowedValue>de</pwg:AllowedValue>
      <pwg:AllowedValue>fr</pwg:AllowedValue>
    </pwg:ElementsNaturalLanguage>
  </pwg:PrintJobDescriptionCapabilities>
</pwg:PrintJobTicketCapabilities>
```

```
<pwg:JobName>true</pwg:JobName>  
<pwg:JobOriginatingUserName>true</pwg:JobOriginatingUserName>  
<pwg:Impressions>true</pwg:Impressions>  
<pwg:MediaSheets>true</pwg:MediaSheets>  
</pwg:PrintJobDescriptionCapabilities>  
<pwg:PrintJobProcessingCapabilities/>  
</pwg:PrintJobTicketCapabilities>
```

Or

JSON Version:

```
{
  "Comment": "Sample simple PrintJobTicketCapabilities",
  "pwg:PrintJobTicketCapabilities": {
    "xmlns:pwg": "http://www.pwg.org/schemas/2012/3/sm",
    "pwg:PrintDocumentProcessingCapabilities": {
      "pwg:Copies": {
        "pwg:Lowerbound": 1,
        "pwg:Upperbound": 10
      },
      "pwg:Finishings": {
        "pwg:AllowedValue": [
          "Staple", "StapleTopLeft", "JogOffset"
        ]
      },
      "pwg:Media": {
        "pwg:AllowedValue": [
          "a4", "na_letter_8.5x11in", "na-8x10"
        ]
      },
      "pwg:MediaType": {
        "pwg:AllowedValue": [
          "stationery", "stationery-coated", "photographic-glossy"
        ]
      },
      "pwg:OrientationRequested": {
        "pwg:AllowedValue": [
          "Landscape", "Portrait"
        ]
      },
      "pwg:PrintColorMode": {
        "pwg:AllowedValue": [
          "Auto", "Color", "Monochrome"
        ]
      },
      "pwg:Quality": {
        "pwg:AllowedValue": [
          "High", "Normal", "Draft"
        ]
      },
      "pwg:Sides": {
        "pwg:AllowedValue": [
          "OneSided", "TwoSidedLongEdge"
        ]
      }
    },
    "pwg:PrintJobDescriptionCapabilities": {
      "pwg:ElementsNaturalLanguage": {
        "pwg:AllowedValue": [
          "en-us", "de", "fr"
        ]
      }
    },
    "pwg:JobName": true,
    "pwg:JobOriginatingUserName": true,
    "pwg:Impressions": true,
  }
}
```

```
        "pwg:MediaSheets": true
    },
    "pwg:PrintJobProcessingCapabilities": ""
}
```

## 21. Appendix H – IPP Mapping (Informative)

### 21.1 Changes to remove some IPP specific aspects

This section lists some changes to remove some IPP specific aspects from the PWG Semantic Model.

1. IPP enumerations use their well-known string name instead of the integer enumeration. This applies not only to IPP attributes but also to IPP Operations.
2. Any IPP attribute name containing “ipp” has had the “ipp” removed.
3. All IPP attribute and operation keywords have the substring “attribute” replaced with “element”.
4. All IPP operation, status codes and attributes have had the first letter capitalized and the ‘-’ character removed and the character following the ‘-’ has been capitalized. (All mixed case PWG Semantic Model keywords can be interpreted without regard to case.)
5. Most value keyword names are mapped using the same rules as in #4 above with some exceptions. Since some keywords are defined or used by other standards the following keyword values are the same as their IPP counterparts:
  - a. CharsetWKV
  - b. NaturalLanguageWKV
  - c. ColorSpaceWKV
  - d. DocumentFormatWKV
  - e. MediaCoatingWKV
  - f. MediaColorWKV
  - g. MediaGrainWKV
  - h. MediaToothWKV
  - i. MediaInputTrayWKV
  - j. MediaPreprintedWKV
  - k. MediaRecycledWKV
  - l. MediaTypeWKV
  - m. MediaSizeAliasNameWKV
  - n. MediaSizeLegacyNamesWKV
  - o. MediaSizeSelfDescribingNameWKV
  - p. OperatingSystemNameWKV
6. Certain elements prefixed with “Job” that apply to either Jobs or Documents has had the “Job” prefix removed. (This mapping clarified by the value in the “Group” cell of the PrintJobTicket Element Summary table in appendix A)
7. The IPP attribute value keywords defined in other registries remain unchanged. Note that the PWG defined media keyword values for the Semantic Elements MediaType, MediaColor, MediaSizeName and Media use the values as specified in PWG 5101.1.
8. XML datatypes are used that map as closely as possible to the IPP specification.
  - a. The IPP datatypes NameWithoutLanguage, NameWithLanguage, TextWithoutLanguage and TextWithLanguage are mapped to the XML datatype String. Localization is handled globally by the ElementsNaturalLanguage element.

- b. The IPP datatype Enum is mapped to the XML datatype NMTOKEN. See #1 above.
  - c. The IPP collection datatype is represented as an XML sequence. Although sequence is used the set of elements is unordered unless order is explicitly specified in the element definition.
  - d. The “1setOf X” types are represented as the base type and the “Multivalued” field in the tables set to “Yes”.
9. Any constraints placed on attribute values has been noted in the tables and whenever possible expressed in the XML schema.

The term “keyword” continues to be used for string values enumerated as part of the PWG Model. The term “object” is sometimes changed to “data class”. The term “operation” has been changed to “action” to use the term more frequently used with XML.

The following IPP attributes are not included: operation-id, attributes-charset, request-id.

## 21.2 Attribute Group Mapping

IPP Actions may contain a number of parameters. The first parameter is always the Operation Attributes for the Action. The IPP Operation Attributes have been mapped to the Printer and Job Description Element Groups.

The IPP Printer Description Attributes map to the PWG Printer Status Elements and Printer Description Elements. The IPP Job Description Attributes map to the PWG Job Status Elements and Job Description Elements. The PWG Model differentiates elements that can be directly set (i.e., Description) versus those that are maintained by automata and can only be changed through first class operations (i.e., Status)

The IPP Job Template Attributes map to the PWG Job Processing Elements and Document Processing Elements.